



AQUAFACT

**Natura Impact Statement
for the hand harvesting of seaweed
at Black Rock, Ballyheige Bay, Co. Kerry**

Produced by

AQUAFACT International Services Ltd.

On behalf of

John and Liz O'Hanlon / Ion Organics Ltd.

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Appendix 1 Consultation

1. Introduction

1.1. Requirement for an Article 6 Assessment

Ion Organics Ltd. is applying to the Department of Housing, Planning & Local Government for a Foreshore Licence for the harvesting of the seaweeds *Fucus vesiculosus* and *F. serratus* from the intertidal zone of Black Rock, Ballyheige Bay, Co. Kerry (Application Number FS6905). The proposed harvesting area is located within the Akeragh, Banna and Barrow Harbour SAC (Site Code: 0332) and the Tralee Bay Complex SPA (Site Code: 04188). The proposed harvesting activity is not directly connected to or necessary for the management of these Natura 2000 sites. Therefore, it is regarded as necessary that this proposal have due regard to Article 6 (3) of the EU Habitats Directive¹ which states:

Article 6 (3): Any plan or project not directly connected with or necessary to the management of the [Natura 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the [Natura 2000] site in view of the [Natura 2000] site's conservation objectives.

This is transposed into national legislation by Regulation 31 of the European Communities (Natural Habitats) Regulations 1997.

1.2. The Aim of this Report

This document has been prepared in accordance with current guidance (DEHLG, 2009, revised February 2010); marine Natura Impact Statement (NIS) working document (NPWS, 2012); EPA Advice Notes on Current Practice (CAAS, 2003); EPA 'Guidelines on the Information to be contained in Environmental Impact Statements' (CAAS, 2002) and the Institute of Ecology and Environmental Management's Guidelines for Ecological Impact Assessment (IEEM, 2006) and provides an assessment of the ecological impacts of the proposed seaweed harvesting operation.

The document provides the information required in order to establish whether or not the proposed harvesting is likely to have a significant impact on surrounding Natura 2000 sites in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

¹ Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

1.3. Consultation

During the preparation of this document, consultation was carried out with the National Parks and Wildlife Service (NPWS) of the Department of Culture, Heritage and the Gaeltacht (DCHG) to identify the scoping opinion of the NPWS in relation to the proposal and to the ecological constraints and sensitivities of the habitats and species in the area. Please note that the proposed harvesting area has increased from 5ha to 7.3ha since the issuing of this scoping letter. Appendix 1 shows the consultation letter. No response has been received to date.

2. Description of the Proposal

2.1. Background

Ion Organics Ltd. is a newly formed business established in October 2018 by John and Liz O'Hanlon and will be creating seaweed based bath products and cosmetics combined with organic botanicals grown on our own land in Ballyduff.

2.2. Development phase

No development phase is required for the harvesting of this natural resource. Existing access points and roads will be used for the collection and onward transport of the harvested seaweed.

2.3. Operational Phase / Sustainable Resource Management

A vehicle will be used to get to the site. It will be parked in the existing parking areas east of the sand dunes. The shore will be accessed on foot along the existing public sandy trackway between the sand dunes by 1 or 2 individuals. Figure 2.1 proposed seaweed harvesting zone and the access route. No vehicles will access the sand dune or beach area.

The seaweed will be harvested from the mid and lower intertidal shoreline on the windward side of Black Rock. Harvesting will occur year around, at low tides, with more seaweed harvested during the summer months, due to more daylight hours and better growth. The hand harvesting of both types of seaweed will involve the use of a sickle to cut the seaweed 15 to 20 cm above the holdfast to ensure re-growth of the plants. The sickles will be sharpened regularly to ensure a clean cut. The harvesting area will be divided up into three zones with seaweed being harvested from only one of the zones per year (Figure 2.1 shows the 3 zones). This will facilitate a 3 year regrowth period.

A biomass assessment was carried out (see Biomass Assessment accompanying the Foreshore Licence application) and this determined that the standing biomass of the 2 target seaweeds is 76.3 tonnes. Ion Organics Ltd. is applying for a licence to harvest a combined total of 2 tonnes (2,000kg) of *Fucus vesiculosus* and *F. serratus*. This represents a sustainable harvest rate of 2.6%.

The seaweed will be gathered in 40kg sacs and 1-2 sacs will be gathered over a low tide period. The quantity harvested annually will be 2,000kg (2 tonnes wet weight). This equates to 50 sacs over the year. While the frequency of sampling will vary, it will average out at approximately 1 sac per week. The harvesting will be planned week by week, conforming to customers or production demand. No seaweed will be harvested if there is no demand for it.

The seaweed will then be carried on foot across the shore back to the waiting vehicle where it will be transported back to Ion Organics premises for processing within a few hours from harvesting. Seaweed will never be stored on the shore or the surrounding land area, it will always be taken directly to their premises, thus eliminating any negative impact on the terrestrial surrounds and shoreline.

Once the wet seaweed has been returned to their premises and separated in to suitable sized bunches for air drying on lines that have been placed outdoors on their land. Once almost dried the seaweed will be brought inside the shed and hung on lines to complete the drying process, at which point the dried seaweed will be packaged.

Figure 2.1 shows the proposed seaweed harvesting area, which covers 7.3ha of the shore and the access points.



Figure 2.1: Seaweed harvesting locations and access point Potential Impacts of Seaweed Harvesting

2.3.1. Removal of target species

Removal of seaweed will result in the removal of nutrients such as nitrogen and phosphorus from the system, due to the harvested seaweed not being available to biodegrade at the end of its life cycle. However, any significant negative impacts from the removal of too many nutrients from the system are deemed unlikely due to the sustainable percentage of weed being removed, the mosaic approach to removal and nutrient replenishment which will occur from several places such as A) from waters of the Atlantic Ocean, B) from human activity in and around the area, such as from domestic sewage, agriculture and from industry and C) natural recycling of nutrients from the decomposition of naturally occurring organic material.

Removal of *F. vesiculosus* and *F. serratus* biomass will also result in the removal of habitat for associated flora and fauna. *Fucus serratus* supports a wide variety of epiphytes with over 90 species having been recorded (Jackson, 2008). Growth of microalgae on the frond surface can cause shading and reduced photosynthesis, anoxia at the frond surface and may interfere with reproduction. Mobile herbivores may benefit *Fucus serratus* through removal of this algal film. Other dominant macrofaunal species found on *Fucus serratus* include *Lacuna pallidula*, *Littorina mariae*, *Amphithoe rubricata*, *Idotea granulosa* and epiflora include *Rhydomenia palmata* and *Elachista fucicola*. *Fucus serratus* is highly fecund and is iteroparous (reproduces repeatedly) surviving and breeding for protracted periods over 3-4 years (Jackson, 2008). Recruitment can occur through reproduction of the remaining population of from other populations. As some of the population will remain it is unlikely that other species will come to dominate. Removal of some of the adult canopy will allow the understory germlings to grow faster. Recovery will probably have occurred after a year.

Fucus vesiculosus is important for promoting biodiversity as it provides substrate and shelter for various species including the tube worm *Spirorbis spirorbis*, herbivorous isopods, such as *Idotea*, and surface grazing snails, such as *Littorina obtusata* (White, 2008). It supports few colonial organisms. Provided the *Fucus vesiculosus* plant is not removed entirely the algae can regenerate from the remaining stem. Recovery would be high due to the high fecundity of the species and its widespread distribution and capacity for dispersal. *Fucus vesiculosus* recruits readily to cleared areas of the shore although full recovery may take 1-3 years.

In addition to the species mentioned above, seaweed beds provide an important habitat for juvenile fish by providing them with a food source and with shelter and protection. The associated flora and fauna are not QIs in their own right, but they, along with *F. vesiculosus* and *F. serratus*, are part of the species

assemblage of intertidal rocky shores, which contribute to the functioning and structure of habitats such as reefs.

2.3.2. Removal of non-target species

In addition to the removal of the target seaweeds, some non-target species will be removed. These include epiphytic flora and other flora and fauna listed in Section 2.4.1 above. These associated flora and fauna, while not QIs in their own rights, contribute to the community assemblage of intertidal rocky shores which make up the 'reef' habitat. The majority of the fauna which are attached to the seaweeds will fall off in the harvesting process; however, an unknown proportion will remain attached and will be removed.

2.3.3. Uncovering of previously hidden fauna

Harvesting of seaweed will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelks *Nucella* spp., *Gibbula umbilicalis*, limpets *Patella vulgata* and shore crabs thus increasing their availability as food items. Mobile fauna such as crabs will quickly move to alternative nearby refugia, before predators such as otter will approach *i.e.* before the harvesters have left the area. Gastropods such as *Littorina* spp. and *Nucella* spp. however, will remain stationary until the shore is inundated by the incoming tide in which time they may be predated on by birds.

2.3.4. Trampling due to weed cutting

Harvesters will walk on the shore to cut and collect the seaweed and some trampling will occur. However, the amount of pressure exerted by one or two people walking on the shoreline will be extremely low. The effect of this pressure particularly on hard substrates such as rocky shores where the target species grow will also be extremely low.

2.3.5. Trampling due to access

Trampling of sensitive species and habitats could occur if harvesters transverse through these sensitive habitats while gaining access to/from the shore.

2.3.6. Reduction in dampening effect

Removal of seaweed could reduce the "dampening effect" the seaweed has on erosion caused by wave action. The force of wave action and hence the rate of erosion varies depending on the level of exposure of a shore and the shore substrate. Hard sediment such as rock, on which the seaweed grows is significantly less susceptible to coastal erosion than soft sediment shores.

2.3.7. Disturbance

The presence of harvesters on the shore have the potential to disturb sensitive species such as breeding birds.

2.3.8. Alien species

Terrestrial, freshwater and marine environments are increasingly impacted by the arrival of non-native species via a number of methods of introduction, including aquaculture activities such as shellfish imports/exports, commercial shipping (fouled hulls and contaminated bilge water), recreational boating as well as natural dispersal. These introductions seriously affect the biodiversity of a region, and ultimately incur significant economic costs in removal and restoration of habitats. The main non-native species that have been identified² as invasive and therefore as a threat to Irish marine environments are described in Table 2.2.

