



Comhairle Contae Fhine Gall

Fingal County Council



IRELAND'S EYE MANAGEMENT PLAN 2018-2022



Prepared by Natura Environmental Consultants info@naturaconsultants.com



Contents

PART 1: DESCRIPTION	5
1. Introduction	5
1.1. Introduction to Ireland's Eye	5
1.2. Purpose of the management plan	5
1.3. Vision for Ireland's Eye.....	5
1.4. Aims and objectives of the management plan	5
2. Legislation and Policy.....	6
2.1. European Union Habitats and Birds Directives.....	6
2.2. Wildlife Acts 1976-2010.....	6
2.3. Fingal County Development Plan.....	6
2.4. Howth Special Amenity Area Order	7
2.5. Dublin Bay Biosphere	8
3. Description.....	8
3.1. Introduction	8
3.2. General Information	8
3.2.1. Location and boundaries.....	8
3.2.2. Tenure	8
3.2.3. Site Infrastructure	8
3.2.4. Map Coverage	8
3.2.5. Photographic Coverage.....	8
3.2.6. Site designations	1
3.3. Environmental Information	9
3.3.1. Climate	9
3.3.2. Geology and soils	9
3.3.3. Habitats and vegetation.....	10
3.3.4. Mammals	14
3.3.5. Birds	1
3.3.6. Marine fauna.....	20
3.4. Cultural heritage	22
3.4.1. Introduction	22
3.4.2. Archaeology	23
3.4.3. Historic buildings and artifacts.....	24
3.4.4. Past Land Use	28
3.5. People and visitor use.....	30

3.5.1.	Stakeholders.....	30
3.5.2.	Access and Visitors.....	30
PART 2: PRESCRIPTION.....		37
4.	Introduction	37
4.1.	General.....	37
4.2.	Consultations and submissions.....	37
5.	Evaluation of key features	37
5.1.	Natural heritage.....	37
5.1.1.	Geology	37
5.1.2.	Terrestrial habitats and vegetation.....	37
5.1.3.	Marine habitats.....	38
5.1.4.	Marine mammals	38
5.1.5.	Seabirds.....	38
5.2.	Cultural heritage	38
5.3.	Overview	38
6.	Objectives.....	39
6.1.	Overall objectives.....	39
6.2.	Objectives for Natura 2000 sites.....	40
6.3.	Objectives for Howth SAAO	40
6.4.	Objectives for National Monuments.....	40
7.	Management framework.....	41
7.1.	Ownership.....	41
7.2.	Statutory protections.....	41
7.3.	Visitor numbers.....	41
7.4.	Management and protection of the island.....	42
8.	Action plan	42
8.1.	Introduction	42
8.2.	Proposed Actions	43
8.3.	Implementation strategy	47
8.3.1.	Access and visitor management	47
8.3.2.	Vegetation.....	49
8.3.3.	Breeding birds	50
8.3.4.	Cultural heritage	51
8.3.5.	Information and interpretation	51
9.	Plan review.....	52

10. Bibliography	53
11. Appendixes.....	56
Appendix 1: Maps	1
Appendix 2: Conservation Objectives for Natura 2000 sites	65
Appendix 3: Scientific names of animals and plants.....	70

Acknowledgements

This plan was prepared by a team including Richard Nairn, Tim Nairn, Marta Ricart (Natura Environmental Consultants), Rob Goodbody (Historic Buildings Consultants), Matt Hague and John Fox.

We would like to thank: Hans Visser (FCC Biodiversity Officer), Dr Gerry Clabby (FCC Heritage Officer), Jenni Roche (Dublin Bay Biosphere), Alexis Fitzgerald (Botanist), Dr Clare Crowley (Courtney Deery Heritage Consultancy), Dr Steve Newton and Tara Adcock (BirdWatch Ireland), Dr Oliver Ó Cadhla (NPWS), Niall Harmey (NPWS), Ciaran Foley (NPWS), John Farragher (Harbourmaster Howth), Ken Doyle (Ireland's Eye Ferries), Marc Doyle (Island Ferries), Sean Pierce (Shearwater Sea Kayaking), Dr Simon Berrow (Irish Whale and Dolphin Group), Dr Mary Tubridy (Mary Tubridy Associates) and Ralph Brady (Feel Good Scuba, Howth).

Citation

This document should be cited as: Nairn, R. (2017) *Ireland's Eye Management Plan 2018-2022*. Fingal County Council. Swords, Co Dublin.

PART 1: DESCRIPTION

1. INTRODUCTION

1.1. INTRODUCTION TO IRELAND'S EYE

Ireland's Eye is a small island lying just over one kilometre north of the harbour at Howth, Co Dublin. It measures 21.5 hectares in area and approximately 700m at its widest point. This is an important site for breeding seabirds. It also supports a number of protected habitats and rare plant species and several important cultural heritage features, such as the Martello tower and the ruined St Nessan's church. The island is uninhabited at present but there is some evidence that it was previously farmed. The island has no built harbour and is generally accessed by small boats from Howth Harbour in good weather only. It is a popular destination for day trippers and is visited by thousands of people each year between April and September. The island is privately owned and is designated as a SAC and SPA under the EU Birds and Habitats Directives. It is covered by the Howth Special Amenity Area Order. It also part of the Dublin Bay Biosphere which is recognised by UNESCO.

1.2. PURPOSE OF THE MANAGEMENT PLAN

The management plan was prepared by Natura Environmental Consultants on behalf of Fingal County Council (FCC). It was developed in consultation with the owner, Julian Gaisford St Laurence, the National Parks and Wildlife Service (NPWS), local interest groups, non-governmental organisations and other interested parties. The plan, which covers the period 2018 to 2022, is not statutory. It is intended to guide the future management of the island by FCC and others. The plan brings together all the existing knowledge on the site and a list of detailed actions that addresses the key concerns over a 5-year period. The plan will inform the day-to-day and long-term management of the island. It will be a working document that is open to periodic review, with additions or amendments being made as conditions change. The theoretical basis for nature conservation management plans is outlined by Alexander (2009).

1.3. VISION FOR IRELAND'S EYE

Fingal County Council will manage Ireland's Eye as a unique heritage asset in the County. It will endeavour to safeguard, conserve, maintain, enhance, promote awareness of, and facilitate appropriate access to, the cultural and natural heritage of the island. Ireland's Eye will be managed under the guiding principles of minimal intervention, acknowledging that the island is subject to ongoing natural processes which form part of the character of the place.

1.4. AIMS AND OBJECTIVES OF THE MANAGEMENT PLAN

This management plan aims to:

- Understand the significance of Ireland's Eye,
- Identify issues which threaten that significance,
- Agree appropriate policies to guide the management of the heritage of the island,
- Agree a series of actions to achieve the objectives of the plan and its agreed policies.

2. LEGISLATION AND POLICY

2.1. EUROPEAN UNION HABITATS AND BIRDS DIRECTIVES

Ireland's Eye is designated as both a Special Area of Conservation (SAC) and a Special Protection Area (SPA). The Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora) forms a basis for the designation of SACs. Similarly, SPAs are legislated for under the Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds). Collectively, SACs and SPAs are referred to as Natura 2000 sites. In general terms, they are considered to be of exceptional importance in terms of rare, endangered or vulnerable habitats and species within the European Union.

The Birds and Habitats Directives are transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011. The statutory agency responsible for Natura 2000 sites is the National Parks and Wildlife Service of the Department of Culture, Heritage and the Gaeltacht.

2.2. WILDLIFE ACTS 1976-2010

Ireland's Eye is also designated as a proposed Natural Heritage Area (pNHA). Prior to statutory designation, pNHAs are subject to limited protection, in the form of recognition of the ecological value of pNHAs by Planning and Licencing Authorities. Under the Wildlife Amendment Act (2000), NHAs are legally protected from damage from the date they are formally proposed for designation.

2.3. FINGAL COUNTY DEVELOPMENT PLAN

The Draft Fingal Development Plan 2017-2023 sets out the Council's proposed policies and objectives for the development of the County over the Plan period. The Plan seeks to develop and improve, in a sustainable manner, the social, economic, environmental and cultural assets of the County. Chapters 9 and 10 of the Development Plan set out the objectives for the Natural Heritage and the Cultural Heritage, respectively, of the County. Those that are the most relevant to the management of Ireland's Eye are listed in the boxes below. These are summaries of the Objectives which are generally longer and more detailed.

Fingal County Development Plan 2017-2023	
Ref:	Objectives – Natural Heritage – Chapter 9
NH09	Ensure Council takes account of objectives and management practices proposed in any management or related plans for Natura 2000 sites
NH13	Strictly protect areas designated as Natura 2000 sites
NH28	Protect and enhance the geological and geomorphological heritage of the County Geological Sites
NH47	Protect and enhance landscape character and value of the islands
NH60	Encourage leisure and amenity type uses along the coast so long as such uses do not cause significant adverse impacts



Fingal County Development Plan 2017-2023	
Ref:	Objectives – Cultural Heritage – Chapter 10
CH02	Protect all archaeological sites and monuments and seek their preservation <i>in situ</i>
CH03	Encourage and promote appropriate management and maintenance of County's archaeological heritage
CH14	Raise public awareness of cultural heritage and improve legibility by providing appropriate signage or interpretation
CH17	Manage archaeological sites and monuments according to best practice and to Conservation Plans <u>where they exist</u> .
CH25	Demonstrate best practice in relation to management, care and maintenance of Protected Structures by continuing programme of commissioning Conservation Plans



2.4. HOWTH SPECIAL AMENITY AREA ORDER

In 1999, Fingal County Council recognised the exceptional character of the area of Howth by making the Howth Special Amenity Area Order (SAAO). The Order protects many of the special qualities of the area and aims to preserve and enhance the character and special features of Howth. The Howth SAAO was confirmed by the Minister for Environment on the 16th May 2000. The Howth Special Amenity Area has a total area of 547 hectares and includes Ireland's Eye (Figure 1). The SAAO operational plan includes an action to prepare a management plan for Ireland's Eye.

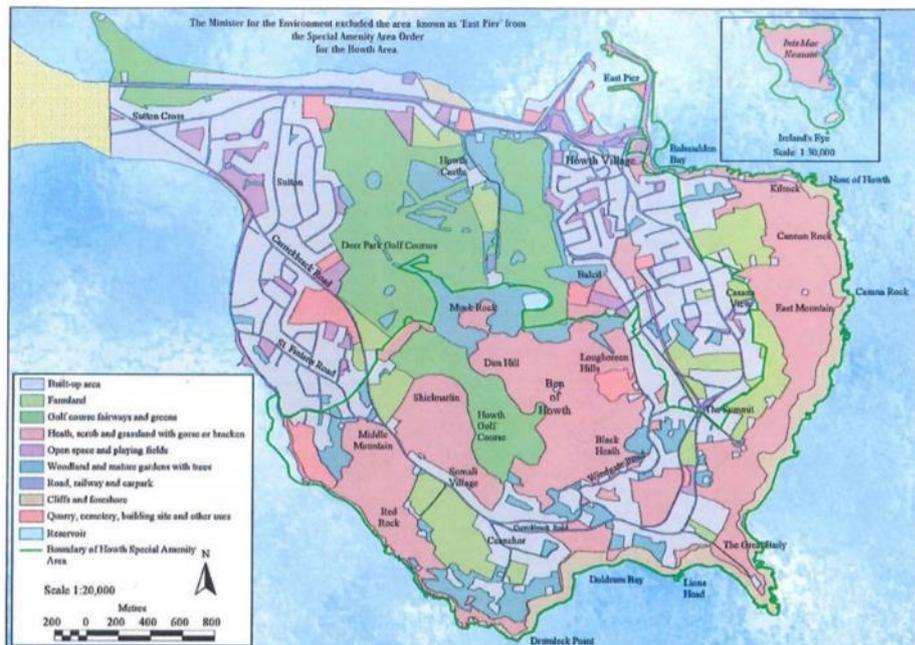


Figure 1: Map showing habitats within Howth SAAO

2.5. DUBLIN BAY BIOSPHERE

Ireland's Eye is covered by the Dublin Bay Biosphere which was designated in 2015 by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). The Dublin Bay Biosphere Biodiversity Conservation and Research Strategy 2016-2020 includes an objective of preparing and implementing a management plan for Ireland's Eye SAC/SPA and a number of supporting surveys.

3. DESCRIPTION

3.1. INTRODUCTION

Ireland's Eye is of importance due to its natural and cultural heritage. It has a range of special interests that are unusual in an east coast context. It is in relatively natural condition and its location within a short distance of the coast and of Dublin City make it highly accessible. The following description brings together all the available information (published and unpublished) on the island. Of particular value were three reports commissioned by FCC on habitats and vegetation (Fitzgerald 2016), breeding birds (Newton *et al.* 2016) and cultural heritage (Crowley 2016). It is also a valued place for visitors and local people in the Fingal area.

3.2. GENERAL INFORMATION

3.2.1. Location and boundaries

Ireland's Eye is located at latitude 53°24.5'N longitude 06°04'W. The central grid reference in the National Grid is O287412. This plan covers the entire island and intertidal area above the low water mark. Ireland's Eye SPA also includes an area of subtidal waters which are effectively owned by the State.

3.2.2. Tenure

Ireland's Eye is privately owned by the Gaisford St. Laurence family. The family home for many centuries has been Howth Castle and Demesne. The lands in Howth, which included Ireland's Eye, were granted to Sir Almeric, first Lord of Howth in 1177, after the Battle of Howth. Sir Almeric took the family name of St. Laurence and the Howth Estate, including Ireland's Eye, has remained in the ownership of the (extended) St. Laurence family for over 800 years (Crowley 2016).

3.2.3. Site Infrastructure

The island has no built harbour or pier. There are two natural landing places, both on the north-western point of the island, either side of the Martello Tower. All pathways on the island are informal and have no surfacing. A new circular trail was developed in the summer of 2017 to guide visitors away from the sensitive bird nesting areas.

3.2.4. Map Coverage

Ireland's Eye is covered by Ordnance Survey of Ireland map scales from 1:2,500 to 1:50,000. The OS Discovery Series sheet 50 is the most easily accessible map. The maps contained in Appendix 1 are based on satellite imagery of the island.

3.2.5. Photographic Coverage

A collection of historical photographs and other illustrations of Ireland's Eye is included in the Cultural Heritage report (Crowley 2016). A further selection of photographs is contained in this Management Plan.

3.2.6. Site designations

Ireland's Eye is designated as a proposed Natural Heritage Area (pNHA site code 203), Special Area of Conservation (SAC site code 2193) and a Special Conservation Area for birds (SPA site code 4117) (see sections 2.1 and 2.2). The SPA includes both the terrestrial part of the island and a marine area around it. It is also included in the much larger marine site Rockabill to Dalkey Island SAC (site code 3000) (Figure 2 and Map 1, Appendix 1). This means that it is of European Importance for nature conservation. It also displays some of the best exposures of Cambrian rocks on the east coast of Ireland and is listed as a County Geological Site in the Fingal County Development Plan 2017-2023 (see section 2.3). The ruins of St Nesson's Church and the Martello Tower are protected structures under the National Monuments Act (see section 3.4). Ireland's Eye is covered by the Dublin Bay Biosphere which is designated by the United Nations Educational, Scientific and Cultural Organisation (UNESCO). It is also part of the Howth Special Amenity Area Order (SAAO) which was confirmed in 2000 under the Local Government Planning and Development Act, 1976.

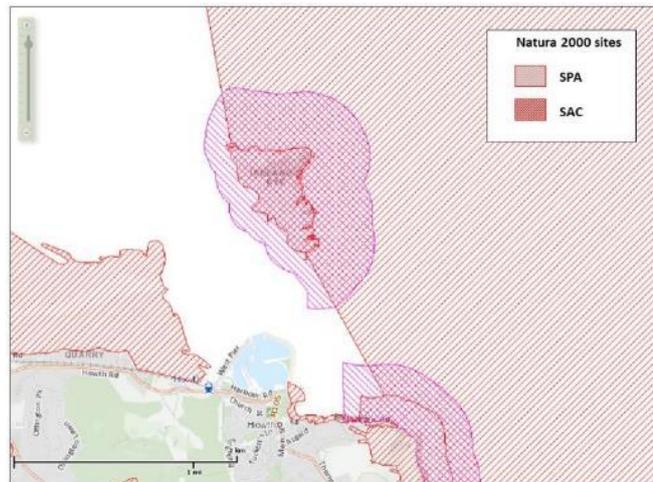


Figure 2: Natura 2000 sites covering Ireland's Eye.

3.3. ENVIRONMENTAL INFORMATION

3.3.1. Climate

The climate of Ireland's Eye is similar to that of the mainland of Co Dublin. The nearest synoptic meteorological station is at Dublin Airport approximately 11 kilometres west of the island. The



Figure 3: Folding of Cambrian rocks at the north-east coast of Ireland's Eye

nearest climatological station is at the National Botanic Gardens in Glasnevin, approximately 14 kilometres south-west of the island. Mean air temperature is around 12°C. The Dublin area is the driest part of Ireland with an average of less than 600mm of rain per year. The dominant wind direction is from the south-west. In January the southerly and south-easterly winds are more prominent than in July, which has a high frequency of westerly winds. Easterly winds occur most often between February and May and are commonly accompanied by dry weather.

3.3.2. Geology and soils

Geology

Ireland's Eye displays some of the best exposed cliff sections and exposures of Cambrian rocks in Fingal (Clarke *et al.* 2007; Parkes 2012). They complement and are closely related to those on Howth Head. These rocks consist of greywacke, sandstone and quartzite, and were deposited in a marine

environment during the initial opening stages of the Iapetus Ocean (over 510 million years ago) (van Lunsen & Max 1975). There are a number of large sea stacks on the north-east side of the island. These impressive coastal features were carved out of the surrounding cliffs by the constant erosive power of the sea. These stacks of sandstone and quartzite help give Ireland's Eye its distinctive appearance from the mainland. There is also some impressive folding in the rocks along the northern coast of the islands. The ledges here provide nesting places for many of the island's breeding seabirds (Figure 3).

Soils

The island has a naturally siliceous soil cover because of the predominantly acid rocks and this is reflected in much of the vegetation to be seen here. The north of the island is at a higher elevation to the south and has a large area of siliceous rocky ground (on which there are varying levels of soil development) and high coastal cliffs along the northern (and eastern) edge of the island. Consequently, there is a contrast in vegetation between the higher, rockier northern side of the island and the lower southern side.

3.3.3. Habitats and vegetation

A survey of habitats and vegetation of Ireland's Eye was undertaken in 2016 (FitzGerald 2016) and this report forms the basis of the following description. Eleven terrestrial habitats were found on the island (Map 2). These have been allocated to the nearest habitat category in the classification of Fossitt (2000) with the nearest equivalent habitat from Annex I of the EU Habitats Directive (Table 1). Four further habitats are marine in nature. Each of these habitats is further described below.

Table 1: Habitat types found on Ireland's Eye (Qualifying interests of SACs are shown in bold).

Code	Habitat types (Fossitt 2000)	Code	Equivalent EU Annex I habitats
Terrestrial habitats			
GS3	Dry humic acid grassland		
GS4	Wet grassland		
GM1	Marsh		
HD1	Dense bracken		
ER1	Exposed siliceous rock		
BL1	Stone walls and stonework		
CS1	Rocky sea cliffs	1230	Vegetated sea cliffs of the Atlantic
CM1	Lower saltmarsh	1330	Atlantic salt meadows
CM2	Upper saltmarsh	1330	Atlantic salt meadows
CB1	Shingle and gravel banks	1220	Perennial vegetation of stony banks
CD2	Marram dunes	2120	Shifting dunes along the shoreline
Marine Habitats			
LR1	Exposed rocky shores	1170	Reefs (intertidal)
LS1	Shingle and gravel shores	1210	Annual vegetation of drift lines
LS2	Sand shores	1140	Sandflats not covered at low tide
SR1	Exposed infralittoral rock	1170	Reefs (subtidal)

Most of the central part of the island is covered by **Dense Bracken (HD1)**¹ (Figure 4). This is by far the dominant vegetation type on the island, with common nettle, common hogweed, barren brome and false oat-grass commonly growing amongst the bracken. Some woodland species avail of the shade under the bracken scrub, including ground-ivy, lesser celandine, bluebell, false brome and lords-and-ladies. This vegetation also occurs intermittently across the northern side of the island (and indeed dominates the centre of the island). Occasionally at the edge of these patches of

¹ All the habitat codes are those given in Fossitt (2000).

bracken, rosebay willow herb occurs. This is a pioneer species of open, recently disturbed ground, especially following a fire event.



