NATURA IMPACT STATEMENT

IN SUPPORT OF THE

APPROPRIATE ASSESSMENT

FOR THE

PROPOSED
PLATFORM FOR GROWTH: SHARED COMMUNITY FACILITIES PROJECT

AT

KEEL BAY

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1. Introduction

1.1. Background

This Natura Impact Statement (NIS) has been prepared in support of the Appropriate Assessment (AA) of the Platform for Growth (PfG); Shared Community Facilities (the proposed project) in accordance with the requirements of Article 6(3) of Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (hereafter referred to as the "Habitats Directive").

This report specifically relates to the Keel Bay site which is being progressed and developed by Mayo County Council through a funding scheme offered by Fáilte Ireland. Full details relating to the scope of the project and associated sites can be found in Section 2 below. However, given the distances between each of the shared facilities locations there are no interactions between each of the sites. A consistent approach has been taken for all projects.

1.2. Legislative Context

The Habitats Directive provides legal protection for habitats and species of European importance. The overall aim of the Habitats Directive is to maintain or restore the "favourable conservation status" of habitats and species of European Community Interest. These habitats and species are listed in the Habitats and Birds Directives (Council Directive 2009/147/EC on the conservation of wild birds) with Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) designated to afford protection to the most vulnerable of them. These two designations are collectively known as European sites and Natura 2000.

AA is required by the Habitats Directive, as transposed into Irish legislation by the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) and the Planning and Development Act (as amended). AA is an assessment of the potential for adverse or negative effects of a plan or project, in combination with other plans or projects, on the conservation objectives of a European Site. These sites consist of SACs and SPAs and provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

Article 6(3) of the Habitats Directive States:

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

The AA process relates to the protection of species listed in Annex I and Annex II of the Habitats Directive which form the Natura 2000 network (Article 3(1)). Species breeding and resting places of species listed in Annex IV of the Habitats Directive are nationally protected in Ireland as per Articles 15 and 16 of the Habitats Directive. The species listed in Annex IV do not form part of the Natura 2000 network as they are not mentioned in Article 3(1) of the Directive which defines the Natura 2000 network.

Article 3(1) of the Habitats Directive States:

> *'A coherent European ecological network of special areas of conservation shall be set up under the title Natura 2000. This network, composed of sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, shall enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range'.*

AA is an assessment of the potential for adverse or negative effects of a plan or project, in combination with other plans or projects, on the conservation objectives of a European site. These sites consist of SACs and SPAs and provide for the protection and long-term survival of Europe's most valuable and threatened species and habitats.

1.3. Approach

This NIS is based on best scientific knowledge and has utilised ecological and hydrological expertise. In addition, a detailed online review of published scientific literature and 'grey' literature was conducted. This included a detailed review of the National Parks and Wildlife Service (NPWS) Website including

mapping and available reports for relevant sites and in particular sensitive qualifying interests (QIs)/special conservation interests (SCIs) described and their conservation objectives. The EPA Envision map viewer (www.epa.ie) and available reports were also reviewed, as was the NPWS (2019) publication "The Status of Protected EU Habitats and Species in Ireland".

The ecological desktop study that has been completed for the AA screening of the proposed project, comprised the following elements:

- Identification of European sites within 15km[1] of the subject lands;
- Identification of European sites within 15km of the site with identification of potential pathways to specific sites (if relevant) greater than 15km from the subject lands;
- Review of the NPWS site synopses and conservation objectives for European sites within 15km and for which potential pathways from the proposed site have been identified; and
- Examination of available information on protected species.

There are four main stages in the AA process as follow:

Stage One: Screening
The process that identifies the likely impacts upon a European site of a project or plan, either alone or in combination with other projects or plans and considers whether these impacts are likely to be significant.

Stage Two: Appropriate Assessment
The consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse effects mitigation measures are required to avoid or minimise potential effects. The details of these mitigation measures are then assessed in the context of the ecological integrity of the plan/project characteristics to ensure no significant adverse effects on European sites. If this assessment process shows there are no residual significant effect, then the process may end at this stage, stage two, of the AA process which are formalised in Natura Impact Statements (NIS) reports which support the overall AA process. However, if the likelihood of significant impacts remains, then the process must proceed to Stage Three.

Stage Three: Assessment of Alternative Solutions
The process that examines alternative ways of achieving the objectives of the project or plan that avoids adverse impacts on the integrity of the European site.

Stage Four: Assessment where no alternative solutions exist and where adverse impacts remain
An assessment of compensatory measures where, in the light of an assessment of imperative reasons of overriding public interest (IROPI), it is deemed that the project or plan should proceed.

The Habitats Directive promotes a hierarchy of avoidance, mitigation and compensatory measures. This approach aims to avoid any effects on European sites by identifying possible effects early in the plan-making process and avoiding such effects. Second, the approach involves the application of mitigation measures, if necessary, during the AA process to the point where no adverse effects on the site(s) remain. If potential effects on European sites remain, the approach requires the consideration of alternative solutions. If no alternative solutions are identified and the plan/project is required for imperative reasons of overriding public interest, then compensation measures are required for any remaining adverse effect(s).

Source-Pathway-Receptor Model

The assessment of potential effects on European sites is conducted following a standard source-pathway-receptor model[2], where, in order for an effect to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the model is sufficient to conclude that a potential effect is not of any relevance or significance.

In the interest of this report, receptors are the ecological features that are known to be utilised by the qualifying interests or special conservation interests of a European site. A source is any identifiable element of the proposed project provision that is known to interact with ecological processes. The pathways are any connections or links between the source and the receptor. This report provides information on whether direct, indirect and cumulative adverse effects could arise from the proposed project.

[1] While the actual zone of impact is likely to be much smaller, the default 15km zone extent has been applied on a precautionary basis
[2] Source(s) – e.g. pollutant run-off from proposed works; Pathway(s) – e.g. groundwater connecting to nearby qualifying wetland habitats; and Receptor(s) – qualifying aquatic habitats and species of European Sites

Guidance

The NIS has been prepared taking into account legislation including the aforementioned legislation and guidance including the following:

- *Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities, Department of the Environment, Heritage and Local Government, 2009;*
- *Commission Notice: Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC", European Commission 2018;*
- *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC", European Commission Environment DG, 2002; and*
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC", European Commission, 2000.*

1.4. Author details

Andrew Torsney is a Senior Ecologist with 8 years' experience working on major national and local scale projects. Andrew graduated from University College Dublin in 2011 with a B.Sc. degree in Zoology and obtained Master's degree in Biodiversity and Conservation from the University of Leeds in 2012. He has a range of ecological skills which include habitat mapping, ecological surveying, data interpretation and report writing. Andrew is a vegetative plant specialist, who has a wealth of experience classifying riparian habitats and identifying rare floral species. Andrew has a vast knowledge of riparian and freshwater ecosystems and undertakes freshwater surveys regularly. Andrew holds 4 national protected species licenses and has a lot of experience optioning surveying licenses for aquatic species such as the white clawed crayfish. He is also a Bat specialist with a wealth of experience, in acoustic surveying and monitoring of bats. Throughout Andrews's career he has worked on a number of large-scale multifaceted projects such as the Killaloe to Dublin water supply project NIS. For this work, Andrew designed and oversaw all ecological field work relating to the Environmental Impact Assessment (EIA) and AA.

2. Description of proposal and receiving environment at Keel Bay

2.1. Platform for Growth: Shared facilities overview

Platform for Growth is a scheme under Fáilte Ireland with the aim to support the development of shared facilities at waterways in the Republic of Ireland through the provision of funding. The funding is made available to County Councils only and there are a series of terms and conditions associated with the application process. Included in this is that the sites selected must have existing water sports operators, such as surf schools and/or stand-up paddle boarding (SUP) schools in situ. This is to consolidate existing tourism offerings and elevate the appeal of these areas by providing adequate facilities. The funding is supported by detailed design specifications and additional supports; however, each site has potential for site specific alterations.

Ecological considerations were built into the site selection process with over 47 proposed locations for shared facilities structures to be placed. Phase 1 and Phase 2 of the ecological considerations (constraints and opportunities assessments) can be seen in appendix III.

2.2. Project specifics at Keel Bay

The planning report and associated documents which support this assessment contain the full details of the works proposed. These associated documents should be consulted to in conjunction with this report.

The following description is provided to facilitate a general understanding of the overall scope of the proposed project:

The shared facilities structure will contain a number of resources such as indoor and outdoor showers (which are to be heated through solar power), serviced toilets, as well as external and internal seating. The proposed facilities will also include a communications workspace, which will be a multi-functional, multi-media education and learning area for the operators of, and visitors to, the proposed facilities. Additional amenities included in the design plan are lockers for storage and washdown areas.

The structure itself is small in scale and has a discrete footprint; the specific location of the proposed facilities is shown in Figure 2.1 below. Figure 2.2 is an illustration of the design proposal upon completion of construction.

Key points of consideration for the site include drainage works for the site and associated shower and washdown facilities. These have been specifically designed to ensure all grey water is collected and managed appropriately (see diagram below).

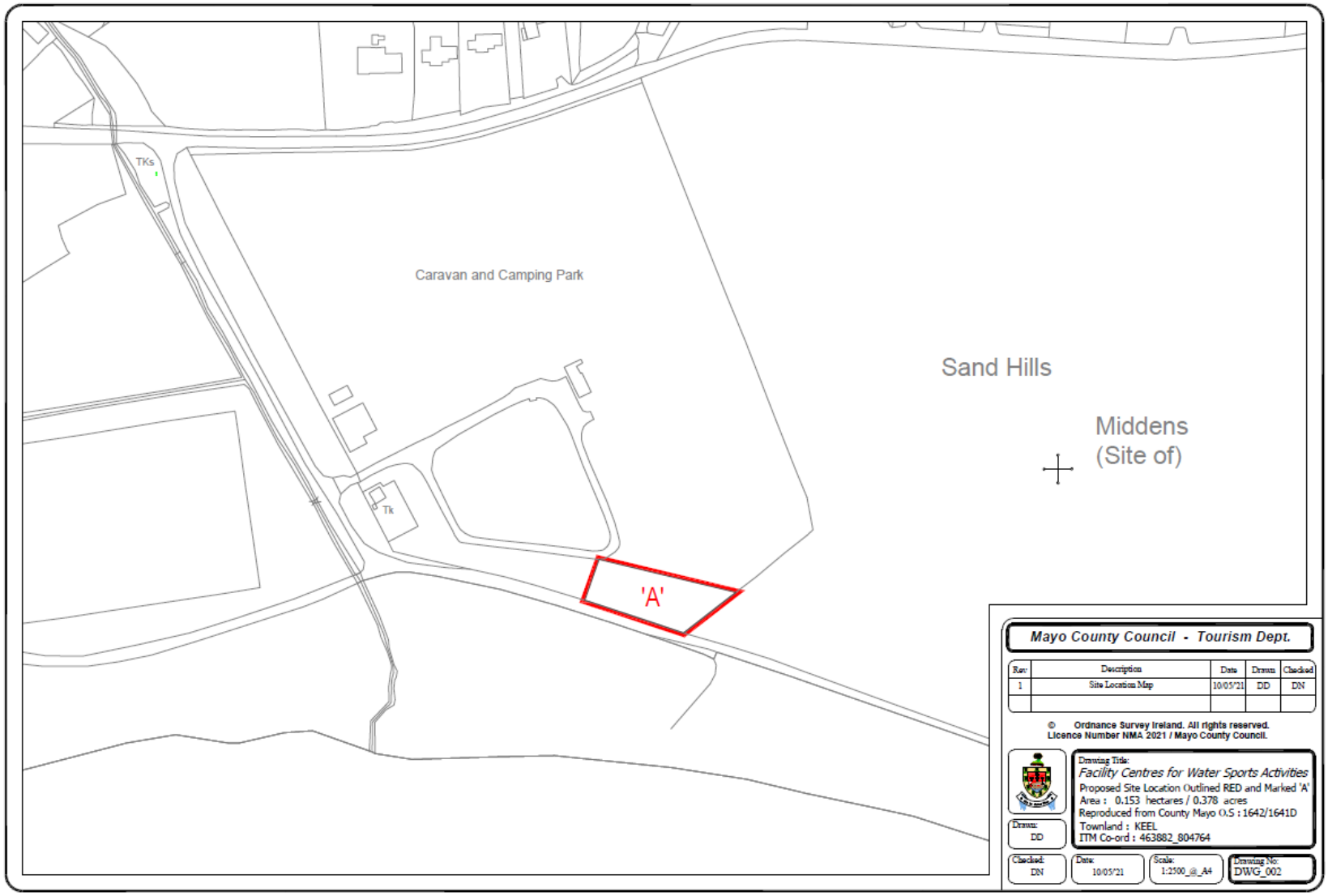

Figure 2.1 Site location of the proposed structure at Keel Bay[3].

[3] Site Location Map – See drawing no DWG_002 for further details.

Figure 2.2 Illustration of the proposed facility upon completion

2.3. Survey methods

Data was collected through a series of surveys conducted between August 2020 and April 2021. This data covered the whole Keel Bay area and was not limited to the footprint of the proposed project. A habitat survey of the site was conducted following standard guidelines set out in 'Best practice guidance for habitat surveys and mapping' developed by the Heritage Council of Ireland. Habitats were classified using habitat descriptions and codes published by the Heritage Council in 'A Guide to Habitat Types in Ireland'. Plant species nomenclature follows Rose's 'The Wild Flower Key: How to identify wild flowers, trees and shrubs in Britain and Ireland'. A list of the dominant and notable plant species was taken for each habitat type. Particular emphasis was given to the possible occurrence of rare or legally protected plant species (as listed in Flora Protection Order 1999) or Red-listed plant species (Curtis & McGough 1985, Wyse Jackson et al. 2016).

Broader ecological data was collected to assess the ecological context of the site. Observations were made for fauna species present or likely to occur on-site. Emphasis was placed on mammals and birds, and especially for species listed in the respective Red lists, namely Colhoun and Cummins (2013), and Marnell et al. (2009). For mammals, search was focused on signs of their presence, such as tracks, feeding marks and droppings, as well as direct observations. For bats, the main focus was on evaluation of suitable habitats to support roosting bats; however, an ecological assessment of habitat suitability was undertaken throughout the site. The assessment process undertaken for bats followed the BCT Guidelines. Chapter 4 of these guidelines identify the approach to assess 'preliminary ecological appraisal for bats'. This chapter sets out methods for identifying habitat suitability which do not constitute assumptions. Bird species were recorded by sight and sound during all field visits.

A winter bird assessment was undertaken on-site on following the SNH Guidelines[4]. This approach is standard practice when assessing potential impacts on winter wading birds. A total of 36 hours of surveys were completed at the site over a 6-month period (between October and March) to identify the site usage from bird species. Specific attention was placed on recording foraging and roosting areas that may be used by SCI species relating to SPAs within commuting range of Keel Bay.

During all surveys, particular attention was given to assessing the presence of rare or protected species. Each species identified was assessed in term of the EU Habitat Directive (92/43/EEC), Bird Directive (2009/147/EC), the Wildlife Act (1976), the Wildlife Amendment Act (2000) and the Red Data Lists for threatened and protected species, published on the NPWS website (www.npws.ie).

2.3.1. Limitations

The biodiversity assessment was carried out in autumn which is not the optimal time for some botanical species as species such as orchids, which have a limited blooming period. However, vegetative ID was used for all surveys which broadens the survey season beyond the flowering season and the species ID were used to inform the broad habitat type classification. The precautionary principle was used to assume all habitats that could align with Annex I priority habitats will be treated as such. Therefore overall, it is considered that there are no significant limitations to the present assessment of the ecological importance of the site.

2.4. Receiving environment at Keel Bay

Keel Bay is a beach area with fixed dune and machaire habitats present throughout. The flat grassy area outside of the SAC is not identified as fixed dune or machair rather is identified as a calcareous grassland due to the species present on site. The characteristic species of machaire such as mayweed, birdsfoot trefoil, yellow rattle etc. are not identified in abundance on site. The area within the SAC is also not fully aligned with the machaire habitat classification, this is largely due to intensive grazing by sheep; the optimal grazing regime for the management of machair is low intensity strip grazing once a year after the habitat has gone to seed (Oct/Nov). The dune habitats that line the beach rest of the receiving area, these dunes have extensive damage due to visitor movements with desire lines regularly cutting through the dunes. The beach site is sandy with rocky outcrops to the west of the site.

[4] SNH (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms; Scottish Natural Heritage

The habitats on-site were surveyed and classified using the Fossit Level 3 coding system which are presented in Figure 2.3 below.