Table 2.1: Identified and Potential non-native invasive marine species.

Invasive Threat Status	Species Name	Group	Threat	Recorded Locations
Identified	Carpet sea squirt (<i>Didemnum vexillum</i>)	Tunicate	Covers and alters large areas of marine habitats	Carlingford Lough, Malahide Marina, Galway Bay
	Slipper limpet (<i>Crepidula fornicata</i>)	Mollusc	Covers and alters large areas of marine habitats	Ballinakill Bay, Carlingford Lough, Dungarvan Bay, Kenmare Bay, Clew Bay However, none of these sites are currently thought to be supporting <i>C. fornicata</i> .
	Wire weed (<i>Sargassum muticum</i>)	Algae	Alteration of marine habitats and loss of native biodiversity	Widespread in Ireland
	Smooth cord-grass (<i>Spartina anglica</i>)	Flowering Plant	Negative impacts on native intertidal communities	Widespread in Ireland on sheltered muds
	Wakame (<i>Undaria pinnatifida</i>)	Algae	Alteration of marine habitats and loss of native biodiversity	Carlingford Lough
Potential	Asian rapa whelk (<i>Rapana venosa</i>)	Mollusc	Causes mortality of native bivalves	No records in UK or Ireland
	Oyster drill (<i>Ceratostoma</i>)	Mollusc	Causes mortality of native oysters	UK only

² <http://invasivespeciesireland.com/> and <http://invasives.biodiversityireland.ie/>

Invasive Threat Status	Species Name	Group	Threat	Recorded Locations
	<i>inornatum</i> and <i>Urosalpinx cinerea</i>)			
	Red King Crab (<i>Paralithodes camtschaticus</i>)	Crustacean	Competition with native species	No records in UK or Ireland

As there will be no boats or transportation lorries used during the proposed seaweed harvesting activities the mechanism for spreading non-native species is removed. In addition, the harvesters are only applying for a license for one area so there will be no opportunity to spread any non-native species between harvesting sites.

3. Description of the Receiving Environment

A site visit was carried out on the 26th November 2018, at low water (12:48pm) on a spring tide. Black Rock is a 12m high rocky island c. 30m wide (E-W) by 180m long (N-S). Black Rock is a bedrock outcrop of unbedded lime-mudstone. Figures 3.1 to 3.5 show images of the shore looking N, NW, W, SW and S from the top of the island. There are numerous rock pools throughout the site forming within channels eroded into the bedrock.



Figure 3.1: View south from Black Rock Island.



Figure 3.2: View southwest from Black Rock Island.



Figure 3.3: View west from Black Rock Island.



Figure 3.4: View northwest from Black Rock Island.



Figure 3.5: View north from Black Rock Island.

The top 15m of the shore was made up of weathered ridges of bedrock which contained localised areas of black lichen *Verrucaria* spp. above a zone of channel wrack *Pelvetia canaliculata* and sparse barnacles *Chthamalus montagui* and *Semibalanus balanoides* (LR.MLR.BF.PelB *Pelvetia canaliculata* and barnacles on moderately exposed littoral fringe rock) which was above a zone of spiral wrack *Fucus spiralis* (LR.MLR.BF.FspiB *Fucus spiralis* on full salinity exposed to moderately exposed upper eulittoral rock). Underneath the fronds of *F. spiralis* was a community consisting of the limpet *Patella vulgata*, the winkles *Littorina saxatilis* and *Littorina littorea*, the whelk *Nucella lapillus*, the mussel *Mytilus edulis* and the

barnacle *Semibalanus balanoides*. These two biotopes were confined to the northwestern part of the island. Figure 3.6 shows the *F. spiralis* biotope.



Figure 3.6: *F. spiralis* biotope in the upper shore in the northwestern part of the island.

The mid shore north and northwest of the island contained a zone of bladder wrack *F. vesiculosus* (LR.MLR.BF.FvesB *Fucus vesiculosus* and barnacle mosaics on moderately exposed mid eulittoral rock). The bedrock and boulders in this area were characterised by a mosaic of the barnacle *Semibalanus balanoides* and the wrack *F. vesiculosus*. The limpet *P. vulgata* and the whelk *N. lapillus* were also present, and the anemone *Actinia equina* and small individuals of the mussel *Mytilus edulis* were confined to crevices. Underneath the *F. vesiculosus* was a community of red seaweeds, including *Corallina officinalis*, *Mastocarpus stellatus* and *Osmundea pinnatifida* with the winkles *Littorina littorea* and *Littorina* spp. present. Figure 3.7 shows the *F. vesiculosus* biotope.



Figure 3.7: *F. vesiculosus* biotope in the mid shore north of the island.

The mid shore in the rest of the site was dominated by the tuft forming red seaweed *Osmundea pinnatifida* (LR.HLR.FR.Osm *Osmundea pinnatifida* on moderately exposed mid eulittoral rock). Other turf forming red seaweeds, such as *Corallina officinalis*, *Mastocarpus stellatus*, *Ceramium* spp. and *Callithamnion hookeri* were also present, but *O. pinnatifida* dominated. Small patches of bare rock amongst the algal turf are occupied by barnacles *S. balanoides*, the limpet *P. vulgata*, the whelk *N. lapillus* and small individuals of the mussel *M. edulis*. The winkles *L. littorea* and *L. saxatilis* were also present.



Figure 3.8: *O. pinnatifida* biotope in the mid shore west of the island.

The lower shore along the full expanse of the island was dominated by serrated wrack *F. serratus* (LR.MLR.BF.Fser.R *Fucus serratus* and red seaweeds on moderately exposed lower eulittoral rock). This

zone was present below the *F. vesiculosus* in the north and northwest and below the *O. pinnatifida* zone in the west and southwest. The serratus zone was on average c. 30m deep. This zone was characterized by a mosaics of the wrack *F. serratus* and turf-forming red seaweeds including *O. pinnatifida* and *C. officinalis*. Underneath the canopy a number of other red seaweeds were present including dulsc *Palmaria palmata*, bead weed *Lomentaria articulata*, *Furcellaria lumbricalis*, *Membranoptera alata* and carrageen *Chondrus crispus*. Green seaweeds such as velvet horn *Codium tomentosum*, *Cladophora rupestris*, gutweed *Ulva intestinalis* and sea lettuce *Ulva lactuca* were present but in small numbers. The following brown seaweeds were also present: *Cystoseira baccata* and sea oak *Halidrys siliquosa* in addition to oarweed *Laminaria digitata* in the deeper rock pools in the lower shore and at the low water mark. The limpet *P. vulgata*, the barnacle *S. balanoides*, the whelk *N. lapillus*, the winkle *L. littorea* and the crab *Carcinus maenas* were also present in the lower shore. Figure 3.9 shows this biotope.



Figure 3.9: *F. serratus* zone in the lower shore.

At the southern part of the Island, the upper/mid shore was characterised by patches of small individuals of the mussel *Mytilus edulis* interspersed with patches of the barnacle *Semibalanus balanoides* and individuals of the limpet *Patella vulgata* (LR.HLR.MusB.MytB *Mytilus edulis* and barnacles on very exposed eulittoral rock).



Figure 3.10: *M. edulis* and barnacles south of the island.

The numerous rock pools (LR.FLR.Rkp Rockpools) located throughout the site were characterised by coral weed *Corallina officinalis*, calcareous encrusters, dulse *Palmaria palmata*, carrageen *Chondrus crispus*, grape pip weed *Mastocarpus stellatus* bead weed *Lomentaria articulata*, *Cystoseira tamariscifolia*, *Furcellaria lumbricalis*, *Cystoseira baccata*, the filamentous *Ceramium nodulosum*, sea oak *Halidrys siliquosa*, serrated wrack *F. serratus*, bladder wrack *F. vesiculosus*, sea lettuce *Ulva lactuca* and velvet horn *Codium tomentosum*. The common limpet *Patella vulgata*, topshells *Monodonta lineata* and *Gibbula cineraria*, the whelk *Nucella lapillus*, periwinkles *Littorina saxatilis* and *L. littorea* and the beadlet anemone *Actinia equina*. Figure 3.11 shows some images of the rock pools. There was one rock pool which contained eelgrass *Zostera marina* to the north of the island in the mid shore area (see Figure 3.12). While this habitat containing *Zostera marina* is not a qualifying interest of the SAC, the species itself is listed on the OSPAR list of threatened and/or declining Species and Habitats.



Figure 3.11: Rock pools located throughout the site.



Figure 3.12: Rock pool contained *Zostera marina* to the north of the island.

Based on the observations made during the site visit and reef extent as portrayed in UKHO admiralty charts, an estimate of the area of intertidal habitat dominated by *F. serratus*/*F. vesiculosus* was determined. This area can be seen in Figure 3.13 and it was estimated to cover 7.3ha. A dedicated seaweed biomass assessment in the area was carried out in October/November 2018 for the purposes of this seaweed harvesting application. The full assessment accompanies the Foreshore Licence application. In short, the total biomass of *Fucus serratus/vesiculosus* was calculated at 76.3t.

