

Natura Impact Statement
Repair of Sea-wall along Old Lighthouse Road
Skellig Michael Island– *Phase 4*



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1 SUMMARY OF FINDINGS

1.1 NATURA IMPACT STATEMENT

Project Title	Repair works to seawall along the Old Lighthouse Road and Old Lighthouse Ruin on Skellig Michael Island (Phase 4 of Upper Lighthouse Road conservation project).
Project Proponent	The Office of Public Works (OPW)
Proposed Mitigation Measures	<ul style="list-style-type: none"> • Preconstruction surveys will take place for all bird species prior to any work being carried out as this will provide baseline information and inform construction works using the appropriate mitigation measures. • Preconstruction tape playback surveys for Storm petrel and Manx shearwater 7-10 days prior to works commencing to identify potential nesting sites. Additionally an endoscope will be used to investigate potential nest sites for Storm petrel, Manx shearwater and Puffin. • Nests shall be marked out and labelled within each works area prior to works commencing. • Wooden dowels shall temporarily be put in place during daylight hours prior to works commencing to ensure that existing tunnels/openings to nesting sites within the wall remain open following works. • Workers shall be supervised by an on-site ornithologist to ensure appropriate mitigation measures are being implemented. • Removal of earth build-up and debris from the Upper Lighthouse buildings will take place in April 2021. An Environmental Clerk of Works (ECoW) will be appointed to oversee and monitor these works. • The ECoW will be present for the full duration of removal of debris from the Upper Lighthouse (approx. 2 weeks on-site).
Conclusion	<p>In conclusion, provided the recommended mitigation measures are implemented in full, it is not expected that the proposed Phase 4 remedial works will result in an adverse impact on the Natura 2000 sites, in view of the sites conservation objectives, considered in this NIS, namely the;</p> <ul style="list-style-type: none"> • Skelligs SPA (004007).

2 INTRODUCTION

In cases where an Appropriate Assessment is required a Natura Impact Statement (NIS) shall be prepared and shall include a report of a scientific examination of evidence and data, carried out by competent persons to identify and classify any implications for Natura 2000 sites in the view of the conservation objectives of the site. The aim of the assessment is to provide a sufficient level of information to the competent authority on which to base their appropriate assessment of the plan or project. The proposed project has been fully described in **Section 4** below. The test of the assessment is whether the plan or project will have 'an adverse effect on the integrity of the site'. Where potentially significant effects are identified proven mitigation measures will be recommended.

The focus of this assessment is to determine whether the repair works to the Upper Lighthouse Compound & gatepost (Area F) and a portion of the seawall adjacent to Lower Lighthouse (Area G) on Skellig Michael Island will have a significant negative impact on the features of interest of the Skelligs SPA.

A Ministerial Consent application was issued by OPW to the Department of Culture, Heritage and the Gaeltacht (DCHG) on 6th March 2020 for the proposed repair works to the existing seawall, existing gatepost and removal of earth build up and debris from the Upper Lighthouse buildings. Grant of Ministerial Consent has not yet been received for the proposed works. Further to this, the OPW National Monuments are submitting an Addendum to the application.

This NIS (Revision D) represents a revised document in light of information contained in the OPW Addendum and will be submitted to the DCHG as part of the revised Ministerial Consent Application. Any changes made to this NIS are presented in red bold text to clarify where changes have been made. The OPW Addendum documents can be found in Appendix 5.

2.1 STATEMENT OF AUTHORITY

This Natura Impact Statement (NIS) has been prepared by Fiona McKenna (BSc.), an ecologist with Malachy Walsh and Partners. Fiona has contributed to numerous Screenings for Appropriate Assessment and Natura Impact Statements for various projects. **March 2021 revisions, as outlined above, have been made by Hazel Dalton (BSc.), ecologist with Malachy Walsh and Partners. Hazel has almost six years' experience with MWP in ecological surveying, ecological impact assessment and the appropriate assessment process, and has undertaken field surveys and prepared several reports for various projects on Skellig Micheal Island.**

Mr. John Murphy, lead ornithologist with Malachy Walsh and Partners, was a contributor to this NIS. He has been a bird watcher for 40 years and has worked professionally as a bird and ecology surveyor since 1982. He was involved in the bird survey design for this project and managed the third year of bird surveys. His knowledge of bird behaviour and bird activity on Skellig Michael Island and nationally has also informed the assessment.

2.2 LEGISLATIVE CONTEXT

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and of wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protected Areas (SPAs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of

Natura 2000, a network of protected sites throughout the European Community. The Habitats Directive has been transposed into Irish law and the relevant Regulations are the European Communities (Birds and Natural Habitats) Regulations 2011. The requirement for Appropriate Assessment of the implications of plans and projects on the Natura 2000 network of sites comes from the Habitats Directive (Article 6(3)) and Part XAB of the Planning and Development Act 2000-2019.

2.3 STAGES OF APPROPRIATE ASSESSMENT

The Appropriate Assessment process is a four-stage process with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The stages are set out in the Appropriate Assessment Screening Report attached as **Appendix 1**.

It has been concluded in the Screening for Appropriate Assessment report that significant impacts on the Skelligs SPA (004007) may potentially occur and could not be ruled.

3 ASSESSMENT METHODOLOGY

3.1 APPROPRIATE ASSESMENT GUIDANCE

This Natura Impact Statement (NIS) has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2000) and guidance prepared by the NPWS (DoEHLG, 2009).

3.2 CONSULTATION

The project was discussed on the 12th February 2020 at a Skellig Michael Design Team meeting. Attendants included Fergus McCormick (OPW), Edward Bourke (Department of Culture, Heritage and the Gaeltacht), Phillip Buckley (NPWS), David Tierney (NPWS) and John Murphy (MWP).

3.3 DESK STUDY

In order to complete the NIS, certain information on the existing environment is required. A desk study was carried out to collate available information on the site's natural environment. This comprised a review of the following publications, data and datasets:

- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS)
 - Conservation Objectives
 - Natura 2000 site data
 - Article 17 reports
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- BirdWatch Ireland (on-line)
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Seabird Populations of Britain and Ireland (Mitchell, Newton, Ratcliffe, & Dunn, 2004)

- Money, S. & Newton, S.F. 2009. A survey of the European Storm-petrel *Hydrobates pelagicus* population in the lower lighthouse road wall on Skellig Michael. BirdWatch Ireland Conservation Report 2009/02, Kilcoole, Co. Wicklow.
- Steve Newton (BirdWatch Ireland) Reports on Storm petrel *Hydrobates pelagicus* population in the lower lighthouse road wall on Skellig Michael, 2013 and 2014.
- Tough, H. & Murphy, J., 2015. *Report on the Biodiversity of Skellig Michael (2015)*, Tralee, Ireland: Malachy Walsh and Partners (Report No. 16775-6002-A.)
- Newton, S.F. & Lynch, J. 2015. A survey of the European Storm-petrel *Hydrobates pelagicus* population nesting in the repaired sections of the lower lighthouse road wall on Skellig Michael. BirdWatch Ireland Conservation Report 2015, Kilcoole, Co. Wicklow.
- Malachy Walsh and Partners, 2019. Bird Survey report for breeding season 2017, 2018 (Report No. 12242-6030-A).
- Malachy Walsh and Partners, 2020. Bird Survey report for breeding season 2019 (Report No. 12242-6033-A).
- Malachy Walsh and Partners, 2020. European Storm petrel report 2015-2020 (Report No. 12242-6035-B)
- Factors affecting survival of fledgling Manx Shearwater (*Puffinus puffinus*) (Perrins, 2014)
- Other information sources and reports footnoted in the course of the report

3.4 ASSESSMENT OF POTENTIALLY SIGNIFICANT EFFECTS

Following the completion of the Screening for Appropriate Assessment, it was concluded that the project could have a significant effect on one Natura 2000 sites, namely Skelligs SPA (004007). An evaluation was undertaken to determine which of the qualifying interests of the SPA potentially lie within the zone of influence of the project and required further assessment in the NIS (see **Section 6** below).

As set out in the NPWS guidance (DoEHLG, 2009), the task of establishing whether a plan or project is likely to have an effect on a Natura 2000 site, namely is based on a preliminary impact assessment using available information and data, including that outlined above, and other available environmental information, supplemented as necessary by local site information and ecological surveys. This is followed by a determination of whether there is a risk that the effects identified could be significant. The precautionary principle approach is adhered to.

Once the potential impacts that may arise from the proposal are identified the significance of these is assessed through the use of key indicators:

- Habitat loss/alteration;
- Habitat or species fragmentation
- Disturbance and/or displacement of species; and
- Water quality and resource;

As mentioned, Stage 2 of Appropriate Assessment (NIS) involves the consideration of the impact on the integrity of the Natura 2000 site of the project, either alone or in combination with other plans or projects, with respect to the site's structure and function and its conservation objectives. Additionally, the mitigation of these impacts can be considered.

4 DESCRIPTION OF PROJECT

4.1 BRIEF PROJECT DESCRIPTION

The proposal relates to the Upper Lighthouse Road which is located in Seal Cove on the western side of Skellig Michael Island. This roadway, bounded by a masonry wall on its seaward side and natural rock-face on the other, runs between the relatively modern, but currently unused, lighthouse building and its associated structures located at the roadways eastern end (known as the Lower Lighthouse), and the original lighthouse building which is now in ruins and located at the roadways western end (known as the Upper/Old Lighthouse). Parts of the sea-wall bounding the roadway have completely collapsed and been lost to the cliff-faces and sea below, while other sections are largely intact with only minor damage evident.

Phase 4 of the project, to which this report pertains, will encompass the Upper Lighthouse compound (ruin), seawall & gatepost (Area F) and the portion of seawall adjacent to Lower Lighthouse (Area G). A drawing showing the section of the Upper Lighthouse compound and wall adjacent to the Lower Lighthouse encompassed by the **Phase 4** works (Area F and Area G) is included in the Figures in **Appendix 2**. This phase of the works will be carried out over the island's coming years. A specific time frame has not been placed for Phase 4 at this time; however, it may start next year, 2021. Any subsequent phases of work will be subject to separate assessment in due course as the overall project progresses.

The proposed works will involve the re-building of lost sections of wall, as well as repair of damaged masonry and replacement of missing capstones. The repair works will require some re-pointing to ensure that the structural integrity of the wall is restored. A lime-based mortar, similar to that which had been previously in-situ, will be used for the repair and rebuilding works. There will be a requirement for removal of surface vegetation as well as some material/debris which has naturally accumulated having fallen from the slopes above. Most of the materials required for the repair works are already present on the island. The exceptions to this are the lime mortar and water which will be brought by boat.

Below in **Sections 4.3.1.1-4.3.1.3** are brief summaries on Phase 1, Phase 2 and Phase 3 of the project which have already been granted consent and commenced.

4.2 SITE LOCATION AND CONTEXT

4.2.1 Site Location

The site is located on the western side of Skellig Michael Island in an area known as Seal Cove. Skellig Michael is an island (the larger of the two Skellig Islands) in the Atlantic Ocean, 11.6 km west of the Iveragh Peninsula in County Kerry, Ireland.

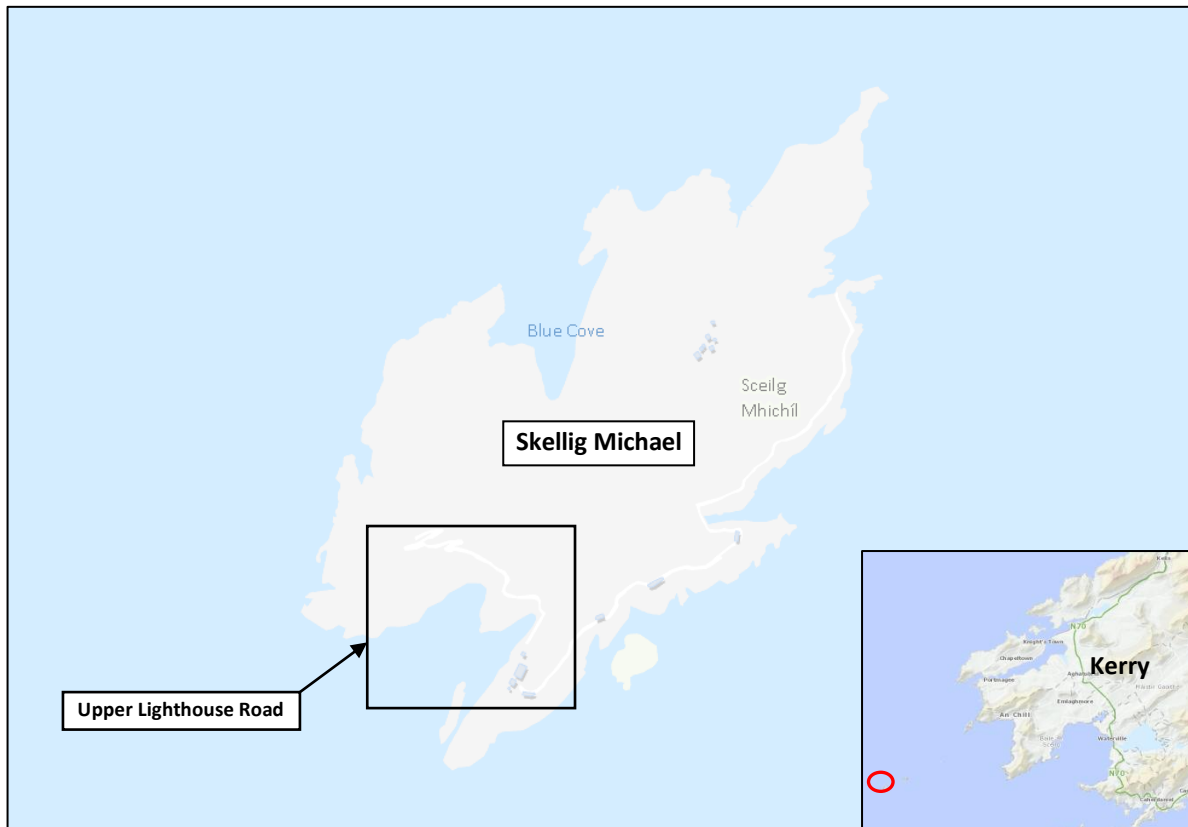


Figure 1: Location of Upper Lighthouse Road on Skellig Michael Island
[OSI Ordnance Survey Ireland Licence No. 0015720]

4.2.2 Description of the Site

Skellig Michael is home to one of the best preserved Christian, monastic settlements dating from the early medieval period, comprising a monastery, hermitage and several stone stairways, which connect the various archaeological features, as well as provide access throughout parts of the island (DEHLG, 2008). The settlement is extremely well-preserved, most probably as a result of the islands remoteness, which together with the harsh weather conditions experienced for much of the year, serves to limit human visitation. However, as a result of its immense archaeological, spiritual and cultural significance, Skellig Michael still attracts large numbers of tourists each year, throughout the summer months. An on-going conservation programme, under the management of the Office of Public Works, also serves to maintain the site through managing visitor access and carrying out necessary maintenance works.

4.3 PURPOSE OF THE PROJECT

The purpose of the Conservation project is to conduct repair works on Skellig Michael. Repairs works are required to the Lower Lighthouse Road retaining wall and Upper Lighthouse compound. The need for the work is due to the loss of the original render on the outside of the retaining wall and the subsequent loss to a large degree of mortar between the stones of the seaward side of the wall due to storm damage and erosion. This has led to the masonry within the wall becoming loose with occasional rupture damage compromise the structural integrity of the wall.

4.3.1 Characteristics of the Project

4.3.1.1 Summary of Consented Phase 1 Works

*Phase 1 of the project was granted consent and commenced in 2017. Phase 1 focussed on three main sections of the Upper Lighthouse Road and seawall to which varying degrees of remedial work were carried out (refer to Area A, Area B and Area C in the Phase 1 works area figure which is included for information in **Appendix 2**).*

4.3.1.2 Summary of Consented Phase 2 Works

*Phase 2 of the project was granted consent and commenced in 2018. Phase 2 focussed on two main sections of the Upper Lighthouse Road and seawall (refer to Area B1 and Area D in the Phase 2 works area figure which is included for information in **Appendix 2**).*

4.3.1.3 Summary of Consented Phase 3 Works

*Phase 3 of the project was granted consent and commenced in 2019. Phase 3 focused on one main section of the sea wall along the Upper Lighthouse Road (refer to Area E in the Phase 3 works area figure which is included for information in **Appendix 2**).*

4.3.1.4 Proposed Phase 4 Works

Phase 4 of the works will encompass the seawall which surrounds the Upper Lighthouse, the ruins & gatepost and a portion of seawall adjacent to the Lower Lighthouse (see Figures in **Appendix 2** for extent of **Phase 4** works). As mentioned previously, this section of the Upper Lighthouse compound sea wall and Lower Lighthouse wall has been subject to varying degrees of damage as a result of natural rock-fall and exposed conditions and as such the degree of remedial works will vary. The proposed works are described in more detail below.

Area F encompasses the seawall which surrounds the Upper Lighthouse compound ruins and the gatepost. Contained within this area are many damaged walls and a crumbled staircase in an old lighthouse tower. Along with the lighthouse ruins there are a number of small outbuildings within the compound with walls and stonework in need of repair. Debris has accumulated on the ground and subsequently vegetation has grown over. Under the debris and vegetation are large flagstones. The aim is to remove the debris and vegetation to expose these flagstones which are original features of the compound. At present the walls are unstable and the repair and remedial works will ensure strength and stability for the future. The gatepost will be inspected and repaired accordingly.

Area G encompasses a portion of the seawall adjacent to the Lower Lighthouse and is similar to the walls which have been repaired previously along the Old Lighthouse Road in earlier phases of the Conservation Project. Existing masonry condition is poor in parts with render still present in some places; however, capstones are missing along certain sections. Although it is likely that most of these capstones have been lost into the sea below, some may now sit on steep, rocky slopes below the

area in question. These may be suitable for re-use in the repair and rebuilding works. On-site rope specialists will retrieve as much dislodged stone as can be safely retrieved from lower levels for use in the remedial works. Masonry repairs required beneath the capping are considered minor, while the exterior face will only require some tightening works. Re-pointing with a lime-based mortar will be carried out on the inner wall face, as was previously in-situ, once the minor masonry repairs and replacement of capstones are complete.

The following table provides a summary of the characteristics of the project.

Table 1: Summary of Project Characteristics

<p><i>Size, scale, area, land-take</i></p>	<p>This assessment covers Phase 4 of remedial works to the Upper Lighthouse compound sea wall and road below the Lower Lighthouse. Varying degrees of remedial work are required, as described in detail in Section 4.3.1.4 above.</p> <p>As part of this phase of works, remedial works will be undertaken in Area F and Area G of the Upper Lighthouse Road (see Figures in Appendix 2).</p> <p>The area of works is located in two distinct areas – Area F concentrated on the Upper Lighthouse (ruin) and Area G concentrated as a wall repair to the sea wall adjacent to the Lower Lighthouse. The proposed repair works are to existing structures in both cases and will not require any further addition to the footprint of these structures.</p> <ul style="list-style-type: none"> • The work to Area F includes repairs to the existing sea wall, removal of organic debris in the area of the ruins, repair to the existing gatepost and removal/inspection of metal elements of the tower structure. • The works to Area G relate to local repair/rebuilding of the seawall as per previous consented work to the seawall. <p>All works will take place within the boundary of the Skelligs SPA (004007). The proposed works will not extend beyond the original wall or roadway footprint. There will be no land-take within the SPA.</p>
<p><i>Details of physical changes that will take place during the various stages of implementing the proposal</i></p>	<p>The erection of scaffolding adjacent to potential nesting sites for Storm petrel. The filling of openings within an existing wall which offers potential nesting habitat for bird species of qualifying interest to the Skelligs SPA.</p> <ul style="list-style-type: none"> • Scaffolding shall be installed, as required, to allow access to the works for ornithological surveys. • Scaffolding will be installed to allow greater access for tape lure surveys. • Scaffolding will be to the seawall but may be locally required in the area of the Upper Lighthouse to facilitate removal of some of the stone and metal elements and an ornithologist shall be onsite supervising the erection of scaffolding. • Scaffolding shall only be installed following initial ornithological surveys to identify sensitive sections within each Area. • A surveyor accesses sections of the wall prior to the erection of scaffolding using a harness. • Nests are marked out prior to the insertion of scaffolding using markers. • Scaffolding shall not be fixed to the wall and no drilling shall be required within the retaining wall. • Access to nesting burrows shall not be obscured by the scaffolding. The erection of scaffolding shall allow greater access to survey harder to reach sections of the retaining wall.
<p><i>Description of resource</i></p>	<ul style="list-style-type: none"> • There shall be a maximum of 5 workers onsite during works. Materials

<i>requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc)</i>	<p>required for the proposed works included the scaffolding which is currently stored on the Island.</p> <ul style="list-style-type: none"> The extra stone material used for the construction of the wall is already stockpiled on the Island. Mortar and water will be brought to the Island for the proposed repair works.
<i>Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)</i>	<ul style="list-style-type: none"> Works to the wall shall take place over a 13-14 week period from early July to late September/early October. Work shall be ongoing when possible over this period as access to the Island is weather dependant.
<i>Description of wastes arising and other residues (including quantities) and their disposal</i>	<p>Wastes arising shall be minimal.</p> <ul style="list-style-type: none"> Scaffolding which is currently stored on the Island following previous years maintenance works shall remain on the Island to be reused for further maintenance works. Waste arising from workers living on the Island (i.e. domestic waste) shall be taken off the Island regularly and disposed of at a suitably licensed facility. Workers shall utilise existing toilet facilities currently available on the Island. Excess lime mortar, washout (which shall be minimal as a limited amount of water will be required to create a dry mortar mix) along with the concrete mortar to be removed from the retaining wall shall be taken off the Island and disposed of at a suitably licensed facility.
<i>Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network</i>	<ul style="list-style-type: none"> Waste arising from workers living on the Island (i.e. domestic waste), excess lime mortar, washout (which shall be minimal as a limited amount of water will be required to create a dry mortar mix) along with the concrete mortar to be removed from the retaining wall shall be taken off the Island and disposed of at a suitably licensed facility. This waste shall be taken off the Island regularly over the works period. Workers shall utilise existing toilet facilities currently available on the Island.
<i>Description of any additional services required to implement the project or plan, their location and means of construction</i>	<ul style="list-style-type: none"> Existing services and living accommodation are available on the Island for construction workers. Water shall be brought to the site for mixing mortar. Electricity shall be provided by means of a diesel powered generator. Water fuel and waste to be stored in the storage shed beside the helipad.

5 DESCRIPTION OF THE RECEIVING ENVIRONMENT

5.1 GENERAL DESCRIPTION OF THE SITE

Located in the north-east Atlantic Ocean, some 11.6km off the mainland, the island is subject to a temperate Atlantic climate, strongly influenced by the Gulf Stream. The geology of Skellig Michael is characterised predominantly by Devonian Old Red Sandstone, which forms the islands two main peaks, the taller of which towers some 218m above the sea below (DEHLG, 2008). Under the exposed weather conditions, erosion and fracturing of rock has resulted in the formation of a relatively flat area, known as Christ's Saddle, which sits between the two peaks and from which stone steps ascend to the monastic buildings above (DEHLG, 2008).

Much of the island surface is characterised by sheer cliff-face, exposed bedrock, boulders and scree. As a result, vegetation cover is not extensive in any area. Where thin soils have accumulated exposure-tolerant plant species such as thrift (*Armeria maritima*), sea-campion (*Silene maritima*), sea-mayweed (*Tripleurospermum maritimum*) and rock sea-spurrey (*Spergularia rupicola*) occur. In

some areas, such as Christ's Saddle and above the Monastery, more extensive areas of vegetation occur, mostly dominated by sea campion. Skellig Michael is of major importance, both in a national and international context, due to its populations of breeding seabirds, both in terms of the species and numbers it sustains (DEHLG, 2008).

5.2 IDENTIFICATION OF OTHER PROJECTS OR PLANS OR ACTIVITIES

5.2.1 Tourism

The island is visited by significant numbers of tourists (approximately 18,000) on an annual basis. The open season typically runs from May to early October with exact opening and closing dates dependent on weather constraints and prevailing sea conditions. Twelve boats are currently licensed to make a single return trip to the island each day during this period, when weather conditions are suitable for the sea crossing. Each boat has a maximum licensed carrying capacity of twelve people. All tourists are strictly daytime visitors, allowed to visit the island between the hours of 10:30 and 15:00 seven days a week. Tourist access is restricted to the eastern half of the island, comprising the East Landing (boat landing area), Lower Lighthouse Road, Monastery and the series of stone steps linking them. There is no public access to the Upper Lighthouse Road.

5.2.2 On-going Remedial Works to Upper Lighthouse Road and Seawall (Phase 1, Phase 2 and Phase 3)

Phase 1, Phase 2 and Phase 3 of the project are partly complete. Once the island's open season has commenced (May 2020) Phase 1, Phase 2 and Phase 3 of the works will continue on the Upper Lighthouse Road. It is expected that there will be an overlap between completion of the Phase 1, Phase 2 and Phase 3 works and the commencement of **Phase 4** works.

6 NATURA IMPACT STATEMENT

6.1 DESCRIPTION OF THE SKELLIGS SPA (004007)

The site comprises Great Skellig and Little Skellig Islands. These highly exposed and isolated islands, which are separated by a distance of 3km, are located in the Atlantic some 14km and 11km (respectively) off the County Kerry mainland.

The Skelligs comprise one of the most important seabird colonies in the country for populations and species diversity. Great Skellig has an internationally important population of Storm petrel (9,994 pairs in 2002)¹, with birds nesting both in the stonework associated with the monastic settlement and in natural crevices amongst the scree and rock. Little Skellig is best known for the long established colony of Gannets, with 26,436 pairs in the last full census in 1994. This is by far the largest colony in Ireland and one of the largest in the world. Great Skellig also has one of the largest colonies of Puffins in the country, with 4,000 individuals estimated in 1999. Other seabird species which occur on the islands in nationally important numbers are as follows (counts made between 1999 and 2002): Fulmar (806 pairs), Manx shearwater (2,370 pairs), Kittiwake (944 pairs), Guillemot (2,551 individuals) and Razorbill (454 individuals)¹.

Great Skellig is a traditional site for chough, though the relatively small size of the Island supports only one nesting pair. Peregrine has also nested in some years. The breeding seabirds on the Skelligs have been fairly well documented over the years, with references to the gannets dating back to the 1700s. Owing to the high importance of the islands for birds, each has been designated a Statutory Nature Reserve. In addition, the non-governmental organisation, BirdWatch Ireland, holds a long-term lease on Little Skellig. There are no known direct threats to the breeding seabird populations, though high numbers of day trippers to Great Skellig could cause disturbance to the fragile soil cover and lead to soil erosion, particularly if visitors do not keep to the stone paths. Little Skellig is largely inaccessible.

In addition to the bird interests, Great Skellig is well known for its early Christian monastic settlement. An automated lighthouse also exists on Great Skellig.

This site is one of the top five seabird sites in the country and is of international importance on account of the Storm petrel and Gannet populations. Storm petrel is listed on Annex I of the E.U. Birds Directive, as is Chough and Peregrine¹. The Skelligs SPA site synopsis is located in **Appendix 3**.