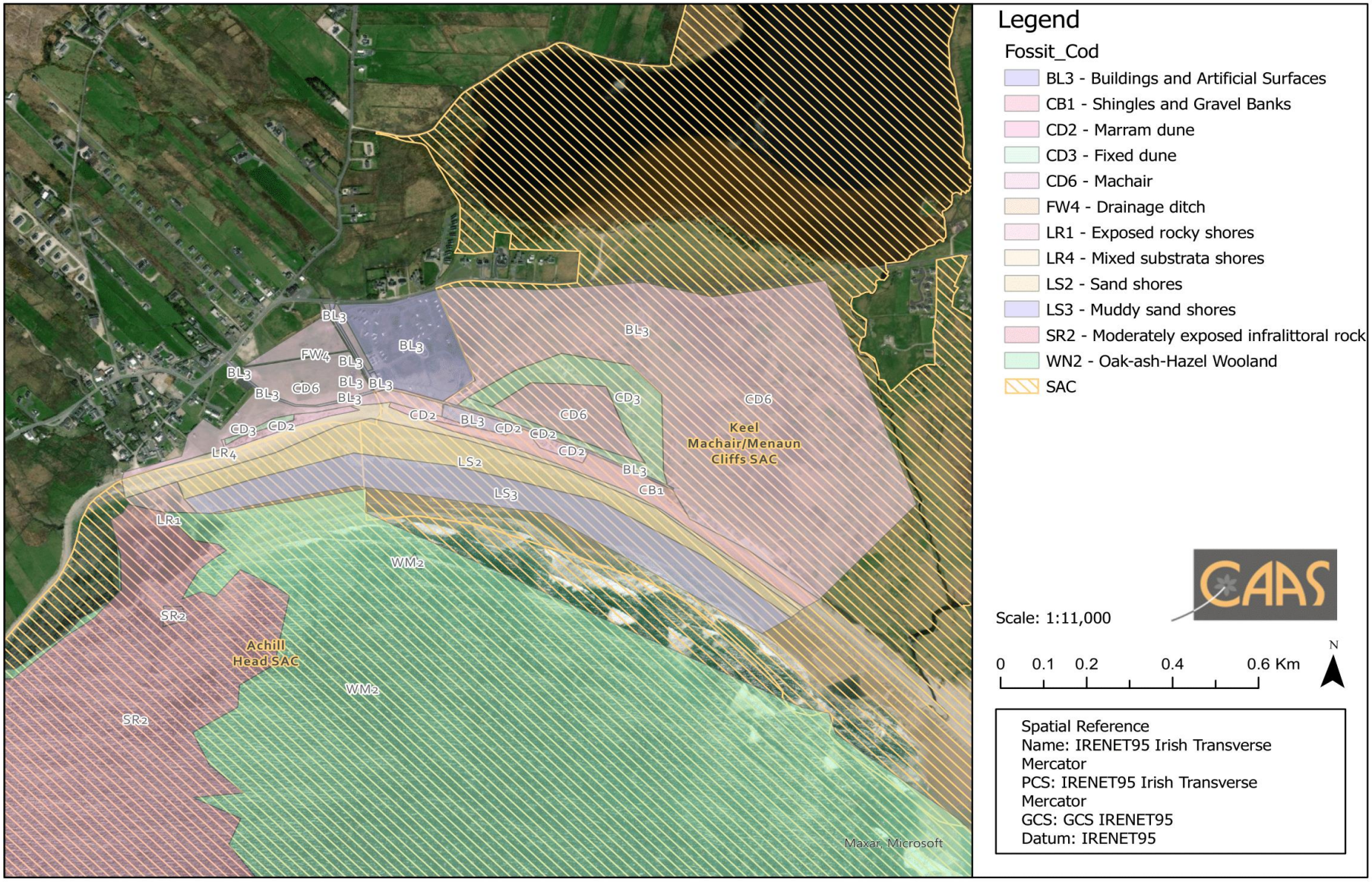

Figure 2.3 Habitat map (Fossit level 3) within the Keel Bay area

2.4.1. Winter bird data for Keel Bay

Data was collected for the Keel Bay from October 2020 to April 2021 which recorded the foraging and roosting locations of all birds on-site as well as all bird flight patterns. All species identified on-site can be seen below (with respective BTO codes):

Brent Goose (light-bellied)	*Branta bernicla hrota*	PB
Common Gull	*Larus canus*	CM
Curlew	*Numenius arquata*	CU
Dunlin	*Calidris alpina*	DN
Great Black-backed Gull	*Larus marinus*	GB
Greenshank	*Tringa nebularia*	GK
Herring Gull	*Larus argentatus*	HG
Oystercatcher	*Haematopus ostralegus*	OC
Purple Sandpiper	*Calidris maritima*	PS
Redshank	*Tringa totanus*	RK
Ringed Plover	*Charadrius hiaticula*	RP
Sanderling	*Calidris alba*	SS
Turnstone	*Arenaria interpres*	TT
Unident. Cormorant/Shag	*Phalacrocorax sp.*	XU
Unident. gull	*Larus sp.*	UU

The main areas of note for birds at Keel Bay are identified in Figure 2.4 and discussed below:

The beach is a sandy shore with a rocky outcrop to the west, machair to the north and heath to the east. This site is used regularly by foraging and roosting birds throughout. All of the foraging observed on site was seen to the east end of the beach along the mud/sand shores and the rocks. The rest of the beach recorded minimal bird activity during the surveys. Redpoll, sanderling, dunlin and turnstones were seen roosting on the beach at roost area C during one of the surveys. Flight paths primarily centred around the shore, commuting back and forth at height. Some birds also moved inland towards the lake surrounded by Machair just north of the proposed site.

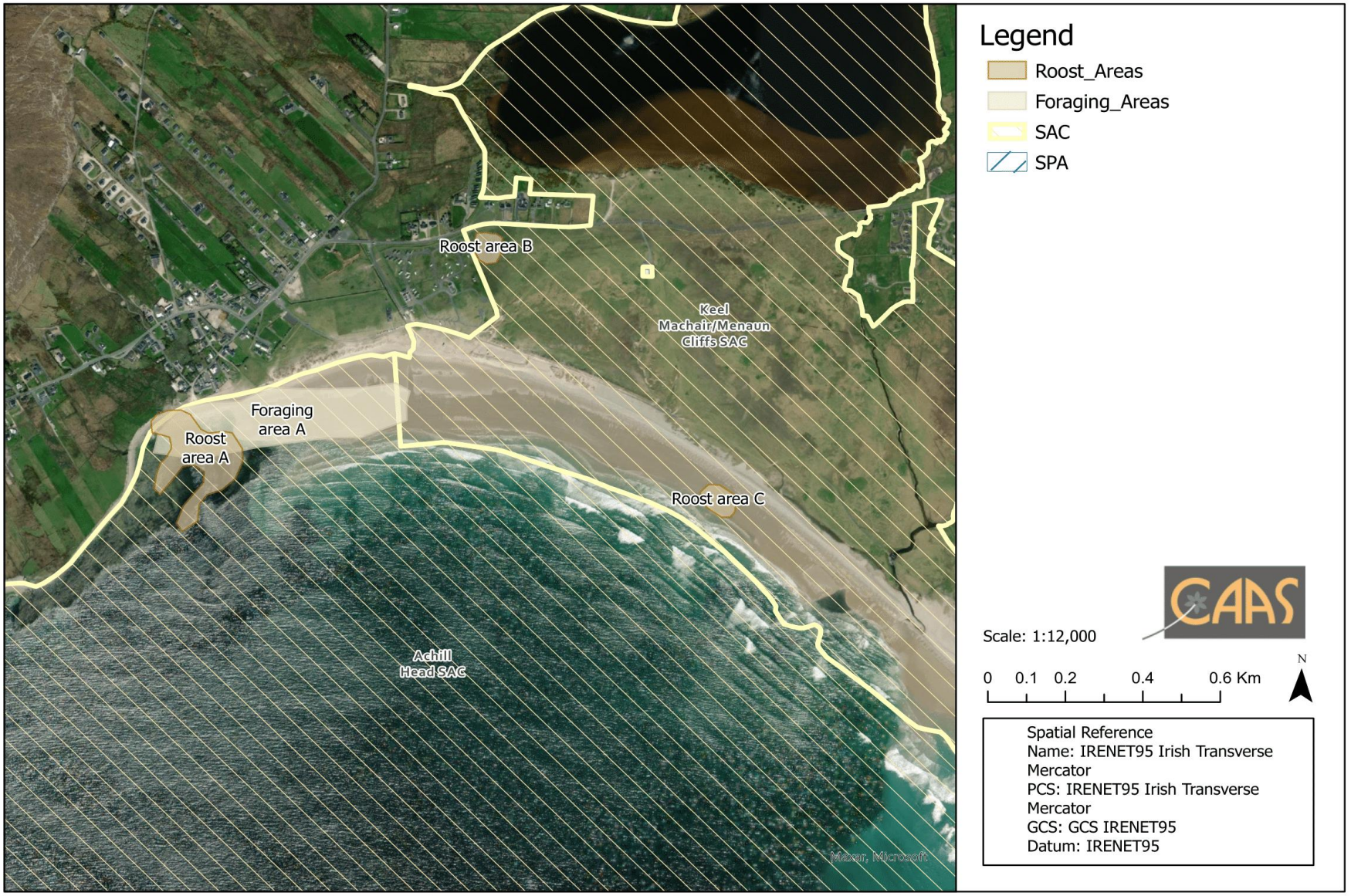

Figure 2.4 Map of all foraging and roosting activity at Keel Bay area

The following three tables present a summary of the occurrence records of each species recorded to be foraging, roosting and/or flying around the Keel Bay area; the full suite of observations recorded can be seen in Appendix II.

Table 2.1 Summary of all birds observed foraging in the Keel Bay area

Common Name	Scientific Name	Largest Group Observed	Total Numbers Observed	Common Group Size
Brent Goose (light-bellied)	*Branta bernicla hrota*	7	44	7
Common Gull	*Larus canus*	7	23	2
Curlew	*Numenius arquata*	38	40	1
Dunlin	*Calidris alpina*	3	4	3
Great Black-backed Gull	*Larus marinus*	2	2	2
Greenshank	*Tringa nebularia*	1	1	1
Herring Gull	*Larus argentatus*	5	10	3
Oystercatcher	*Haematopus ostralegus*	9	110	11
Purple Sandpiper	*Calidris maritima*	1	1	1
Redshank	*Tringa totanus*	2	2	2
Ringed Plover	*Charadrius hiaticula*	6	133	6
Sanderling	*Calidris alba*	8	29	3
Turnstone	*Arenaria interpres*	5	16	5

Table 2.2 Summary of all birds observed roosting in the Keel Bay area

Common Name	Scientific Name	Largest Group Observed	Total Numbers Observed	Common Group Size
Brent Goose (light-bellied)	*Branta bernicla hrota*	7	9	2
Common Gull	*Larus canus*	8	37	1
Curlew	*Numenius arquata*	25	25	25
Dunlin	*Calidris alpina*	2	3	2
Great Black-backed Gull	*Larus marinus*	4	6	2
Herring Gull	*Larus argentatus*	4	31	4
Oystercatcher	*Haematopus ostralegus*	9	199	13
Redshank	*Tringa totanus*	6	13	4
Ringed Plover	*Charadrius hiaticula*	7	117	1
Sanderling	*Calidris alba*	8	29	1
Turnstone	*Arenaria interpres*	19	29	19
Unident. Cormorant/Shag	*Phalacrocorax sp.*	2	6	2
Unident. gull	*Larus sp.*	10	10	10

Table 2.3 Summary of all birds observed flying overhead in the Keel Bay area

Common Name	Scientific Name	Largest Group Observed	Total Numbers Observed	Common Group Size
Common Gull	*Larus canus*	6	6	6
Curlew	*Numenius arquata*	3	3	3
Herring Gull	*Larus argentatus*	4	4	4
Oystercatcher	*Haematopus ostralegus*	45	45	45
Unident. Cormorant/Shag	*Phalacrocorax sp.*	3	11	2
Unident. gull	*Larus sp.*	8	59	8

3. Screening for Appropriate Assessment

3.1. Introduction to Screening

This stage of the process identifies any potential significant affects to European sites from a project or plan, either alone or in combination with other projects or plans. A series of questions are asked in order to determine:

- Whether a plan or project can be excluded from AA requirements because it is directly connected with or necessary to the management of a European site.
- Whether the project will have a potentially significant effect on a European site, either alone or in combination with other projects or plans, in view of the site's conservation objectives or if residual uncertainty exists regarding potential impacts.

An important element of the AA process is the identification of the "'conservation objectives", "Qualifying Interests" (QIs) and/ or "Special Conservation Interests" (SCIs) of European sites requiring assessment. QIs are the habitat features and species listed in Annexes I and II of the Habitats Directive for which each European Site has been designated and afforded protection. SCIs are wetland habitats and bird species listed within Annexes I and II of the Birds Directive. It is also vital that the threats to the ecological / environmental conditions that are required to support QIs and SCIs are considered as part of the assessment.

The following NPWS Generic Conservation Objectives have been considered in the screening:

- For SACs, to maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected; and
- For SPAs, to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

Where available, Site-Specific Conservation Objectives (SSCOs) designed to define favourable conservation status for a particular habitat[5] or species[6] at that site have been considered.

3.2. Identification of Relevant European Sites

The Department of the Environment (2009) Guidance on AA recommends a 15km buffer zone to be considered. Although sites beyond this buffer zone would be considered if relevant, a review of all sites within this zone has allowed a determination to be made that in the absence of significant hydrological links the characteristics of the proposed project will not impose effects beyond the 15km buffer.

Details of European sites that occur within 15km of the proposed project boundary are provided in Table 3.1. European sites and EPA Rivers Catchments are also mapped in Figure 3.1 below. Information on QIs, SCIs and site-specific vulnerabilities and sensitivities (see Appendix I) and background information (such as that within Ireland's Article 17 Report to the European Commission, site synopses and Natura 2000 standard data forms) have been considered by both the AA screening assessment (provided under this section) and Stage 2 AA (provided under Section 4). Conservation objectives that have been considered by the assessment are included in the following National Parks and Wildlife Service documents:

NPWS (2014) Conservation Objectives for Mullet/Blacksod Bay Complex SAC [IE0000470] Version 1.
NPWS (2016) Conservation Objectives for Corraun Plateau SAC [IE0000485] Version 1.
NPWS (2013) Conservation Objectives for Duvillaun Islands SAC [IE0000495] Version 1.
NPWS (2017) Conservation Objectives for Doogort Machair/Lough Doo SAC [IE0001497] Version 1.
NPWS (2018) Conservation Objectives for Keel Machair/Menaun Cliffs SAC [IE0001513] Version 1.
NPWS (2021) Conservation Objectives for Croaghaun/Slievemore SAC [IE0001955] Version 8.
NPWS (2013) Conservation Objectives for Achill Head SAC [IE0002268] Version 1.
NPWS (2015) Conservation Objectives for West Connacht Coast SAC [IE0002998] Version 1.
NPWS (2014) Conservation Objectives for Blacksod Bay/Broad Haven SPA [IE0004037] Version 1.
NPWS (2021) Conservation Objectives for Duvillaun Islands SPA [IE0004111] Version 8.
NPWS (2021) Conservation Objectives for Bills Rocks SPA [IE0004177] Version 8.

[5] Favourable conservation status of a habitat is achieved when: its natural range, and area it covers within that range, are stable or increasing; 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.

[6] 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; 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.

NPWS (2021) Conservation Objectives for Mullet Peninsula SPA [IE0004227] Version 8.
NPWS (2021) Conservation Objectives for Doogort Machair SPA [IE0004235] Version 8.

The assessment considers available conservation objectives. Since conservation objectives focus on maintaining the favourable conservation condition of the QIs/SCIs of each site, the screening process concentrated on assessing the potential effects of the proposed project against the QIs/SCIs of each site. The conservation objectives for each site have been considered throughout the assessment process.

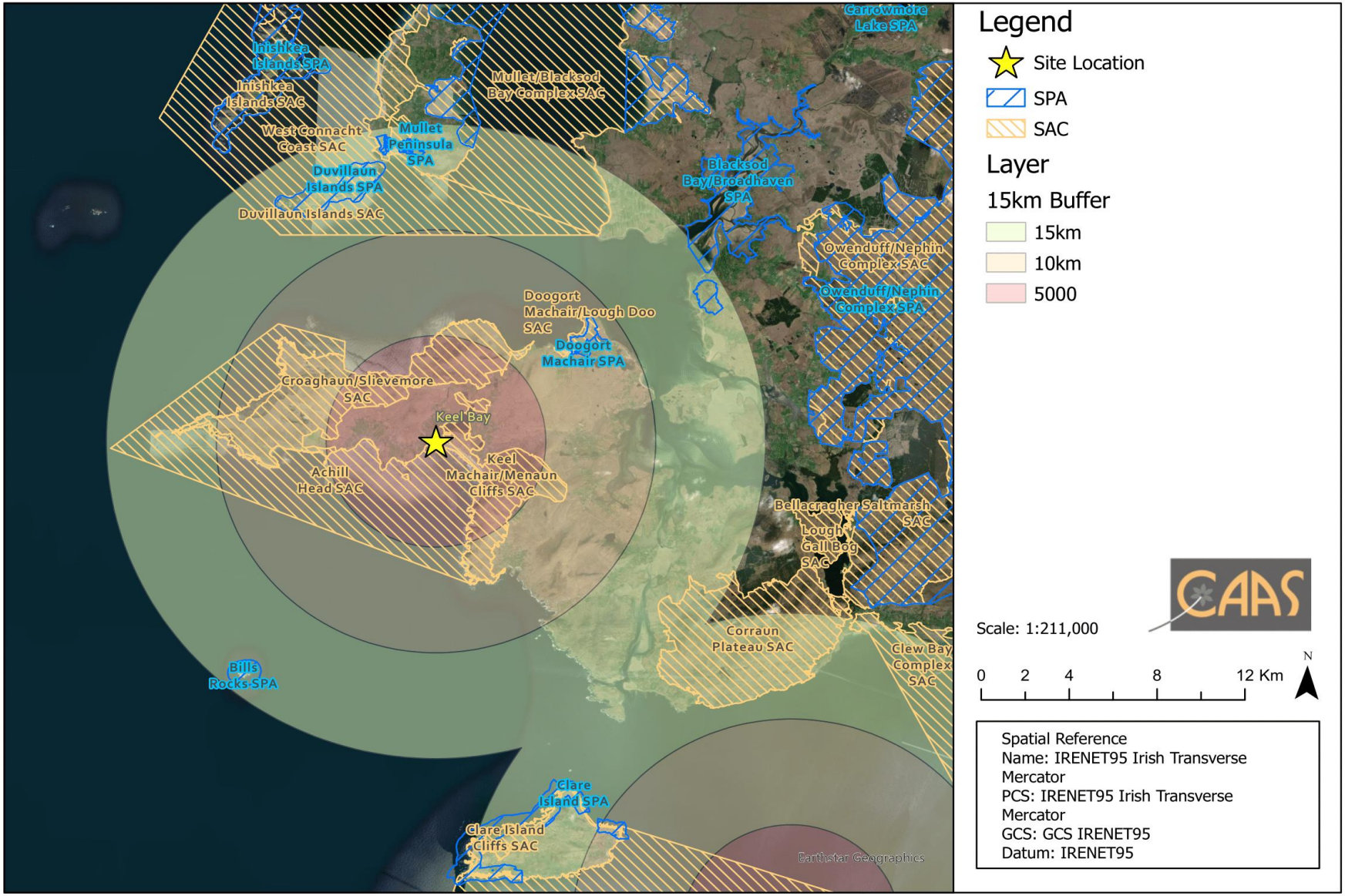

Figure 3.1 Source: NPWS (datasets downloaded 5th May 2021)

3.3. Assessment Criteria and Screening

3.3.1. Is the proposed project Necessary to the Management of European Sites?

The overarching objective of the proposed project is not the nature conservation management of the sites, but to provide shared facilities for water-based sports such as stand-up paddle boarding, surfing and swimming including shower facilities and locker. Therefore, the proposed project is not considered to be directly connected with or necessary to the management of European sites.