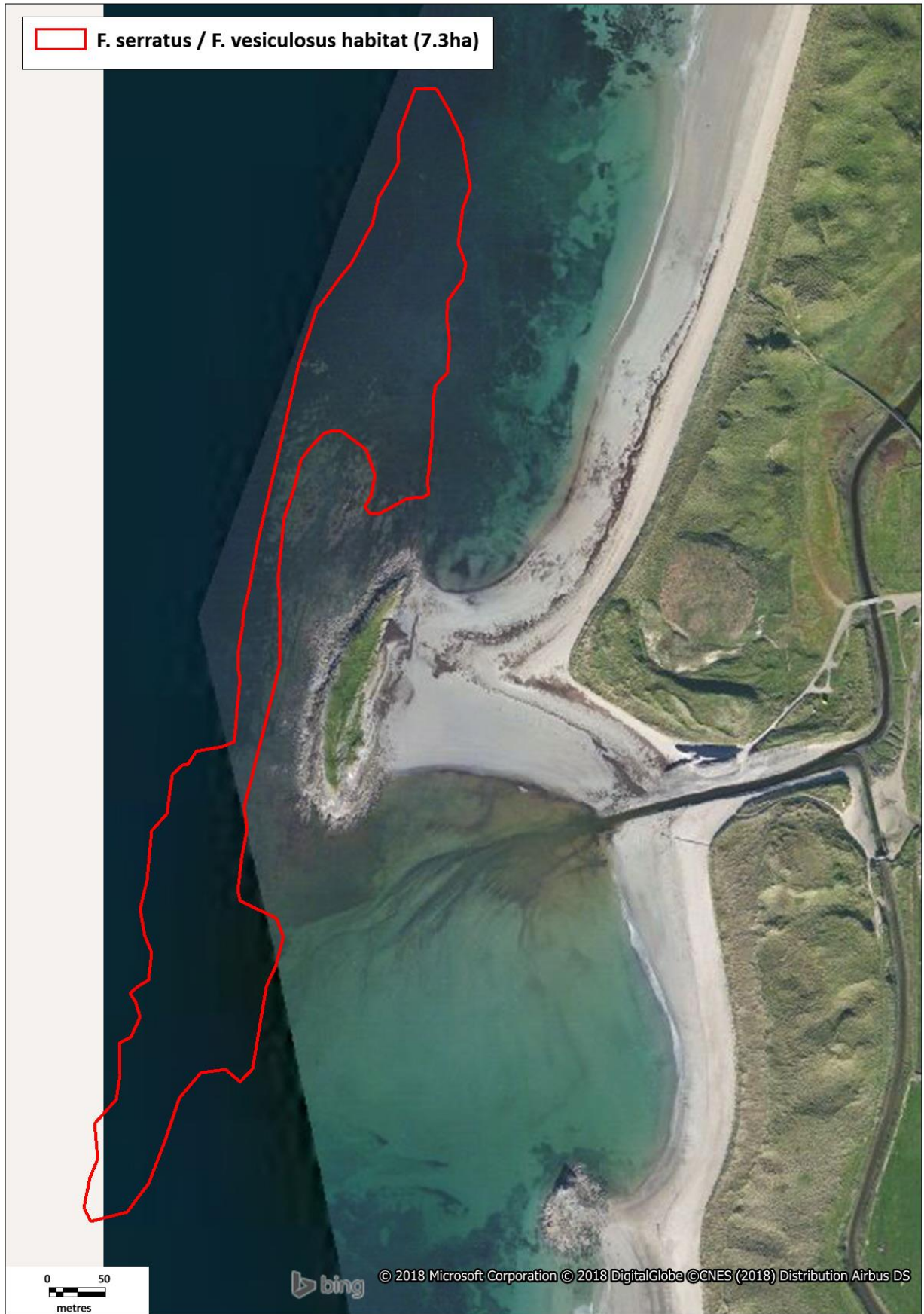


Figure 3.13: Estimated extent of *F. serratus*/*F. vesiculosus*.

Black Rock Island is connected to the mainland by a sandy shore backed by sand dunes (see Figure 3.14). This is a sandy shore classified by the benthic community 'sand with *Nephtys cirrosa*' (NPWS, 2014b). The distinguishing species of this community complex are the polychaetes *Nephtys cirrosa*, *Magelona mirabilis*, *Glycera tridactyla* and *Spiophanes bombyx*, the bivalves *Spisula subtruncata*, *Fabulina fabula* and *Macomangulus tenuis* and the cumacean *Vaunthompsonia cristata*. Other species recorded within this complex include unidentified nemerteans, the bivalve *Donax vittatus*, the polychaetes *Sigalion mathildae*, *Scolelepis foliosa*, and *Nephtys hombergii* and the crustaceans *Pontocrates arenarius*, *Periculodes longimanus* and *Bathyporeia guilliamsoniana*.



Figure 3.14: View east from Black Rock towards the sand dune systems on the coast.

The sand dune system along the coast consists of 'Fixed dunes with herbaceous vegetation (grey dunes)', 'Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)' and 'Annual vegetation of drift lines'.

The vegetation on the fixed dunes is made up of a mosaic of Marram (*Ammophila arenaria*) tussocks interspersed with low-lying patches of a Red Fescue-Lady's Bedstraw (*Festuca rubra-Galium verum*) community (NPWS, 2013). Other species occurring include Smooth Meadow-grass (*Poa pratensis*), Daisy (*Bellis perennis*), Ribwort Plantain (*Plantago lanceolata*) and Bulbous Buttercup (*Ranunculus bulbosus*). There is a sparse occurrence of moss species, including *Brachythecium rutabulum*, *Tortula ruralis* ssp. *ruraliformis* and *Homalothecium lutescens*. These tend to be restricted to areas close to rabbit burrows, where they are associated with species such as Germander Speedwell (*Veronica chamaedrys*), Squinancywort (*Asperula cynanchica*) and Dog Lichen (*Peltigera* spp.). A number of other species typical

of Mesobromion grasslands are found in this habitat type, reflecting the calcareous nature of the site. These include Pyramidal Orchid (*Anacamptis pyramidalis*), Thyme-leaved Sandwort (*Arenaria serpyllifolia*) and Hairy Rock-cress (*Arabis hirsuta*).

The shifting dunes occur as a narrow band running along the seaward side of the coastal strip. The main ridges are dominated by Marram and reach heights in excess of 20m in places. Companion species include Sea Spurge (*Euphorbia paralias*), Colt's-foot (*Tussilago farfara*), Sea-holly (*Eryngium maritimum*) and Sand Sedge (*Carex arenaria*).

Also occurring are embryonic dunes, with such species as Sand Couch (*Elymus farctus*) and Sea Rocket (*Cakile maritima*). The latter species, along with Spear-leaved Orache (*Atriplex prostrata*), has also been recorded from the 'annual vegetation of drift lines' habitat at this site.

Figure 3.15 shows the locations of these Annex I habitats at the site. The existing sandy track providing access to the shore can be seen between the dunes. The track varies in width from 3.5 to 4m (see Figure 3.16).

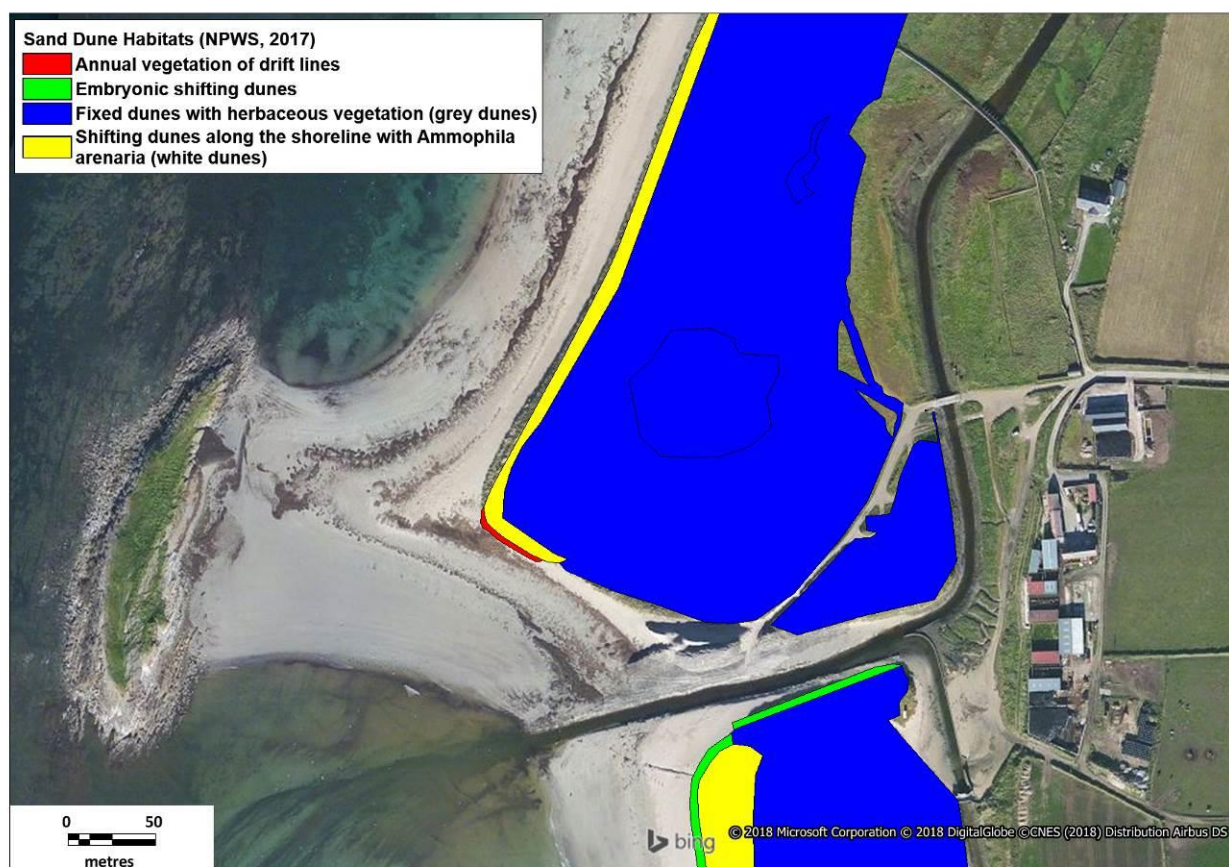


Figure 3.15: Location of coastal Annex I habitats at the site (NPWS, 2017).



Figure 3.16: View down (LHS) and up (RHS) the existing sandy track.

The outflow from Akeragh Lough is located c. 220m east of Black Rock and can be seen in Figure 3.15. The outflow is c. 10m wide and acts as a clearly defined separation from the harvesting activity and the coastal habitats to the south (see Figure 3.17).



