



Marine Ecosystems Project

Exploring co-management and an ecosystem based
approach in the Llŷn marine area

February 2016

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1. Introduction

The Marine Ecosystems Project is a pilot project located in Pen Llŷn and is an evolution of the work of the Pen Llŷn a'r Sarnau Special Area of Conservation (PLAS SAC). The project developed from recommendations in a document formulated by the Welsh Fishermen's Association (WFA) called '*Striking the Balance*' which proposed a method of managing the sea to improve our understanding of the marine environment and promote the recovery and resilience of ecosystems without having a detrimental impact on local fishermen and communities; an approach that would also safeguard cultural and economic life and protect traditional fisheries and recreational activities. The PLAS SAC and the WFA jointly lead the project, reflecting the fact that conservation and the fishing industry identify a need to work collaboratively and cooperatively to achieve effective conservation and management of the marine environment, and emphasising the need for joint management and consultation as part of a joined up approach.

The approach taken by the project and aspirations for the project are supported in principle by recent legislative developments in Wales: The Well-being of Future Generations Act 2015, and the Environment Bill 2016.

This report describes the work undertaken by the Marine Ecosystems Project in its first year 2015-16 and the outcomes from that work. This report has been prepared by the Project Officer working with the Pen Llŷn a'r Sarnau SAC Officer and the project steering group.

2. Background

2.a **Striking the Balance** - Prepared by Dr Andy Woolmer for Welsh Fishermen's Association (WFA)

The *Striking the Balance* report was produced by the WFA in response to proposals for Highly Protected Marine Conservation Zones (MCZs) in Wales. *Striking the Balance* proposed an alternative approach for managing Welsh seas that would contribute to our understanding of the marine environment together with promoting ecosystems recovery and resilience. Although the proposed MCZ designations have subsequently been retracted, the adaptive co-management ecosystem-based approach put forward in *Striking the Balance* has been considered further and led to the setting up of the Marine Ecosystems Project. The approach proposes a set of principles that can easily be transferred and adapted and implemented in any protected area such as an SAC or wider sea area.

“The WFA believe that the adaptive co-management ecosystem-based model, once demonstrated successfully within the MCZs, could be applied more widely to other MPAs and wider Welsh seas where very real gains in terms of ecosystem recovery and resilience could be made.”

Excerpt from *Striking the Balance*

2.b Key principles of the Welsh Fishermen’s Association Adaptive Co-Management Ecosystem Based MCZ approach:

The principles below refer to Marine Conservation Zones (MCZs) but can equally be applied to any marine area.

1. Welsh MCZs should be managed as multiple-use sites: Multiple-use MCZs managed on ecosystem-based principles can deliver the win-win-win of environmental, fisheries and socio-economic gains for the sites and local communities.

2. Strong environmental protection but proportionate to risk: WFA believes that sensitive habitats should be protected from damage and disturbance; it believes that the nature of this protection should be precautionary but proportionate to the risk.

3. Local solutions to local issues: WFA proposes the establishment of MCZ adaptive co-management groups made up of relevant local sea users including fishermen, recreational anglers and conservation groups. The aim of these groups should be to develop locally applicable management in a bottom-up partnership process rather than a top-down impositional dictat.

4. Management should be flexible and adaptive: The natural world is highly variable and our understanding of it requires constant updating; MCZ management therefore needs to be adaptive and flexible to reflect this continuous change.

5. Evidence and knowledge-based management: Fisheries and conservation management should be evidence-based rather than advocacy-led. Flexible and adaptive management will only be possible with a well-informed understanding of the marine environment and the ways in which we interact with it. The WFA stands ready to play a central role and accept its responsibilities in research and monitoring to provide the necessary data to management.

6. Compliance and enforcement: WFA recognise that without widespread compliance with MCZ management measures, the protection of the marine environment would be jeopardised. Welsh fishermen are keen to embrace a new role as environmental stewards to ensure compliance within MCZs.

2.c The Project Area

The Marine Ecosystems Project area includes inshore waters around the Llŷn peninsula. It overlaps with the Pen Llŷn a'r Sarnau Special Area of Conservation (PLAS SAC), see Figure 1 below. In practice the seaward boundary of the project area is not rigidly fixed allowing scope to consider matters of relevance to the commercial inshore fishermen and the PLAS SAC.



