

Appropriate Assessment Screening for Aquaculture activities in Ardbear Bay / Clifden Bay Co. Galway

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| Brief description of the project or plan | <p>Currently, the production of salmon (<i>Salmo salar</i>) is licenced at 2 sites, the production of rainbow trout (<i>Oncorhynchus mykiss</i>), is licenced at 1 site and the production of mussels (<i>Mytilus edulis</i>) is licenced at 3 sites in Ardbear Bay / Clifden Bay. There is also an Oyster Fishery Order area within Ardbear Bay / Clifden Bay.</p> <p>In addition to the licenced sites there is an application for an Aquaculture Licence for the production of mussels (<i>Mytilus edulis</i>) using longlines at 1 subtidal site in the bay.</p> <p>The locations of the aquaculture sites are shown in Figure 1</p> |
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| Brief description of the Natura 2000 sites | <p>Ardbear Bay / Clifden Bay is not a Natura 2000 site. The following Natura 2000 sites are adjacent to (within 15Km) of the aquaculture sites in Ardbear Bay / Clifden Bay and are shown in Figure 1.</p> <p>West Connacht Coast SAC (Site Code 002998)</p> <p>This site consists of a substantial area of marine waters lying off the coasts of Counties Mayo and Galway in the west of Ireland. Comprising two parts, in its northern component the site extends from the coastal waters off Erris Head westwards beyond Eagle Island and the Mullet Peninsula in Co. Mayo. From there it extends southwards immediately off the coast as far as the entrance to Blacksod Bay. In its southern component, the site stretches from Clare Island and the outer reaches of Clew Bay at Old Head and continues southwards off the Mayo coast to the Connemara coast near Clifden and Ballyconneely, Co Galway. Predominantly coastal in nature, the site extends westwards into Atlantic continental shelf waters up to approximately 7-11 km from the mainland, although in its southern component it remains mostly inshore of the main islands: Clare Island, Inishturk, Inishbofin and Inishshark. Its area contains subtidal waters fringing these and other islands, as well as islets and rocky skerries off the Co. Mayo and Co. Galway coasts.</p> <p>The Conservation Objectives of this site are¹</p> <ul style="list-style-type: none"> • To maintain the favourable conservation condition of Common Bottlenose Dolphin in West Connacht Coast SAC, |
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¹ NPWS (2015) Conservation Objectives: West Connacht Coast SAC 002998. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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| | <p>Slyne Head Peninsula SAC (Site Code 002074)</p> <p>This site comprises the peninsula west of Ballyconneely, Co. Galway. It extends northwards to Errislannan Point to include the shallow waters of Mannin Bay. The peninsula is low-lying and undulating, reaching a maximum height of only 64 m (Doon Hill). The peninsula is fringed with rocky shores and sandy beaches, with some extensive areas of machair and several brackish lakes and lagoons. Inland, the site is a maze of small fields, supporting a mosaic of habitats dominated by grassland and heath, interspersed with numerous lakes and associated swamp, marsh and fen. An important feature of the site is the influence of windblown calcareous sand on these habitats.</p> <p>The Conservation Objectives of this site are²</p> <ul style="list-style-type: none"> • To restore the favourable conservation condition of Coastal lagoons in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Large shallow inlets and bays in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Reefs in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Annual vegetation of drift lines in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Perennial vegetation of stony banks in Slyne Head Peninsula SAC, • To restore the favourable conservation condition of Atlantic salt meadows (<i>Glauco- Puccinellietalia maritima</i>) in Slyne Head Peninsula SAC, • To restore the favourable conservation condition of Mediterranean salt meadows (<i>Juncetalia maritimi</i>) in Slyne Head Peninsula SAC, • To restore the favourable conservation condition of Embryonic shifting dunes in Slyne Head Peninsula SAC, • To restore the favourable conservation condition of Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes') in Slyne Head Peninsula SAC, • To restore the favourable conservation condition of Machairs in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of European dry heaths in Slyne Head Peninsula SAC, |
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² NPWS (2015) Conservation Objectives: Slyne Head Peninsula SAC 002074. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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| | <ul style="list-style-type: none"> • To maintain the favourable conservation condition of <i>Juniperus communis</i> formations on heaths or calcareous grasslands in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) in Slyne Head Peninsula SAC • To maintain the favourable conservation condition of <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Alkaline fens in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Petalwort in Slyne Head Peninsula SAC, • To maintain the favourable conservation condition of Slender Naiad in Slyne Head Peninsula SAC, <p>Slyne Head Islands SAC (Site Cod 000328) This site comprises a long archipelago of islands, islets, rocks and reefs located off the western shores and south-western tip of the Slyne Head Peninsula in Co. Galway. The surrounding shallow marine areas are also included as part of the site. The islands are mostly low-lying and have a covering of a grassy maritime turf. A few sandy coves occur on the larger islands, along with shingle. The islands are uninhabited apart from an automated lighthouse on Illaunamid.