Appropriate Assessment Screening for Aquaculture activities in Dunmanus Bay, Co. Cork	
Brief description of the project or plan	The following species are cultured in Dunmanus Bay (number of licences in parenthesis) - mussels (4), oysters (2) sea urchins (2), and seaweeds (1). Additionally, applications have been received for the following species - mussels (1) and seaweeds (1) Site T05/196A is licenced for the production of mussels (*M. edulis*). Site T05/196B is licenced for the production mussels (M. edulis), sea urchins *((P. lividus*) and native seaweeds (*Laminaria saccharina, Laminara digitate, Alaria esculenta and Palmaria palmata*) Site T05/439A is licenced for the production of mussels (*M. edulis*). Site T05/466A is licenced for the production of mussels (*M. edulis*). Site T05/473A is licenced for the production of oysters (*C. gigas*) Site T05/570A is licenced for the production of oysters (*O. edulis*) and sea urchins *((P. lividus*). An application for a licence for the production of mussels (*M. edulis*) has been submitted for Site T05/590A and an application for a licence for the production of native red, brown and green seaweeds and *Alaria esculenta* has been submitted for Site T05/611A The locations of the aquaculture sites are shown in Figure 1

Brief description of the Natura 2000 sites	Dunmanus Bay is approximately 24km long and ranges in width from approximately 1.3km at the eastern end to 6.5km at the mouth. The following Natura 2000 sites are adjacent to (within 15Km) of the aquaculture sites in Dunmanus Bay and are shown in Figure 1. **Sheep's Head SAC (Site code: 000102)** The site extends from near Ahakista in the east, to the Sheep's Head lighthouse in the west. It is a narrow ridge of sandstone which encloses a number of rectangular basins filled either by peat bogs or lakes. The main value of the area is the presence of the terrestrial features, dry heath and wet heath, habitats listed on Annex II of the EU Habitats Directive. In addition, Annex I Birds Directive species, the Chough, and an Annex II species under the Habitats Directive, the Kerry Slug, are found in the area. The Conservation Objectives of this site are[1]: To maintain or restore the favourable conservation condition

[1] NPWS (2018) Conservation objectives for Sheep's Head SAC [000102]. Generic Version 6.0. Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

	of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected: • Northern Atlantic wet heaths with *Erica tetralix* • European dry heaths • Kerry Slug *Geomalacus maculosus* **Dunbeacon Shingle SAC (Site Code 002280)** This coastal site is located at the head of Dunmanus Bay in Dunbeacon townland, 5 km south-west of Durrus village, Co. Cork. The site comprises a diverse and complex mosaic of habitat types in a relatively small area. As well as supporting an example of 'perennial vegetation of stony banks', Dunbeacon Shingle SAC also contains areas of saltmarsh, rush pasture, lake, freshwater marsh, tidal estuarine creeks, scrub woodland, Alder (*Alnus glutinosa*) and willow (Salix spp.) dominated wet woodland, wet heath and dry heath. The Conservation Objectives of this site are:[2] To maintain the favourable conservation condition of Perennial vegetation of stony banks in Dunbeacon Shingle SAC, • Perennial vegetation of stony banks **Reen Point Shingle SAC (Site Code 002281)** Reen Point Shingle SAC is located in Dunmanus Bay, 4 km north-west of Durrus village, in Reencappul townland, Co. Cork. The site covers a relatively small area and consists of a headland shaped like a hammer. The 'handle' of the hammer shape consists of two vegetated shingle bars, one at each side, with a marshy/lagoonal area in between. Reen Point Shingle SAC contains two important examples of perennial vegetation of stony banks, a habitat listed on Annex I of the E.U. Habitats Directive. The presence of other coastal habitats such as saltmarsh, lagoon, freshwater marsh and heath adds further interest to the site. The Conservation Objectives of this site are[3] To maintain the favourable conservation condition of Perennial vegetation of stony banks in Reen Point Shingle SAC, • Perennial vegetation of stony banks

[2] NPWS (2017) Conservation Objectives: Dunbeacon Shingle SAC 002280. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
[3] NPWS (2017) Conservation Objectives: Reen Point Shingle SAC 002281. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.