3.3.2. Elements of the proposed project with Potential to Give Rise to Effects

The proposed project has two primary avenues for potential effects; relating to the construction phase and the operational phase. The construction phase introduces sources for potential effects such as habitat loss, disturbance through noise pollution, hydrological interactions through surface run off etc. The key areas for concern in this regard are:

- Augmentation of existing habitats within the footprint of the proposed structure itself and relating to construction compounds etc.;
- Construction and Earthworks sources such as Dust;
- Surface Water Management; and
- Noise and vibration.

Due to the nature and extent of the proposed project the construction phase will be small scale temporary; however, the potential effects outlined above are considered throughout the assessment process.

The operational phase of the shared facilities will be comprised of toilets, shower facilities (both indoors and outdoors), equipment washdown facilities, etc. The overall structure will consolidate the existing tourism facilities into a communal hub which will centralise the visitor experience for the area. This centre will act as a hub for the area, which presents an opportunity to broaden awareness of the sensitive features of the landscape. The proposed facility thus has the potential to increase the site use from tourist and local recreation. Therefore, associated effects must be considered. This is particularly relevant when assessing potential movement patterns of visitors from the facility to the closest access point to the water's edge.

All potential sources for effects are considered in this assessment with respect to each of the European sites identified. The sensitivities/vulnerabilities of the QIs and SCIs, in relation to all potential sources for effects and potential pathways for such effects, are considered. Where sources and pathways for effects are identified, the potential effects will be assessed in relation to the SSCOs.

3.3.3. Characterising Visitor Interactions at Tourist Destinations

Fáilte Ireland regularly engages with environmental research that is used to make informed management decisions and produce robust guidelines to facilitate the protection of the environment. From its inception in 2014, the Wild Atlantic Way (WAW) Operational Programme Monitoring Programme (undertaken to date by CAAS on behalf of Fáilte Ireland and guided by relevant stakeholders) has been conducting research into the impacts of tourism on the receiving environment. To date the surveys have been monitoring 57 sites and recorded the activities and effects of over 26,000 visitors to WAW discovery points.

This research characterises visitor movements at each site while examining the ecological features and sensitives present. A detailed assessment of the site facilities and management actions on-site is also undertaken. From this data, impacts to ecological features are quantified in a systematic way and management recommendations are made. Over the 5 years of the monitoring, the data has shown that visitors themselves cause low level effects, and high-level effects are predominantly caused by the mismanagement of sites. As well as the site-specific data being collected, the monitoring program collates and interprets existing national environmental indicator data compiling the results into annual macro monitoring reports. The WAW monitoring research is guided by an independent working group which steers the research and develops the program as the data is collected. This working group comprises of members from the EPA, NPWS, the Environmental Pillar and a representative from each of the County Councils along the WAW.

Each year the results are refined and published online in the form of Visitor Observation Reports, Ecological Impact Reports and the Macro Monitoring Reports. The reports are then dissected and detailed reports containing all relevant site-specific information are sent to each of the County Councils along the WAW; as well as any site management teams at sites not under the management of the County Council. This ensures that the research can be harnessed on-site by those responsible while contributing towards informed management plans and guidelines created by Fáilte.

This extensive database demonstrates that over 85% of visitors observed at WAW discovery points are having low or no effects on the ecological features or processes at these sites. Ecological impacts observed comprise:

- Destruction of structures, vegetation or fauna;
- Trampling of herbaceous vegetation;
- Disturbance of wildlife;
- Heavy littering or dumping quantities of waste;
- Addition/alteration of site features, transient emissions, noise;
- Harvesting of large quantities of shells from beach sites;
- Fishing activities;
- Removal and throwing of large rocks; and
- Unrestricted dogs causing disturbances to wildlife.

The Monitoring Programme has identified that dunes, machair, maritime grasslands and upland habitats such as heathlands are the most sensitive/vulnerable to visitor effects. Therefore, the operational phase elements of the proposed project may result in visitor movements within sensitive habitats causing the effects identified above. This is considered with respect to the typology and context of the site and the ecological integrity of the European sites connected to the site (see below).

It is important to note that visitor movements and associated effects are localised and do not extend beyond the receiving environment.

This data was reviewed to inform the AA process through identifying and characterising the potential effects and interactions from tourists along the WAW. It is assumed that visitor interactions within the Draft Plan area will be consistent with the trends, activities and effects recorded in this dataset.

The WAW monitoring data identified that over 90% of visitors stayed within 500m of the discovery point, 97% within 1.2km from the discovery point and less than 1% of visitors extended beyond 2km away from the discovery point. For these reasons, SACs beyond 2km are not considered with respect to potential effects from visitor movements. Similarly, sites beyond 500m are thought to be a sufficient distance to minimise potential effects such that there would be no likely significant effect to the ecological integrity of the European site on foot of visitor movement patterns. Where European sites are within 500m of the proposed facilities detailed considerations related to the visitor management processes are required.

3.4. Screening of Sites

Table 3.1 examines whether there is potential for effects on European sites considering information provided above, including Appendix I. Sites are screened out based on one or a combination of the following criteria:

- The existence of potential for pathways for significant effects, such as hydrological links, proposed project proposals and the site to be screened;
- The distance of the relevant site from the proposed project boundary; and
- The existence of a link between identified threats or vulnerabilities at a site to potential impacts that may arise from the proposed project.

Table 3.1 Screening of European Sites

Site Code	Site Name	Distance	Qualifying Feature	Potential Effects	Pathway for Significant Effects	Potential for In-Combination Effects
001513	Keel Machair/Menaun Cliffs SAC	Directly Adjacent	Petalwort *(Petalophyllum ralfsii)* [1395], Machairs * in Ireland [21A0], Alpine and Boreal heaths [4060], Perennial vegetation of stony banks [1220]	The proposed project is directly adjacent to this habitat with sources for potential effects therefore further considerations are required.	Yes	Yes
002268	Achill Head SAC	0.05	Large shallow inlets and bays [1160], Mudflats and sandflats not covered by seawater at low tide [1140], Reefs [1170]	The proposed project is directly adjacent to this habitat with sources for potential effects therefore further considerations are required.	Yes	Yes
001955	Croaghaun/Slieve more SAC	2.4	Alpine and Boreal heaths [4060], Siliceous scree of the montane to snow levels *(Androsacetalia alpinae and Galeopsietalia ladani)* [8110], European dry heaths [4030], Blanket bogs * if active bog [7130], Northern Atlantic wet heaths with Erica tetralix [4010]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. There are no pathways for effects between the site and the qualifying interests of this SAC. Therefore, there are no further considerations required.	No	No
001497	Doogort Machair/Lough Doo SAC	6.93	Machairs * in Ireland [21A0], Petalwort *(Petalophyllum ralfsii)* [1395]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. There are no pathways for effects between the site and the qualifying interests of this SAC. Therefore, there are no further considerations required.	No	No
004235	Doogort Machair SPA	7.37	Dunlin *(Calidris alpina)* [A149]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. Given the distances between the site and the SPA, taking into account the scale and characteristics of the proposed projects. There are no effects identified with respect to the SPA due to the considerable distance.	No	No
002998	West Connacht Coast SAC	9.75	Bottlenose dolphin *(Tursiops truncatus)* [1349]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and	No	No

Site Code	Site Name	Distance	Qualifying Feature	Potential Effects	Pathway for Significant Effects	Potential for In-Combination Effects
				the waterways they will access. There are no pathways for effects between the site and the qualifying interests of this SAC. Therefore, there are no further considerations required.		
000470	Mullet/Blacksod Bay Complex SAC	11.73	Fixed coastal dunes with herbaceous vegetation - grey dunes [2130], Atlantic decalcified fixed dunes *(Calluno-Ulicetea)* [2150], Salicornia and other annuals colonising mud and sand [1310], Alkaline fens [7230], Large shallow inlets and bays [1160], Reefs [1170], Otter *(Lutra lutra)* [1355], Petalwort *(Petalophyllum ralfsii)* [1395], Shifting dunes along the shoreline with Ammophila arenaria - white dunes [2120], Mudflats and sandflats not covered by seawater at low tide [1140], Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150], Machairs * in Ireland [21A0]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. There are no pathways for effects between the site and the qualifying interests of this SAC. Therefore, there are no further considerations required.	No	No
004111	Duvillaun Islands SPA	11.87	Storm Petrel *(Hydrobates pelagicus)* [A014], Fulmar *(Fulmarus glacialis)* [A009], Barnacle goose *(Branta leucopsis)* [A045]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. Given the distances between the site and the SPA, taking into account the scale and characteristics of the proposed projects. There are no effects identified with respect to the SPA due to the considerable distance.	No	No
000495	Duvillaun Islands SAC	11.9	Common Bottlenose Dolphin *(Tursiops truncatus)* [1349], Grey Seal *(Halichoerus grypus)* [1364]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. There are no pathways for effects between the site and the qualifying interests of this SAC. Therefore, there are no further considerations required.	No	No
000485	Corraun Plateau SAC	12.7	Juniperus communis formations on heaths or calcareous grasslands [5130], Siliceous rocky slopes with chasmophytic vegetation [8220], Northern Atlantic wet heaths with Erica tetralix [4010], European dry heaths [4030], Siliceous scree of the montane to snow levels *(Androsacetalia alpinae and*	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access.	No	No

Site Code	Site Name	Distance	Qualifying Feature	Potential Effects	Pathway for Significant Effects	Potential for In-Combination Effects
			Galeopsietalia ladani) [8110], Alpine and Boreal heaths [4060]	There are no pathways for effects between the site and the qualifying interests of this SAC. Therefore, there are no further considerations required.		
004177	Bills Rocks SPA	13.25	Puffin *(Fratercula arctica)* [A204], Storm Petrel *(Hydrobates pelagicus)* [A014]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. Given the distances between the site and the SPA, taking into account the scale and characteristics of the proposed projects. There are no effects identified with respect to the SPA due to the considerable distance.	No	No
004227	Mullet Peninsula SPA	13.52	Corncrake *(Crex crex)* [A122]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. Given the distances between the site and the SPA, taking into account the scale and characteristics of the proposed projects. There are no effects identified with respect to the SPA due to the considerable distance.	No	No
004037	Blacksod Bay/Broadhaven SPABlacksod Bay/Broad Haven SPA	13.6	Red-throated Diver *(Gavia stellata)* [A001], Dunlin *(Calidris alpina)* [A149], Ringed Plover *(Charadrius hiaticula)* [A137], Sandwich Tern *(Sterna sandvicensis)* [A191], Curlew *(Numenius arquata)* [A160], Great Northern Diver *(Gavia immer)* [A003], Bar-tailed Godwit *(Limosa lapponica)* [A157], Sanderling *(Calidris alba)* [A144], Slavonian Grebe *(Podiceps auritus)* [A007], Light-bellied Brent Goose *(Branta bernicla hrota)* [A046], Common Scoter *(Melanitta nigra)* [A065], Wetland and Waterbirds [A999], Red-breasted Merganser *(Mergus serrator)* [A069]	The proposed development has potential to introduce small scale temporary construction phase effects that are identified to be localised. Similarly, the operational phase of the project is identified to have small scale effect through sources such as disturbance from visitor movements between the facility and the waterways they will access. Given the distances between the site and the SPA, taking into account the scale and characteristics of the proposed projects. There are no effects identified with respect to the SPA due to the considerable distance.	No	No

3.5. Other plans and projects

Article 6(3) of the Habitats Directive requires an assessment of a plan or project to consider other plans or projects that might, in combination with the plan or project, have the potential to adversely affect European sites.

As part of this assessment each plan or project is considered within a radius of the red line boundary of the proposed area as defined by the ecologist. The distance of this radius works from a standard 500m, but can be extended if the ecologist deems it necessary depending on whether certain characteristics are present, such as:

- Direct or indirect connectivity to a European site;
- In close proximity to a European site;
- The proposal is of a substantial scale relative to the conditions and/or current works taking place in the surrounding landscape.

These factors are considered particular to each proposal for each particular location and specification.

3.5.1. Plans of relevance in the context of this proposal include:

- Draft Mayo County Development Plan 2021 - 2027
- Destination Mayo Tourism strategy 2016 - 2021

There are no specific policies or objectives that conflict with the proposed project. The proposed project is aligned with the development goals set out in the above-mentioned plans and therefore in combination effects are not identified. Furthermore, all policies and objectives contained within the County Development Plan, and Visitor Experience Development Plan, relating to sustainable development etc. must be complied with.

3.5.2. Projects of relevance to this development:

To identify projects for consideration for the in-combination effects section, the National Planning and Housing development database was used[7]. A review of all planning applications within the standard 500m zone was conducted focusing on all applications extant within the past 5 years[8], which is displayed in Table 3.2 below.

All local applications within the last five years are either: small in scale, with short term, minor scale construction phases, which utilise current site resources and are in keeping with current site conditions; or are seeking changes to current permissions, or the current usage of a site; or are seeking retentions of current permission. Therefore, there are no significant in combination effects identified.

[7] Accessed at: https://data-housinggovie.opendata.arcgis.com/datasets/planning-application-sites-2010-onwards;
[8] Planning applications have a standard lifespan of 5 years as per Section 40 (3)(b) of the Planning & Development Act 2000, as amended; therefore, these are viewed to be the 'live' applications, all other projects are considered as part of the site context

Table 3.2 Local planning applications within the receiving environment of the proposed project

Project Code	Status	Overview	Project Area (sq m)	Possible significant effects from plan or project	Is there a risk of in-combination effects	Possible Significant in-combination effects
1510	Conditional	Construct two dwelling houses with connection to public sewers and all ancillary site developments	16,908	This is a small-scale project which is in keeping with the urban context. Given the small-scale nature of the proposed facility and the distance to any European site, there are no in combination effects identified that would result in significant effects.	No	No
18534	Conditional	Revise car parking layout permitted under p10/259 and to retain additional car parking located adjacent to the site permitted under p10/259	9,838	This is a small-scale project which is in keeping with the urban context. Given the small-scale nature of the proposed facility and the distance to any European site, there are no in combination effects identified that would result in significant effects.	No	No
20614	Conditional	Construct agricultural shed along with all necessary site works and ancillaries	7,129	This is a small-scale project which is in keeping with the urban context. Given the small-scale nature of the proposed facility and the distance to any European site, there are no in combination effects identified that would result in significant effects.	No	No
15647	Conditional	Construction of a dwelling house with connection to all public services along with all necessary site works and ancillaries	6,225	This is a small-scale project which is in keeping with the urban context. Given the small-scale nature of the proposed facility and the distance to any European site, there are no in combination effects identified that would result in significant effects.	No	No
191012	Conditional	A) Permission for retention of development. The development to be retained consists of the extension and change of fenestration of existing dwelling house constructed under planning permission P03/3273. (B) Retention of extension and change of fenestrate	5,519	This is a small-scale project which is in keeping with the urban context. Given the small-scale nature of the proposed facility and the distance to any European site, there are no in combination effects identified that would result in significant effects.	No	No
16134	Conditional	Retention of ground floor extension comprising of a launderette and service facility as well as modifications and alterations to ground floor layout plan and elevations at the existing guesthouses	1,790	This is a small-scale project which is in keeping with the urban context. Given the small-scale nature of the proposed facility and the distance to any European site, there are no in combination effects identified that would result in significant effects.	No	No

3.6. AA Screening Conclusion

The effects that could arise from the proposed project have been examined in the context of several factors that could potentially affect the integrity of any European site. On the basis of the findings of this Screening for AA, it is concluded that the proposed project:

- Is not directly connected with or necessary to the management of any European site; and
- May, if unmitigated, have significant adverse effects on 2 (no.) European sites.

Therefore, a Stage 2 AA is required for the proposed project (see Section 4 of this report). An AA Screening Determination undertaken by the planning authority accompanies this report and the Draft proposed project.

4. Stage 2 Appropriate Assessment

4.1. Introduction

The Stage 2 AA assesses whether the proposed project alone, or in-combination with other plans, programmes, and/or projects, would result in adverse effects on the integrity of the 2 European sites brought forward from screening (those considered on Table 3.1 for which there is "Potential Pathway for Significant Effects" and/or "Potential for In-Combination Effects"), with respect to site structure, function and/or conservation objectives.

4.2. Characterisation of European sites Potentially Affected

The AA Screening identified 2 European sites with pathway receptors for potential effects arising from the implementation of the proposed project. Appendix I characterises each of the qualifying features of the 2 European sites brought forward from Stage 1 in context of each of the sites' vulnerabilities. Each of these site characterisations were taken from the NPWS website[9].

4.3. Identifying and Characterising Potential Significant Effects

The following parameters can be used when characterising impacts[10]: Sites are screened out based on one or a combination of the following criteria:

- where it can be shown that there are no significant pathways such as hydrological links between activities of the and a site;
- where a site is located at such a distance from area that effects are not foreseen; and
- where known threats or vulnerabilities of a site cannot be linked to potential impacts that may arise from the .

4.4. Characterising potential significant effects

The following parameters are described when characterising impacts (following guidance from the Chartered Institute of Ecology and Environmental Management, Environmental Protection Agency and National Roads Authority):

- **Direct and Indirect Impacts** - An impact can be caused either as a direct or as an indirect consequence of a Plan/Project.
- **Magnitude** - Magnitude measures the size of an impact, which is described as high, medium, low, very low or negligible.
- **Extent** - The area over that the impact occurs – this should be predicted in a quantified manner
- **Duration** - The time that the effect is expected to last prior to recovery or replacement of the resource or feature.
  - Temporary: Up to 1 Year;
  - Short Term: The effects would take 1-7 years to be mitigated;
  - Medium Term: The effects would take 7-15 years to be mitigated;
  - Long Term: The effects would take 15-60 years to be mitigated; and
  - Permanent: The effects would take 60+ years to be mitigated.
- **Likelihood** – The probability of the effect occurring taking into account all available information.
  - Certain/Near Certain: >95% chance of occurring as predicted;
  - Probable: 50-95% chance as occurring as predicted;
  - Unlikely: 5-50% chance as occurring as predicted; and
  - Extremely Unlikely: <5% chance as occurring as predicted.

The Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for ecological impact assessment (2016) define: an ecologically significant impact as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographic area; and the integrity of a site as the coherence of its ecological structure and function, across its whole area, which enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.