Figure 1. Map of the Pen Llŷn a'r Sarnau Special Area of Conservation (PLAS SAC – dark shaded area) with the Marine Ecosystems Project area highlighted in red

2.d Commercial Fishing in Llŷn

Commercial fishing activity around Llŷn generally reflects the typical fishing activity around the whole of Wales, by under 10m vessels (with a few exceptions) employing mainly static gears; either pots, nets or hook and line. Scallop dredging also takes place within the scalloping season, in areas to the north of Llŷn, just outside the PLAS SAC boundary. There is a variety of fishermen in Llŷn, with some part-time, some semi-retired and others fishing full time on a larger scale. The requirements and expectations of each of these groups are different and to some extent their requirements and their dependence on the fishery is very different.

According to a recent survey by the Llŷn Ecomuseum, the busiest port seems to be Porthdinllaen which is a small fishing village located on the north coast of the Llŷn peninsula, with 8 fishing vessels moored in the bay. The prolific shipbuilding and

fishing industries which flourished during the 19th century has helped shape this beautiful bay and the fishing activity that takes place here today.

There is also plenty of fishing activity around the tip of the peninsula and the south coast of Llŷn with mostly static gear fishing methods such as potting and some netting taking place. The catch is mostly lobsters, crabs, whelks, scallops, brill and turbot, with most of the catch exported to UK and Asian markets. However a few fishers supply to local restaurants such as Dylan's Restaurant in Cricieth and Gwesty'r Tŷ Newydd in Aberdaron. Other fishers have expressed an interest in selling their catch directly as it lands or in some form of an active auction.

2.e Pen Llŷn a'r Sarnau Special Area of Conservation (PLAS SAC)

Because of the varied and unusual underwater landscapes, type of habitat, and the amazing animals and plants that live in the area, the coast and sea area around the Llŷn peninsula and north Cardigan Bay is protected as the Pen Llŷn a'r Sarnau Special Area of Conservation (PLAS SAC) – a wildlife conservation site that has earned its designation as one of the best wildlife areas in Europe (the SAC designation is made under the EC Habitats Directive which is helping implement globally agreed targets to help prevent loss of biodiversity). This large SAC encompasses the Llŷn peninsula to the north, Tremadog Bay, and the Sarnau reefs in its southern half, as well as the large estuaries along the coast of Meirionnydd and north Ceredigion.

The SAC has a Relevant Authorities Group (RAG), which consists of Natural Resources Wales, Gwynedd Council, Powys Council, Ceredigion Council, Welsh Water, Severn Trent, Snowdonia National Park Authority and Trinity House; these are organisations with a particular remit in the marine environment. Being part of the RAG supports delivery of their responsibilities to the SAC and helps promote collaborative working to meet these authorities' commitments to achieve favourable management of the SAC.

The role of the RAG is to oversee the management of the SAC and, through working as a group, identify actions and share learning and resources to manage the site and integrate this with other work/initiatives. There is a SAC Officer for the site who facilitates the RAG, working with them to deliver aspects of SAC project work, helping ensure commitment from their authority to fulfil their duties towards the SAC, and by leading the implementation of specific management projects. The SAC also has a Liaison Group consisting of a large number of representatives from different industries and interest groups around the site. The Liaison Group acts as a forum for a wider group of interests to be involved in developing and implementing the management of the site. The RAG and the Liaison Group together provide the existing PLAS SAC management structure.

Some of the projects identified by the RAG and Liaison Group and co-ordinated by SAC Officer include:

- Porthdinllaen Seagrass Project – addressing impacts on seagrass.
- Turning Tide Project – addressing marine litter.
- Marine Ecosystems Project – working with the fishing industry on various projects.
- Morfa Gwyllt Project – addressing issues on the Morfa Gwyllt lagoon.
- Dolphin Watch – monitoring the effectiveness of the recreational code of conduct.
- Numerous raising awareness projects such as school visits, website, social media, events etc.
- Living Coasts Living Seas Project – investigating a number of interpretation techniques that provide information and celebrate our local marine environment.

The existing PLAS SAC management structure is currently under revision by the Wales Marine Protected Areas Management Steering Group as part of a review into management area options at an all-Wales level. One of the recommendations is to manage the marine environment as geographic spatial units rather than around individual conservation designations. This is part of discussions around the need for a step change in the approach to marine management in Wales to halt the loss of biodiversity and ensure the long term viability of sustainable marine industries. This partnership approach, within an area larger than a site boundary, supports this ecosystem approach to area based management.