Figure 4: Dense bracken habitat covers the central part of the island

The fire that occurred in the island in June 2015 evidently aided this vegetation type by killing off less well-adapted competitors like gorse and this species is surprisingly rare on the island. Bracken meanwhile easily survived the fire with its underground system of rhizomes and has been able to spread onto the burnt ground during following years. Small patches of other scrubland species also occur intermittently, especially just south of the siliceous rock at the north end of the island. For example, a patch of elder and sycamore trees is present. Because of the dominance of bracken scrub

over large parts of the island, much of the habitat and vegetational diversity is therefore forced to exist on the edges of the island, where different ecological factors are incidentally at play.

Beginning from the usual boat entry point to the island at the north-western corner near the Martello Tower, short coastal **Dry Grassland (GS3)** occurs. Burrowing activity and nesting birds keep this area of vegetation somewhat disturbed, with sand heaps, rabbit burrows and seabird nests intermittently present. These scrapes are also present abundantly along the northern edge of the island. Species such as soft-brome, biting stonecrop, sea campion, sand sedge, rock sea-spurrey, buck's-horn plantain, thrift, large stands of slender thistle and others occur commonly in this vegetation. The rare sea stork's-bill also occurs here.

At the northern and eastern edges of the island, the dominant habitat is **Rocky Sea Cliff (CS1)** (Figure 5). A number of the species are found to occur in both the cliffs and siliceous rock vegetation type, for example, biting stonecrop and English stonecrop. White stonecrop evidently does not cope well on the rocky sea cliffs. The vegetation of the steep rocky cliffs and slopes, particularly near the sea stacks and gannet colony at the north-eastern corner of the island, has been affected by bird activity. Bird nesting sites necessarily decrease the area where plants can grow on the steep cliff sand slopes and increase disturbance.



Figure 5: Cliffs on the north side of Ireland's Eye.

The northern end of the island is at a higher altitude and is dominated by a large outcrop of **Exposed Siliceous Rock (ER1)** with varying levels of soil development over it. In parts, the soil is deep enough (usually in the deeper crevices) for bracken scrub to take hold. On the higher ground, siliceous rocky outcrops are found, on which a typical lowland siliceous (acidic) rock vegetation has developed. On the siliceous rocky outcrops thrive, the native english stonecrop, the native biting stonecrop and red fescue dominate the vegetation with other species like sheep's-fescue, early hair-grass, polypody and sea beet occurring occasionally on the rocks. Wood sage grows in some areas on these rocky outcrops, along with navelwort and, rarely, honeysuckle.

Both the dry grassland and siliceous rock habitats are also found at the western, eastern and south-eastern edges of the island, where the soil becomes too thin for the bracken to colonise.

Carrigeen Bay contains a **Sand Shore (LS2)** and **Marram Dunes (CD2)** at the western/southwestern edge of the island, an area of species-rich sandy coastal grassland (Figure 6). The rare spring squil occurs here along with red fescue, sand sedge and thrift. On the dunes of Carrigeen Bay, a typical sand dune species assemblage can be found. Bracken is encroaching on the sand dunes in some parts. Prickly saltwort was found on the lower dunes. At the north end of the dunes, the rare henbane was also found.



Figure 6. Bracken encroaching on the dunes at Carrigeen Bay.

Two very small patches of saltmarsh vegetation occur at the western edge of the island, north of Carrigeen Bay. The vegetation displays elements of both **Lower Salt Marsh (CM1)** and **Upper Salt Marsh (CM2)** vegetation. Common saltmarsh-grass and sea arrowgrass are indicative of the former while blackgrass and common scurvygrass are indicative of the latter. Species, such as seaside brookweed, which are more indicative of freshwater seepage also occur.

Shingle Shore (LS1) occurs in two patches at the southern edge of the island where the prevailing wind has moved much of the lighter material away, leaving the heavier stones to make up the shingle. A typical **Shingle and Gravel Bank (CB1)** vegetation type occurs here. The species include common beet and sea mayweed. A distinctive shingle species, henbane, has also been recorded here. The vegetation grades into a narrow strip of sand dune vegetation across the southern edge of the island, indicated by the emergence of European beachgrass in the vegetation.

Vegetation typical of **Stone Walls and other Stonework (BL1)** occurs on the ruined church in the west of the island and on the Martello Tower at the north-western corner of the island. Species like sea-fern grass, biting stonecrop and wall barley occur here.

A very small patch of **Wet Grassland (GS4)** occurs at the north-western section of the island. This patch is the remnant of what was once a wet hollow with most likely typical **Marsh (GM1)** vegetation but over time this has filled in with sediment and now displays a species complement more typical of wet grassland including creeping buttercup, common rush and silverweed cinquefoil. Species like common water-starwort and common spike-rush also occur and indicate a formerly more wet substrate.

Legally protected, rare and locally rare plant species

Table 2: Rare and locally rare plant species on Ireland's Eye 2016

Common Name	Scientific Name	Habitat	Frequency in island	Status
Henbane	<i>Hyoscyamus niger</i>	Top of sandy ground near the bracken scrub.	Recorded on the island repeatedly.	Extremely rare in Co. Dublin. Very sensitive to trampling.
Spring Squill	<i>Scilla verna</i>	Thin sandy soil over a rocky outcrop.	Few locations.	Rare in Co. Dublin.
Sea Stork's Bill	<i>Erodium maritimum</i>	Short grassland and bare burnt ground.	Few locations.	Very rare in Co. Dublin.
Campion hybrid	<i>Silene x hampeana</i>	Top of sandy ground near the bracken scrub.	Few locations.	Very rare in Co. Dublin.
Early Forget-me-not	<i>Myosotis ramosissima</i>	Thin bare burnt ash-rich soil over rocky ground.	One location.	Very rare in Co. Dublin.
Prickly Saltwort	<i>Salsola kali</i>	Lower sandy dunes in Carrigreen Bay.	One location.	Rare in Fingal County area.
Wild Onion	<i>Allium vineale</i>	Shingle shore at SE of island.	One location.	Occasional-rare in Fingal County area.
Heath Groundsel	<i>Senecio sylvaticus</i>	Thinner bracken scrub.	Two locations.	Rare in Co. Dublin, but common on Howth Head.

Eight rare/locally rare species were found on Ireland's Eye during the 2016 survey. The species with habitats, frequency and status are listed in Table 2. Their locations are shown in Map 3 (Appendix 1). There are also recent records of Sea Kale *Crambe maritima* on Ireland's Eye from 1974 and 1981 (Doogue *et al.* 1998). While this species was not recorded in the 2016 survey it may reappear in future from dormant seed. The species is considered 'near threatened' in the current Red List of Vascular Plants (Wyse Jackson *et al.* 2016). It is extremely rare on shingle beaches in Co Dublin (Doogue *et al.* 1998).

Invasive Alien Plant Species

Seven invasive/potentially invasive species were found on Ireland's Eye during the 2016 survey (Table 3 and Map 4). For most of these species, it is not fully clear how they reached the island. Some of them are likely to have arrived on the island by being carried in/on animals, especially birds and perhaps even humans. For example, stinking iris and Japanese rose were most likely transported to the island by bird-sown seed. Some species, such as Bilbao's fleabane and narrow-leaved ragwort, may have migrated to the island via wind-transported seeds (or perhaps attached to birds or even humans).

Table 3. Invasive plant species on Ireland's Eye.

Common Name	Latin Name	Habitat	Frequency in island	Damage
White Stonecrop	<i>Sedum album</i>	Bare rocky ground and thin soil over rocky ground.	Very abundant throughout rocky ground.	Out-competes native <i>Sedum</i> species, English Stonecrop and Biting Stonecrop.
Stinking Iris	<i>Iris foetidissima</i>	West and southwest of island, near dunes.	Few locations.	Potentially invasive.
Spanish Bluebell	<i>Hyacinthoides hispanica</i>	Grows sheltered by bracken scrub.	Few locations.	Competes with native Bluebell species and may be hybridising.
Bilbao's Fleabane	<i>Conyza floribunda</i>	Grows sheltered by bracken scrub.	Two locations.	Potentially invasive.
Montbretia	<i>Crocasmia x crocosmiiflora</i>	Bracken scrub near sandy dunes of Carrigeen Bay.	Two locations.	Potentially invasive.
Narrow-leaved Ragwort	<i>Senecio inaequidens</i>	Thin soil over rocky ground.	One location.	Potentially invasive.
Japanese Rose	<i>Rosa rugosa</i>	Bracken scrub near sandy dunes of Carrigeen Bay.	One location.	Potentially invasive on dune systems.

The arrival mechanism for different invasive species is important for the success or otherwise of future removal efforts. Species that have the ability to be wind-transported to the island are likely to replenish their populations over time, despite removal efforts. Species which are transported by birds are also likely to replenish populations over time as there are very significant breeding and visiting bird populations on the island. Sycamore has been found on the island but is not regarded as invasive or potentially invasive, given its long-naturalised and widespread status in Ireland and its small and fairly self-contained presence on the island.



Figure 7. Invasive White stonecrop with native Biting stonecrop

3.3.4. Mammals

Seals

Both Grey and Harbour Seals have been recorded on Ireland's Eye although the former species is much less frequently seen around the island than the latter (Figure 8). The seals haul out on a number of intertidal rocks and stony shorelines at the north-west and west of the island. They are also found ashore seasonally on the rocky flanks of Thulla, a small grass-topped islet situated to the

south-east of Ireland's Eye, or occupying low-lying rocky ledges and nearby narrow channels that lie between it and the larger island of Ireland's Eye. They also use deep sea caves on the north and north-east sides of the island to rest ashore away from interference. Like Harbour Seals, Grey Seals are monitored regularly on all coasts of Ireland by the National Parks and Wildlife Service (NPWS) using a combination of repeated aerial surveys and ground-counting visits to key colonies (Ó Cadhla *et al.*, 2008; Ó Cadhla *et al.* 2013).

Lambay Island and Ireland's Eye are generally considered as two subsites used by the same north Dublin population of Grey Seals, individuals of which may also travel further afield within the Irish Sea and beyond. NPWS surveys for Grey Seals record the minimum number of pups located ashore during the breeding season which takes place in Ireland between late August and early December. From repeated sample-based counting of newborn pups, an all-age population estimate can be calculated. For the two islands combined, the minimum pup production was estimated at 58 pups (2005) and 77 pups (2009). From this an all-age population of 270-347 was estimated in 2009. Ireland's Eye currently represents a modest proportion of these figures with only small numbers of pups recorded ashore around the island and within its caves. However peak counts of up to 60 Grey Seals around the island and its outlying rocks would not be unusual during resting periods within the annual cycle. NPWS surveys of both protected seal species in autumn-winter 2017 suggest at least 10 Grey Seal pups were born on the island.



Figure 8: Grey seal hauled out near the east landing

Cetaceans

A number of cetacean species has been recorded on the north Dublin coastline. Harbour porpoise is the most widespread species with some of the highest densities anywhere in Ireland recorded off north County Dublin. In a study of five coastal areas in Ireland the highest density was estimated was off North County Dublin where an average of 2.03 porpoises per km² were recorded (Berrow *et al.* 2008). This study gave an abundance estimate of 211 individual porpoises (95% CI = 137-327) in a study area to the north of Ireland's Eye. The surveys were repeated in 2013 and 2016 and similar high densities of Harbour Porpoise were found (Berrow & O'Brien 2013; O'Brien & Berrow 2016). The marine area around Ireland's Eye has been included in a Special Area of Conservation (Rockabill to Dalkey Island SAC) for which one of the qualifying interests is the Harbour Porpoise. Other cetacean species are regularly recorded on the Fingal coastline including in the vicinity of Howth Head and Ireland's Eye. Bottlenose dolphins occur occasionally in this area. They are highly mobile and transient but are part of the coastal population which uses all Irish inshore waters. Minke whales are occasionally sighted during the spring and summer and for two years running in 2010 and 2011 a humpback whale was reported off Howth (data from the Irish Whale and Dolphin Group). Common dolphins have been seen on several occasions mainly off Rockabill and Howth (S. Pierce, Shearwater Sea Kayaking).

Other mammals

There has been no dedicated survey of mammals on the island. Casual observations indicate that Rabbit and Brown Rat are present. Rabbit burrows are used for nesting by a small population of Puffins on the northern slopes of the island.

3.3.5. Birds

Ireland's Eye is a Special Protection Area designated for its important assemblage of breeding seabirds. Eleven species are confirmed as breeding on the island during a number of surveys. Two species, Fulmar and Kittiwake, have declined over the last 17 years. Three species, Shag, Guillemot and Razorbill, have increased dramatically. Three species, Cormorant, Lesser Black-backed Gull and Puffin, have remained stable. The two common large gulls, Herring Gull and Great Black-backed Gull, have shown moderate increases (Figure 9). Gannets have also increased significantly since the colony was established on the island in the 1980s (Newton *et al.* 2016).



Figure 9: Great Blacked Gull with two small chicks



Figure 11: Oystercatcher

The terrestrial avifauna is remarkably constant. The island supports a locally important population of breeding Oystercatchers (10 pairs) and Shelduck.

Large areas of the island were affected by a wildfire in summer 2015 but this appears to have had little impact on the breeding numbers of Great Black-backed and Herring Gulls that nest in the impacted area although the breeding productivity of these species must have been reduced. These two species are also disturbed on their nests by visitor traffic commuting to the west beach or the viewpoints along the north cliffs and some instances of direct nest interference have been observed.

Abundance and distribution of seabirds

Full details are given below on the long-term patterns of change in seabird numbers on Ireland's Eye. In the shorter term, breeding seabird numbers appear to be relatively stable (Table 4). Twenty-two fewer Great Black-backed Gull nests were discovered in 2016. This may have been a result of the 2015 fire. However, Herring Gulls do not appear to have been affected with 80 more nests recorded in 2016 compared to 2015. A higher proportion of this species nests in areas not reached by the fire.

Black Guillemots and Manx Shearwater were not recorded breeding on Ireland's Eye. Map 5 in Appendix 1 shows the distribution of the main seabird colonies.

Table 4: Summary of the 2016 breeding seabird survey of Ireland's Eye and comparison with previous surveys in 2004 and 1999 (Mitchell *et al.* 2004)(Note Gannet is treated separately)

Species	Count Unit ¹	BoCCI listing ²	1999	2004	2016
Fulmar	AOS	Green	70	37	34
Kittiwake	AON	Amber	941	455	401
Guillemot	IND	Amber	2191	4410	4274
Razorbill	IND	Amber	522	1600	1335
Lesser Black-backed Gull	AOT	Amber	1	2	3
Great Black-backed Gull	AOT	Amber	100	154	132
Herring Gull	AOT	Red	250	318	398
Cormorant	AON	Amber	306	424	398
Shag	AON	Amber	32	81	72
Puffin	IND	Amber	4	14	24

¹Count Units: AOS = Apparently Occupied Sites; AON = Apparently Occupied Nests; AOT = Apparently Occupied Territories; IND = Individuals.

²Birds of Conservation Concern in Ireland (BOCCI) is the recognized system for categorizing the risk to bird species in the Republic of Ireland. Red list = High Conservation Concern. Amber list = Medium Conservation Concern (Colhoun and Cummins 2013).



Figure 10: Main gannet colony on the north-eastern stack

A recent census of Gannets was not undertaken in 2016 as a thorough census was conducted by aerial survey in 2013. This gave the population as 547 Apparently Occupied Sites (AOS) (Newton *et al.* 2015). Nesting Gannets had colonised an area on the main north cliffs away from the 'traditional stack' during that survey. During the 2016 survey, there were 15 Apparently Occupied Sites with at least three pairs supporting young on the north cliffs. They were attended by 37 adult birds and 2 sub-adults.

The breeding success of Kittiwakes was assessed in 2016 by counting the number of well-grown young in nests in 4 sub-colonies. In total 35 young were present in 103 nests giving a productivity of 0.34 potentially fledged young per nesting pair. This is on the low side of average for this species; only two nests contained two young with the remainder having a single offspring. The mean brood size of thirty Great Black-backed Gull nesting pairs was 1.93. A total of 177 well-grown young Cormorants were counted on the North cliffs, indicating a reasonably good breeding season for this species.

A total of five survey sections were used during the 2016 breeding bird field surveys. All seabirds were recorded in Sections 1, 2 and 3 and none were recorded nesting in Sections 4 and 5. The sections to the north and east of the island supports largest numbers of almost all species (Table 4). These are the main cliff-nesting areas of the island.

The total populations of each seabird species breeding on Ireland's Eye are compared with the national populations of the same species in Table 5. The total populations have not been fully censused since 2000 (Mitchell *et al.* 2004) so the percentages given are approximate. Where a site holds at least 1% of the national breeding population this is considered to be of national importance.

Table 4. Totals of each seabird species recorded in each of the survey sections in 2016.

Species	Count Unit ¹	Ireland's Eye 1	Ireland's Eye 2	Ireland's Eye 3
Fulmar	AOS	25	9	0
Cormorant	AON	85	262	51
Shag	IND	51	21	00
Lesser Black-backed Gull	IND		3	0
Herring Gull	AOT	136	203	59
Great Black-backed Gull	AOT	96	17	19
Kittiwake	AOT	54	347	0
Guillemot	AON	3456	818	0
Razorbill	AON	704	631	0
Puffin	AON	24	0	0

¹Count Units: AOS = Apparently Occupied Sites; AON = Apparently Occupied Nests; AOT = Apparently Occupied Territories; IND = Individuals. Data from BirdWatch Ireland (Newton *et al.* 2016).

Table 5: Summary of the breeding seabird populations of Ireland's Eye

Species ¹	Count Unit ²	BoCCI listing ³	Date of most recent census	Estimated population	National population estimate 1998-2002 ⁴	Percentage of national population	Source
Fulmar	AOS	Green	2016	34	32,918	0.1%	Newton <i>et al.</i> 2016
Gannet	AOS	Amber	2013	547	47,946	1%	Newton <i>et al.</i> 2015
Cormorant*	AON	Amber	2016	398	4,548	9%	Newton <i>et al.</i> 2016
Shag	AON	Amber	2016	72	3,426	2%	Newton <i>et al.</i> 2016
Lesser Black-backed Gull	AON/T	Amber	2016	3	2,876	0.1%	Newton <i>et al.</i> 2016
Herring Gull*	AON/T	Red	2016	398	5,521	7%	Newton <i>et al.</i> 2016
Great Black-backed Gull	AON/T	Amber	2016	132	2,243	6%	Newton <i>et al.</i> 2016
Kittiwake*	AON	Amber	2016	401	36,100	1%	Newton <i>et al.</i> 2016
Guillemot*	IND	Amber	2016	4,274	138,108	3%	Newton <i>et al.</i> 2016
Razorbill*	IND	Amber	2016	1,335	25,980	5%	Newton <i>et al.</i> 2016
Puffin	IND	Amber	2016	24	19,641	0.1%	Newton <i>et al.</i> 2016

¹Bold indicates species with nationally important populations

²Count Units: AOS = Apparently Occupied Sites; AON = Apparently Occupied Nests; AOT = Apparently Occupied Territory; IND = Individuals.

³Birds of Conservation Concern in Ireland (Colhoun & Cummins 2013)

⁴Estimates for the Republic of Ireland (Mitchell *et al.* 2004)

*Qualifying Interests of Ireland's Eye SPA

Seabird foraging areas

Over the period 2014-2017 a major survey of seabird activity in the area north of Ireland's Eye was undertaken in connection with the proposed wastewater sea outfall for the Greater Dublin Drainage Project (Iredale & Veale 2017). Between March to October the species that were recorded in the highest numbers were Guillemot and Razorbill. Peak numbers of individuals for both of these species were observed in May (monthly peaks 1,587 and 1,181 birds respectively), with slightly lower numbers observed in June and July. It should be noted that quite substantial numbers of Guillemots or Razorbills that were not identified to species level were also recorded. By August, observations of these species had reduced to a very low level, which remained the case until February. Numbers begin to increase in March and April.