6.2 IDENTIFICATION OF POTENTIALLY SIGNIFICANT IMPACTS TO QUALIFYING FEATURES

When Natura 2000 sites are selected for stage 2 assessments, then all the qualifying features of conservation interest must be included in that stage of the assessment. However, when assessing impact, qualifying features are only considered relevant where a credible or tangible source-pathway-receptor link exists between the proposed development and a protected species or habitat type. In order for an impact to occur there must be a risk initiated by having a 'source' (e.g. nearby watercourse), a 'receptor' (e.g. a protected species associated aquatic or riparian habitats), and an impact pathway between the source and the receptor (e.g. a watercourse which connects the proposed development site to the site designated for the protection of the aforementioned species). Identifying a risk that could, in theory, cause an impact does not automatically mean that the risk

¹<https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004007.pdf>

event will occur, or that it will cause or create an adverse impact. However, identification of the risk does mean that there is a latent possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature of the risk, the extent of the exposure to the risk and the characteristics of the receptor. The potential impacts of the project are identified in **Table 2** below;

Table 2: Identification of potential impacts

<p><i>Description of elements of the project likely to give rise to potential ecological impacts.</i></p>	<ul style="list-style-type: none"> • Works will be conducted entirely within a Natura 2000 site (Skelligs SPA) • Works are scheduled to take place during the breeding season for SCI species • All access and works, as described in Section 4.3.1.4 above, will be conducted within or in close proximity to breeding areas for SCI species • The seawall and old lighthouse compound to which remedial works will be carried out, constitute potential habitat for certain SCI species
<p><i>Describe any likely direct, indirect or secondary ecological impacts of the project (either alone or in combination with other plans or projects) by virtue of:</i></p> <ul style="list-style-type: none"> • <i>Size and scale;</i> • <i>Land-take;</i> • <i>Distance from Natura 2000 Site or key features of the Site;</i> • <i>Resource requirements;</i> • <i>Emissions;</i> • <i>Excavation requirements;</i> • <i>Transportation requirements;</i> • <i>Duration of construction, operation etc.; and</i> • <i>Other.</i> 	<ul style="list-style-type: none"> • Loss of minor area of potential nesting habitat for ground-nesting species (infilling areas where surface vegetation has been removed) • Potential alteration of nesting habitat for some SCI species • Potential disturbance/displacement of species as a result of fugitive noise emissions and increased human activity by virtue of the proximity of nesting seabirds to the proposal site

Table 3 (below) lists the qualifying features of the Skelligs SPA (004007) and evaluates through a scientific examination of evidence and data whether or not these features should or should not be selected for further assessment in the NIS. The qualifying features that are selected for further assessment are discussed further in the section followed by an assessment of potentially significant effects arising from the remedial and repair worked to **Area F** and **Area G** on Skellig Michael Island.

An evaluation based on these factors to determine which species and habitats are the plausible ecological receptors for potential impacts of the unmitigated proposal has been conducted in **Section 6.3** below. This evaluation determined that certain habitats and species (listed in **Table 3** below) should be selected for further assessment as plausible ecological receptors.

Table 3: Identification of potentially significant impacts to qualifying features of the Skelligs SPA (004007)

Qualifying Feature	Potential for Significant Impacts	Rationale
Fulmar (<i>Fulmarus glacialis</i>)	Yes	Fulmar do not use the structure for breeding as shown in previous surveys they prefer to nest on sea cliffs (see Appendix 4) so there will be no direct effects. There is some potential for indirect disturbance effects.
Manx shearwater (<i>Puffinus puffinus</i>)	Yes	Manx shearwater do not use the stone walls for breeding as shown in previous surveys (see Appendix 4). This species prefers to breed in burrows higher up on the Island, the Upper lighthouse ruin may provide suitable habitat.
Gannet (<i>Morus bassanus</i>)	No	Gannet prefer to nest on sea cliffs and do not use the structure for breeding as shown in previous surveys (see Appendix 4).
Kittiwake (<i>Rissa tridactyla</i>)	No	Kittiwake prefer to nest on sea cliffs and do not use the structure for breeding as shown in previous surveys (see Appendix 4).
Guillemot (<i>Uria aalge</i>)	No	Guillemot prefer to nest on sea cliffs and do not use the structure for breeding as shown in previous surveys (see Appendix 4).
Storm petrel (<i>Hydrobates pelagicus</i>)	Yes	Storm petrels are known to nest in gaps/openings within the lower lighthouse retaining wall (see Appendix 4) and in existing debris in the Upper Lighthouse (see Appendix 5).
Puffin (<i>Fratercula arctica</i>)	Yes	Puffins are known to occasionally nest within larger openings including gullies within the retaining wall (see Appendix 4).

***Appendix 4** contains a summary of information from previous surveys carried out on the island; this information was used to assess which species to select for further assessment.

6.2.1.1 Species selected for further assessment

Storm petrels are the main receptor likely to be present in the works area. Puffin and Manx shearwater may also be present but most likely in low or few numbers in comparison to the Storm petrel. It is considered Fulmar may be nesting in close proximity to the existing features so indirect disturbance cannot be ruled out.

6.2.1.1.1 Fulmar (*Fulmarus glacialis*)

Fulmar is found all around the Irish coast, although the majority are found in the west (Mitchell, et al., 2004). Although the species typically winters at sea, they can be seen in Irish waters all year around. During the breeding season they are found nesting on grassy cliff-ledges and shelves, although they may utilise less sloping ground in some areas (Mitchell, et al., 2004). Fulmar has expanded its breeding range throughout Ireland over the last century, beginning in Mayo in 1911. It comes to land during daylight hours, unlike its relatives the shearwaters and other petrels and mainly breeds on sea cliffs, but will nest on level ground, on buildings and in burrows and crevasses. Fulmar attends colonies in the winter sporadically, with breeding cliffs deserted one week and full

the next. The breeding period typically begins in May when a single egg is laid with chicks typically hatching within the first two weeks of July (Taylor, et al., 2012). The incubation period has been estimated at between 47-49 days (Mallory, 2006) and the fledging period between 50-53 days (Hatch and Nettleship, 1998 as cited in Mallory, 2006). At Scottish colonies, the breeding period has been found to begin in mid-May, with chicks subsequently fledging the nest in late August (Dunnet, 1991 as cited in Edwards et al., 2013). Annual studies on Skomer Island, off the coast of Wales, have found that egg laying typically occurs towards the end of May, but has been recorded at the beginning of May also, with chicks typically hatching within the first two weeks of July (Taylor, et al., 2012). Fulmar is a common breeder on Skellig Michael, typically present from January to September (DEHLG, 2008). The most recent seabird national census (2015 – 2018) stated 725 Fulmar nest sites on the island². Although no Fulmars have been found to nest within the wall structures on the island they may nest close by and could be indirectly disturbed.

No detailed Conservation Objectives are available for the Skelligs SPA. Targets and attributes for the conservation of this species are available in detailed Conservation Objectives for other SPAs including the Saltee Islands SPA (004002)³. These have been reviewed and considered in relation to the current project and are described below **Table 4**.

Table 4: Targets and attributes associated with site specific conservation objectives for Fulmar on the Saltee Islands SPA

No.	Attribute	Target
1	Breeding population abundance: Apparently Occupied Sites (AOSs)	No significant decline
2	Productivity rate	No significant decline
3	Distribution: breeding colonies	No significant decline
4	Prey biomass available	No significant decline
5	Barriers to connectivity	No significant increase
6	Disturbance at the breeding site	No significant increase
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase

The impact assessment of the proposed repair works has identified potential impacts due to disturbance and/or displacement of the species from nesting sites. These impacts could counteract targets for some attributes in **Table 4** above. A review of the Natura 2000⁴ form for the Skelligs SPA indicates that the negative threats, pressures and activities to the SPA was walking / trampling and disturbance associated with visitors to the Island, this ranked 'Medium'.

6.2.1.1.2 *Manx Shearwater (Puffinus puffinus)*

Manx shearwaters spend most of their lives at sea, only coming to land during the breeding season, which is protracted throughout the summer months. They nest in underground burrows and so typically breed on uninhabited off-shore islands which are free from mammalian predators, often in huge numbers. They are unable to walk on land, instead dragging themselves over the ground into their burrows. This makes them vulnerable to gull predation and so they typically only return to breeding colonies on dark, moonless nights. A study by Perrins (2014) on Skokholm Island off the coast of Wales found that the single egg is typically laid in early May with incubation taking

²<https://www.npws.ie/sites/default/files/publications/pdf/IWM114.pdf>

³ https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004002.pdf

⁴ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004007.pdf>

approximately 51 days. This generally corresponds with the incubation period of between 47 - 55 days suggested by DEHLG (2015). During a survey carried out in 2015, fluffy week-old chicks were recorded in nests on the island on the 2nd July, giving an estimated hatching date of approximately 25th June (Tough & Murphy, 2015). This estimated hatch date combined with the the incubation period would suggest Manx shearwater commenced egg-laying in early May. Manx shearwater is an amber listed species (Colhoun and Cummins, 2013). Manx shearwaters typically nest in underground burrows in suitably-vegetated areas of the island. They do not use the dry-stone walls on the island for breeding. Although the main breeding colonies include Christ's Saddle and the Monastery (Sub-section 8 and Sub-section 4, respectively), there is some, albeit, limited potential for nesting Manx shearwater to occur in suitably-vegetated areas in the general vicinity of the Old Lighthouse Road and the areas within the Old Lighthouse compound ruin.

Whilst no detailed Conservation Objectives are available for the Skelligs SPA or for an SPA for which Manx shearwater are a species of qualifying interest, targets and attributes for the conservation of similar species are available in detailed Conservation Objectives for other SPAs including the Saltee Islands SPA (004002)³. These have been reviewed and considered in relation to the current project and are described below in **Table 5**.

Table 5: Targets and attributes associated with site specific conservation objectives for ten species of seabird on the Saltee Islands SPA

No.	Attribute	Target
1	Breeding population abundance: Apparently Occupied burrow (AOB)	No significant decline
2	Productivity rate	No significant decline
3	Distribution: breeding colonies	No significant decline
4	Prey biomass available	No significant decline
5	Barriers to connectivity	No significant increase
6	Disturbance at the breeding site	No significant increase
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase
8	Occurrence of mammalian predators	Absent or under control

The impact assessment of the proposed repair works has identified potential impacts due to the loss of nesting habitat as well as disturbance and/or displacement of the species from nesting sites. These impacts could counteract the targets of some attributes in **Table 5** above. A review of the Natura 2000⁴ form for the Skelligs SPA indicates that the only negative threats, pressures and activities to the SPA was walking / trampling and disturbance associated with visitors to the Island, this ranked 'Medium'.

6.2.1.1.3 Storm petrel (*Hydrobates pelagicus*)

Storm petrels are a small species of seabird which spend much of their lives at sea. Storm petrels breed in colonies on islands off the west coast of Ireland. The great bulk of the population is found in Co. Kerry with the Skellig Islands and the Blasket Islands having substantial colonies. To date, the largest colony surveyed in the world has been found to occur on the island of Inishtooskert, a small uninhabited island in the Blaskets, easily visible from the mainland. They nest under vegetation, in boulder fields and in old buildings and walls, only returning to nest sites after dark. Skellig Michael has an internationally important population of this species (9,994 pairs estimated in 2002), with birds nesting both in the stonework associated with the monastic settlement and in natural crevices amongst the scree and rock. The species has been found by several studies, both on Skellig Michael

and elsewhere, to have a protracted breeding season. European Storm petrel is an Annex I species and is amber-listed in Ireland (Colhoun and Cummins, 2013). The breeding period typically commences in May/June (DEHLG, 2015), with the majority of eggs laid in late June, as found by Ratcliffe, et al., (1998) and Watson, et al., (2014), on islands off the Irish and British coasts, including Inis Tuaisceart, part of the Basket Islands, located approximately 40km to the north of Skellig Michael. However, egg laying may commence as early as the start of June or indeed as late as early August (Ratcliffe, et al., 1998; Watson, et al., 2014). The eggs are incubated by both parents for 38–50 days, the longer periods arising when the eggs have become chilled through adult absence. The chicks fledge about 56–86 days after hatching (Snow & Perrins, 1998). A number of surveys conducted since as part of the conservation project works on the island in 2017, 2018 and 2019 show Storm petrel chicks were observed in the nest in early August. Based on this observation, it was estimated that egg-laying took place in late June/early July given that the incubation period of 40-41 days suggested by Davies (1957).

A bird survey of the Upper Lighthouse was undertaken by NPWS in the 2020 breeding season. It was found that existing debris in this area was being used by Storm Petrels for nesting.

Given that the proposed works will overlap with the breeding season for this species, there is potential for Storm petrel to be present in the dry-stone walls, namely the seawall adjacent to the Lower Lighthouse (See **Appendix 4** for previous survey results) **and existing debris within the Upper Lighthouse compound (see Appendix 5).**

Whilst no detailed Conservation Objectives are available for the Skelligs SPA or for an SPA for which Storm petrel are a species of qualifying interest, targets and attributes for the conservation of similar species are available in detailed Conservation Objectives for other SPAs including the Saltee Islands SPA (004002)³. These have been reviewed and considered in relation to the current project and are described below in **Table 6**.

Table 6: Targets and attributes associated with site specific conservation objectives for ten species of seabird on the Saltee Islands SPA

No.	Attribute	Target
1	Breeding population abundance: Apparently Occupied burrow (AOB)	No significant decline
2	Productivity rate	No significant decline
3	Distribution: breeding colonies	No significant decline
4	Prey biomass available	No significant decline
5	Barriers to connectivity	No significant increase
6	Disturbance at the breeding site	No significant increase
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase
8	Occurrence of mammalian predators	Absent or under control

All attributes and related targets for Storm petrel were taken from conservation objective of the ten seabird species protected in the Saltee Islands SPA and listed in **Table 6** above. Some of these targets and attributes relate specifically to other sites and are not necessarily relevant to the Skelligs SPA but are representative of factors considered in the conservation of the species in other areas. The impact assessment of the proposed repair works has identified potential impacts due to the loss of nesting habitat as well as disturbance and/or displacement of the species from nesting sites. These impacts could counteract targets for some of the attributes in **Table 6** above. A review of the Natura 2000⁴ form for the Skelligs SPA indicates that the only negative threats, pressures and activities to

the SPA was walking / trampling and disturbance associated with visitors to the Island, this ranked 'Medium'.

6.2.1.1.4 Puffin (*Fratercula arctica*)

Puffin is a small species of auk which has a very large distribution, occurring throughout the North Atlantic Ocean from north-west Greenland to Norway and down to the Iberian Peninsula and beyond. It is an amber-listed species in Ireland (Colhoun and Cummins, 2013). Puffins typically attend breeding colonies from April until early August. They usually nest in areas that are safe from mammalian predators, for which reason they prefer off-shore islands. Skellig Michael is a nationally important site for this species; with 4,000 birds estimated to occur in 1999 (NPWS, 2015). Puffins tend to nest colonially in burrows on the grassy slopes, sometimes using rabbit burrows. They can also nest elsewhere on the island in boulder scree, cracks in the steep cliffs or occasionally in sea wall openings. However, overall the numbers recorded nesting in these areas is low with the vast majority of the population using burrows throughout the island. Puffins are known to nest on slopes below the Kittiwake colony in Seal Cove. The breeding season for Puffin lasts from April to early August⁵, although birds may arrive to breeding colonies as early as February (DEHLG, 2015). Like many other seabird species, a single egg is laid (Finney, et al., 2001). Eggs are normally laid during May (DEHLG, 2015), although it can occur earlier in the season, as found by some studies. A study on Skomer Island, off the Welsh coast, found some eggs to have been laid within the first week of April, with at least some eggs hatched by mid-May (Taylor, et al., 2012).

Whilst no detailed Conservation Objectives are available for the Skelligs SPA, there are detailed conservation objective available for several SPAs for which Puffins are a species of qualifying interest. Targets and attributes for the conservation of this species are available in detailed Conservation Objectives for other SPAs including the Saltee Islands SPA (004002)³. These have been reviewed and considered in relation to the current project and are described **Table 7** below.

Table 7: Targets and attributes associated with site specific conservation objectives for Puffin on the Saltee Islands SPA

No.	Attribute	Target
1	Breeding population abundance: Apparently Occupied burrow (AOB)	No significant decline
2	Productivity rate	No significant decline
3	Distribution: breeding colonies	No significant decline
4	Prey biomass available	No significant decline
5	Barriers to connectivity	No significant increase
6	Disturbance at the breeding site	No significant increase
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase
8	Occurrence of mammalian predators	Absent or under control

The impact assessment of the proposed repair works has identified potential impacts due to the loss of nesting habitat as well as disturbance and/or displacement of the species from nesting sites. These impacts could counteract the targets for some of attributes in **Table 7** above. A review of the Natura 2000⁴ form for the Skelligs SPA indicates that the only negative threats, pressures and activities to the SPA was walking / trampling and disturbance associated with visitors to the Island, this ranked 'Medium'.

⁵<https://birdwatchireland.ie/birds/puffin/>

6.3 ASSESSMENT OF POTENTIALLY SIGNIFICANT EFFECTS

6.3.1 Habitat loss and / or alteration

The area of works shall be confined to the Upper Lighthouse compound (**Area F**) and one section of the retaining wall adjacent to the Lower Lighthouse only (**Area G**) within the Skelligs SPA (004007). No extra land take will be required for the proposed works. Storm petrel and to a lesser extent Puffin nest in gaps along the entire retaining wall, which are ephemeral year to year, becoming exposed and closed due to storm damage and erosion. Similarly, parts of the Upper Lighthouse compound ruin (**Area F**) which have become overgrown with falling soil and vegetation has resulted in the creation of transient habitat for Manx shearwater, Puffin **and Storm Petrel**.

The filling of gaps within **Area G** of the retaining wall will result in the alteration of potential nesting habitat for breeding species. In some instances insertion of 'tightening' stone into the retaining wall may block entrances/openings to nesting chambers. However, only those gaps that pose a structural risk i.e. stress points, shall be filled as part of the proposed works. Concrete mortar will not be used to point the sections that are not currently pointed with concrete mortar. The dry stone wall finish will allow many of the potential nesting sites to remain. The areas of fallen vegetation and soil at the Upper Lighthouse will be cleared to facilitate the works, resulting in alteration of the habitat at this location.

Prior to the commencement of the remedial works, active nests will be marked to ensure that no remedial works will be undertaken in these locations while breeding birds are present. Remedial works will commence at these locations only once it has been confirmed that breeding birds are not or are no longer using the gaps or burrows (see **Section 6.5**). A large portion of the Skellig Micheal colonies of Storm petrel, Manx shearwater and Puffin nest at Christ's saddle and the Monastery and will not be impacted by the works. These areas of the island are considered more suitable and stable owing to the enduring availability of habitat relative to the retaining wall and the ruin. Therefore the alteration of habitat potentially used by breeding birds in these works areas is not considered to have a significant effect on the conservation objectives of the SCIs of the Skelligs SPA.

6.3.2 Habitat or species fragmentation

Given the limited extent, scale and nature it is not expected that any significant habitat or species fragmentation will occur as a result of the proposed works.

6.3.3 Disturbance and/or displacement of species

The dry stone walls on which the proposed works will be carried out are categorised as 'stone walls and other stonework (BL1)' (Fossitt, 2000). The proposed works will require the temporary erection of scaffolding adjacent to but independent of the wall to allow access to each area of works. Scaffolding will rest on a plateau at the base of the wall or will be propped from rock adjacent to the retaining wall depending on conditions locally. Drilling shall be required into rock plateau below in order to support the scaffold. While the erection of scaffolding will not require prolonged drilling, there is likely to be temporary noise disturbance from the drill to chicks potentially present in the gaps. However, owing to observations made during supervision of similar works in past seasons, this temporary disturbance is not expected to result in significant effects on the conservation objectives of SCIs.

As workers move along the wall there will be temporary localised disturbance to Storm petrel and possibly Puffin chicks present within some of the gaps. As these gaps will be marked prior to

commencement of the works, all workers will be aware of the locations of these gaps, and no remediation works will be undertaken on these demarcated areas. Works will only take place during daylight hours; therefore there will be no disturbance to feeding activity, when the adults return to the nest at night. The scaffolding, which could potentially create an obstruction to nesting site, will be of a structure such that it is skeletal, open for the most part which will allow continued access to the wall without offering a significant barrier to adults or fledglings.

6.3.3.1 Fulmar

The following table assesses the effects of the proposed works against the attributes required to maintain the favourable conservation status of Fulmar. It also acknowledges where mitigation will be required to ensure that the attribute will not be significantly affected or the conservation objectives undermined. As there are no specific Conservation Objectives for Skellig Michael SPA, Fulmar is a Species of Conservation interest for the Saltee Island SPA and these population attributes have been used.

Table 8: Population attributes of Fulmar measured against the nature and significance of potential impact from proposed works (Attributes from Saltee Islands SPA)

No.	Attribute	Target	Nature, extent and significance of potential impact	Mitigation required
1	Breeding population abundance: Apparently Occupied Sites (AOSs)	No significant decline	No expected impact	No
2	Productivity rate	No significant decline	There is potential for the productivity rate to be affected in the absence of mitigation. Mitigation will prevent significant effects to the productivity rate.	Yes, 6.5.3 and 6.5.4
3	Distribution: breeding colonies	No significant decline	No expected impact	No
4	Prey biomass available	No significant decline	No expected impact	No
5	Barriers to connectivity	No significant increase	No expected impact	No
6	Disturbance at the breeding site	No significant increase	There is potential for indirect disturbance to breeding Fulmar which may nest close to where construction work is to be carried out due to the presence of workers, increased activity and noise emissions. Mitigation will prevent significant disturbance effects from workers and equipment.	Yes, 6.5.3 and 6.5.4
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase	No expected impact	No

6.3.3.2 Manx shearwater

The following table assesses the effects of the proposed works against the attributes required to maintain the favourable conservation status of Manx shearwater. It also acknowledges where mitigation will be required to ensure that the attribute will not be significantly affected or the conservation objectives undermined. As

there are no specific Conservation Objectives for Skellig Michael SPA or specific attributes for Manx shearwater the Saltee Island SPA population attributes have been used.

Table 9: Population attributes of Manx shearwater measured against the nature and significance of potential impact from proposed works (Attributes from Saltee Islands SPA)

	Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
1	Breeding population abundance: Apparently Occupied burrow (AOB)	No significant decline	There is potential for Breeding population abundance to be affected in the absence of mitigation. Mitigation will prevent significant impacts to the breeding population abundance during remediation works.	Yes, 6.5.2 and 6.5.4
2	Productivity rate	No significant decline	There is potential for the productivity rate to be affected in the absence of mitigation. Mitigation will prevent significant effects to the productivity rate.	Yes, 6.5.2 and 6.5.4
3	Distribution: breeding colonies	No significant decline	No expected impact	No
4	Prey biomass available	No significant decline	No expected impact	No
5	Barriers to connectivity	No significant increase	No expected impact	No
6	Disturbance at the breeding site	No significant increase	There is potential for disturbance to breeding Manx shearwater which may nest in burrows (namely in Area F) where construction work is to be carried out due to the presence of workers, increased activity and noise emissions. Mitigation will prevent significant disturbance effects from workers and equipment.	Yes, 6.5.2 and 6.5.4
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase	No expected impact	No
8	Occurrence of mammalian predators	Absent or under control	No expected impact	No

6.3.3.3 Storm petrel

The following table assesses the effects of the proposed works against the attributes required to maintain the favourable conservation status of Storm petrel. It also acknowledges where mitigation will be required to ensure that the attribute will not be significantly affected or the conservation objectives undermined. As there are no specific Conservation Objectives for Skellig Michael SPA or specific attributes for Manx shearwater the Saltee Island SPA population attributes have been used.

Table 10: Population attributes of Storm petrel measured against the nature and significance of potential impact from proposed works (Attributes from Saltee Islands SPA)

	Attribute/ Measure	Target	Assessment of Potentially Significant Effects	Mitigation Required
1	Breeding population abundance: Apparently Occupied burrow (AOB)	No significant decline	<ul style="list-style-type: none"> There will no loss of AOBs in areas that are concreted and are to be replaced with lime mortar. The proposed tightening works will concentrate on stress points along the wall thus not all gaps will be closed. Gaps containing existing nests (AOB) will not be closed, therefore there will no loss of AOBs. The closing/tightening of gaps will result in the alteration of some existing potential nesting habitat for these species in future seasons. This will not be above that which occur through natural processes. Removal of existing earth build-up and debris within the Upper Lighthouse compound will result in loss of suitable nesting habitat for Storm Petrel and may result in disturbance of breeding birds. Mitigation will prevent significant impacts to the breeding population abundance during remediation works. 	Yes, see Section 6.5.1, 6.5.2, 6.5.3 and 6.5.4
2	Productivity rate	No significant decline	There is potential for the productivity rate to be affected in the absence of mitigation. Mitigation will prevent significant effects to the productivity rate.	Yes, see Section 6.5.1, 6.5.2, 6.5.3 and 6.5.4
3	Distribution: breeding colonies	No significant decline	No expected impact	No
4	Prey biomass available	No significant decline	No expected impact	No
5	Barriers to connectivity	No significant increase	No expected impact	No
6	Disturbance at the breeding site	No significant increase	There is potential for disturbance to breeding Storm petrel which may nest in walls and/or the Upper Lighthouse compound where construction work is to be carried out due to removal of existing debris , the presence of workers, increased activity and noise emissions. Mitigation will prevent significant disturbance effects from workers and equipment.	Yes, see Section 6.5.1, 6.5.2, 6.5.3 and 6.5.4
7	Disturbance at marine areas immediately adjacent to the colony	No significant increase	No expected impact	No
8	Occurrence of mammalian predators	Absent or under control	No expected impact	No

6.3.3.4 Puffin

The table assesses the effects of the proposed works against the attributes required to maintain the favourable conservation status of Puffin. It also acknowledges where mitigation will be required to ensure that the attribute will not be significantly affected or the conservation objectives undermined. As there are no specific Conservation Objectives for Skellig Michael SPA, Puffin a Species of Conservation interest for the Saltee Island SPA and these population attributes have been used.

Table 11: Population attributes of Puffin measured against the nature and significance of potential impact from proposed works (Attributes from Saltee Islands SPA)

No.	Attribute	Target	Nature, extent and significance of potential impact	Mitigation required
1	Breeding population abundance: Apparently Occupied burrow (AOB)	No significant decline	<ul style="list-style-type: none"> There will no loss of AOBs in areas that are concreted and are to be replaced with lime mortar. The proposed tightening works will concentrate on stress points along the wall thus not all gaps will be closed. Gaps containing existing nests (AOB) will not be closed, therefore there will no loss of AOBs. The closing/tightening of gaps will result in the alteration of some existing potential nesting habitat for these species in future seasons. This will not be above that which occur through natural processes. Mitigation will prevent significant impacts to the breeding population abundance during remediation works. 	Yes, see Section 6.5.1, 6.5.2, 6.5.3 and 6.5.4
2	Productivity rate	No significant decline	There is potential for the productivity rate to be affected in the absence of mitigation. Mitigation will prevent significant effects to the productivity rate.	Yes, see Section 6.5.1, 6.5.2, 6.5.3 and 6.5.4
3	Distribution: breeding colonies	No significant decline	No expected impact	No
4	Prey biomass available	No significant decline	No expected impact	No
5	Barriers to connectivity	No significant increase	No expected impact	No
6	Disturbance at the breeding site	No significant increase	There is potential for disturbance to breeding Puffin which may nest in walls where construction work is to be carried out due to the presence of workers, increased activity and noise emissions. Mitigation will prevent significant disturbance effects from workers and equipment.	Yes, see Section 6.5.1, 6.5.2, 6.5.3 and 6.5.4
7	Disturbance at marine areas immediately	No significant increase	No expected impact	No

No.	Attribute	Target	Nature, extent and significance of potential impact	Mitigation required
	adjacent to the colony			
8	Occurrence of mammalian predators	Absent or under control	No expected impact	No

6.3.4 Water quality and resource

The area of works is located along the coastline with no nearby rivers or streams as there is no source of freshwater on the Island apart from rainfall. Given the scale and scope of the proposed works and the dilution factor of the sea no impact is envisaged to water quality.

