Table 1: Appropriate Assessment of Aquaculture Activities in Kilmackilloge Harbour for site applications T06/364A; T06/35A; T06/106; T06/254A; T06/495A; T06/360A T06/513A – consideration of Special Protection Areas

1.1 Brief description of Project or Plan

Mussels (*M. edulis*) are grown in suspended culture at a total of 10 licensed sites in Kilmackilloge Harbour, Co. Kerry, covering an area of approx. 49 ha. The locations of the sites are shown on <u>Licensed Aquaculture Sites (22/06/2022) (marine.ie)</u>. Licence applications for cultivation of mussels using longlines at sites for site applications T06/364A; T06/35A; T06/106; T06/254A; T06/495A; T06/360A T06/513A are under appeal.

1.2 Brief description of Natura 2000 site

Kilmackilloge Harbour is a Natura 2000 site, being within the Kenmare River SAC. It is also within the potential range of Special Conservation Interest Species from a number of SPA's in the region. The Kenmare River SAC is considered in the Marine Institute's Report supporting Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC 9Site Code: 02158) dated March 2019. However, the potential impact on SPA's were not considered in this report.

Beara Peninsula SPA (Site Code: 004155) is a coastal site parts of which border the northern shore of Bantry Bay. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Chough and Fulmar. The site includes the sea cliffs, the land adjacent to the cliff edge and several upland areas further inland of the coast about Eagle Hill, Knockgour, Allihies and Firkeel. The high water mark forms the seaward boundary.

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

Bird Code Common Name Scientific Name A009 Fulmar Fulmarus glacialis

A346 Chough Pyrrhocorax pyrrhocorax

Sheeps Head to Toe Head SPA (Site Code: 004156) is a large site situated on the south-west coast of Co. Cork, adjacent to Bantry Bay. The site includes sea cliffs, the land adjacent to the cliff edge an area further inland to the east of Dunlough Bay, and also areas of sand dunes at Barley Cove and Crookhaven. The high water mark forms the seaward boundary. It is one of the most important sites in the country for Chough. The presence of Peregrine falcon is of particular significance.

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

Bird Code Common Name Scientific Name A103 Peregrine Falco peregrinus

A346 Chough Pyrrhocorax pyrrhocorax

Puffin Island SPA (Site Code: 004003): is one of the most important seabird colonies in Ireland with an assemblage of over 10,000 pairs of breeding seabirds. The site had the largest population of Fratercula arctica and the second largest Puffinus puffinus population recorded in the Seabird 2000 survey, plus a large population of Hydrobates pelagicus (populations of Fratercula arctica and Hydrobates pelagicus are both of international importance). It also supports nationally important populations of Fulmarus glacialis, Larus fuscus, Larus marinus and Alca torda. It is less important for Rissa tridactyla and Uria aalge. Several pairs of Pyrrhocorax pyrrhocorax breed. The site is owned by BirdWatch Ireland and is a Statutory Nature Reserve.

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

Bird Code	Common Name	Scientific Name
A009	Fulmar	Fulmarus glacialis
A013	Manx Shearwater	Puffinus puffinus
A014	Storm Petrel	Hydrobates pelagicus
A183	Lesser Black-backed Gull	Larus fuscus
A200	Razorbill	Alca torda
A204	Puffin	Fratercula arctica

Skelligs SPA (Site Code: 004007) The site comprises Great Skellig and Little Skellig islands and the surrounding seas to a distance of 500 m from the shorelines. These highly exposed and isolated islands are located in the Atlantic ocean some 14 km and 11 km (respectively) off the County Kerry mainland. The site is one of the most important seabird colonies in the country for populations and species diversity. It has internationally important populations of Hydrobates pelagicus and Sula bassana. For Sula bassana, it is the largest colony in Ireland and one of the largest in the world. It also supports nationally important populations of Fulmarus glacialis, Puffinus puffinus, Rissa tridactyla, Uria aalge and Fratercula arctica. References to breeding seabirds date back to the 1700s. It is a traditional site for Pyrrhocorax pyrrhocorax and Falco peregrinus.