Boat-based assessment in 2016 and 2017 revealed that fledged chicks were present on cliffs and not in the water until mid-July. At this point, numbers of auks on nests on the cliffs rapidly declined; however, no rafts of fledged chicks (or adults) were observed on the water around Ireland's Eye at any stage. By the final week of July, the vast majority of auks had left the area, and no massing of large numbers of birds in the water had been recorded. It would appear that, rather than spending time on the water around the island, auks leave the nest only when they intend to leave the area, and perhaps leave in smaller groups than initially thought. Furthermore, many of these movements may occur at night.

Kittiwakes were observed in highest numbers in May and July (557 and 319 birds), with a substantial decrease in numbers of birds recorded in August. Numbers then remained low until around February, before increasing again in March and August. Whilst Herring Gull observation frequency peaked in July, numbers in May and June were almost as high. Furthermore, with the exception of August and September, numbers of observations remained at fairly high levels for all other months (Iredale & Veale 2017).

Other birds

Passerine and other birds of the island are described in Table 6. Seventeen passerine species were recorded virtually all in low numbers (1-3 pairs) or handfuls of visiting migrants (e.g. Hirundines). The species list has not changed significantly since the last published list (up to October 2005), particularly with regard to breeding species. However, two new non-breeding species were recorded – Sand Martin and Song Thrush, and a new species with proved



Figure 11: Shelduck

breeding added - Robin.

Shelduck (Figure 11) and Oystercatcher are the most numerous non-passerine breeding species. As with the Passerines, there has been little significant change when compared with the list of Madden & Merne (2006). It would appear that the breeding avifauna was not significantly altered by the summer 2015 wildfire, perhaps because most species have already completed breeding (fledged one brood) by the time of the fire in June. A reasonable proportion of the breeding passerines that did nest in the spring/summer of 2016 did nest in the area that was burnt, further indicating a lack of significant effect, even if some late nests may have been destroyed in 2015.

Table 6. Status of other birds on Ireland's Eye

<i>Species</i>	<i>Status in 2016</i>	<i>Species</i>	<i>Status in 2016</i>
Hooded Crow	Breeding confirmed	Willow Warbler	Non-breeding visitor/migrant
Rock Pipit	Breeding confirmed	Song Thrush	Non-breeding visitor/migrant
Stonechat	Breeding confirmed	House Martin	Non-breeding visitor/migrant
Wren	Breeding confirmed	Sand Martin	Non-breeding visitor/migrant
Blackbird	Breeding confirmed	Swallow	Non-breeding visitor/migrant
Robin	Breeding confirmed	Peregrine	Breeding confirmed
Reed Bunting	Breeding confirmed	Shelduck	Breeding confirmed
Linnet	Breeding confirmed	Oystercatcher	Breeding confirmed
Whitethroat	Probable breeder	Ringed Plover	Breeding confirmed
Meadow Pipit	Probable breeder	Mallard	Potential breeder
Pied Wagtail	Possible breeder	Short-eared Owl	Winter visitor/passage migrant
Wheatear	Non-breeding visitor/migrant	Brent Goose	Winter visitor
Willow Warbler	Non-breeding visitor/migrant	Sandwich Tern	Summer visitor
		Feral or Racing Pigeon (Rock Dove)	Visitor and possible breeder

The populations of two breeding water birds, Shelduck and Oystercatcher, appear to have increased and one, Ringed Plover, may have decreased. These species move their young to coastal habitat once out of the nest and so perhaps most young survived the 2015 fires. The islands of Lambay, Ireland's Eye and Dalkey appear to be the stronghold of the east coast of Ireland breeding Oystercatcher; the largest 'colony' would be Lambay with about 25 pairs, followed by about 10 each on Ireland's Eye and Dalkey (Madden 2004). With regard to BoCCI listing (Colhoun & Cummins 2013), the island supports one Red-listed breeding passerine, the Meadow Pipit, and three Amber-listed species, Robin, Stonechat and Linnet.

3.3.6. Marine fauna

Historical records

In 1907 a series of trawls of the seabed off the coast of North county Dublin were undertaken (Colgan 1908). Eight dredging trips were made in the course of the year, the field of exploration stretching from Lambay in the north to Killiney Bay in the south. The sampling was confined within a limit of three miles (4.8km) from the shores of the county mainland, and within a maximum depth-limit of 20 fathoms (37m) although the nearest samples to Ireland's Eye were around Howth Head and Lambay. The marine molluscs in these samples were identified by Colgan (1908).

Marine SAC

Ireland's Eye is covered by Rockabill to Dalkey Island SAC (Figure 1) which is designated for the marine Annex I qualifying interest Reefs and the Annex II species Harbour porpoise. Intertidal and subtidal surveys were undertaken in 2010 and 2011 (MERC, 2010, MERC 2012a and MERC, 2012b). These data were used to determine the physical and biological nature of the Annex I habitat. Within the Rockabill to Dalkey Island SAC two community types are recorded within the Annex I habitat, namely Intertidal reef community complex and Subtidal reef community complex, as summarised in Table 1. A description of each community type is given below. Such biological communities are grouped together into what experts consider are sufficiently stable units (i.e. a complex) for conservation targets.

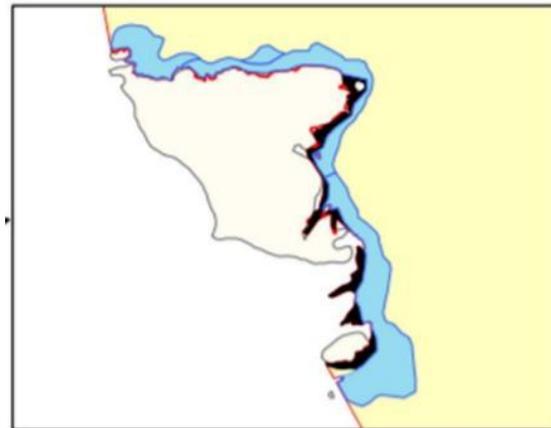


Figure 12: Distribution of intertidal (black) and subtidal (blue) reef community complex around Ireland's Eye

Intertidal reef community complex

This reef community complex is recorded on the islands within this site and on the south coast of Howth. The exposure regime of the complex ranges from exposed to moderately exposed reef (Figure 12). Exposed reef is recorded on the east and southern shores of Ireland's Eye. Moderately exposed reef also occurs on Ireland's Eye. The substrate here is that of flat and sloping bedrock. Vertical cliff faces are found on the north and northeast shores of Ireland's Eye. The species associated with this community complex include the fucoids *Fucus serratus*, *F. vesiculosus*, *F. spiralis*, *Ascophyllum nodosum* and *Pelvetia canaliculata*, the barnacle *Semibalanus balanoides* and the bivalve *Mytilus edulis*. In the more exposed areas *Semibalanus balanoides* and *Mytilus edulis* dominate while in the more moderately exposed 3 areas it is the fucoid species that are more abundant. The gastropods *Patella vulgata* and *Littorina* sp. are also recorded here. In all area the kelp species *Laminaria digitata* is recorded at the low water mark. Species associated with the Intertidal reef community complex are *Fucus serratus*, *Fucus spiralis*, *Fucus vesiculosus*, *Semibalanus balanoides*, *Ascophyllum nodosum*, *Mytilus edulis*, *Pelvetia canaliculate*, *Patella vulgate*, *Laminaria digitate* and *Littorina* sp.

Subtidal reef community complex

This community complex is recorded off the islands within the site and also off the coast between Lambay Island and Rush Village. The exposure regime here ranges from moderately exposed reef in some areas to exposed reef over the remainder of the site. The substrate ranges from that of flat

and sloping bedrock, to bedrock with boulders and also a mosaic of cobbles and boulders. Vertical rock walls occur on the north and east of Ireland's Eye. In the northern reaches of the site, at Rockabill and Ireland's Eye, areas of both sediment scouring and a thin veneer of silt were observed on the reefs; the veneer of silt was also recorded at Lambay Island. In the shallow reaches of this community complex (10m) the anemone *Alcyonium digitatum* occurs in moderate abundances and *Metridium senile* also being recorded here. Faunal crusts of bryozoans such as *Flustra foliacea* and *Chartella papyracea* and hydroids including *Nemertesia antennina* are recorded in deeper water (>20m) along with the ascidian *Aplidium punctum*. The asteroid *Asterias rubens* is recorded throughout the site while the barnacle *Balanus crenatus*, the echinoderms *Echinus esculentus* and *Antedon bifida* also occur here. In general, it was noted that where the reef was subjected to the effects of sediment, either through scouring or settlement of silt, low numbers of species and individuals occurred.

Sea fish

A total of 47 fish species are known to commonly frequent the Fingal coastal waters. These include:

- 14 commercial stocks including Cod, Whiting, Sole, Dublin Bay Prawn, Haddock, Plaice, Herring, Lobster, Razor Clam, King scallop, Queen scallop, Velvet crab, Brown crab, Whelk.
- 14 species with commercial value including Monkfish, Blue whiting, Grey Mullet, Bass, Sea Trout, Atlantic Salmon, Periwinkle, Squid, Dab, Lemon Sole, Ling, Pollack, Thornback Ray, Blonde Ray.
- 19 species which have no commercial value including Tope, White Skate, Long Nose Skate, Common Skate, Conger Eel, Flounder, Wrasse, Mako shark, Thresher shark, Six gilled shark, Basking shark, Porbeagle shark, Blue shark, Cuckoo Ray, Electric Ray, Homelyn Ray, Undulate Ray, Painted Ray, Sting Ray (Ecoserve 2006).

A guide to sea angling in Ireland includes the following information: "Howth village lies on the Eastern side of Howth Head and is the largest fishing port on the east coast. This is a major small boat angling centre and the local club have a headquarters on the west pier. Small boats can be launched from the slipway for general ground fishing around Ireland's Eye and on the Kish Bank. Species to be expected are codling, coalfish, pollack, whiting, dogfish, spurdog, ray, mackerel and flatfish. Both piers give access to deep water for the shore angler with mullet, dogfish, pollack, coalfish and codling all available" (<http://www.fishinginireland.info/sea/east/dublin/index.htm#map> maintained by Inland Fisheries Ireland).

3.4. CULTURAL HERITAGE

3.4.1. Introduction

There has, to date, been remarkably little written about the history and heritage of Ireland's Eye and this account is based on background research and a field survey carried out by Courtney Deery Heritage Consultancy (Crowley 2016). A field survey was undertaken during 2016 in order to verify the historic areas or elements identified in the desk study and to consider additional influences or features that may not be apparent from the research. The inspection sought to identify and record known features and to assess the condition and the significance of each element. It provides a photographic record of the form, materials and treatments of the architectural heritage, of the upstanding archaeological sites and of areas of distinct character. The field inspection also sought to identify any unrecorded low-visibility or destroyed monuments that may be present on the island and assess the archaeological potential (if any) of the site. Any cultural heritage features (agricultural, industrial or maritime) present on the island were identified and recorded and these are shown on Map 6 in Appendix 1.

3.4.2. Archaeology

Prehistoric Activity

There is direct evidence for prehistoric maritime activity in the seas around Ireland's Eye, albeit not on the island itself. Ireland's Eye is just one of a network of small islands off the coast of Dublin within easy reach of the mainland and of each other, with Dalkey Island and a nearby islet (the Muglins) on the south side of Dublin Bay, Lambay Island c. 9km north of Ireland's Eye, and the Skerries islands further north again (Colt, St Patrick's, Shenick, Rockabill and Red Island; the latter now a headland). This grouping of Dublin islands included the nearby Howth peninsula, which was an island during the prehistoric period (it is now joined to the mainland by a sandy isthmus at Sutton Cross), as well as Clontarf Island (a small island of sand and gravel now under the East Wall area). There is an abundance of evidence to suggest that Dublin's coastline – both mainland and islands – was used by Mesolithic people, hunter-gatherers who were exploiting maritime resources; this includes significant Late Mesolithic activity in the form of middens at both Dalkey and at Sutton / Howth Head (RMP DU015-024) and Late Mesolithic fish traps identified in estuarine mud from the River Liffey (Mitchell 1956; Liversage 1968; Woodman *et al.* 1999, McQuade & O'Donnell 2007). Analysis of lithics collected from Lambay Island also revealed definite evidence for the use of the island in the Late Mesolithic period, with strong indications that it was used from the Early Mesolithic (c. 7000 BC) onwards (Dolan & Cooney 2010). At a time when Ireland was densely wooded, boats provided the most efficient means of transport into the interior, via rivers and lakes, while coastal and island hopping would have been the easiest way to communicate in coastal areas.

The evidence for the Neolithic period (c. 4000-2500 BC) paints a similar picture, with both recorded and excavated sites demonstrating that Neolithic activity was widespread in the Dublin coastal zone. The more sedentary, farming-based economy of the Neolithic period has left greater visible traces in the archaeological record; there were permanent and fixed settlements, new funerary monuments and a more organised approach to the exploitation of natural resources and tool production. In the areas closest to Ireland's Eye, along the Fingal coastline, there is a megalithic portal tomb on Howth Head (RMP DU015-032), as well as a coastal group of passage tombs that extend northwards from Knocklea, near Rush, to Bremore and Gormanston. Evidence from surface finds and the results of archaeological excavations in the vicinity of Malahide, Skerries, Balbriggan, Lusk, Beaverstown and Donabate also indicate an intensity of Neolithic activity – and settlement – along this coastline (Dolan & Cooney 2010).

Promontory Fort

A promontory fort may also have occupied the headland at the north-western tip of Ireland's Eye (SMR DU015-133). The possible site was identified during a promontory fort survey in the late 1990s, in which it is described as follows:

'The headland, irregular in plan, slopes steeply down to the point [on which the Martello Tower sits] and at a point some 30m inland is a curving natural escarpment of rock outcrop with level berm and gentle rise visible immediately to the west, suggesting the presence of a fosse and wall or bank. This was visible from the air and the site has not yet been visited on the ground. Several vague lines running across the headland closer to the tower may indicate further defences. Not enough remains visible above ground to ascertain the nature of these features.' (Casey 1999)

There were no visible traces of the features identified by Casey (1999) on aerial photography as a possible promontory fort (SMR DU015-133; Plate 22). The abundant protruding natural rocks and the overgrown nature of the site make it difficult to discern any patterns on the ground. This small headland is fairly level, however, with a large section of rising rock outcrop forming a natural boundary between it and the rest of the island, and the natural spring located just beyond it. The relatively level area between the Martello Tower and the rock outcrop measures approximately 90m by 50m or c. 0.45. Although the rock outcrop provides a natural boundary, it also allows a vantage point over the level area, which would appear to be a disadvantage from a defensive point of view. On such a small island, however, a defensive boundary may not have been required, but simply one that divided the 'fort' or settlement area from the rest of the land mass

The presence of promontory forts in fairly close proximity on Howth, Lambay, at Drumanagh near Loughshinny and (possibly) on Ireland's Eye may be indicative of the uncertain and hazardous nature of maritime trade during the Iron Age (Cooney 1993).

3.4.3. Historic buildings and artifacts

Early Christian Settlement on Ireland's Eye

Little is known about the early medieval ecclesiastical site on Ireland's Eye. It was reputedly founded in the early 7th century by three sons of Necessan – Dichuill, Munissa and Neslug – and is traditionally associated with an early medieval illuminated gospel-book known as the Garland of Howth. The ruins of St Necessan's Church represent the only surviving physical remains of the ecclesiastical site on the island. Historically, it is known that St Necessan's became a parish church during the Anglo-Norman period, having formed the original prebendal lands and church of Archbishop Comyn's Collegiate Chapter of St Patrick since 1190. This status was short-lived, however, as the prebend was transferred to St Mary's of Howth in 1235, which then became the parish church.

St Necessan's Church

St Necessan's Church is a recorded archaeological monument (RMP DU016-001001) (Figure 13). It comprises the ruined remains of a pre-Norman structure, though more precise dating is difficult owing to the scant remains and to a rather heavy-handed restoration attempt in the 19th century. Although known as St Necessan's Church – and referred to as such here – it is more correctly called Kilmacnessan, i.e. the Church of Necessan's Sons (Cooney 1990).



Figure 13: St. Necessan's Church

The site was visited by a number of antiquarians and artists during the 19th century, resulting in a number of sketches and even two early photographs (taken c. 1889-1893). At the time of Petrie's visit in 1828, the church ruins had yet to be 'restored' and were also a good deal more substantial; Petrie noted some years later that 'of the ancient stone-roofed church on Ireland's Eye the doorway was unfortunately destroyed some years since, that the stones might be used in the erection of a roman catholic chapel in Howth' (Petrie 1845).

The church, which survives currently in its reconstructed form to gable height, is a nave and a chancel construction, aligned ENE-WSW. The chancel is tied into the nave and has a vaulted roof

from which rises the partial remains of a round turret (this has been interpreted by some as the remains of a round tower); the sketches by Petrie (1828), Du Noyer (1841) and Wakeman (1843) all show a large portion of the turret still *in situ*. The sketches produced by the antiquarians also demonstrate the degree to which the ruins degraded in the first half of the 19th century and also the extent of the subsequent reconstruction. By the time Wakeman visited in 1843, the whole of the west gable had disappeared, as had the east window and parts of the east wall, along with much of the south walls of the chancel and nave.

The ensuing restoration works can be seen – still crisp and obviously quite recently completed – in the two photographs taken towards the end of the century. The turret is, by this time, gone and its base partly or wholly reconstructed along with the east gable wall and window. In addition, the north wall, which is shown on Wakeman's and Du Noyer's sketches with no openings, is now pierced with two small windows (one each in the nave and chancel). More subtle differences include the impost on the doorway (the projecting blocks embedded in the wall which serve as the base for the lowest voussoir of the arch); as Cochrane (1893) observed, these are now formed of rough hammered flagstones, whereas Petrie's earlier sketch had shown them as chamfered along their bottom edges (Figures 14 and 15).



Figure 14: St Nessian's Church, doorway in east wall at present

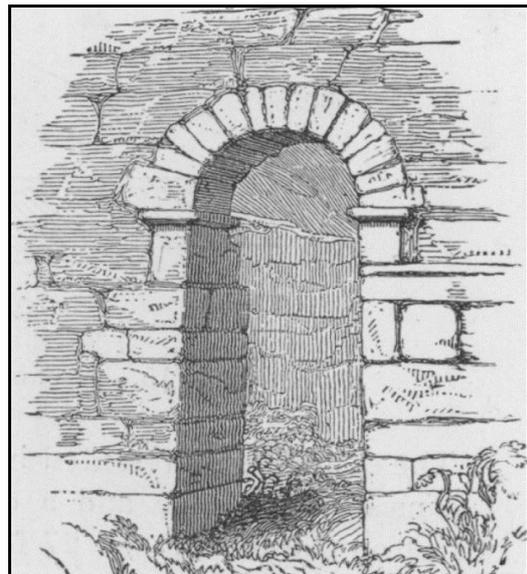


Figure 15: Petrie's sketch of east doorway, 1828 (Cochrane 1893)

The recorded church ruins (RMP DU016-001001) occupy the most sheltered location on the island, on the leeward side of the high cliffs that dominate its north and east shores. The church site appears carefully chosen, nestled in a shallow depression in relatively low land above the beach. It has good views back towards Howth Head and the mainland, and it is surrounded by a broad sweep of land that rises gradually up from the beach at Carrigeen Bay to the cliffs. There is no obvious or clear pathway to accessing the ruins, with the significant overgrowth of bracken and briars making approaches from all angles difficult. The combination of the local stone used to construct the church, its location in a slight dip and the overgrowth of vegetation can make the church almost invisible in the landscape.

Although the ground surface is entirely obscured by the extensive overgrowth, the topography has a generally level aspect and there is an absence of the rock outcrops that are abundant elsewhere on the island. It is known that at least some of this area was under the plough in the post-medieval period and it is likely that the early medieval ecclesiastical settlement would have made full use of all cultivable land on the island (essentially the wider area surrounding the church site). The dense vegetation masks any traces that may survive of enclosing walls or fences, either around the church site or as field boundaries. It also makes it impossible to detect any patterns – subtle or otherwise – that may survive on the ground surface, such as stone foundations, low earthen banks or ridge-and-furrow marks. An examination of aerial photographic coverage of the island yielded no additional information.