6.3.5 Operational phase

No significant impact is envisaged during the operational phase of the proposed project. The proposed work shall ensure that sections of the wall do not collapse due to ongoing storm damage and erosion. Maintenance works shall be required periodically to the wall but the level of works required shall be significantly less following the proposed remedial works.

6.4 ASSESSMENT OF POTENTIALLY SIGNIFICANT CUMULATIVE EFFECTS

The EC (2001) guidelines on the provision of Article 6 of the Habitats' Directive state that the phrase 'in combination with other plans or projects' in Article 3(3) of the Habitats Directive refers to the cumulative impacts due to plans or projects 'that are currently under consideration together with the effects of any existing or proposed projects or plans.' Direct and indirect impacts have already been identified in **Section 6.2**.

A cumulative impact arises from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed repair work to the lower lighthouse road retaining wall. Other projects, plans or activities on Skellig Michael Island have been identified in **Section 5.2**. Tourism and ongoing maintenance works were identified as resulting in a potential cumulative impact to the Skelligs SPA.

6.4.1 Tourism

As has already been stated in this report Skellig Michael Island is visited by approximately 18,000 tourists per year with a maximum number of 180 people visiting the Island per day at the height of the tourist season. Access to the Island is weather dependant and tourists are only allowed access to the Island between the hours of 10:30 and 15:00. A review of the Natura 2000 form for the Skelligs SPA indicates that the only negative threats, pressures and activities to the SPA identified in that document was walking / trampling and disturbance associated with visitors to the Island. Tourists utilise the lower lighthouse road to provide access to the Island from the pier.

The tourist season coincides with the bird breeding season. However, adult Storm petrels and Manx shear water visit nesting sites during the hours of darkness when tourists are not present on the Island. Storm petrel chicks remain within the nest until fledging and are present while tourists access the Island but the level of disturbance is not considered to be significant given their location on the seaward side of the retaining wall and a certain degree of habituation. This would also be the case for other species which utilise the grassy slopes (Puffin and Manx shearwater), steps and other structures on the Island. From previous years of surveys along the wall the numbers of puffins nesting within the retaining wall are very low. Disturbance to these individuals is very minimal considering their proximity relevant to areas used by tourists, located in gullies on the steep incline down from the road. Tourists may however come into close contact with the species in more accessible areas utilised in greater numbers by the species i.e. the grassy slopes and burrows beside steps along the walking trail used by tourists. There is the potential for a significant cumulative impact to the Skelligs SPA for the unmitigated project along with the impact of tourism.

6.4.2 Ongoing maintenance works

A series of maintenance works carried out by the Office of Public Works (OPW) have been ongoing on the Skellig Michael Island on an annual basis. These included the clearing of gullies and the maintenance of steps, pathways and the pier at the beginning of the tourist season.

A series of repair works have been carried out to other sections of the retaining wall along the lower lighthouse road during the years of 2011-2019. The proposed project described in this document is to finish repair works necessary to the retaining wall and the Upper Lighthouse compound. Repair works have also been carried out to other structures on the Island including the lighthouse platform, a section of the north Steps and St. Michael's Church. Storm petrel have been recorded within the retaining wall in particular but repair works including the filling of gaps/openings in structures with stone and lime mortar reduce the amount of nesting habitat available to storm petrel. The mitigation measures described in **Section 6.5** will prevent significant cumulative impacts to the Skelligs SPA with on-going maintenance works.

6.5 MITIGATION

6.5.1 Pre-construction ornithological survey

Pre-construction surveys are required to inform the mitigation. Baseline information of bird species present in the structures is required prior to any remedial work taking place. The pre-construction ornithological survey methodology has been developed during the previous baseline survey in 2009 (Money and Newton, 2009) and surveys conducted during repair works in 2013 and 2014 carried out by Dr. Steven Newton (BirdWatch Ireland) and 2017, 2018 and 2019 by the senior Ornithologist, John Murphy (Malachy Walsh and Partners).

Prior to any construction working commencing, the entire extent of the wall shall be investigated thoroughly for evidence and signs of nesting Fulmar, Manx shearwater, Storm petrel, Puffin, and any other species. A pre-construction tape playback survey (under the conditions of a NPWS derogation licence) for Storm petrel, and Manx shearwater shall be carried out of the retaining wall and the area immediately surrounding the proposed area of works. The survey shall be conducted during the breeding season beginning. Tape playback enables the overall distribution and density of occupied petrel nesting sites to be located but it does not identify all nesting locations. This is because a proportion of males, and none of the females, respond to the taped male calls on a given survey day. The addition of an endoscope will help to ensure all potential nests are search. Surveys shall be carried out from the inserted scaffold for a 7 day period.

Nests shall be marked out and labelled with wooden batons within each works area prior to works commencing (See **Figure 2** below).



Figure 2. Storm petrel nest site marked with wooden baton along the retaining wall (plate extracted from 2019 Skellig Michael Bird Report by MWP)

Additionally an endoscope shall be also be used to investigate the full extent of all crevices, holes and burrows both within walls and any areas suitable for nesting birds (under the conditions of a NPWS derogation licence). It is possible to detect nesting Storm petrels within drystone structures using an endoscope, although difficulties can be encountered when birds nest deep within the walls if bends occur in the access route, which may make the nest chamber inaccessible to the endoscope. It may be possible to use endoscopy to survey areas of the wall during peak incubation time; although unless one is sure that all areas have been adequately viewed it would be hard to rule out the possibility of the presence of nesting birds (Money and Newton, 2009). This survey methodology shall not be used alone to locate potential nesting sites but only in conjunction with tape playback survey.

Storm petrel nest about 6 inches to a foot inside stone wall crevices. Survey work is completed during daytime when birds are on nests. Nests are therefore not blocked at night and no physical intrusion on the nest will occur. Surveyors do not spend long surveying, spending the bare minimum amount of time necessary to complete the survey. Tape lures are played for 10 seconds at a time before move on to a new site. Tape lure playback in conjunction with endoscope was used in 2015 to locate Manx shearwater in burrows in Monastery peak, the Lower Monastery garden and Christ's Saddle (tape playback Licence No: 041/2015 and endoscope Licence No: 042/2015). This method may be used again in suitable areas located in the Upper Lighthouse compound to determine the presence of Manx shearwater (conditions of a NPWS derogation licence). Puffin nests are visually inspected and no physical intrusion occurs. They also nest in larger holes, which are easier to visually inspect. Razorbill and rock pipit are non-SCIs that breed in the vicinity and they can be visually seen coming and going from nest sites so surveyors can avoid them. There is no expected significant impact from surveying on birds of SCI.

6.5.2 Ornithological surveys during construction

Ornithological surveys shall be ongoing during the proposed repair works. It is recommended that an ornithologist be onsite for the full duration of works to monitor repairs works and ensure that the proposed mitigation measures are implemented fully. For Storm petrels and Puffins wooden dowels shall temporarily be put in place during daylight hours prior to works commencing at local sections of the retaining wall to ensure that existing tunnels/entrances to nesting sites are retained. This methodology has been adopted during previous year's works to ensure that tunnels/entrances to existing nesting sites within the retaining wall remain after works have finished at each localised section of the wall. Typically these wooden dowels shall only remain *in situ* for a maximum of two hours. Wooden dowels shall not be left within these tunnels/entrances overnight to avoid restricting access to adult storm petrels returning to feed chicks. Once the section of the wall around each dowel has been completed they shall be removed. If Fulmar are present on ledges in close proximity to the subject site during the pre-construction surveys their nest location will be noted and monitored until suitable timing for works to commence.

If pre-construction surveys determine the presence of Manx shearwater the areas where the occupied nests are located will be flagged and excluded from work being carried out until any fledglings have left the nest (approximately end of August/September). Work will be directed away from the occupied nests and works will continue away from those areas to minimise disturbance. Once the final chicks have fledged for that year there may be time constraints to finish the work before the island closes at the end of the season. If time permits the areas with the newly empty nests may be cleared or blocked to exclude the birds returning the following year so works can continue until completion (conditions of a NPWS derogation licence).

6.5.3 Environmental Clerk of Works (ECoW) and Removal of Debris at Upper Lighthouse

An Environmental Clerk of Works (ECoW) will be appointed by OPW to oversee and monitor works relating to removal of existing earth build-up and debris at the Upper Lighthouse. The ECoW will be present for the full duration of this element of the project (approx. 2 weeks on-site) (See Section 6.5.5 below regarding recommended timing).

In the unlikely event a storm petrel is located in the debris, appropriate measures will be taken (e.g., the bird will be kept in a secure container and released after dark, or the nest location will be secured and kept protected / undisturbed for the season).

The OPW and DCHG will meet with the Environmental Clerk of Works at the commencement of the works to discuss and agree all details of the proposed works. The ECoW is to submit a report to OPW on completion of the works which will be forwarded to the DCHG and NPWS for comment.

6.5.4 General mitigation measures

6.5.4.1 Scaffolding

- Lowering pole, planks and fitting – will not be dropped onto platforms from overhead. Materials will be lowered gently using ropes and harnesses.

6.5.4.2 Removal of concrete, etc

- Lump hammer and chisel will be used to remove concrete mortar.

- Con-saw will be used to remove concrete capping on top of the wall instead of a jackhammer or drill.
- Dust and debris will be brushed off walls at the end of the day to reduce the impact to chicks within nests or adults returning at the end of the day.
- Removal of capstones will be done by hand using lump hammer and chisel.
- All excavated material will be stored in a designated area until removal.
- All spoil will be removed from the site and disposed of at a suitably licensed facility.

6.5.4.3 *Tightening*

- Wooden mallet will be used for inserting chockstones.
- Break stones will be used for tightening on the roadway rather than the scaffolding where possible.

6.5.4.4 *Pointing with fresh mortar*

- Pointing will not extend outside the footprint of existing concrete mortar.
- Access holes to known nesting sites will be left open.
- Care will be taken with surplus/excess mortar so that it does not impede access or dropped on to ledges used by puffins, etc.
- Wet mortar will be covered with hessian and stored in a secured area following works.

6.5.5 **Timing of Repair Work**

Removal of earth build-up and debris from the Upper Lighthouse buildings will take place in April 2021 prior to Storm Petrels returning to the island to breed and take up nest-sites.

All other repair work will not commence prior to the hatching of eggs in nest sites and will only commence once the egg are hatched chicks are in the nest. At this stage in the breeding cycle chicks are large enough to withstand the noise and vibrations associated with the works.

6.5.6 **Allowance for Expansion of Storm Petrel breeding nest sites in wall**

Previous surveys between 2015 and 2019 carried out by Malachy Walsh and Partners determined a total of 223 occupied nests were located in 276m of wall (the combined wall lengths of all sections surveyed). For phase 4 of the works to be carried out on areas F and G, the wall lengths for each area are 70m and 60m, respectively. Based on the previous number of located nests it is estimated that there may be 80 occupied nests in Area F and 50 occupied nests in Area G (Malachy Walsh and Partners, 2020).

In addition to protecting existing nesting sites during the repair works, it is proposed to provide an allowance for the expansion of Storm petrel nest sites in the wall in Areas F and G. Additional suitable Storm petrel nesting spaces will be identified ahead of the repair works and depending on the number of hole/crevices found in the wall there will be an allowance of 20-25% of holes to be left open for the following years breeding season providing that these holes are not essential to repair. It is proposed that this work will be supervised by the project site ornithologist.

6.5.7 **Waste Control**

Wastes arising shall be minimal. Fittings at joints will be checked prior to works to ensure that they are working effectively. If fittings need to be replaced old fittings shall be disposed of off the Island at a suitably licensed facility. Waste arising from workers living on the Island (i.e. domestic waste)

shall be taken off the Island regularly and disposed of at a suitably licensed facility. Workers shall utilise existing toilet facilities currently available on the Island. Excess lime mortar, washout (which shall be minimal as a limited amount of water will be required to create a dry mortar mix) along with the concrete mortar to be removed from the retaining wall shall be taken off the Island and disposed of at a suitably licensed facility.

6.5.8 Storage

Materials shall be stored beside the area of works. The storage of materials, containers, stockpiles and waste, however temporary, will follow best practice at all times and be stored at designated areas. Scaffolding which is currently stored on the Island following previous years maintenance works shall remain on the Island to be reused for further maintenance works. Storage will be located as follows:

- Away from coastline
- Under cover to prevent damage from the elements
- In secure areas
- Well away from machinery and people (visitors to the Island and construction workers)

6.6 MONITORING

It is proposed to conduct ornithological monitoring of areas where maintenance has been completed to determine the level of nesting activity following repair works in the coming years. This will include all areas as part of the Upper Lighthouse Road conservation project (Area A-G).

6.7 RESIDUAL IMPACTS

Provided that the recommended mitigation measures set out in **Section 6.5** are implemented in full, it is not expected that significant residual impacts will result from the remedial works proposed.

6.8 CONCLUSION

In conclusion, the recommended mitigation measures will be implemented in full during the proposed remedial works of Area F and Area G. Therefore the remedial works will not result in an adverse residual impact on the Natura 2000 sites considered in this NIS, namely:

- **Skelligs SPA (004007)**

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Appendix 1

A Screening Appropriate Assessment Report: Repair of Sea-wall along Old Lighthouse Road Skellig Michael Island – Phase 4

Screening for Appropriate Assessment
Repair of Sea-wall along Old Lighthouse Road
Skellig Michael Island – *Phase 4*



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1 SUMMARY OF FINDINGS

1.1 SCREENING FOR APPROPRIATE ASSESSMENT

Project Title	Repair works to seawall along the Old Lighthouse Road and Old Lighthouse Ruin on Skellig Michael Island (Phase 4 of Upper Lighthouse Road conservation project)
Project Proponent	The Office of Public Works (OPW)
Project Location	The site is located on the western side of Skellig Michael island in an area known as Seal Cove. Skellig Michael is an island (the larger of the two Skellig islands) in the Atlantic Ocean, 11.6 km west of the Iveragh Peninsula in County Kerry, Ireland.
Conclusion	<p>It has been objectively concluded during the screening process that 3 sites within 15km of the project are not likely to be significantly impacted by the proposal to conduct repair works to the lower lighthouse road retaining wall and these include:</p> <ul style="list-style-type: none"> • Valencia Harbour/Portmagee Channel SAC (002262) • Iveragh Peninsula SPA (004154) • Puffin Island SPA (004003) <p>It has been concluded that the project is likely to have a significant effect, or significant effects cannot be ruled out at this stage, on the following Natura 2000 sites:</p> <ul style="list-style-type: none"> • Skelligs SPA (004007)

2 INTRODUCTION

2.1 PURPOSE OF ASSESSMENT

The Office of Public Works (OPW) is currently undertaking a long-term conservation project on the Upper Lighthouse Road (also known as the Old Lighthouse Road) on Skellig Michael Island. This project will be carried out on a phased basis over the coming years during the island's annual open season. Phase 1 of the project was granted consent and commenced in 2017. Phase 2 of the project was granted consent and commenced in 2018. Phase 3 of the project was granted consent and commenced in 2019. Screenings for Appropriate Assessment were undertaken for Phase 1, Phase 2 and Phase 3 of the project.

This Screening for Appropriate Assessment has been undertaken to determine the potential for significant impacts of a proposal to commence the next stage of remedial works to the Upper lighthouse compound (ruin) including the sea wall and gatepost and a portion of wall adjacent to the lower lighthouse on nearby sites with European conservation designations (i.e. Natura 2000 Sites). This Screening for Appropriate Assessment, which has been undertaken by Malachy Walsh and Partners (MWP) staff ecologists, pertains to **Phase 4** of the project (see Figures in **Appendix C** for extent of Phase 1, Phase 2, Phase 3 and Phase 4 works). Subsequent phases of work will be subject to separate assessment in due course as the overall project progresses.

A Ministerial Consent application was issued by OPW to the Department of Culture, Heritage and the Gaeltacht (DCHG) on 6th March 2020 for the proposed repair works to the existing seawall, existing gatepost and removal of earth build up and debris from the Upper Lighthouse buildings. Grant of Ministerial Consent has not yet been received for the proposed works. Further to this, the OPW National Monuments are submitting an Addendum to the application.

This Screening for Appropriate Assessment (Revision C) represents a revised document in light of information contained in the OPW Addendum and will be submitted to the DCHG as part of the revised Ministerial Consent Application. Any changes made to this Screening for Appropriate Assessment are presented in red bold text to clarify where changes have been made relative to the previous revision.

2.2 LEGISLATIVE CONTEXT

The Habitats Directive (92/43/EEC) seeks to conserve natural habitats and of wild fauna and flora by the designation of Special Areas of Conservation (SACs) and the Birds Directive (79/409/EEC) seeks to protect birds of special importance by the designation of Special Protected Areas (SPAs). It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected sites throughout the European Community. The Habitats Directive has been transposed into Irish law and the relevant Regulations are the European Communities (Birds and Natural Habitats) Regulations 2011. The requirement for Appropriate Assessment of the implications of plans and projects on the Natura 2000 network of sites comes from the Habitats Directive (Article 6(3)). Under the European Communities (Birds and Natural Habitats) Regulations 2011 a public authority is required to carry out a Screening for Appropriate Assessment of a proposed development prior to issuing consent. The information presented in this Screening for Appropriate Assessment will be used by the competent authority to complete their screening exercise. Further information is available at:

<http://ec.europa.eu/environment/nature/legislation/habitatsdirective/>

<http://www.npws.ie/planning/appropriateassessment/>

2.3 STAGES OF APPROPRIATE ASSESSMENT

The Appropriate Assessment process is a four-stage process with issues and tests at each stage. An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required. The stages are set out in **Appendix A**.

3 ASSESSMENT METHODOLOGY

3.1 APPROPRIATE ASSESSMENT GUIDANCE

This screening for Appropriate Assessment, or Stage 1, has been undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001) and the European Commission Guidance 'Managing Natura 2000 sites' (EC, 2000) and guidance prepared by the NPWS (DoEHLG, 2009).

3.2 CONSULTATION

The project was discussed on the 12th February at a Skellig Michael Design Team meeting. Attendants included Fergus McCormick (OPW), Edward Bourke (Department of Culture, Heritage and the Gaeltacht), Phillip Buckley (NPWS), David Tierney (NPWS) and John Murphy (MWP).

3.3 DESK STUDY

In order to complete the screening for Appropriate Assessment certain information on the existing environment is required. A desk study was carried out to collate available information on the site's natural environment. This comprised a review of the following publications, data and datasets:

- OSI Aerial photography and 1:50000 mapping
- National Parks and Wildlife Service (NPWS)
- National Biodiversity Data Centre (NBDC) (on-line map-viewer)
- BirdWatch Ireland (on-line)
- Teagasc soil area maps (NBDC website)
- Geological Survey Ireland (GSI) area maps
- Environmental Protection Agency (EPA) water quality data
- Other information sources and reports footnoted in the course of the report

3.4 SCREENING FOR APPROPRIATE ASSESSMENT

As set out in the NPWS (DoEHLG, 2009) guidance, the task of establishing whether a plan or project is likely to have an effect on a Natura 2000 site is based on a preliminary impact assessment using available information and data, including that outlined above, and other available environmental information, supplemented as necessary by local site information and ecological surveys. This is followed by a determination of whether there is a risk that the effects identified could be significant. The precautionary principle approach is required.

Once the potential impacts that may arise from the proposal are identified the significance of these is assessed through the use of key indicators:

- Habitat loss

- Habitat alteration
- Habitat or species fragmentation
- Disturbance and/or displacement of species
- Water quality and resource

4 SCREENING FOR APPROPRIATE ASSESSMENT

Screening for Appropriate Assessment (Stage 1) determines the need for a full Appropriate Assessment (Stage 2) and consists of a number of steps, each of which is addressed in the following sections of this report:

- Establish whether the proposal is necessary for the management of a Natura 2000 site
- Description of the project **Phase 4** - repair works to the Upper Lighthouse compound (ruin), seawall & gatepost and a portion of seawall adjacent Lower Lighthouse namely Area F and Area G, respectively - see Phase 4 Works Figure in **Appendix C**)
- Identification of Natura 2000 sites potentially affected
- Identification and description of individual and cumulative impacts of the project
- Assessment of the significance of the impacts on the integrity of Natura 2000 sites
- Conclusion of screening stage

4.1 MANAGEMENT OF NATURA 2000 SITES

The proposal is not connected with or necessary to the conservation management of a Natura 2000 site.

4.2 DESCRIPTION OF PLAN/PROJECT

4.2.1 Brief Project Description

The proposal relates to the Upper Lighthouse Road which is located in Seal Cove on the western side of Skellig Michael Island. This roadway, bounded by a masonry wall on its seaward side and natural rock-face on the other, runs between the relatively modern, but currently unused, lighthouse building and its associated structures located at the roadways eastern end (known as the Lower Lighthouse), and the original lighthouse building which is now in ruins and located at the roadways western end (known as the Upper/Old Lighthouse). Parts of the sea-wall bounding the roadway have completely collapsed and been lost to the cliff-faces and sea below, while other sections are largely intact with only minor damage evident.

Phase 4 of the project, to which this report pertains, will encompass the Upper Lighthouse compound (ruin), seawall & gatepost (Area F) and the portion of seawall adjacent to Lower Lighthouse (Area G). A drawing showing the section of the Upper Lighthouse compound and wall adjacent to the Lower Lighthouse encompassed by the **Phase 4** works (Area F and Area G) is included in the Figures in **Appendix C**. This phase of the works will be carried out over the island's coming seasons. Any subsequent phases of work will be subject to separate assessment in due course as the overall project progresses.

The area of work, which is the focus of this evaluation, is described in detail in **Section 4.2.5** below, and is shown on a map of the general area in the Figures in **Appendix C**.

The proposed works will involve the re-building of lost sections of wall, as well as repair of damaged masonry and replacement of missing capstones. The repair works will require some re-pointing to ensure that the structural integrity of the wall is restored. A lime-based mortar, similar to that which had been previously in-situ, will be used for the repair and rebuilding works. There will be a requirement for removal of surface vegetation as well as some material/debris which has naturally accumulated having fallen from the slopes above. Most of the materials required for the repair works are already present on the island. The exceptions to this are the lime mortar and water which will be brought by boat.

4.2.2 Purpose of the Project

This screening report pertains to **Phase 4** of the overall project (see Section 4.2.5.1, 4.2.5.2 and 4.2.5.3 below for brief summaries on Phase 1, Phase 2 and Phase 3 of the project which have already been granted consent and commenced). As part of the **Phase 4** works, it is proposed to carry out repair works to the Upper Lighthouse compound (ruin), seawall & gatepost and the portion of seawall adjacent to Lower Lighthouse on Skellig Michael Island (Area F and Area G, respectively) where natural rock-falls, as well as extremely harsh maritime conditions, have resulted in a state of disrepair to the existing structure. The purpose of the works is to conserve and maintain the structure into the future.

In general, the works will be largely similar to wall conservation works carried out during Phase 1, Phase 2 and Phase 3 of the Upper Lighthouse Road project, which received consent in 2017, 2018 and 2019 respectively and along the Lower Lighthouse Road in previous years.

4.2.3 Site Location

The site is located on the western side of Skellig Michael Island in an area known as Seal Cove. Skellig Michael is an island (the larger of the two Skellig Islands) in the Atlantic Ocean, 11.6 km west of the Iveragh Peninsula in County Kerry, Ireland.



Figure 1: Location of Upper Lighthouse Road on Skellig Michael Island
[OSI Ordnance Survey Ireland Licence No. 0015720]

4.2.4 Description of the Site

Skellig Michael is home to one of the best preserved Christian, monastic settlements dating from the early medieval period, comprising a monastery, hermitage and several stone stairways, which connect the various archaeological features, as well as provide access throughout parts of the island (DEHLG, 2008). The settlement is extremely well-preserved, most probably as a result of the islands remoteness, which together with the harsh weather conditions experienced for much of the year, serves to limit human visitation. However, as a result of its immense archaeological, spiritual and cultural significance, Skellig Michael still attracts large numbers of tourists each year, throughout the summer months. An on-going conservation programme, under the management of the Office of Public Works, also serves to maintain the site through managing visitor access and carrying out necessary maintenance works.

Located in the north-east Atlantic Ocean, some 11.6km off the mainland, the island is subject to a temperate Atlantic climate, strongly influenced by the Gulf Stream. The geology of Skellig Michael is characterised predominantly by Devonian Old Red Sandstone, which forms the islands two main peaks, the taller of which towers some 218m above the sea below (DEHLG, 2008). Under the exposed weather conditions, erosion and fracturing of rock has resulted in the formation of a relatively flat area, known as Christ's Saddle, which sits between the two peaks and from which stone steps ascend to the monastic buildings above (DEHLG, 2008).

Much of the island surface is characterised by sheer cliff-face, exposed bedrock, boulders and scree. As a result, vegetation cover is not extensive in any area. Where thin soils have accumulated exposure-tolerant plant species such as thrift (*Armeria maritima*), sea-campion (*Silene maritima*), sea-mayweed (*Tripleurospermum maritimum*) and rock sea-spurrey (*Spergularia rupicola*) occur. In some areas, such as Christ's Saddle and above the Monastery, more extensive areas of vegetation occur, mostly dominated by sea campion. Skellig Michael is of major importance, both in a national and international context, due to its populations of breeding seabirds, both in terms of the species and numbers it sustains (DEHLG, 2008).

4.2.5 Characteristics of the Project

4.2.5.1 Summary of Consented Phase 1 Works

*Phase 1 of the project was granted consent and commenced in 2017. Phase 1 focussed on three main sections of the Upper Lighthouse Road and seawall to which varying degrees of remedial work were carried out (refer to Area A, Area B and Area C in the Phase 1 works area figure which is included for information in **Appendix C**).*

As part of the Phase 1 works masonry repairs to damaged sections of the seawall in Area A were carried out. Dislodged masonry which had fallen onto the slopes below was retrieved by specialist rope operatives and used as much as possible during these repair works. Tightening works to the walls exterior face were carried out while the inner face was re-pointed with a lime-based mortar. Missing capstones were also replaced. Temporary protective scaffolding was erected on the roadway adjacent to the cliff-face in Area B to allow safe passage of workers and to facilitate remedial works. This scaffolding attached to the cliff-face itself, rather than the roadway or adjacent seawall, so as to prevent further damage. A small area of debris which had accumulated on the roadway was manually excavated under ornithological and archaeological supervision to improve safe access for workers. Concrete brickwork which had been installed in a breached section of seawall in Area C

during historical repairs was removed. The breached section of wall was re-built to capstone level. Lime-based mortar was used to point the walls inner face. Damaged sections of wall on either side of the breach were repaired and missing capstones were replaced.

A thin layer of vegetation was removed from the road surface throughout Areas A, B and C in order to improve conditions underfoot for workers. Any holes uncovered during this process were in-filled with material gathered during remedial works. These works were conducted under the direct supervision of the project ornithologist and archaeologist.

4.2.5.2 Summary of Consented Phase 2 Works

Phase 2 of the project was granted consent and commenced in 2018. Phase 2 focussed on two main sections of the Upper Lighthouse Road and seawall (refer to Area B1 and Area D in the Phase 2 works area figure which is included for information in **Appendix C**).