Figure 3.17: Outflow from Akeragh Lough which separates the harvesting activity from the sand dune habitats further south.

There is also some Atlantic saltmarsh at the site, which is also an Annex I habitat (see Figure 3.18). The saltmarsh has developed along the drainage channel in a small area behind the sand dunes. The drainage channel drains Lough Akeragh to the north. Most of the saltmarsh at the site contains mid-marsh and

mid-upper marsh communities (McCorry & Ryle, 2009). Some zonation is present with the lower zone communities found along the edge of the channel. The thin strip of saltmarsh on the east side of the site is dominated by red fescue (*Festuca rubra*) and frequent common scurvy-grass (*Cochlearia officinalis*). Other species present include sea milkwort (*Glaux maritima*), sea plantain (*Plantago maritima*), greater sea-spurrey (*Spergularia media*), sea beet (*Beta maritima*) and orache (*Atriplex lacinata*).

The saltmarsh is dominated by a lower marsh community towards the mouth of the outflow and the saltmarsh vegetation is somewhat fragmented with sea plantain and common saltmarsh-grass (*Puccinellia maritima*) predominant. Common cordgrass (*Spartina anglica*) is present in this section and has colonised a small channel through the Atlantic saltmarsh. There are also several small clumps of common cordgrass isolated on the sand adjacent to the saltmarsh.

The lower sections along the southern channel are vegetated by a sward of common saltmarsh-grass. This vegetation is zoned and transitions to a band dominated by common scurvy-grass and sea plantain. The saltmarsh north of the bridge is better developed. There is some low-mid vegetation in this area as the adjacent land is quite low-lying. This is dominated by sea plantain and common saltmarsh-grass. Sea club-rush (*Bolboschoenus maritimus*) is also spreading into the saltmarsh vegetation in places. An upper saltmarsh community is found on the eastern side of the channel that is dominated by creeping bent (*Agrostis stolonifera*) and saltmarsh rush (*Juncus gerardii*). Other species present include sea arrowgrass (*Triglochin maritimum*), sea milkwort, sea plantain, and common scurvy-grass.



Figure 3.18: Location of Annex I Atlantic Saltmarsh habitat at the site (NPWS, 2017).

The proposed harvesting site is located within the Tralee Bay Complex SPA. The site is of special conservation interest for the following species: Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull and Common Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. Dedicated waterbird surveys have shown that oystercatcher, ringed plover, black-headed gulls, common gulls and curlew roost and forage at Black Rock and grey plover, sanderling, dunlin, bar-tailed godwit, black-tailed godwit, redshank, turnstone and light bellied Brent geese forage at the site (NPWS, 2014b).

Birds observed during the site visit included light-bellied Brent geese, oystercatcher, heron, ringed plover, godwit, curlew, sanderling, herring gull and black-headed gull.

The proposed harvesting area occupies 0.2% of the Tralee Bay Complex SPA and 0.5% of the Akeragh, Banna and Barrow Harbour SAC.

4. Stage 1: Appropriate Assessment Screening

In accordance with the European Commission Methodological Guidance (EC, 2002), a list of Natura 2000 sites that can be potentially affected by the proposed seaweed harvesting has been compiled. Adopting the precautionary principle in identifying these sites, it has been decided to apply a buffer zone of 15km around the proposed harvesting area (Scott Wilson *et al.*, 2006). As the harvesting activities are confined to the intertidal zone, the only habitats that can be affected are those in the intertidal area and the only species that can be impacted are those in the intertidal zone (whether it be permanently or temporarily) and those which rely on the intertidal zone for shelter or food.

4.1. Identification of Relevant Natura 2000 Sites

Figure 4.1 shows the cSACs and SPAs within 15km of the proposed seaweed harvesting area. Table 4.1 details the distance from the harvesting area, the qualifying interests (QIs)/Special Conservation Interests (SCIs) of each of the Natura 2000 sites and the screening result with explanations as to the potential impacts or lack of them.

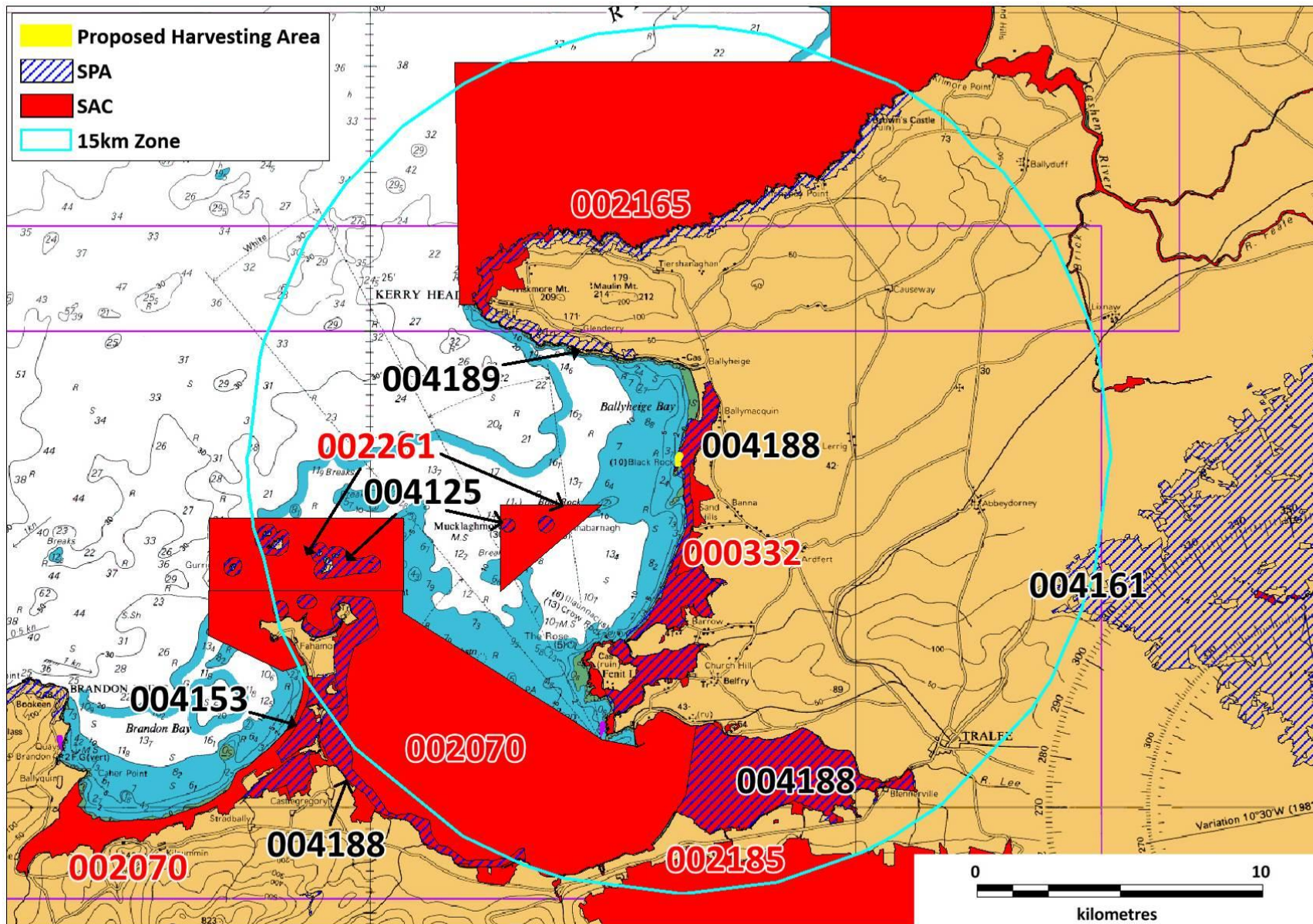


Figure 4.1: Natura 2000 sites within 15km of the Black Rock proposed harvesting area.

Table 4.1: Natura 2000 sites, Qualifying Interests, Potential Impacts and Screening Assessment. * denotes priority habitats

Natura 2000 Site	Distance from Harvesting Area	QI / SCI	Potential Impact	Screening Assessment
Akeragh, Banna and Barrow Harbour SAC (IE000332)	Within	Annual vegetation of drift lines [1210]	Potential for disturbance when accessing shore	Screened In
		<i>Salicornia</i> and other annuals colonising mud and sand [1310]	None – habitat not present at the site (McCorry & Ryle, 2009)	Screened Out
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]	Potential for disturbance when accessing shore	Screened In
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	None – due to distance (4km southeast of access point)	Screened Out
		Embryonic shifting dunes [2110]	None – habitat separated from harvesting activity by a 10m wide outflow from Akeragh Lough	Screened Out
		Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	Potential for disturbance when accessing shore	Screened In
		Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Potential for disturbance when accessing shore	Screened In
		Humid dune slacks [2190]	None – due to distance (430m north of access point)	Screened Out
		European dry heaths [4030]	None – non-marine/coastal habitat and distance too great, no potential for interaction	Screened Out
Tralee Bay and Magharees Peninsula, West of Cloghane SAC (IE002070)	9.5km SW	Estuaries [1130]	None – distance too great, no potential for interaction	Screened Out
		Mudflats and sandflats not covered by seawater at low tide [1140]		
		Coastal lagoons [1150]		
		Large shallow inlets and bays [1160]		
		Reefs [1170]		
		Annual vegetation of drift lines [1210]		
		Perennial vegetation of stony banks [1220]		
		<i>Salicornia</i> and other annuals colonising mud and sand [1310]		
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]		
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]		
		Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]		