[9] Last accessed 5th May 2021; https://www.npws.ie/protected-sites

[10] These descriptions are informed by publications including: Chartered Institute of Ecology and Environmental Management (2016) "Guidelines for ecological impact assessment"; Environmental Protection Agency (2002) "Guidelines on the Information to be contained in Environmental Impact Statements"; and National Roads Authority (2009) "Guidelines for Assessment of Ecological Impacts of National Roads Schemes".

The Habitats Directive requires the focus of the assessment at this stage to be on the integrity of the site as indicated by its Conservation Objectives. It is an aim of NPWS to draw up conservation management plans for all areas designated for nature conservation. These plans will, among other things, set clear objectives for the conservation of the features of interest within a site.

SSCOs have been prepared for a number of European sites. These detailed SSCOs aim to define favourable conservation condition for the qualifying habitats and species at that site by setting targets for appropriate attributes which define the character habitat. The maintenance of the favourable condition for these habitats and species at the site level will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.

> Favourable conservation status of a species can be described as being achieved when: *'population data on the species concerned indicate that it is maintaining itself, and the natural range of the species is neither being reduced or 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.'*
>
> 'Favourable conservation status of a habitat can be described as being achieved when: *'its natural range, and area it covers within that range, is stable or increasing, and the ecological factors that 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'.*

A Generic Conservation Objective for a cSAC is provided below:

- To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

A Generic Conservation Objective for a SPA is provided below:

- To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

EC guidance[11] outlines the types of effects that may affect European sites. These include effects from the following activities.

4.4.1. Types of Potential Effects

Assessment of potential effects on European sites is conducted utilising a standard source-pathway model (see approach referred to under Sections 1.3 and 3). The 2001 European Commission AA guidance outlines the following potential changes that may occur at a designated site, which may result in effects on the integrity and function of that site: loss/reduction of habitat area; habitat or species fragmentation; disturbance to key species; reduction in species density; changes in key indicators of conservation value (water quality etc.); and climate change. Each of these potential changes are considered below and in Table 4.1 with reference to the QIs/SCIs of all of the European sites brought forward from Stage 1 of the AA process (see Section 3).

4.4.2. Loss/Reduction of Habitat Area

The closest SAC to the Keel Bay is 0.05km away and the closest SPA is 7.37km away from the proposed red line boundary. Habitat loss or reduction could arise through the implementation of the proposed project as a result of improper placement of the physical structure of the proposed works; either within Annex I priority habitat or within habitat which supports Annex II species. The habitat assessments undertaken over the course of the site selection process and scope refinement (detailed in Section 2 above and further developed in Appendix III) were incorporated into the project design for each of the sites selected. The habitats identified within the footprint of the proposed project at Keel Bay do not align with any Annex I priority habitat which form part of the associated SAC. Similarly, the habitats present on-site were not identified to be supporting habitat utilised by the SCI species of the associated SPA.

The operational phase elements of the project could result in habitat loss though visitor movements (as identified above), the key considerations in this regard relate to:

- Destruction of structures, vegetation or fauna; and
- Trampling of herbaceous vegetation.

[11] Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission Environment DG, 2001

The development is to be placed within an existing campsite outside of the SAC. However, the area between the proposed site and the beach is a qualifying interest of the SAC; namely a machair habitat which has specific conservation objectives to maintain or restore habitat area.

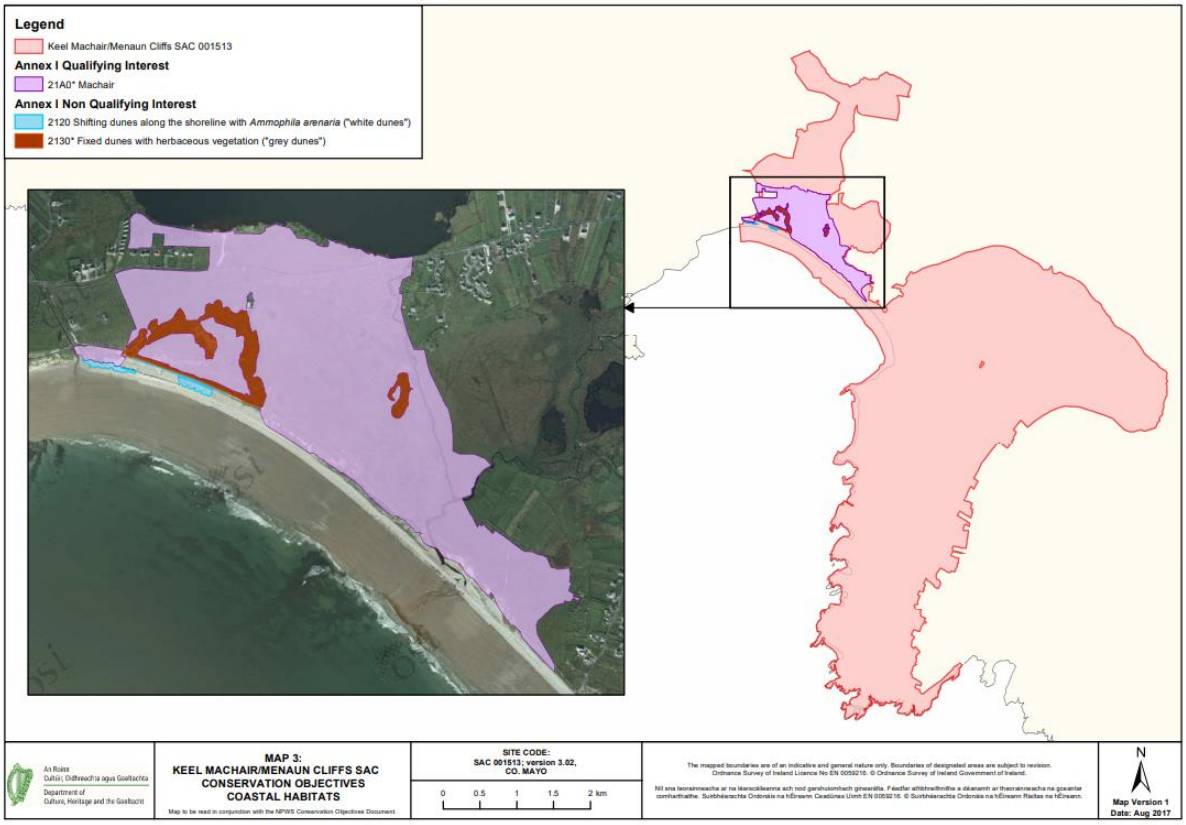

Figure 2 Map taken from the SSCOs for the Keel Machair/Menaun Cliffs SAC

Therefore, mitigation measures are required to ensure that there are no significant adverse effects due to construction on the ecological integrity of any European site. A visitor management plan, signage and fencing are required to ensure the visitor movements from the facility do not result in habitat loss. These mitigation measures (Section 5) have been incorporated into the to avoid any habitat loss.

4.4.3. Habitat or species Fragmentation

As previously stated, the proposed project provides for infrastructure developments which have associated effects. These effects could result in the fragmentation of habitat and or species through light pollution, habitat loss, removal of stepping stone habitats etc. Therefore, mitigation measures are required to ensure that there are no significant adverse effects in relation to fragmentation on the ecological integrity of any European site.

The proposed Facilities site directly adjacent to Achill Head SAC; with the SAC's sandy beach/coastal dune habitat directly bordering the site, followed by nearby by shallow bay water, mudflats, coastal marsh habitat and Machair grassland of the Keel Machair/Menaun Cliffs SAC.

The proposed site already has a hard surface pathway for visitors to access the water the beach from the proposed location of the Facilities structure, and from the adjoining car parking facilities. The curtailment of human movement through these already existing hard surface pathways which lead to the shoreline, will reduce footfall on, and direct visitors away from, the sensitive coastal habitats mentioned above. The area is already often frequented by human visitors, with resulting high levels of activity. Thus, the current proposal is not anticipated to add significant increases to the current level of disturbance of habitats of the adjacent SAC at the proposed site and adjoining sandy beach – but rather to facilitate gathering in one location (i.e., proposed Facilities), instead of spreading out of humans across the sandy beach and shoreline.

The closest SPA (Doogort Machair SPA) is approx. 7.3km from the proposed site. Foraging and roosting activity by SCI species was recorded nearby the proposed site area along the sandy shoreline and rocky outcrop habitats. The ornithological data show that additional bird roosting activity is intermittent throughout the beach and along the nearby Machair grassland habitat. However, given the abundance of available habitat within the immediate and local area, and the small local scale of the proposed project, which will curtail visitors into a main area and aid restrictions of sensitive surrounding habitats, it is not anticipated that the proposed Facilities project will have significant effects fragmenting either the populations or available habitat to local SCI species.

However, given the proximity of several sensitive QI habitats to the proposed Facilities site, which are threatened by activities such as trampling/walking (e.g., Machair), there is potential for visitors to cause disturbance to the QI habitats of the vegetative habitats Achill Head SAC and the Keel Machair/Menaun Cliffs SAC.

Thus, several mitigation measures are provided in Section 5 of this reports to address this potential, and ensure no significant effect to the QI habitats of the Achill Head SAC and the Keel Machair/Menaun Cliffs SAC occur. In the implementation of these mitigation, it is anticipated that there will be no significant effect to the ecological integrity of European Sites as a result of the proposed Facilities development (see full list of measures reproduced at Section 5 of this report).

Inappropriate lighting could affect the ecological integrity of the site; however, the design of the proposed development is cognisant of light pollution effects and therefore there are no external light features. Furthermore, the operational times of the facility will not require excessive lighting and the light pollution source are not identified to be significant due to the proposed operating times of the facilities.

The proposed project will not result in the loss of Annex I habitat or supporting habitat for Annex II species. The site selection process has specifically considered the sensitivities and distributions of the QIs and SCIs of the European sites connected to Keel Bay. Therefore, there are no habitat or species fragmentation effects identified for the proposed project due to careful site location selection (see full list of measures reproduced at Section 5 of this report). Disturbance effects through construction and operation of the proposed project are considered below.

4.4.4. Disturbance to Key Species

Disturbance effects are cause by any activity that has potential to alter the movement patterns/distribution of species. Disturbance effects can relate to direct disturbance through human activity/movement or noise pollution. This is particularly relevant in relation to tourism and recreation in general, from the perspective that many of the tourism destinations or attractions in the area are in or adjacent to European sites. The construction phase elements of the proposed works will be temporary and small scale; nonetheless noise pollution measures have been incorporated into the Construction Environmental Management Plan (CEMP).

The operational phase of the proposed project has potential to introduce consistent low levels of disturbance effects through visitor movements. The facility is within an existing tourism destination with existing visitor movement patterns on-site. The facility is small scale and aims to consolidate visitor activity around the facility, this may alter the overall visitor movement patterns at Keel Bay. The species of specific concern with respect to disturbance effects are the SCI species from the Doogort Machair SPA. These effects are discussed in detail in Table 4.1 below.

4.4.5. Reduction in species density

Species densities are reliant on species distributions, habitat condition, connectivity of ecological resources and availability of resources such as prey/food. The proposed project introduces potential sources for effects to affect these four determinant factors for species densities in the form of construction phase effects such as habitat destruction, light pollution, hydrological interaction or operational effects such as disturbance effects, habitat encroachment, trampling etc.

Detailed survey work has been undertaken at the site, particularly in relation to the QIs and SCIs of the nearby European sites. Hydrological interactions are likely to cause alterations to the trophic structure of a site; however, these interactions are discussed below. The site is known to be an existing tourism

destination with existing water-based activities being facilitated on-site. There are no annex I habitats or supporting habitats for annex II species - relevant to the European sites identified in the area - that were identified during the field surveys within the footprint of the development. Therefore, there are no additional mitigation measures required to avoid effects to species density that are not already identified for disturbance effects, habitat interactions and/or water quality interactions.

4.4.6. Changes of Indicators of Conservation Value

Water quality is the primary macro indicator of conservation value. The proposed project is adjacent to the water's edge and therefore construction phase effects could introduce sources for effects with respect to water quality. Sources such as surface water run-off and dust could interact with the ecological integrity of European sites. Therefore, a CEMP has been devised for the proposed project to ensure construction phase effects are avoided or minimised.

The operational phase elements of the plan have similar connectivity pathways, and therefore the greywater run off for the site needs to be managed. The site has been equipped with a drainage system and water collection system that ensures no run off from the operational phase will escape into the surrounding environs. All grey water will be collected and managed according (for full details see Section 5 below).

Increased development pressures could place additional loadings onto the existing waste water treatment plant facilities. It has been confirmed in communication with Mayo County Council that the local Waste Water Treatment Plant (WWTP) has capacity to accept the additional loadings within the existing infrastructure.

4.4.7. Climate change

The proposed works will not result in any greenhouse gas emissions to air during the operational phase. The construction phase works will have increased temporary emissions which will be localised however, given the distance to the nearest European site these are determined to be negligible. Such effects upon greenhouse gas emissions will not affect changes projected to arise from climate change to the degree that it would affect the QIs or SCIs of the European sites considered.

Table 4.1 Characterisation of Potential Effects arising from the subject land area

Site Code	Site Name	Characterisation of Potential Effects
001513	Keel Machair/Menaun Cliffs SAC	The known threats and pressures for the site are: Intensive maintenance of public parcs or cleaning of beaches, golf course, trampling, overuse, human induced changes in hydraulic conditions, invasive non-native species, disposal of household or recreational facility waste, mowing or cutting of grassland, reduction or loss of specific habitat features, flooding, fertilisation, roads, motorways, camping and caravans, outdoor sports and leisure activities, recreational activities, intensive sheep grazing, regular motorized driving, paths, tracks, cycling tracks, habitat shifting and alteration, storm, cyclone, walking, horse-riding and non-motorised vehicles, erosion The construction phase elements of the project will not impose effects on the QIs of the SAC unless the construction compound is inappropriately placed. Therefore, mitigation measures have been provided to account for this. The operational phase elements of the plan could introduce habitat loss; therefore, a visitor management plan, signage and fencing are required to ensure the visitor movements from the facility do not result in habitat loss. These mitigation measures (Section 5) have been incorporated into the to avoid any habitat loss.
002268	Achill Head SAC	The known threats and pressures for the site are Other human intrusions and disturbances, trampling, overuse, leisure fishing, hunting, fishing or collecting activities not referred to above, wildlife watching, pelagic trawling, invasive non-native species, storm, cyclone, outdoor sports and leisure activities, recreational activities, fishing and harvesting aquatic resources The operational phase of the proposed project introduces potential risks associated with recreational activities such as rockpooling which is a known threat for the site. Therefore, signage and a visitor management plan will be put in place to ensure conflicts do not arise. Furthermore, the habitats are hydrologically sensitive, therefore a construction environmental management plan will be devised (see below).

5. Mitigation Measures

This section outlines measures that have been incorporated into the proposed project in order to mitigate against potential effects to European sites as identified above. The proposed project was prepared in an iterative manner whereby the project design (including the location of the proposed structure) and AA documents have informed subsequent versions of the other. These mitigation measures ensure that there will be no significant effects to the ecological integrity of any European site from implementation of the proposed project. The mitigation measures most relevant to the protection of European sites are identified in Table 5.1 below.

Table 5.1 Measures most relevant to the protection of European sites

Mitigation Measure	Description
Construction compound location	Due to the sensitivity of the site, the location of the construction compound and associated works has potential to adversely affect the protected features of the associated European site, therefore the location of the compound must be provided.
Construction Environmental Management Plan	The site has been identified to have pathways for effects to the receiving environment including sources for effect to hydrological condition of the surrounding waterways. The construction phase of the works has potential to introduce the following sources for effects: • Dust and emissions from construction and earthworks; • Including Surface water run-off. • Lighting during construction and operation; and • Noise and vibration. These potential sources must be address in the CEMP to ensure there are no hydrological interactions which could lead to significant adverse effects to European sites. The CEMP must detail control measures for: • All hazardous materials; such as bunding of materials, appropriate work practices etc. • Dust control measures to ensure dust emissions are minimised. • All surface water runoff must be controlled in an appropriate manner; where necessary silt fences will be installed in advance of works and appropriately maintained to ensure hydrological interactions are minimised. • Construction phase lighting will need to be controlled to minimise light pollution as a matter of good practice – for example: via the implementation of lights out hours when construction is not active on site (evening and night hours), and the use of low UV, directional lighting. The construction phase and movement of heavy vehicles across the site could cause localised disturbance of wading birds that may use the habitats within the site area. Most of the construction phase works are small scale due to the discrete; nonetheless, noise management protocols should be incorporated into the CEMP. The facility should not be lit at night when it is closed to avoid unnecessary light pollution.
Signage	Ecological signage will be installed on site which highlights the key ecological resources for the site and their sensitivities. The signs will detail activities which are prohibited due to their potential harmful effects to the receiving environment. For Keel this includes the Machaire and Dune systems which are currently heavily degraded and damaged through tourism. Bird species are also a key feature for this site. Activities such as kite surfing should be restricted to areas away from the roosting and foraging areas identified. The signs should explain the importance of sticking to the paths for dune stability and avoidance of damage. Trampling leads to a decline in species diversity.
Visitor Management Plan	The Visitor Management Plan will have two elements focusing on commercial operators and the general public using the site. The operator's agreement for the facility must ensure that the operators uphold an environmental code of conduct and agree to usher visitors away from the key ecological resources of the site (roosting areas, dunes etc.). For Keel this includes the Machaire and Dune systems which are currently heavily degraded and damaged through tourism. Bird species are also a key feature for this site. Activities such as kite surfing should be restricted to areas away from the roosting and foraging areas identified.

Mitigation Measure	Description
	A path system of visitor movement control measures is needed for the site to alleviate existing damage and help to restore favourable conservation condition of the site. For general facility use, there will be a clear process in place to ensure that any site damage (additional desire lines, habitat destruction etc), is appropriately managed. This could include the use of signage or facility management processes. The VMP must contain a clear action-based monitoring process to ensure that if issues arise from the operational phase of the facility (conflicts with avian species on site) that they will be identified and resolved in a timely manner.
Greywater Management	All site run-off must be managed through an appropriate greywater management system that takes account of the external drainage areas from the shower facilities. To ensure no inappropriate materials (shower gels, shampoos, sun creams etc.) are mobilised and entre the surface water pathways. The greywater management plan must demonstrate how this will be controlled and managed.
Litter Management	A Litter management plan will be implemented by the County Council to ensure all bins are adequately serviced as per the needs.
Fencing	The Dune habitats on site are a protected feature of the SAC. It is well documented that visitor movement patterns – if unrestricted – follow a shortest distance approach. Therefore, fencing is required to ensure visitor movements to and from the facility will not encroach on the dune habitats which are protected. The construction of such fencing will be bound by the CEMP and the materials are at the discretion of the Council; however, split hazel fencing is recommended. A path system of visitor movement control measures is needed for the site to alleviate existing damage and help to restore favourable conservation condition of the site.