The Garland of Howth

An early Christian illustrated bible, *The Garland of Howth*, is in the collections of Trinity College Dublin (Figure 16). While the book is traditionally associated with St Necessan and Ireland's Eye, its provenance is not entirely secure. Unlike like other illuminated gospel books, it is not named after the saint with whom it is associated or the place where it is thought to have been made (such are the cases, for example, with the *Book of Mulling*, named for St Mulling, and the *Books of Durrow* and *Kells*). It has neither a dedicatory inscription that might assist in tracing where it was produced or by whom, nor any additional material inserted at a later date that might help to establish where a book was made or even where it was at a certain point in the distant past (Moss, 2016). In contrast, the *Garland of Howth* has a name of obscure origin and there is only a story to connect it to the early medieval church of St Necessan on Ireland's Eye.

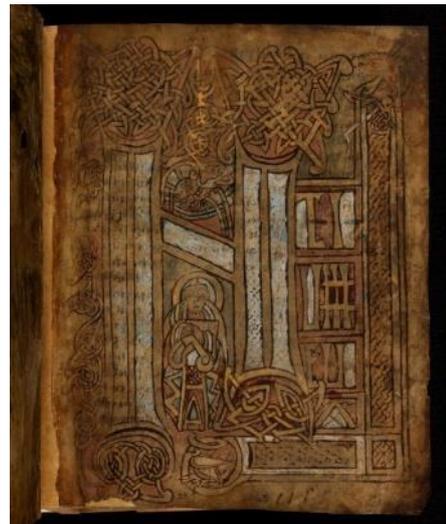


Figure 16: The Garland of Howth

The *Garland of Howth* is first documented in the early 1530s when it is called the 'Kerlower' by Archbishop of Dublin, John Alen, a name that is a phonetic derivation of the Irish *Ceathair Leabhair*, or 'four books [of the gospels]' (McNeill 1950). Almost a century later, the book was apparently in Howth Castle and Archbishop Ussher noted there, with some disdain, that the Kerlower had become vulgarly known as 'The Garland of Howth' (Elrington, 1848, cited in Moss, 2016). It is possible that 'garland' is a more extreme Anglicization of *Ceathair Leabhair*, or that the term garland implies a talismanic function, common to a number of relics of the time; in the 17th century, the word 'garland' was also used to denote 'the principal ornament, the thing most prized', and it may be that this lies at the root of the name (Moss 2016). In the 19th century the Trinity Librarian T.K. Abbott changed the name of the manuscript to the *Codex Usserianus Secundus*, to reflect his belief that Archbishop Ussher had been responsible for its accession to the Library (*ibid.*). As there is no proof that Ussher owned the book, nor that he brought it to the Library, it has since reverted to being called the *Garland of Howth*.

The date of the book is also uncertain, though a 9th century date is now generally accepted (Moss, 2016; Alexander and Colker, cited in McBrierty 1981). It is of relatively small size, particularly when compared with the contemporary *Book of Kells*, and this difference most likely reflects their original functions; the early medieval gospel books were either designed to be small enough to be held for reading or carried about by missionaries (e.g. the compact *Book of Mulling* and *Book of Dimma*) or

large enough to be displayed (e.g. the Book of Kells). The Garland of Howth measures only 24.1 cm x 19.2 cm, thus about half the size of the Book of Kells, and where the latter would have been far too large to look at without the aid of a table or lectern, the Garland of Howth could have been held comfortably in the hands (<https://www.tcd.ie/library/early-irish-mss/launch-of-the-digital-garland-of-howth>).

Martello Tower

The Martello tower on Ireland's Eye is both a recorded archaeological monument and a protected structure (RMP DU015-016; RPS No. 589) (Figure 17). It is situated on a rock outcrop at the northwest end of the island. It was constructed c. 1804 as a 'Two Gun Tower' (i.e. armed with two 24-pounder guns) to command the anchorage and the approaches to Howth and was the largest example in north county Dublin (Bolton *et al.* 2012). The 'double-tower' has a basal plinth and is defended by a machicolation. There is a raised doorway on the south side with dressed limestone



Figure 17: Martello Tower

jamb. The raised doorway was designed to deter attackers (much like the early medieval round towers that still stand on some of the Irish ecclesiastical sites) and access today can only be gained by climbing the rope that hangs from the stone door-jamb. In addition to the doorway, there are small openings on the east and west sides, as well as a small opening with brick insertions beneath the doorway (possibly a later, partial repair).

As with all the other north Dublin towers, its construction is of rendered rubble masonry. In contrast, the corbels at the box machiolation and around the top of the tower, as well as the stonework around the doorway is of finely cut limestone (probably from the quarries beside Corr Castle in Howth; Bolton *et al.* 2012). A plan drawn in 1848 shows the extent of Board of Ordnance land with six boundary stones marking rights of way and the position of a freshwater spring (Bolton 2008; other mid-19th century plans show, variably, five or eleven boundary stones) (Figure 18). The tower itself is a well-preserved example. It appears to have been unoccupied for most of its existence, though it was in use – probably seasonally – by the Preventative Water Guard (the Revenue Coast Guard) to prevent smuggling (Bolton 2008; discussed further below). The tower was reported in poor condition throughout the 19th century – with numerous references to the damaging effects of persistent damp from the sea air and lack of a permanent occupant – and was unsuccessfully offered to let on a number of occasions before its



Figure 18: Boundary stone

purchase by the Earl of Howth in 1909 (Bolton 2008). The tower is currently unoccupied, derelict and in private ownership.

The interior of the tower has been lime-washed and the graffiti on it is evidence of past visitors to the island. The original wooden floor at the first-floor level has been removed (the raised doorway provides an entrance to this level), though the remains of the timber supports can still be seen in the wall. This has left the undercroft exposed and revealed a large iron storage chest still in situ, as well as the random-rubble stone partition walls that divided the area into three small spaces. Where the limewash has eroded from the roof of the tower, the brick-construction of the slightly domed top can be seen (this doming is not visible from the outside as it is hidden behind the parapet walls).

3.4.4. Past Land Use

Evidence for former farming practices on the island

There is evidence that at least some parts of the island were used for tillage during the 19th century, as evidenced by the Roman coins and later burial that were uncovered during ploughing in the 1860s; it is equally possible, however, that the practice pre-dates the recorded instances. It is not only possible, but likely, that the island was farmed during the early medieval period. It may have been of a relatively small-



Figure 19: 'Ruins of St Nessian's Church', sketch by R. A. in the *Dublin Penny Journal*, August 1833

scale – essentially subsistence farming – with crops grown and animals grazed to support the monastic community. Depending on the size of the ecclesiastical settlement – which was presumably substantial enough to house a scriptorium, as well as the church, burial ground and dwellings of the monks – it may also have held lands on the nearby mainland of Howth peninsula, with these being settled and farmed by monks. The connection of an island settlement to associated activities and land possessions on the nearest mainland during the early medieval period can be seen in the contemporary crannógs. Such sites in County Westmeath, for example, tend to be associated with good agricultural land for both arable farming and grazing (O'Sullivan, 2004); O'Sullivan also notes the possibility that some crannógs were even positioned at particular parts of lakes in order to control prime pastures along the lakeshore (with some of the ringforts found along lakeshores possibly representing byres and corrals for the protection of cattle, rather than enclosures for human settlement).

It also appears that the island was used for grazing animals and for hunting, with evidence once more coming from 19th century observations. An account of a visit to the island in 1833 by 'R. A.' in the *Dublin Penny Journal* describes seeing 'a few horses, who bound in uncontrolled liberty over the yielding turf' (these being 'the only visible signs of proprietorship' on the island), as well as a 'party of gentlemen' who were hunting the gulls that nested on the island (these are illustrated in a sketch contained in the article and reproduced in Figure 19). The same author also comments on the 'marks of mounds and trenches' near the church and that 'although the soil appears rich, yet it is now uncultivated and over-grown with fern and briars'. It is possible that the author was describing ridge-and-furrow marks, an archaeological pattern of ridges and troughs created by a system of ploughing

that was used during the medieval period. Raised ridges in this manner had the advantage of better draining the fields for crops, before the advent of underground field drainage systems.

Landing places on the island

On the eastern side there is evidence of rocks being cut or shaped to create steps to allow easier access up the cliff-side from the water's edge (Figure 20). This is a much more elaborate landing place compared to the western side, and the steps cut into the steep cliff would have necessitated a considerable amount of effort to achieve. It seems unlikely that local fishermen would invest the requisite time and energy, simply to facilitate the occasional and seasonal tourist visitor. More probable is that the steps were cut to create a new landing place that would allow direct and easy access to the Martello Tower at the beginning of the 19th century. The construction of the tower would have required the delivery and unloading of substantial amounts of heavy material, but given the somewhat precarious nature of the landing place, it seems unlikely (though not impossible) that it could have been used for this purpose. It may well have been created during this initial stage to serve the tower once built, perhaps for those times when the tides rendered the western landing point unusable. Some concrete has been added at the base of the steps to allow a better footing from the boat to the steps.



Figure 20: The eastern landing place

In contrast, on the western side of the promontory, an iron railing set into concrete on the rocks at high water mark is the only indication of a landing place, and even this appears to be a relatively late addition (perhaps early to mid-20th century, given the use of concrete and the iron railing). There is also a natural cove nestled amongst the rocky outcrops on this side of the tower, which is considerably larger when the tide is out, and the cobble and sand beaches here are the most likely landing place for the builders of the Martello Tower and the gunners who took charge of it. Three massive granite stones left over from the tower's construction still lie on the cobbled beach below the tower, strengthening the argument that this was the closest and easiest landing place for unloading at the tower (Bolton, *Pers. Comm*).

There was another landing point on the southeast side of the island, at the Long Hole (the inlet that was the scene of the infamous Kirwan murder). Steps had been constructed by local boatmen (it is not known when) but these were washed away during heavy easterly gales some years ago and were never replaced (Ken Doyle, *Ireland's Eye Ferries, Pers. Comm.*).

The sheltered beach along the west side of the island provides a much easier and safer means of landing – for a small, shallow-draft vessel at least; as evidenced by the dinghy that had pulled up there on the day of the field survey – and it has undoubtedly been used by visitors to the island from the prehistoric period onwards. Its proximity to the early medieval church suggests that it was almost certainly used during this period at least.

Natural Spring

An important natural feature of the island – and one that was a prerequisite to human habitation – is that it has a fresh water spring. This is located at the northern end of the island, c. 145m southeast of the Martello Tower. The spring is not marked on the first edition six-inch Ordnance Survey (OS) map of 1843, though it does appear on the more detailed 25-inch map of 1906-9; instead of the normal OS marker for a spring (which is a tiny circle), this is shown as a small pond, suggesting that the spring feeds into a natural hollow. It is this feature, rather than the spring itself that allows it to be identified in the field, despite the extensive overgrowth. The wet ground in the hollow supports different plant life, thus distinguishing it from the surrounding vegetation, and the feature is further highlighted by the slight dip in the ground. There was no obvious built structure visible, though it may have been obscured by the overgrowth, which prevented close and thorough inspection. No other springs are marked on the historic Ordnance Survey maps and none were identified during the field survey; it should be noted, however, that the extent of vegetative overgrowth across the island may obscure any other natural springs that may be present.

3.5. PEOPLE AND VISITOR USE

3.5.1. Stakeholders

Stakeholders are individuals, groups or communities likely to be affected by, or to influence, a management decision or action concerning a site. Conservation management should adopt an inclusive approach which takes account of the interests of stakeholders and, where possible, involves them in management and planning (Alexander 2009).

The main stakeholders in Ireland's Eye are:

1. the owner;
2. the ferry operators;
3. visitors;
4. organisations that bring visitors to the island;
5. Fingal County Council;
6. National Parks and Wildlife Service;
7. Howth Special Amenity Area Order committee;
8. Dublin Bay Biosphere Partnership.



Figure 21: Visitors arriving by ferry to the island

3.5.2. Access and Visitors

Tourism strategy

Fingal Tourism Strategy 2015-2018

Fingal County Council has developed a tourism strategy for the County to provide the 'definitive pathway to tourism development in Fingal'. The objective was to develop a comprehensive strategy for the development of tourism with support and buy-in of relevant public, private and community tourism stakeholders. Fingal County Development Plan 2011-2017 identified the potential for tourism to Fingal, as well as placing a strong emphasis on the protection of the County's environmental, heritage and cultural assets. Fingal's tourism is heavily dependent on day trip visitors, particularly to coastal locations, heritage attractions or for the pursuit of a special interest, together with stayover visits, largely concentrated around Dublin Airport.

The following extracts from Fingal Tourism Strategy 2015-2018 are those most relevant to Ireland's Eye:

The Coastal Experiences

Rationale: The accessibility of the coast and its numerous offerings is undoubtedly Fingal's primary strength in the tourism marketplace. It can deliver to visitors to the Dublin Region the experience of coastal scenery as well as access to the sea, distinctive coastal towns and villages, and a range of water based activities.

Enhancing the visitor experience: The top priority is to manage the natural and built environment to safeguard, and where appropriate, enhance the coastal appeal and experience for the visitor. 4.1.4

Harbours and islands - the coast from the water: Fingal's necklace of harbours and islands presents an ideal opportunity to explore the development of the appeal of trips on water to visitors.

Strategic objective

Action area: Harbours & Islands

Action HI3: Encourage and support the development of seasonal boat trips/water taxi services.

Martello towers: Twelve towers are dotted along the Fingal coastline and formed part of the 26 defences of Dublin in the event of a Napoleonic invasion. The towers, including two located on islands, represent one of the County's most distinctive architectural features and are a compelling presentation of the area's history. The history, with its international linkages, would appeal to both Irish and overseas visitors, especially the culturally curious

Visitor numbers

Visitors to the island are largely dependent on the ferry boat services from Howth. These boats are run by several (related) experienced seamen whose family have been operating such services for several generations. They have an exclusive licence from the owners to land on the island. Two companies (Ireland's Eye Ferries and Island Ferries) operate a total of four boats which often land visitors at intervals of 15 to 30 minutes during good weather (Figure 22).



Figure 22: Visitors disembarking from a ferry boat on the eastern landing place.

A total of three visitor surveys were carried out for full days in June, July and August 2017. The surveys recorded a total of 15 to 20 boats landing per weekend day with between 129 and 203 visitors in total (Table 6). Some visitors stay on the island for only one or two hours and there is a high turnover each day.

Table 6: Sample survey of visitor numbers on Ireland's Eye in June to August 2017

Date	Day	Weather	Total boats landing	Total visitors landing	Peak no visitors on island at one time
24/06/2017	Saturday	Dry sunny	15	129	58
15/07/2017	Saturday	Dry sunny	17	203	66
07/08/2017	Monday Bank Holiday	Dry sunny	20	183	57
Average			17	172	60

Table 7: Distribution of visitors (percentage) per sector Saturday 24th June 2017

Area	Sector	11:30	12:30	13:30	14:30	15:30	Peak
1	North Cliffs and rock	32%	40%	48%	62%	57%	62%
2	Central area	12%	25%	0%	16%	3%	25%
3	Carageen beach	16%	15%	48%	9%	28%	48%
4	South beach	8%	0%	0%	0%	0%	8%
5	Eastern cliffs	32%	20%	3%	13%	12%	32%

The distribution of visitors on the island was mapped approximately once per hour during each survey (Map 7 in Appendix 1). The results show that the majority of visitors remain in the northern part of the island between the landing places, the main beach and the summit which is an attraction for younger fitter people due to the excellent views (Table 7). Carrigeen beach is the other main attraction.

Visitor characteristics

Tourists and Irish people

The visitors to the island tend to be a mixture of Irish and overseas people. There is no breakdown of visitor numbers but the proportion of overseas tourists is relatively high. This is because the island is widely promoted in tourist literature and on-line tourist guides (see below).

Educational and group visits

At times during the summer there are group visits to the island. Some of these are attracted by the wildlife, especially the breeding seabirds that can be easily viewed. The Irish Wildlife Trust organises two trips with an average total of 48 members each summer. Other natural history groups such as Dublin Naturalists' Field Club also make regular visits to the island to collect records of plants and animals. Some English language schools visit the island with overseas students as an outdoor adventure.



Figure 23: A group of Spanish students climbing on the Martello Tower.

These students tend to spend the majority of their time on the beach.

Sailors and anglers

The shallow water off the west side of the main beach is a popular anchorage for yachts, mainly from Howth and Malahide. Crews of the boats frequently land on the beach and may explore the island. There are no figures for the number of these visitors.

Fishing around the island is popular with sea anglers and this is facilitated by at least one of the ferry boats based in Howth Harbour. These boats may occasionally land some visitors who find suitable shore angling locations on the rocks.

Specialist visitors

Sea kayakers are regular visitors to the island as it is a short crossing from the mainland and offers relatively easy landing conditions (Walsh 2014). Shearwater Sea Kayaking, based in Howth makes an estimate of 3 to 4 landings per month on the island involving between 10 to 25 people (Figure 24). It is estimated that an average of about 150 kayakers would be landed in the island in a good year. Trips are very dependent on weather conditions especially wind direction. They have a policy of remaining strictly on the foreshore area usually in and around the creek area in the south-east corner, on the main beach or under the Martello Tower. At least two other kayaking groups run trips from Howth and occasionally land on the island. These are East Coast Kayaking Club and I Canoe (information from Sean Pierce).



Figure 24: Kayakers landing on the south-east end of Ireland's Eye, July 2017.

Main visitor attractions

Views and landscapes: Ireland's Eye offers the casual visitor a range of unspoilt coastal views including Howth Head, Howth village, Howth Castle and Demesne, Fingal coastlines from Baldoyle to Skerries, Lambay and the Irish Sea. It also gives visitors the sense of a wild landscape on the island itself which is within an hour of Dublin city.

Beaches: The western side of Ireland's Eye is fringed by almost continuous sandy beaches that are attractive for general visitors and relatively easy to access from the landing places (Figure 25). The beaches are very suitable for safe swimming and other beach activities. They are also close to safe anchorages for yachts and other leisure craft.



Figure 25: The main beach at low tide.

quarters. At present, there is no information available to help visitors interpret these structures.

Seabirds: The large seabird colonies on the island are a dramatic and unusual sight for most visitors during the months of April to August. The close views available of nesting birds and small chicks on the island are especially attractive to children.

Other natural history interests: The natural habitats, flora, seals, insects and many other groups of plants and animals are interesting to naturalists and scientists because they represent a wild coastal ecosystem.

Visitor promotion

Ireland's Eye is widely promoted as a visitor attraction for local people and overseas tourists. Visitors can find information in many on-line and printed guides. Some of these are illustrated in the screen grabs below.



discoverireland.com

St Necessan founded a monastery on Ireland's Eye off the coast of Dublin in the sixth century, and today the remains of an eighth century church can still be seen.

In the early 19th century a Martello tower was built to defend against attacks from France.

The island, now a bird sanctuary, has a rugged coast with a free standing rock formation known as 'The Stack'. Large numbers of guillemots, terns, gannets, razorbills, cormorants and puffins nest around the shore.



visitdublin.com

Ireland's Eye Ferries is a family run business, now in its 4th generation, offering boat trips from the fishing village of Howth in North Dublin. There are two main trips. The first is a scenic trip around Ireland's Eye lasting approx 40 minutes during which you see the Martello Tower, the cliffs and stack, sea birds (Gannets, Puffins, Guillemots, Kittiwakes) and seals. On the second trip you can land on the island and stay for a while and explore, climb to the summit for spectacular views, stroll along or relax on the beaches, find the ruins of a 5th century monastery and enjoy the peace and quiet away from the mainland. It only takes 15 minutes to get to the island and you can stay an hour or two



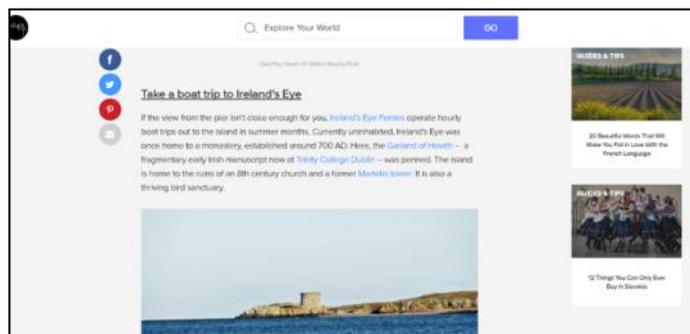
fingaldublin.ie

Lying just north of Howth Harbour Ireland's Eye can be reached by boat from the East Pier during the summer months. Measuring some 28 hectares the island is uninhabited, its only buildings are a Martello Tower and the little ruined church said to have been founded in the sixth century. During the early summer months the place is vibrantly alive with the sights and sounds of breeding seabirds. The island is protected under the Howth SAO.