Additional material was removed from a mound which had naturally accumulated on the roadway in Area B1. Material was removed to a sufficient depth such that the original road level was reinstated. Masonry rebuilding and repair works to the sea wall in this area were also carried out. Only minor repair works to the sea wall were required in Area D as the wall was found to be relatively intact. Rope workers retrieved as much dislodged stone from lower cliff-faces as possible for re-use during remedial works. Surface vegetation on the roadway was removed in order to improve ground conditions underfoot, as was done previously on other sections of roadway during the Phase 1 works

4.2.5.3 Summary of Consented Phase 3 Works

Phase 3 of the project was granted consent and commenced in 2019. Phase 3 focused on one main section of the seas wall along the Upper Lighthouse Road (refer to Area E in the Phase 3 works area figure which is included for information in **Appendix C**).

Phase 3 was less than the required works undertaken to date for Phase 1 and Phase 2. This is because the section of road and seawall along the Upper Lighthouse Road which is encompassed by the Phase 3 works (Area E) is not in as poor condition as other sections of the roadway, and hence less conservation works are required in this area. Vegetation was removed from the road surface as carried out previously on other sections of the Upper Lighthouse Road as part of the Phase 1 and Phase 2 in order to improve conditions underfoot for worker. Any holes which became exposed in the roadway following vegetation removal were in-filled with suitably-sized material e.g. gravels and cobbles, which have naturally accumulated on the roadway having fallen from the above slopes. Vegetation removed as part of this aspect of the proposal was re-used elsewhere on the island as part of on-going routine works. Existing masonry was largely in good condition with render still present; however, capstones were missing along certain sections. Rope workers retrieved as much dislodged stone from lower cliff-faces as possible for re-use during remedial works. These works were conducted under the direct supervision of the project ornithologist.

4.2.5.4 Proposed Phase 4 Works

Phase 4 of the works will encompass the seawall which surrounds the Upper Lighthouse, the ruins & gatepost and a portion of seawall adjacent to the Lower Lighthouse (see Figures in **Appendix C** for extent of **Phase 4** works). As mentioned previously, this section of the Upper Lighthouse compound sea wall and Lower Lighthouse wall has been subject to varying degrees of damage as a result of

natural rock-fall and exposed conditions and as such the degree of remedial works will vary. The proposed works are described in more detail below.

Phase 4 of the project, which is the focus of this report, will involve both masonry repair and rebuilding works to existing structures contained within Area F and Area G.

Area F encompasses the seawall which surrounds the Upper Lighthouse compound ruins and the gatepost. Contained within this area are many damaged walls and crumbled staircase in old lighthouse tower. There are also small outbuildings within the compound with walls and stonework on need of repair. Debris has accumulated on the ground and subsequently vegetation has grown over. Under the debris and vegetation are large flagstones, the aim is to remove the debris and vegetation to expose these flagstones which are original features. At present there walls are unstable and the repair and remedial works will ensure strength and stability for the future. The gatepost will be inspected and repaired accordingly.

Area G is the seawall adjacent to the Lower lighthouse and is similar to the walls which have been repaired previously along the Old Lighthouse Road in earlier phases of the Conservation Project. Existing masonry condition is not the best with render still present in some places; however, capstones are missing along certain sections. Although it is likely that most of these capstones have been lost into the sea below, some may now sit on steep, rocky slopes below the area in question. These may be suitable for re-use in the repair and rebuilding works. On-site rope specialists will retrieve as much dislodged stone as can be safely retrieved from lower levels for use in the remedial works. Masonry repairs required beneath the capping are considered minor, while the exterior face will only require some tightening works. Re-pointing with a lime-based mortar will be carried out on the inner wall face, as was previously in-situ, once the minor masonry repairs and replacement of capstones are complete.

In light of the environmental sensitivity of the site, all Phase 1, Phase 2 and Phase 3 works carried out to date have been particularly cognisant of nesting seabirds occurring within the vicinity. All remedial works have been carried out under the direct guidance and supervision of the project ornithologist in order to minimise disturbance of nesting birds. Separate reports have been prepared on bird surveys undertaken to date as part of Phase 1, Phase 2 and Phase 3 of the Upper Lighthouse Road conservation project. These reports provide additional information on bird survey methodologies employed and survey findings to date. Please refer to the 2017/2018 and 2019 survey reports on bird surveys carried out along the Upper Lighthouse Road during the seabird breeding season and **Section 4.2.5.5** below.



Figure 2: Typical scaffolding set-up along breached section of seawall and roadway



Figure 3. Typical section of masonry seawall undergoing wall tightening works



Figure 4. Typical road surface along Upper Lighthouse Road prior to removal of surface vegetation



Figure 5. Typical road surface along Upper Lighthouse Road following removal of surface vegetation and infilling

4.2.5.5 Project Characteristics Summary

The proposed works are to a permanent structure that is an integral part of the existing habitat. The works will not cause or initiate any further habitat loss. There will be no land-take outside the original wall footprint. No significant resource requirements are required. Equipment will be restricted to light hand tools only and only minor volumes of lime-based mortar. All materials, except for water and the lime-based mortar, will be sourced from the island. Where necessary, the debris and/vegetations will be manually excavated under ornithological supervision.

The primary emissions expected from the proposed works are fugitive emissions of noise from the use of light hand tools and the increase in human activity for the duration of the works. Specialist rope access workers (Work at Height) will be on-site to assist in the erection of temporary scaffolding and the possible retrieval of dislodged masonry which may sit on lower cliff-slopes. Work at Height will oversee all health and safety aspects of the remedial works. Works shall be weather dependant and will only be conducted when safe to do so.

The following table provides a summary of the characteristics of the project.

Table 1: Characteristics of the project

<p><i>Size, scale, area, land-take</i></p>	<p>This assessment covers Phase 4 of remedial works to the Upper Lighthouse compound sea wall and road below the Lower Lighthouse. Varying degrees of remedial work are required, as described in detail in Section 4.3.1.4 above.</p> <p>As part of this phase of works, remedial works will be undertaken in Area F and Area G of the Upper Lighthouse Road (see Figures in Appendix C).</p> <p>The area of works is located in two distinct areas – Area F concentrated on the Upper Lighthouse (ruined) and Area G concentrated as a wall repair to the sea wall adjacent to the Lower Lighthouse. The proposed repair works are to existing structures in both cases and will not require any further addition to the footprint of these structures.</p> <ul style="list-style-type: none"> • The work to Area F includes repairs to the existing sea wall, removal of organic debris in the area of the ruins, repair to the existing gatepost and removal/inspection of metal elements of the tower structure. • The works to Area G relate to local repair/rebuilding of the seawall as per previous consented work to the seawall. <p>All works will take place within the boundary of the Skelligs SPA (004007). The proposed works will not extend beyond the original wall or roadway footprint. There will be no land-take within the SPA.</p>
<p><i>Details of physical changes that will take place during the various stages of implementing the proposal</i></p>	<p>The erection of scaffolding adjacent to potential nesting sites for Storm petrel. The filling of openings within an existing wall which offers potential nesting habitat for bird species of qualifying interest to the Skelligs SPA.</p> <ul style="list-style-type: none"> • Scaffolding shall be installed, as required, to allow access to the works for ornithological surveys. • Scaffolding will be installed to allow greater access for tape lure surveys. • Scaffolding will be to the seawall but may be locally required in the area of the Upper Lighthouse to facilitate removal of some of the stone and metal elements and an ornithologist shall be onsite supervising the erection of scaffolding. • Scaffolding shall only be installed following initial ornithological surveys to identify sensitive sections within each Area.

	<ul style="list-style-type: none"> • A surveyor accesses sections of the wall prior to the erection of scaffolding using a harness. • Nests are marked out prior to the insertion of scaffolding using markers. • Scaffolding shall not be fixed to the wall and no drilling shall be required within the retaining wall. • Access to nesting burrows shall not be obscured by the scaffolding. The erection of scaffolding shall allow greater access to survey harder to reach sections of the retaining wall.
<i>Description of resource requirements for the construction/operation and decommissioning of the proposal (water resources, construction material, human presence etc)</i>	<ul style="list-style-type: none"> • There shall be a maximum of 5 workers onsite during works. Materials required for the proposed works included the scaffolding which is currently stored on the Island. • The extra stone material used for the construction of the wall is already stockpiled on the Island. Mortar and water will be brought to the Island for the proposed repair works.
<i>Description of timescale for the various activities that will take place as a result of implementation (including likely start and finish date)</i>	<ul style="list-style-type: none"> • Works to the wall shall take place over a 13-14 week period from early July to late September/early October. • Work shall be ongoing when possible over this period as access to the Island is weather dependant.
<i>Description of wastes arising and other residues (including quantities) and their disposal</i>	<p>Wastes arising shall be minimal.</p> <ul style="list-style-type: none"> • Scaffolding which is currently stored on the Island following previous years maintenance works shall remain on the Island to be reused for further maintenance works. • Waste arising from workers living on the Island (i.e. domestic waste) shall be taken off the Island regularly and disposed of at a suitably licensed facility. • Workers shall utilise existing toilet facilities currently available on the Island. • Excess lime mortar, washout (which shall be minimal as a limited amount of water will be required to create a dry mortar mix) along with the concrete mortar to be removed from the retaining wall shall be taken off the Island and disposed of at a suitably licensed facility.
<i>Identification of wastes arising and other residues (including quantities) that may be of particular concern in the context of the Natura 2000 network</i>	<ul style="list-style-type: none"> • Waste arising from workers living on the Island (i.e. domestic waste), excess lime mortar, washout (which shall be minimal as a limited amount of water will be required to create a dry mortar mix) along with the concrete mortar to be removed from the retaining wall shall be taken off the Island and disposed of at a suitably licensed facility. • This waste shall be taken off the Island regularly over the works period. • Workers shall utilise existing toilet facilities currently available on the Island.
<i>Description of any additional services required to implement the project or plan, their location and means of construction</i>	<ul style="list-style-type: none"> • Existing services and living accommodation are available on the Island for construction workers. Water shall be brought to the site for mixing mortar. • Electricity shall be provided by means of a diesel powered generator. Water fuel and waste to be stored in the storage shed beside the helipad.

4.3 IDENTIFICATION OF OTHER PROJECTS OR PLANS OR ACTIVITIES

4.3.1 Tourism

The island is visited by significant numbers of tourists (approximately 18,000) on an annual basis. The open season typically runs from May to early October with exact opening and closing dates dependent on weather constraints and prevailing sea conditions.

4.3.2 On-going Remedial Works to Upper Lighthouse Road and Seawall (Phase 1, Phase 2 and Phase 3)

Phase 1, Phase 2 and Phase 3 of the works will continue on the Upper Lighthouse Road. It is expected that there will be an overlap between completion of the Phase 1, Phase 2 and Phase 3 works and the commencement of **Phase 4** works.

4.4 IDENTIFICATION OF NATURA 2000 SITES

4.4.1 Likely Zone of Impact Influence

As described above, the test for the screening for Appropriate Assessment is to assess, in view of best scientific knowledge, if the development, individually or in combination with other plans or projects is likely to have a significant effect on a Natura 2000 site. If there are any significant, potentially significant, or uncertain effects, it will be necessary to proceed to Appropriate Assessment and submit an NIS. National guidance recommends that a list is compiled of all Natura 2000 sites within what is described as a 'likely zone of impact of [a] plan or project' (DoEHLG, 2009, p.32) and which may, or ultimately may not, be impacted upon by the proposal. In the case of plans it is recommended that this zone extends out for a distance of 15km (Scott Wilson *et al.*, 2006, cited in DoEHLG, 2009). With regard to projects such as the proposal considered in this report, the guidance goes on to state, as follows:

For projects, the distance could be much less than 15km, and in some cases less than 100m, but this must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects. (DoEHLG, 2009)

The Natura 2000 sites within this 'likely zone of impact' and their qualifying features of Special Conservation Interest are identified in **Section 4.4.2**, below, and the conservation objectives of the sites are described in accordance with the guidance. Following this, the potential impacts associated with the proposal will be identified before an assessment is made of the likely significance of these impacts. If, at the end of the screening process, it cannot be objectively concluded that no significant impacts are likely or, if screening concludes that there is uncertainty about the significance of the impacts, it will be necessary to proceed to Stage 2, Appropriate Assessment.

4.4.2 Identification of Natura 2000 Sites

Adopting the precautionary principle in identifying potentially affected European sites, it has been decided to include all SACs and SPAs within 15km of the proposal site. Table 1 below lists designated SACs and SPAs within 15km or the zone of influence of the proposal site including their proximity. A map showing these designated sites in relation to the proposal is given in **Appendix B** along with the Site Synopsis for each Natura 2000 sites.

Table 2: Natura 2000 sites within 15km radius of proposal site

No.	Designated Site	Site Code	Proximity of subject site to nearest point of designated site
1	Skelligs SPA	004007	The proposal site lies within the SPA boundary
2	Puffin Island SPA	004003	This designated site is located 10.6km north east of the proposal site
3	Iveragh Peninsula SPA	004154	This designated site is located 12.9km north east of the proposal site

No.	Designated Site	Site Code	Proximity of subject site to nearest point of designated site
4	Valentia Harbour/Portmagee Channel SAC	002262	This designated site is located 14.0km north east of the proposal site

4.4.3 Characteristics of Natura 2000 Sites

The following table lists the qualifying features of conservation interest for the SAC and SPA sites that lie within 15km of the proposal site. Information pertaining to designated sites is from site synopses, conservation objectives and other information available on www.npws.ie.

Table 3: Natura 2000 sites with qualifying features of conservation interest

Designated Site	Qualifying features of conservation interest
Skelligs SPA (004007)	<ul style="list-style-type: none"> • Fulmar (<i>Fulmarus glacialis</i>) • Manx shearwater (<i>Puffinus puffinus</i>) • Storm petrel (<i>Hydrobates pelagicus</i>) • Gannet (<i>Morus bassanus</i>) • Kittiwake (<i>Rissa tridactyla</i>) • Guillemot (<i>Uria aalge</i>) • Puffin (<i>Fratercula arctica</i>)
Puffin Island SPA (004003)	<ul style="list-style-type: none"> • Fulmar (<i>Fulmarus glacialis</i>) • Manx Shearwater (<i>Puffinus puffinus</i>) • Storm petrel (<i>Hydrobates pelagicus</i>) • Lesser black-backed gull (<i>Larus fuscus</i>) • Razorbill (<i>Alca torda</i>) • Puffin (<i>Fratercula arctica</i>)
Iveragh Peninsula SPA (004154)	<ul style="list-style-type: none"> • Fulmar (<i>Fulmarus glacialis</i>) • Peregrine (<i>Falco peregrinus</i>) • Kittiwake (<i>Rissa tridactyla</i>) • Guillemot (<i>Uria aalge</i>) • Chough (<i>Pyrrhocorax pyrrhocorax</i>)
Valentia Harbour / Portmagee Channel SAC (002262)	<ul style="list-style-type: none"> • Mudflats and sandflats not covered by seawater at low tide (1140) • Large shallow inlets and bays (1160) • Reefs (1170)

4.4.4 Conservation Objectives

According to the Habitats Directive, the *conservation status of a natural habitat* will be taken as 'favourable' within its bio-geographic range when:

- its natural range and areas 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 as defined below.

According to the Habitats Directive, the conservation status of a species means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' within its bio-geographic range when:

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

The specific conservation objectives for each site are available on www.npws.ie. These have been accessed for the sites listed in the tables above on the 11/02/2020. Generic conservation objectives were available for the following sites:

- Skelligs SPA (004007), version 6.0, produced 21/02/2018
- Puffin Island SPA (004003), version 6.0, produced 21/02/2018
- Iveragh Peninsula SPA (004154), version 6.0, produced 21/02/2018

Site specific and more detailed conservation objectives were available for the following site:

- Valencia Harbour/Portmagee Channel SAC (002262), version 1.0, produced 31/10/2012

A supporting document is available for marine habitats within Valencia Harbour/Portmagee Channel SAC. NPWS (2012) Valencia Harbour/Portmagee Channel SAC (site code: 002262) Conservation objectives supporting document - marine habitats Version 1 August 2012

Management plans were not available for any sites. All conservation objectives together with other designated site information are available on <http://www.npws.ie/protectedsites/>.

4.5 IDENTIFICATION OF POTENTIAL IMPACTS

Potential likely ecological impacts arising from the project are identified in **Table 4** below.

Table 4: Potential likely ecological impacts

<p><i>Description of elements of the project likely to give rise to potential ecological impacts.</i></p>	<ul style="list-style-type: none"> • Works will be conducted entirely within a Natura 2000 site (Skelligs SPA) • Works are scheduled to take place during the breeding season for SCI species • All access and works, as described in Section 4.2.5 above, will be conducted within or in close proximity to breeding areas for SCI species • The seawall and old lighthouse compound to which remedial works will be carried out, constitute potential habitat for certain SCI species
<p><i>Describe any likely direct, indirect or secondary ecological impacts of the project (either alone or in combination with other plans or projects) by virtue of:</i></p> <ul style="list-style-type: none"> ○ <i>Size and scale;</i> ○ <i>Land-take;</i> ○ <i>Distance from Natura 2000 Site or key features of the Site;</i> ○ <i>Resource requirements;</i> ○ <i>Emissions;</i> ○ <i>Excavation requirements;</i> ○ <i>Transportation requirements;</i> ○ <i>Duration of construction, operation etc.; and</i> ○ <i>Other.</i> 	<ul style="list-style-type: none"> • Loss of minor area of potential nesting habitat for ground-nesting species (infilling areas where surface vegetation has been removed) • Potential alteration of nesting habitat for some SCI species • Potential disturbance/displacement of species as a result of fugitive noise emissions and increased human activity by virtue of the proximity of nesting seabirds to the proposal site

4.6 ASSESSMENT OF SIGNIFICANCE OF POTENTIAL IMPACTS

This section considers the list of sites identified in **Section 4.4.2** above together with the potential ecological impacts identified in the previous section and determines whether the project is likely to have significant effects on a Natura 2000 site.

When assessing impact, Natura 2000 sites are only considered relevant where a credible or tangible source-pathway-receptor link exists between the proposed development and a protected species or habitat type. In order for an impact to occur there must be a risk initiated by having a 'source' (e.g. excavation), a 'receptor' (e.g. a protected habitat/species and/or the habitats on which they depend), and an impact pathway between the source and the receptor (e.g. a waterbody which connects the proposal site to the protected species or habitats). An evaluation based on these factors to determine which Natura 2000 sites are the plausible ecological receptors for potential impacts of the proposed remedial works was carried out. The evaluation had regard to the scope, scale, nature and size of the project, its location relative to the Natura 2000 sites listed in **Table 2**, above and the degree of connectedness that exists between the project and each Natura 2000 site's potential ecological receptors.

Because Skellig Michael is an island in the north-east Atlantic Ocean and the following Natura 2000 sites, namely Puffin Island SPA, Valentia Harbour/Portmagee Channel SAC and the Iveragh Peninsula SPA, all lie at a remove of in excess of 10km from the subject site, it is considered that no plausible impact pathway connects the habitats and species for which these sites are designated to the location of the proposed works. As a consequence, these Natura 2000 sites will not be considered further in this document.

This screening exercise will, therefore, only focus on the Skelligs SPA within which the proposal area is located.

The likelihood of significant effects to the Skelligs SPA from the project was determined based on a number of indicators including:

- Habitat loss and/or alteration
- Habitat or species fragmentation
- Disturbance and/or displacement of species
- Water quality and resource

The likelihood of significant cumulative/in-combination effects is assessed in **Section 4.6.5** below.

4.6.1 Habitat Loss and/or Alteration

Natural processes, comprising rock-falls and erosion as a result of the highly-exposed maritime conditions, have resulted in damage to the existing Upper Lighthouse Road and sea-wall located on the south-western side of Skellig Michael Island. In order to conserve the structural integrity of the seawalls varying degrees of remedial works are required to parts of the structures, as outlined in **Section 4.2.5.4** above. All remedial works will be restricted to the footprint of the Upper Lighthouse compound and seawall adjacent to the Lower Lighthouse. Man-made stone structures found on Skellig Michael are utilised by nesting seabird species, in particular Storm Petrel and to a lesser extent Puffins. It is also noted that Puffins, Manx shearwater **and Storm Petrels** nest in underground burrows and in crevices under rocks and boulders throughout the island. There is, therefore, potential for loss or alteration of potential nesting habitat and further assessment is required.

4.6.2 Disturbance and/or Displacement of Species

Northern fulmar (*Fulmarus glacialis*)

Fulmar has expanded its breeding range throughout Ireland over the last century, beginning in Mayo in 1911. It comes to land during daylight hours, unlike its relatives the shearwaters and other petrels and mainly breeds on sea cliffs, but will nest on level ground, on buildings and in burrows and crevasses. The species winters at sea, but can be seen in Irish waters throughout the year. Fulmer attends colonies in the winter sporadically, with breeding cliffs deserted one week and full the next. The breeding period typically begins in May when a single egg is laid with chicks typically hatching within the first two weeks of July (Taylor, et al., 2012). Fulmar is a common breeder on Skellig Michael, typically present from January to September (DEHLG, 2008). The most recent seabird national census (2015 – 2018) stated 725 Fulmar nest sites on the island¹. Fulmars do not utilise the dry-stone structure that makes up the Old Lighthouse Road sea-wall for breeding; however, they do utilise suitable ledges on the steep rocky cliffs throughout much of the island. Fulmar could

¹<https://www.npws.ie/sites/default/files/publications/pdf/IWM114.pdf>

potentially occupy nest-sites on surrounding cliff ledges close to where work is being carried out, therefore there is potential for indirect disturbance and further assessment is required.

Manx shearwater (*Puffinus puffinus*)

Manx shearwaters spend most of their lives at sea, only coming to land during the breeding season, which is protracted throughout the summer months. They nest in underground burrows and so typically breed on uninhabited off-shore islands which are free from mammalian predators, often in huge numbers. They are unable to walk on land, instead dragging themselves over the ground into their burrows. This makes them vulnerable to gull predation and so they typically only return to breeding colonies on dark, moonless nights. Manx shearwater is an amber listed species (Colhoun and Cummins, 2013). Manx shearwaters typically nest in underground burrows in suitably-vegetated areas of the island. They do not use the dry-stone walls on the island for breeding. Although the main breeding colonies include Christ's Saddle and the Monastery, there is some, albeit, limited potential for nesting Manx shearwater to occur in suitably-vegetated areas in the general vicinity of the Old Lighthouse compound ruin. There is potential for disturbance and further assessment is required.

European Storm petrel (*Hydrobates pelagicus*)

Storm petrels are a small species of seabird which spend much of their lives at sea. Storm petrels breed in colonies on islands off the west coast of Ireland. The great bulk of the population is found in Co. Kerry with the Skellig Islands and the Blasket Islands having substantial colonies. To date, the largest colony surveyed in the world has been found to occur on the island of Inishtooskert, a small uninhabited island in the Blaskets, easily visible from the mainland. They nest under vegetation, in boulder fields and in old buildings and walls, only returning to nest sites after dark. Skellig Michael has an internationally important population of this species (9,994 pairs estimated in 2002), with birds nesting both in the stonework associated with the monastic settlement and in natural crevices amongst the scree and rock. The species has been found by several studies, both on Skellig Michael and elsewhere, to have a protracted breeding season. European Storm petrel is an Annex I species and is amber-listed in Ireland (Colhoun and Cummins, 2013). Given that Storm petrel are known to nest in dry-stone walls it is likely they will be present in the seawall adjacent to the Lower Lighthouse and presumably in areas within the Old Lighthouse compound ruin there is potential for disturbance and further assessment is required.

Northern gannet (*Morus bassanus*)

Gannets are a large species of seabird with a transatlantic distribution occurring from the eastern coast of North America to the southern tip of Greenland, the waters off north-western Russia and the west coast of Africa (Birdlife International, 2020). The Census of Gannet *Morus bassanus* colonies in Ireland in which took place 2013-2014 showed there to be an increase in Gannet population to 47,946 from 36,111 in 2004 (Newton, et al., 2015). Gannet is amber-listed in Ireland due to its highly localised breeding distribution (Colhoun & Cummins, 2013). Although thousands of Gannets pass Skellig Michael on their way to and from Little Skellig, previous assessments have found that they do not typically utilise the island (Harrop, 1959; Lovegrove, et al., 1965; Merne and Walsh, 2005 as cited in DEHLG, 2015), although the occasional bird may be seen resting on the island's lower rocks. Gannets, however, are not known to use Skellig Michael as a breeding site. Bearing this in mind, and the location of the proposed remedial works, significant disturbance and/or displacement impacts to Gannet are not likely.

Black-legged kittiwake (*Rissa tridactyla*)

Skellig Michael holds nationally important numbers of kittiwake. Kittiwakes are amber-listed in Ireland as the breeding population is quite restricted in its distribution (Colhoun & Cummins, 2013). Kittiwakes form colonies, sometimes thousands strong, often with other species of seabird. Breeding typically occurs on steep sea cliffs where birds build nesting platforms on almost vertical faces although they will occasionally use man-made structures such as old buildings. The tendency to build nests on narrow, precarious ledges to afford protection from predators has been linked to a relatively high fledging success rate for the species (Vincenzi & Mangel, 2013). The breeding season typically begins within the first two weeks of May (Mitchell, et al., 2004; Taylor, et al., 2012), although sometimes as early as January or February (DEHLG, 2015). Previous surveys have established the locations of the main kittiwake breeding colonies on Skellig Michael. Throughout all the years of breeding bird surveys conducted along the retaining wall, Kittiwakes were not observed using the structure for nesting. Any occasion Kittiwakes were present on the ledges below walls to be worked were monitored and no works carried out were carried out until the Kittiwakes had departed breeding ledges. Bearing this in mind, significant disturbance and/or displacement impacts to Kittiwakes are not likely.

Common guillemot (*Uria aalge*)

Guillemots only come to land to breed, nesting on-shore from May through August, and often in large colonies. Breeding colonies are restricted to cliffs with suitable ledges as eggs are laid directly onto rock; therefore competition for nest space is considerable. Guillemots are known to defend even the smallest nesting territory, sometimes measuring as little as 5cm². Guillemots winter off the Irish coast and are found in harbours, bays and off-shore waters. Some Irish birds are believed to winter near their breeding sites. Guillemot is an amber-listed species in Ireland (Colhoun and Cummins, 2013). Skellig Michael holds nationally important numbers which are dispersed between four main sub-colonies. The breeding season for Guillemot begins around March/April, with a single egg usually laid between the end of April and the middle of May (Birkhead, et al., 2012; Taylor, et al., 2012; DEHLG, 2015). Throughout all the years of breeding bird surveys conducted along the retaining wall, Guillemot were not observed using the structure for nesting. They are known to nest on ledges further below the Kittiwake colony. Bearing this in mind, significant disturbance and/or displacement impacts to Guillemot are not likely.

Atlantic Puffin (*Fratercula artica*)

Puffin is a small species of auk which has a very large distribution, occurring throughout the North Atlantic Ocean from north-west Greenland to Norway and down to the Iberian Peninsula and beyond. It is an amber-listed species in Ireland (Colhoun and Cummins, 2013). Puffins typically attend breeding colonies from April until early August. They usually nest in areas that are safe from mammalian predators, for which reason they prefer off-shore islands. Skellig Michael is a nationally important site for this species; with 4,000 birds estimated to occur in 1999 (NPWS, 2015). Puffins tend to nest colonially in burrows on the grassy slopes, sometimes using rabbit burrows. They can also nest elsewhere on the island in boulder scree, cracks in the steep cliffs or occasionally in sea wall openings. There is some, albeit, limited potential for disturbance and further assessment is required.