2.f Llŷn Landscape Partnership

Over the last 5 years the Llŷn Landscape Partnership has been delivering numerous environmental, community and economic projects on the Llŷn Peninsula. Following a wide ranging consultation process a portfolio of projects were developed in 4 main work streams:

1. The built and natural environment
2. Community involvement, developing a sense of pride in local heritage
3. Access and visitor experience
4. Improving skills to maintain and improve the heritage landscape

All the projects selected in the work programme had a clear exit strategy, with an emphasis on celebrating Llŷn's rich culture and heritage on land and sea. Some of the projects selected included:

- Numerous interpretation projects celebrating Llŷn's Maritime heritage.
- Maintaining and improving Llŷn's important coastal heathlands.

- Developing digital circular walks that linked the Llŷn Ecomuseum sites to the Wales Coast Path.
- A new car park, amphitheatre and woodland paths in Plas Glyn y Weddw, Llanbedrog.
- Primary school visits to Ynys Enlli.
- Archaeological dig on Mynydd Rhiw.
- Working with Keep Wales Tidy to educate local children about the negative impact of litter on wildlife and ecosystems.
- The renovation work on GWYLAN, a traditional Llŷn clinker fishing boat.

All the projects that have been delivered celebrate the vibrant heritage and culture of the area, with an emphasis on celebrating and sharing this information with local people and visitors.

2.g The Well-being of Future Generations Act 2015 and Wales Environment Bill 2016

The Well-being of Future Generations Act came into force in 2015. This future-looking Wales-only legislation is about improving the social, economic, environmental and cultural well-being of Wales. It makes the public bodies listed in the Act think more about the long-term, work better with people and communities and each other, look to prevent problems and take a more joined-up approach.

Consequently Gwynedd Council and other public bodies will be required to set and publish well-being objectives against seven well-being goals set out in the Act, and work to achieve these goals. These objectives will demonstrate how Gwynedd Council and other public bodies will actively contribute towards improving the economic, social, environmental and cultural well-being of Wales. The seven goals of well-being in the act are:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A Wales of Vibrant culture and thriving Welsh language
- A globally responsible Wales

The Act puts in place a ‘sustainable development principle’; to act in accordance with this principle public bodies must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.

The Environment (Wales) Act 2016 was agreed by the National Assembly for Wales in February 2016. This will put in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined-up way. The Bill introduces an iterative and interconnected framework for management of Wales' natural resources through the publication and review of the following documents:

- State of Natural Resources Report (SoNaRR) produced by Natural Resources Wales, to be published September 2016.
- National Natural Resources Policy (NNRP) produced by the Welsh Ministers to be published spring 2017.
- Area statements produced by Natural Resources Wales. Area statements will further the implementation of the national policy at the local level .

3. Project Scope and Structure

The project brings together a range of stakeholders from the fishing industry and marine and terrestrial management on Llŷn, bridging the gap between land and sea environments to work together to deliver an agreed set of outcomes, delivering best practice, and evidence based advice. Projects that embrace the connections between sea and land are not common, but are essential if looking to take forward and integrated, approach to managing natural resources.

3.a Project Scope

Key issues arising out of the *Striking the Balance report* were around implementing the principles of an ecosystem-based approach to management of marine fisheries in Wales through a co-management approach to management of the Welsh marine environment.

The Marine Ecosystem Project was set up as a pilot to investigate how an ecosystem-based approach and co-management might be taken forward in the context of a more defined geographical area. The Llŷn area was selected on the basis of existing collaborative working arrangements through the PLAS SAC and to build on previous initiatives relating to fisheries and marine management in this area.

In addition to investigating the application of an ecosystem-based approach and co-management in principle, the project also explored some specific issues that had been identified as of concern by the Welsh Fishermen's Association and which had also been identified as issues for the SAC, and which could be considered within the context of a co-management approach.

Therefore, overall the project investigated the following:

- Ecosystem based approach } in relation to management of commercial
- Co-management } fisheries within the project area
 - Liaison, Engagement and Awareness Raising } Specific issues
 - Fishing for Litter } explored through
 - Cetacean Entanglement and Mitigation } the context of co-
 - Code of conduct for recreational sea users } management

Information about each of these areas of the project and the findings from each of these are provided in subsequent sections of the report:

- **Section 4** describes what was achieved and the findings from each of the work areas above.
- **Section 5** presents the recommendations from the project and outlines the next steps in relation to the future funding and consolidating the work undertaken so far.