6. Conclusion

Stage 1 AA Screening and Stage 2 AA of the Platform for Growth; Shared Community Facilities has been carried out. Implementation of the proposed project at Keel Bay has the potential to result in effects to the integrity of 2 European sites, if unmitigated.

The risks to the safeguarding and integrity of the qualifying interests, special conservation interests and conservation objectives of the European sites have been addressed by the inclusion of mitigation measures that will prioritise the avoidance of effects in the first place and mitigate effects where these cannot be avoided.

In-combination effects from interactions with other plans and projects was considered in the assessment and the mitigation measures incorporated into the plan are seen to be robust to ensure there will be no significant adverse effects as a result of the implementation of the proposed project either alone or in-combination with other plans/projects.

Having incorporated mitigation measures, it is concluded that the Platform for Growth; Shared Community Facilities at Keel Bay is not foreseen to give rise to any significant adverse effects on designated European sites, alone or in combination with other plans or projects[12]. This evaluation is made in view of the conservation objectives of the habitats or species, for which these sites have been designated.

[12] Except as provided for in Article 6(4) of the Habitats Directive, viz. There must be: a) no alternative solution available, b) imperative reasons of overriding public interest for the plan to proceed; and c) Adequate compensatory measures in place.

Appendix I Background information on European sites

Site characteristics and quality of European sites within 15km of the subject lands

Site Code	Site Name	Quality of Site	Other Site Characteristics
000495	Duvillaun Islands SAC	The Duvillauns form part of a larger group of islands together with the Inishkeas and Inish Keeragh which hold c. 33% of the national population of Halichoerus grypus. They support a nationally important wintering population of Branta leucopsis and nationally important breeding populations of five seabird species notably Larus marinus and Phalacrocorax carbo. Small colonies of Hydrobates pelagicus and Sterna paradisaea also occur. The site also provides habitat for the Annex II cetacean species *Tursiops truncatus*. Boat use or marine tourism activity by the human population may cause disturbance to natural behaviours and impact negatively on the species within the site.	Site comprises a group of uninhabited islands rocks and reefs situated at the southern tip of the Mullet Peninsula. Duvillaun More and Duvillaun Beg are the main islands but Turduvillaun Gaghta Island Keely Island and Leamareha Island are included as well as the surrounding marine areas. Much of Duvillaun More is above the 30m contour and there are cliffs at the north-west west and south-west sides. About two-thirds of this island is covered by a grassy sward. Duvillaun Beg also has a grassy sward and an extensive intertidal shoreline. The other islets are mostly rocky knolls.
001497	Doogort Machair/Lough Doo SAC	This site is primarily of interest because of the presence of machair a priority Annex I habitat. The condition and representativity/diversity of this habitat is good especially when compared with other sites in Co. Mayo. A small population of the Annex II liverwort Petalophyllum ralfsii occurs within the machair. The site is also important for a large number of nationally rare or scarce bryophyte species which include Leiocolea gillmanii (the only Irish site) Pohlia walhenbergii Catoscopium nigritum and Fossombronia incurva. The site supports breeding Vanellus vanellus and Calidris alpina the latter a Red Data Book species.	This small coastal site is located along the northern coast of Achill Island Co. Mayo. The terrestrial areas of the site are covered by wind-blown sand which has led to the formation of machair surfaces on a number of different levels. These surfaces slope back to two freshwater lakes (Loughs Doo and Nambrack) which are themselves of considerable ecological interest. The main habitat within the site is machair grassland (both dry and damp) with small areas of sandy beach rocky/shingle shore lake and freshwater marsh. Grazing and recreational activities are the main land uses within the site and in surrounding areas. Unlike many areas of machair in Co. Mayo the site has not been damaged by the subdivision and subsequent fencing of the land.
004177	Bills Rocks SPA	The site supports nationally important population of Fratercula arctica (ca. 7.1% of the all-Ireland total). It also has a colony of Hydrobates pelagicus which is at least of regional importance. Other breeding seabird species are Fulmarus glacialis Phalacrocorax aristotelis Larus marinus Rissa tridactyla and Alca torda. The site is an excellent example of an isolated and highly exposed seabird colony.	Bills Rocks are a group of three rocks lying close together approximately 10 south of Moyteoge Head (Achill Island). The islands are composed of metamorphic rock and are drift covered. They rise precipitously to a height of approximately 35 m. The two larger islands have flattish tops which are covered by swards of Armeria maritima. Rocky reefs surround the islands. The sea area to a distance of 500 m from the island is included for the benefit of the breeding auks.
004227	Mullet Peninsula SPA	The Mullet Peninsula SPA supports a nationally important breeding population of Crex crex and is one of a suite of sites along the western seaboard that is regularly utilised by this species. Crex crex is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.	The Mullet Peninsula SPA comprises three separate areas situated on the Mullet peninsula in Co. Mayo. The peninsula is low-lying and exposed (rarely rising above 20 m) and is mostly underlain by metamorphic schist and gneiss although the southern tip is granite and rises to 103 m. The three areas that make up the site are located respectively 5 km north-west 2 km west and 15 km south-west of the town of Belmullet. The main habitat present is grassland which is managed in a relatively intensive manner.
001955	Croaghaun/Slievemore SAC	The site is of immense importance for the occurrence of rare and specialised oceanic bryophytes most of which are associated with alpine heath. It is one of the best examples of this habitat in the country and covers an area of 297ha. The site also supports a wide diversity of habitats from sea level to >650m. Erica erigena a plant confined in Europe to Spain Portugal Western France and Counties Mayo and Galway in Ireland has its most westerly location at Lough Nakeeroge (Foss et. al. 1987).	This is a medium sized site rising in height from sea level to 688m. It is dominated especially at the west of the site by cliffs which can exceed 300m. Nestling below the cliffs of Croaghaun are five corrie lakes perched at various levels above the sea. Slievemore rises to >650m at the east of the site. Both summits support alpine heath and exposed rock. Wet heath wet grassland and blanket bog are found on the lower less steep slopes. The underlying geology is pre-Cambrian schists and gneisses at Slievemore and quartzite at Croaghaun. Land use consists of grazing peat cutting quarrying and tourism development. A main road runs parallel to the shore at the south of the site.

Site Code	Site Name	Quality of Site	Other Site Characteristics
004235	Doogort Machair SPA	This site traditionally supported a breeding Calidris alpina subsp. schinzii population with ten pairs recorded here in 1985. The population declined to two pairs in 1996 and by 2009 no breeding Calidris alpina subsp. schinzii were recorded at the site. However Calidris alpina subsp. schinzii has been recorded here during the early stages of the breeding season in recent years indicating its potential as a breeding resource for this scarce breeding bird whose national population has declined in recent years. The site can also be of importance for other breeding wader species - a 1996 survey recorded eleven pairs of Vanellus vanellus and one pair of Charadrius hiaticula. It is also used on occasion by Pyrrhocorax pyrrhocorax.	Doogort Machair SPA is a small coastal site situated in the north-east corner of Achill Island adjacent to the village of Valley and approximately 3 km east of Doogort Co. Mayo. The site comprises machair and associated habitats including foredunes and freshwater marsh as well as two lakes Lough Doo and Lough Nambrack.
000470	Mullet/Blacksod Bay Complex SAC	Blacksod Bay has a good range of representative littoral and sublittoral sediment communities. The seagrass Zostera marina occurs at several localities and species richness in sublittoral sediment communities is high. There is an interesting and unusual Horse Mussel (Modiolus modiolus) / Purple Sea Urchin (Paracentrotus lividus) community. There are large oyster (Ostrea edulis) populations and the rare anemone Phellia gausapata is present. The machair and fixed dune habitats are particularly well developed and comprise some of the largest areas of these habitats in Ireland. A fine example of decalcified fixed dunes occurs. A fairly extensive area of alkaline fen which is subject to a strong maritime influence occurs at Termoncarragh Lough. Cross Lough is a good example of a naturally eutrophic system and receives large inputs of wind-borne ions from the nearby ocean. Petalophyllum ralfsii has recently been found at two machair areas within the site. The site supports significant populations of nine Annex I Bird Directive species most notably internationally important populations of wintering Gavia immer and Branta leucopsis a nationally important population of Limosa lapponica and a regionally important population of Anser albifrons flavirostris. The site is one of the only Irish breeding sites for Phalaropus lobatus though birds have not been recorded in recent years. A good diversity of other wintering waterfowl occur including internationally important numbers of Branta bernicla horta and Charadrius hiaticula. The site also had important concentrations of breeding waders especially Calidris alpina and Vanellus vanellus. Lutra lutra occurs throughout much of site.	This large coastal site located in north-west Mayo comprises much of the Mullet Peninsula the sheltered waters of Blacksod Bay and the low-lying sandy coastline from Belmullet to Kinrovar. Blacksod Bay is 16 km in length and 8 km wide at the mouth. It is a shallow bay reaching a maximum depth of 19 m and with weak tidal streams. The character of the site is strongly influenced by the Atlantic Ocean and the exposed location of much of it results in a terrestrial landscape dominated by blown sand and largely devoid of trees. In addition to sand dune habitats other terrestrial habitats include shallow coastal lakes notably Cross Lough and Termoncarragh Lough salt marshes and some rocky shore. The underlying bedrock consists mainly of schists and gneiss. Grazing is the main terrestrial activity while fishing and recreational activities are carried out in Blacksod Bay.
002268	Achill Head SAC	The Achill Head site has good examples of extremely exposed reef communities. The littoral reef contains populations of the purple sea-urchin Paracentrotus lividus which are vulnerable to over-exploitation. The infralittoral reef contains an exceptional Alaria esculenta community. There are important sponge communities in the circalittoral reef. Achill Head is the only pSAC where one sponge species Halicnemia verticillata is present (though it also occurs in outer Galway Bay). The brachiopod Neocrania anomala is frequent at one circalittoral reef. It is only otherwise known to occur in abundance in the Kenmare River in the south-west of the country. Exposed shallow bays with small though significant examples of intertidal sand flats are also present and add habitat diversity to the site.	Achill Head is the most westerly point of Achill Island on the north-west coast of Ireland. The site comprises the shallow waters extending from Dooega Head north-westwards to Achill Head and north-eastwards to Gubnahinneora Point. Bedrock is metamorphic schist and gneiss alternating with metamorphic quartzite. High cliffs (650m) on the north-west of the island drop vertically into the sea forming steep sublittoral reefs. Landwards they sweep down to two exposed bays Keem Bay and Keel Bay that are composed of sediments.

Site Code	Site Name	Quality of Site	Other Site Characteristics
002998	West Connacht Coast SAC	The site represents a key habitat for the Annex II species Bottlenose Dolphin within Ireland. Survey data show that Bottlenose Dolphin occurrence within the site compares favourably with another designated site in the Lower Shannon Estuary and that dolphins sampled within the site are genetically distinct from those occupying the Shannon Estuary. Overall Bottlenose Dolphin population estimates for the site also exceed that of the Shannon Estuary. The species is known to range widely within the site and it occurs within the site in all seasons while comparatively high group sizes of up to 50-65 dolphins or more have been recorded therein. Adults with young (i.e. calves) are commonly observed in summer within the site while foraging resting and social behaviour are commonly recorded at key locations. Groups of dolphins demonstrate a level of site fidelity to such locations within and between years. Sighting records from coastal and boat-based observation are also significant for the coast of Ireland and groups of Bottlenose Dolphins have been tracked from land as they transit along the Atlantic coastline. The site contains a wide array of habitats and hydrographic features believed to be important for Bottlenose Dolphin including areas of strong current flow within bays or adjacent to coastal headlands islands sandbanks shoals and reefs. Harbour Porpoise Short-beaked Common Dolphin Rissoâ€™s Dolphin Killer Whale and Minke Whale are also recorded within the site. The site also contains two Annex II seal species: Harbour Seal and Grey Seal which carry out breeding resting social behaviour and moulting activity at terrestrial or intertidal locations in immediate proximity to the site.	The selected site extending approximately 90 km in total length encompasses two dynamic coastal water areas in the west of Ireland and a range of associated shallow marine habitats. These include exposed Atlantic continental shelf waters and sheltered coastal bays diverse seabed structures including sedimentary basins and reefs prominent headlands islets and islands of various sizes. The site borders numerous existing designated sites for Annexed species and habitats and is adjacent to a wide array of coastal features e.g. sheltered bays exposed open bays estuaries coastal cliffs and sea caves several of which are also designated protected sites.
004037	Blacksod Bay/Broad Haven SPA	The site supports an excellent diversity of wintering waterfowl species and is one of the most important wetland complexes in the west. It has internationally important populations of Gavia immer and Branta bernicla hrota. The site also supports nationally important populations of Melanitta nigra Numenius arquata Limosa lapponica Charadrius hiaticula Calidris alpina Mergus serrator and Calidris alba. The site provides both feeding and roosting areas for the birds though some species may also utilise areas elsewhere for feeding and/or roosting purposes. A nationally important population of Calidris alpina subsp. schinzii breeds within areas of the machair. Inishderry Island has a nationally important breeding colony of Sterna sandvicensis as well as nesting Sterna hirundo Sterna paradisaea and Larus ridibundus.	Situated in the extreme north-west of Co. Mayo this site comprises a number of bays and inlets including Sruwaddacon Bay Moyrahan Bay Traw-Kirtaun Blind Harbour Tullaghan Bay and the various sheltered bays and inlets in Blacksod Bay including Trawmore Bay Feorinyeeo Bay Saleen Harbour Elly Bay and Elly Harbour. At low tide extensive areas of intertidal sand and mudflats are exposed. These support a well-developed macro-invertebrate fauna. Seagrass (Zostera marina) occurs at several localities. Salt marshes which are often on a peat substrate fringe parts of the site and provide useful roosts for the wintering waterfowl. Sandy and shingle beaches are well-represented. A small island Inishderry occurs in the inner part of the bay and is used by nesting terns and gulls. Also included within the site are two small lakes on the Mullet Peninsula Cross Lough and Leam Lough. The underlying bedrock consists mainly of schists and gneiss.
000485	Corraun Plateau SAC	The site is important for the large though often disturbed areas of alpine heath dry heath wet heath and juniper scrub habitats. Blanket bog is also present and within this is an area of relatively intact high plateau bog. The Red Data Book species Saussurea alpina is found on high rocky ledges. The largest colony of Erica erigena in Ireland is found on the heaths at Mallaranny and also occurs elsewhere in the site.	The geology at the site is varied. The area around Mallaranny is underlain by Dalradian schists while Corraun Mountain is underlain by Dalradian schists and quartzites. The southern coast is underlain by old red sandstone. The site consists of a steep mountain and summit plateau at Corraun (524m) and other high summits above Lough Cullydoo (541m) and 360m in the vicinity of Claggan Mountain (360m) at the east of the site. The area is dominated by heath type vegetation in combination with pockets of peat and rock. Oligotrophic lakes are present at the north of the site. The main landuse is grazing with peat-cutting in parts.

Site Code	Site Name	Quality of Site	Other Site Characteristics
001513	Keel Machair/Menaun Cliffs SAC	This site is important because of the presence of the priority Annex I habitat machair though the quality of the habitat has been reduced by heavy grazing and recreational use. A fairly typical example of alpine and sub-alpine heath also occurs though this has been degraded by sheep grazing. Also of importance is a fine example of a stony beach which occurs adjacent to the machair. Associated with the machair is a large population of the Annex II liverwort Petalophyllum ralfsii. Two legally protected plant species occur Lathyrus japonicus and Mentha pulegium. A variety of rare bryophytes have been recorded including Philonotis rigida Cyclodictyon laetevirens Bryum marratii and Bryum calophyllum. The site supports wintering Cygnus cygnus and breeding Falco peregrinus and Pyrrhocorax pyrrhocorax. Some breeding waders and breeding seabirds are also found.	This relatively large coastal site located along the mid-western coast of Achill Island Co. Mayo comprises a complex of coastal and upland habitats. The dominant bedrock within the site is quartzite with an extensive flat area of blown sand occurring between Trawmore Strand and Keel Lough. The principal habitats are heaths varying from wet to dry blanket bog sea cliffs (up to 250 m) machair and lakes. Other habitats which occur in small amounts are freshwater marsh sandy beach and a shingle/stony ridge. The tall quartzite cliffs which dominate the south-western shore lend a very scenic quality to the site.
004111	Duvillaun Islands SPA	The site is an important seabird colony with nationally important populations of Hydrobates pelagicus Fulmarus glacialis and Larus marinus. In winter the Duvillauns support Branta leucopsis - up to 500 birds can occur; these are part of a much larger population centred on the Mullet Peninsula and Inishkea Islands. The site is a traditional nesting location for Falco peregrinus and 1-2 pairs of Pyrrhocorax pyrrhocorax breed. The Duvillauns form part of a larger group of islands which hold one of the largest breeding populations of Halichoerus grypus in Ireland a species listed on Annex II of the E.U. Habitats Directive.	The site comprises a group of uninhabited marine islands rocks and reefs located between 1 and 5 km off the southern tip of the Mullet Peninsula in Co. Mayo. The surrounding seas to a distance of 200 m from the shoreline where seabirds forage bathe and socialise are included in the site. Duvillaun More is the largest of the islands rising to 63 m with cliffs on the north-west west and south-west sides. About two-thirds of this island is covered by a maritime grassland sward. There is a small area of dry heath at the west end of the island near the summit. Duvillaun Beg which rises to 14 m also has a grassy sward and an extensive intertidal shore. The other islands while having some land above the high tide mark are largely rocky islets and knolls. From west to east the lesser islands are Turduvillaun Shiraghy Islands Drumacappul Islands Orragoon Island Keely Island Gaghta Island and Leamareha Island.