Lonely Planet Guide

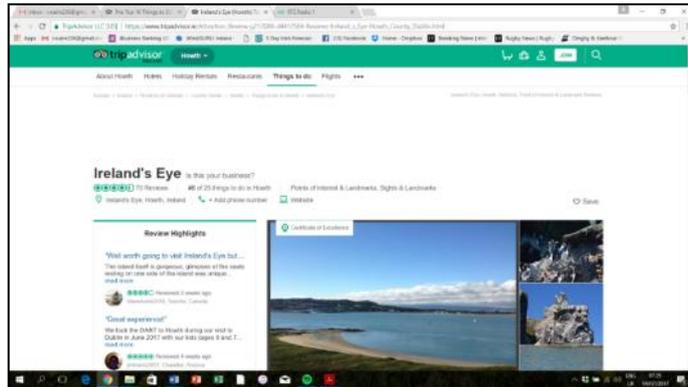
A short distance offshore from Howth is Ireland's Eye, a rocky seabird sanctuary with the ruins of a 6th-century monastery. There's a Martello tower at the northwestern end of the island, where boats from Howth land, while a spectacularly sheer rock face plummets into the sea at the eastern end. It's really only worth exploring if you're interested in birds, although the boat trip out here, with [Doyle & Sons](#), affords some lovely views of Dublin Bay.



theculturetrip.com/

Ireland's Eye got its name through mistranslation. In Celtic times it was known as Eria's Island – Eria being a woman's name at the time – but this was later confused with the Irish word for Ireland, Éirinn. The Viking word for island was ey, and so it ultimately came to be known as Ireland's Eye. A monastery was founded on the island during the sixth century, and a ruined church dating back to 700AD can still be seen there. The island is also the site of one of Howth's three 19th-century Martello towers – the best view of Ireland's Eye can be seen from the village's East Pier. Island Ferries take groups out to the island from Howth on weekends throughout the year (pre-booking is required during off season) and every day during summer.

Ireland's Eye Management Plan 2018-2022



Trip Advisor

Review Highlights

“Amazing best experience in long time”

My husband and I are dubliners, have been promising ourselves to take the boat trip to irelands eye... [read more](#)

“Great boat trip to Ireland's Eye from Howth”

We happened upon the boat ferry to see Ireland's Eye, a small island off of Howth harbor. It was...[read more](#)

PART 2: PRESCRIPTION

4. INTRODUCTION

4.1. GENERAL

This section of the management plan presents a prescription for management of Ireland's Eye including an evaluation of key features,

4.2. CONSULTATIONS AND SUBMISSIONS

Written consultations were undertaken during July and August 2017 with a number of stakeholders including the owner, ferry operators, FCC officials, Howth Harbourmaster, National Parks and Wildlife Service, local yacht clubs, sea kayaking clubs, wildlife organisations and tourism organisations. Written submissions were received from FCC Heritage Officer, BirdWatch Ireland, Mountaineering Ireland, Shearwater Sea Kayaks, Mary Tubridy, Feel Good Scuba and Restoring Monuments. In addition, a public meeting was held in Howth on 14th September 2017. This was attended by 75 people representing a wide range of organisations and interests. The draft management plan was presented to the meeting and a discussion of issues followed. A further presentation of the draft management plan was given to the committee responsible for management of Howth Special Amenity Area Order (SAAO).

5. EVALUATION OF KEY FEATURES

5.1. NATURAL HERITAGE

The following are the key natural heritage features of Ireland's Eye:

- Folding and faulting in the Cambrian rocks on the northern cliffs, best viewed from a boat.
- A number of natural habitat types of which two are protected within a Special Area of Conservation (SAC).
- Several plant species that are rare in County Dublin.
- An area of intertidal and sub-tidal reefs that are protected within a marine SAC.
- A significant haul-out site for Grey Seals.
- A high density of Harbour Porpoise in the waters surrounding the island that are protected within a marine SAC.
- An assemblage of breeding seabirds with nationally important numbers of several species that are protected within a Special Protection Area (SPA).

5.1.1. Geology

Ireland's Eye displays some of the best exposed cliff sections and inland exposures of Cambrian rocks in Fingal (Clarke *et al.* 2007). It is listed as a County Geological Site (Parkes 2012).

5.1.2. Terrestrial habitats and vegetation

Ireland's Eye holds a total of 11 terrestrial habitat types (according to the classification of Fossitt 2000) (Table 1). Five of these habitat types are classified as Annex I habitats under the EU Habitats Directive. Ireland's Eye is designated as a Special Area of Conservation (SAC) under the EU Habitats Directive with two qualifying interests. Eight rare/locally rare plant species were found on Ireland's Eye in 2016. Most of these are rare in a Co. Dublin context.

5.1.3. Marine habitats

The waters around Ireland's Eye contain good examples of reefs (both intertidal and subtidal). This habitat is listed in Annex II of the EU Habitats Directive and the site is covered by the Rockabill to Dalkey Island SAC. There are two further marine habitats that are affected by the tide (Table 1).

5.1.4. Marine mammals

Ireland's Eye is a regular haul-out and breeding site for Grey Seal. The waters around the island are used by a high density of Harbour Porpoise. Both of these marine mammal species are listed in Annex II of the EU Habitats Directive while Harbour Porpoise is a qualifying interest of the Rockabill to Dalkey Island SAC.

5.1.5. Seabirds

Ireland's Eye supports a seabird assemblage of national importance with approximately 4,800 breeding pairs² of seabirds of 11 species including Gannet, Fulmar, Cormorant, Shag, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Kittiwake, Common Guillemot, Razorbill and Puffin (Table 2). The most numerous species is the Common Guillemot with an estimated 4,274 individuals present in 2016. A breeding population is considered to be of national importance when it comprises at least 1% of the total national³ figure for that species. The most recent full census of seabirds in Ireland was in 1998-2002 (Mitchell *et al.* 2004). On this basis eight species occur here in nationally important numbers. Ireland's Eye is designated as a Special Protection Area (SPA) under the EU Birds Directive, with five qualifying interests including Cormorant, Herring Gull, Kittiwake, Common Guillemot and Razorbill.

5.2. CULTURAL HERITAGE

The following are the key cultural heritage features of Ireland's Eye:

- The ruined St. Nessian's church which is an early Christian site and is listed in the Record of Monuments and Places (RMP).
- A burial site associated with St. Nessian's church which is listed in the RMP.
- The Martello Tower which is listed in the RMP and is a protected structure.
- Boundary stones associated with the Martello tower.
- A possible promontory fort on the north-western corner of the island which is listed in the Sites and Monuments Record and is scheduled for inclusion in the next revision of the RMP.

5.3. OVERVIEW

In order to evaluate the most important features of Ireland's Eye these are listed in order of their relative value in Table 8. This establishes a list of priorities for protection but does not suggest that other features are unimportant.

Table 8: Summary evaluation of key features on Ireland's Eye

Level of value	Feature	Status
-----------------------	----------------	---------------

² Auks are counted as individuals and this is divided by 2 to convert to pairs.

³ National refers to the Republic of Ireland.

International	Perennial vegetation of stony banks	Qualifying interest of Ireland's Eye SAC
	Vegetated sea cliffs of the Atlantic and Baltic coasts	Qualifying interest of Ireland's Eye SAC
	Reefs (intertidal and subtidal)	Qualifying interest of Rockabill to Dalkey Island SAC
	Harbour Porpoise <i>Phocena phocena</i>	Qualifying interest of Rockabill to Dalkey Island SAC
	Cormorant <i>Phalacrocorax carbo</i>	Qualifying interest of Ireland's Eye SPA
	Herring Gull <i>Larus argentatus</i>	Qualifying interest of Ireland's Eye SPA
	Kittiwake <i>Rissa tridactyla</i>	Qualifying interest of Ireland's Eye SPA
	Guillemot <i>Uria aalge</i>	Qualifying interest of Ireland's Eye SPA
	Razorbill <i>Alca torda</i>	Qualifying interest of Ireland's Eye SPA
National	Gannet <i>Morus bassanus</i>	Nationally important populations
	Shag <i>Phalacrocorax aristotelis</i>	Nationally important populations
	Great Black-backed Gull <i>Larus marinus</i>	Nationally important populations
	Martello Tower	RMP site
	St Nesson's Church	RMP site
	Burial site near St Nesson's Church	RMP site
	Possible promontory fort	SMR site
County	Geological features	County geological site
	Henbane <i>Hyoscyamus niger</i>	Rare in Co Dublin or Fingal County
	Spring Squill <i>Scilla verna</i>	Rare in Co Dublin or Fingal County
	Sea Stork's Bill <i>Erodium maritimum</i>	Rare in Co Dublin or Fingal County
	Campion hybrid <i>Silene x hampeana</i>	Rare in Co Dublin or Fingal County
	Early Forget-me-not <i>Myosotis ramosissima</i>	Rare in Co Dublin or Fingal County
	Prickly Saltwort <i>Salsola kali</i>	Rare in Co Dublin or Fingal County
	Wild Onion <i>Allium vineale</i>	Rare in Co Dublin or Fingal County
	Heath Groundsel <i>Senecio sylvaticus</i>	Rare in Co Dublin or Fingal County
	Boundary stones associated with Martello Tower	Rare in Co Dublin or Fingal County
	Possible promontory fort	Rare in Co Dublin or Fingal County

6. OBJECTIVES

6.1. OVERALL OBJECTIVES

The overall objectives of this management plan are:

- To protect and enhance the natural and cultural heritage of Ireland's Eye for the long-term future.
- To ensure the favourable conservation status of those habitats and species which are qualifying interests of the SACs and SPA.
- To facilitate the managed use of the island by visitors in a safe environment.
- To provide adequate information for visitors to enhance their enjoyment of the island.

More specific objectives are contained in the following designations.

6.2. OBJECTIVES FOR NATURA 2000 SITES

The conservation objectives for the Special Areas of Conservation and the Special Protection Area are given below. In the case of the qualifying interests of the SACs more detailed attributes and targets are given in Appendix 2.

The Conservation Objectives for Ireland's Eye SAC and the Rockabill to Dalkey Island SAC are: To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SACs has been selected.

The Conservation Objective for Ireland's Eye SPA is: To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

6.3. OBJECTIVES FOR HOWTH SAAO

The overall objective of Howth Special Amenity Area Order 1999 is 'to preserve and enhance the character or special features of the area, including the provision of open spaces'. In pursuance of this objective, no development, other than exempted development and developments within the limitations more especially set out in Schedule 3 attached to this Order, shall be permitted within this area. Ireland's Eye is covered by this SAAO.

6.4. OBJECTIVES FOR CULTURAL HERITAGE ASSETS

The four recorded archaeological sites or monuments located on the island (Martello Tower, Promontory Fort, Church and Burial site) are afforded protection under the National Monuments Acts (1930-2004). Under Section 14 of the Principal Act (1930):

'It shall be unlawful...to demolish or remove wholly or in part or to disfigure, deface, alter, or in any manner injure or interfere with any such national monument without or otherwise than in accordance with the consent hereinafter mentioned (a licence issued by the Office of Public Works National Monuments Branch) or to excavate, dig, plough or otherwise disturb the ground within, around, or in the proximity to any such national monument'.

'Any proposed works at or in relation to a recorded archaeological site or monument (including repairs, maintenance, or removal of vegetation) will require consultation with the National Monuments Service of the Department of Culture, Heritage and the Gaeltacht (DCHG). In addition, the Martello Tower is a protected structure and as such is also afforded protection under the Local Government (Planning and Development Act) 2000 (as amended). Consultation regarding any proposed works at or in relation to the protected structure should also include the Architectural Heritage Advisory Unit of the DCHG'.

7. MANAGEMENT FRAMEWORK

7.1. OWNERSHIP

Ireland's Eye is owned by the Gaisford St.Laurence family of Howth Castle.

7.2. STATUTORY PROTECTIONS

Ireland's Eye and the waters surrounding it are protected by both Special Area of Conservation and Special Protection Area designated under the EU Birds and Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011. It is also covered by the Howth Special Amenity Area Order 1999. The Martello Tower, St. Nessan's Church, burial site and possible promontory fort are protected under the National Monuments Act 1930.

7.3. VISITOR NUMBERS

Ireland's Eye

The annual total number of visitors to Ireland's Eye is unknown at present. Section 3.5.2 of this management plan presents some information based on three surveys carried out at peak visiting times in the summer of 2017. This suggests a peak number of approximately 200 people per day are landed by the ferry operators with approximately 20 boats per day. This represents the highest number of visitors per day in the peak season at a weekend. At other times the numbers are likely to be considerably lower due to poor weather. The main season for day visitors is from April to August. Three of the present four ferry boats are licenced for 12 passengers on each crossing. The fourth boat is licenced for 24 passengers. At present, there is no evidence that the current visitor use of the island is having any significant adverse impacts on the features of importance. However, management is necessary to ensure that this continues in future.

Skellig Michael Example

The island of Skellig Michael in Co Kerry has some similarities with Ireland's Eye in that it is uninhabited and there are both natural and cultural features of interest to visitors. However, the vulnerability of this site would be regarded as very high by comparison with Ireland's Eye. The *Skellig Michael World Heritage Site Management Plan 2008-2018* discusses the visitor use in the context of protection of the key features of the island.

In the period between 1978 and 1994 there was a significant increase in the number of visitors to the island. This led to a noticeable increase in damage to the site, both inadvertent and wilful. In this context the OPW initiated negotiations with local boatmen in 1994 to formulate an agreed plan to limit the daily number of visitors, with the aim of preserving the National Monument.

In 1994 the OPW decided that the daily number of visitors should be capped at a maximum of 180. As the majority of boats operating at the time had a capacity of 12 persons, the number of boats required to achieve the maximum number of visitors was 15 per day. However, in deference to the fact that there were 19 boats either landing visitors on Skellig Michael in 1994 or who had made the financial commitment to do so, the OPW agreed to a total of 19 boats being permitted to land passengers in 1995. It was further agreed that as boatmen retired, this number would reduce over time to a maximum of 15 boats per day.

It was agreed that, subject to compliance with certain conditions, permits to land visitors on the island would issue to individuals, renewable on an annual basis and subject to certain conditions. OPW continues to use this permit system to effectively control the number of visitors to the site and to balance the need to preserve the National Monument and facilitate visitor access. These negotiated visitor numbers were endorsed by UNESCO in 1995 when the nomination for World Heritage status was under consideration. It is the intention of the OPW to continue to operate this arrangement for the foreseeable future. However, the criteria for the granting of future permits for boats to land visitors on the island will be reviewed. The average number of visitors per season in the period since 1995 is c.11,100, a figure that, having been monitored over a period of thirteen seasons, is deemed sustainable in terms of protection of the National Monument.

7.4. MANAGEMENT AND PROTECTION OF THE ISLAND

The management objectives for Ireland's Eye may be summarised as protection and enhancement of the nature conservation and cultural heritage of the island while facilitating safe visitor access. At present, there is no evidence that the current visitor use of the island is having any significant adverse impacts on the features of importance. However, this requires management to ensure nature conservation and protection of the recorded archaeological sites and monuments on the island.

Section 8 includes an action plan for the island for the 5-year period 2018-2022 with a timeframe and responsibilities. Implementation of this action plan will be dependent on available resources. The management plan will be reviewed at 5-year intervals to ensure that it is fit for purpose.

8. ACTION PLAN

8.1. INTRODUCTION

An action plan is presented in section 8.2 as a basis for management of the island over the 5-year period 2018-2022. The actions are grouped under five headings as follows:

- A: Access and visitor management
- B: Vegetation
- C: Breeding birds
- D: Cultural Heritage
- E: Education and interpretation.

In the case of each proposed action the table below gives a summary of the action, objectives of the action, frequency with which the action should be repeated, target date for undertaking the action and responsibilities. A fuller outline of the actions is given in the implementation strategy in section 8.3.

8.2. PROPOSED ACTIONS

Ref	Proposed action	Objective	Frequency	Target date ¹	Responsibility ²
A	<i>Access and visitor management</i>				
A1	Improve landing place on east side of Martello tower by constructing a small landing stage with surfaces at high tide and low tide levels. Install hand rails on stage and steps.	To improve safety for visitors and crews of ferry boats	Once	2018	FCC, Owner
A2	Mow pathways each spring and maintain these on two dates between May and September. Move pathway in places if required to avoid erosion	To improve access for visitors to popular parts of the island and to discourage disturbance to breeding bird colonies	Annual	Ongoing	FCC
A3	Install permanent direction signs on stone/concrete posts	To improve access and information for visitors	Once	2018	FCC
A4	Consider seasonal wardening if bird monitoring shows significant disturbance impacts	To improve guidance to visitors in order to avoid sensitive areas	Annual	2018	FCC, BWI
A5	Prohibit dogs on the island during the period April to August by signage	To prevent disturbance to breeding birds	Annual	Ongoing	FCC, Owner
A6	Prohibit overnight camping on the island except by permit	To reduce the frequency of littering and fires	Annual	Ongoing	FCC, Owner
A7	Prohibit barbeques or other fires on the island at all times by signage	To reduce the risk of accidental fires in the vegetation	Annual	Ongoing	FCC, Owner
A8	Undertake clearance of litter and dumping on the beach and other areas of the island	To improve amenity for visitors	Several times per year	Ongoing	FCC, local volunteers
A9	Install a pedestrian counter close to the main landing stage on the island	To determine visitor numbers to the island throughout the year	Annual	2018	FCC
A10	Set up a steering group for Ireland's Eye to report to Fingal County Council	To coordinate management efforts on the island, in particular clean-ups, pathway management, management of cultural heritage features and invasive species control	Annual	Ongoing	FCC, SAAO Committee

Ireland's Eye Management Plan 2018-2022

Ref	Proposed action	Objective	Frequency	Target date ¹	Responsibility ²
B	Vegetation				
B1	Remove invasive species	To restrict spread of invasive species in native vegetation	Annual	Ongoing	FCC, CVI, local volunteers
B2	Monitor vegetation change using permanent quadrats	To improve knowledge on the changes in vegetation due to management or other factors	Every 3 yrs	2019 2022	FCC, NPWS, DNFC
B3	Clear some areas of dense bracken on centre part of island using annual mowing in early spring and autumn	To encourage development of species-rich grassland and enhance nesting areas for breeding birds	Annual	Ongoing	FCC, CVI
B4	Reinstate pond/spring on the island	To conserve wetland vegetation and historical feature connected with the Martello Tower	Once	2018	FCC, CVI
C	Breeding birds				
C1	Install string fences to guide visitors away from seabird nesting areas ³	To prevent disturbance to breeding birds	Annual	Ongoing	FCC, NPWS, BWI
C2	Close south beach to visitors using string fences during the period April to August	To prevent disturbance to breeding birds	Annual	Ongoing	FCC, NPWS, BWI
C3	Undertake rat control in selected areas of the island during March-April as required ³	To reduce rat predation on nesting seabirds	Annual	Short-term	FCC
C4	Monitor impacts of visitor management on breeding gulls by recording breeding success/productivity in sample areas ³	To test if the visitor management measures are successful or require modification	Every 5 yrs	2021	FCC, NPWS, BWI
C5	Monitor breeding bird populations by censusing of all species in fixed subsites	To monitor the effects of visitor management and long-term changes in populations	Every 3 yrs	2019 2022	FCC, NPWS, BWI
D	Cultural heritage				
D1	Carry out condition survey of the Martello Tower and of St Nessan's Church.	To determine the current state of the structures and identify areas of vulnerability, and provide recommendations for the repair, maintenance and conservation of the structures.	Once	Short-term	FCC
D2	Undertake repairs to the Martello Tower	To ensure safety for visitors and to protect	Once	2018	FCC, NMS

Ref	Proposed action	Objective	Frequency	Target date ¹	Responsibility ²
	including installation of security door in existing opening and repointing of masonry below doorway	the structure and integrity of the building			
D3	Monitoring of the Martello Tower and of St Nessian's Church, using the baseline provided by the condition surveys. I	To ensure the ongoing conservation and protection of the monuments.	Annual	Ongoing	FCC
D4	Reinstatement of early 19 th century route demarcated by the boundary stones, between Carrigeen Bay and the Martello Tower, and its continuation to the church.	To improve visibility of cultural heritage features on the island, and access to them, and to increase connection between historic monuments. [This can be achieved through the mown pathways in A2].	Annual	Ongoing	FCC
D5	Develop a programme of archaeological research to explore the considerable archaeological potential on the island, which may include systematic field-walking, LiDAR and geophysical surveys, and archaeological excavation.	To improve understanding of the cultural heritage value of the site	Once	Medium term	FCC, NMS
E	<i>Information and interpretation</i>				
E1	Provide an information panel on the west pier at Howth Harbour	To improve visitor education and cooperation with management	Once	2018	FCC, NPWS, BWI
E2	Provide an interpretative leaflet for distribution through the ferry operators and local tourist information office	To improve visitor education and cooperation with management	Annual	Ongoing	FCC
E3	Submit accurate information on visiting island to main tourism websites	To improve visitor education and cooperation with management	Annual	Ongoing	FCC
E4	Develop an Ambassador program for Ireland's Eye in conjunction with a local primary school under the programme of Dublin Bay Biosphere	To improve youth education and family involvement with the island	Annual	Ongoing	FCC, DBBP

Ireland's Eye Management Plan 2018-2022

1. Timescale: Short term (1-2 years); Medium term (3-5 years).

2. Responsibility: FCC = Fingal County Council; NPWS = National Parks & Wildlife Service; NMS = National Monuments Service; BWI = BirdWatch Ireland; DNFC = Dublin Naturalists' Field Club; CVI = Conservation Volunteers Ireland, SAAO = Special Amenity Area Order, DBBP = Dublin Bay Biosphere Partnership.

