Scottish Sustainable Marine Environment Initiative

Swarbacks Minn Sub-Area Marine Spatial Plan

A Case Study

Rachel Hope
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Background

Swarbacks Minn is located on the west coast of Shetland in the south east corner of St Magnus Bay. The area incorporates Busta Voe, Aiths Voe, Olnafirth, Gonfirth, Northra Voe and Cole Deep. Some of the deepest inshore coastal waters in Shetland occur in the area – Swarbacks Minn itself is over 100 m deep in places whilst Aith Voe, at 68 m, is the deepest voe in Shetland.

The Swarbacks Minn area was chosen for the development of a sub-area plan due to its extensive aquaculture industry as well as being an important area for recreation and for a number of natural heritage interests.

Due to the number of aquaculture sites consented in the area and the minimum separation distance stipulated under the *Interim Policy for Marine Aquaculture* (2007) no additional planning consents can be granted in this area without the revocation of an existing licence. Although fully developed with no opportunity for new sites this does not mean that this area is optimally utilised. There are many sites unused, not ideally located or in areas of potential conflict.

In the Swarbacks Minn area there are thirty-six licensed shellfish sites and fifteen finfish sites, of these twenty-six shellfish farms appear to be being used (72%) and three finfish sites appear to being used (20%). Of the unused finfish sites eleven are currently registered as inactive with Marine Scotland, and one site is currently fallow but registered active. Of the 17,247 tonnes consented for finfish production less than 4,800 tonnes (27%) is currently being utilised. Figure 1 shows the location of both active and inactive finfish and shellfish sites.

Finfish Production

One reason for the low finfish production in the area is disease events and sealice levels. In recent years a number of finfish businesses have ceased to trade or closed their operations in this area leading to redundancies and loss of finfish production. Subsequently a number of these finfish sites have been converted to shellfish production whilst others have remained unused.

The Swarbacks Minn area is included in the *Final Report of the Joint Government / Industry Working Group on Infectious Salmon Anaemia (ISA) January 2000*, which established finfish management areas. Management areas are based on tidal excursions around active farms, where there is overlap between tidal excursions sites are considered to be within the same management area. In Shetland a tidal excursion distance of 3.506 km is used. Within these areas developers are expected to form management agreements detailing stocking and disease prevention measures.

Until September 2009 the Swarbacks Minn area was part of area '4a' which stretched from Hillswick to Brindister Voe, a distance of 24 km. However as part of industry measures to prevent the potential spread of ISA and control sealice a number of sites have been inactivated and a small 'disease-break' has been created in Roe Sound splitting this area. Swarbacks Minn and Brindister are now one management area '4a' and north of Roe Sound is now another management area '4c'.

As part of the Marine Scotland 'Locational Guidelines for Authorisation of Marine Fish Farms in Scottish Waters' (2009) Swarbacks Minn is divided into Aiths Voe, Busta Voe,

Northra Voe, Olnafirth and the outer Swarbacks Minn/ Coledeep area. Overall the Swarbacks Minn area is classified as Category 2. Olnafirth and Northra Voe are classified as Category 1 and Aiths Voe and Busta Voe are classified as Category 2. Marine Scotland monitoring of the Olnafirth in 2002 indicated that there was no evidence of nutrient enhancement. Further survey work was carried out in 2009, the results of which are pending.

It should be noted that the predicted nutrient enrichment due to aquaculture is unlikely to occur. This is not only due to the high number of finfish sites which are inactive but also because at a number of locations the consented finfish tonnage is being held on developments which have since converted to shellfish production. Currently there is no finfish production in Northra Voe, Roe Sound or Busta Voe and production in Aiths Voe is expected to finish within 2009. Olna Firth is the only voe still used for finfish production but only has a 52% utilisation of tonnage. Using current production tonnages all of these areas would be classified as Category 3.

Shellfish production

Busta Voe, Olna Firth and the waters around the island of Linga are designated shellfish harvesting waters. These areas as well as Gonfirth and Aiths Voe are also classified harvesting waters. These same areas also have an A/B harvesting classification for mussels as does East Burra Firth. Twenty one of the thirty six approved sites are located in these areas.