</p> <p>The Conservation Objectives of this site are³</p> <ul style="list-style-type: none"> • To maintain the favourable conservation condition of Reefs in Slyne Head Islands SAC, • To maintain the favourable conservation condition of Grey Seal in Slyne Head Islands SAC, <p>Connemara Bog Complex SAC (Site Code 002034) The Connemara Bog Complex SAC is a large site encompassing the majority of the south Connemara lowlands in Co. Galway. The site is bounded to the north by the Galway–Clifden road and stretches as far east as the Moycullen–Spiddal road. The site supports a wide range of habitats, including extensive tracts of western blanket bog, which form the core interest, as well as areas of heath, fen, woodlands, lakes, rivers and coastal habitats</p> |
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³ NPWS (2012) Conservation Objectives: Slyne Head Islands SAC 000328. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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| | <p>The Conservation Objectives of this site are⁴</p> <ul style="list-style-type: none"> • To maintain the favourable conservation condition of Coastal lagoons in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Reefs in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoetanojuncetea</i> in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Natural dystrophic lakes and ponds in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation in Connemara Bog Complex SAC, • To restore the favourable conservation condition of Northern Atlantic wet heaths with <i>Erica tetralix</i> in Connemara Bog Complex SAC, • To restore the favourable conservation condition of European dry heaths in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) in Connemara Bog Complex SAC, • To restore the favourable conservation condition of Blanket bogs in Connemara Bog Complex SAC, • To restore the favourable conservation condition of Transition mires and quaking bogs in Connemara Bog Complex SAC, • To restore the favourable conservation condition of Depressions on peat substrates of the <i>Rhynchosporion</i> in Connemara Bog Complex SAC, • To restore the favourable conservation condition of Alkaline fens in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Marsh Fritillary in Connemara Bog Complex SAC, • To restore the favourable conservation condition of Atlantic Salmon in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Otter in Connemara Bog Complex SAC, • To maintain the favourable conservation condition of Slender Naiad in Connemara Bog Complex SAC, |
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⁴ NPWS (2015) Conservation Objectives: Connemara Bog Complex SAC 002034. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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| | <p>Twelve Bens/Garraun Complex SAC (Site Code: 002031)</p> <p>This is an extensive site situated in the north-west of Connemara in Co. Galway and dominated by mountainous terrain. The site is bounded to the south by the Connemara Bog Complex, to the east by the Maumturk Mountains and to the north by Killary Harbour. Included within the site are the Twelve Bens mountain range, the mountains to the north of Kylemore (Doughruagh, Garraun and Benchoona), rivers including the Ballynahinch and Owenglin systems and an area of coastal heath and machair near Glassilaun. The site also includes some extensive tracts of lowland blanket bog which are continuous with the mountains.</p> <p>The Conservation Objectives of this site are⁵:</p> <ul style="list-style-type: none"> • To maintain the favourable conservation condition of Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) in The Twelve Bens/Garraun Complex SAC, • To maintain the favourable conservation condition of Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i> in The Twelve Bens/Garraun Complex SAC, • To restore the favourable conservation condition of Alpine and Boreal heaths in The Twelve Bens/Garraun Complex SAC, • To restore the favourable conservation condition of Blanket bogs (* if active bog) in The Twelve Bens/Garraun Complex SAC, • To restore the favourable conservation condition of Depressions on peat substrates of the <i>Rhynchosporion</i> in The Twelve Bens/Garraun Complex SAC, • To restore the favourable conservation condition of Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia adani</i>) in The Twelve Bens/Garraun Complex SAC • To restore the favourable conservation condition of Calcareous rocky slopes with chasmophytic vegetation in The Twelve Bens/Garraun Complex SAC, • To restore the favourable conservation condition of Siliceous rocky slopes with chasmophytic vegetation in The Twelve Bens/Garraun Complex SAC, • To maintain the favourable conservation condition of Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles in The Twelve Bens/Garraun Complex SAC, • To restore the favourable conservation condition of Freshwater Pearl Mussel in The Twelve Bens/Garraun Complex SAC, |
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⁵ NPWS (2017) Conservation Objectives: The Twelve Bens/Garraun Complex SAC 002031. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