3. SPA Objective: Conservation Objective of Special Protection Area.

8.3. IMPLEMENTATION STRATEGY

8.3.1. Access and visitor management

A1. Improve landing place

At present, the landing place on east side of Martello tower comprises a rough rock surface which does not allow the boats to tie alongside. The crews must hold the boat against the rock while visitors are helped ashore. This is not safe for visitors or crews especially when there is a swell on the sea surface. In easterly or north-easterly winds when this landing is not accessible, boats land on the western side of the Martello tower but only when there is sufficient water at high tide. The rock surface here is also uneven and is not safe. It is proposed to improve the eastern location by constructing a small landing stage with surfaces at high tide and low tide levels. Metal rings or cleats could be added to allow the boats to tie up safely. Installation of hand rails on stage and steps would greatly improve safety. This action will be the subject of Appropriate Assessment Screening under the European Communities (Birds and Natural Habitats) Regulations 2011. (Target date: 2018. Responsibility: FCC).

A2. Mow pathways

A series of mown pathways through the dense Bracken vegetation (Figure 27) will be created to assist visitors walking safely and comfortably to the main beach, the church and the summit of the island (see Map 8). The majority of the vegetation in the centre of the island is dominated by dense bracken with an understorey of brambles. Care will be taken to ensure that any rare or locally rare plant species are not impacted by the paths. The creation of a series of looped paths will also guide the majority of the visitors away from the more vulnerable gull colonies during the nesting season. The pathways will be trimmed each year in April at the start of the visitor season and maintained on two further dates later in the summer.



Figure 27: Mown pathway and temporary signs

Trampling by visitors on these paths will tend to keep the pathways clear of tall vegetation. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

A3. Direction signs

It is proposed to install a series of direction signs that are durable and relatively vandal-proof. These would be stone/concrete pillars designed in keeping with the historic 19th century boundary stones on the island (see Figure 28 & 29 and Map 8). Inscribed directions to the main features such as beach, church, summit and boat landing will be visible above the vegetation at all times. (Target date: 2018. Responsibility: FCC).



Figure 28: Proposed direction sign and current temporary signs



Figure 29: Existing historic boundary stone with inscription of the Board of Ordnance

A4. Seasonal wardening

Consideration will be given to employing seasonal wardens during the seabird nesting season of April to August to reduce disturbance in some of the more vulnerable gull colonies. This will depend on an assessment of whether current visitor use causes significant adverse impact at a population level to any of the species present. (Frequency: Annual. Target date: 2018. Responsibility: FCC).

A5. Prohibition of dogs

Uncontrolled dogs can cause significant disturbance to nesting birds and chicks during the breeding season. Dogs (except for guide dogs on a lead) will be prohibited from the island during the months of April to August inclusive, by the use of signage on the West Pier at Howth. The ferry operators have voluntarily agreed to refuse access to (except for guide dogs) dogs on their boats during this period. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

A6. Prohibition of camping

Overnight camping can lead to fires that may get out of control damaging the vegetation of the island. It also leads to littering. Overnight camping will be prohibited except by permit. Permits will only be issued to individuals or groups that can show that they will abide by the code of conduct for the island. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

A7. Prohibition of barbeques and fires

Barbeques and campfires can lead to damage to the vegetation and breeding birds on the island. All barbeques and campfires will be prohibited by signage. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

A8. Clearance of litter and dumping

It is proposed to carry out an annual clearance of litter on the island by Fingal County Council. Visitors will also be encouraged, by signage and promotional leaflet, to remove their own litter from the island. The Harbourmaster's Office provides suitable receptacles on the West Pier for visitors to dispose of litter. The large pontoon stranded on the main beach should be removed as soon as possible. Polystyrene waste from this pontoon is causing pollution on the beach and in the sea. (Frequency: annual. Target date: ongoing. Responsibility: FCC, local volunteers).

A9. Installation of pedestrian counter

A pedestrian counter will be installed on the pathway leading from the main landing places on the island. This will allow more accurate recording of visitor numbers each year. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

A10. Steering group

A Steering Group will be formed to coordinate management of the Ireland's Eye under the auspices of Fingal County Council. The Steering Group should have representation from the owner, statutory agencies and voluntary organisations with an interest in the island. The title 'Friends of Ireland's Eye' would help users of the island to understand the function of the steering group. (Target date: 2018. Responsibility: FCC).

8.3.2. Vegetation

B1. Remove invasive species

The White Stonecrop, which is widespread on the shallow grounds among the rocks, will be removed with garden trowels when the plants are in flower. This will allow those removing the plants to distinguish it from the native stonecrop species. The plants will be bagged and removed from the island to be disposed off. Bilbao's Fleabane, Narrow-leaved Ragwort and Japanese Rose have already been removed by hand in 2017, but these sites will have to be monitored for any regrowth. The stands of Stinking Iris and Montbretia will be spot-treated with a herbicide such as Round-up or equivalent using a backpack sprayer. The locations of the invasive species are shown in Map 4. (Frequency: annual. Target date: ongoing. Responsibility: FCC, CVI).

B2. Monitor vegetation change

A total of 20 permanent botanical quadrats (PQ) were recorded on 5th June 2016 (Map 9 in Appendix 1). For each 2 × 2 metre PQ, a high-resolution ITM grid reference was recorded and 4 metal tent pegs were placed accurately using a measuring tape, one at each corner of the PQ. It is proposed to record these PQ's every three years (in June). This will allow Fingal County Council to closely monitor the effects of the 2015 fire and other environmental impacts (including direct human impacts) on plant species diversity on the island. It is also important to maintain the permanent quadrats in order to monitor the effect of any potential increased visitor numbers to the island. (Frequency: every 3 years. Target dates: 2019,2022. Responsibility: FCC, NPWS, DNFC).

B3. Clear bracken

A large part of the central area of the island has been invaded by bracken since this area was farmed in the 19th century (and probably earlier). This vegetation has a low species diversity. It is proposed to clear some areas of bracken annually by cutting it with a strimmer and by trialling the use of Azulox on Bracken to encourage the development of species-rich grassland as occurs in other parts of the island. This will also provide additional habitats for birds that nest on open areas. Care will be taken to ensure that any rare or locally rare plant species are not impacted by the paths. (Frequency: annual. Target date: ongoing. Responsibility: FCC, CVI).

B4. Reinstate pond/spring on the island

The natural spring, that was used by the military personnel stationed at the Martello Tower in the early 19th Century, has become overgrown with rank vegetation. It is proposed to restore this spring by clearing out the vegetation by hand with spades and develop a pond. This will allow a typical wetland vegetation to develop and it restores a historical feature on the island. (Target date: 2018. Responsibility: FCC, CVI).

8.3.3. Breeding birds

C1. Install string fences during breeding season

String fences will be erected around the main gull nesting areas during the breeding season from April to August. Notices on the fences will direct visitors away from the nesting areas. The fences will be removed at the end of the breeding season. This action will help to achieve the conservation objectives of the Special Protection Areas for which Herring Gull is one of the qualifying interests. Notices will be erected along the fences to inform visitors of their purpose and to secure their co-operation. (Frequency: annual. Target date: ongoing. Responsibility: FCC, NPWS, BWI).

C2. Close south beach during breeding season

It is proposed to use string fences (as in action C1) to mark off the south beach during the breeding season from April to August. This area has nesting Oystercatcher, Ringed Plover and Herring Gull (which is a qualifying interest of the SPA). Notices will be erected along the fences to inform visitors of their purpose and to secure their co-operation. The fences will be removed at the end of the breeding season. (Frequency: annual. Target date: ongoing. Responsibility: FCC, NPWS, BWI).

C3. Undertake rat control

Control of rats will be undertaken in selected areas of the island during the winter months. This will improve breeding success of burrow-nesting seabirds such as Puffin and Manx Shearwater (there was probably a breeding colony of this species in the past). Guidelines are given by Invasive Species Ireland (Kelly *et al.* 2008). (Frequency: annual. Target date: ongoing. Responsibility: FCC, NPWS, BWI).

C4. Monitor impacts of visitor disturbance on breeding gulls

A sample of nesting Herring Gulls and Great Black-backed Gulls will be monitored by recording breeding success/productivity in selected areas. Study areas will be selected to represent different levels of disturbance. The results of this monitoring will inform future actions including seasonal wardening, visitor management and rat control. (Frequency: every 5 years. Target date: 2021. Responsibility: FCC, NPWS, BWI).

C5. Monitor breeding bird populations

A complete census of all seabird species (except Gannet) will be undertaken every three years. Gannets are covered on a 10-year cycle using aerial photographs. The extent and numbers of birds nesting on the main island will be monitored at intervals. Information on seabird breeding productivity is the foremost gap and this can be obtained using fixed plots. BirdWatch Ireland has initiated this work systematically in 2017, covering Shag, Kittiwake, Guillemot and Razorbill with less complete work or smaller sample sizes for Cormorant and Fulmar. The number of nests per plot (=sub-colony) will also give an index of population size. The results of this monitoring will inform future actions including seasonal wardening, visitor management and rat control. (Frequency: every 3 years. Target date: 2019, 2022. Responsibility: FCC, NPWS, BWI).



Figure 30: Martello tower showing door opening and missing brickwork

8.3.4. Cultural heritage

D1. Undertake repairs to Martello Tower

There is potential for damage to the Martello Tower due to visitors climbing on the exterior and gaining unauthorised access to the interior (Figure 30). It is proposed to undertake minor conservation measures to prevent this occurring in future. This will include the installation of a security door (or grill) in the existing opening and the repointing of masonry below the door. These measures will require licencing under the National Monuments Act 1930 (and amendments) and prior consultation with the National Monuments Service of the DCHG. (Target date: 2018. Responsibility: FCC, NMS).

D2. Undertake archaeological research

There is considerable archaeological potential on the island that is currently unrealised. This includes a possible ecclesiastical settlement that would have been associated with the church, possible promontory fort or possible middens in the sand dunes. LiDAR (Light Detection and Ranging), which could be used to obtain a better understanding and interpretation of the physical, topographical and cultural heritage landscape on the island. LiDAR has the ability to map features obscured by vegetation and/or which may be indistinguishable on the ground. If funding were made available, a programme of research excavation could be devised (subject to the permission of, and in consultation with, the National Monuments Service, DCHG), perhaps in partnership with an academic institution. The most rewarding sites on the island in terms of archaeological excavation are likely to be in the vicinity of the church or at the site of the possible promontory fort. Excavation works close to a recorded archaeological site/monument will require licencing under the National Monuments Act 1930 (and amendments). (Target date: medium term. Responsibility: FCC, NMS).

8.3.5. Information and interpretation

E1. Provide an information panel

It is proposed to design and erect an information panel on the end of West Pier at Howth Harbour (Figure 31). This location will be accessible to a large number of people compared to the relatively small number that visit the island at present. The panel will give a summary of information on the important features of the island (habitats, birds, cultural heritage) and a code of conduct for visitors (avoiding disturbance to birds, prohibition of dogs, fires and camping, etc.). The information panel will be erected in conjunction with the Harbourmaster's Office. (Target date: 2018. Responsibility: FCC).



Figure 31: End of Howth West Pier where an information panel could be located

E2. Provide an interpretative leaflet

A simple information leaflet will be provided each year for distribution to visitors. This could contain a summary of information on the important features of the island (habitats, birds, cultural heritage) and a code of conduct for visitors. The leaflets will be offered to all the ferry operators to distribute to visitors during the crossing to the island. Leaflets could also be made available through organisations, such as yacht clubs, sea kayakers, climbers, scout groups and wildlife organisations. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

E3. Submit accurate information to tourism websites

It is clear that some of the existing tourism websites contain incomplete or misleading information visiting the island. This will be improved by submission of accurate and up-to-date information on a regular basis. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

E4. Develop an ambassador program in conjunction with a local primary school

An ambassador program will be established in conjunction with a local primary school to build up pupils' knowledge of Ireland's Eye. This could be done by means of site visits and school work so the children (and their families) feel connected with and knowledgeable about the heritage of the island. This will be done in with assistance of voluntary organisations and expert input. These ambassador programs will be developed as part of the Dublin Bay Biosphere initiative. It is also hoped to organise a "conference" for school children, whereby pupils give brief presentations on their species or sites to other children in Dublin Bay. (Frequency: annual. Target date: ongoing. Responsibility: FCC).

9. PLAN REVIEW

This management plan covers the period 2018 to 2022. The plan will be reviewed in 2022 and updated for a further five-year period 2023-2027 to take account of any changes that have happened in the interim.

10. BIBLIOGRAPHY

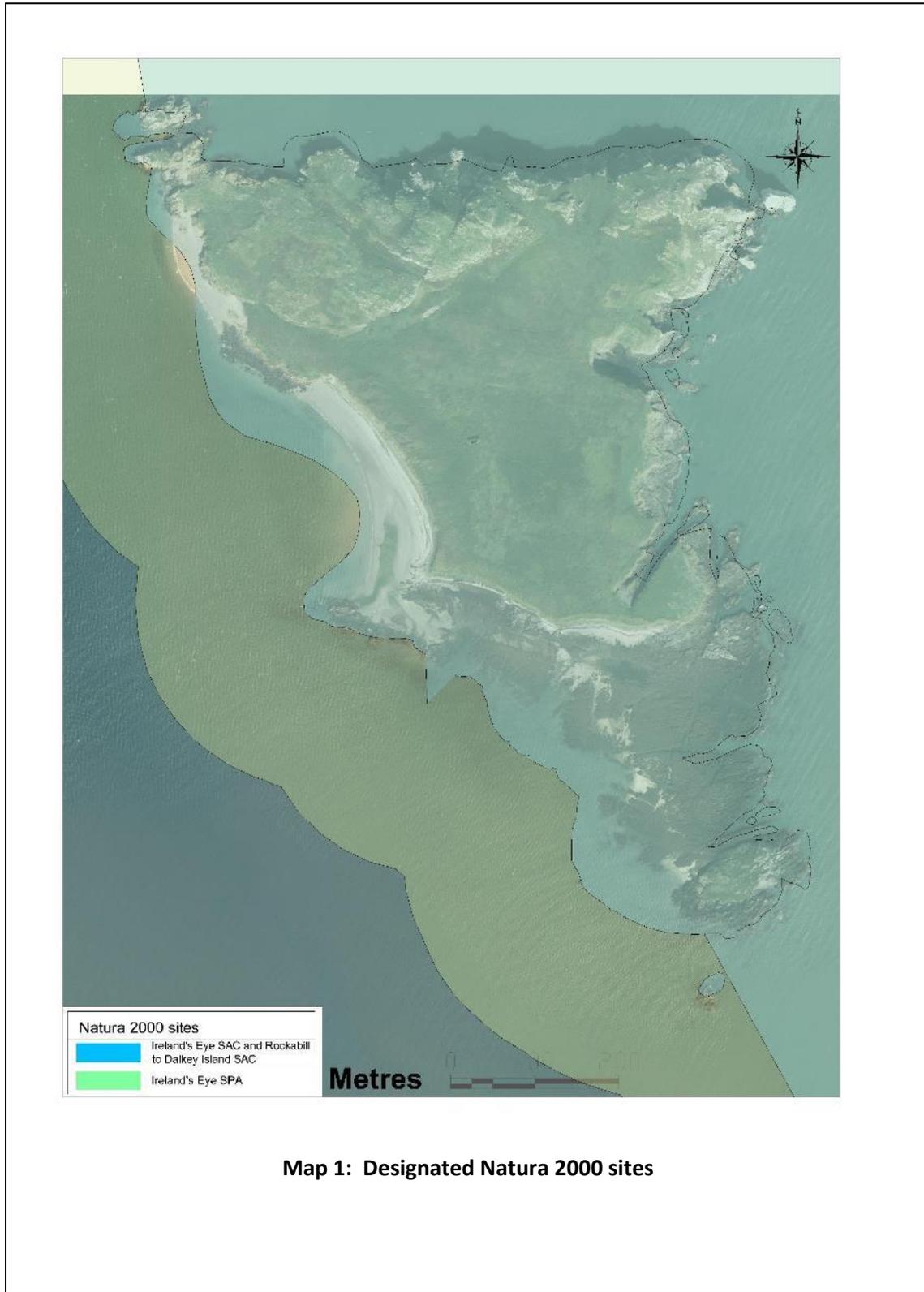
- Alexander, M. 2009. *Management Planning for Nature Conservation*. Springer.
- Berrow, S.D., Hickey, R., O'Brien, J. O'Connor, I. and McGrath, D. 2008. Harbour Porpoise Survey 2008. Report to the National Parks and Wildlife Service. Irish Whale and Dolphin Group.
- Berrow, S., Hickey, R., O'Connor, I. and McGrath, D. 2014. Density estimates of harbour porpoise (*Phocoena phocoena*) at eight coastal sites in Ireland. *Biology and Environment* 114B (1), 19-34.
- Berrow, S. and O'Brien, J. 2013. Harbour Porpoise SAC Survey (2013) Report to the National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht. Irish Whale and Dolphin group. pp37.
- Bolton, J. 2008. *Martello Towers Research Project*. Dublin: Dun Laoghaire-Rathdown & Fingal County Councils.
- Bolton, J., Carey, T., Goodbody, R. and Clabby, G. 2012. *The Martello Towers of Dublin*. Dun Laoghaire-Rathdown County Council and Fingal County Council
- Casey, M. 1999. *The Coastal Promontory Forts of Ireland*. M. A. Thesis, NUI Galway.
- Clarke, A., Parkes, M. & Gatley, S. 2007. *The Geological Heritage of Fingal. An audit of County Geological Sites in Fingal*. Dublin. Geological Survey of Ireland.
- Cochrane, R. 1893. 'Notes on the ecclesiastical antiquities in the Parish of Howth, Co. Dublin', in *Journal of the Royal Society of Antiquaries of Ireland*, Fifth Series, Vol. 3, No. 4, pp.386-407.
- Colgan, N. 1908. Dublin Marine Biological Committee. General account of dredging operations, 1907 with special notes on the Mollusca. *The Irish Naturalist* 17, 105-114.
- Colhoun, K. & Cummins, S. 2013. Birds of Conservation Concern in Ireland 2014-2019. *Irish Birds* 9: 523-544.
- Cooney, G. 1990. 'Dublin's Islands', in *Archaeology Ireland*, Vol. 4, No. 4 (Winter, 1990), pp.7-9.
- Cooney, G. 1993. 'Lambay: An Island on the horizon', in *Archaeology Ireland*, Vol. 7, No. 4 (Winter, 1993), pp.24-28.
- Crowley, C. 2016. Cultural Heritage Study of Ireland's Eye, North County Dublin. Report by Courtney Deery Heritage Consultancy to Fingal County Council.
- Dolan, B & Cooney, G. 2010. 'Lambay lithics: the analysis of two surface collections from Lambay, Co. Dublin', in *Proceedings of the Royal Irish Academy, Section C: Archaeology, Celtic Studies, History, Linguistics, Literature*, Vol. 110C (2010), pp. 1-33.
- Doogue, D., Nash, D., Parnell, J., Reynolds, S. & Wyse Jackson, P. 1998 *Flora of County Dublin*. The Dublin Naturalists' Field Club, Dublin.
- Ecoserve 2006. *Fisheries Study of Fingal Coastal Zone*. Report to Fingal County Council.