Qualifying features and known threats and pressures for each of the European sites within 15km of the subject lands

Site Code	Site Name	Qualifying Feature	Pressures Codes	Known Threats and Pressures
000470	Mullet/Blacksod Bay Complex SAC	Atlantic decalcified fixed dunes *(Calluno-Ulicetea)* [2150], Fixed coastal dunes with herbaceous vegetation - grey dunes [2130], Alkaline fens [7230], Large shallow inlets and bays [1160], Mudflats and sandflats not covered by seawater at low tide [1140], Otter *(Lutra lutra)* [1355], Reefs [1170], Petalwort *(Petalophyllum ralfsii)* [1395], Machairs * in Ireland [21A0], Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150], Shifting dunes along the shoreline with Ammophila arenaria - white dunes [2120], Salicornia and other annuals colonising mud and sand [1310]	A02.01, A04.01.02, A04.01.01, E03.01, A08, F02, G01, A05.02, C01.01.02, C01.02, G05.09, J02.12.01	Agricultural intensification, Intensive sheep grazing, Intensive cattle grazing, Disposal of household or recreational facility waste, Fertilisation, Fishing and harvesting aquatic resources, Outdoor sports and leisure activities, recreational activities, Stock feeding, Removal of beach materials, Loam and clay pits, Fences, fencing, Sea defense or coast protection works, tidal barrages
000485	Corraun Plateau SAC	European dry heaths [4030], Juniperus communis formations on heaths or calcareous grasslands [5130], Alpine and Boreal heaths [4060], Siliceous rocky slopes with chasmophytic vegetation [8220], Siliceous scree of the montane to snow levels *(Androsacetalia alpinae and Galeopsietalia ladani)* [8110], Northern Atlantic wet heaths with Erica tetralix [4010]	C01.01, A04, E01, B, C01, I01, E03.01, F03.02.02, G01	Sand and gravel extraction , Grazing, Urbanised areas, human habitation, Sylviculture, forestry, Mining and quarrying, Invasive non-native species, Disposal of household or recreational facility waste, Taking from nest (e.g. falcons), Outdoor sports and leisure activities, recreational activities
000495	Duvillaun Islands SAC	Common Bottlenose Dolphin *(Tursiops truncatus)* [1349], Grey Seal *(Halichoerus grypus)* [1364]	E06.02, A04.03, D03.01.01, F02, D02, H06.01, E01	Reconstruction, renovation of buildings, Abandonment of pastoral systems lack of grazing, Slipways, Fishing and harvesting aquatic resources, Utility and service lines, Noise nuisance, noise pollution, Urbanised areas, human habitation
001497	Doogort Machair/Lough Doo SAC	Machairs * in Ireland [21A0], Petalwort *(Petalophyllum ralfsii)* [1395]	G01.02, G01.08, A10, G01.03, A04, C01.03, G02.08, G05.01, L07, G02, K01.01	Walking, horseriding and non-motorised vehicles, Other outdoor sports and leisure activities, restructuring agricultural land holding, Motorised vehicles, Grazing, Peat extraction, Camping and caravans, Trampling, overuse, Storm, cyclone, Sport and leisure structures, Erosion
001513	Keel Machair/Menaun Cliffs SAC	Perennial vegetation of stony banks [1220], Machairs * in Ireland [21A0], Petalwort *(Petalophyllum ralfsii)* [1395], Alpine and Boreal heaths [4060]	G05.05, G02.01, G05.01, J02, I01, E03.01, A03, J03.01, J02.04.01, A08, D01.02, G02.08, G01, A04.01.02, G01.03.01, D01.01, M02.01, L07, G01.02, K01.01	Intensive maintenance of public parcs or cleaning of beaches, Golf course, Trampling, overuse, Human induced changes in hydraulic conditions, Invasive non-native species, Disposal of household or recreational facility waste, Mowing or cutting of grassland, Reduction or loss of specific habitat features, Flooding, Fertilisation, Roads, motorways, Camping and caravans, Outdoor sports and leisure activities, recreational activities, Intensive sheep grazing, Regular motorized driving, Paths, tracks, cycling tracks, Habitat shifting and alteration, Storm, cyclone, Walking, horseriding and non-motorised vehicles, Erosion
001955	Croaghaun/Slieve more SAC	Siliceous scree of the montane to snow levels *(Androsacetalia alpinae and Galeopsietalia ladani)* [8110], European dry heaths [4030], Alpine and Boreal heaths [4060], Blanket bogs * if active bog [7130], Northern Atlantic wet heaths with Erica tetralix [4010]	A10, A04, C01.03, G01, I01, C01.01.01, D01.01	Restructuring agricultural land holding, Grazing, Peat extraction, Outdoor sports and leisure activities, recreational activities, Invasive non-native species, Sand and gravel quarries, Paths, tracks, cycling tracks
002268	Achill Head SAC	Large shallow inlets and bays [1160], Reefs [1170], Mudflats and sandflats not covered by seawater at low tide [1140]	G05, G05.01, F02.03, F06, G02.09,	Other human intrusions and disturbances , Trampling, overuse, Leisure fishing, Hunting, fishing or collecting activities not referred to above, Wildlife watching, Pelagic trawling, Invasive non-native species, Storm,

Site Code	Site Name	Qualifying Feature	Pressures Codes	Known Threats and Pressures
			F02.02.02, I01, L07, G01, F02	cyclone, Outdoor sports and leisure activities, recreational activities, Fishing and harvesting aquatic ressources
002998	West Connacht Coast SAC	Bottlenose dolphin *(Tursiops truncatus)* [1349]	E03, E03.01, D03.02, H06.01, F02, H03	Discharges, Disposal of household or recreational facility waste, Shipping lanes, Noise nuisance, noise pollution, Fishing and harvesting aquatic ressources, Marine water pollution
004037	Blacksod Bay/Broad Haven SPA	Red-throated Diver *(Gavia stellata)* [A001], Sanderling *(Calidris alba)* [A144], Ringed Plover *(Charadrius hiaticula)* [A137], Dunlin *(Calidris alpina)* [A149], Sandwich Tern *(Sterna sandvicensis)* [A191], Great Northern Diver *(Gavia immer)* [A003], Curlew *(Numenius arquata)* [A160], Wetland and Waterbirds [A999], Slavonian Grebe *(Podiceps auritus)* [A007], Bar-tailed Godwit *(Limosa lapponica)* [A157], Light-bellied Brent Goose *(Branta bernicla hrota)* [A046], Common Scoter *(Melanitta nigra)* [A065], Red-breasted Merganser *(Mergus serrator)* [A069]	F02.03, F01, A08, E01, F02.03.01, G01.02	Leisure fishing, Marine and Freshwater Aquaculture, Fertilisation, Urbanised areas, human habitation, Bait digging or collection, Walking, horseriding and non-motorised vehicles
004111	Duvillaun Islands SPA	Fulmar *(Fulmarus glacialis)* [A009], Barnacle goose *(Branta leucopsis)* [A045], Storm Petrel *(Hydrobates pelagicus)* [A014]	A04	Grazing
004227	Mullet Peninsula SPA	Corncrake *(Crex crex)* [A122]	A01, A03, A04, E01.02	Cultivation, Mowing or cutting of grassland, Grazing, Discontinuous urbanisation
004235	Doogort Machair SPA	Dunlin *(Calidris alpina)* [A149]	A04, M02	Grazing, Changes in biotic conditions

Known threats pressures and sensitivities of Qualifying Interests identified from the SACs within 15km of the subject lands

Qualifying Interests	EU Code	Current threats to Qualifying Interests	Sensitivity of Qualifying Interests
Mudflats and sandflats not covered by seawater at low tide	[1140]	Aquaculture, fishing, bait digging, removal of fauna, reclamation of land, coastal protection works and invasive species, particularly cord-grass; hard coastal defence structures; sea-level rise.	Surface and marine water dependent. Moderately sensitive to hydrological change. Moderate sensitivity to pollution. Changes to salinity and tidal regime. Coastal development.
Large shallow inlets and bays	[1160]	Pressures on the habitat include nutrient enrichment, dredging and invasive alien species. Overall Status is assessed as Bad and deteriorating, a genuine decline since the 2013 assessment of Inadequate and improving, and is based on more detailed information.	Inappropriate development, changes in turbidity, surface water runoff, discharge etc. On site management activities.
Reefs	[1170]	Professional fishing; taking for fauna; taking for flora; water pollution; climate change; and change in species composition.	Sensitive to disturbance and pollution.
Perennial vegetation of stony banks	[1220]	Disruption of the sediment supply, owing to the interruption of the coastal processes, caused by developments such as car parks and coastal defence structures including rock armour and sea walls. The removal of gravel.	Marine water dependent. Low sensitivity to hydrological changes. Coastal development, trampling from recreational activity and gravel removal.
Salicornia and other annuals colonising mud and sand	[1310]	Invasive Species; erosion and accretion.	Marine water dependent. Medium sensitivity to hydrological change. Changes in salinity and tidal regime. Infilling, reclamation, invasive species.
Tursiops truncatus	[1349]	Shipping lanes, disposal of household or recreational facility waste, fishing and harvesting aquatic resources, marine water pollution, discharges, noise nuisance, noise pollution	Noise and human disturbance, marine pollution, marine and fisheries waste
Otter *(Lutra lutra)*	[1355]	Decrease in water quality: Use of pesticides; fertilization; vegetation removal; professional fishing (including lobster pots and fyke nets); unting; poisoning; sand and gravel extraction; mechanical removal of peat; urbanised areas; human habitation; continuous urbanization; drainage; management of aquatic and bank vegetation for drainage purposes; and canalization or modifying structures of inland water course.	Surface and marine water dependent. Moderately sensitive to hydrological change. Sensitivity to pollution.
Grey Seal*(Halichoerus grypus)*	[1364]	Distance to human activities, accidental entanglement in fishing gear competition for prey resources, illegal killing, pollution and habitat degradation.	Prey availability, reduction in available habitat and water quality.
Petalwort *(Petalophyllum ralfsii)*	[1395]	There are no significant impacts affecting this species.	None identified.
Shifting dunes along the shoreline with white dunes*(Ammophila arenaria)*	[2120]	Recreation and coastal defences, which may interfere with local sediment dynamics.	Overgrazing, and erosion. Changes in management.
Fixed coastal dunes with herbaceous vegetation (grey dunes)	[2130]	Recreation; overgrazing and inappropriate grazing: non-native plant species, particularly sea buckthorn (Hippophae rhamnoides).	Overgrazing, and erosion. Changes in management.
Atlantic decalcified fixed dunes *(Calluno-Ulicetea)*	[2150]	Agricultural intensification, fertilisation, recreation	Trampling, fragmentation, pollution
Machairs (* in Ireland)	[21A0]	Non-intensive sheep grazing, walking, horse riding and non-motorised vehicles, damage by herbivores (including game species), marine macro-pollution (i.e., plastic bags, styrofoam), burning down, off-road motorized driving, erosion, storm, cyclone, trampling, overuse.	Recreation, human disturbance, pollution, over or under grazing / land management.

Qualifying Interests	EU Code	Current threats to Qualifying Interests	Sensitivity of Qualifying Interests
Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	[3150]	Hydrological changes, afforestation; waste water; invasive alien species; sport and leisure activities.	Surface and groundwater dependant. Highly sensitive to hydrological changes. Highly sensitive to pollution.
Northern Atlantic wet heaths with Erica tetralix	[4010]	Reclamation, afforestation and burning; overstocking; invasion by non-heath species; exposure of peat to severe erosion.	Surface and groundwater dependent. Highly sensitive to hydrological changes. Inappropriate management.
European dry heaths	[4030]	Afforestation, overburning, over-grazing, under-grazing and bracken invasion.	Moderately sensitive to hydrological change. Changes in management. Changes in nutrient status.
Alpine and Boreal heaths	[4060]	Abandonment; overgrazing; burning; outdoor recreation; quarries; communication networks; and wind farm developments.	Changes in management. Changes in nutrient or base status. Moderately sensitive to hydrological change.
Juniperus communis formations on heaths or calcareous grasslands	[5130]	Overgrazing, erosion, scrub clearance, inappropriate land use management, and succession processes.	Changes in management. Changes in nutrient or base status. Changes to vegetation composition. Introduction of alien species.
Blanket bogs (* if active bog)	[7130]	Land reclamation, peat extraction; afforestation; erosion and landslides triggered by human activity; drainage; burning and infrastructural development.	Surface and groundwater dependent. Highly sensitive to hydrological changes. Inappropriate management.
Alkaline fens	[7230]	Land reclamation, peat extraction; afforestation; erosion and landslides triggered by human activity; drainage; burning and infrastructural development.	Surface and groundwater dependent. Highly sensitive to hydrological changes. Inappropriate management.
Siliceous scree of the montane to snow levels *(Androsacetalia alpinae and Galeopsietalia ladani)*	[8110]	Overgrazing, undergrazing and succession were recorded as medium-importance pressures in this reporting period, and Structure and functions were again assessed as Inadequate, the trend is considered to be stable rather than improving. This change is due to improved knowledge and the habitat is considered to have been stable since before the last assessment.	Erosion, overgrazing and recreation.
Siliceous rocky slopes with chasmophytic vegetation	[8220]	Pressures associated with the non-native invasive species New Zealand willowherb (Epilobium brunnescens).	Erosion, overgrazing and recreation.

SCI Species identified within from SPAs within 15km of the subject land area

Special Conservation Interests
Red-throated diver *(Gavia stellata)* [A001]
Great northern diver *(Gavia immer)* [A003]
Slavonian grebe *(Podiceps auritus)* [A007]
Northern fulmar *(Fulmarus glacialis)* [A009]
European storm-petrel *(Hydrobates pelagicus)* [A014]
Barnacle goose *(Branta leucopsis)* [A045]
Barnacle goose *(Branta leucopsis [Eastern Greenland/Scotland/Ireland])* [A045]
Barnacle goose *(Branta leucopsis [Svalbard/Denmark/UK])* [A045]
Black *(common)* scoter *(Melanitta nigra)* [A065]
Red-breasted merganser *(Mergus serrator)* [A069]
Corn crake *(Crex crex)* [A122]
Ringed plover *(Charadrius hiaticula)* [A137]
Sanderling *(Calidris alba)* [A144]
Bar-tailed godwit *(Limosa lapponica)* [A157]
Eurasian curlew *(Numenius arquata)* [A160]
Sandwich tern *(Sterna sandvicensis)* [A191]
Atlantic puffin *(Fratercula arctica)* [A204]

Vulnerabilities of Special Conservation Interests

- Bird species are particularly vulnerable to direct disturbance due to noise and/or vibration. These effects are localised, and disturbance effects are foreseen to be low at distances beyond 2km[13].
- Direct habitat loss is a serious concern for bird species, as well as the reduction in habitat quality. Habitat degradation could occur through effects such as local enrichment due to agricultural practices or damage to habitat through activities such as trampling.
- Prey species diversity and availability is a key element of species conservation. Community dynamics and ecosystem functionality are complex concepts and require site specific information. The site synopsis and conservation objectives for the SPAs identified within the ZOI were used to identify any specific prey sensitivities.
- Availability of nesting/roosting habitat. Particularly for the Hen Harrier.
- Vegetation composition, structure and functionality.

Wetland and Waterbirds [A999] Direct land take is a common vulnerability to all sites; as well as significant water quality effects. The conservation objective of all SPAs designated for Wetland and Waterbirds is to maintain the favourable conservation condition of the wetland habitat as a resource for the regularly occurring migratory waterbirds using it.

[13] SNH (2007) A Review of Disturbance Distances in Selected Bird Species: Scottish Natural Heritage; M. Ruddock & D.P. Whitfield

Appendix II Winter Bird Data

Appendix II Table 1 All bird foraging behaviours observed in the Keel Bay area

BTO Code	Number of Individuals	Common Name	Scientific Name	Habitat Description	Tidal Condition	Foraging Group Composition
CM	2	Common Gull	*Larus canus*	muddy sandy shore, beside river mouth	High	CM2, OC1
CM	6	Common Gull	*Larus canus*	sandy shoreline	Low	OC3, RP20, CM6
CM	7	Common Gull	*Larus canus*	sandy muddy shore	Low	OC9, CM7
CM	6	Common Gull	*Larus canus*	sandy muddy shore	Mid Tide	OC11, CM6, HG5
CM	2	Common Gull	*Larus canus*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
CU	1	Curlew	*Numenius arquata*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
CU	38	Curlew	*Numenius arquata*	grassed area	High	CU38
CU	1	Curlew	*Numenius arquata*	Edge of tide. Sandy beach with seaweed-covered rocks being exposed.	Mid Tide	CU1, OC13, PB16
DN	3	Dunlin	*Calidris alpina*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
DN	1	Dunlin	*Calidris alpina*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
GB	2	Great Black-backed Gull	*Larus marinus*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
GK	1	Greenshank	*Tringa nebularia*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
HG	3	Herring Gull	*Larus argentatus*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
HG	5	Herring Gull	*Larus argentatus*	sandy muddy shore	Mid Tide	OC11, CM6, HG5
HG	2	Herring Gull	*Larus argentatus*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
OC	12	Oystercatcher	*Haematopus ostralegus*	sandy/muddy shore	Mid Tide	OC12, SS6
OC	11	Oystercatcher	*Haematopus ostralegus*	grassed area	High	OC11
OC	9	Oystercatcher	*Haematopus ostralegus*	muddy sand shore waders feeding here except about an hour either side of high tide	Mid Tide	OC9, SS10
OC	6	Oystercatcher	*Haematopus ostralegus*	patches of sand between rockpool areas	Low	OC6, RP10
OC	9	Oystercatcher	*Haematopus ostralegus*	sandy muddy shore	Low	OC9, CM7
OC	15	Oystercatcher	*Haematopus ostralegus*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
OC	2	Oystercatcher	*Haematopus ostralegus*	seaweed-covered rocks	Mid Tide	OC2, RK2, TT5
OC	11	Oystercatcher	*Haematopus ostralegus*	sandy muddy shore	Mid Tide	OC11, CM6, HG5
OC	3	Oystercatcher	*Haematopus ostralegus*	sandy shoreline	Low	OC3, RP20, CM6
OC	1	Oystercatcher	*Haematopus ostralegus*	muddy sandy shore, beside river mouth	High	CM2, OC1
OC	18	Oystercatcher	*Haematopus ostralegus*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2