3.b Funding

In 2015 the Marine Ecosystems Project secured funding through the Welsh Government’s Nature Fund. To make the best use of the fund the Marine Ecosystems Project and the Llŷn Landscape Project (a terrestrial project on Llŷn) worked together in order to encompass all elements of the local environment around Llŷn. This provided a great opportunity to make connections between terrestrial and marine environments in Llŷn, enabling the PLAS SAC and the Llŷn Landscape Partnership to work alongside each other on the Nature Fund bid. The Nature Fund money, together with funding from SeaFish, made it possible to recruit a Project Officer to lead the Marine Ecosystems Project.

As a result of a successful bid by Gwynedd Council to the NRW Competitive Fund, the Marine Ecosystems Project has recently secured funding for a further two years supported by additional funding from SeaFish. This provides an exciting opportunity to consolidate and build on the initial work undertaken through the first year of the Marine Ecosystems pilot project.

3.c Project Structure

A Steering Group was set up to oversee the running of the project; this consisted of representatives from the PLAS SAC, WFA, NRW, Llŷn Landscape Partnership, Llŷn Fishermen and Wales Environment Link (WEL).

The Project Officer, Catrin Glyn, was appointed in 2015 to facilitate the project. Catrin is based within Gwynedd Council and is line managed by Alison Hargrave, the PLAS SAC Officer.

Catrin worked with the steering group to agree the approach and timetable for the different work areas under the project. A variety of approaches were taken including fact-to-face discussions with fishermen and other stakeholders (such as drop-in days, focus group, one-to-one interviews), questionnaires and contract reports. Wide use was made of social media to help publicise the project and encourage involvement in the different aspects of the work.

4. Project Outputs and Findings

4.a Liaison, Engagement and Awareness Raising

The project has undertaken an active approach to engaging with partners and the general public. Numerous techniques have been used to raise awareness and to establish the project in the area. This section will explain how the project has, successfully managed to engage with the relevant stakeholders.

i. Liaison with Relevant Partners

In addition to meetings with the project's partners, the Project Officer has attended numerous meetings in order to inform stakeholders of the work being undertaken and the aims and objectives of the project. These meetings included liaising with:

- The Llŷn AONB
- Llŷn Ecomuseum
- The Maritime and Country Parks Officer of Gwynedd Council
- The Anglesey and Gwynedd FLAG
- Marine School of Ocean Science
- Ceredigion SAC Officer
- Whale and Dolphin Conservation
- World Animal Protection
- North Wales Wildlife Trust
- Llŷn Coastal Festival
- Plas Heli Sailing Academy

ii. Raising Awareness Days

The Project Officer has also attended public events in order to network with stakeholders and to raise awareness and profile of the project with the public. These

events range from networking and sharing good practice with other environmental Project Officers, to organising activities educating children on the negative impact of marine litter. Such events include:

- Taste of the Sea Porthdinllaen (27/6/2015)
- Tudweiliog Agricultural Show (8/8/2015)
- Shared Learning from the Nature Fund - Integrated Natural Resource Management in practice (23/9/2015)

iii. Presenting Information

Project presentations include:

- Wales Biodiversity Partnership Conference (10/9/2015)
- Key Stage 2 pupils at Ysgol Pentreuchaf (21/9/2015)

iv. Media

The Project Officer has been interviewed on the nature programme – Galwad Cynnar on BBC Radio Cymru discussing the bottom up approach to the project and the importance of on the ground implementation and collaborative work, on a local level. The Officer has also been interviewed on the station to promote the consultation and drop in session at Plas Heli Sailing Academy (see appendix 6.d(iii) for more information on the Code of Conduct consultation).

The project has also released information regarding numerous aspects of the project to the press and articles have appeared in the local newspaper, Llanw Llŷn and in the Caernarfon and Denbigh Herald.