Natura 2000 Site	Distance from Harvesting Area	QI / SCI	Potential Impact	Screening Assessment
Tralee Bay and Magharees Peninsula, West of Cloghane SAC (IE002070) (cont'd)	9.5km SW	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	None – distance too great, no potential for interaction	Screened Out
		Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) [2170]		
		Humid dune slacks [2190]		
		<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]		
		Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]		
		<i>Lutra lutra</i> (Otter) [1355]		
Lower River Shannon SAC (Site Code: IE002165)	8.3km NW	Sandbanks which are slightly covered by sea water all the time [1110]	None – distance too great, no potential for interaction	Screened Out
		Estuaries [1130]		
		Mudflats and sandflats not covered by seawater at low tide [1140]		
		Coastal lagoons [1150]		
		Large shallow inlets and bays [1160]		
		Reefs [1170]		
		Perennial vegetation of stony banks [1220]		
		Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]		
		<i>Salicornia</i> and other annuals colonising mud and sand [1310]		
		Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330]		
		Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]		
		Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260]		
		<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]		
Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) [91E0]				

Natura 2000 Site	Distance from Harvesting Area	QI / SCI	Potential Impact	Screening Assessment
Lower River Shannon SAC (Site Code: IE002165) (cont'd)	8.3km NW	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	None – distance too great, no potential for interaction	Screened Out
		<i>Petromyzon marinus</i> (Sea Lamprey) [1095]		
		<i>Lampetra planeri</i> (Brook Lamprey) [1096]		
		<i>Lampetra fluviatilis</i> (River Lamprey) [1099]		
		<i>Salmo salar</i> (Salmon) [1106]	None – no interaction with intertidal habitats	Screened Out
		<i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349]	None – distance too great, no potential for interaction	Screened Out
		<i>Lutra lutra</i> (Otter) [1355]		
Slieve Mish Mountains SAC (Site Code: IE002185)	13.3km S	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	None – non-marine/coastal habitat and distance too great, no potential for interaction	Screened Out
		European dry heaths [4030]		
		Alpine and Boreal heaths [4060]		
		Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) [8110]		
		Calcareous rocky slopes with chasmophytic vegetation [8210]		
		Siliceous rocky slopes with chasmophytic vegetation [8220]		
		<i>Trichomanes speciosum</i> (Killarney Fern) [1421]		
Magharee Islands SAC (Site Code: IE002261)	3km SW	Reefs [1170]	None – distance too great, no potential for interaction	Screened Out
Magharee Islands SPA (Site Code: IE004125)	4.7km SW	Storm Petrel (<i>Hydrobates pelagicus</i>) [A014]	None – distance too great, no potential for interaction	Screened Out
		Shag (<i>Phalacrocorax aristotelis</i>) [A018]		
		Barnacle Goose (<i>Branta leucopsis</i>) [A045]		
		Common Gull (<i>Larus canus</i>) [A182]		
		Common Tern (<i>Sterna hirundo</i>) [A193]		
		Arctic Tern (<i>Sterna paradisaea</i>) [A194]		
		Little Tern (<i>Sterna albifrons</i>) [A195]		
Dingle Peninsula SPA (Site Code: IE004153)	14km SW	Fulmar (<i>Fulmarus glacialis</i>) [A009]	None – distance too great, no potential for interaction	Screened Out
		Peregrine (<i>Falco peregrinus</i>) [A103]		
		Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]		

Natura 2000 Site	Distance from Harvesting Area	QI / SCI	Potential Impact	Screening Assessment
Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)	13.7km E	Hen Harrier (<i>Circus cyaneus</i>) [A082]	None – distance too great and habitat preference, no potential for interaction	Screened Out
Tralee Bay Complex SPA (Site Code: 004188)	Within	Whooper Swan (<i>Cygnus cygnus</i>) [A038]	Potential for disturbance when harvesting	Screened In
		Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]		
		Shelduck (<i>Tadorna tadorna</i>) [A048]		
		Wigeon (<i>Anas penelope</i>) [A050]		
		Teal (<i>Anas crecca</i>) [A052]		
		Mallard (<i>Anas platyrhynchos</i>) [A053]		
		Pintail (<i>Anas acuta</i>) [A054]		
		Scaup (<i>Aythya marila</i>) [A062]		
		Oystercatcher (<i>Haematopus ostralegus</i>) [A130]		
		Ringed Plover (<i>Charadrius hiaticula</i>) [A137]		
		Golden Plover (<i>Pluvialis apricaria</i>) [A140]		
		Grey Plover (<i>Pluvialis squatarola</i>) [A141]		
		Lapwing (<i>Vanellus vanellus</i>) [A142]		
		Sanderling (<i>Calidris alba</i>) [A144]		
		Dunlin (<i>Calidris alpina</i>) [A149]		
		Black-tailed Godwit (<i>Limosa limosa</i>) [A156]		
		Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]		
		Curlew (<i>Numenius arquata</i>) [A160]		
Redshank (<i>Tringa totanus</i>) [A162]				
Turnstone (<i>Arenaria interpres</i>) [A169]				
Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]				
Common Gull (<i>Larus canus</i>) [A182]				
Wetland and Waterbirds [A999]				
Kerry Head SPA (Site Code: IE004189)	3.6km NW	Fulmar (<i>Fulmarus glacialis</i>) [A009] Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]	None – distance too great, no potential for interaction	Screened Out

4.2. Screening Assessment & Statement

After an initial review of the Natura 2000 sites listed in Table 4.1 and their QI/SCIs, it was considered that “no pathway” exists by which the proposed harvesting activity could impact upon the following Natura 2000 sites as the habitats and species protected in these Natura 2000 sites are either too far away from the proposed harvesting site and/or the habitats/species in question are not coastal/marine:

- Tralee Bay and Magharees Peninsula, West of Cloghane SAC (IE002070)
- Lower River Shannon SAC (Site Code: IE002165)
- Slieve Mish Mountains SAC (Site Code: IE002185)
- Magharee Islands SAC (Site Code: IE002261)
- Magharee Islands SPA (Site Code: IE004125)
- Dingle Peninsula SPA (Site Code: IE004153)
- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code: 004161)
- Kerry Head SPA (Site Code: IE004189)

There is no likelihood of a significant adverse impact on the above Natura 2000 sites and therefore **Appropriate Assessment is not necessary** for these Natura 2000 sites.

The screening stage has however identified potential impacts on Qualifying Interests from the Akeragh, Banna and Barrow Harbour SAC (IE000332) and Special Conservation Interests from the Tralee Bay Complex SPA (Site Code: 004188). These will be carried forward to Stage 2 Appropriate Assessment. The screened in QIs/SCIs are:

- Annual vegetation of drift lines [1210]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]
- Shelduck (*Tadorna tadorna*) [A048]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]

- Pintail (*Anas acuta*) [A054]
- Scaup (*Aythya marila*) [A062]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Ringed Plover (*Charadrius hiaticula*) [A137]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Grey Plover (*Pluvialis squatarola*) [A141]
- Lapwing (*Vanellus vanellus*) [A142]
- Sanderling (*Calidris alba*) [A144]
- Dunlin (*Calidris alpina*) [A149]
- Black-tailed Godwit (*Limosa limosa*) [A156]
- Bar-tailed Godwit (*Limosa lapponica*) [A157]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Turnstone (*Arenaria interpres*) [A169]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Wetland and Waterbirds [A999]

The remaining QIs from Akeragh, Banna and Barrow Harbour SAC (IE000332) have been screened out and do not require Appropriate Assessment for the following reasons:

- *Salicornia* and other annuals colonising mud and sand [1310] – this habitat is not present in the vicinity of the access point and access route (McCorry & Ryle, 2009).
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410] - this habitat is not present in the vicinity of the access point and access route. This habitat is 4km from the harvesting activity (NPWS, 2017).
- Embryonic shifting dunes [2110] – this habitat is separated from the harvesting activity by a 10m wide drainage outflow and therefore the harvesters will not interact with this habitat.

5. Stage 2 Appropriate Assessment (Natura Impact Statement)

5.1. Characteristics of the Relevant Natura 2000 Sites

5.1.1. Akeragh, Banna and Barrow Harbour SAC (IE000332)

Akeragh, Banna and Barrow Harbour SAC is a large coastal site covering a 10 km section of coastline in Co. Kerry and includes a wide diversity of habitats (NPWS, 2013). The underlying rock is limestone, which outcrops only in the southern part of the site, in the impressive columns and hillsides north of Fenit. Elsewhere shell sand is predominant with occasional development of peat. This large site is of major ecological interest due both to its range of floristically-rich coastal habitats, nine of which are listed on Annex I of the E.U. Habitats Directive, including one priority habitat, and as a wintering site for significant numbers of waterfowl (including two Annex I species).

The site is designated for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive: [1210] Annual Vegetation of Drift Lines, [1310] Salicornia Mud, [1330] Atlantic Salt Meadows, [1410] Mediterranean Salt Meadows, [2110] Embryonic Shifting Dunes, [2120] Marram Dunes (White Dunes), [2130] Fixed Dunes (Grey Dunes)³, [2190] Humid Dune Slacks and [4030] Dry Heath.

Sand dunes run southwards from Ballyheige and they become especially interesting south of the Akeragh outflow where they show great variety in both physiography and vegetation. The largest proportion of the sand dune system is fixed dune grassland. The vegetation is made up of a mosaic of Marram (*Ammophila arenaria*) tussocks interspersed with low-lying patches of a Red Fescue-Lady's Bedstraw (*Festuca rubra-Galium verum*) community.

Mobile Marram dunes occur as a narrow band running along the seaward side of the entire coastal strip. There is a slight increase in dune mobility towards the growing tip at Carrahane. The main ridges are dominated by Marram and reach heights in excess of 20m in places. Companion species include Sea Spurge (*Euphorbia paralias*), Colt's-foot (*Tussilago farfara*), Sea-holly (*Eryngium maritimum*) and Sand Sedge (*Carex arenaria*). Also occurring are embryonic dunes, with such species as Sand Couch (*Elymus farctus*) and Sea Rocket (*Cakile maritima*). The latter species, along with Spear-leaved Orache

³ = priority habitat

(*Atriplex prostrata*), has also been recorded from the 'annual vegetation of drift lines' habitat at this site.