All of the above seabird species, apart from Gannet, utilise Skellig Michael for breeding. It was determined that significant disturbance/displacement impacts are unlikely for Gannet, Kittiwake and Guillemot is unlikely. It was concluded Flumar, Manx shearwater, Storm petrel and Puffin may

potentially be subject to disturbance/displacement impacts as a result of the remedial works and further assessment is required.

4.6.3 Water Quality

The area of works is located along the coastline with no nearby rivers or streams. There is no water on the island apart from rainwater.

Given the limited scale and scope of the proposed activities no significant impact is envisaged to water quality within the Skelligs SPA, as a result of the proposed remedial works considered in this assessment.

4.6.4 Habitat or Species Fragmentation

Habitat fragmentation has been defined as 'reduction and isolation of patches of natural environment' (Hall *et al.*, 1997 cited in Franklin *et al.*, 2002) which results in spatial separation of habitat areas which had previously been in a state of greater continuity. Adverse effects of habitat fragmentation on species or populations can include the increased isolation of populations which can detrimentally impact on the resilience or robustness of the populations thereby reducing overall species diversity and altering species abundance.

The preceding sections have concluded significant water quality impacts for any Natura 2000 site are not foreseen. Significant habitat loss or significant disturbance or displacement impacts to a number SCI species cannot be ruled out for the Skelligs SPA and as a result habitat fragmentation could possibly ensue. Therefore on the basis of this further assessment is required.

4.6.5 Cumulative/In-combination Impacts

Although the proposed works will occur during the island's tourist open season, as well as coincide with the breeding season for many of the SCI species for which the Skelligs SPA is designated, the area of proposed works is not open to the general public, being located on the western side of the island. Therefore, as tourists do not have access to the part of the island in question it is considered that there is no potential for significant cumulative or in-combination disturbance impacts, as a result of interaction between tourism and the proposed works.

The **Phase 4** works will represent a continuation of Phase 1, Phase 2 and Phase 3 works which commenced in 2017, 2018 and 2019, respectively. The **Phase 4** works will be carried out by the same team of workers completing Phase 1, Phase 2 and Phase 3 and so will not require any increase in human resource requirement. Therefore, although certain minor aspects of the Phase 1, Phase 2 and Phase 3 works are expected to be carried out concurrently with some of the **Phase 4** works, significant cumulative impacts are not predicted from this aspect of the proposal.

In conclusion, with regards to existing tourism activities on the island and permitted Phase 1, Phase 2 and Phase 3, the next stage of proposed wall and road repair works (**Phase 4**) to the Upper Lighthouse compound seawall and gatepost (Area F) and the seawall adjacent to the Lower Lighthouse (Area G) on Skellig Michael Island are not considered to have any potential for significant, adverse cumulative or in-combination impacts, bearing in mind the location and limited scale of the works considered in this proposal.

4.7 CONCLUSION OF SCREENING STAGE

In conclusion, to determine the potential impacts, if any, of the project on nearby Natura 2000 sites, a screening process for Appropriate Assessment was undertaken. The proposed remedial works are within 15km of four Natura 2000 sites.

It has been objectively concluded during the screening process that the three sites within 15km of the project are not likely to be significantly impacted by the proposal to carry out the next stage of remedial works to the Old Lighthouse Road and sea wall. These sites are as follows:

- Valencia Harbour/Portmagee Channel SAC (002262)
- Iveragh Peninsula SPA (004154)
- Puffin Island SPA (004003)

It has been concluded that the project is likely to have a significant effect, or significant effects cannot be ruled out at this stage, on the following Natura 2000 sites:

- Skelligs SPA (004007)

Therefore, it is necessary to proceed to Appropriate Assessment and as such a Natura Impact Statement is required for this site.

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Appendix A

Stages of Appropriate Assessment

Stage 1 - Screening

This is the first stage of the Appropriate Assessment process and that undertaken to determine the likelihood of significant impacts as a result of a proposed project or plan. It determines need for a full Appropriate Assessment.

If it can be concluded that no significant impacts to Natura 2000 sites are likely then the assessment can stop here. If not, it must proceed to Stage 2 for further more detailed assessment.

Stage 2 - Natura Impact Statement (NIS)

The second stage of the Appropriate Assessment process assesses the impact of the proposal (either alone or in combination with other projects or plans) on the integrity of the Natura 2000 site with respect to the conservation objectives of the site and its ecological structure and function. This is a much more detailed assessment than Stage 1. A Natura Impact Statement containing a professional scientific examination of the proposal is required and includes any mitigation measure to avoid, reduce or offset negative impacts.

If the outcome of Stage 2 is negative i.e. adverse impacts to the sites cannot be scientifically ruled out, despite mitigation, the plan or project should proceed to Stage 3 or be abandoned.

Stage 3 - Assessment of alternative solutions

A detailed assessment must be undertaken to determine whether alternative ways of achieving the objective of the project/plan exists.

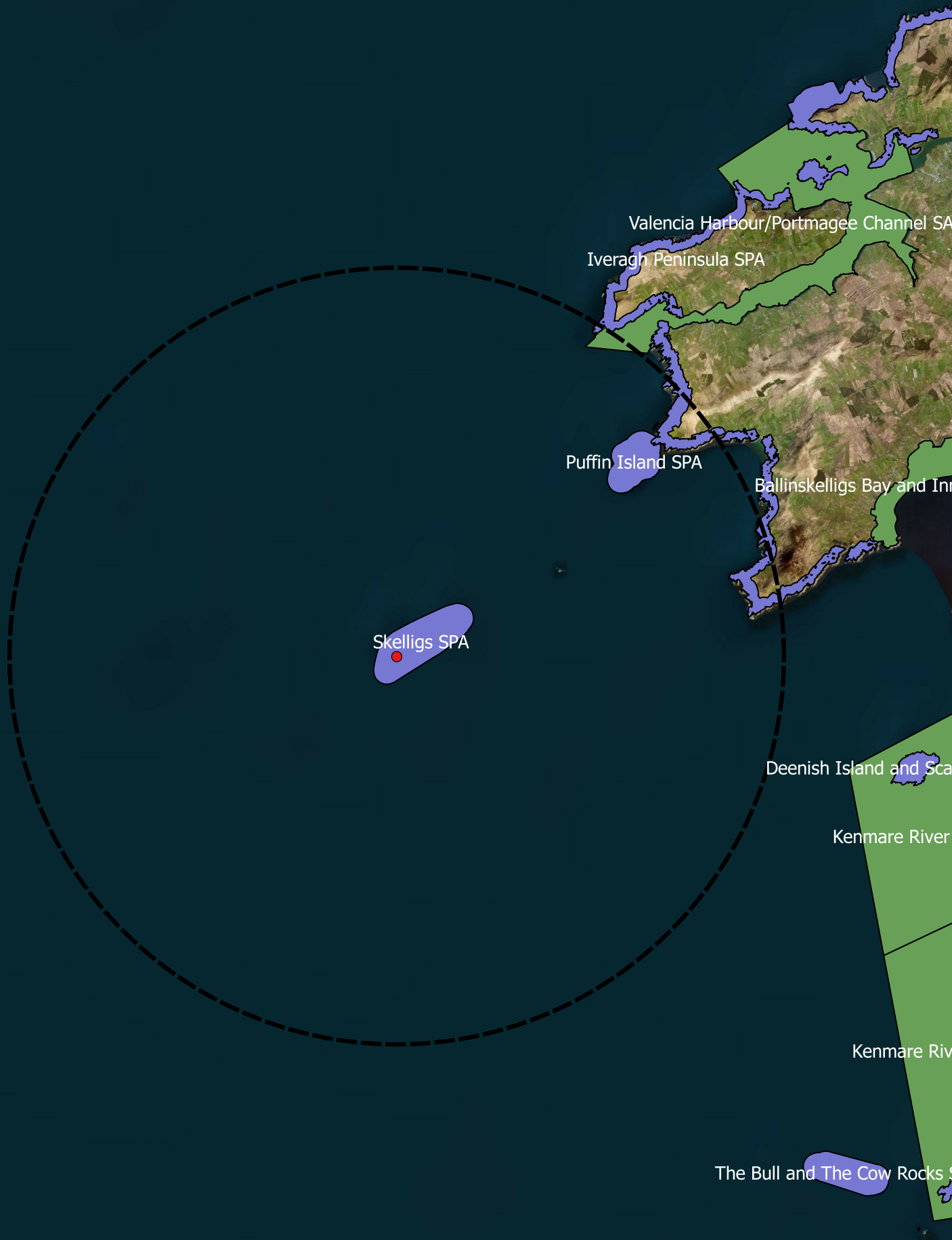
Where no alternatives exist the project/plan must proceed to Stage 4.

Stage 4 - Assessment where no alternative solutions exist and where adverse impacts remain

The final stage is the main derogation process examining whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project to adversely affect a Natura 2000 site where no less damaging solution exists.

Appendix B

Map of Natura 2000 Sites within 15km and Site Synopses



Legend

- Site
- ⊞ 15km Buffer
- Special Area of Conservation
- Special Protected Area



**Malachy Walsh
and Partners**

SITE SYNOPSIS

SITE NAME: SKELLIGS SPA

SITE CODE: 004007

The site comprises Great Skellig and Little Skellig islands. These highly exposed and isolated islands, which are separated by a distance of 3 km, are located in the Atlantic some 14 km and 11 km (respectively) off the County Kerry mainland. The geology of the islands is of Old Red Sandstone, with a little slate and veins of white quartzite. Both islands are precipitous rocky sea stacks, Great Skellig rising to 218 m and Little Skellig to 134 m.

Great Skellig supports a sparse maritime flora on shallow soils. Common plant species include Thrift (*Armeria maritima*), Sea Campion (*Silene maritima*) and Rock Sea-spurrey (*Spergularia rupicola*), with patches of Red Fescue (*Festuca rubra*), Dock (*Rumex* sp.) and Sea Mayweed (*Matricaria maritima*) occurring frequently. Little Skellig is largely unvegetated, due both to the low soil cover and to the effect that the nesting birds have on the vegetation. However, Sea Mayweed occurs on ledges that are too small for Gannets, and Tree Mallow (*Lavatera arborea*), a local species in Ireland, has been recorded.

The Skelligs comprise one of the most important seabird colonies in the country for populations and species diversity. Great Skellig has an internationally important population of Storm Petrel (4,000-6,000 pairs in 2002), with birds nesting both in the stonework associated with the monastic settlement and in natural crevices amongst the scree and rock. Little Skellig is best known for the long established colony of Gannets, with 26,436 pairs in the last full census in 1994. This is by far the largest colony in Ireland and one of the largest in the world. Great Skellig also has one of the largest colonies of Puffins in the country, with 4,000 individuals estimated in 1999. Other seabird species which occur on the islands in nationally important numbers are as follows (counts made between 1999 and 2002): Fulmar (806 pairs), Manx Shearwater (2,370 pairs), Kittiwake (944 pairs), Guillemot (2,551 individuals) and Razorbill (454 individuals).

Great Skellig is a traditional site for Chough, though the relatively small size of the island supports only one nesting pair. Peregrine has also nested in some years.

The breeding seabirds on the Skelligs have been fairly well documented over the years, with references to the Gannets dating back to the 1700s. Owing to the high importance of the islands for birds, each has been designated a Statutory Nature Reserve. In addition, the non-governmental organisation, BirdWatch Ireland, holds a long-term lease on Little Skellig. There are no known direct threats to the breeding seabird populations, though high numbers of day trippers to Great Skellig could cause disturbance to the fragile soil cover and lead to soil erosion, particularly if visitors do not keep to the stone paths. Little Skellig is largely inaccessible.

In addition to the bird interests, Great Skellig is well known for its early Christian monastic settlement. An automated lighthouse also exists on Great Skellig.

This site is one of the top five seabird sites in the country and is of international importance on account of the Storm Petrel and Gannet populations. Storm Petrel is listed on Annex I of the E.U. Birds Directive, as is Chough and Peregrine.

Site Name: Valencia Harbour/Portmagee Channel SAC

Site Code: 002262

Valencia Harbour and Portmagee Channel, at the tip of the Iveragh peninsula in Co. Kerry, separate Valencia Island from the mainland. The channel, which is approximately 1 km wide, and Valencia Harbour and Doulus Bay to the east of the island, contain important examples of three habitats in particular reefs, large shallow inlets and tidal mudflats.

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

[1140] Tidal Mudflats and Sandflats [1160] Large Shallow Inlets and Bays [1170] Reefs

The reefs at this site range from high water to 34 m in depth. They support an excellent range of communities from those that are typical of areas very exposed to wave action to those typical of areas sheltered from wave action but with some tidal stream present. A number of uncommon shallow subtidal communities occur here. The area also has an excellent range of sediment communities present including beds of free living red calcareous algae, generally called maerl beds (also known as 'coral'), with the uncommon anemone *Halcampa chrysanthellum*. Areas of soft mud or muddy sand are characterised by the sea pen *Virgularia mirabilis* and a range of burrowing anemones, including the very rare species *Edwardsia delapiae*, which has not been recorded since it was originally found and described from this area in 1928. Also present is *Scolanthus callimorphus*, only known from Kilkieran Bay, Co. Galway and one site in England. The phoronid *Phoronis psammophila* occurs in this community and has not been recorded elsewhere in Ireland or Britain.

The littoral reefs of Valencia Island are composed of areas that are exposed to, or very sheltered from, wave action. At exposed sites there is a typical zonation for this habitat: an upper shore with a narrow band of the brown alga *Pelvetia canaliculata*; a mid shore covered by barnacles, limpets and mussels, with rock pools containing the Purple Sea Urchin *Paracentrotus lividus* and coralline algal crusts; and a low shore dominated by mussels and barnacles with *Porphyra* sp., followed by mixed kelp species (*Laminaria digitata*, *Laminaria saccharina* and *Saccorhiza polyschides*). On mixed substrate in sheltered areas there is a typical zonation of bands of *Ascophyllum nodosum* and *Fucus vesiculosus* in the mid shore, with *Fucus serratus* in the low shore. The subtidal fringe has mixed kelp species with an understorey of red algae. On the north-east shore of Portmagee Channel, the very low shore has Eelgrass (*Zostera*

marina) beds and a variety of bivalve species. Burrowing anemones, in particular *Cereus pedunculatus*, occur in gravel and mud in very sheltered areas. Boulders in the sublittoral fringe have a kelp community on top, and on the undersides a community of bryozoans and sea squirts (*Polyclinum aurantium* and *Morchellium argus*).

The shallow water reefs in areas very exposed to wave action have kelp park communities of *Laminaria hyperborea*, with dense foliose algae, the jewel anemone *Corynactis viridis* and the sea squirt *Pycnoclavella aurilucens*. Reefs moderately exposed to wave action with moderate current display good examples of *L. hyperborea* forest with a cushion fauna of sponges and ascidians which is considered uncommon. Another unusual community characterised by the keel worm *Pomatoceros triqueter* and occasional kelp occurs on areas of scoured cobbles. Vertical rock supports a range of hydroids, red algae, the sea urchin *Echinus esculentus*, with only occasional kelp plants. In sheltered areas either a species rich community of mixed kelps with sand scour tolerant fauna may be present, or a forest of *L. hyperborea* and *L. saccharina* may occur. This latter community is considered uncommon. Isolated silty bedrock outcrops support sponges, hydroids, anemones and occasional red and brown algae.

In deeper water at the western entrance to Portmagee Channel the reefs are very exposed or moderately exposed to wave action. Very steep bedrock is characterised by sponges, the jewel anemone *Corynactis viridis* and the cup coral *Caryophyllia smithi*. More gently sloping and upward facing circalittoral bedrock is characterised by pink coralline crusts, encrusting bryozoans, *Caryophyllia smithi*, *Echinus esculentus* and the sponges *Haliclona viscosa* and *Mycale rotalis*. These communities are typical of these habitats.

The very sheltered beach on the shores of the Valencia River estuary has a gradually sloping shingle beach, with a narrow band of *Fucus vesiculosus*, *Ascophyllum nodosum* and *Enteromorpha* sp., amphipods (e.g. *Echinogammarus marina*) and winkles (e.g. *Littorina littorea*) are frequent under the algae. Seaward of the shingle in muddy sand the polychaete *Scoloplos armiger* and the lug-worm *Arenicola marina* are common. The tide-swept low shore is characterised by the polychaete *Lanice conchilega*. The bivalve *Scrobicularia plana* is common in the upper mid shore, while *Angulus tenuis* is more prevalent in the mid and low shore.

The site has a good range of sediment communities which vary from gravel and pebbles to maerl, sand and mud. The moderately exposed sediments consist of areas of medium sand with the burrowing sea urchin *Spatangus purpureus* and the bivalve *Dosinia exoleta*. Areas with mixed sediments with different combinations of pebbles, gravel and mud are generally characterised by a variety of hydroids, anemones, bivalves and red algae. Soft mud or muddy sand is characterised by burrowing anemones, in particular *Sagartiogeton undata* and *Edwardsia claparedii*, the sea pen *Virgularia mirabilis*, the molluscs *Philine aperta* and *Haminoe navicula*, and bivalves. *H. navicula* is common in these communities but rare elsewhere in Ireland. A number of other uncommon marine species are found within the site including the rare phoronid *Phoronis psammophila* which occurs at a number of locations within the site, and two rare burrowing anemones *Edwardsia delapiae* and *Scolathus callimorphus*.

This site is of particular interest and importance because it contains good examples of three habitats listed on Annex I of the E.U. Habitats Directive – tidal mudflats and sandflats, large shallow inlets and bays, and reefs.

SITE SYNOPSIS

SITE NAME: IVERAGH PENINSULA SPA

SITE CODE: 004154

The Iveragh Peninsula SPA is a large site situated on the west coast of Co. Kerry. The site encompasses the high coast and sea cliff sections of the peninsula from just west of Rossbehy in the north, around to the end of the peninsula at Valencia Island and Bolus Head, and as far east as Lamb's Head in the south. The site includes the sea cliffs, the land adjacent to the cliff edge (inland for 300 m) and also areas of sand dunes at Derrynane and Beginish. The high water mark forms the seaward boundary except at Doulus Head/Killelan Mountain where the adjacent sea area to a distance of 500 m from the cliff base is included to provide areas for foraging and socialising activities for breeding seabirds. The site is underlain by Devonian sandstones, siltstones and mudstones. A small area of igneous rocks (dolerite and gabbro) occurs at Beginish and on the adjacent shore.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Chough, Peregrine, Guillemot, Fulmar, and Kittiwake.

Vegetated sea cliffs dominate the site; these occur along the length of the site and support a good variety of plant species typical of the habitat, including Thrift (*Armeria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Sea Spleenwort (*Asplenium marinum*) and Rock Sea-spurry (*Spergularia rupicola*). The cliff-tops support heath or coastal grassland. Apart from the sea cliffs themselves, the site includes areas of dry heath, wet heath, upland acid grassland, dense Bracken (*Pteridium aquilinum*), semi-improved and improved pasture grassland, dune grassland, streams, bedrock shores and islets.

The site supports an important population of breeding Chough, a Red Data Book species that is listed on Annex I of the E.U. Birds Directive; 109 breeding pairs were recorded from the site in the 1992 survey and 88 in the 2002/03 survey. The birds are found around the coast from Lamb's head in the south-west to Rossbehy in the north. A small number of pairs are found inland, mainly around the Macgillycuddy's Reeks.

The topography of the Iveragh Peninsula, with its mosaic of grazed semi-improved and improved pastures, extensive inland upland areas of coastal heath and grassland, and sand dune systems in close proximity to breeding cliffs, favours Chough. Particularly high densities of Chough occur at Valencia Island where livestock grazing presents the species with widespread feeding opportunities. Valencia Island held the largest autumn flock, (42 birds), observed in the period 2002 to 2004. Choughs also benefit from the close proximity of the dune systems at Rossbehy in the north and at Inch, where flocks of up to 81 birds have been observed in the autumn. The smaller area of dune habitat at Derrynane is also used, with flocks of up to 33 birds present in October 2003. Communal roosts exist on Lamb's Head near Derrynane and at the western tip of Valencia Island. Pairs and small flocks of Chough can be found around the coast and in the mountainous uplands of the Iveragh Peninsula throughout the year. Studies have shown that Chough forage mainly within 300 m of the cliff tops used for breeding and these areas have been included in the site.

Landuse is predominantly extensive grazing of sheep, and to a lesser degree, cattle. This grazing regime, which results in a tight vegetation sward, is beneficial to Chough. The habitats present

are quite robust and there are few noticeable activities negatively impacting on the Chough population. However, the reduction in cattle numbers and increase in sheep numbers in the recent past, is less beneficial to Chough, as sheep grazing results in a more uniform vegetation sward. One other potential threat is the residue left in livestock dung due to the application of broad-spectrum anti-parasitic drugs.

The site supports an important Peregrine population (6 pairs in 2002); this species is listed on Annex I of the E.U. Birds Directive. The site also holds nationally important populations of Guillemot (2,860 pairs in 1999-2000), Fulmar (766 pairs in 1999-2000), Kittiwake (1,150 pairs in 2000), Great Black-backed Gull (63 pairs in 1999-2000) and Black Guillemot (118 individuals in 1999), as well as smaller populations of other breeding seabirds: Razorbill (90 pairs in 1999-2000), Herring Gull (30 pairs in 1999-2000), Cormorant (33 pairs in 1999-2000) and Shag (11 pairs in 1999-2000).

The Iveragh Peninsula SPA is the second most important site in the country for Chough and is of high importance for Peregrine. It also supports a range of breeding seabirds, including populations of Guillemot, Fulmar, Kittiwake, Great Black-backed Gull and Black Guillemot of national importance. The presence of Chough and Peregrine, both species that are listed on Annex I of the E.U. Birds Directive, is of particular significance.

13.11.2006

SITE SYNOPSIS

SITE NAME: PUFFIN ISLAND SPA

SITE CODE: 004003

Puffin Island lies approximately 0.5 km off the northern side of St Finan's bay in south-west Co. Kerry. It is a long, narrow island of Old Red Sandstone. The island is almost divided into two halves – the southern half is a long narrow, rocky ridge, rising to 130 m, while the northern half broadens into a grassy plateau though has a high point of 159 m. The island is surrounded by mostly steep cliffs and slopes. The vegetation of the main part of the island is a typical maritime grassy sward, though nine different plant communities have been distinguished, including a small area of Ling Heather (*Calluna vulgaris*) heath. A Thrift (*Armeria maritima*) community dominates the slopes. In the past Puffin Island was grazed quite heavily by sheep, and today rabbits are common.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Fulmar, Manx Shearwater, Storm Petrel, Lesser Black-backed Gull, Razorbill and Puffin. The site is also of special conservation interest for holding an assemblage of over 20,000 breeding seabirds.

Puffin Island is one of the most important seabird sites in Ireland. In the recent Seabird 2000 survey, it was rated as of international importance for its breeding populations of Storm Petrel (5,177 pairs), Manx Shearwater (6,329 pairs) and Puffin (5,125 individuals). The colony of Puffins was the largest recorded in Ireland during the survey, while that of Manx Shearwater is the second largest colony after the Blaskets. The island also supports nationally important populations of Fulmar (447 pairs in 2000), Lesser Black-backed Gull (139 pairs in 2000), Great Black-backed Gull (72 pairs in 2000) and Razorbill (800 pairs in 1982 - incomplete survey in 2000). Other seabirds which breed are Shag (5+ pairs in 2000), Kittiwake (250 pairs in 1982), and Guillemot (250 pairs in 1982).

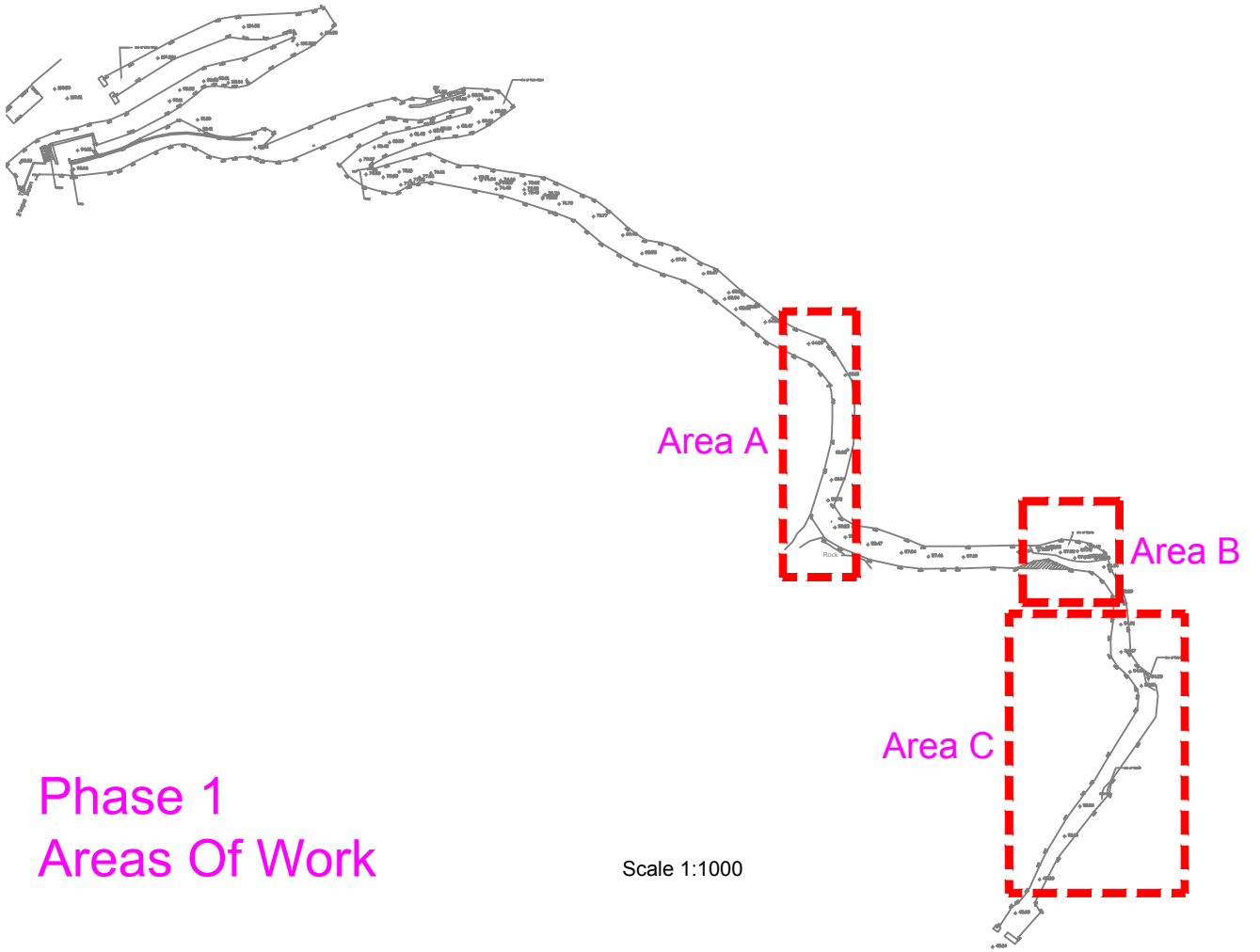
A further bird species of conservation importance which breeds on Puffin Island is Chough, with up to 3 pairs recorded in 1992 and at least one pair in 2000. During winter the resident population may be joined by other birds that breed on the mainland. The presence of Chough and Storm Petrel is of particular note as these species are listed on Annex I of the E.U. Birds Directive.