	Farranamanagh Lough SAC (Site Code 002189) Farranamanagh Lough is a small, shallow (2 m), sedimentary lagoon situated on the south side of the Sheep's Head peninsula in west Co. Cork. This lagoon is in an almost completely natural condition lying behind a stony barrier through which runs an apparently permanent outlet. While this lagoon is small in size, geomorphologically it is a good representative of a sedimentary lagoon with an inlet in almost completely natural condition. As there are only six known examples of this type of lagoon in the country, Farranamanagh Lough is of considerable conservation importance. The shingle barrier also supports a fine example of the community 'perennial vegetation of stony banks'. The Conservation Objectives of this site are[4] • To maintain the favourable conservation condition of Coastal lagoons* in Farranamanagh Lough SAC, • To restore the favourable conservation condition of Perennial vegetation of stony banks in Farranamanagh Lough SAC, **Sheeps Head to Toe Head SPA (Site Code: 004156)** This is a large site situated on the south-west coast of Co. Cork. It encompasses the high coast and sea cliffs from Sheep's Head to Mizen Head, Brow Head and Crookhaven in the west and from Baltimore to Tragumna Bay, Gokane Point and the Toe Head peninsula in the east. The high water mark forms the seaward boundary. The site includes sea cliffs, the land adjacent to the cliff edge and and also areas of sand dunes at Barley Cove and Crookhaven. The site supports an important population of breeding Chough and an important population of Peregrine. The Conservation Objectives of this site are:[5] To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA: • Peregrine *Falco peregrinus* • Chough *Pyrrhocorax pyrrhocorax*

[4] NPWS (2018) Conservation Objectives: Farranamanagh Lough SAC 002189. Version 1. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht.
[5] NPWS (2018) Conservation objectives for Sheep's Head to Toe Head SPA [004156]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht

Assessment criteria	
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.	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) 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 dependant upon a number of factors including water depth, the floatation provided and the carrying capacity of the system. Seaweed is cultured using longlines supported by floating structures similar to those used for mussel culture. 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 but half-grown oysters, sourced from Ireland or within the EU (typically France) may also be used as stock. Intertidal culture of *O. edulis* is carried out in tanks or directly on the seabed. Seed is sourced from within Ireland. Urchins are cultured in cage structures in the lower intertidal and subtidal areas or, in the case of suspended culture, are cultured in bins suspended from longlines. They are contained at all times.

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:	
size and scale;	There are no direct or indirect impacts from the culture operations on the adjacent SACs or SPA
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 sties. Sites T05/196 A & B, T05/439A and T05/466A, in inner Dunmanus Bay are located a minimum of 0.5Km from the nearest boundary of the Dunbeacon Shingle SAC, 3.4Km from the nearest boundary of the Reen Point Shingle SAC, 3.8Km from the nearest boundary of the Sheep's Head SAC and 9.5Km from the nearest boundary of the Farranamanagh Lough SAC. Site T05/473A, also in inner Dunmanus Bay, is located circa 50m from the nearest boundary of the Dunbeacon Shingle SAC, 3.6Km from the nearest boundary of the Reen Point Shingle SAC, 4Km from the nearest boundary of the Sheep's Head SAC and 9.7Km