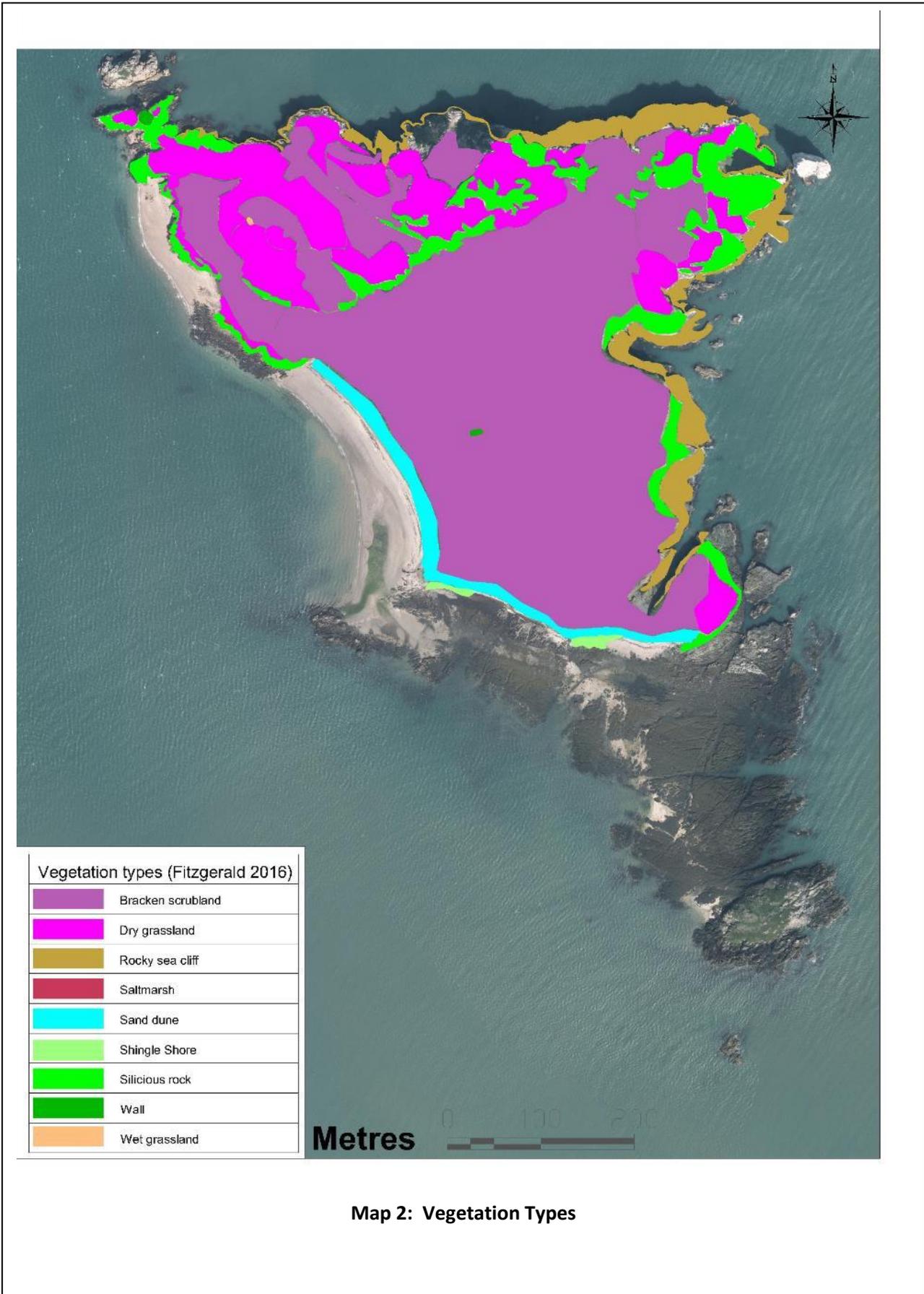
- Elrington, C. R. (ed.) 1848. *The whole works of the most Rev. James Ussher, D.D., Lord Archbishop of Armagh, and Primate of all Ireland: With a life of the author, and an account of his writings.* Dublin: Hodges & Smith.
- Fitzgerald, A. 2016. Vegetation Study of Ireland's Eye, Co. Dublin. Report to Fingal County Council.
- Fossitt, J. A. 2000. *A Guide to Habitats in Ireland.* Heritage Council. Kilkenny.
- Iredale, R. & Veale, N.W. 2017. Greater Dublin Drainage Pipeline Ornithology Surveys 2014-2017: Draft Estuarine, Coastal and Marine Ornithology Technical Report (unpublished). Report for Irish Water prepared by RPS Planning and Development Limited.
- Kelly, J., Maguire, C.M. & Cosgrove, P.J. 2008. *Invasive Predatory Mammals on Islands Strategy.* Prepared for NIEA and NPWS as part of Invasive Species Ireland.
- Liversage, G.D. 1968. 'Excavations at Dalkey Island, Co. Dublin, 1956-1959'. *Proceedings of the Royal Irish Academy* 66C, pp. 53-233.
- Madden, B. 2004. Oystercatchers breeding on Lambay and a review of their breeding status on the east coast. *Irish East Coast Bird Report* 2001: 95-99.
- Madden, B. & Merne, O.J. 2006. An annotated list of the birds of Ireland's Eye. *Irish East Coast Bird Report* 2002: 106-117.
- McBrierty, V. J. (ed.) 1981. *The Howth Peninsulas: its history, lore and legend.* Dublin: North Dublin Round Table.
- McNeill, C. (ed.) 1950. *Calendar of Archbishop Alen's Register, c. 1172-1534: prepared and edited from the original in the Registry of the United Dioceses of Dublin and Glendalough and Kildare by Charles McNeill ; with an index compiled by Liam Price.* Dublin: Royal Society of Antiquaries of Ireland.
- McQuade, M. & O'Donnell, L. 2007. 'Late Mesolithic fish traps from the Liffey Estuary, Dublin, Ireland', in *Antiquity* 81, pp. 569-584.
- MERC 2010. Irish Sea Reef Survey Project Report. Carried out by MERC on behalf of National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.
- MERC 2012a. Intertidal Reef Survey of Lambay Island SAC and SPA, Rockabill Island SPA, Ireland's Eye SAC, Dalkey Islands SPA and Muglins. Carried out by MERC on behalf of the Marine Institute in partnership with National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.
- MERC 2012b. Subtidal Reef Survey of Lambay Island SAC and SPA, Rockabill Island SPA, Ireland's Eye SAC, Dalkey Islands SPA and Muglins. Carried out by MERC on behalf of the Marine Institute in partnership with National Parks and Wildlife Service, Department of Environment, Heritage and Local Government.
- Merne, O.J. & Madden, B. 2000. Breeding seabirds of Ireland's Eye, County Dublin. *Irish Birds* 6:495-506.
- Mitchell, G.F. 1956. An early kitchen midden at Sutton, Co. Dublin. *Journal of the Royal Society of Antiquaries of Ireland* 86, pp. 1-26.
- Mitchell, P.I., Newton, S.F., Ratcliffe, N. & Dunn, T.E. 2004. Seabird populations of Britain and Ireland. Poyser, London.

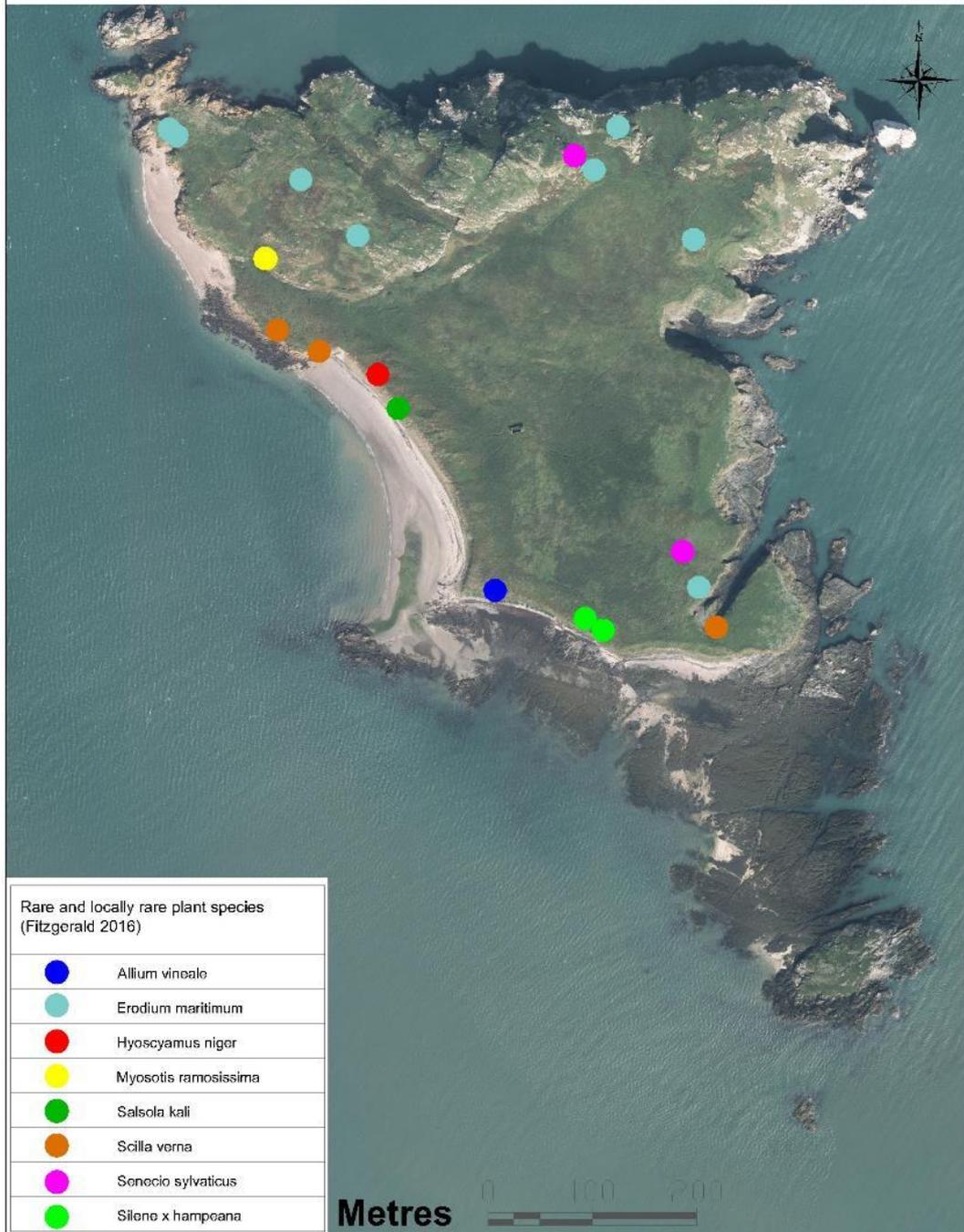
- Moss, R. 2016. 'What's in a name? The Garland of Howth', Early Irish Manuscripts Blog of Trinity College Library, <https://www.tcd.ie/library/early-irish-mss/whats-in-a-name-the-garland-of-howth>.
- Newton, S.F., Harris, M.P. & Murray, S. 2015. Census of Gannet *Morus bassanus* colonies in Ireland in 2013-2014. *Irish Birds* 10: 215-220.
- Newton, S., Power, A. and Crowe, O. 2016. Ireland's Eye 2016. Breeding Birds Survey and Visitor Activity and Impact Study. Report by BirdWatch Ireland to Fingal County Council.
- O'Brien, J. and Berrow, S.D. 2016. Harbour porpoise surveys in Rockabill to Dalkey Island SAC, 2016. Report to the National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht. Irish Whale and Dolphin Group. pp. 24.
- Ó Cadhla, O., Strong, D., O'Keeffe, C., Coleman, M., Cronin, M., Duck, C., Murray, T., Dower, P., Nairn, R., Murphy, P., Smiddy, P., Saich, C., Lyons, D. & Hiby, A.R. 2008. An assessment of the breeding population of grey seals in the Republic of Ireland, 2005. Irish Wildlife Manuals No. 34. National Parks & Wildlife Service, Department of the Environment, Heritage and Local Government, Dublin, Ireland. 60pp.
- Ó Cadhla, O., Keena, T., Strong, D., Duck, C. and Hiby, L. 2013. *Monitoring of the breeding population of grey seals in Ireland, 2009 - 2012*. Irish Wildlife Manuals, No. 74. National Parks and Wildlife Service, Department of the Arts, Heritage and the Gaeltacht, Dublin, Ireland.
- O'Sullivan, A. 2004. *The Social and Ideological Role of Crannogs in Early Medieval Ireland*. Unpublished PhD Thesis, NUI Maynooth.
- Petrie, G. 1845 (1970 reprint). *The Ecclesiastical Architecture of Ireland: an essay on the origin and uses of the round towers of Ireland*. Shannon: Irish University Press.
- Parkes, M. 2012. *Islands, Coasts and Quarries: The Geological Heritage of Fingal*. Swords. Fingal County Council.
- Van Lunsen, H.A. & Max, M.D. 1975. *The Geology of Howth and Ireland's Eye*, Co. Dublin. *Geological Journal* 10: 35-58.
- Walsh, D. *Oileain: The Irish islands guide*. Pesada Press. Caernarfon, Wales.
- Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M.W. & Tasker, M.L. 1995. *Seabird monitoring handbook for Britain and Ireland*. JNCC, Peterborough.
- Wakeman, W. F. 1892. 'Ante-Norman churches in the County of Dublin', in *Journal of the Royal Society of Antiquaries of Ireland*, Fifth Series, Vol. 2, No. 2, pp.101-106.
- Woodman, P.C., Anderson, E. & Finlay, N. 1999. *Excavations at Ferriter's Cove, 1983-95*, Dublin: Wordwell.
- Wyse Jackson, M., FitzPatrick, Ú., Cole, E., Jebb, M., McFerran, D., Sheehy Skeffington, M. & Wright, M. 2016. *Ireland Red List No. 10: Vascular Plants*. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland.