Puffin Island is owned by BirdWatch Ireland and is managed for conservation. The island is also a Statutory Nature Reserve. Unauthorised grazing, which has occurred in the past, is the main threat to the island as this could lead to erosion of the fragile soil cover.

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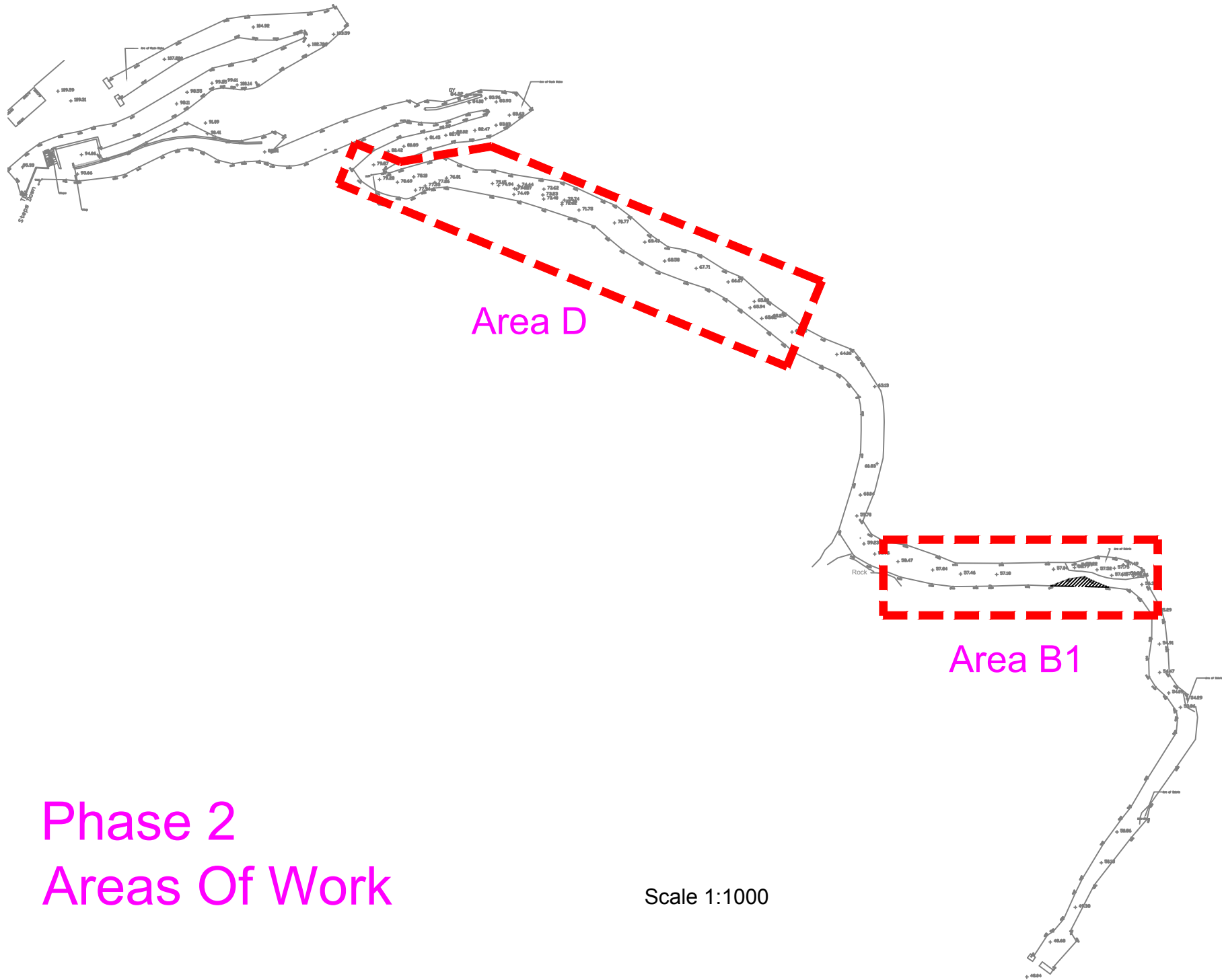
Appendix C

Figures



Phase 1
Areas Of Work

Scale 1:1000

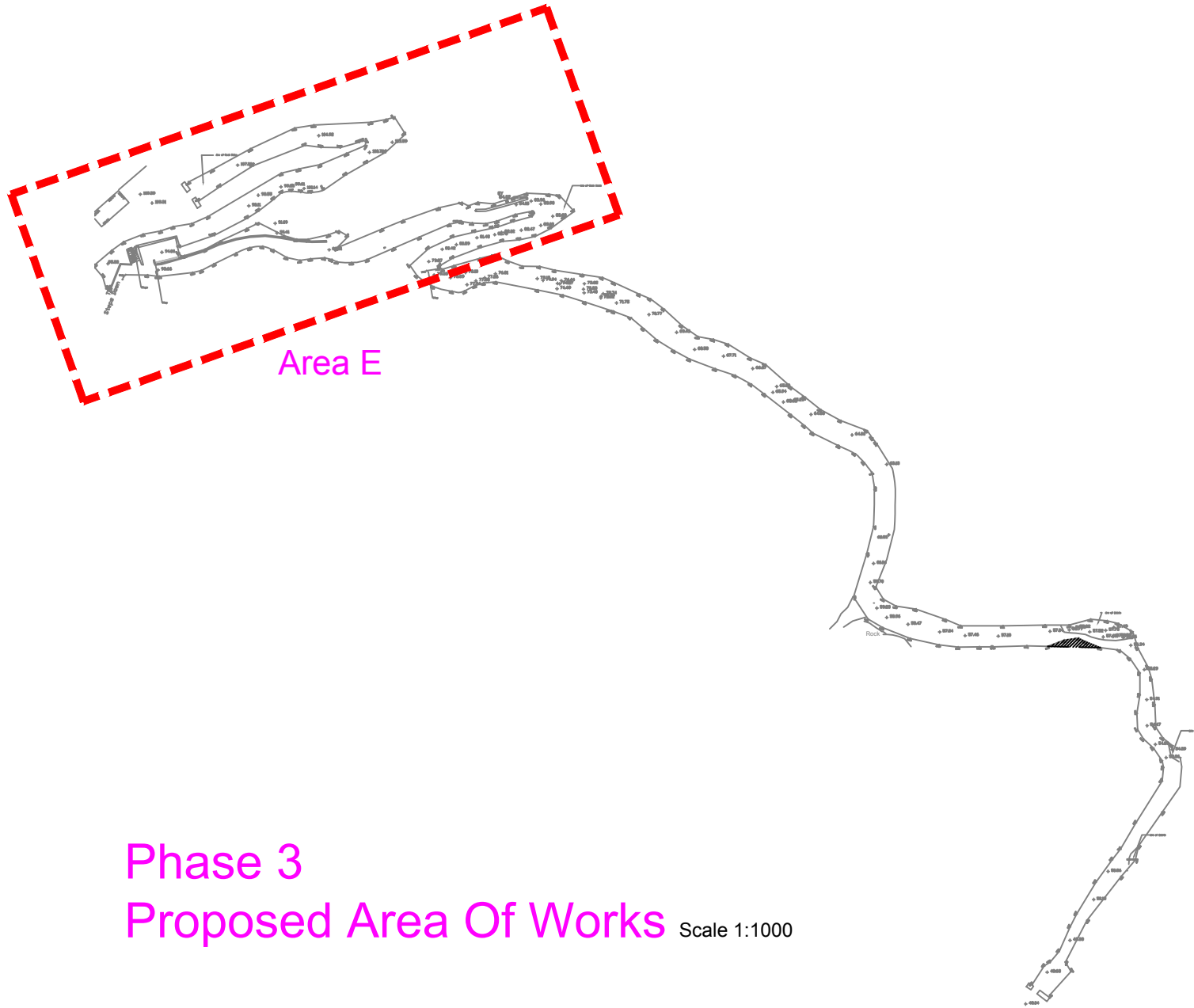


Area D

Area B1

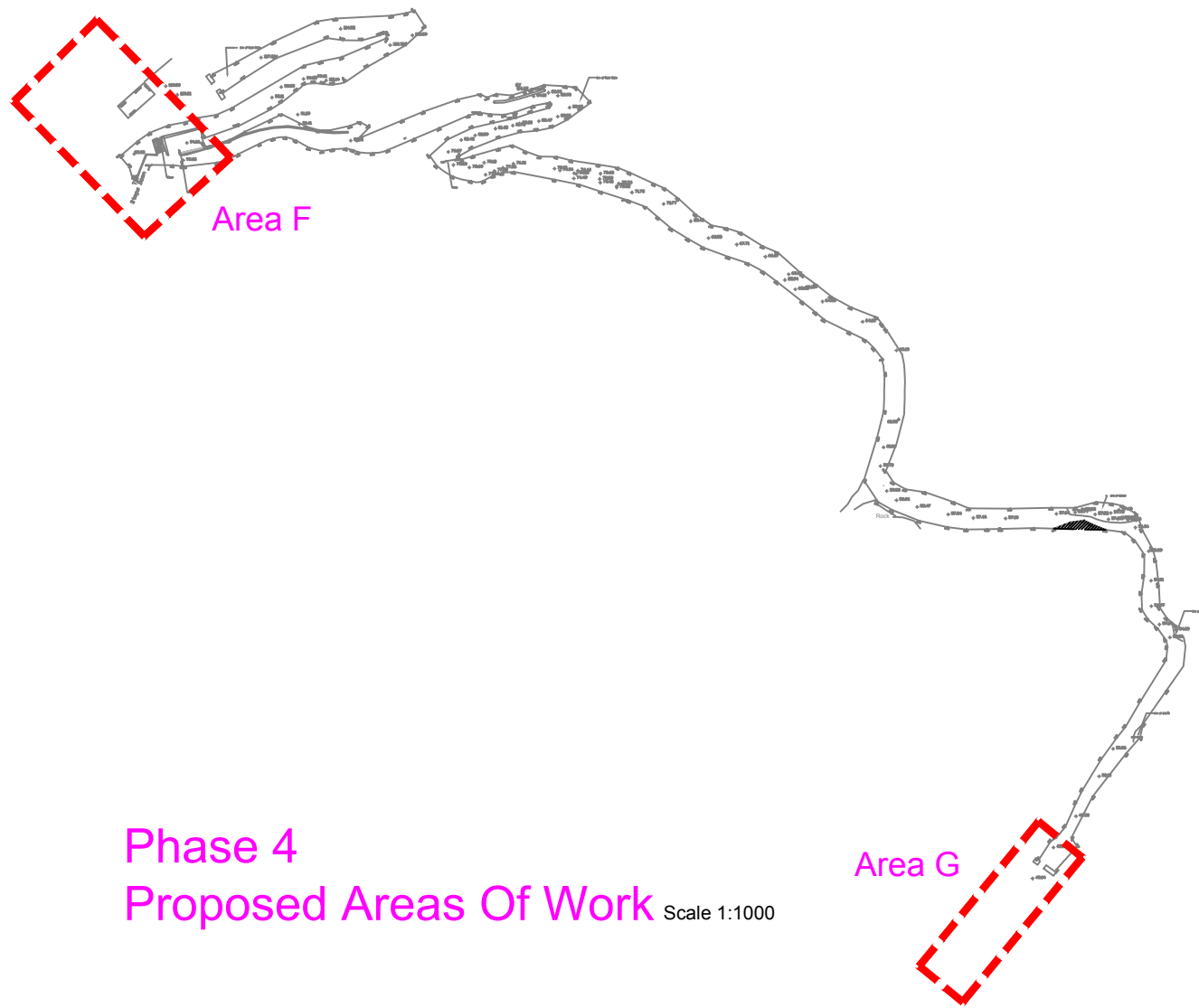
Phase 2 Areas Of Work

Scale 1:1000



Area E

Phase 3
Proposed Area Of Works Scale 1:1000



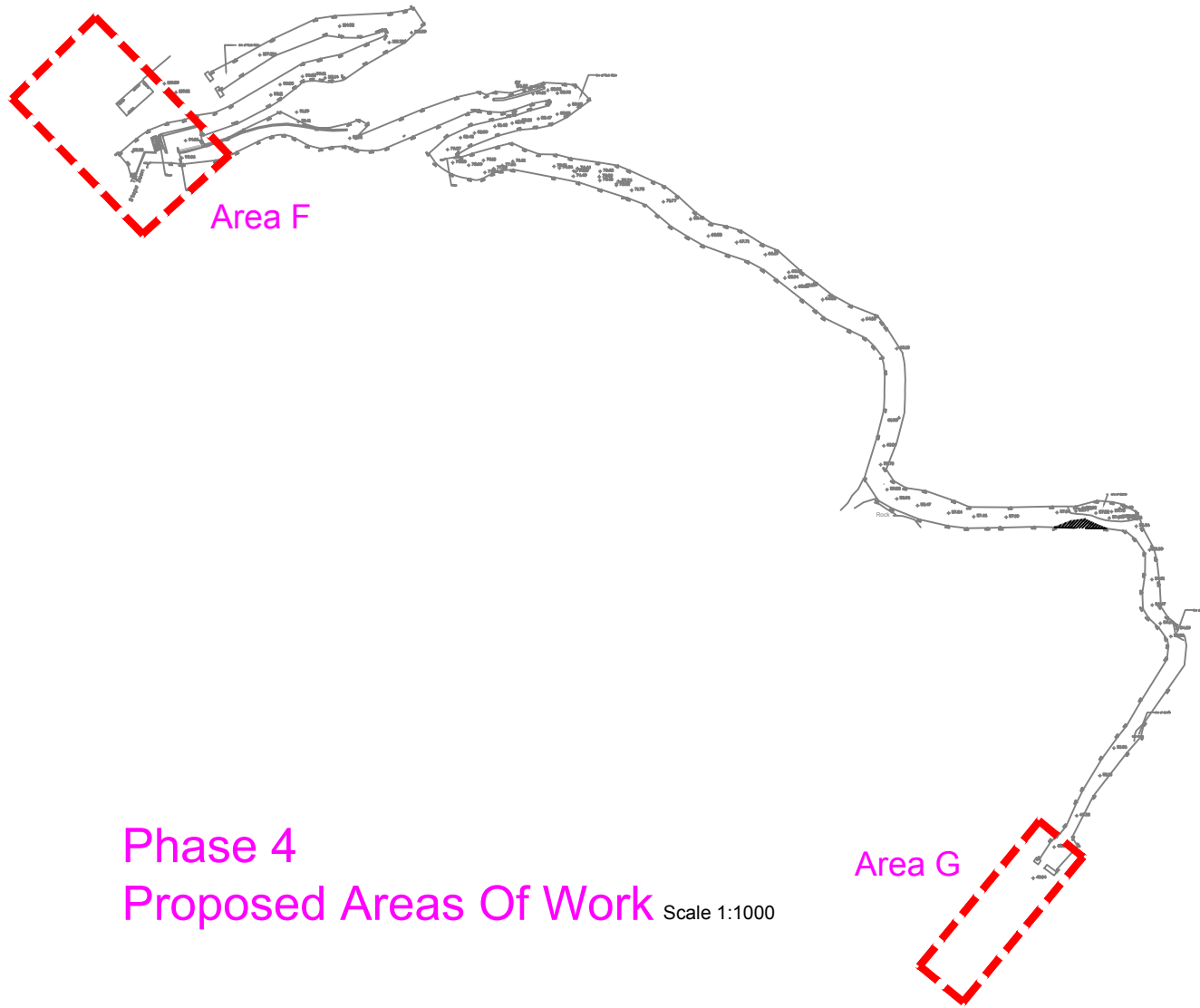
Phase 4
Proposed Areas Of Work Scale 1:1000

Area F

Area G

Appendix 2

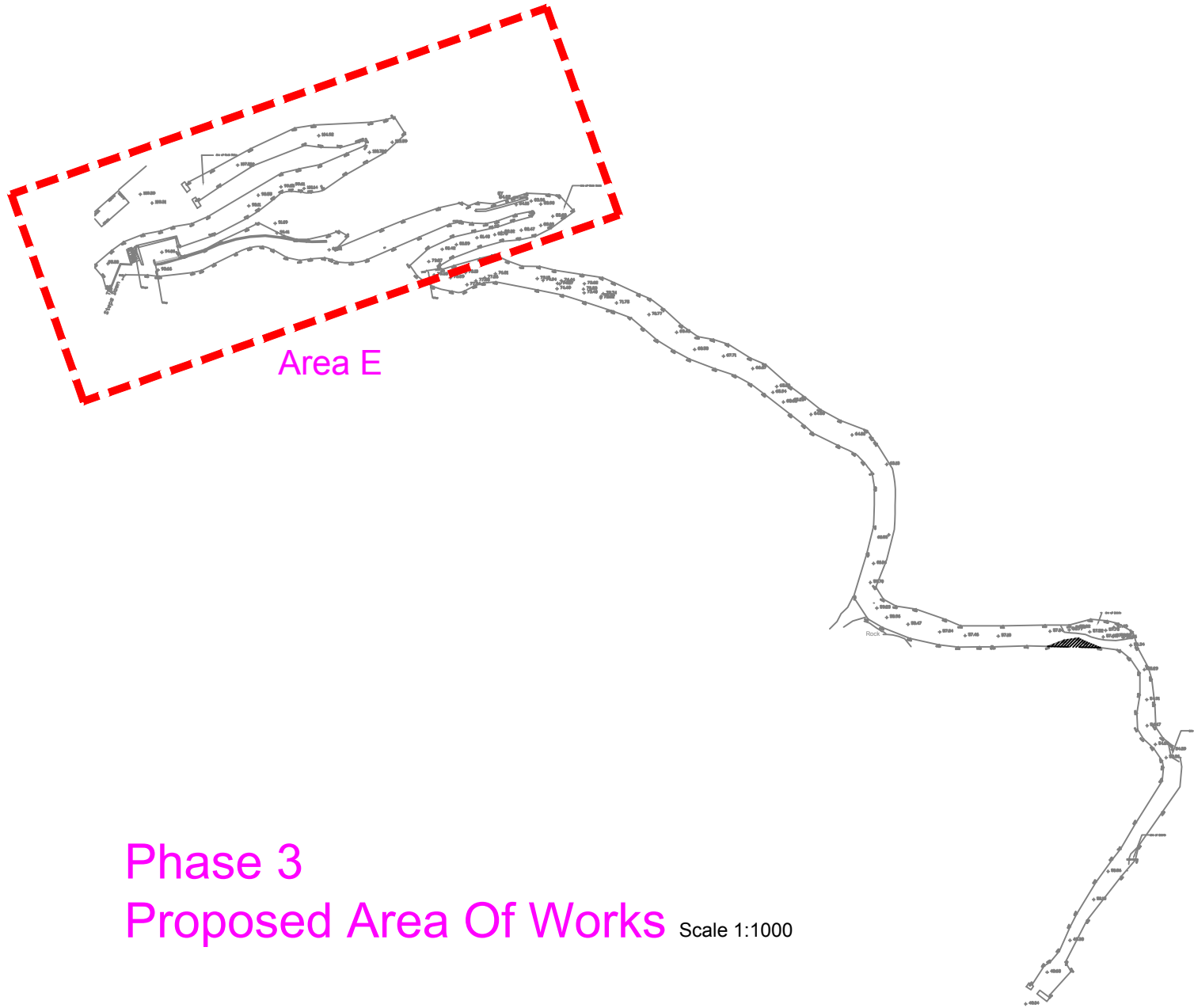
Figures



Phase 4
Proposed Areas Of Work Scale 1:1000

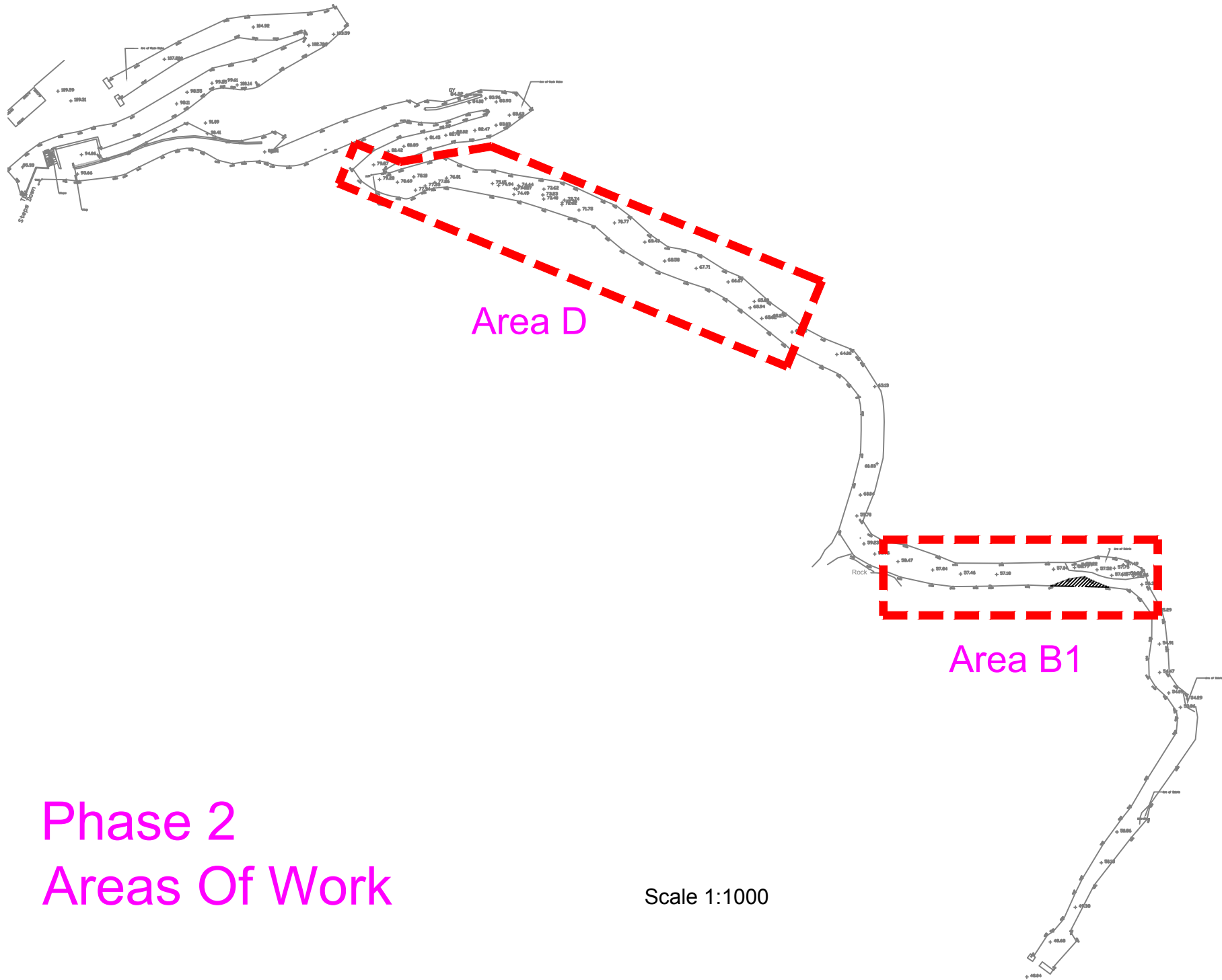
Area G

Area F



Area E

Phase 3
Proposed Area Of Works Scale 1:1000

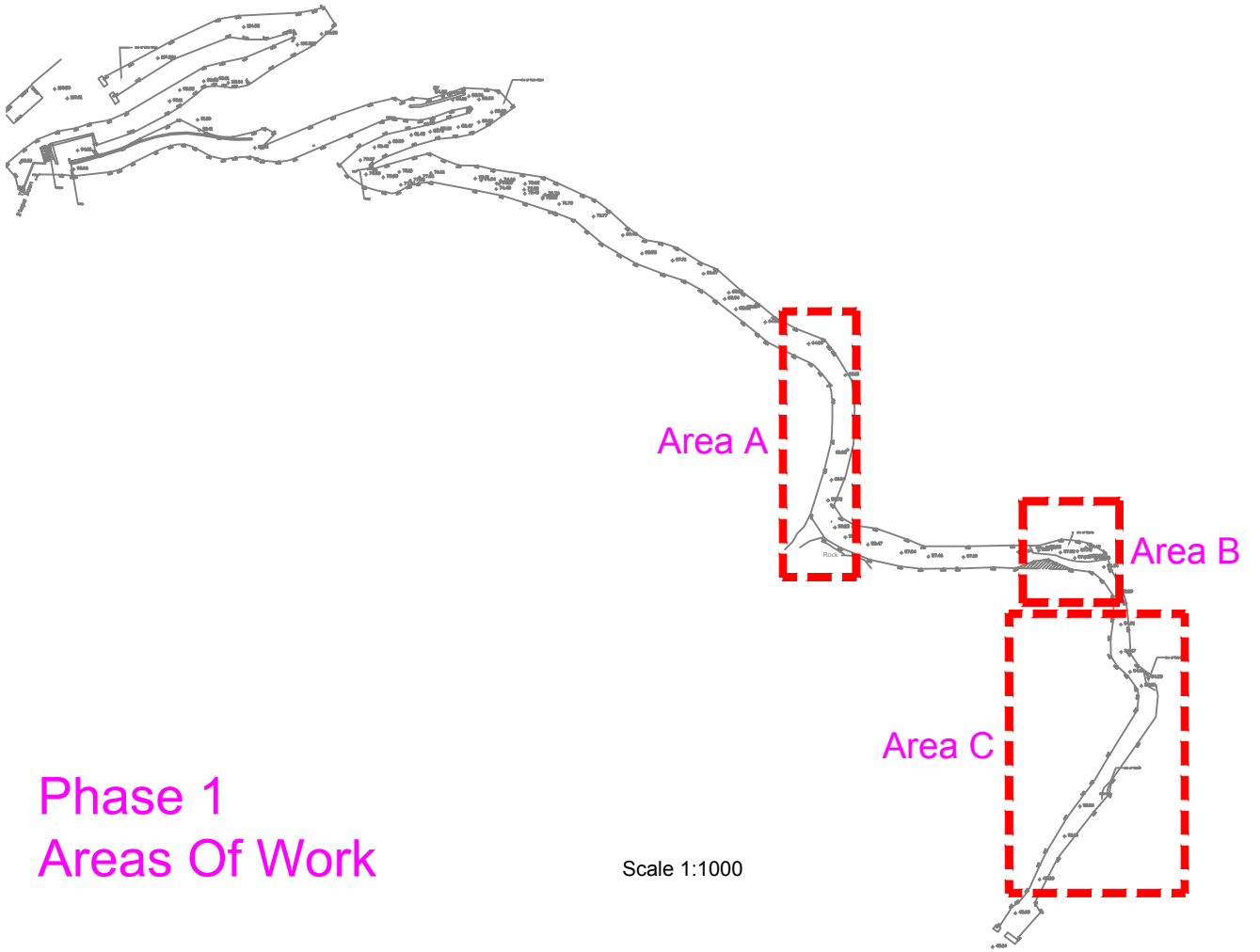


Area D

Area B1

Phase 2 Areas Of Work

Scale 1:1000



Phase 1
Areas Of Work

Scale 1:1000

Appendix 3

Site Synopsis and Generic Conservation Objectives: Skelligs SPA (004007)

SITE SYNOPSIS

SITE NAME: SKELLIGS SPA

SITE CODE: 004007

The site comprises Great Skellig and Little Skellig islands. These highly exposed and isolated islands, which are separated by a distance of 3 km, are located in the Atlantic some 14 km and 11 km (respectively) off the County Kerry mainland. The geology of the islands is of Old Red Sandstone, with a little slate and veins of white quartzite. Both islands are precipitous rocky sea stacks, Great Skellig rising to 218 m and Little Skellig to 134 m.