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| | <ul style="list-style-type: none"> • To maintain the favourable conservation condition of Atlantic Salmon in The Twelve Bens/Garraun Complex SAC, • To maintain the favourable conservation condition of Otter in The Twelve Bens/Garraun Complex SAC, • To maintain the favourable conservation condition of Slender Naiad in The Twelve Bens/Garraun Complex SAC, <p>Inishbofin, Omev Island and Turbot Island SPA (Site Code 004231)</p> <p>Inishbofin, Omev Island and Turbot Island SPA comprises parts of three islands lying off the coast of Connemara in Co. Galway. Inishbofin, the largest of the three islands, is situated c. 5 km from the mainland and some 20 km north-west of Clifden. It is composed of metamorphic schists and gneiss, and rises to a maximum height of 89m above sea level. Omev Island is a small island situated 10 km west-north-west of Clifden. It is underlain by granite, which is partly covered by blown sand. The area within the SPA is along the southern coast and takes in about one third of the island. Turbot Island is a flat, low-lying island situated less than 1 km off the coast and 8 km west of Clifden. The island is approximately 1.5 km in length and is underlain by granite. The habitats on the island are mainly enclosed agricultural grassland - damp to wet peaty pasture with patches of Yellow Iris (<i>Iris pseudacorus</i>) and small areas of machair.</p> <p>The Conservation Objectives for this site are⁶</p> <p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:</p> <ul style="list-style-type: none"> • Corncrake <p>Cruagh Island SPA (Site Code 0041170)</p> <p>Cruagh Island is located approximately 2 km west of Omev Island, off the Connemara coast in Co. Galway. It is a small-to medium sized, low-lying island (maximum height 62 m) and is uninhabited. The island is dominated by a maritime grassy sward with some exposed rock. The sea area to a distance of 500 m is included in the site to accommodate 'rafting' shearwaters.</p> |
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⁶ NPWS (2018) Conservation objectives for Inishbofin, Omev Island and Turbot Island SPA [004231]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

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| | <p>The Conservation Objectives for this site are⁷</p> <p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:</p> <ul style="list-style-type: none"> • Manx Shearwater • Barnacle Goose <p>Slyne Head to Ardmore Point Islands SPA (Site Code 004159)</p> <p>The site includes a number of islands along the Connemara coast, Co. Galway, from Slyne Head to Kilkieran Bay. It is characterised by a large number of small, uninhabited islands, rocks and skerries. Some of the islands are up to 4 km from the mainland, whilst others are in very shallow waters close to the shoreline. The larger islands in the site include Inishlackan, Croaghnaakeela Island, St Macdara's Island, Masson Island, Birmore Island, Freaghillaun, Illaunamid and Illaunurra. Most of the larger islands support maritime grassland; machair occurs on Masson Island. The surrounding seas to a distance of 200 m, which are used as foraging areas by terns and other seabirds, are included within the site.</p> <p>The Conservation Objectives of this site are⁸</p> <p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:</p> <ul style="list-style-type: none"> • Barnacle Goose • Sandwich Tern • Arctic Tern • Little Tern |
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⁷ NPWS (2018) Conservation objectives for Cruagh Island SPA [004170]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

⁸ NPWS (2018) Conservation objectives for Slyne Head to Ardmore Point Islands SPA [004159]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.

| Assessment criteria | |
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| <p>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 site.</p> | <p>Mussels are cultured using longlines. A long-line 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) and 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.</p> <p>Finfish are contained in floating cages structures arranged in a grid system which are secured to the seabed via ropes attached to anchors. The fish are inputted to the cages as smolts, where they are fed, and following a period of 18- 24 months are harvested.</p> <p>The culture of oysters is carried sub tidally on the seabed. Subtidal extensive culture of oysters involves the placement of oysters in an uncontained fashion on the seabed after a nursery phase in the intertidal zone. Stock is checked periodically when the progress (growth and mortality) will be monitored and intervention will be necessary if anomalies are discovered. Typically seed for the Pacific oyster is sourced from hatcheries in the UK or France but half-grown oysters, sourced from Ireland or within the EU (typically France) may also be used as stock. In the case of the native oyster, seed is sourced from within Ireland. The oysters are harvested by dredging. Harvest is expected 24-36 months after initial seeding for oysters.</p> |

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| <p>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of:</p> | |
| <p>size and scale;</p> | <p>There are no direct or indirect impacts from the culture operations on the adjacent SACs or SPA</p> |

