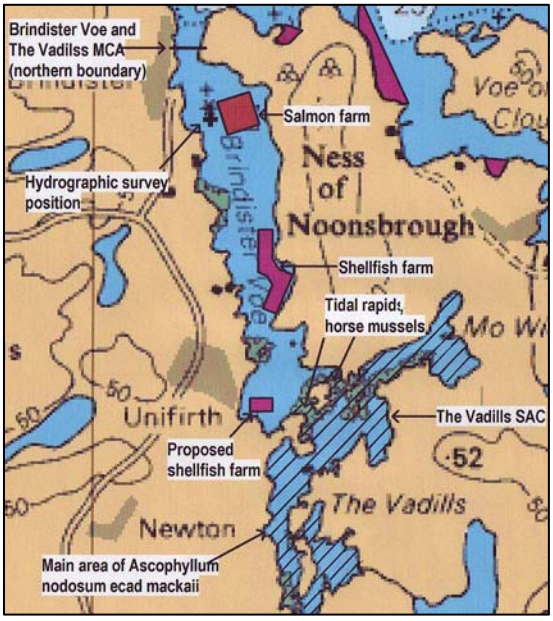
Appropriate Assessments

Case study 5: Shellfish cultivation in Shetland

Case Ref.	Date	The Fishery	The European Marine Site	The Competent Authority	Why Assessment?	Decision
5	2005	Mussel, queen scallop and oyster cultivation	The Vadills SAC	Shetland Islands Council	Possible impact on rare 'Lagoon' habitat and associated species	Permission refused.



An application was made to the Shetland Islands Council on 18 April 2005 to develop a new mariculture site for mussels, queen scallops and oysters. The site was located at the southern end of Uni Firth, adjacent to the mouth of The Vadills. Proposed equipment for this site were four double long-lines of 100m in length, with a surface works area of 8000m^2 oriented east-west within a mooring area of 10,400m^2. The application included no reference to any need to deter predation by eider ducks.

The Vadills Special Area of Conservation (SAC) is made up of eight shallow basins, up to 5m deep. It was designated as an SAC by the Scottish Executive in March 2005 because of this 'lagoon' habitat. Listed under Annex 1 of the EC Habitats Directive and specified as a priority habitat in the UK, lagoons are expanses of shallow coastal saltwater, of varying salinity and water volume, wholly or partially separated from the sea by sandbanks, shingle or rocks. This priority status is granted to those habitats that are in danger of disappearing and there are both Priority Species and Priority Habitat Action Plans in place in the Vadills, taking account of their inherent and unique character and vulnerability.

Of particular importance within this habitat are tideswept reefs, supporting barnacles, littorinids, sea squirts and mussels in shallow areas and kelps, sponges sea squirts, crabs, starfish and mollusc in deeper waters; sublittoral sediments supporting small areas of maerl and beds of a brittlestar not normally found in such shallow waters; extremely sheltered areas feature beds of a free living brown seaweed – *Ascophyllum nodosum* ecad *mackaii* – thongweed and seagrass; and two species of sea cucumber, rare or unknown elsewhere in Shetland, are also found in The Vadills.

A draft management scheme for The Vadills to assist relevant authorities in respect of their obligations under the Habitats Directive and the Conservation Regulations had been developed. The scheme was drawn up under the auspices of the Marine SACs Advisory Panel and highlighted that shellfish farming within or adjacent to Uni Firth could have an impact on the Vadills. It also provided guidance to shellfish developers that they should demonstrate that their development will not cause significant deterioration of the conservation interests of the site.

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Consultation was undertaken with relevant authorities and organisations. Objections to the proposal were received from Scottish Natural Heritage (SNH) and the Royal Society for the Protection of Birds (RSPB) on the grounds that there was insufficient information to assess the possible environmental impact on the adjacent SAC. SNH also raised concerns about:

- carrying capacity issues;
- impacts of waste from the development on sensitive habitat; and
- visual impacts.

A local resident objected on grounds of environmental and visual impacts and due to expected resultant restriction of access to foreshore.

The consultation concluded that an Appropriate Assessment of the proposal and its potential effects on the SAC conservation interests would be necessary. The Appropriate Assessment was restricted to those aspects that related directly to the conservation objectives of the site. For this reason, the concerns about visual impacts were not taken forward by the Shetland Islands Council as the competent authority.

The considerations of the different possible impacts of the fishery are summarised in the table below:

Potential significant impacts	Assessment and Mitigating measures
Impact on carrying capacity – the ability of a body of water to support and sustain marine organisms	The potential standing biomass of the proposed site was estimated at 80-90 tonnes. The applicant already operates a site in the Brindister Voe with a standing biomass of 240-270 tonnes and indicated he would reduce the longlines in the existing site to match the increase posed by the new site. This would mean the standing biomass in the voe would remain the same. However, the AA found that the carrying capacity of the Voe – based on surface area, water volume, flushing time, tidal range and an average mussel filtration rate – was only 140 tonnes. The conclusion was that the existing potential mussel production rate would reduce the flow of available nutrients to The Vadills, having an effect over time on the communities present within the lagoons.
Impacts of development waste in the form of shell debris on the features of the site	Hydrographic data indicating a generally slow rate of movement of water in the Voe broadly supported the view that shell debris would not impact on the conservation interests in the SAC. The AA concluded that shells would have a relatively high settling rate due to their weight and would be unlikely to spread more than a few metres beyond the edge of the site. However, the AA also concluded that a reliable estimate of the volume of shell debris was not possible as it would depend on many variables, including, for example, the level of spat settlement and the incidence of storms in any given year.
Impacts of faecal waste on the features of the site.	Faecal waste is much lighter than shell debris and would therefore be transported further. The AA put estimates of 30-45 m redistribution from the edge of the site on faecal debris and concluded that, given proximity of the site and the site boundary to The Vadills, the entry of such waste materials was likely through the western entrance channel. The AA further concluded that, over time, this material might impact on site integrity and conservation interests of the SAC through accumulation. Benthic fauna, including any Biodiversity Action Plan (BAP) species, such as maerl or horse mussels, and the rapid tidal habitats in the channels would be most at risk from this process.
Water flow	It was not possible to produce a scientific quantification of the impact of good settlement on the mussel ropes on the circulation pattern and flow rate of water within Uni Firth and the Vadills.

Impacts on free living brown seaweed /algae (*Ascophyllum nodosum* ecad *mackaii*)	This species is known to be present at a site 1.5km from the proposed development site. The development is therefore unlikely to have an impact. However, it is possible that it is also present at other locations in The Vadills, closer to the development, and, as this species is reported to be vulnerable to aquaculture activities, these areas may be at risk.

As the competent authority for Appropriate Assessments covering The Vadills SAC, the Shetland Islands Council concluded that it was not possible to show that the proposed development of a mussel farm in Uni Firth will not have a long-term impact on the site's conservation interests and integrity.

The main impacts were stated to be through accumulation of biodeposits occluding benthic habitats and possible impedance of water flow in the western entrance channel to the SAC affecting the tidal rapids habitats and fauna in these areas. Other impacts would be on the rare species of algae and on the general integrity of the site due to overload of the carrying capacity.

The Council thus refused the development on the grounds that no mitigating measures could remove the potential impacts, the site was not necessary to the management of the SAC and there were no identifiable reasons of overriding public interest.