Great Skellig supports a sparse maritime flora on shallow soils. Common plant species include Thrift (*Armeria maritima*), Sea Campion (*Silene maritima*) and Rock Sea-spurrey (*Spergularia rupicola*), with patches of Red Fescue (*Festuca rubra*), Dock (*Rumex* sp.) and Sea Mayweed (*Matricaria maritima*) occurring frequently. Little Skellig is largely unvegetated, due both to the low soil cover and to the effect that the nesting birds have on the vegetation. However, Sea Mayweed occurs on ledges that are too small for Gannets, and Tree Mallow (*Lavatera arborea*), a local species in Ireland, has been recorded.

The Skelligs comprise one of the most important seabird colonies in the country for populations and species diversity. Great Skellig has an internationally important population of Storm Petrel (4,000-6,000 pairs in 2002), with birds nesting both in the stonework associated with the monastic settlement and in natural crevices amongst the scree and rock. Little Skellig is best known for the long established colony of Gannets, with 26,436 pairs in the last full census in 1994. This is by far the largest colony in Ireland and one of the largest in the world. Great Skellig also has one of the largest colonies of Puffins in the country, with 4,000 individuals estimated in 1999. Other seabird species which occur on the islands in nationally important numbers are as follows (counts made between 1999 and 2002): Fulmar (806 pairs), Manx Shearwater (2,370 pairs), Kittiwake (944 pairs), Guillemot (2,551 individuals) and Razorbill (454 individuals).

Great Skellig is a traditional site for Chough, though the relatively small size of the island supports only one nesting pair. Peregrine has also nested in some years.

The breeding seabirds on the Skelligs have been fairly well documented over the years, with references to the Gannets dating back to the 1700s. Owing to the high importance of the islands for birds, each has been designated a Statutory Nature Reserve. In addition, the non-governmental organisation, BirdWatch Ireland, holds a long-term lease on Little Skellig. There are no known direct threats to the breeding seabird populations, though high numbers of day trippers to Great Skellig could cause disturbance to the fragile soil cover and lead to soil erosion, particularly if visitors do not keep to the stone paths. Little Skellig is largely inaccessible.

In addition to the bird interests, Great Skellig is well known for its early Christian monastic settlement. An automated lighthouse also exists on Great Skellig.

This site is one of the top five seabird sites in the country and is of international importance on account of the Storm Petrel and Gannet populations. Storm Petrel is listed on Annex I of the E.U. Birds Directive, as is Chough and Peregrine.

Site Name: Valencia Harbour/Portmagee Channel SAC

Site Code: 002262

Valencia Harbour and Portmagee Channel, at the tip of the Iveragh peninsula in Co. Kerry, separate Valencia Island from the mainland. The channel, which is approximately 1 km wide, and Valencia Harbour and Douulus Bay to the east of the island, contain important examples of three habitats in particular reefs, large shallow inlets and tidal mudflats.

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

[1140] Tidal Mudflats and Sandflats [1160] Large Shallow Inlets and Bays [1170] Reefs

The reefs at this site range from high water to 34 m in depth. They support an excellent range of communities from those that are typical of areas very exposed to wave action to those typical of areas sheltered from wave action but with some tidal stream present. A number of uncommon shallow subtidal communities occur here. The area also has an excellent range of sediment communities present including beds of free living red calcareous algae, generally called maerl beds (also known as 'coral'), with the uncommon anemone *Halcampa chrysanthellum*. Areas of soft mud or muddy sand are characterised by the sea pen *Virgularia mirabilis* and a range of burrowing anemones, including the very rare species *Edwardsia delapiae*, which has not been recorded since it was originally found and described from this area in 1928. Also present is *Scolanthus callimorphus*, only known from Kilkieran Bay, Co. Galway and one site in England. The phoronid *Phoronis psammophila* occurs in this community and has not been recorded elsewhere in Ireland or Britain.

The littoral reefs of Valencia Island are composed of areas that are exposed to, or very sheltered from, wave action. At exposed sites there is a typical zonation for this habitat: an upper shore with a narrow band of the brown alga *Pelvetia canaliculata*; a mid shore covered by barnacles, limpets and mussels, with rock pools containing the Purple Sea Urchin *Paracentrotus lividus* and coralline algal crusts; and a low shore dominated by mussels and barnacles with *Porphyra* sp., followed by mixed kelp species (*Laminaria digitata*, *Laminaria saccharina* and *Saccorhiza polyschides*). On mixed substrate in sheltered areas there is a typical zonation of bands of *Ascophyllum nodosum* and *Fucus vesiculosus* in the mid shore, with *Fucus serratus* in the low shore. The subtidal fringe has mixed kelp species with an understorey of red algae. On the north-east shore of Portmagee Channel, the very low shore has Eelgrass (*Zostera*

marina) beds and a variety of bivalve species. Burrowing anemones, in particular *Cereus pedunculatus*, occur in gravel and mud in very sheltered areas. Boulders in the sublittoral fringe have a kelp community on top, and on the undersides a community of bryozoans and sea squirts (*Polyclinum aurantium* and *Morchellium argus*).

The shallow water reefs in areas very exposed to wave action have kelp park communities of *Laminaria hyperborea*, with dense foliose algae, the jewel anemone *Corynactis viridis* and the sea squirt *Pycnoclavella aurilucens*. Reefs moderately exposed to wave action with moderate current display good examples of *L. hyperborea* forest with a cushion fauna of sponges and ascidians which is considered uncommon. Another unusual community characterised by the keel worm *Pomatoceros triqueter* and occasional kelp occurs on areas of scoured cobbles. Vertical rock supports a range of hydroids, red algae, the sea urchin *Echinus esculentus*, with only occasional kelp plants. In sheltered areas either a species rich community of mixed kelps with sand scour tolerant fauna may be present, or a forest of *L. hyperborea* and *L. saccharina* may occur. This latter community is considered uncommon. Isolated silty bedrock outcrops support sponges, hydroids, anemones and occasional red and brown algae.

In deeper water at the western entrance to Portmagee Channel the reefs are very exposed or moderately exposed to wave action. Very steep bedrock is characterised by sponges, the jewel anemone *Corynactis viridis* and the cup coral *Caryophyllia smithi*. More gently sloping and upward facing circalittoral bedrock is characterised by pink coralline crusts, encrusting bryozoans, *Caryophyllia smithi*, *Echinus esculentus* and the sponges *Haliclona viscosa* and *Mycale rotalis*. These communities are typical of these habitats.

The very sheltered beach on the shores of the Valencia River estuary has a gradually sloping shingle beach, with a narrow band of *Fucus vesiculosus*, *Ascophyllum nodosum* and *Enteromorpha* sp., amphipods (e.g. *Echinogammarus marina*) and winkles (e.g. *Littorina littorea*) are frequent under the algae. Seaward of the shingle in muddy sand the polychaete *Scoloplos armiger* and the lug-worm *Arenicola marina* are common. The tide-swept low shore is characterised by the polychaete *Lanice conchilega*. The bivalve *Scrobicularia plana* is common in the upper mid shore, while *Angulus tenuis* is more prevalent in the mid and low shore.

The site has a good range of sediment communities which vary from gravel and pebbles to maerl, sand and mud. The moderately exposed sediments consist of areas of medium sand with the burrowing sea urchin *Spatangus purpureus* and the bivalve *Dosinia exoleta*. Areas with mixed sediments with different combinations of pebbles, gravel and mud are generally characterised by a variety of hydroids, anemones, bivalves and red algae. Soft mud or muddy sand is characterised by burrowing anemones, in particular *Sagartiogeton undata* and *Edwardsia claparedii*, the sea pen *Virgularia mirabilis*, the molluscs *Philina aperta* and *Haminoe navicula*, and bivalves. *H. navicula* is common in these communities but rare elsewhere in Ireland. A number of other uncommon marine species are found within the site including the rare phoronid *Phoronis psammophila* which occurs at a number of locations within the site, and two rare burrowing anemones *Edwardsia delapiae* and *Scolathus callimorphus*.

This site is of particular interest and importance because it contains good examples of three habitats listed on Annex I of the E.U. Habitats Directive – tidal mudflats and sandflats, large shallow inlets and bays, and reefs.

SITE SYNOPSIS

SITE NAME: IVERAGH PENINSULA SPA

SITE CODE: 004154

The Iveragh Peninsula SPA is a large site situated on the west coast of Co. Kerry. The site encompasses the high coast and sea cliff sections of the peninsula from just west of Rossbehy in the north, around to the end of the peninsula at Valencia Island and Bolus Head, and as far east as Lamb's Head in the south. The site includes the sea cliffs, the land adjacent to the cliff edge (inland for 300 m) and also areas of sand dunes at Derrynane and Beginish. The high water mark forms the seaward boundary except at Doulus Head/Killelan Mountain where the adjacent sea area to a distance of 500 m from the cliff base is included to provide areas for foraging and socialising activities for breeding seabirds. The site is underlain by Devonian sandstones, siltstones and mudstones. A small area of igneous rocks (dolerite and gabbro) occurs at Beginish and on the adjacent shore.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Chough, Peregrine, Guillemot, Fulmar, and Kittiwake.

Vegetated sea cliffs dominate the site; these occur along the length of the site and support a good variety of plant species typical of the habitat, including Thrift (*Armeria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Sea Spleenwort (*Asplenium marinum*) and Rock Sea-spurry (*Spergularia rupicola*). The cliff-tops support heath or coastal grassland. Apart from the sea cliffs themselves, the site includes areas of dry heath, wet heath, upland acid grassland, dense Bracken (*Pteridium aquilinum*), semi-improved and improved pasture grassland, dune grassland, streams, bedrock shores and islets.

The site supports an important population of breeding Chough, a Red Data Book species that is listed on Annex I of the E.U. Birds Directive; 109 breeding pairs were recorded from the site in the 1992 survey and 88 in the 2002/03 survey. The birds are found around the coast from Lamb's head in the south-west to Rossbehy in the north. A small number of pairs are found inland, mainly around the Macgillycuddy's Reeks.

The topography of the Iveragh Peninsula, with its mosaic of grazed semi-improved and improved pastures, extensive inland upland areas of coastal heath and grassland, and sand dune systems in close proximity to breeding cliffs, favours Chough. Particularly high densities of Chough occur at Valencia Island where livestock grazing presents the species with widespread feeding opportunities. Valencia Island held the largest autumn flock, (42 birds), observed in the period 2002 to 2004. Choughs also benefit from the close proximity of the dune systems at Rossbehy in the north and at Inch, where flocks of up to 81 birds have been observed in the autumn. The smaller area of dune habitat at Derrynane is also used, with flocks of up to 33 birds present in October 2003. Communal roosts exist on Lamb's Head near Derrynane and at the western tip of Valencia Island. Pairs and small flocks of Chough can be found around the coast and in the mountainous uplands of the Iveragh Peninsula throughout the year. Studies have shown that Chough forage mainly within 300 m of the cliff tops used for breeding and these areas have been included in the site.

Landuse is predominantly extensive grazing of sheep, and to a lesser degree, cattle. This grazing regime, which results in a tight vegetation sward, is beneficial to Chough. The habitats present

are quite robust and there are few noticeable activities negatively impacting on the Chough population. However, the reduction in cattle numbers and increase in sheep numbers in the recent past, is less beneficial to Chough, as sheep grazing results in a more uniform vegetation sward. One other potential threat is the residue left in livestock dung due to the application of broad-spectrum anti-parasitic drugs.

The site supports an important Peregrine population (6 pairs in 2002); this species is listed on Annex I of the E.U. Birds Directive. The site also holds nationally important populations of Guillemot (2,860 pairs in 1999-2000), Fulmar (766 pairs in 1999-2000), Kittiwake (1,150 pairs in 2000), Great Black-backed Gull (63 pairs in 1999-2000) and Black Guillemot (118 individuals in 1999), as well as smaller populations of other breeding seabirds: Razorbill (90 pairs in 1999-2000), Herring Gull (30 pairs in 1999-2000), Cormorant (33 pairs in 1999-2000) and Shag (11 pairs in 1999-2000).

The Iveragh Peninsula SPA is the second most important site in the country for Chough and is of high importance for Peregrine. It also supports a range of breeding seabirds, including populations of Guillemot, Fulmar, Kittiwake, Great Black-backed Gull and Black Guillemot of national importance. The presence of Chough and Peregrine, both species that are listed on Annex I of the E.U. Birds Directive, is of particular significance.

13.11.2006

SITE SYNOPSIS

SITE NAME: PUFFIN ISLAND SPA

SITE CODE: 004003

Puffin Island lies approximately 0.5 km off the northern side of St Finan's bay in south-west Co. Kerry. It is a long, narrow island of Old Red Sandstone. The island is almost divided into two halves – the southern half is a long narrow, rocky ridge, rising to 130 m, while the northern half broadens into a grassy plateau though has a high point of 159 m. The island is surrounded by mostly steep cliffs and slopes. The vegetation of the main part of the island is a typical maritime grassy sward, though nine different plant communities have been distinguished, including a small area of Ling Heather (*Calluna vulgaris*) heath. A Thrift (*Armeria maritima*) community dominates the slopes. In the past Puffin Island was grazed quite heavily by sheep, and today rabbits are common.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Fulmar, Manx Shearwater, Storm Petrel, Lesser Black-backed Gull, Razorbill and Puffin. The site is also of special conservation interest for holding an assemblage of over 20,000 breeding seabirds.

Puffin Island is one of the most important seabird sites in Ireland. In the recent Seabird 2000 survey, it was rated as of international importance for its breeding populations of Storm Petrel (5,177 pairs), Manx Shearwater (6,329 pairs) and Puffin (5,125 individuals). The colony of Puffins was the largest recorded in Ireland during the survey, while that of Manx Shearwater is the second largest colony after the Blaskets. The island also supports nationally important populations of Fulmar (447 pairs in 2000), Lesser Black-backed Gull (139 pairs in 2000), Great Black-backed Gull (72 pairs in 2000) and Razorbill (800 pairs in 1982 - incomplete survey in 2000). Other seabirds which breed are Shag (5+ pairs in 2000), Kittiwake (250 pairs in 1982), and Guillemot (250 pairs in 1982).

A further bird species of conservation importance which breeds on Puffin Island is Chough, with up to 3 pairs recorded in 1992 and at least one pair in 2000. During winter the resident population may be joined by other birds that breed on the mainland. The presence of Chough and Storm Petrel is of particular note as these species are listed on Annex I of the E.U. Birds Directive.

Puffin Island is owned by BirdWatch Ireland and is managed for conservation. The island is also a Statutory Nature Reserve. Unauthorised grazing, which has occurred in the past, is the main threat to the island as this could lead to erosion of the fragile soil cover.

8.9.2006

Appendix 4

Skellig Michael Previous Surveys

Appendix 4

Summary of Previous Surveys on Skellig Michael



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1 PREVIOUS SURVEYS ON SKELLIG MICHAEL

Skellig Michael Island has been divided in to 8 sub-sections (See **Figure 1**). The following sections will discuss previous studies on the island and will make reference to which Sub-section it pertains to.

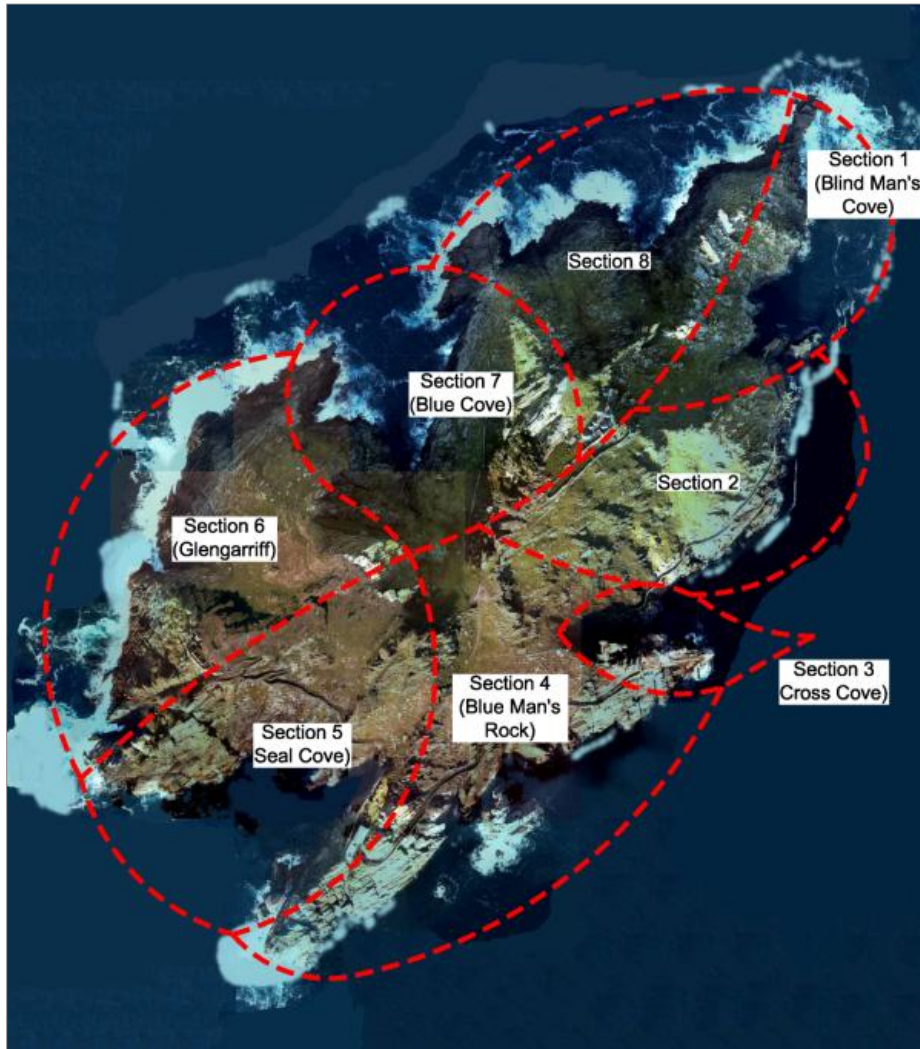


Figure 1. Skellig Michael Island divided in to 8 Sub-sections (Tough & Murphy, 2015)

1.1 SPECIES NOT SELECTED FOR FURTHER ASSESSMENT

1.1.1 Fulmar (*Fulmarus glacialis*)

Fulmar has expanded its breeding range throughout Ireland over the last century, beginning in Mayo in 1911. It comes to land during daylight hours, unlike its relatives the shearwaters and other petrels and mainly breeds on sea cliffs, but will nest on level ground, on buildings and in burrows and crevasses. Fulmar are found on steep rocky cliffs, grassy cliffs and steep slopes above cliffs. The species winters at sea, but can be seen in Irish waters throughout the year. Fulmar attends colonies in the winter sporadically, with breeding cliffs deserted one week and full the next.

Previous surveys

Fulmar were recorded in sub-section 4 each year between 2009 and 2014 with percentage of total island population ranging from 0.67% recorded in 2011 to 5.40% recorded in 2013. However, no Fulmar breed on the lower levels below the wall. Instead Fulmars breed on higher rocky ledges above the path. Detailed in **Table 1** below are all 'Apparently Occupied Sites' (AOS) by Fulmar in Section 4 between 2009 and 2014 (Money & Newton, 2009; Newton & Lynch 2015).

Table 1: Surveys from 2009-2015 of section 4 and the island

Year	Section 4	Total number of the species counted on the Island	Percentage of the total within Section 4
2015	15 AON	-	-
2014	7 AOS	765 AOS	0.92
2013	31 AOS	574 AOS	5.40
2012	10 AOS	668 AOS	1.50
2011	4 AOS	600 AOS	0.67
2010	17 AOS	677 AOS	2.51
2009	4 AOS	579 AOS	0.69

2015

In 2015 a survey was carried out on the Skellig Michael throughout the summer by Malchy Walsh and Partners. The Island was divided in to the same sections 8 Sub-sections used by the NPWS, all sightings of Fulmar were recorded, counts are indicative of the total number of individuals observed, including young, anywhere on the island or in close proximity to it. Detailed in **Table 2** below are the total counts of Fulmar between the months of June and October (Tough & Murphy, 2015).

Table 2: Fulmar total counts on Skellig Michael Island 2015

Skellig Michael Bird Survey Counts 2015								
Species	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
	8-11th June	22-25th June	6-9th July	20-23rd July	10-13th Aug	26-28th Aug	15-18th Sept	29 Sept -1st Oct
Northern Fulmar	576	456	386	536	402	231	17	6

2017

In 2017 during the repairs within Sub-section 5 at Area A (See Figures in **Appendix 2** of main report for Areas) two Fulmar chicks were on the cliff ledge below the wall where there was a bend in the road. One of the chicks was out of sight of the works and the other was protected using a muslin sack. The sack was safely placed over the nest, covering the bird so that it would not be disturbed during immediate work on this section of wall. The chick remained on the shelf during the construction of the entire scaffolding and eventually left the nest safely, before scaffolding was taken down (MWP, 2019).

2019

In 2019 during repairs within Sub-section 5 at Area B (See Figures in **Appendix 2** of main report for Areas), no birds were found occupying the work area. One Fulmar was seen on a shelf 12m below the works. Another bird was sitting on a ledge closer to the work area but did not appear to be nesting (MWP, 2020).

Throughout the previous surveys Fulmer have not been recorded nesting within the walls along the Old Lighthouse Road.

1.1.2 Gannet (*Morusbassanus*)

Gannets are a large species of seabird with a transatlantic distribution occurring from the eastern coast of North America to the southern tip of Greenland, the waters off north-western Russia and the west coast of Africa (Birdlife International, 2015). At the last national census there were estimated to be 32,758 breeding pairs in Ireland (Mitchell, et al., 2004). Gannet is amber-listed in Ireland due to its highly localised breeding distribution (Colhoun & Cummins, 2013). Although thousands of gannets pass Skellig Michael on their way to and from Little Skellig, previous assessments have found that they do not typically utilise the island (Harrop, 1959; Lovegrove, et al., 1965; Merne and Walsh, 2005 as cited in DEHLG, 2015), although the occasional bird may be seen resting on the island's lower rocks. Gannets, however, are not known to use Skellig Michael as a breeding site.

Previous records

No Gannets were ever seen on land on Great Skellig between 1989 and 2009 (Merne & Walsh 2005, unpublished data), though thousands were observed passing every day on their way to and from Little Skellig.

Between 2009 and 2014 no observations of the species were made on the island during the summer bird surveys (Money & Newton, 2009; Newton & Lynch 2015).

In 2015 during the course of the survey period, gannet were observed passing the island on a daily basis and were observed feeding off shore every day. However, there were no observations of gannet made on the island (Tough & Murphy, 2015).

1.1.3 Kittiwake (*Rissa tridactyla*)

Skellig Michael holds nationally important numbers of Kittiwake. Kittiwakes are amber-listed in Ireland as the breeding population is quite restricted in its distribution (Colhoun & Cummins, 2013). Kittiwakes form colonies, sometimes thousands strong, often with other species of seabird. Breeding typically occurs on steep sea cliffs where birds build nesting platforms on almost vertical faces although they will occasionally use man-made structures such as old buildings. The tendency to build nests on narrow, precarious ledges to afford protection from predators has been linked to a relatively high fledging success rate for the species (Vincenzi & Mangel, 2013). The breeding season typically begins within the first two weeks of May (Mitchell, et al., 2004; Taylor, et al., 2012), although sometimes as early as January or February (DEHLG, 2015). Previous surveys have established the locations of the main kittiwake breeding colonies on Skellig Michael. In relation to the proposed works at Seal Cove, Kittiwakes are known to breed on ledges located below the roadway just beyond the Lower Lighthouse gate.

Previous surveys

While Kittiwake was recorded elsewhere on the island there were no observations of the species in section 4 during the summer bird surveys of 2009-2014 (Money & Newton, 2009; Newton & Lynch 2015). Detailed in **Table 3** below are all 'Apparently Occupied Sites' (AOS) by Fulmar in Section 4 between 2009 and 2014 (Money & Newton, 2009; Newton & Lynch 2015).

Table 3: Surveys from 2009-2015 of Section 4 and on the island

Year	Section 4	Total number of the species counted on the Island	Percentage of the total within Section 4
2015			
2014	0	573 AON	0
2013	0	591 AON	0
2012	0	647 AOS + 9 AON = 656	0
2011	0	408 AOS	0
2010	0	431	0
2009	0	501 AOS	0

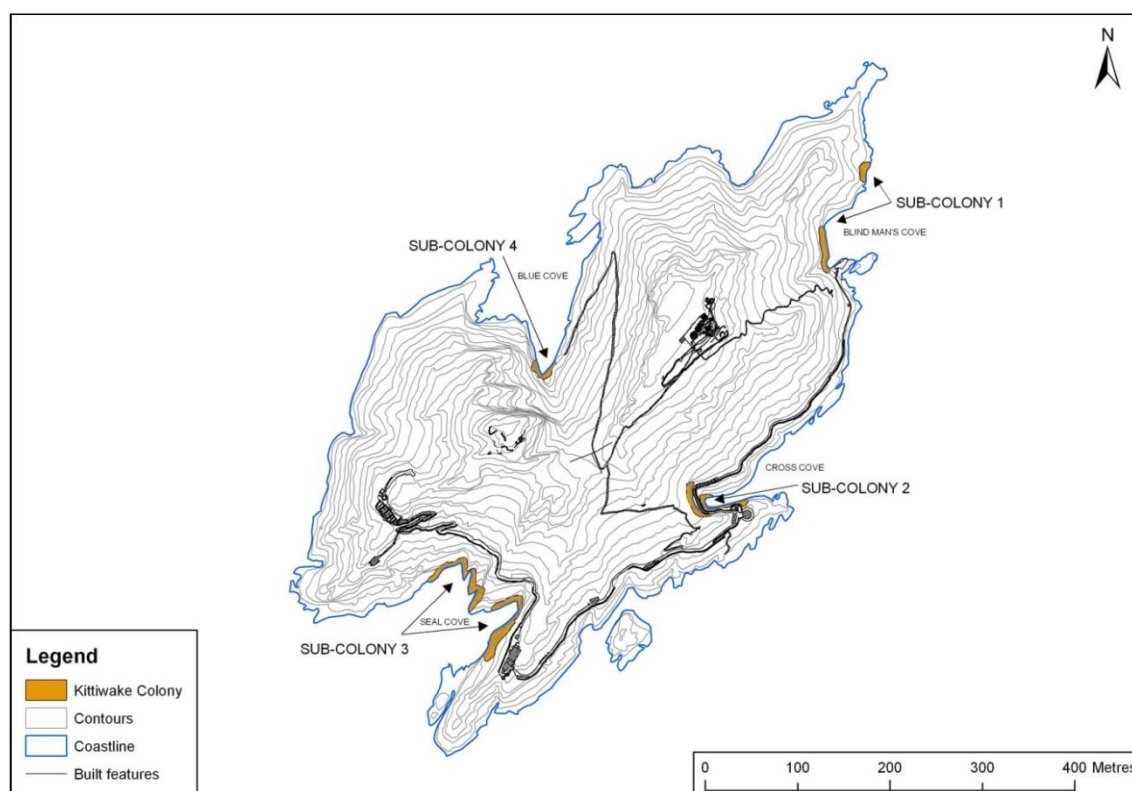


Figure 2: Map 9 Kittiwake distribution on Great Skellig (data from 1990-2009 presented in DEHLG, 2015)

2015

In 2015 a breeding survey was carried out on the Skellig Michael throughout the summer by Malachy Walsh and Partners. All sightings of Kittiwake were recorded, counts are indicative of the total number of individuals observed, including young, anywhere on the island or in close proximity to it.