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

Bird Code	Common Name	Scientific Name
A009	Fulmar	Fulmarus glacialis
A013	Manx Shearwater	Puffinus puffinus
A014	Storm Petrel	Hydrobates pelagicus
A016	Gannet	Morus bassanus
A188	Kittiwake	Rissa tridactyla
A199	Guillemot	Uria aalge

A204 Puffin Fratercula arctica

The Bull and The Cow Rocks SPA (Site Code: 004066): comprises two very small rocky islands, the Cow and the Bull, situated at respective distances of approximately 2.5 km and 4 km from Dursey Head in the extreme south-west of Ireland. The Bull and the Cow is one of the most important seabird colonies in the country, with nationally important populations of Hydrobates pelagicus, Sula bassana and Fratercula arctica. For Sula bassana, it is the third largest colony in Ireland. It also supports regionally important numbers of Fulmarus glacialis, Rissa tridactyla, Uria aalge and Alca torda. References to breeding seabirds date back to the 1800s. Both islands are Refuges for Fauna and the Cow is state-owned.

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

Bird Code	Common Name	Scientific Name
A014	Storm Petrel	Hydrobates pelagicus
A016	Gannet	Morus bassanus
A204	Puffin	Fratercula arctica

Iveragh Peninsula SPA (Site Code: 004154) is a large site situated on the west coast of Co. Kerry. The site encompasses the high coast and sea cliff sections of the peninsula from just west of Rossbehy in the north, around to the end of the peninsula at Valencia Island and Bolus Head, and as far east as Lamb's Head in the south. The site supports a nationally important population of breeding Chough, a Red Data Book species that is listed on Annex I of the E.U. Birds Directive; 106 breeding pairs were recorded from the site in the 1992 survey and 86 in the 2002/03 survey. Flocks of up to 42 birds were recorded in the 2002 to 2004 period. The site also supports an Peregrine population (5 pairs in 2002); this species is listed on Annex I of the E. U. Birds Directive. The site also holds nationally important populations of Guillemot (2,860 pairs in 1999-2000), Fulmar (766 pairs in 1999-2000), Kittiwake (1,150 pairs in 2000), Great Black-backed Gull (63 pairs in 1999-2000) and Black Guillemot (118 individuals in 1999), as well as smaller populations of other breeding seabirds: Razorbill (90 pairs in 1999-2000), Herring Gull (30 pairs in 1999-2000), Cormorant (33 pairs in 1999-2000) and Shag (11 pairs in 1999-2000).

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

Bird Code	Common Name	Scientific Name
A009	Fulmar	Fulmarus glacialis
A103	Peregrine	Falco peregrinus
A188	Kittiwake	Rissa tridactyla
A199	Guillemot	Uria aalge
A346	Chough	Pyrrhocorax pyrrhocora

Deenish Island and Scariff Island SPA (Site Code: 004175) are small to medium sized uninhabited islands are situated between 5 and 7 km west of Lamb's Head off the Kerry coast and thus are very exposed to the forces of the Atlantic. The site supports an nationally important population of Puffinus puffinus (5.2% of all-Ireland total). The site has long been known as a breeding site for Hydrobates pelagicus but there is no recent survey data. Other seabird species which occur in all-Ireland important numbers are Sterna paradisaea, Fulmarus glacialis and Larus fuscus. This site also has breeding Phalacrocorax aristotelis, Larus argentatus and Cepphus grille. Deenish Island and Scariff Island provides excellent habitat for the seabirds. The islands also have a small breeding population of Pyrrhocorax pyrrhocorax.