The site contains a number of dune slack areas, these being best developed on the landward side of Carrahane dunes. Species present in these dune slacks include Common Bent (*Agrostis stolonifera*), Red Clover (*Trifolium pratense*), Glaucous Sedge (*Carex flacca*), Water Mint (*Mentha aquatica*), Creeping Willow (*Salix repens*) and the scarce Marsh Helleborine (*Epipactis palustris*).

Of particular ecological interest is the gradation from fixed dune and dune slack to saltmarsh at Carrahane. Saltmarsh here is particularly well-developed but also occurs at Barrow Harbour. Common saltmarsh species include Thrift (*Armeria maritima*), Red Fescue, Sea Plantain (*Plantago maritima*), Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*Juncus maritima*).

Akeragh Lough now supports extensive areas of brackish vegetation. It was formerly richer in birdlife, but the lake level has been controlled by a sluice on the outflow, the total water area has declined. Also, the peaty land to the east has been afforested. The site supports important wintering waterfowl populations. Brent Goose occur in internationally important numbers (360 in winter 1996/97), while in winter 1996/97 nationally important populations of Ringed Plover (130), Grey Plover (62), Lapwing (approx. 2000), Sanderling (280) and Bar-tailed Godwit (345) occurred. Notable populations of Golden Plover, Oystercatcher, Dunlin, Curlew and Redshank also occur. The regular occurrence of Golden Plover and Bar-tailed Godwit is of note as these species are listed on Annex I of the E.U. Birds Directive.

5.1.2. Tralee Bay Complex SPA (Site Code: 004188)

The Tralee Bay Complex SPA is located along the coast of north Co. Kerry between Ballyheige in the north, Tralee in the east and Stradbally in the west (NPWS, 2015). The site includes the inner part of Tralee Bay, including Derrymore Island, the inlets of Barrow Harbour and Carrahane Strand, Akeragh Lough, Lough Gill, and much of the intertidal habitat from Scraggane Point at the northern end of the Magharees Peninsula around the coast to c. 2km south of Ballyheige. Inner Tralee Bay is well sheltered by the Derrymore Island peninsula. The intertidal sediments vary from muddy sands on the upper shore to firm rippled sands on the lower, more exposed shore. The sediments have a diverse macro-invertebrate fauna, with such species as Cockle (*Cerastoderma edule*), Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*), Baltic Tellin (*Macoma balthica*) and Shrimp (*Crangon crangon*) occurring. The intertidal flats have extensive beds of Eelgrass (*Zostera* spp.).

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Whooper Swan, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Pintail, Scaup, Oystercatcher, Ringed Plover, Golden Plover, Grey Plover, Lapwing, Sanderling, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Turnstone, Black-headed Gull and Common Gull. It is also of special conservation interest for holding an assemblage of over 20,000 wintering waterbirds. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

Tralee Bay Complex SPA is an internationally important wetland for wintering waders and wildfowl. It supports an internationally important population of Light-bellied Brent Goose (1,412) and nationally important populations of a further 21 species, *i.e.* Whooper Swan (101), Shelduck (220), Wigeon (1,634), Teal (623), Mallard (571), Pintail (54), Scaup (892), Oystercatcher (1,011), Ringed Plover (344), Golden Plover (6,393), Grey Plover (195), Lapwing (6,106), Sanderling (228), Dunlin (2,444), Black-tailed Godwit (139), Bar-tailed Godwit (608), Curlew (1,170), Redshank (635), Turnstone (229), Black-headed Gull (1,320) and Common Gull (599) – all figures are five year mean peak counts for the period 1995/96 to 1999/2000, except the gulls which are four year mean peak counts for the period 1996/97 to 1999/2000.

Tralee Bay Complex SPA is of high ornithological importance as it annually supports over 20,000 wintering waterbirds, including an international important population of Light-bellied Brent Goose and nationally important populations of 21 other species. It is of note that three of the species that regularly occur, Whooper Swan, Golden Plover and Bar-tailed Godwit, are listed on Annex I of the E.U. Birds Directive. Tralee Bay is a Ramsar Convention site and parts of the Tralee Bay Complex SPA are designated as Nature Reserves. Lough Gill is a Wildfowl Sanctuary.

5.2. Conservation Objectives

The conservation objectives for the screened in QIs/SCIs can be seen below.

5.2.1. Akeragh, Banna and Barrow Harbour SAC (IE000332)

Conservation Objectives for : Akeragh, Banna and Barrow Harbour SAC [000332]

1210 Annual vegetation of drift lines

To maintain the favourable conservation condition of Annual vegetation of drift lines in Akeragh, Banna and Barrow Harbour SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For the sub-sites mapped: Ballyheige - 0.01ha; Banna Strand - 0.47ha. See map 4	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009) and the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Annual vegetation of drift lines was mapped at two sub-sites, Ballyheige (CMP site ID: 078) and Banna Strand (SDM site ID: 077), giving a total estimated area of 0.48ha within Akeragh, Banna and Barrow Harbour SAC. The habitat is very difficult to measure in view of its dynamic nature which means that it can appear and disappear within a site from year to year. See the Akeragh, Banna and Barrow Harbour SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 4 for known distribution	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. Physical barriers will affect sediment supply at these sites. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species sea rocket (<i>Cakile maritima</i>), sea sandwort (<i>Honckenya peploides</i>), prickly saltwort (<i>Salsola kali</i>) and oraches (<i>Atriplex</i> spp.)	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Ryle et al. (2009) and Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. See the coastal habitats supporting document for further details

Conservation Objectives for : Akeragh, Banna and Barrow Harbour SAC [000332]

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

To restore the favourable conservation condition of Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) in Akeragh, Banna and Barrow Harbour SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For the sub-site (Ballyheige) and potential areas mapped: 22.26ha. See map 3	Based on data from the Saltmarsh Monitoring Project (SMP) (McCorry and Ryle, 2009). The sub-site Ballyheige (SMP site ID: SMP0077) that supports Atlantic Salt Meadows (ASM) was mapped (1.02ha) and additional areas of potential ASM habitat (21.24ha) were identified from an examination of aerial photographs, giving a total estimated area of 22.26ha within Akeragh, Banna and Barrow Harbour SAC. NB further unsurveyed areas may be present within the SAC. See the Akeragh, Banna and Barrow Harbour SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 3 for known and potential distribution	Based on data from McCorry and Ryle (2009). NB further unsurveyed areas may be present within the SAC. See the coastal habitats supporting document for further details
Physical structure: sediment supply	Presence/absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions	Based on data from McCorry and Ryle (2009). See the coastal habitats supporting document for further details
Physical structure: creeks and pans	Occurrence	Maintain creek and pan structure, subject to natural processes, including erosion and succession	Based on data from McCorry and Ryle (2009). See the coastal habitats supporting document for further details
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime	Based on data from McCorry and Ryle (2009). See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from McCorry and Ryle (2009). See the coastal habitats supporting document for further details
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward	Based on data from McCorry and Ryle (2009). See the coastal habitats supporting document for further details
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of the area outside of creeks vegetated	Based on data from McCorry and Ryle (2009). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in McCorry and Ryle (2009)	See the coastal habitats supporting document for further details
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1%	Based on data from McCorry and Ryle (2009). Common cordgrass (<i>Spartina anglica</i>) was noted in the ASM at Ballyheige and had colonised a small channel through the ASM. However, it is very sparse. See the coastal habitats supporting document for further details

Conservation Objectives for : Akeragh, Banna and Barrow Harbour SAC [000332]

2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

To restore the favourable conservation condition of Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) in Akeragh, Banna and Barrow Harbour SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession. For the sub-sites mapped: Ballyheige - 0.59ha; Banna Strand - 5.32ha. See map 4	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009) and the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Shifting dunes along the shoreline with <i>Ammophila arenaria</i> was mapped at two sub-sites, Ballyheige (CMP site ID: 078) and Banna Strand (SDM site ID: 077), giving a total estimated area of 5.91ha within Akeragh, Banna and Barrow Harbour SAC. The habitat is very difficult to measure in view of its dynamic nature. See the Akeragh, Banna and Barrow Harbour SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 4 for known distribution	Based on data from Ryle et al. (2009) and Delaney et al. (2013). The mobile dunes at Ballyheige consist of a narrow strip of scarcely more than 2m wide, confined to the southern half of the sub-site. Marram dunes (white dunes) are best developed in the north and south of Banna Strand and are absent or form a very narrow band for the central part of the sub-site. See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Marram grass (<i>Ammophila arenaria</i>) reproduces vegetatively and requires constant accretion of fresh sand to maintain active growth encouraging further accretion. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: plant health of dune grasses	Percentage cover	More than 95% of marram grass (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present)	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (<i>Ammophila arenaria</i>) and/or lyme-grass (<i>Leymus arenarius</i>)	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Ryle et al. (2009) and Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (<i>Hippophae rhamnoides</i>) should be absent or effectively controlled. See the coastal habitats supporting document for further details

Conservation Objectives for : Akeragh, Banna and Barrow Harbour SAC [000332]

2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

To restore the favourable conservation condition of Fixed coastal dunes with herbaceous vegetation (grey dunes)* in Akeragh, Banna and Barrow Harbour SAC, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession. For the sub-sites mapped: Ballyheige - 22.81ha; Banna Strand - 133.02ha. See map 4	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009) and the Sand Dunes Monitoring Project (SDM) (Delaney et al., 2013). Fixed coastal dunes with herbaceous vegetation was mapped at two sub-sites, Ballyheige (CMP site ID: 078) and Banna Strand (SDM site ID: 077), giving a total estimated area of 155.83ha within the SAC. See the Akeragh, Banna and Barrow Harbour SAC conservation objectives supporting document for coastal habitats for further details
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes. See map 4 for known distribution	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Physical barriers can lead to fossilisation or over-stabilisation of dunes, as well as beach starvation resulting in increased rates of erosion. See the coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Ryle et al. (2009) and Delaney et al. (2013). At the back of the fixed dunes at Ballyheige, there is a transition to the wet grassland and marsh vegetation of Akeragh Lough. At Banna Strand, there is a gradation from fixed dune and humid dune slack to saltmarsh at Carrahane Strand. See the coastal habitats supporting document for further details
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes	Based on data from Gaynor (2008), Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain range of sub-communities with typical species listed in Delaney et al. (2013)	See the coastal habitats supporting document for further details.
Vegetation composition: negative indicator species (including <i>Hippophae rhamnoides</i>)	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover	Based on data from Gaynor (2008), Ryle et al. (2009) and Delaney et al. (2013). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Sea buckthorn (<i>Hippophae rhamnoides</i>) should be absent or effectively controlled. The fixed dunes at both Ballyheige and Banna Strand contain agricultural 'weed' species and other species indicative of disturbance such as common ragwort (<i>Senecio jacobaea</i>), common nettle (<i>Urtica dioica</i>), creeping thistle (<i>Cirsium arvense</i>) and bramble (<i>Rubus fruticosus</i> agg.). See the coastal habitats supporting document for further details
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control	Based on data from Ryle et al. (2009) and Delaney et al. (2013). See the coastal habitats supporting document for further details