The project has taken a very active approach and is demonstrating a strong presence on social media sites. Information is posted regularly about the developments of the project and other relevant information, of interest to our followers, is posted and shared. The social media sites have substantially gained followers and the project is interacting on a regular basis with the public. This quick and dynamic technique has proven to be incredibly effective and the public are positively engaging. The project is digitally collaborating with partners in order to share information to a wider audience and this has proven to be extremely effective with more and more people engaging and visiting our sites. Digital partners include:

- Llŷn Ecomuseum
- The National Trust
- Wales Coast Path
- NRW

- Project Seagrass
- MCS
- Llŷn Coastal Bus

The project has produced 3 films explaining the aims and objectives of the project and these films have been largely shared on social media and viewed by a substantial audience (see links to films and other material publicity and awareness raising material in appendix 6.e).

4.b The Ecosystem Based Approach (EBA) and Co-management

These two aspects of the project are presented together as the approach taken considered these two elements simultaneously with co-management being seen as an approach that could help to deliver an ecosystem based approach.

i. Introduction to the Ecosystem Based Approach

This is a complex topic which can be difficult to realise in terms of practical delivery of natural resource management. The ecosystem based approach is recognised by the Convention on Biological Diversity as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use of the world's natural resources in an equitable way. It is based on the application of appropriate scientific methodologies that support decision making that considers the whole ecosystem (essential processes, functions and interactions amongst organisms and their environment, recognising humans, with their cultural diversity, as an integral component of ecosystems). The ecosystem based approach is recognised as providing an important contribution to planning and implementing adaptations to climate change and to disaster risk reduction strategies.

The project considered the ecosystem based approach (EBA) in the context of Llŷn commercial fisheries. One key and essential element of implementing an EBA is to consider all aspects of the wider marine environment when making decisions about particular activities. For example, how an issue that occurs in an area and is focussed on just one feature or problem, can actually have an effect on a number of different things over a wider area.

“The ecosystem approach to fisheries is a general approach to fisheries management that essentially balances the aims for human and ecological well-being under the broad concept of sustainable development in a fisheries context. The broad data and information base required for implementing the ecosystem approach to fisheries incorporates scientific, traditional and local knowledge of fisheries resources, the ecosystem, and the socio-economic context. Fishers have a wealth of knowledge and experience that is extremely valuable for research and management of fisheries,

particularly in the case of small-scale fisheries, where scientific data are often scarce.”

Excerpt from *Fishers Knowledge and the ecosystem approach to fisheries*

The Convention on Biological Diversity has defined 12 principles for the Ecosystem Approach. In order to implement the EBA all principles should be considered and interlinked:

Principle 1: The objectives of management of land, water and living resources are a matter of societal choices.

Principle 2: Management should be decentralized to the lowest appropriate level.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should:

- Reduce those market distortions that adversely affect biological diversity;
- Align incentives to promote biodiversity conservation and sustainable use;
- Internalize costs and benefits in the given ecosystem to the extent feasible.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principle 6: Ecosystems must be managed within the limits of their functioning.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9: Management must recognize that change is inevitable.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

A report on case studies where the ecosystem approach has been applied to management of marine natural resources (Woo & Woolmer 2014) identifies a number of findings in terms of best practice to support sustainable management of natural resources using an ecosystem based approach. The report conclusions identify the following as important considerations that strongly influence the success of implementing sustainable marine natural resource management projects:

- Building and maintaining relationships and networks
- Active involvement of stakeholders at different levels
- Spatial management implemented at appropriate spatial scale
- Support (at all levels) for co-management structures and their implementation
- Investment to the process over time – less effective / ineffective if start and stop approach

ii. Introduction to co-management of fisheries

Co-management is often defined as a relationship between an organisation (usually a government agency) and other resource-users and stakeholders in order to manage fisheries. The distribution ratio of the responsibility, or authority, or both, to both parties can vary. In terms of fisheries, co-management is a structure of management where local fishers and users of the sea are working with central agencies to manage their fishery.

Striking the Balance identified 5 co-management structures reflecting different levels and authority and responsibility:

Instructive – This involves minimal exchange of information between government and stakeholders. In this type of structure, government informs stakeholders of the plans they wish to implement.

Consultative – Consultation is undertaken with stakeholders, but ultimately decisions are taken by Government.

Co-operative – True co-management. Stakeholders and government work together as complete equal partners.

Advisory – Stakeholders tend to hold the power and authority and advise government on decisions so that government can enforce them.

Informative – A full self-governance. The power and responsibility has been completely delegated to user groups, they have the responsibility to inform government of these decisions.