BTO Code	Number of Individuals	Common Name	Scientific Name	Habitat Description	Tidal Condition	Foraging Group Composition
OC	13	Oystercatcher	*Haematopus ostralegus*	Edge of tide. Sandy beach with seaweed-covered rocks being exposed.	Mid Tide	CU1, OC13, PB16
PB	7	Brent Goose (light-bellied)	*Branta bernicla hrota*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
PB	21	Brent Goose (light-bellied)	*Branta bernicla hrota*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
PB	16	Brent Goose (light-bellied)	*Branta bernicla hrota*	Edge of tide. Sandy beach with seaweed-covered rocks being exposed.	Mid Tide	CU1, OC13, PB16
PS	1	Purple Sandpiper	*Calidris maritima*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
RK	2	Redshank	*Tringa totanus*	seaweed-covered rocks	Mid Tide	OC2, RK2, TT5
RP	6	Ringed Plover	*Charadrius hiaticula*	seaweed-covered rocks	Mid Tide	OC18, RP6, DN1, CU1, PB21, GK1, HG3, GB2
RP	54	Ringed Plover	*Charadrius hiaticula*	grassed area	High	RP54, TT10, SS2
RP	18	Ringed Plover	*Charadrius hiaticula*	sandy shore with pebbles	Low	SS8, RP18
RP	10	Ringed Plover	*Charadrius hiaticula*	patches of sand between rockpool areas	Low	OC6, RP10
RP	25	Ringed Plover	*Charadrius hiaticula*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
RP	20	Ringed Plover	*Charadrius hiaticula*	sandy shoreline	Low	OC3, RP20, CM6
SS	3	Sanderling	*Calidris alba*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
SS	8	Sanderling	*Calidris alba*	sandy shore with pebbles	Low	SS8, RP18
SS	6	Sanderling	*Calidris alba*	sandy/muddy shore	Mid Tide	OC12, SS6
SS	10	Sanderling	*Calidris alba*	muddy sand shore waders feeding here except about an hour either side of high tide	Mid Tide	OC9, SS10
SS	2	Sanderling	*Calidris alba*	grassed area	High	RP54, TT10, SS2
TT	5	Turnstone	*Arenaria interpres*	seaweed-covered rocks	Mid Tide	OC2, RK2, TT5
TT	1	Turnstone	*Arenaria interpres*	Tide-line on sand, with seaweed and seaweed-covered rocks	Mid Tide	OC15, SS3, TT1, RP25, DN3, HG2, CM2, PB7, PS1
TT	10	Turnstone	*Arenaria interpres*	grassed area	High	RP54, TT10, SS2

Appendix II Table 2 All bird roosting behaviours observed in the Keel Bay area

BTO Code	Number of Individuals	Common Name	Scientific Name	Feature Type	Habitat Description	Roosts Group Composition
CM	1	Common Gull	*Larus canus*	grassed area	flooded field	OC28, HG16, CM1
CM	8	Common Gull	*Larus canus*		rocky shore	HG4, XU1, CM8
CM	6	Common Gull	*Larus canus*		Rocky shore covered in seaweed from recent storms	OC9, XU2, CM6, GB2, SS8, RP10
CM	10	Common Gull	*Larus canus*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
CM	12	Common Gull	*Larus canus*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
CU	25	Curlew	*Numenius arquata*	rock	bare bedrock	CU25, OC34
DN	2	Dunlin	*Calidris alpina*	gravel bank	pebble bank	RP54, SS1, DN2, TT19
DN	1	Dunlin	*Calidris alpina*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
GB	2	Great Black-backed Gull	*Larus marinus*		Rocky shore covered in seaweed from recent storms	OC9, XU2, CM6, GB2, SS8, RP10
GB	4	Great Black-backed Gull	*Larus marinus*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
HG	16	Herring Gull	*Larus argentatus*	grassed area	flooded field	OC28, HG16, CM1
HG	1	Herring Gull	*Larus argentatus*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
HG	4	Herring Gull	*Larus argentatus*		rocky shore	HG4, XU1, CM8
HG	3	Herring Gull	*Larus argentatus*	flooded field	flooded field	HG3, RK3
HG	3	Herring Gull	*Larus argentatus*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
HG	4	Herring Gull	*Larus argentatus*	flooded area	flooded grassland	OC1, HG4, RK6
OC	9	Oystercatcher	*Haematopus ostralegus*		Rocky shore covered in seaweed from recent storms	OC9, XU2, CM6, GB2, SS8, RP10
OC	1	Oystercatcher	*Haematopus ostralegus*	flooded area	flooded grassland	OC1, HG4, RK6
OC	13	Oystercatcher	*Haematopus ostralegus*	beach	sand/pebble beach	OC13
OC	48	Oystercatcher	*Haematopus ostralegus*	bedrock	bare rock	OC48, PB2
OC	34	Oystercatcher	*Haematopus ostralegus*	rock	bare bedrock	CU25, OC34
OC	28	Oystercatcher	*Haematopus ostralegus*	grassed area	flooded field	OC28, HG16, CM1
OC	19	Oystercatcher	*Haematopus ostralegus*	beach	sand	OC19
OC	6	Oystercatcher	*Haematopus ostralegus*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
OC	28	Oystercatcher	*Haematopus ostralegus*	rock	bedrock above tide-line	OC28, RP7
OC	13	Oystercatcher	*Haematopus ostralegus*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
PB	2	Brent Goose (light-bellied)	*Branta bernicla hrota*	bedrock	bare rock	OC48, PB2
PB	7	Brent Goose (light-bellied)	*Branta bernicla hrota*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
RK	4	Redshank	*Tringa totanus*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
RK	6	Redshank	*Tringa totanus*	flooded area	flooded grassland	OC1, HG4, RK6
RK	3	Redshank	*Tringa totanus*	flooded field	flooded field	HG3, RK3
RP	1	Ringed Plover	*Charadrius hiaticula*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7

BTO Code	Number of Individuals	Common Name	Scientific Name	Feature Type	Habitat Description	Roosts Group Composition
RP	25	Ringed Plover	*Charadrius hiaticula*		sand shore covered in pebbles	SS20, RP25
RP	20	Ringed Plover	*Charadrius hiaticula*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
RP	7	Ringed Plover	*Charadrius hiaticula*	rock	bedrock above tide-line	OC28, RP7
RP	54	Ringed Plover	*Charadrius hiaticula*	gravel bank	pebble bank	RP54, SS1, DN2, TT19
RP	10	Ringed Plover	*Charadrius hiaticula*		Rocky shore covered in seaweed from recent storms	OC9, XU2, CM6, GB2, SS8, RP10
SS	1	Sanderling	*Calidris alba*	gravel bank	pebble bank	RP54, SS1, DN2, TT19
SS	20	Sanderling	*Calidris alba*		sand shore covered in pebbles	SS20, RP25
SS	8	Sanderling	*Calidris alba*		Rocky shore covered in seaweed from recent storms	OC9, XU2, CM6, GB2, SS8, RP10
TT	19	Turnstone	*Arenaria interpres*	gravel bank	pebble bank	RP54, SS1, DN2, TT19
TT	10	Turnstone	*Arenaria interpres*	rock	bare bedrock	CM12, OC13, DN1, RP1, TT10, RK4, HG1, PB7
UU	10	Unident. gull	*Larus sp.*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
XU	2	Unident. Cormorant/Shag	*Phalacrocorax sp.*		Rocky shore covered in seaweed from recent storms	OC9, XU2, CM6, GB2, SS8, RP10
XU	1	Unident. Cormorant/Shag	*Phalacrocorax sp.*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1
XU	1	Unident. Cormorant/Shag	*Phalacrocorax sp.*		rocky shore	HG4, XU1, CM8
XU	2	Unident. Cormorant/Shag	*Phalacrocorax sp.*		Rocky shore, with some areas covered in seaweed and some sandy patches	OC6, UU10, CM10, GB4, HG3, RP20, XU2, XU1

Appendix II Table 3 All birds observed flying overhead in the Keel Bay area

BTO Code	Number of Individuals	Common Name	Scientific Name	Group Size	Survey Date	Flight Duration in Seconds	Flight Height	Flight Direction	Brief Description	Flight Group Composition
CM	6	Common Gull	*Larus canus*	6	03/11/2020	30	30	SW		CM6
CU	3	Curlew	*Numenius arquata*	3	27/12/2020	50	3	W	Group of curlew flying low over the beach and landing in fields to the west of the beach	CU3
HG	4	Herring Gull	*Larus argentatus*	0	26/10/2020	10	20	E	regular occurrence, gulls overhead	HG4, UU8
OC	45	Oystercatcher	*Haematopus ostralegus*	45	21/12/2020	20	30	N	large flock of oyster catchers flying towards grasslands behind dunes. when I was driving home I saw them all foraging on the (semi flooded) grasslands here	OC45
UU	5	Unident. gull	*Larus sp.*	5	03/11/2020	10	10		gulls and corvids lifting and flying into wind throughout survey	UU5
UU	20	Unident. gull	*Larus sp.*	20	21/12/2020	0	0		Gulls flying around dunes, carpark and beach throughout survey	UU20
UU	8	Unident. gull	*Larus sp.*	0	26/10/2020	10	20	E	regular occurrence, gulls overhead	HG4, UU8
UU	8	Unident. gull	*Larus sp.*	8	27/12/2020	60	25	W		UU8
UU	3	Unident. gull	*Larus sp.*	3	03/11/2020	15	30	S	Large gulls circling in air	UU3
UU	15	Unident. gull	*Larus sp.*	15	27/12/2020	0	20		Gulls regularly flying above carpark and dunes	UU15
XU	2	Unident. Cormorant/Shag	*Phalacrocorax sp.*	2	26/10/2020	10	1		low flying shag/cormorant - regularly siting during survey	XU2
XU	2	Unident. Cormorant/Shag	*Phalacrocorax sp.*	2	21/12/2020	60	2	E		XU2
XU	3	Unident. Cormorant/Shag	*Phalacrocorax sp.*	3	26/10/2020	30	2	W	rising and falling regularly and often diving into water - throughout survey	XU3
XU	1	Unident. Cormorant/Shag	*Phalacrocorax sp.*	1	03/11/2020	5	2		cormorant/shag diving in this area.	XU1
XU	2	Unident. Cormorant/Shag	*Phalacrocorax sp.*	2	27/12/2020	50	2	E		XU2
XU	1	Unident. Cormorant/Shag	*Phalacrocorax sp.*	1	03/11/2020	20	5	W		XU1

Appendix II Table 4 Survey details and comments for all surveys at Keel Bay

Site	Weather conditions	Surveyor	Date	Arrival Time	Survey Start Time	Survey End Time	Comments	Disturbance Events	Tourism Notes
Keel Bay	Windy and cloudy with rain showers and sunny spells. 10 degrees.	James Orr	26/10/2020 19:21	10:50	11:00	14:00	large flock of over 100 geese (I think barnacle geese) spotted flying offshore and landing on initialling	dog walkers disturbing birds regularly.	
Keel Bay	Sunny with some clouds. 10 degrees and a little bit of wind	James Orr	26/10/2020 12:00	10:45	14:30	17:30	2nd survey of the day. 30-minute gap	dogs disturbing the birds regularly. quad bike went up and down the beach once and disturbed birds	
Keel Bay	Cold and windy (30km/h). Clear for the first half of the survey and raining for the second half	James Orr	03/11/2020 14:14	10:20	10:30	13:30	Recent storms had pushed a lot of seaweed up onto the beach at the western end by rocky zone.		Kite surfers in the middle and eastern end of beach. Majority of birds at the western end and not disturbed.
Keel Bay	Cold, but sunny with light winds.	James Orr	03/11/2020 19:02	10:20	14:00	17:00	The huge amount of seaweed washed onto the beach from the recent storms was a very clear difference to previous visits.	Lots of walkers and dogs - few places for birds to be undisturbed	
Keel Bay	Cold, rainy and low visibility. no wind	James Orr	21/12/2020 12:00	09:00	09:10	00:10	No waders foraging on the beach during the survey. potentially because high tide was at 10.00 and there wasn't much beach available.		
Keel Bay	Very windy (45km/h), cold (3C) and frequent heavy rain showers	James Orr	27/12/2020 12:11	09:05	09:15	12:15	Lots of bird activity at the western edge of the beach, quite far from my vantage point near the carpark	Dog walkers and seaweed/shellfish collectors	
Keel Bay	Wind N, force2/3. Dull, low cloud, but becoming sunny. Cold, with snow on the hills.	Kieran Finch	21/01/2021 12:00	08:40	09:00	12:00		Regular walkers and dogs.	
Keel Bay	Wind SW, force 2/3. Dull, cloudy, light rain, some dry spells.	Kieran Finch	21/01/2021 12:00	12:30	12:50	15:50	Large amounts of plastic. Ridge of pebbles, between sea and marsh behind, is seriously polluted with bits of ropes broken fish boxes, etc. Some domestic rubbish also.	Regular walkers and dogs.	
Keel Bay	Wind SW, force 7/8. Sunshine, with 3 or 4 hail showers.	Kieran Finch	17/02/2021 12:00	08:34	08:50	11:50		Few walkers.	Litter is a serious problem. Both in dunes (people litter), and on pank of stones behind beach where the problem is litter from

Site	Weather conditions	Surveyor	Date	Arrival Time	Survey Start Time	Survey End Time	Comments	Disturbance Events	Tourism Notes
									the sea (bits of nets, boots, fish boxes, etc).
Keel Bay	Wind SW, force 7/8. Cloudy, occasional sunshine, occasional showers.	Kieran Finch	17/02/2021 12:00	12:30	13:00	16:00		Some walkers with digs.	Litter problem.
Keel Bay	Wind SW, force5/6. Cloudy, occasional light showers.	Kieran Finch	22/03/2021 12:00	08:20	08:30	11:30		Occasional walkers and dogs.	Litter, in the form mainly of fishing net pieces, fish box parts and some domestic rubbish, is a problem on the stone bank behind the beach.
Keel Bay	Wind SW, force5/6. Cloudy, few very brief sunny spells, light drizzle for last half hour.	Kieran Finch	22/03/2021 12:00	13:15	13:30	16:30		Few walkers and dogs.	

Appendix III Phase 1 & 2 Environmental Constraints & Opportunities Assessments

PHASE 1 – SITE SELECTION MATRIX

ECOLOGICAL OPPORTUNITIES/CONSTRAINTS ASSESSMENT

OF THE

Platform for Growth – Grant Scheme – Providing Shared Community Facilities

Co Mayo Sites

by: **CAAS Ltd.**
1st Floor
24-26 Lower Ormond Quay
Dublin 7

DECEMBER 2022

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Introduction

This report is to inform the site selection process for the Platform for Growth – Grant Scheme – Providing Shared Community Facilities. Keel Bay Beach has been preliminarily identified by Fáilte Ireland in collaboration with Mayo County Council for inclusion in the scheme. Each of these sites are to be assessed from an ecological and planning context to identify any potential conflicts with progressing within the scheme.

Approach

A traffic light system categorises the locations according to the following criteria:

Green	Mild Amber	Deep Amber	Red
No obvious ecological constraints	Ecologically sensitive site with potential to be managed appropriately*.	Ecologically sensitive site which may provide supporting habitat for protected species.	Clear ecological constraints are evident

The constraints matrix focuses on ecological sensitivities but will also consider planning issues such as archaeology, scenery, traffic and/or water services. The existence of hard surfaced areas and infrastructure on site will promote a favourable outcome; this is derived from the Wild Atlantic Way (WAW) monitoring programme data which identifies that serviced and/or managed sites have less impacts associated with them.

Aerial imagery was used to assess the habitats on site for the existence of trails and desire lines, this may be particularly relevant for dune sites. Data is presented, where possible, to identify the distribution of species and habitats within the site from sources such as the NPWS and NBDC databases. Aerial photography has been used to determine the facilities and infrastructure of the sites. Where data exists for locations within the WAW environmental monitoring programme it was used to inform the process. EPA data was harnessed to identify the hydrological characteristics of the area.

A green status may be achieved for sites with no significant constraints identified. Where there is potential for protected ecological features to be impacted but there is no evidence of existing threats and pressures or the scheme introduces potential to alleviate some of the existing impacts, the location may be recorded as light Amber. Deep amber follows the same criteria but where there are known threats and/or pressures for tourism at the site; unless there are also planning or water quality related issues, this would result in red status. The matrix has been populated following a dynamic approach with all sources documented. The rationale for the final ranking is explained with all data sources and characteristics clearly shown in the matrix.

For all Deep Amber locations, a list of specific criteria and design considerations has been drafted at this stage to ensure that early project developments are cognisant of the identified issues for the site. These includes any boundary constraints, management considerations and or activities to be restricted/controlled. This desk-based assessment will inform the early ecological assessment of the sites brought to Phase 2 of this site selection process.