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

Bird Code	Common Name	Scientific Name
A009	Fulmar	Fulmarus glacialis
A013	Manx Shearwater	Puffinus puffinus
A014	Storm Petrel	Hydrobates pelagicus
A183	Lesser Black-backed Gull	Larus fuscus
A194	Arctic Tern	Sterna paradisaea

1.3 Describe the individual elements of the project (either alone or in combination with other plans and projects) likely to give rise to impacts on the Natura 2000 site

Mussels are cultured using longlines. A long-line is supported by a series of small floats joined by a cable or chain and anchored at the bottom on both ends is employed. Mussel spat (seed) is collected on ropes or strings (droppers) are suspended on the line. From each of the lines there are a number of dropper lines (up to 5m in length). The depth of the droppers, which is directly related to the quantity of mussels being cultured, is dependent upon a number of factors including water depth, the floatation provided and the carrying capacity of the system.

Intertidal culture of C. gigas is carried out in bags on trestles in the intertidal zone. Depending on the size of the stock the numbers of oysters in each bag will vary with lower number in bags with larger oysters. Typically, seed is sourced form hatcheries in the UK or France.

Finfish (salmon) are contained in floating cage structures arranged in a grid system which are secured to the seabed via ropes attached to anchors. The fish are put into the cages as smolts, where they are fed, and following a period of 18-24 months are harvested.

Scallop culture is carried out in stacked frames on the seabed initially, with larger adults placed directly on the seabed.

1.4 Describe any likely direct, indirect, or secondary impacts of the project (either alone or	far as Killmackilloge Bay and are known to feed in in-shore waters and bays are: Beara Peninsula SPA (approx. 23 km from proposed sites) Fulmar Deenish Island and Scariff Island SPA (approx. 28 km from proposed sites) Fulmar Storm Petrel Lesser black-backed gull Puffin Island SPA (approx. 45 km from proposed sites) Fulmar Iveragh Peninsula SPA (approx. 25 km from proposed sites) Fulmar Guillemot The Bull and The Cow Rocks SPA (approx. 40 km from proposed sites) Gannet Storm petrel Puffin Skelligs SPA (approx. 50 km from proposed sites) Gannet
in combination with other plans or projects) on the Natura 2000 site by virtue of:	
Size and scale	None
Land-take	None
Distance from the Natura 2000 site or key features of the site	There is no spatial overlap between any of the aquaculture sites and the SPA's listed above. Distance to the various SPA sites under consideration that are more than 15km away from the proposed sites are given in Section 1.3 of this table

	Cultured hisphan (managed and assets and assets and the Control of the
Resource requirements	Cultured bivalves (mussels and oysters) are filter feeders and they feed upon suspended particulate matter. They selectively ingest phytoplankton and other organic material (e.g. small zooplankton and bacteria) and dispose of inorganic and larger organic matter in pseudofeces, which is excreted into the water column. Typically, the faecal and pseudofecal pellets will fall to the sea floor and may cause localised organic enrichment and/or sedimentation. The level of enrichment is a function of, <i>inter alia</i> , water depth current speed, density of culture, the quantity of suspended particulate matter in the water column, or a combination of these. The build-up of excess organic matter beyond the footprint of the sites is not considered likely. The bivalve shellfish production activities do not use any resources required by the qualifying features within the Natura 2000 sites.
Emissions (disposal to land, water or air):	The only emissions arising from the mussel production are faeces and pseudofaeces, which are excreted into the water column. Typically the faecal and pseudofaecal pellets will fall to the sea floor and there is no direct or indirect impact on the qualifying interests within the Natura 2000 sites. Activities associated with the mussel culture would include regular boat trips to the lines to seed, maintain, thin lines and/or harvest the mussels. These site visits would necessitate the use of a vessel which would increase the level of noise in the system. In addition the risk of pollution from exhaust or a spill would also be increased by virtue of the vessels operating in the system. This same risk would apply to recreational boats and wild fishery interests operating in the harbour. Any accidental oil spills / pollution events associated with mussel production activities within Kilmackillogue Harbour are likely to be minor in nature, have a localised impact only and will not have any direct or indirect impact on the qualifying interests of the SPA's under consideration.
Excavation requirements	There are no excavation or similar activities associated with the aquaculture activity
Transportation requirements	Access routes to the aquaculture sites do not spatially overlap with any of the nearby SPA's. The produced aquaculture products are transported offsite by lorry using the existing national road network with no impact on the nearby SPA's.
Duration of construction, operation, decommissioning etc	During set and decommissioning there will be some temporary non-significant disturbance.
• Other	None