On behalf of the Shetland Islands Council the Marine Development Department of the NAFC Marine Centre has undertaken carrying capacity modelling for shellfish production in the area. Their analysis indicates that all the voes in the area are at or are exceeding their carrying capacity with the exception of the outer Swarbacks Minn area.

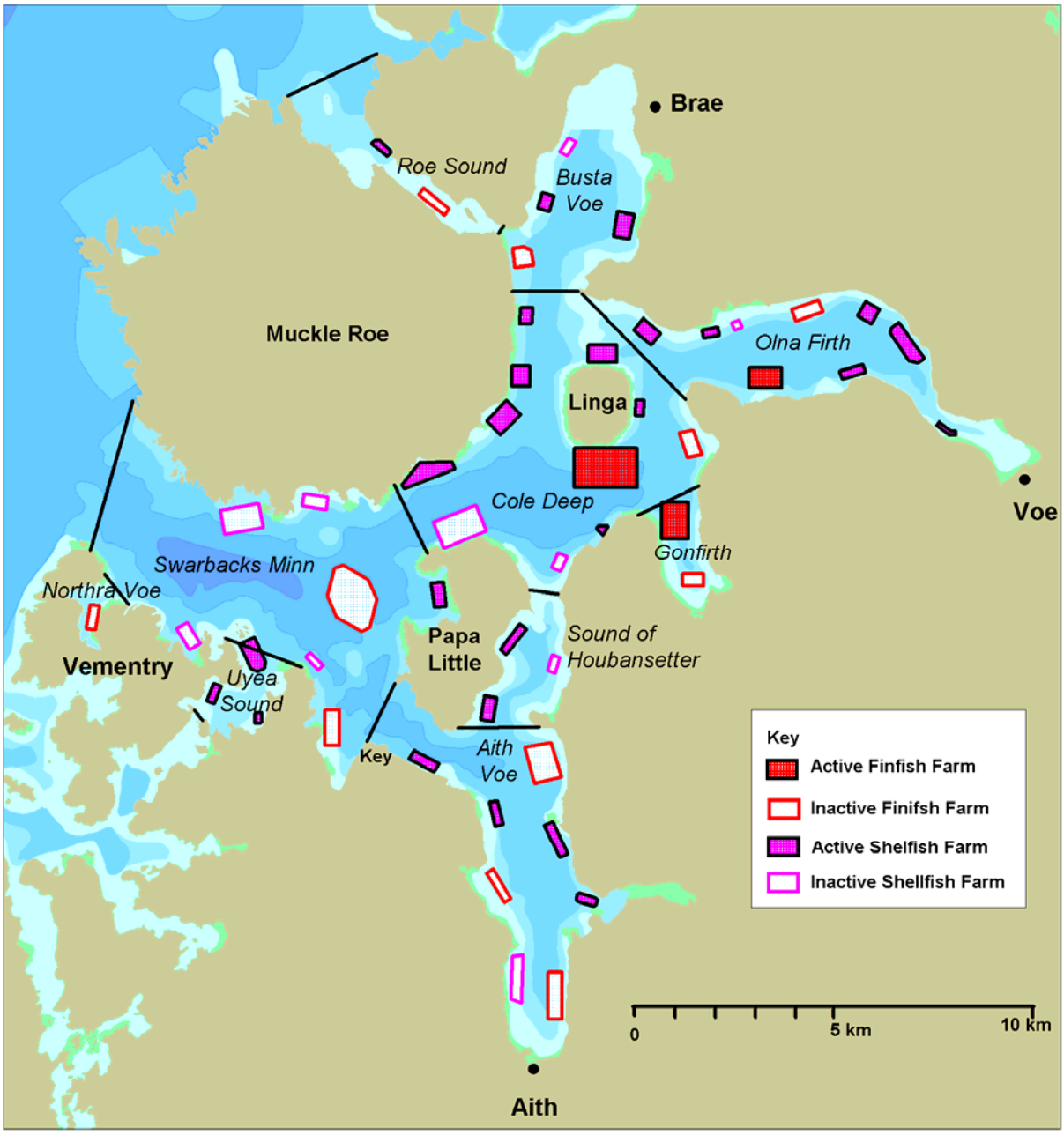

Figure 1- Licensed aquaculture sites in the Swarbacks Minn area.