Where Annex I habitats are present on site and there are known threats and pressures associated with tourism and/or recreational pressures and damage is evident due to tourism the location is categorised as red. Where protected habitats are present on site but the known threats and pressures for the sites do not relate to visitor impacts or there is opportunity to alleviate existing impacts due to tourism the site are investigated further

Matrix Assessment

Table 2 Matrix of Provisional Sites screened for Phase 1 of the Platform for Growth-Shared Facilities Grant Funding Scheme-Co. Mayo

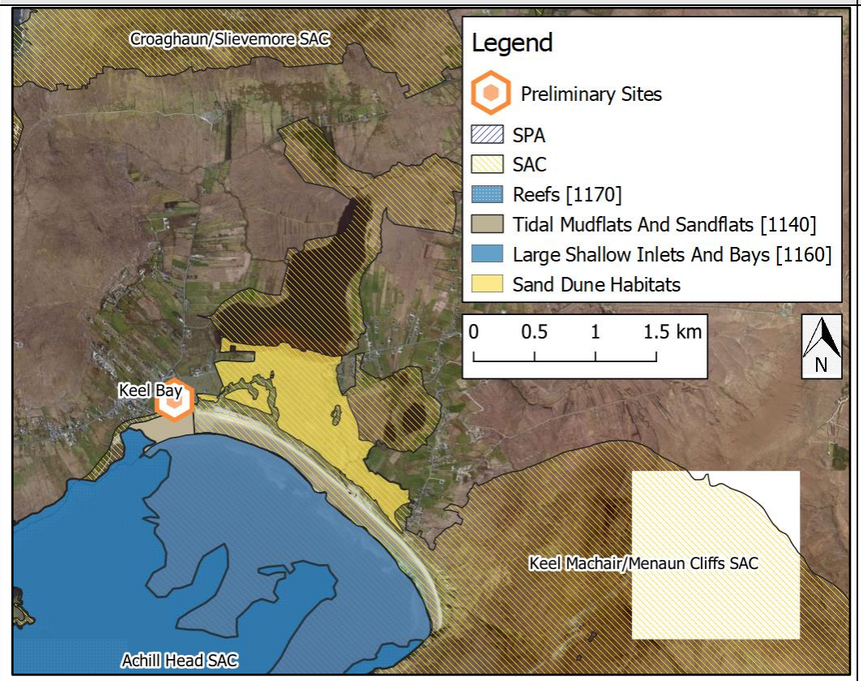
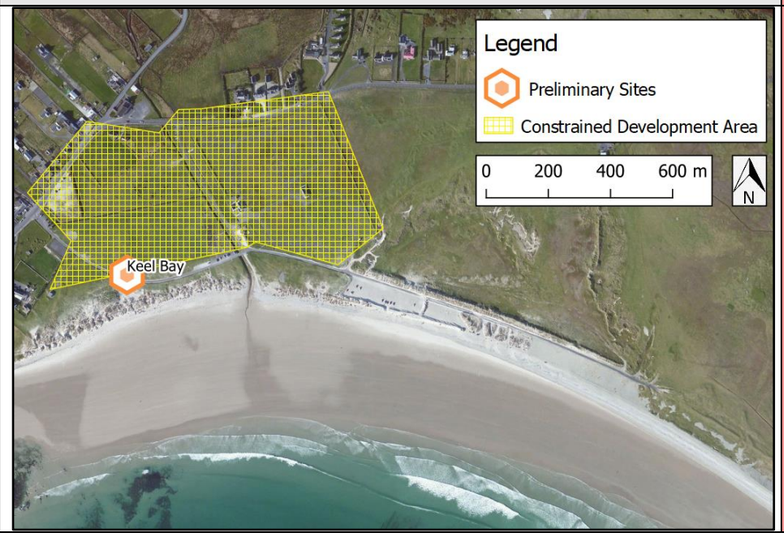
Rank	Location	European Site	Known threats and Pressures related to tourism	Protected Habitats Present	Potential for supporting habitat for Annex II species	Existing Infrastructure	Hydrological sensitivities	Planning Considerations	Other Ecological Sensitivities *(e.g. potential bat roosts)*	Ranking Rationale
DA	Keel **Mayo**	Keel Machair/Menaun Cliffs SAC (Within) Achill Head SAC (Within)	Camping and caravans, Outdoor sports and leisure activities, recreational activities, Human induced changes in hydraulic conditions, Paths, tracks, cycling tracks, Roads, motorways, Regular motorized driving, Invasive non-native species, Trampling, overuse, Disposal of household or recreational facility waste, Intensive maintenance of public parcs or cleaning of beaches, Golf course, Habitat shifting and alteration, Reduction or loss of specific habitat features, Walking, horseriding and non-motorised vehicles, Mowing or cutting of grassland Trampling, overuse, Hunting, fishing or collecting activities not referred to above, Leisure fishing, Other human intrusions and disturbances, Fishing and harvesting aquatic *resources*, Outdoor sports and leisure activities, recreational activities, Wildlife watching		None identified at this point.	Carparking facilities are present. However, there is evidence of vehicular movement and parking on soft habitats. Mobile activity centres are known to operate at the site, some of which park on the protected habitat features.	Y	A sensitive open site. No apparent significant conflicts. Buildings to avoid sites between road and sea Buildings to be as close as possible to existing other buildings, use existing surfaced carpark surfaces only	No habitat identified outside the designated features.	This site is known to be damaged by tourism. This fund represents the potential to manage existing threats and pressures at the site related to tourism reduce existing sources for effects through visitor management and the control of visitor movement patterns and associated activities. Clear signage could provide an education and awareness platform in relation to the importance of the habitats present and the need for responsible visitor interactions on site.

Table 3 Further information related to the constraints and further assessments required for all of the Deep Amber (DA) sites taken from the Phase 1 matrix above.

Rank	Location	Ranking Rationale	Constraints Map	Location Constraints	Other Ecological Sensitivities *(e.g. potential bat roosts)*	Further Survey and Data Requirements	Future Ranking Process
DA	Keel	This site is known to be damaged by tourism. This fund represents the potential to manage existing threats and pressures at the site related to tourism reduce existing sources for effects through visitor management and the control of visitor movement patterns and associated activities. Clear signage could provide an education and awareness platform in relation to the importance of the habitats present and the need for responsible visitor interactions on site.		All development works must be undertaken outside of the SAC and SPA boundaries. This area is indicated in the hashed yellow polygon. No works may be undertaken on the dunes which are protected. Strict hydrological control measures and considerations may be required for both construction and operational phase. Existing carparking which currently have minimal management and result in direct damage to the QIs of the SAC should be removed to reduce existing sources for effects. Signage is required to broaden the awareness of the importance of the dunes and to highlight the evident damage. Fencing is required to ensure visitor movements are controlled.	No habitat identified outside the designated features.	Winter wading surveys are required at this site.	A visitor management plan and signage platform must be created for this site. The visitor management plan must focus on the constraining visitor movements around the protected dunes and introduce activity control measures were required. The signage should focus on highlighting the importance and sensitivity of dune habitats. All hard infrastructure works must be undertaken within the yellow hashed area. If the hashed area is identified to be used by any SCI or QI species during the winter surveys, this site will not be feasible for any construction. Assuming the measures above are permissible and no SCI or QI species are found to use the site in significant numbers, there should be no barriers to progression within the scheme.

Conclusion

The results are as follows:

1.	Green	0
2. Amber	Mild	0
3. Amber	Deep	1
4.	Red	0

All of the green listed sites have existing hard infrastructure facilities present with no protected sites listed for the sites. There is potential at all sites for winter waders to use the sites as foraging locations which may contribute to the overall ecological integrity and population trends of nearby SPAs. Therefore, winter bird surveys may be required for all sites that are brought forward to stage 2 and subsequently stage 3.

The deep amber sites are complex and further details relating to design considerations and constraints are identified in Table 3. These sites require detailed considerations in relation to the requirement for strict control of the location of any developments as well as the need to prepare detailed Visitor Management Plans for the sites. These sites represent opportunities to alleviate existing damage or pressures related to tourism through the implementation of the funds, however the control measures and considerations may be constrained and detailed. For these sites to be progressed to stage 2, Fáilte Ireland and the respective council must be prepared to engage in detailed and iterative design discussions to ensure a successful outcome is achieved from tourism and ecological perspectives.

The above information has been prepared using the best available information as at the 11th of September 2020. This information may be updated and amended as subsequent habitat and field data is identified to refine the assessment process.

PHASE 2 – ECOLOGICAL ASSESSMENTS

ECOLOGICAL OPPORTUNITIES/CONSTRAINTS ASSESSMENT

OF THE

Platform for Growth – Grant Scheme – Providing Shared Community Facilities

Co. Mayo Sites

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Introduction

This report is to inform the site selection process for the Platform for Growth – Grant Scheme – Providing Shared Community Facilities. Keel Bay Beach has been preliminarily identified by Fáilte Ireland in collaboration with Mayo County Council for inclusion in the scheme. Each of these sites have been assessed from an ecological and planning context to identify any potential conflicts with progressing within the scheme (for further detail please refer to the phase 1 report).

The first phase of this process resulted in Keel Bay Beach being progressed to phase 2 following a multifaceted selection process which included detailed ecological and environmental consideration.

Approach

All sites brought to phase 2 of the site selection process were visited and detailed ecological assessments were undertaken. For each of the sites a Phase 3 Fossett Code Habitat map was generated and this was compared to the baseline data collected to date for each of the sites. Issues, considerations and requirements were then identified for each of the sites with respect to the proposed works characteristics identified above. Where protected habitats were identified on site constraints maps were generated to identify areas where development could be permissible. All areas outside of these development constraints maps are not permissible for development under the habitat's directive.

Keel Bay

Habitats
There are 9 natural and 2 artificial habitat classification identified on the site. Overall, the area is extremely species poor but most of the grassland area preceding the dunes align with the Machair habitat classification system (CD6 as indicated in Figure 6.1). This habitat is a qualifying interest species of the Keel Machaire/Menaun Cliffs SAC. Petalwort (*Petalophyllum ralfsii*) has also been recorded on site within the fixed dune habitat area. The shallow inlet and bay habitat is also a qualifying interest feature of the Achill Head SAC and is known to support migrating basking shark populations among other species.

The SAC is designated for the following:

- Perennial vegetation of stony banks [1220]
- Machairs (* in Ireland) [21A0]
- Alpine and Boreal heaths [4060]
- Petalophyllum ralfsii (Petalwort) [1395]

The conservation objectives for the Machaire and Petalwort habitat set out targets and attributes to ensure the area of habitat is stable or increasing with a focus of the physical form and function of the habitat as well as the inter and intraspecific dynamics are to be maintained. These habitats are sensitive to disturbance and trampling impacts from tourists and are a recognised existing threat for the site.

Site Issues
The habitat assessments identified that the area is extremely degraded with inappropriate grazing and mismanaged tourism identified to be the key issues for the site. The photos below show areas of protected habitat within the SAC that are currently used as parking facilities with no visitor controls to access the beach, therefore the dunes between this parking area and the beach are extremely unstable.

Development Considerations
Development outside of the SAC boundary can be considered; however, there are habitats identified outside of the SAC boundary that are identified to align with the classification of Annex I Machair (Figure 6.2). These habitats are qualifying interests of the SAC and are protected in their own right outside of SAC boundaries; however, given the condition of the site the removal of this habitat could be possible through a derogation licence process. Therefore, extensive consultation with the National Parks and Wildlife Services (NPWS) will be required if any land take is required from the habitat. It should be considered as a last resort and all efforts should be made to use existing hard surfaced areas where possible. A derogation licence will be required if any machaire habitat is to be removed.

Considerations should be given to introducing a sustainable grazing management regime to increase the diversity of the area which will in turn add to the perceived experience from visitors and increase the value of the tourism offerings at Keel Bay. Increased signage and awareness should also be considered as an opportunity to work towards Keel becoming a sustainable beach town with a diverse environment upon which the tourism industry of the bay relies on.

Development Requirements

The development requirements that are known at this point include but are not limited to:

- Constrained Development Working Areas (Figure 6.2);
- Hydrological Mitigation Measures;
- Visitor Management Plan:
- Must identify how visitor movements will be restricted/controlled within all areas of sensitive habitats (such as Machaire and Fixed Dunes).
- Construction Environmental Management Plan.

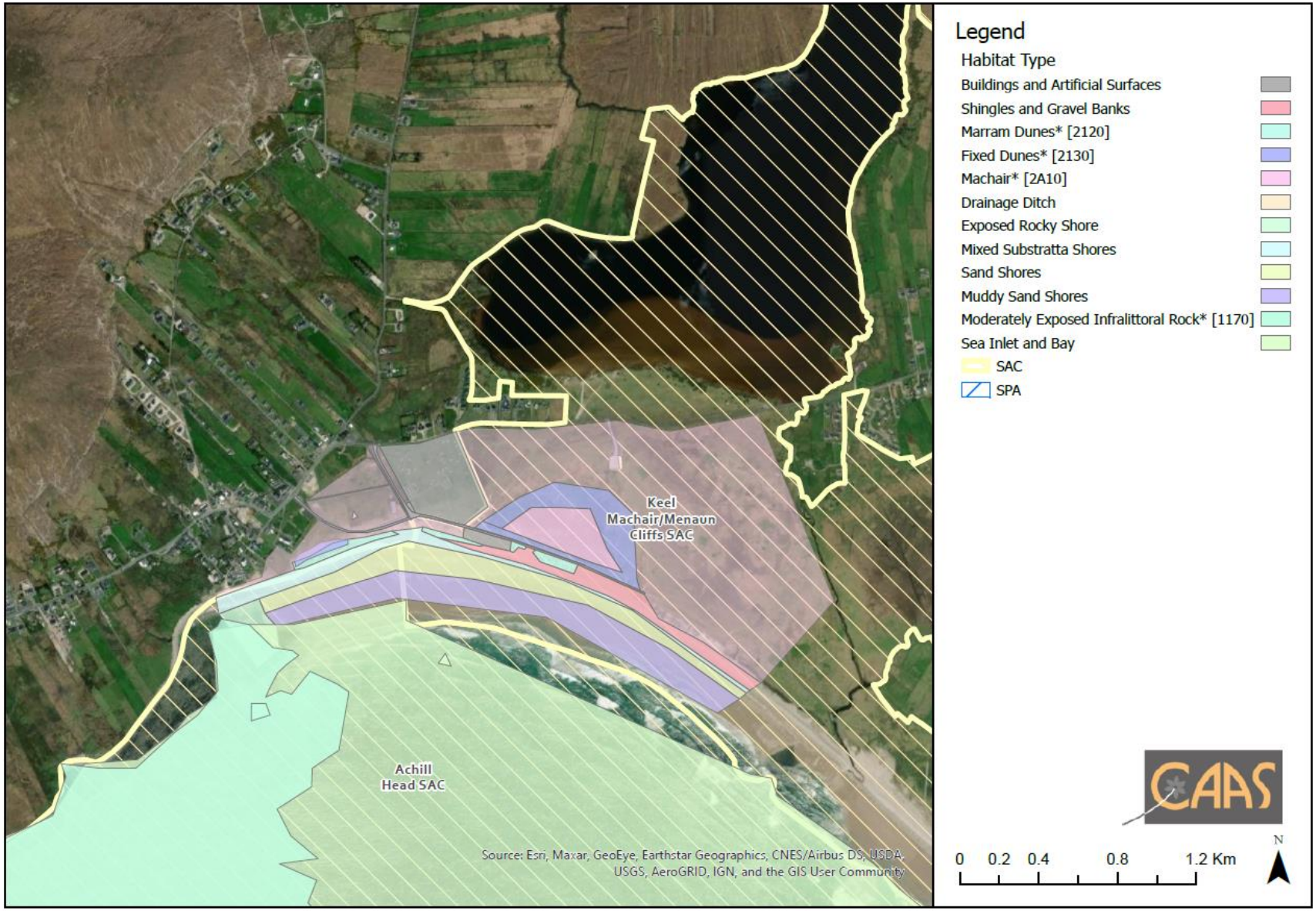

Figure 6.1 Habitats present at Keel Bay as at September 2020

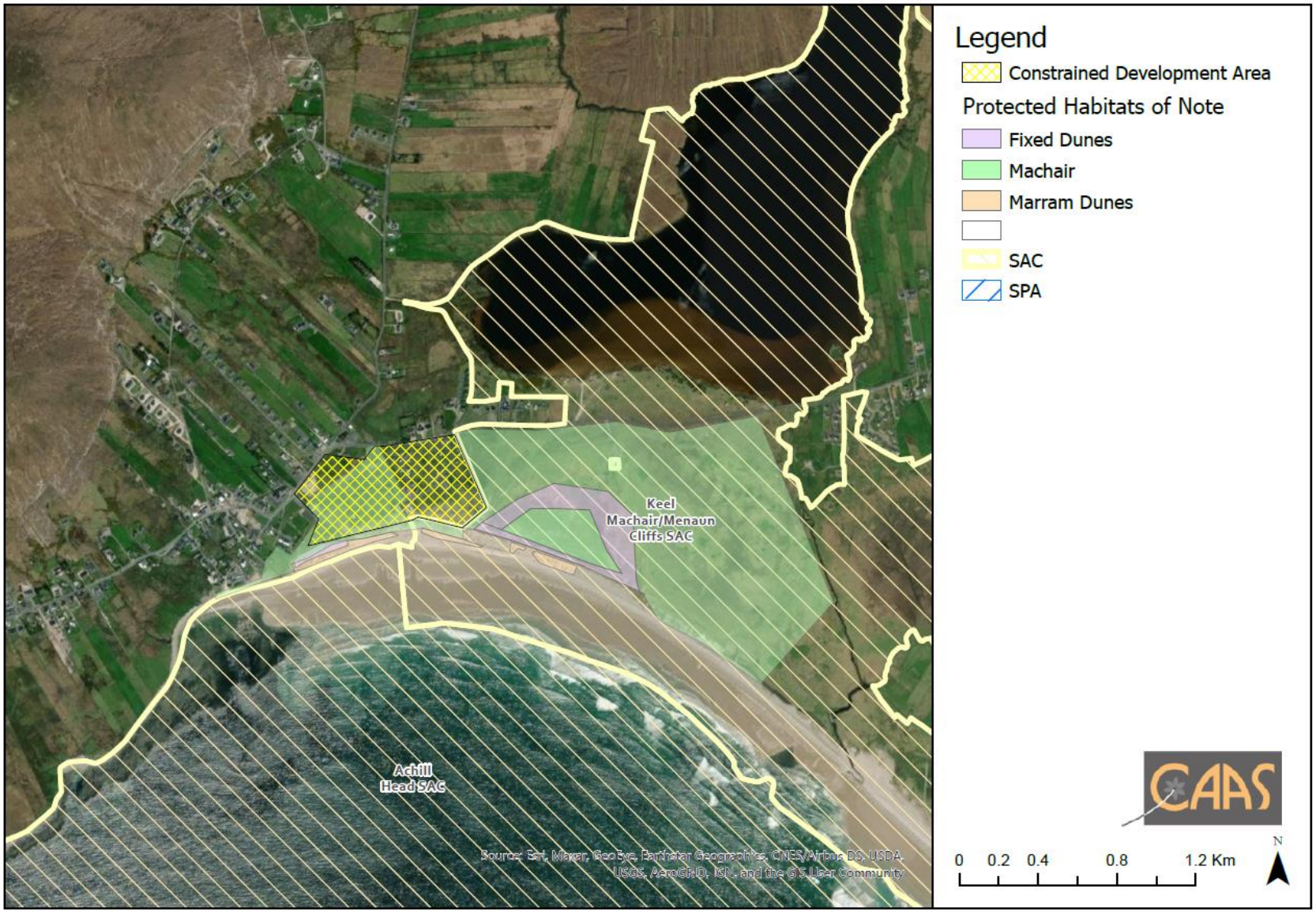

Figure 6.2 Constrained development area showing the SAC boundary where development is precluded; roughly 50% of this area is identified as degraded Machaire which is an Annex I priority habitat