1.5 Describe any likely changes to the site	
arising as a result of:	
reduction of habitat area	There is no reduction in habitat area within the Natura 2000 sites arising from the mussel production activities. Mussel longlines have actually been shown in studies to provide extra perching sites for gulls, shags and cormorants, causing a potential positive impact
 disturbance to key species 	There is no evidence in the literature to suggest that rope mussel culture or seaweed culture will negatively impact Fulmar, Storm Petrel, Lesser black-backed gull, Guillemot, Gannet or Puffin
	The studies of Roycroft et al (2006) on mussel farm and bird interactions in a bay in SW Ireland found neutral/positive interactions for both cormorants and gull species from mussel farming.
habitat or species fragmentation	There is no habitat or species fragmentation within the nearby SPA's arising from the mussel production activities.
 reduction in species density 	There is no reduction in species density within the nearby SPA's arising from the mussel production activities
 changes in key indicators of conservation value (water quality etc) 	There are no changes in key indicators of conservation value within the nearby SPA's arising from the mussel production activities.
climate change	Given the nature and scale of the mussel production activities the contribution to climate change is insignificant.
1.6 Describe any likely impacts on the Natura 2000 site as a whole in terms of:	
interference with the key relationships that define the structure of the site	None of the activities associated with the production of mussels in Kilmackilloge Harbour will interfere with the key relationships that define the structure of the nearby SPA sites.
 interference with key relationships that define the function of the site 	Given the shellfish culture activity is not conducted in a Natura 2000 site the only concern would be a negative interaction between the shellfish culture activity and the potential feeding activity of SCI species from nearby SPA's who are known to feed close in-shore and have Kilmackilloge Harbour within their range.

	Current knowledge indicates that these species have a positive/neutral reaction to mussel longlines, using the floats as perches and feeding from the epibenthos growing on the ropes and floats. Consequently, it is concluded that the culture of mussels using longlines as it is currently constituted in Kilmackillogue Harbour does not pose significant risk to the SCI species and as such does not require a full appropriate assessment.
1.7 Provide indicators of significance as a result of the identification of effects set out above in terms of:	
• loss	None identified
• fragmentation	None identified
• disruption	None identified
• disturbance	Increased boat traffic during set up and operation may cause disturbance, but the impacts on the five species listed above are likely to be minimal.
 change to key elements of the site (e.g., water quality etc) 	None identified
1.8 Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	None identified

Table 2: Finding of No Significant Effects		
Details of project or plan		
2.1 Name of Project or Plan	Aquaculture Activities—Rope Mussel Culture- in Kilmackilloge Harbour for site applications T06/364A; T06/35A; T06/106; T06/254A; T06/495A; T06/360A T06/513A – consideration of Special Protection Areas	
2.2 Name and location of Natura 2000 site	Kilmackilloge Harbour is a Natura 2000 site, being within the Kenmare River SAC. It is also within the potential range of Special Conservation Interest Species from a number of SPA's in the region. The Kenmare River SAC is considered in the Marine Institute's Report supporting Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC 9Site Code: 02158) dated March 2019. However, the potential impact on SPA's were not considered in the Marine Institute report. The SPA's considered here were: Sheep's Head to Toe Head SPA 004156 Beara Peninsula SPA 004155 Iveragh Peninsula SPA 004154 Deenish Island and Scariff Island SPA 004175 The Bull and The Cow Rocks SPA 004066 Puffin Island SPA 004003 Skelligs SPA 004007	
2.3 Description of Project or Plan	Licence applications for rope mussel culture in Kilmackilloge Harbour.	
2.4 Is the project or plan directly connected with or necessary to the management of the site (provide details)?	No	
2.5 Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)?	Oysters, scallop, mussels and finfish are cultured in Kilmackilloge Harbour. Oyster culture is carried out using bags and trestles in the intertidal zone. The trestles are arranged in rows along the shore to maximise water movement over the oysters in the bags. Scallops are cultured by being spread on the seafloor and harvested via dredging and/or diving. Finfish are contained in floating cage structures arranged in a grid system, which are secured to the seabed via ropes attached to anchors. Finfish are imputed into the cages as smolts and following a period of 18-24 months are harvested.	