The Swarbacks Minn Area

Roe Sound

Roe Sound is a narrow, shallow stretch of water separating Muckle Roe from the Shetland mainland. There is a small marina and slip on the mainland side of the sound. There is one licensed finfish farm and one licensed shellfish farm in the sound, the finfish farm is currently inactive and the shellfish farm is currently active.

Due to the shallowness of Roe Sound and the low clearance under the bridge linking Muckle Roe to mainland Shetland Roe Sound can only be navigated by relatively small craft.

Survey work undertaken in Roe Sound describes the biotope as sublittoral stable mud with dense *Arenicola marina*- biotope code AreSyn (Hiscock, 1986).

Busta Voe

Busta Voe is a medium sized shallow voe, reaching only 35 m deep. The village of Brae is situated on the east shore of voe and is the one of the biggest villages in Shetland. The waste outfall from Brae is situated in Busta Voe. There is a large mussel processing plant situated on the east shore of Busta Voe with a private pier for mussel farm boats.

The Busta Voe area is recognised for its importance for recreation. There is a marina and slip at the head of the voe next to the 'Brae Boating Club'. Water sports which take place from Brae include yowl rowing, dingy sailing, yacht racing, windsurfing and a sub-aqua club is based next to the marina.

There are three shellfish farms licensed in the Busta Voe area but only two are active. There is also one licensed finfish farm, which is currently registered as inactive. There is currently 1,050 tonnes of licensed finfish consent. This area is classed as 'Category 2' by the Scottish Government (2009a). Any active finfish farm in this area would break the disease 'firewall' recently created between management areas '4a' and '4c', as defined by Marine Scotland (Scottish Government, 2009).

There are currently policies in place which restrict further development of aquaculture in Busta Voe. The *Interim Policy for Aquaculture* (2007) policy M7 (c) states 'no further new aquaculture developments will be permitted in Busta Voe ….. and any variations to existing sites north of this line should not result in either an increase in site size, a change in site location or an increase in environmental or visual impact.'

The area has been well surveyed with 12 sublittoral surveys. A littoral survey was undertaken at the small lagoon at Saltness. Busta Voe is fringed with subblittoral mixed sediment with *Modiouls* beds (ModHo), (Howson, 1999). The centre of the voe is sublittoral muddy sands with polycheates. There is a small maerl bed at the entrance to Busta Voe.

Olnafirth

Olnafirth is a long, narrow voe which reaches a depth of approximately 40 m. The village of Voe is situated at the head of the voe, where there is a small marina and slip. The marina is home to both recreational boats and a number of smaller fishing vessels. Voe also serves as a base for one of the shellfish companies in the area.

There is a deep water private pier on the north shore of Olnafirth which is used

occasionally by a salmon farming company during harvesting.

There are seven shellfish farms licensed in Olnafirth, six of which are active and two finfish farms, only one of which is active. There is 3,100 tonnes of finfish consent in Olnafirth, only 1,900 tonnes of which is held on finfish farms and only 1,600 is held on an active site. This area is classified as 'Category 1' by the Scottish Government (2009). Modelling work undertaken by the NAFC Marine Centre indicates that Olna Firth is exceeding its carrying capacity for shellfish production.

Olnafirth is fringed with *Modiolus* beds (biotope codes ModHAs and ModHo), to a depth of approximately 30 m. Beyond this sublittoral muddy sand with bivalves (biotope code AbrNucCor) and sublittoral muddy sand with polycheates (biotope code SpiSpi) (Howson, 1999).

Gonfirth

Gonfirth is a small voe, situated in the south-east corner of Swarbacks Minn it is a relatively shallow voe, with a maximum depth of 35m at the entrance. The dominant biotope in Gonfirth is kelp with sparse red algae (biotope codes LSac.Ft; LSac.Pk, EchBriCC) with the mouth of the voe changing to *Modiolus* beds (biotope code ModHAs) (Howson, 1999).

There are two licensed finfish farms in the voe, only one of which is active. In addition there is a finfish farm shore base and pier which is used to serve the three active finfish farms in the area, located in Olnafirth, Gonfirth and Cole Deep.