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| 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 Natura 2000 sites. |
| Resource requirements (water abstraction etc.): | <p>Cultured bivalves (mussels, 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 fecal 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.</p> <p>Similarly the culture of finfish, which involves the use of pre-prepared feed, does not use any resources required by the qualifying features within the adjacent Natura 2000 sites. As is the case with bivalves salmon will produce fecal pellets which 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.</p> |
| Emissions (disposal to land, water or air): | The intertidal shellfish production sites accessed via vehicle (tractors) along designated routes through the shore. The subtidal sites are accessed mainly by boats, with other vehicles used as required. As a consequence, noise and pollution e.g. as a result of a fuel spill may present a risk to features of adjoining Natura sites with a specific marine element. The risks are not considered significant at current levels of activity. Impacts would be localised and minor. |
| 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 adjacent Natura 2000 sites. The produced aquaculture products are transported offsite by lorry using the existing national road network with no impact on the adjoining Natura 2000 sites. |
| Duration of construction, operation, decommissioning: | None |

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| Other: | |
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| Describe any likely changes to the site arising as a result of: | |
| Reduction of habitat area: | There is no reduction in habitat area within any of the Natura 2000 sites considered arising from the aquaculture production activities. |
| Disturbance to key species: | Given the separation distance of the production sites from the adjacent Natura 2000 sites and the absence of any clear “source –pathway – receptor” there will be no disturbance to key species within any Natura 2000 sites. There is no evidence in the scientific literature to suggest that aquaculture activities impact on the bird species listed as Special Conservation interests in the adjacent SPAs |
| Habitat or species fragmentation: | There is no habitat or species fragmentation within the Natura 2000 sites arising from the aquaculture production activities. |
| Reduction in species density: | There is no reduction in species density within the Natura 2000 sites arising from the aquaculture production activities. |
| Changes in key indicators of conservation value (water quality): | There are no changes in key indicators of conservation value within the Natura 2000 sites arising from the aquaculture production activities. |
| Climate change: | Given the nature and scale of the aquaculture production activities the contribution to climate change is considered insignificant. |

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| Describe any likely impacts on the Natura 2000 site as a whole in term of; | |
| Interference with the key relationships that define the structure of the site: | None of the activities associated with the shellfish and finfish production in Ardbear Bay / Clifden Bay will interfere with the key relationships that define the structure of the adjacent Natura 2000 sites. |
| Interference with the key relationships that define the function of the site | None of the activities associated with the shellfish and finfish production in Ardbear Bay / Clifden Bay will interfere with the key relationships that define the function of the adjacent Natura 2000 sites. |
| Provide indicators of significance as a result of the identification of effects set out above in terms of: | |
| Loss | None identified |

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| Fragmentation: | None identified |
| Disruption: | None identified |
| Disturbance: | None identified |
| Change to key elements of the site (e.g. water quality etc.): | None identified |

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| 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 |
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Finding of no significance effect report:

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| Name of project or plan: | Aquaculture activities in Ardbear Bay / Clifden Bay. |
| Name and location of Natura 2000 site It would be helpful for a map or plan to be provided: | See Figure 1 |
| Description of the project or plan | Shellfish and finfish culture activity in Ardbear Bay / Clifden Bay, Co. Galway |
| Is the project or plan directly connected with or necessary to the management of the site (provide details)? | No. |
| Are there other projects or plans that together with the project or plan being assessed could affect the site (provide details)? | No. |
| Describe how the project or plan (alone or in combination) is likely to affect the Natura 2000 site. | The cultivation of shellfish and finfish in Ardbear Bay / Clifden Bay, is not likely to affect the conservation features of the adjacent Natura 2000 sites. |
| Explain why these effects are not considered significant. | <p>There is no spatial overlap of the aquaculture activities with Natura sites. In addition, there would be no interference with key relationships that define the function of the sites. The culture activities will not result in habitat loss, there will not be significant disturbance to key species and there will be no habitat or species fragmentation. There will be no direct discharge of pollutants into adjacent Natura 2000 sites and water quality will not be affected. Consequently, it is concluded that the culture of shellfish and finfish as it is currently constituted and proposed in Ardbear Bay / Clifden Bay, does not pose significant risk to the conservation features of the adjacent Natura 2000 sites and as such does not require a full appropriate assessment.</p> <p>On the basis of the above it is considered that there will be no significant effects on the qualifying feature / interests' of the adjacent Natura 2000 sites.</p> |
| Who carried out the assessment? | Marine Institute, February 2020 |

Figure 1. Location of aquaculture sites in Ardbear Bay / Clifden Bay (licenced sites in red, application site in green) and adjacent Natura 2000 sites.