11. APPENDIXES

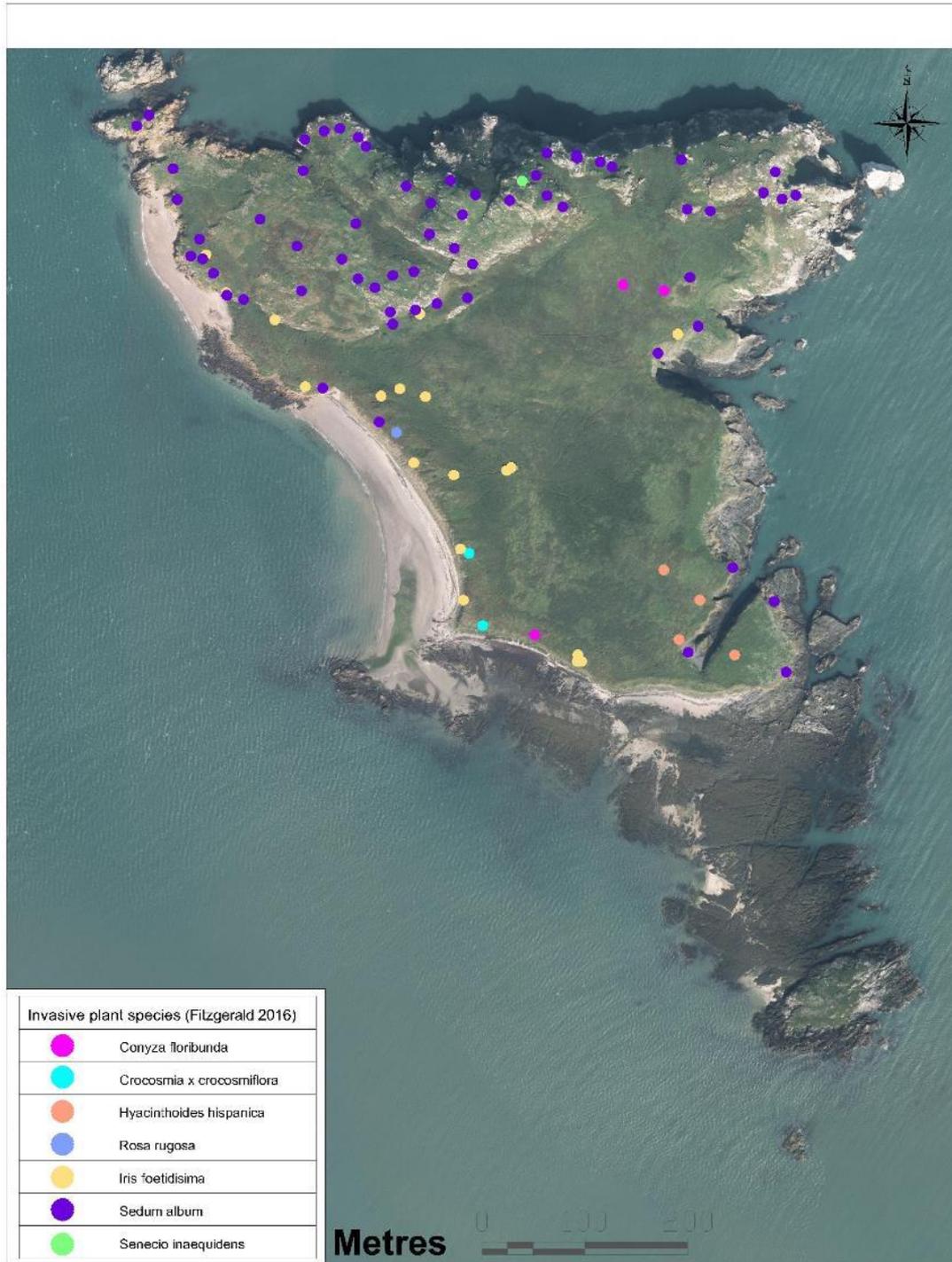
APPENDIX 1: MAPS



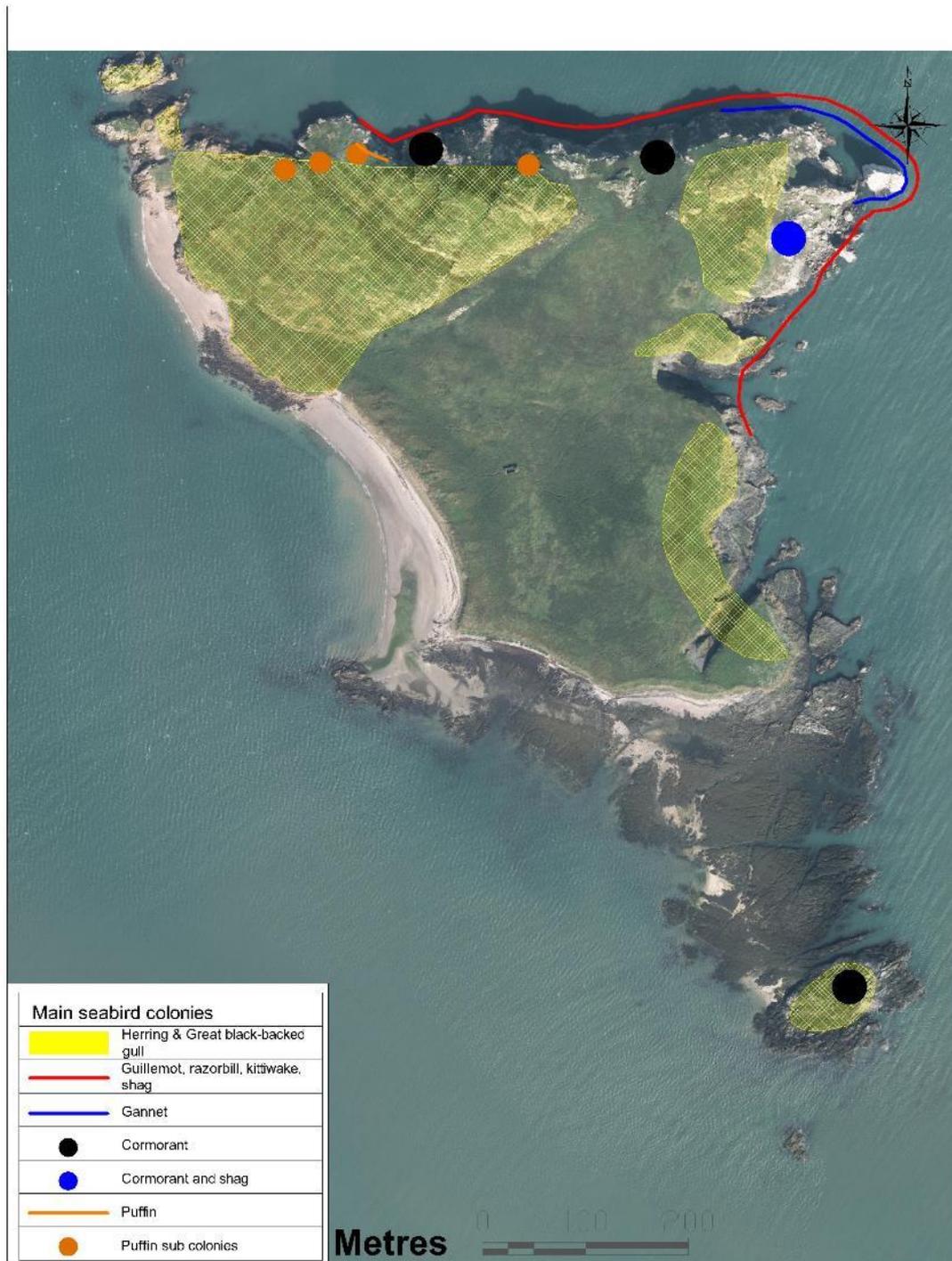




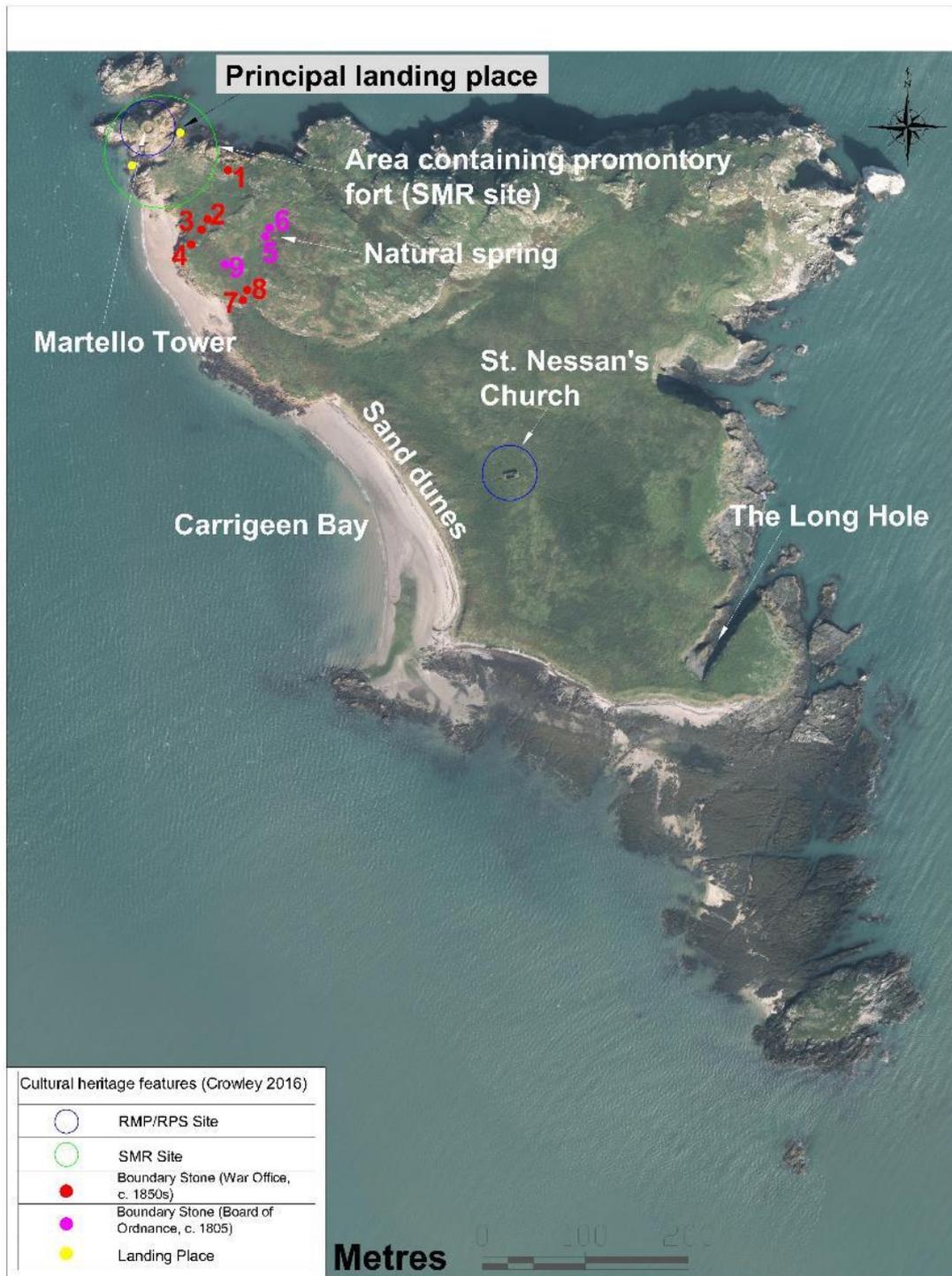
Map 3: Rare and locally rare plant species



Map 4: Invasive plant species



Map 5: Main seabird colonies



Map 6: Cultural heritage features



Map 7: Visitor survey sectors



Map 8: Proposed key features, paths and direction signs



Map 9: Permanent botanical quadrats

APPENDIX 2: CONSERVATION OBJECTIVES FOR NATURA 2000 SITES

Conservation Objectives for : Ireland's Eye SAC [002193]

1220 Perennial vegetation of stony banks

To maintain the favourable conservation condition of Perennial vegetation of stony banks in Ireland's Eye SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	The current area of perennial vegetation of stony banks in Ireland's Eye SAC is unknown. The habitat was recorded as being present, but its extent was not mapped, from one sub-site during the National Shingle Beach Survey (NSBS; Moore and Wilson, 1999); Ireland's Eye (NSBS site ID: 0138). A total area of 0.13ha of vegetated shingle was recorded at Ireland's Eye (CMP site ID: 008) during the Coastal Monitoring Project (CMP; Ryle et al., 2009). NB further unsurveyed areas may be present within the SAC. See the Ireland's Eye SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes including erosion and succession. See map 3 for mapped locations	The full distribution within the SAC is unknown at present, although the habitat was recorded at Ireland's Eye by Moore and Wilson (1999) and by Ryle et al. (2009). Shingle occurs on the western shore between sand hills and a sandy beach. The habitat is likely to be more widespread. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Moore and Wilson (1999) and Ryle et al. (2009). The shingle within Ireland's Eye SAC comprises coarse sand and fine gravel. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Moore and Wilson (1999) and Ryle et al. (2009). At Ireland's Eye, there is an extensive area of bedrock shore, which grades into sandy beaches and shingle, which are backed by low sand hills. See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the typical vegetated shingle flora including the range of sub-communities within the different zones	Based on data from Moore and Wilson (1999) and Ryle et al. (2009). The shingle beach at Ireland's Eye SAC has poor vegetation, mainly limited to some marram (<i>Ammophila arenaria</i>) at the back of the beach. Curled dock (<i>Rumex crispus</i>), silverweed (<i>Potentilla anserina</i>) and spear-leaved orache (<i>Atriplex prostrata</i>) was also recorded. See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Moore and Wilson (1999) and Ryle et al. (2009). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. The CMP noted that the negative indicator species creeping thistle (<i>Cirsium arvense</i>) and common nettle (<i>Urtica dioica</i>) are present but rare in this habitat. See the coastal habitats supporting document for further details

Conservation Objectives for : Ireland's Eye SAC [002193]

1230 Vegetated sea cliffs of the Atlantic and Baltic coasts

To maintain the favourable conservation condition of Vegetated sea cliffs of the Atlantic and Baltic coasts in Ireland's Eye SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat length	Kilometres	Area stable, subject to natural processes, including erosion. Total length of cliff mapped: 2.57km. See map 3	Based on data from the National Inventory of Sea Cliffs and Coastal Heath (Browne, 2005). The length of cliff was re-digitised (onto 1:5000 OSi map background) and is estimated to be 2.57km within Ireland's Eye SAC. Cliffs are linear features and are therefore measured in kilometres. See the Ireland's Eye SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline, subject to natural processes. See map 3	Sea cliffs are known to occur along the coastline at Ireland's Eye extending from the north-west along the northern coastline to the south-east of the island and reach a height of 69m on the north-east side. It is thought that all of the cliffs in this SAC are of the hard type (Browne, 2005). See the coastal habitats supporting document for further details
Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes, including groundwater quality, due to artificial structures	Attribute and target based on Barron et al. (2011). Maintaining natural geomorphological processes, including natural erosion, is important for the health of vegetated sea cliffs. Hydrological processes maintain flushes, and in some cases tufa formations, that can be associated with sea cliffs. Hydrological features such as gullies, streams or cascades may occur on sea cliffs. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession	Attribute and target based on Barron et al. (2011). Dry grassland merges with sea cliff vegetation on Ireland's Eye. See the coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Attribute and target based on Barron et al. (2011). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in the Irish Sea Cliff Survey (Barron et al., 2011)	The sea cliff flora at Ireland's Eye SAC includes rock sea-spurrey (<i>Spergularia rupicola</i>), sea stork's-bill (<i>Erodium maritimum</i>), rock samphire (<i>Cirithium maritimum</i>), golden samphire (<i>Inula crithmoides</i>), rock sea-lavender (<i>Limonium binervosum</i>), meadow rue (<i>Thalictrum minor</i>), Portland spurge (<i>Euphorbia portlandica</i>) and tree-mallow (<i>Lavatera arborea</i>). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage	Negative indicator species (including non-native species) to represent less than 5% cover	Attribute and target based on Barron et al. (2011). Hogweed (<i>Heracleum sphondylium</i>), common nettle (<i>Urtica dioica</i>) and slender thistle (<i>Carduus tenuiflorus</i>) are common in areas beneath seabird colonies in the SAC. See the coastal habitats supporting document for further details
Vegetation composition: bracken and woody species	Percentage	Cover of bracken (<i>Pteridium aquilinum</i>) on grassland and/or heath less than 10%. Cover of woody species on grassland and/or heath less than 20%	Attribute and target based on Barron et al. (2011). Bracken (<i>Pteridium aquilinum</i>) has not been recorded on the sea cliffs in Ireland's Eye SAC, however bracken is present in the dry grassland behind the cliffs. See the coastal habitats supporting document for further details

Conservation objectives for Ireland's Eye SPA [004117]

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

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

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

Favourable conservation status of a habitat is achieved when:

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

The favourable conservation status of a species is achieved when:

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

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

Bird Code	Common Name	Scientific Name
A017	Cormorant	<i>Phalacrocorax carbo</i>
A184	Herring Gull	<i>Larus argentatus</i>
A188	Kittiwake	<i>Rissa tridactyla</i>
A199	Guillemot	<i>Uria aalge</i>
A200	Razorbill	<i>Alca torda</i>

Conservation Objectives for : Rockabill to Dalkey Island SAC [003000]

1170 Reefs

To maintain the favourable conservation condition of Reefs in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area is stable or increasing, subject to natural processes. See map 3	Habitat area estimated as 182ha using 2010 and 2011 intertidal and subtidal reef survey data (MERC, 2010, 2012a,b), InfoMar bathymetry and the Arklow to Skerries Islands Admiralty Chart (1468_0)
Habitat distribution	Occurrence	Distribution is stable or increasing, subject to natural processes. See map 3	Distribution derived from 2010 and 2011 intertidal and subtidal reef survey data (MERC, 2010, 2012a,b), InfoMar bathymetry and the Arklow to Skerries Islands Admiralty Chart (1468_0). See marine supporting document for further details
Community structure	Biological composition	Conserve the following community types in a natural condition: Intertidal reef community complex; and Subtidal reef community complex. See map 4	Reef community mapping based on 2010 and 2011 intertidal and subtidal reef survey data (MERC, 2010, 2012a,b). See marine supporting document for further details

Conservation Objectives for : Rockabill to Dalkey Island SAC [003000]

1351 Harbour porpoise *Phocoena phocoena*

To maintain the favourable conservation condition of Harbour porpoise in Rockabill to Dalkey Island SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use. See map 5	See marine supporting document for further details
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site	See marine supporting document for further details

APPENDIX 3: SCIENTIFIC NAMES OF ANIMALS AND PLANTS

MAMMALS

Species	Scientific name
Brown rat	<i>Rattus norvegicus</i>
Grey seal	<i>Halichoerus gryphus</i>
Harbour seal	<i>Phoca vitulina</i>
Harbour porpoise	<i>Phocoena phocoena</i>
Rabbit	<i>Oryctolagus cuniculus</i>

BIRDS

Species	Scientific name
Fulmar	<i>Fulmaris glacialis</i>
Kittiwake	<i>Rissa tridactyla</i>
Shag	<i>Phalacrocorax aristotelis</i>
Guillemot	<i>Uria aalge</i>
Razorbill	<i>Alcatorda</i>
Cormorant	<i>Phalacrocorax Carbo</i>
Lesser Black-backed Gull	<i>Larus fruscus</i>
Puffin	<i>Fratercula arctica</i>
Herring Gull	<i>Larus argentatus</i>
Great Black-backed Gull	<i>Larus marinus</i>
Gannet	<i>Morus bassana</i>
Robin	<i>Erithacus rubecula</i>
Oystercatcher	<i>Haematopus ostralegus</i>
Shelduck	<i>Tadorna tadorna</i>
Hooded Crow	<i>Corvus cornix</i>
Rock Pipit	<i>Anthus petrosus</i>
Stonechat	<i>Saxicola torquatus</i>
Wren	<i>Troglodytes troglodytes</i>
Blackbird	<i>Turdus merula</i>
Reed Bunting	<i>Emberiza schoeniclus</i>
Linnet	<i>Carduelis cannabina</i>
Whitethroat	<i>Sylvia communis</i>
Meadow Pipit	<i>Anthus pratensis</i>
Pied Wagtail	<i>Motacilla alba</i>
Wheatear	<i>Oenanthe oenanthe</i>
Willow Warbler	<i>Phylloscopus trochilus</i>
Song Thrush	<i>Turdus philomelos</i>
House Martin	<i>Delichon urbicum</i>
Sand Martin	<i>Riparia riparia</i>
Swallow	<i>Hirundo rustica</i>

FLOWERING PLANTS

Habitat	Common Name	Scientific Name
Bracken Scrubland	Bracken	<i>Pteridium aquilinum</i>
	Common Nettle	<i>Urtica dioica</i>
	Common Hogweed	<i>Heracleum sphondylium</i>
	Barren Brome	<i>Anisantha sterilis</i>
	False Oat-grass	<i>Arrhenatherum elatius</i>
	Ground-ivy	<i>Glechoma hederacea</i>
	Lesser Celandine	<i>Ficaria verna</i> sp. <i>fertilis</i>
	Bluebell	<i>Hyacinthoides non-scripta</i>
	False Brome	<i>Brachypodium sylvaticum</i>
	Lords-and-Ladies	<i>Arum maculatum</i>
Rosebay Willowherb	<i>Chamerion angustifolium</i>	
Dry grassland	Soft-brome	<i>Bromus hordeaceus</i>
	Biting Stonecrop	<i>Sedum acre</i>
	Sea Campion	<i>Silene uniflora</i>
	Sand Sedge	<i>Carex arenaria</i>
	Rock Sea-spurrey	<i>Spergularia rupicola</i>
	Buck's-horn Plantain	<i>Plantago coronopus</i>
	Thrift	<i>Armeria maritima</i>
	Slender Thistle	<i>Carduus tenuiflorus</i>
	Sea Stork's-bill	<i>Erodium maritimum</i>
Rocky Sea Cliff	Thrift	<i>Armeria maritima</i>
	Red Fescue	<i>Festuca rubra</i>
	Sea Plantain	<i>Plantago maritima</i>
	Biting Stonecrop	<i>Sedum acre</i>
	English Stonecrop	<i>Sedum anglicum</i>
Siliceous Rocky	Biting Stonecrop	<i>Sedum acre</i>
	English Stonecrop	<i>Sedum anglicum</i>
	Thrift	<i>Armeria maritima</i>
	Red Fescue	<i>Festuca rubra</i>
	Sheep's-fescue	<i>Festuca ovina</i>
	Rock Sea-spurrey	<i>Spergularia rupicola</i>
	Early Hair-grass	<i>Aira praecox</i>
	Polypody	<i>Polypodium vulgare</i>
Sea Beet	<i>Beta vulgaris</i> ssp. <i>maritima</i>	

Habitat	Common Name	Scientific Name
	Wood Sage	<i>Teucrium scorodonia</i>
	Navelwort	<i>Umbilicus rupestris</i>
	Honeysuckle	<i>Lonicera periclymenum</i>
Sand Dune	Portland Spurge	<i>Euphorbia portlandica</i>
	Spring Squill	<i>Scilla verna</i>
	Red Fescue	<i>Festuca rubra</i>
	Sand Sedge	<i>Carex arenaria</i>
	Thrift	<i>Armeria maritima</i>
	Common Stork's-bill	<i>Erodium cicutarium</i>
	Sea Rocket	<i>Cakile maritima</i>
	Sand Couch	<i>Elytrigia juncea</i>
	Slender thistle	<i>Carduus tenuiflorus</i>
	Sea Spurge	<i>Euphorbia paralias</i>
	Sea Radish	<i>Raphanus raphanistrum ssp. maritimus</i>
	Scarlet Pimpernel	<i>Anagallis arvensis</i>
	Marram Grass	<i>Ammophila arenaria</i>
	Spear-leaved Orache	<i>Atriplex prostrata</i>
	Curled Dock	<i>Rumex crispus var. littoreus</i>
	Sea Mouse-ear	<i>Cerastium diffusum</i>
	Bulbous Buttercup	<i>Ranunculus bulbosus</i>
	Lady's Bedstraw	<i>Galium verum</i>
	Mouse-ear Hawkweed	<i>Pilosella officinarum</i>
	Prickly Saltwort	<i>Salsola kali</i>
Henbane	<i>Hyoscyamus niger</i>	
Salt Marsh	Common Saltmarsh-Grass	<i>Puccinellia maritima</i>
	Seaside Arrowgrass	<i>Triglochin maritima</i>
	Blackgrass	<i>Juncus gerardii</i>
	Common Scurvygrass	<i>Cochlearia officinalis</i>
	Seaside Brookweed	<i>Samolus valerandi</i>
Shingle Shore	Common beet	<i>Beta vulgaris</i>
	Sea mayweed	<i>Tripleurospermum maritimum</i>
	Henbane	<i>Hyoscyamus niger</i>
	European beachgrass	<i>Ammophila arenaria</i>
Wall vegetation	Sea-fern Grass	<i>Catapodium marinum</i>
	Wall barley	<i>Hordeum murinum</i>

Habitat	Common Name	Scientific Name
	Biting Stonecrop	<i>Sedum acre</i>
Wet grassland	Creeping Buttercup	<i>Ranunculus repens</i>
	Common Rush	<i>Juncus effusus</i>
	Silverweed Cinquefoil	<i>Potentilla anserina</i>
	Common Water-Starwort	<i>Callitriche stagnalis</i> s.s.
	Common Spike-rush	<i>Eleocharis palustris</i>