Aiths Voe

Aiths voe is a long narrow voe and is Shetlands deepest voe at 68 m. The village of Aith is situated at the head of the voe where there is a small pier and slipway. The Aith pier, which is run by the Aith Pier Trust, is currently used by shellfish produces and recreational users in the area and has previously been used by finfish producers. Aith rowing club are based in Aith and practice in Aiths Voe and around the isle of Papa. There is a lifeboat based at Aith and a navigational route in and out of Aith needs to be kept clear of obstructions to ensure safe navigation in the event of the life boat needing to be launched.

Aiths Voe is predominantly sublittoral muddy sand with bivalves (biotope code AbrNucCor) with a shallower fringe of sublittoral muddy sand with polycheates (biotope code SpiSpi) (Howson, 1999).

There are currently three licensed finfish farms in the voe, two of which are registered as inactive with Marine Scotland and one of which is currently fallow. Aiths Voe has suffered from significant sea lice problems and was implicated in the closer of two sites in the voe. There is currently 3,484 tonnes of consented biomass in Aiths Voe and is classed as 'Category 2' by the Scottish Government (2009).

There are also five shellfish farms, four of which appear to currently active. Modelling work undertaken by the NAFC Marine Centre indicates that Aiths Voe is already exceeding its carrying capacity for shellfish production.

Cole deep/ Linga

Cole Deep is the deepest enclosed area in Shetland, reaching a depth of over 100 m. Below the kelp line *Modiolus* beds fringe much of this area including the isle of Linga (Howson, 1999).

In this area there are nine licensed shellfish farms, seven of which are active and two licensed finfish farms, one of which is active. This area is included in the 'Swarbacks Minn area' in the Locational Guidelines by the Scottish Government (2009) and is classified as 'Category 2'.

Papa Little- Sound of Houbansetter

The sound of Houbansetter separates Papa Little from the Cole Ness headland. It is a small sound, with moderate tidal flow. There are three licensed shellfish farms in Houbansetter, two which are currently active.

Mouth of Swarbacks Minn

The mouth of Swarbacks Minn is a deep and exposed sound, reaching over 100 m deep. This area is very exposed in easterly winds. The mouth of Swarbacks Minn is formed between the isles of Muckle Roe and Vementry. Vementry and the west coast of Muckle Roe are uninhabited.

Survey work in the main channel of Swarbacks Minn has not been extensive. The survey which has taken place indicate circalittoral muddy sands (biotope code CMS) (Howson, 1999).

There are five licensed shellfish farms in this area and two licensed finfish farm. Only one of the shellfish farms is currently active and the finfish farms are both inactive. The exposed nature of the mouth of Swarbacks Minn makes utilisation of some of these sites difficult with current technology.

Uyea Sound

Uyea sound is the northern half of a sound which separates the isle of Vementry from mainland Shetland. It exits into Swarbacks Minn to the north-east and joins Cribba Sound to the south-west. The sound is relatively shallow reaching 15 m deep. The entrance to the sound is fringed with *Laminaria hyperborea* (Howson, 1999).

There are three shellfish farms licensed in Uyea sound all of which are currently active. There is no additional space for new developments and modelling work undertaken by the NAFC Marine Centre indicates that this sound is already at its carrying capacity for shellfish production.

Northra Voe

Northra Voe is a small voe on the north-west corner of Vementry, there is one licensed finfish farm in the voe which is currently inactive. This voe is classified as 'Category 1' by the Scottish Government (2009). No survey work is known to have been undertaken in this voe except monitoring work by the finfish farm.

Aquaculture development opportunities and constraints

There are a number of opportunities and constraints in the Swarbacks Minn area when considering how to create the optimal economic, social and environmentally sensitive use of space.