	from the nearest boundary of the Farranamanagh Lough SAC. Site T05/570A is located circa 500m from the nearest boundary of the Reen Point Shingle SAC, 1 Km from the nearest boundary of the Sheep's Head SAC. 2.6Km from the nearest boundary of the Dunbeacon Shingle SAC and 5.3Km from the nearest boundary of the Farranamanagh Lough SAC. Site T05/590A is located circa 2.2 Km from the nearest boundary of the Sheep's Head SAC, 3Km from the nearest boundary of the Farranamanagh Lough SAC, 4.2Km from the nearest boundary of the Reen Point Shingle SAC, and 5.3Km from the nearest boundary of the Dunbeacon Shingle SAC Site T05/611A is located circa 2.4 Km from the nearest boundary of the Sheep's Head SAC, 2.5Km from the nearest boundary of the Farranamanagh Lough SAC, 5.4Km from the nearest boundary of the Reen Point Shingle SAC, and 7.3Km from the nearest boundary of the Dunbeacon Shingle SAC All sites (both licenced and at application stage) are located a minimum distance of 3.9Km from the nearest boundary of the Sheeps Head to Toe Head SPA.
Resource requirements (water abstraction etc.):	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 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, *inter alia*, 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. Urchin culture is carried out in contained systems and relies on the input of feed (usually seaweed sourced locally). The production of sea urchins does not use any resources required by the qualifying features within the Natura 2000 sites The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar Illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites.
Emissions (disposal to land, water or air):	The aquaculture sites in Dunmanus Bay 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 including the Dunbeacon Shingle SAC, Reen Point Shingle SAC and the Farranamanagh Lough SAC . The risks are, however, not considered significant at current levels of aquaculture activity. It is considered that

	impacts would be localised and minor. The risk of the introduction of non-native species is considered to be low given that the main species produced in the bay i.e. mussels (*M. edulis*), sea urchins (*P. lividus*), oysters (*O. edulis*) and seaweeds (*Laminaria saccharina, Laminara digitata Alaria and Palmaria palmata*) are all native species and seed is sourced within Ireland. The risk of the transfer of non-native species with hatchery seed of *C. gigas* is also not considered to be significant. The use of half-grown oysters from outside the State as a source of stock has the potential to result in the introduction of non-native species into the bay. Adoption of industry best practice and implementation of measures set out in relevant guidelines as they relate to the risk of introduction of non-target species (e.g. Invasive Species Ireland guideline available at http://invasivespeciesireland.com/biosecurity/aquaculture/) would also significantly reduce the risk.
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
Other:	The use of half-grown oysters from outside Dunmanus Bay as a source of stock has the potential to result in the introduction of non-native species into the bay. The non-native sea squirt *Didemnum vexillum* has been recorded in inner Dunmanus Bay but the exact source of this species has not been identified.

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 Sheeps Head to Toe Head SPAs, i.e., Chough, and Peregrine..
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.