5.2.2. Tralee Bay Complex SPA (Site Code: 004188)

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A038 Whooper Swan *Cygnus cygnus*

To maintain the favourable conservation condition of Whooper Swan in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by whooper swan, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part four of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A046 Brent Goose *Branta bernicla hrota*

To maintain the favourable conservation condition of Light-bellied Brent Goose in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by light-bellied brent goose, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A048 Shelduck *Tadorna tadorna*

To maintain the favourable conservation condition of Shelduck in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by shelduck, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A050 *Wigeon Anas penelope*

To maintain the favourable conservation condition of Wigeon in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by wigeon, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A052 *Teal Anas crecca*

To maintain the favourable conservation condition of Teal in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by teal, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A053 *Mallard Anas platyrhynchos*

To maintain the favourable conservation condition of Mallard in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by mallard, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A054 Pintail *Anas acuta*

To maintain the favourable conservation condition of Pintail in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by pintail, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A062 Scaup *Aythya marila*

To maintain the favourable conservation condition of Scaup in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by scaup, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A130 Oystercatcher *Haematopus ostralegus*

To maintain the favourable conservation condition of Oystercatcher in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by oystercatcher, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part four of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A137 Ringed Plover *Charadrius hiaticula*

To maintain the favourable conservation condition of Ringed Plover in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by ringed plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A141 Grey Plover *Pluvialis squatarola*

To maintain/restore the favourable conservation condition of Grey Plover in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by grey plover, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A142 Lapwing *Vanellus vanellus*

To maintain the favourable conservation condition of Lapwing in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by lapwing, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A144 Sanderling *Calidris alba*

To maintain the favourable conservation condition of Sanderling in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by sanderling, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A149 Dunlin *Calidris alpina alpina*

To maintain the favourable conservation condition of Dunlin in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by dunlin, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A156 Black-tailed Godwit *Limosa limosa*

To maintain the favourable conservation condition of Black-tailed Godwit in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by black-tailed godwit, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A157 Bar-tailed Godwit *Limosa lapponica*

To maintain the favourable conservation condition of Bar-tailed Godwit in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by bar-tailed godwit, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A160 Curlew *Numenius arquata*

To maintain the favourable conservation condition of Curlew in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by curlew, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A162 Redshank *Tringa totanus*

To maintain the favourable conservation condition of Redshank in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by redshank, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A169 Turnstone *Arenaria interpres*

To maintain the favourable conservation condition of Turnstone in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by turnstone, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A179 Black-headed Gull *Chroicocephalus ridibundus*

To maintain the favourable conservation condition of Black-headed Gull in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by black-headed gull other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A182 Common Gull *Larus canus*

To maintain the favourable conservation condition of Common Gull in Tralee Bay Complex SPA, which is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Population trend	Percentage change	Long term population trend stable or increasing	Population trends are presented in part four of the conservation objectives supporting document
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing and intensity of use of areas by common gull, other than that occurring from natural patterns of variation	Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document

Conservation Objectives for : Tralee Bay Complex SPA [004188]

A999 Wetlands

To maintain the favourable conservation condition of the wetland habitat in Tralee Bay Complex SPA as a resource for the regularly-occurring migratory waterbirds that utilise it. This is defined by the following attribute and target:

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 3,657 hectares, other than that occurring from natural patterns of variation	The wetland habitat area was estimated as 3,657ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document

5.3. Impact Assessment

5.3.1. Annual vegetation of drift lines [1210]

TRAMPLING DUE TO ACCESS

The location of the drift line habitat can be seen in Figure 5.1. It is in a single location at the corner of the dune system. The access path can be seen in relation to the location of this habitat. The access points and access route do not overlap this habitat.

ALIEN SPECIES

As the drift line habitat will not be accessed by harvesters, there is no mechanism to spread invasive species if they were present in the area.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

The proposed harvesting area will not overlap with the drift line habitat. Given the lack of spatial interaction and the justifications given above, it has been concluded that the conservation objective (NPWS, 2017) to maintain the favourable conservation condition of this habitat in the Akeragh, Banna and Barrow Harbour SAC will not be compromised as the habitat area will remain stable or increasing subject to natural processes and the habitat distribution will not decline or change subject to natural processes. The physical structure, functionality and sediment supply will be maintained and the vegetation structure and composition will be maintained. Negative indicator species (including non-natives) will be maintained at <5% cover.



Figure 5.1: Drift line habitat in relation to the access point and route.

5.3.2. Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) [1330]

TRAMPLING DUE TO ACCESS

The location of the saltmarsh habitat can be seen in Figure 5.2. It is located either side of the access bridge to the site. The access path can be seen in relation to the location of this habitat. The access points and access route do not overlap this habitat.

ALIEN SPECIES

As the saltmarsh habitat will not be accessed by harvesters, there is no mechanism to spread invasive species (*Spartina anglica*) if it is present in the area.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

The proposed harvesting area will not overlap with the saltmarsh habitat. Given the lack of spatial interaction and the justifications given above it has been concluded that the conservation objective (NPWS, 2017) to restore the favourable conservation condition of this habitat in the Akeragh, Banna and Barrow Harbour SAC will not be compromised as the habitat area will remain stable or increasing subject to natural processes and the habitat distribution will not decline or change subject to natural

processes. The physical structure (sediment supply, creeks and pans and flooding regime) will be maintained and the vegetation structure and composition will be maintained. Negative indicator species (including non-natives) will not spread by >1% annually.



Figure 5.2: Saltmarsh habitat in relation to the access point and route.

5.3.3. Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]

TRAMPLING DUE TO ACCESS

The location of the shifting dunes can be seen in Figure 5.1 above. It can be seen in this figure that this dune habitat does not overlap with the access point or access route. Therefore, there will be no interaction between the harvesting activity and this habitat.

ALIEN SPECIES

As dune systems will not be accessed by harvesters, there is no mechanism to spread the invasive species sea buckthorn *Hippophae rhamnoides* if it is present on the dune.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

The proposed harvesting area will not overlap with the shifting dune habitat. Given this lack of spatial interaction it has been concluded that the conservation objective to restore the favourable

conservation condition (NPWS, 2017) of this habitat in the Akeragh, Banna and Barrow Harbour will not be compromised by the proposed seaweed harvesting activity as the habitat area will remain stable or increasing subject to natural processes and the habitat distribution will not decline or change subject to natural processes. The physical structure and vegetation structure will be maintained. The vegetation composition of typical species and sub-communities will be maintained and the negative indicator species should be effectively controlled and represent <5% cover.

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

TRAMPLING DUE TO ACCESS

The location of the fixed dune habitat can be seen in Figure 5.1 above. It can be seen in this figure that this dune habitat does not overlap with the access point or access route. Therefore, there will be no interaction between the harvesting activity and this habitat.

ALIEN SPECIES

As dune systems will not be accessed by harvesters, there is no mechanism to spread the invasive species sea buckthorn *Hippophaea rhamnoides* if it is present on the dune.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

The proposed harvesting area will not overlap with the fixed dune habitat. Given this lack of spatial interaction it has been concluded that the conservation objective to restore the favourable conservation condition (NPWS, 2017) of this habitat in the Akeragh, Banna and Barrow Harbour will not be compromised by the proposed seaweed harvesting activity as the habitat area will remain stable or increasing subject to natural processes and the habitat distribution will not decline or change subject to natural processes. The physical structure and vegetation structure will be maintained. The vegetation composition of typical species and sub-communities will be maintained and the negative indicator species should be effectively controlled and represent <5% cover.