Co-management therefore means that both ends of the spectrum have experience and knowledge which is relevant for good fisheries management. Co-management provides the diversity of perspectives and more affective and legitimate management.

The concept is becoming more popular over the last few decades and international agencies have been encouraging and supporting the development of co-managing institutions. There is also evidence that co-management areas had more fish left in the sea than non-co-management areas, suggesting that co-management had been successful in helping to conserve the resources.

iii. Existing Co-management and Ecosystem Based approaches in Llŷn

Some local examples relevant to the Marine Ecosystems Project are described in (a)-(c) below:

(a) Current Fisheries Management Structures

Commercial fishing activity around Llŷn, like the whole of Wales is regulated under EU and UK legislation. In Wales, this is delivered through Common Fisheries Policy Regulations and UK/Welsh Statutory Instruments administered by the Welsh Government. WG is also responsible for delivering the EU Marine Strategy Framework Directive 2010 in achieving Good Environmental Status with respect to fishing activities and their impacts on the marine environment.

A national Wales Marine Fisheries Advisory Group and three regional Inshore Fishery Groups (IFGs) were created by Welsh Government in 2010 as a bottom up and stakeholder engagement approach to managing inshore fisheries in Wales.

The IFGs have been established in the north, mid and south of Wales to develop a partnership between WG, NGOs and fishermen. The aim is to improve how fisheries are managed and they consist of a representation of fishers together with scientists and environmental bodies such as NRW.

Four Fisheries Local Action Groups (FLAGS) have been set up in Wales. The FLAGS have been set up to provide support for the sustainable development of fisheries areas. The FLAGS support measures to promote economic diversification and an improved quality of life in areas affected by a decline in fishing activities. These groups were created to explore the emphasis on the territorial approach, which encourages a focus on specific areas and seeks to mobilise local actors from all sectors: public, private and civil society, to work together as FLAGS to design and implement integrated local development strategies. The lead body responsible for delivery in Gwynedd and Môn (Marine Ecosystems Project area) is Menter Môn, the Local Action Group for Anglesey.

Other groups provide input to WG on managing fisheries also such as the WFA and SAC partnerships such as PLAS SAC which has commercial fishermen on the liaison group and is working closely with the Marine Ecosystems Project.

(b) Pen Llŷn a'r Sarnau SAC – the Porthdinllaen Seagrass Project

The PLAS SAC has a work programme that includes a number of elements including:

- Raising Awareness
- Stakeholder engagement
- Project development and implementation
- Revising and updating the PLAS SAC management scheme
- Additional monitoring

This section demonstrates how the PLAS SAC develops and implements a specific project using co management and an EBA. The specific project in question is the Porthdinllaen Seagrass Project. This is an example of the work that is undertaken by the PLAS SAC.

Seagrass is an important component of the PLAS SAC and is one of the reasons this area is so special. The seagrass bed in Porthdinllaen is one of the largest and the densest in North Wales with recent surveys estimating it to cover an area the size of 46 football pitches. The seagrass in Porthdinllaen is part of the intertidal mudflats and sandflats feature of the PLAS SAC. This feature is in unfavourable condition. One reason is the effect of anchoring and mooring on the seagrass in Porthdinllaen. The aim of this project is to develop and implement management options that will improve the condition of the seagrass whilst allowing the existing use of the bay to continue. The aim is to develop and implement these management options in full partnership with stakeholders. This project is an example of implementation through a co-management structure in the area. To demonstrate this, this section will explain how the seagrass project has implemented work through an EBA.

The Seagrass project has followed the same structure as other projects undertaken by PLAS SAC.

The project was initiated to address the issues with the seagrass identified in the PLAS SAC management scheme. . However, in line with an EBA, the project has been looking at the bay from a wider perspective and taking all designations into consideration such as the Area of Outstanding Natural Beauty (AONB), Site of Special Scientific Interest (SSSI) and the Heritage Coast. The project has also been taking all species and habitats in the surrounding area into consideration. It does not limit its approach to only the species dependant on the seagrass habitat.

Not only has the project been looking at possible management measures to improve the condition of the seagrass, but it has also been looking at socioeconomic aspects . The project has liaised with two local recreational/adventure businesses to examine the scope and possibilities regarding a possible snorkel trail. The aim is to make the most of the seagrass and to take advantage of the economic benefits of the seagrass to the local economy. Beer Mats with information about the importance of the seagrass

have also been produced and are used in the Tŷ Coch Pub which is located on the beach in Porthdinllaen. The pub has been recently nominated as the third best pub in the world and attracts thousands of visitors and locals alike each year.