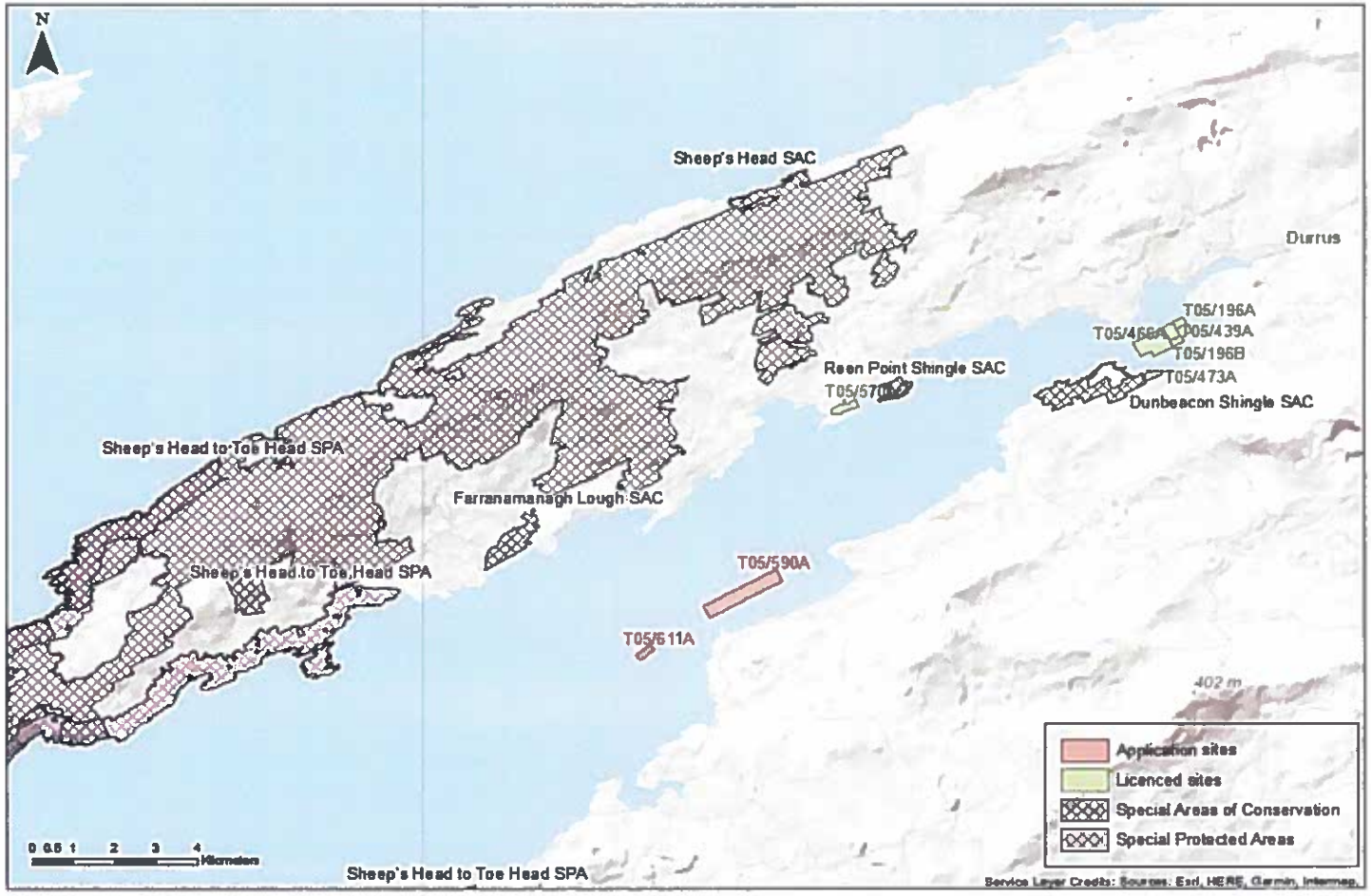
Changes in key indicators of conservation value (water quality):	There are no changes in key indicators of conservation value within the Natura 2000 sites arising from the aquaculture production activities.
Climate change:	Given the nature and scale of the aquaculture production activities the contribution to climate change is considered insignificant.

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

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

Finding of no significance effect report:	
Name of project or plan:	Aquaculture activities in Dunmanus Bay, Co. Cork.
Name and location of Natura 2000 site It would be helpful for a map or plan to be provided:	Sheep's Head SAC (Site code: 000102), Dunbeacon Shingle SAC (Site Code 002280), Reen Point Shingle SAC (Site Code 002281), Farranamanagh Lough SAC (Site Code 002189) and the Sheeps Head to Toe Head SPA (Site Code: 004156) – See Figure 1
Description of the project or plan	Shellfish and seaweed culture activity in Dunmanus Bay, Co. Cork.
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 seaweeds in Dunmanus Bay is not likely to affect the features of adjoining Natura 2000 sites.
Explain why these effects are not considered significant.	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 the environment and water quality will not be affected. Consequently, it is concluded that the culture of shellfish and seaweed, as it is currently constituted and proposed, in Dunmanus 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. 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.
Who carried out the assessment?	Marine Institute, February 2019

Figure 1. Location of aquaculture site in Castlehaven Bay and adjacent Natura 2000 sites



B