5.3.5. Whooper Swan (*Cygnus cygnus*) [A038]

DISTURBANCE

Whooper swans are dabbling species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from 1 or 2 harvesters on the shore is extremely unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS,

2014a) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.6. Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]

DISTURBANCE

Light-bellied Brent geese feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.7. Shelduck (*Tadorna tadorna*) [A048]

DISTURBANCE

Shelduck are dabbling species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from harvesters on the shore is highly unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.8. Wigeon (*Anas penelope*) [A050]

DISTURBANCE

Wigeon are dabbling species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from harvesters on the shore is highly unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.9. Teal (*Anas crecca*) [A052]

DISTURBANCE

Teal are dabbling species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from harvesters on the shore is highly unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.10. Mallard (*Anas platyrhynchos*) [A053]

DISTURBANCE

Mallard are dabbling species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from harvesters on the shore is highly unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.11. Pintail (*Anas acuta*) [A054]

DISTURBANCE

Pintail are dabbling species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from harvesters on the shore is highly unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.12. Scaup (*Aythya marila*) [A062]

DISTURBANCE

Scaup are diving species that can be found in coastal areas such as estuaries and mudflats in the winter. They feed in shallow waters and hence will not be feeding on the exposed intertidal where harvesters will be working. Therefore any disturbance from harvesters on the shore is highly unlikely.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.13. Oystercatcher (*Haematopus ostralegus*) [A130]

DISTURBANCE

Oystercatchers feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.14. Ringed Plover (*Charadrius hiaticula*) [A137]

DISTURBANCE

Ringed plover feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.15. Golden Plover (*Pluvialis apricaria*) [A140]

DISTURBANCE

Golden plover predominantly feed above the supralittoral zone on grassland and therefore will not be disturbed by harvesters on the shoreline.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain/restore the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.16. Grey Plover (*Pluvialis squatarola*) [A141]

DISTURBANCE

Grey plover feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.17. Lapwing (*Vanellus vanellus*) [A142]

DISTURBANCE

Lapwing feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.18. Sanderling (*Calidris alba*) [A144]

DISTURBANCE

Sanderling feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.19. Dunlin (*Calidris alpina*) [A149]

DISTURBANCE

Dunlin feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.20. Black-tailed Godwit (*Limosa limosa*) [A156]

DISTURBANCE

Black-tailed godwit feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.21. Bar-tailed Godwit (*Limosa lapponica*) [A157]

DISTURBANCE

Bar-tailed godwit feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.22. Curlew (*Numenius arquata*) [A160]

DISTURBANCE

Curlew feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.23. Redshank (*Tringa totanus*) [A162]

DISTURBANCE

Redshank feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.24. Turnstone (*Arenaria interpres*) [A169]

DISTURBANCE

Turnstone feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.25. Black-headed Gull (*Chroicocephalus ridibundus*) [A179]

DISTURBANCE

Black-headed gulls feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.26. Common Gull (*Larus canus*) [A182]

DISTURBANCE

Common gulls feed on the exposed intertidal and therefore will be disturbed by harvesters on the shoreline. The level of disturbance however will be low, with only birds close to the harvesters (approximately within 50m) being disturbed which will cause them to move away to another part of the shore.

UNCOVERING OF PREVIOUSLY HIDDEN FAUNA

Harvesting of *Fucus* spp. will uncover previously hidden invertebrates such as winkles *Littorina* spp., whelk *Nucella* spp., *Gibbula umbilicalis*, limpet *Patella vulgata* and shore crabs thus increasing their availability as food items. Uncovering intertidal gastropods may temporarily increase foraging success of a small number of bird species.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this species in the Tralee Bay Complex SPA will not be compromised as there will be no change to the population trend and no significant decrease in the range, timing and intensity of use of areas.

5.3.27. Wetland and Waterbirds [A999]

REMOVAL OF TARGET AND NON-TARGET SPECIES

Removal of target seaweed (and non-target species) will result in the removal of nutrients such as nitrogen and phosphorus from the system, due to the harvested seaweed not being available to biodegrade at the end of its life cycle. However, due to the proposed sustainable harvest biomass, sector rotation and harvesting methods (which are summarised in Section 2.3 above), wetlands, while being directly impacted by the removal of seaweed, will not be over-exploited and the removal of the planned quantities of seaweed will not have deleterious effects on their structure and functioning as sufficient biomass will remain to provide habitat for associated flora and fauna and to maintain habitat functioning. In addition, the seaweed will regrow and hence the habitat will be replenished. Therefore, the removal of biomass will not have a significant negative impact on the SPA.

REDUCTION IN "DAMPENING EFFECT" OF WEED

Removal of *Fucus* spp. could reduce the "dampening effect" the seaweed has on erosion caused by wave action. However, the removal of sustainable quantities in rotational cycles and the sustainable harvesting techniques employed (*i.e.* 15-20cm of holdfast will remain) will minimise the impact from a reduction in the dampening effect. There will be no negative impact on the wetland habitat from a

reduction in dampening effect.

TRAMPLING DUE TO WEED CUTTING

Wetlands will be traversed by harvesters where they occur along the coastal rocky intertidal area. However, the area affected will be spatially very small in the context of the habitat as a whole and no significant negative impacts are likely.

ALIEN SPECIES

All harvesters will be trained to identify the potential alien species which could be established at the site. If any species are encountered on the shore during harvesting they will be avoided so as to prevent any spread. A non-native species action plan would be implemented for the site to prevent the further spread of the invasive.

IMPLICATIONS FOR CONSERVATION OBJECTIVES

Given the reasons outlined above, it has been concluded that the conservation objective (NPWS, 2014b) to maintain the favourable conservation condition of this habitat in the Tralee Bay Complex SPA will not be compromised as the habitat area will remain stable.

5.3.28. Cumulative Effects

Apart from some winkle picking, shore angling, dog walking and recreational use of the beach there are no other known activities which occur on the shoreline which may have a cumulative impact on the Natura 2000 sites. There are no other applications for seaweed harvesting for the area. The addition of 1 or 2 individuals for a number of hours per week and the sustainable manner of harvesting proposed will ensure that the proposed harvesting will not, in-combination with the existing low level ongoing activities, have a significant impact on the Natura 2000 sites or their conservation objectives.

5.4. Conclusion

The proposed annual quantities of *Fucus serratus* and *Fucus vesiculosus* to be harvested from the shoreline of Black Rock Island are low and sustainable (<10% of the standing stock biomass). Sustainable harvesting methods will be employed while harvesting and as a result the proposed seaweed harvesting by Ion Organics Ltd. will not, both alone and in-combination with other activities have a significant negative impact on the Qualifying Interests/Special Conservation Interests or conservation objectives of the relevant cSAC and SPA and their structure, function and integrity will not be compromised.

6. Mitigation Measure

While not required for the protection of the Natura 2000 sites, it is appropriate to ensure that the *Zostera marina* habitat is protected from the harvesting activity. In order to ensure this, the rock pool containing *Zostera* will be pointed out to the harvesters and they will avoid tracking through this pool when accessing the shore.

As a precautionary measure to prevent the spread of invasive species, the harvesters will be trained to identify the potential alien species which could become established at the site. If any species are encountered on the shore during harvesting they will be avoided so as to prevent any spread. A non-native species action plan would be implemented for the site to prevent the further spread of the invasive.

All clothing and equipment will be cleaned and dried prior to use at the harvesting site if they have been used at other locations

7. References

- CAAS. 2002. Guidelines on the Information to be contained in Environmental Impact Statements. Prepared on behalf of Environmental Protection Agency.
- CAAS. 2003. Advice Notes on Current Practice (in the preparation of Environmental Impact Statements). Prepared on behalf of Environmental Protection Agency.
- DEHLG. 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (Revised February 2010).
- European Commission. 2002. Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- IEEM. 2006. Guidelines for Ecological Impact Assessment in the United Kingdom. Institute of Ecology and Environmental Management.
- Jackson, A. 2008. *Fucus serratus*. Toothed wrack. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 11/05/2015]. Available from: <<http://www.marlin.ac.uk/speciesbenchmarks.php?speciesID=3346>>
- McCorry, M. & T. Ryle. 2009. Saltmarsh monitoring project 2007-2008. Unpublished report to NPWS. 2012. Marine Natura Impact Statements in Irish Special Areas of Conservation. A Working

Document, April 2012. Prepared by NPWS of the DAHG.

NPWS. 2013. Site Synopsis. Site Name: Akeragh, Banna and Barrow Harbour SAC. Site Code: 000332. Revision 13. August 2013.

NPWS. 2014a. Conservation Objectives: Tralee Bay Complex SPA 004188. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht. NPWS (2014) Conservation Objectives: Tralee Bay Complex SPA 004188. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS. 2014b. *Tralee Bay and Magharees Peninsula, west to Cloghane SAC (Site Code 2070). Conservation Objectives Supporting Document - marine habitats*. Version 1. February 2014.

NPWS. 2015. Site Synopsis. Site Name: Tralee Bay Complex SPA. Site Code: 004188.

NPWS. 2017. Conservation Objectives: Akeragh, Banna and Barrow Harbour SAC 000332. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

White, N. 2008. *Fucus vesiculosus*. Bladder wrack. Marine Life Information Network: Biology and Sensitivity Key Information Sub-programme [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 30/11/2018]. Available from: <https://www.marlin.ac.uk/species/detail/1330>

Appendix 1
Consultation



AQUAFACT

AQUAFACT INTERNATIONAL SERVICES LTD.

20th November 2018

Our Reference: JN1511

RE: HAND-HARVESTING OF SEaweEDS AT BLACK ROCK, BALLYHEIGE BAY, CO. KERRY

Dear Manager,

Ion Organics Ltd. is applying to the Department of Housing, Planning & Local Government for a foreshore licence to harvest seaweeds from the shoreline of Black Rock, Ballyheige Bay, Co. Kerry. The proposed harvesting area occupies 5Ha of foreshore and the accompanying map shows the area in question.

AQUAFACT has been commissioned by Ion Organics Ltd. to prepare the Natura Impact Statement to accompany their Foreshore Licence Application.

Ion Organics Ltd. proposes to hand harvest a combined total of 2 tonnes of *Fucus serratus* and *Fucus vesiculosus* per annum. The proposed harvesting area will be divided into three zones, with only one of the three zones harvested per year. The shoreline will be accessed by foot and the seaweed will be harvested by hand in a non-linear pattern using a sickle to cut the seaweed. The seaweed will be cut approximately 150-200mm above the holdfast. Ion Organics' sustainable harvesting plan will ensure areas harvested in one year are left to recovery before they are harvested again.

The proposed seaweed harvesting zone is located within the Akeragh, Banna and Barrow Harbour SAC (Site Code: 0332) but does not overlap any qualifying interests of this SAC. The proposed seaweed harvesting zone also overlaps the Tralee Bay Complex SPA (Site Code: 04188). The accompanying map shows these designated sites.

There are no archaeological features noted on the Sites and Monuments Record within the proposed harvesting area.

I am writing this letter to inform you of Ion Organics intentions and if you have any comments, queries or concerns please do not hesitate to contact me.

Kind regards,

Caroline Roche (caroline@aquafact.ie)

-  Proposed Harvesting Area (5Ha)
-  SPA
-  cSAC

Ballyheige Bay

000332

004188

(10) Black Rock

Sand hills

Prable to flood

Sand hills