Constraints

Currently there are a number of constraints preventing optimal use of space:

- There are a large number of inactive sites preventing relocation and / or amalgamation of many sites
- Many sites have not been used in excess of five years and some sites are licensed to companies who are no longer actively trading and did not engage in the Swarbacks Minn sub-area plan process.
- Sites are closer together than would be permitted under current policy i.e. mussel farms are within 500 m of adjacent sites and finfish farms within 1000 m of adjacent finfish farms this means that there are more sites consented than current separation distance would allow
- It is not possible to consent any new sites without the revocation of an existing licence
- The size of finfish biomass consent required to be economical to operate has increased. Larger finfish tonnages require deeper and more tidal locations which reduces the number of potential locations suitable for finfish aquaculture
- It is not generally desirable to amalgamate shellfish sites as a number of smaller sites tend to be more productive and therefore more economical than fewer larger sites, this means there will always be a requirement for a large number, albeit potentially small, shellfish sites
- Shellfish carrying capacity modelling undertaken by the SIC indicates that all of the voes, with the exception of Swarbacks Minn, are at, or exceeding their carrying capacity this means that there maybe limited potential for inactive finfish sites to be converted to shellfish production without the transfer of shellfish tonnage from other sites
- Any relocation, amalgamation or increased site utilisation needs to carefully consider disease management and control and the Area Management Agreements which have already been put in place (such as the 'Swarbacks Minn voluntary AMA' between all finfish developers in the area)
- Many locations in Swarbacks Minn (including where a number of sites are consented) are at too exposed locations and / or the route to the sites would be too exposed to be operable with current technology
- The costs associated with moving a site or site amalgamations are very large and may be a disincentive
- Mussel farmers in the area do not currently want to see a significant increase in mussel production due to current market conditions

Opportunities

Currently there are a number of opportunities to create an optimal use of space:

- There is the potential for finfish site amalgamation if new locations became available (i.e. through the removal of unused sites) this could potentially create more economical sites. It would also potentially offer the opportunity for further alterations through the creation of additional space and could offer the opportunity to create community and natural heritage benefits.
- There is the potential for greater consideration to be given to disease and welfare management plans in the planning and licensing system
- There is the potential to create plans which maintain the disease break between north and south Roe Sound
- There is the potential to consider a disease break between Brindister Voe and Swarbacks Minn
- Some shellfish farms may be more economical if it were possible to move them slightly. This would potentially increase separation distance from their nearest neighbour but potentially moving a site closer to other sites.
- There is the potential to consider site location and ensure that sites are located in the most productive locations

Community

The Swarbacks Minn area is covered by two community councils; 'Sandsting and Aithsting Community Council' cover the south-west corner of Swarbacks Minn and 'Delting Community Council' covers the north-east of Swarbacks Minn (see Figure 1). The largest communities are at Brae, Voe, Aith and Muckle Roe, it should be noted that there are a number of other smaller communities including Wethersta, Cole and East Burrafirth.

Marine recreation is an important part of Shetland life with the Brae and Busta Voe area of particular importance for North Shetland. Additionally there are a number of marinas in the Swarbacks Minn area at Roe Sound, Brae, Aith and Olnafirth which are used by recreational and commercial boat users.

Some recreational users in the area expressed the view that some developments have not been positioned with sufficient consideration to the users of slips, piers and marinas and these areas should be kept clear of development. They also expressed the view that greater consideration could be given to the positioning of sites relative to well used channels.

There are a number of potential community benefits that could be achieved in the area:

- Through site amalgamation and relocation there is the potential to fulfil community aims to create view points which are development free, assess visual impact of plans and to minimise landscape effects
- There is the potential to give greater consideration to recreational boat routes and ensure that sites are adequately lit on these routes
- There is the potential to improve access to piers and slips in the area

Natural Heritage

Olnafirth, Cole Deep and Busta Voe have a number of areas which are known to be Biological Action Plan (BAP) habitats such as horse mussels beds (*Modiolus), Ruppia* beds and salt marsh areas. There are also areas where there are indicative species of BAP habitats, such as maerl and horse mussels but there is less certainty as to whether the percentage cover would be considered a true 'bed' (see Marine Atlas Map 16a, 16b, Map 17 and Map 18). These habitats are potentially sensitive to a number of different types of development.