	No in-combination impacts of these developments and existing activity in Kilmackilloge Harbour was detected.	
	activity in minimum age manager was detected.	
Assessment of significant effects		
2.6 Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site	No significant effects detected on nearby SPA sites and SCI species due to the planned cultivation of mussel in Kilmackilloge Harbour for site applications T06/364A; T06/35A; T06/106; T06/254A; T06/495A; T06/360A T06/513A	
2.8 Explain why these effects are not considered significant	The activity does not take place within the Natura 2000 sites, emissions of faeces and pseudofaeces are localised and impact the seabed beneath the longlines and have no direct or indirect effect on the qualifying interests of the adjoining Natura sites. There will be no reduction or fragmentation of any of the habitats within the sites or disruption or disturbance of key species. The integrity of the sites will not be impacted. Previous studies have detected positive/neutral impacts on the SCI	
	species assessed from longline mussel culture On the basis of the above it is considered that there will be no significant effects detected on nearby SPA sites and SCI species due to the planned cultivation of mussel in Kilmackilloge Harbour for site applications T06/364A; T06/35A; T06/106; T06/254A; T06/495A; T06/360A T06/513A.	
Data collected to carry out		
2.9 Who carried out the assessment?	Dr Ciar O'Toole, Technical Advisor for the Aquaculture Licences Appeals Board, 3 October 2022.	
2.10 Sources of data	DAFM (2019) Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in Kenmare River Special Area of Conservation (SAC) (site code 2158). September 2019. Gittings, T. (2018) Bird Impact Assessment. Report Submitted to the Aquaculture Licence Appeals Board February 2018.	
	Marine Institute (2019) Report supporting Appropriate Assessment of Aquaculture and Fisheries Risk Assessment in Kenmare River SAC (Site Code: 02158) dated March 2019.	
	NPWS (2022) Conservation objectives for Beara Peninsula SPA [004155]. Generic Version 9.0. Department of Housing, Local Government and Heritage	
	NPWS (2022) Conservation objectives for Sheep's Head to Toe Head SPA [004156]. Generic Version 9.0. Department of Housing, Local Government and Heritage.	

NPWS (2022) Conservation objectives for Puffin Island SPA [004003]. Generic Version 9.0. Department of Housing, Local Government and Heritage. NPWS (2022) Conservation objectives for Skelligs SPA [004007]. Generic Version 9.0. Department of Housing, Local Government and Heritage. NPWS (2022) Conservation objectives for The Bull and The Cow Rocks SPA [004066]. Generic Version 9.0. Department of Housing, Local Government and Heritage. NPWS (2022) Conservation objectives for Iveragh Peninsula SPA [004154]. Generic Version 9.0. Department of Housing, Local Government and Heritage. NPWS (2022) Conservation objectives for Deenish Island and Scariff Island SPA [004175]. Generic Version 9.0. Department of Housing, Local Government and Heritage. Roycroft, Daphne; Kelly, Thomas; Lewis, Lesley (2006) Behavioural interactions of seabirds with suspended mussel longlines Aquaculture International, Volume 15 (1) – Nov 8, 200 Thaxter, Chris B.; Lascelles, Ben; Sugar, Kate; Cook, Aonghais S.C.P.; Roos, Staffan; Bolton M., Langston R H W, Burton N H K. (2012) Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. Biological Conservation, Volume 156: 53-61 - Nov 1, 2012 Special Protection Areas (SPA) | National Parks & Wildlife Service (npws.ie) gov.ie - Aquaculture & Foreshore Management (www.gov.ie) 2.11 Level of assessment Desk study completed 2.12 Where can the full See 2.10 for references results of the assessment be accessed and viewed?