Detailed in **Table 4** below are the total counts of Kittiwakes between the months of June and October (Tough & Murphy, 2015).

Table 4: Kittiwake total counts on Skellig Michael Island 2015

Skellig Michael Bird Survey Counts 2015								
Species	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
	8-11th June	22-25th June	6-9th July	20-23rd July	10-13th Aug	26-28th Aug	15-18th Sept	29 Sept -1st Oct
Black-legged Kittiwake	708	812	1,388	1,352	713	270	0	0

2018

Remedial works were being carried out in Sub-section 5 of the island in Area C (See Figures in **Appendix 2** of main report for Areas). Kittiwakes nest on ledges below the seawall in Area C which is classed as 'Sub-colony 3, Sea Cove' (see **Figure 2** above). Works in this area were not allowed to commence until Kittiwakes had departed breeding ledges. A survey of the planned Area C was carried out (the week of 7th to 10th August 2018) to establish the departure dates of remaining Kittiwake chicks. The Kittiwake chicks below the area where scaffolding was required were all fully grown at this point in the season. Some had already departed the nesting ledges. The remainder departed the nest colony over the weekend of the 26th and 27th August.

The go ahead to erect the scaffolding was given at this point after the wall was surveyed by rope for nesting Storm petrels. Work commenced along this section of wall on the 29th August. Once the scaffolding was in place the ornithologist returned the week of the 7th September to monitor progress and fully survey the wall again (MWP, 2019).

Throughout all the years of breeding bird surveys conducted along the retaining wall, Kittiwakes were not observed using the structure for nesting.

1.1.4 Guillemot (*Uriaaalge*)

Guillemots only come to land to breed, nesting on-shore from May through August, and often in large colonies. Breeding colonies are restricted to cliffs with suitable ledges as eggs are laid directly onto rock; therefore competition for nest space is considerable. Guillemots are known to defend even the smallest nesting territory, sometimes measuring as little as 5cm². Guillemots winter off the Irish coast and are found in harbours, bays and off-shore waters. Some Irish birds are believed to winter near their breeding sites. Guillemot is an amber-listed species in Ireland (Colhoun and Cummins, 2013). Skellig Michael holds nationally important numbers which are dispersed between four main sub-colonies. The breeding season for guillemot begins around March/April, with a single egg usually laid between the end of April and the middle of May (Birkhead, et al., 2012; Taylor, et al., 2012; DEHLG, 2015). While the wall itself does not represent suitable nesting habitat for this species, guillemots are known to nest on ledges located below the roadway just beyond the Lower Lighthouse gate, further below the Kittiwake colony.

Previous surveys

Between 2009 and 2014 Guillemot were recorded in 2013 only when two birds were observed occupying apparent sites. This record for section 4 represented 0.19% of the total number of Guillemot counted on the island during that year's summer survey. For all other years, while Guillemot was observed in other sections of the island, no individuals were recorded in section 4 (Money & Newton, 2009; Newton & Lynch 2015). Detailed in **Table 4** below are all 'Apparently Occupied Sites' (AOS) by Guillemot in Section 4 between 2009 and 2014 (Money & Newton, 2009; Newton & Lynch 2015).

Table 5: Surveys from 2009-2015 of Section 4

Year	Section 4	Total number of the species counted on the Island	Percentage of the total within Section 4
2015			
2014	0	1,625 IND	0
2013	2 AOS	1,050 AOS	0.19
2012	0	1,159 IND	0
2011	0	1,094 IND	0
2010	0	1,092 AOS	0
2009	0	899 AOS	0

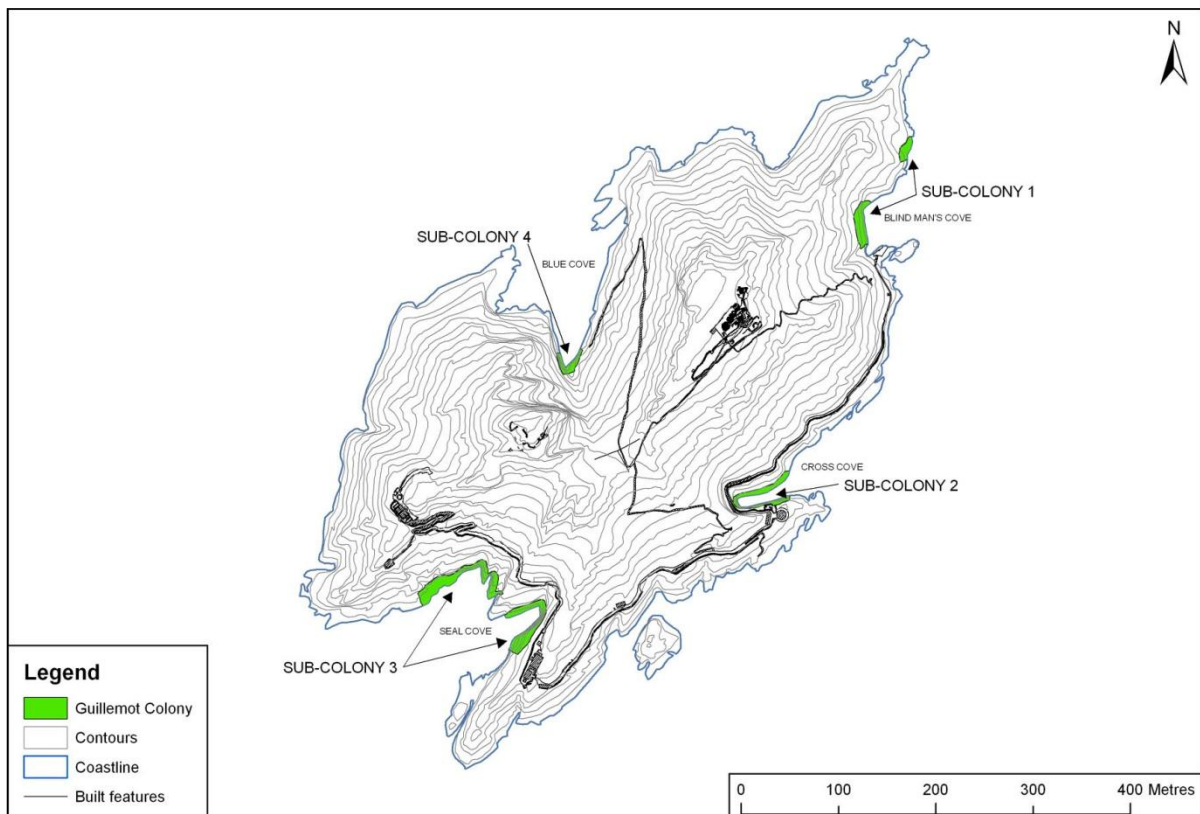


Figure 3. Map 11 Guillemot breeding distribution on Great Skellig (data from 1990-2009 presented in DEHLG, 2015)

2015

The count unit used for Guillemot was 'Individual adult on land' with surveying commencing in June to count during the late incubation/early nestling period, as per the methodology outlined by Walsh et al., (1995). Furthermore, only adults on breeding ledges were counted, excluding any observed on rocks at the base of cliffs or indeed out to sea. Detailed in **Table 6** below are the total counts of Guillemot between the months of June and October (Tough & Murphy, 2015Error! Bookmark not defined.).

Table 6: Guillemot total counts on Skellig Michael Island 2015

Skellig Michael Bird Survey Counts 2015								
Species	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
	8-11th June	22-25th June	6-9th July	20-23rd July	10-13th Aug	26-28th Aug	15-18th Sept	29 Sept -1st Oct
Guillemot	1,479	1,765	1,521	756	1	2	1	0

1.2 SPECIES SELECTED FOR FURTHER ASSESSMENT

1.2.1 Previous surveys Storm petrels (*Hydrobates pelagicus*)

2009

The Storm petrel population nesting in the supporting wall of the 'main lighthouse road' on Skellig Michael was surveyed by tape playback method between 18th and 29th of July 2009 by Money and Newton. The lower lighthouse wall was divided into 17 sections of varying lengths, covering 550 metres approximate, this area of the island spans over Sub-sections 1-4. This survey found 754 AOSs (Apparently Occupied Sites) over a 550m stretch of wall (Money and Newton, 2009).

2015

In the Birdwatch Ireland (BWI) resurveyed the same area in 2015, there were 179 responses to tape lure survey, therefore, the 2009 population estimate was a possible overestimate. The number of responses in the 2015 BWI survey would indicate that the lighthouse wall supports less than 2% of the Storm petrel population on the island (Newton and Lynch, 2014).

2015

With regard to Ratcliffe, et al., (1998), the tape playback survey method was employed (Licence No: 041/2015) to detect the presence of storm petrel nests by recording the location of responses with the addition of the endoscope (Licence No. 042/2015) to look deep with in the wall structure where able. Storm petrel census survey techniques, as outlined in Gilbert, et al (1998), were also referred to. In order to minimise disturbance to nesting storm petrel, it was decided to focus the monitoring effort on particular areas, rather than encompass all nesting sites, as agreed with the NPWS. The upper Monastery wall was selected as this section of wall had not been the subject of any focussed storm petrel survey effort in the past. The wall was located within Sub-section 8 of the island with eight nests located in total. Another area selected for surveying with tape lure and endoscope were

the Stairway to Heaven steps which is located within Sub-section 4 of the island, a total of fifteen nests were located (Tough & Murphy, 2015).

2017/2018

The pre-construction ornithological surveys were carried out on two sections of the Old Lighthouse Road (Area A and Area C) prior any remedial works. The same methodology which was developed during the previous baseline surveys in 2009 (Money and Newton, 2009) and surveys conducted during repair works in 2013 and 2014 carried out by Dr. Steven Newton (BirdWatch Ireland) was repeated and carried out during the 2017/18 survey works, as is standard for all previous years (Licence No. 039/2017 (dated 05/05/17) and Licence No. 018/2018 (dated 20/02/18). All work conducted was within Sub-section 5 (Seal Cover) (See Figures in **Appendix 2** of main report for Area A and Area C).

Prior to any construction works commencing, the areas of wall ear-marked for repairs were investigated thoroughly for evidence and signs of nesting storm petrel, puffin and any other species. A pre-construction tape playback survey for storm petrel was carried out on the retaining wall and the area immediately surrounding the proposed area of works. Nests were clearly marked out and labelled within each works area prior to works commencing. An endoscope was also used occasionally and where required, to investigate the full extent of all crevices, holes and burrows both within walls and under any remaining stone caps on top of the walls.

A total of 11 occupied sites were recorded in 2017 and a total of 9 occupied nests were recorded in 2018.

2019

In 2019 the same methods and techniques used in previous years were applied (License No. Licence No. 50/2019 to survey Area B and Area B1 along the Old Lighthouse Road.

A total of 18 occupied nests were recorded in 2019.

In summary, all nest-sites identified over the course of the 2017/2018/2019 surveys were clearly marked and workers made aware of their location. Where nest-sites were identified, these areas were cordoned off. Works within these areas were prohibited until such time as birds had departed breeding areas. All wall repair and rebuilding works carried out had particular cognisance of nesting storm petrel such that breeding sites were not altered in any way and impacts to breeding birds were minimised.

1.2.2 Previous surveys Puffin (*Fratercula arctica*)

2015

A survey was conducted in 2015 within Sub-section 5 of the Island. The sheer density of puffin numbers on the island made it impossible to estimate the number of individuals present. Rather, it was decided that the most practical approach was to sub-sample the island. On the evening of the 25th June, 1,864 puffins were counted outside burrows on the grassy slopes and other ledges in Lighthouse Bay (Tough & Murphy, 2015).

By the 14th July, young puffins were seen to be leaving the nests, with many of the birds in the vicinity of the south steps appearing to have already departed. Also on this date, over 2,000 puffins were observed sitting on the water, south of the OPW guides' cabins. On the following evening (15th July), puffins were observed to return to all slopes in larger numbers, in comparison with the previous day. On the evening of the 5th August, several hundred puffins were seen flying around the island. Surveying on the 11th August found no puffins to be on the island. On the 12th August, while approximately 200 puffins were observed out at sea to the south of the island, only three birds were observed on the island – this comprised a single adult bird, seen at dusk on the southern slopes, and two chicks which appeared to have had just left their burrows and were making their way down towards the sea (Tough & Murphy, 2015).

2017

Prior to remedial works carried out in Sub-section 5 on section of the wall in Area A, rope access surveys were conducted before erecting any scaffolding (Licence No. 039/2017) using endoscope and tape lure surveys for nesting Storm petrel. Along with eleven Storm petrels, three puffin nests were found to be located at a bend in the roadway. Between sixteen and seventeen puffin nests were identified in Area B also. These were located in the vicinity of a mound of debris in this area as well as on the cliff slope below the road (See Figures in **Appendix 2** of main report for Area A and Area B).

2018

The section of roadway and seawall which stretches from the most western end of Area D as far as Area B was surveyed under licence from the NPWS (Licence No. 018/2018). Within this area one puffin nest was identified at the bend in the road at the bottom end of Area A. This nest-site was screened off and left undisturbed to prevent the nest being crushed underfoot until such time as puffins were found to have departed the nest. Additionally five puffin nests were identified within Area B. These were left in-situ and cordoned off, again until such time as puffins had departed nests after which works were allowed to commence in this area (See Figures in **Appendix 2** of main report for Area A and Area D).

2019

During the 2019 breeding seabird season a section of wall in Area B & B1 was rebuilt and repaired, along with a small section of Area D (see Figures in **Appendix 2** of main report for Area B, B1 and D). The wall was surveyed for nesting seabirds throughout the summer months, checking for suitable areas for nesting Storm Petrels and taking into account any holes where Puffins were nesting (Licence No. 50/2019 (dated 16/04/19). Any location where Puffins were found to have nested during the 2019 breeding season, these holes were marked up and left clear for birds to return to in 2020.

1.2.3 Previous surveys Manx shearwater (*Puffinus puffinus*)

2015

Due to the potential vulnerability of nesting Manx shearwater to trampling and other ground disturbance, it was decided to sub-sample the island population, as agreed with the NPWS, to reduce the area of nesting habitat subjected to surveying (Tough & Murphy, 2015).

The survey employed the tape playback method, having regard to Walsh, et al., (1995) and under license from and guidance of the NPWS (Licence No: 041/2015). Using the tape lure, ten sample burrows were then identified in each study area and confirmed by endoscope (Licence No: 042/2015,). During night surveys, these burrows were visually monitored by surveyors to record all adult activity and behaviour. The burrows were monitored over the breeding season for chick development, through typical stages from hatching to fledging. While surveying, great care was taken to ensure that no damage to confirmed or potential burrows occurred. The survey concentrated on three main areas, comprising suitable nesting habitat, namely the upper Monastery peak, the Lower Monastery garden and Christ's Saddle (Sub-sections 7, 8 and 4, respectively) (Tough & Murphy, 2015).

A total of fifty-eight nest holes were identified in the upper Monastery peak, a total of twenty-eight nest holes were found in the lower Monastery garden and In Christ's Saddle fifty potential Manx shearwater nest holes were found during surveying. Ten nest holes were chosen and marked to monitor further. Puffins and Manx shearwater both utilise burrow and although no Puffin were observed at Monastery peak and Monastery garden they were present at Christ's Saddle (Tough & Murphy, 2015). All monitoring burrows were checked for each of the three locations which determined Manx shearwater were using the burrows as furry chicks were observed using he endoscope. Adults were also seen at night bringing food and presumably change nest duties (Tough & Murphy, 2015).

Appendix 5

OPW Ministerial Consent Addendum Documentation



The Principal Officer,
National Monuments Section,
Department of Housing Local Government and Heritage,
Custom House,
Dublin 1

17th November 2020

Re: Addendum to Request for Ministerial Consent for repair works at the Upper Lighthouse, Skellig Michael, Co. Kerry.

Dear Sirs,

With reference to the provisions of section 14 of the National Monuments Act, 1930 as amended by Section 5 of the National Monuments (Amendment) Act 2004 I hereby enclose an Addendum dated 17th November 2020 to the request for Ministerial Consent dated 6th March 2020 for carrying out repair works at the Upper Lighthouse, Skellig Michael, Co. Kerry.

Please find enclosed the following Addendum documents.

- Addendum Document dated 17th November 2020.
- OPW drawing 001 – Potential Locations of Nesting Birds at Upper Lighthouse.

I am issuing DHLGH with digital copies of this letter and attached documents today.

If you have any queries in relation to the application please contact me.

Yours sincerely,

Fergus Mc Cormick
Senior Conservation Architect Grade 1
Office of Public Works
National Monuments Section
52 St Stephen Green, Dublin 2
Phone (01) 647 6675
Mobile 087 1671141

Skellig Michael Upper Lighthouse Removal of Debris

Environmental and Archaeological Monitoring

Addendum dated 17th November 2020 to Ministerial Consent Application Issued to DCHG on 6th March 2020

1. Introduction

Further to the Ministerial Consent application issued to DCHG on 6th March 2020, the OPW National Monuments are submitting an Addendum to the application. This document aims to describe the environmental and archaeological monitoring works for the proposed removal of debris in the Upper Lighthouse at Skellig Michael, Co. Kerry.

Skellig Michael is a World Heritage site inscribed on the UNESCO World Heritage List in 1996 for its unique architectural and natural attributes. Skellig Michael is also a natural habitat and a destination for nesting birds. It is a designated Special Area of Conservation (SAC) under the Habitats Directive (92/43/EEC) and a designated Special Protection Area (SPA) under the Birds Directive (79/409/EEC). Both Directives form part of Natura 2000, a European network of protected natural sites.

In addition to the monastic site, Skellig Michael also contains two 19th century lighthouses built by the Commissioners of Irish Lights. The Upper Lighthouse is a 19th century building containing former dwellings for light keepers and a lighthouse tower. It is presently in a ruinous state and the OPW are proposing to refurbish it. The first stages of the repair works involve clearing out the existing earth build up and debris to expose the original flooring of the Upper Lighthouse building.



Figure 1 - Aerial view of the Upper Lighthouse

NPWS carried out a birds' survey in the Upper Lighthouse in the 2020 season and found that the existing debris was being used by storm petrels for nesting. It is now proposed to carry out the proposed debris removal works in April 2021 before the storm petrels return and build their nests in the ground (subject to receipt of consent). In the unlikely event a storm petrel is located in the debris appropriate measures will be taken (e.g., the bird will be kept in a secure container and released after dark, or the nest location will be secured and kept protected / undisturbed for the season).

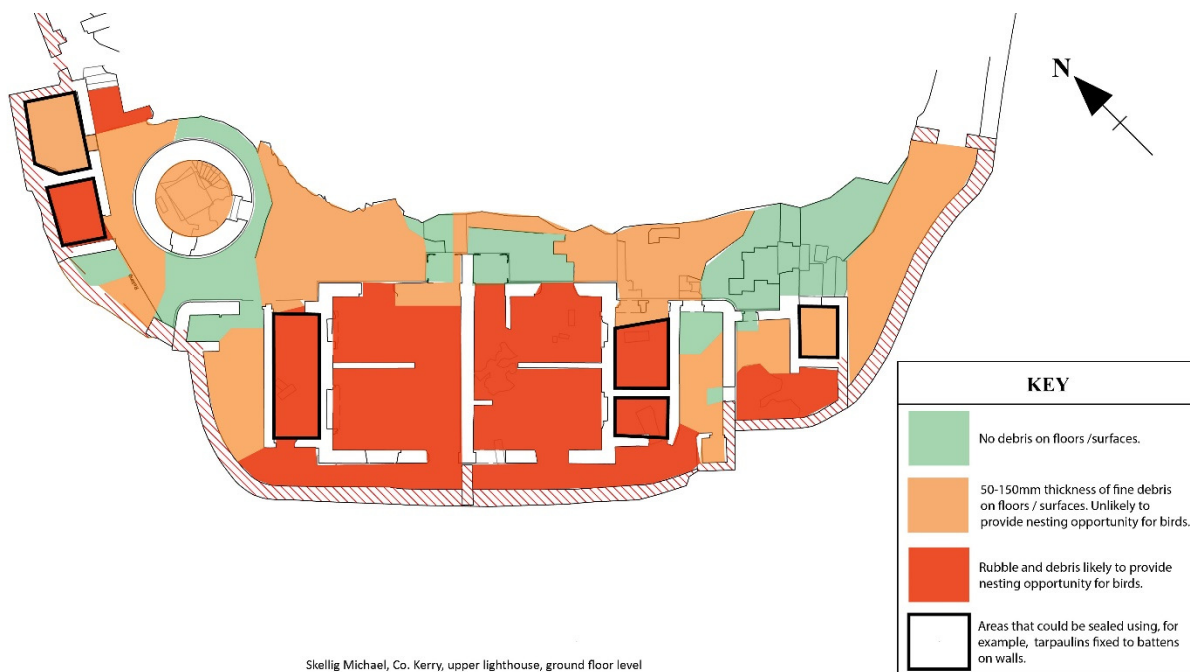


Figure 2 - Ground Floor Plan of the Upper Lighthouse showing possible locations of birds' nests (Alan R. Hayden)

The OPW will ensure that Environmental and Archaeological monitoring is in place for the duration of the debris removal works to the Upper Lighthouse (estimated circa 2 weeks).

2. Proposed works included in the Ministerial Consent application

The Ministerial Consent Application was issued to DCHG on 6th March 2020 for the proposed repair works to the existing seawall and the removal of earth build up and debris from all the Upper Lighthouse buildings. The proposed works also include repairs to the existing gatepost. Grant of Ministerial Consent has not yet been received for the proposed works. The Ministerial Consent application included an Archaeological Method Statement, which was drafted by Alan Hayden Consultant Archaeologist.

3. Proposed monitoring

The removal of debris from the Upper Lighthouse buildings will allow for uncovering the existing flooring to facilitate the conservation proposals. It is proposed to take out the debris from the Upper Lighthouse in April 2021 before the birds nesting season commences. It is vital to protect the unique natural heritage of Skellig Michael.

The OPW will ensure that the removal of earth build-up and debris will be accompanied by the necessary environmental monitoring. The OPW will be appointing an Environmental Clerk of Works to oversee the works and ensure that no damage is caused to the birds. The Environmental Clerk of Works will be present for the full length of the removal of debris from the Upper Lighthouse to monitor the works (circa two weeks on site).

The works will also include archaeological monitoring by a Consultant Archaeologist Alan Hayden who will be present on site for the duration of the works and will monitor the removal of all debris.

The OPW and DCHG will meet with the Environmental Clerk of Works and Consultant Archaeologist at the commencement of the works to discuss and agree all details of the proposed works. The OPW will be requesting the Environmental Clerk of Works to submit his or her final report to OPW on completion of the site works. OPW will forward this report a copy of this report to DCHG and NPWS for their comment and records.

End.



Figure 3 - General view of the Upper Lighthouse building and tower



Figure 4 – Existing debris in Upper Lighthouse



Figure 5 - Existing debris in Upper Lighthouse



Figure 6 - Existing debris in Upper Lighthouse



Figure 7 - Existing debris in Upper Lighthouse

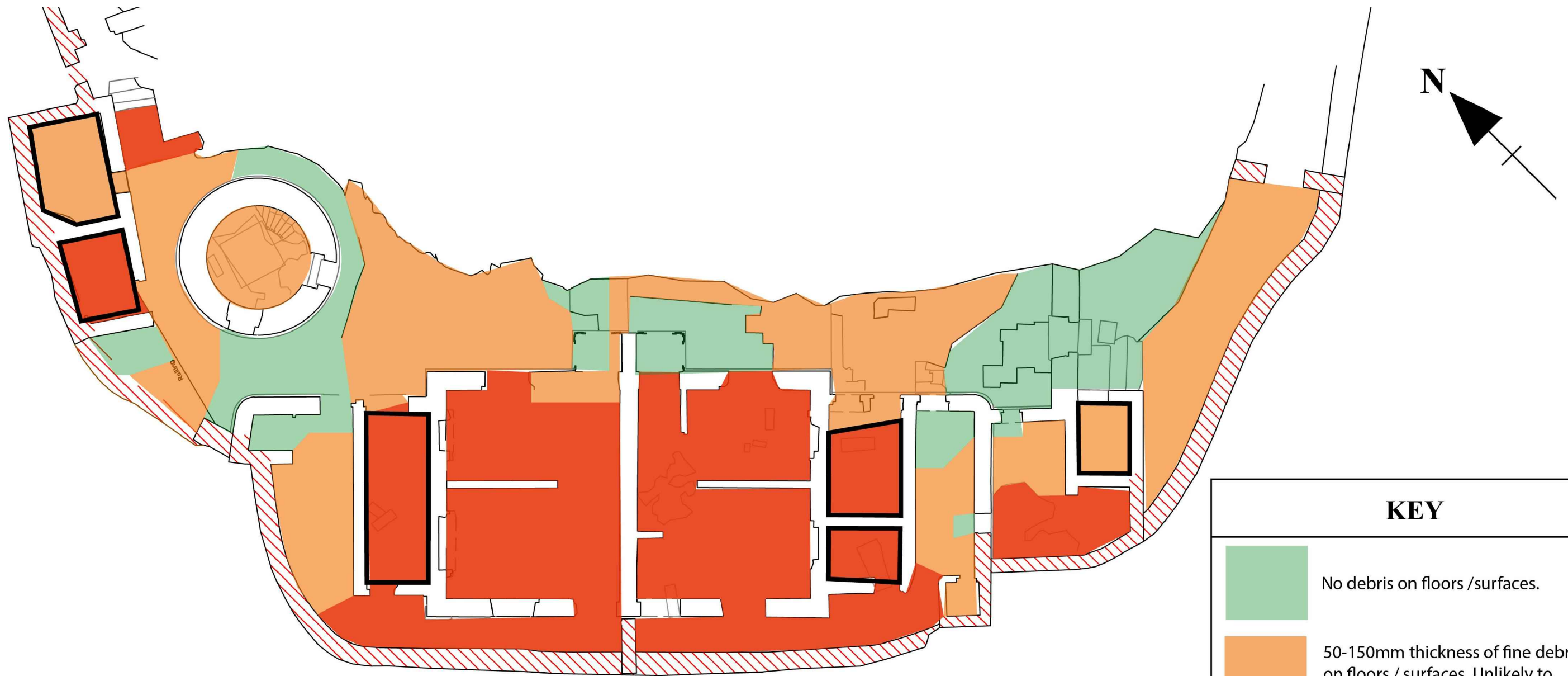
Fergus Mc Cormick

Senior Architect

OPW National Monuments

17 November 2020

MAP OF POTENTIAL LOCATIONS OF NESTING BIRDS ON THE UPPER LIGHTHOUSE SUBMITTED BY ALAN HAYDEN ON 19.10.2020



KEY

- No debris on floors /surfaces.
- 50-150mm thickness of fine debris on floors / surfaces. Unlikely to provide nesting opportunity for birds.
- Rubble and debris likely to provide nesting opportunity for birds.
- Areas that could be sealed using, for example, tarpaulins fixed to battens on walls.

Skellig Michael, Co. Kerry, upper lighthouse, ground floor level