There are a number of potential natural heritage benefits which could be achieved:

- Reduce or not increase potential impacts on horse mussels in Olnafirth, Cole Deep and Busta Voe
- Ensure future developments consider potential impacts on *Ruppia* beds in Busta Voe and salt marsh areas

Promotion of Area Management Plans

Area Management Plans can take several forms; they could be focused on improving community, natural heritage or industry benefit. Measures to increase economic viability, reduce environmental impact and decrease impact on the community should generally be encouraged.

Marine Scotland promotes the formation of finfish area management agreements. The creation and preservation of management plans is of significant economic importance to the finfish industry. Some of the now unused sites in the area have reported that the sites were uneconomical to operate due to sea lice levels. These inactivated sites could

potentially be relocated or converted to shellfish production.

If site relocation and amalgamation is to occur there is the potential to form plans and agreements that not only benefit industry but give greater consideration to community and natural heritage issues.

Costs

Site relocation would incur several costs in gaining planning consents and CAR Licences. New equipment may need to be purchased if sites are to be amalgamated. It is estimated to relocate a finfish farm would cost between £34,164 and £92,864. It is estimated the creation of a new site with new equipment would cost between £324,164 and £542,864. It is estimated the cost of relocating a shellfish site would be between £3,000 and £7,000. Details of costs are shown in Table 1.

Table 1: The costs associated with relocating an aquaculture development

	Finfish	**Finfish**	**Shellfish**	**Shellfish**
	Min	**Max**	**Min**	**Max**
Licensing Costs				
Hydrographic survey	£2,300	£3,500	N/A	N/A
Benthic Survey	£3,750	£4,500	N/A	N/A
Photographic Seabed Survey	£1,500	£2,500	N/A	N/A
AutoDepomod Modelling	£2,000	£3,500	N/A	N/A
Wave Climate Analysis	nil	£3,500	N/A	N/A
Marine mammal survey	nil	£750	N/A	N/A
Environmental Statement	£7,000	£20,000	N/A	N/A
Planning Application	£3,000	£12,000	£500	£1,500
CAR Licence	£2,614	£2,614	N/A	N/A
Sub-total	**£22,164**	**£52,864**	**£500**	**£1,500**
Move Equipment				
Vessel costs (e.g. boat costs/ tug hire)	£10,000	£40,000	£500	£1,500
Total	**£32,164**	**£92,864**	**£1,000**	**£3,000**
New Site				
New equipment	£300,000	£490,000		
Total	**£322,164**	**£542,864**		

Survey Work

The Swarbacks Minn area has been comparatively well surveyed, with over 40 littoral and sublittoral Phase I mapping / recording surveys undertaken in the area. RoxAnn survey work has also been undertaken in Olna Firth and Busta Voe. The aquaculture industry has undertaken sublittoral benthic survey work as part of their planning and monitoring requirements. It was felt that at this time no additional survey work was required to guide the marine spatial planning process.

Is a sub-area plan required?

Potential sub-area plans need to ensure that they are not duplications of other plans and policies and that they are necessary and distinct. It is also important that a sub-area plan would not include unnecessary duplication of the overarching Shetland Marine Spatial Plan. As the focus of this study was primarily on the extensive aquaculture industry in the area there is the risk a sub area plan for Swarbacks Minn could also represent a duplication of the future Shetland Island Council Aquaculture Framework plans. For all interests other than aquaculture it was considered that no further area specific polices were required.

The planning issues highlighted in the Swarbacks Minn area relating to aquaculture are not unique to this area and are duplicated across many parts of Shetland. Additional aquaculture polices that apply to all of Shetland as well as some which specifically relate to Swarbacks Minn could be included in the main MSP rather than create a sub-area plan. The Marine Atlas could be updated to include more area specific details such as maps to include the Aith Life Boat route and the areas used by recreational routes such as sailing courses and yowl practice routes.

The Swarbacks Minn area could be used as a case study on marine spatial planning and how the Shetland Marine Spatial Plan can be used to the benefit of areas that are already extensively developed.

It is likely that changes made it in this area will take place over a number of years. Currently developers who are willing or keen to make changes in the area are restricted by their proximity to other developments or the absence of free space to relocate to. Little change can be made until more space becomes available, either through site amalgamations or by a reduction in the number of sites in the area.

Many developers are unlikely to want to place potential future plans in a public document, particularly stock listed companies, which prevents the formation of a plan detailing a perceived ‘ideal’ future use of space.

Many developers are concerned that if licences / consents were surrendered for environmental, community or disease control benefits that until the MSP policies are enforceable then new developments could be proposed in their place. Given the high costs of relocating or setting up a new site developers will be cautious before engaging in any proposed changes.

By providing a polices framework which support and encourage the formation of area wide management plans which consider other users and interests developers may feel more secure in making changes to sites both within the Swarbacks Minn area and elsewhere.

Recommended Additional Polices

Aquaculture Development Management Plans

Background

Development management plans are plans which adopt a holistic, multiple site approach to management which aim to bring benefits to industry and/ or other users and interests. This may be through the development of disease control and prevention measures, optimising production or to benefit the fishing industry, recreational users, the community or natural heritage.

Policy

Area wide aquaculture development management plans proposals will be supported and encouraged where:

a) It can be shown that the plan will lead to one or more of the following:
   - Reduced overall environmental impacts
   - Reduced potential impact on protected species or habitats
   - Safeguard or improve fishing opportunity
   - Aim to produce community benefits i.e. reduced visual impact, noise or impact on recreation / access
   - Reduced potential for disease transmission, sea lice numbers or increase fish welfare
   - Increased socio-economic benefit i.e. from job creation or increased economic viability

b) The plan considers the potential impacts (both positive and negative) on local communities, natural heritage, socio-economic viability, disease prevention and control and other industries in the area

Development applications will not normally be considered which undermine the aims of current, active and relevant development management plans

Justification

Development management plans have the potential to bring about significant benefits by considering impacts and interactions from and between multiple developments. It is important that where these plans are entered into the potential impacts, both positive and negative are fully considered. It is also important that the aims of the plans are not undermined by subsequent applications. This may be of particular relevance where space for new developments has only been made available by the actions of a development management plan.

The Swarbacks Minn Area

Background

Due to the high numbers of consented sites within the Swarbacks Minn area and the required minimum separation distance stipulated in the *Interim Policy for Aquaculture* (SIC, 2007) there is currently no potential for the development of new finfish or shellfish developments without the revocation of existing licences.

The Swarbacks Minn area is defined as the north-west mouth of Roe Sound to the mouth of Swarbacks Minn, located between Muckle Roe and Vementry. This area includes Busta Voe, Olnafirth, Gonfirth, Aiths Voe, Uyea Sound, Sound of Houbansetter, Roe Sound, Cole Deep, Swarbacks Minn and Northra Voe. It excludes the Brindister Voe area, Vementry Sound and Cribba Sound.

Policy

In Swarbacks Minn applications for new sites will only be considered where:

1) The developer intends the application to be in place of an existing licence / permission at another or the same location
2) Is part of a site exchange to improve economic, biosecurity, navigation, natural heritage or community benefit i.e. an exchange between a shellfish and finfish farm

This policy will be reviewed at least every 3 years.

Renewal of site planning permissions which have never been active will only be considered where a plan of proposed use detailing why the site has not already been developed and how it will be used in the future and details are given, where relevant, of how the development will fit in with any aquaculture development management plans in the area.

Justification

Due to the high number of sites in the area there is little room for site alterations to be made. Additionally some unused sites may be preventing a more effective use of space and although some may form part of a long term plan for a developer this is perhaps not the case for all undeveloped, unused sites. The continued renewal of these development consents is potentially preventing the relocation and amalgamation of other developments which may bring benefits to industry, natural heritage and the community.

Separation distances

Policy

There will be a presumption in favour of maintaining the minimum separation distance between developments as detailed in the *Interim Policy for Aquaculture* (SIC, 2007). Consideration may be given to reducing these minimum distances provided:

1) It can be shown to bring either an economic, natural heritage or community benefit
2) It does not impact on the operations or economic viability of neighbouring sites or other users
3) It will not cause a significant increase in the risk of disease transmission

Justification

Small movements in development positioning may help to increase economic viability by creating disease breaks, increasing growth and reducing impacts on natural heritage, navigation and fisheries. It should be noted that any planning application that does not meet the *Interim Policy for Aquaculture* will be determined by the council planning board.

References

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