Stakeholder engagement has been done to the highest level. The project has a steering group consisting representation from a variation of interest groups, such as the Royal Yachting Association, National Trust, local fishermen, NRW and recreational users of the bay. The project has integrated fully with the community through sources such as Nefyn town council, community council and local schools. The project has also run focus groups and drop in sessions and held open days, fully engaging with the public at every opportunity. This has enabled the project to gain interest from different project groups. This allows the public to interact with management, feed into the project and to access information.

The project has also undertaken an adaptive management strategy by learning from experiences and adapting the way in which it works. The local residents and users required more local evidence as to the effects and benefits of the seagrass to the area. This request was taken on board by the project and was integrated into the work programme.

Constant reporting and evaluating has taken place to regularly inform stakeholders and the project's database on updates and progress. A key element of co-management is being open and adaptive, and the seagrass project has proven to be both.

This framework and working method is adaptive and flexible and can be transferred easily.

(c) The Llŷn Landscape Project

The Llŷn Landscape Partnership works at the landscape-scale in Llŷn bringing together a number of environmental, statutory, educational and community agencies to collaborate for the benefit of the Peninsula. The partnership focuses on a wide spectrum of issues that include fishing, nature conservation, heritage and tourism. This wide array of dimensions fits well with the ecosystem approach and enables the project to have a broad reach and to draw in a range of stakeholders. The Llŷn Landscape Character Assessment (Borum, 2010) undertaken for the partnership identified projects that could be delivered through the Heritage Lottery Fund. These included the protection of coastal habitats, particularly the heath, coastal grassland and sea cliffs, which are under threat from intensive agriculture, visitor pressure and climate change. A Coastal Connectivity Strategy was created to develop strategic priorities to ensure that these habitats are protected.

The work of the partnership is grounded in the ecosystem approach. The partnership considers the long term economic sustainability of land management, food production and recreation whilst strengthening ecosystems. There is a strong focus on the long-term, a valuable way of working and ensuring that what is being planned and implemented now will be worthwhile and will continue long into the future.

The partnership identified through public consultation that inclusion of local opinions and expectations for the landscape were a crucial part of looking after the peninsula. They noted that the people of Llŷn appreciate the natural beauty of the area, the diverse habitats and land-forms, the industrial heritage, and the Welsh language and culture.

The knowledge and experience built up by the Llŷn partnership over the past ten years has meant that they are able to translate the principles of the ecosystem approach into practical actions on the ground. The partnership's working model encourages co-production on a local level and nurtures an open and transparent approach to managing land, allowing problems to be solved through negotiation and compromise. This open and collaborative approach also facilitates the inclusion of local knowledge, allowing the partnership to engage, develop and implement practical plans with stakeholders, fostering a positive multi-agency working relationship.

The ecosystem approach places emphasis on the importance of local knowledge. Local people have a strong sense of how a landscape's characteristics are central to identity, culture and community. The retention of this connection to the natural environment means that there is a common aspiration for safeguarding the Llŷn Peninsula. The long-term sustainability of projects is also a key consideration of the partnership, aspects of which are again illustrative of the ecosystem approach.

The knowledge and experience of the partnership, culture of trust between partners, and positive multi-agency working have facilitated negotiations between organisations and stakeholders. This open communication has proven to be the strongest element in delivering projects efficiently and seamlessly. The use of the ecosystem approach has encouraged engagement with the public by using traditional and electronic interpretation techniques. Working with partners in the agriculture, tourism, education and economic sectors and with local communities, the partnership has ensured that end users are included in the projects. By sharing the long-term aims and objectives for the area, more people are involved in the process of achieving a sustainable future for the peninsula and its inhabitants.

The partnership's working model has successfully implemented an EBA by having years of experience and knowledge in land management and placing the local people central to decision making. It identified how local knowledge and the project's experience over 10 years has contributed towards understanding the context and the issues to be addressed. The positive multi-agency model has developed an evolving partnership that uses the knowledge and information accumulated, to set operational

objectives and targets for where the partnership should be in future and the desired ecosystem state. Stakeholder engagement and the consideration of partnerships long term economic sustainability of land management allows for exploring management options and develop a management plan, as a base for future implementations. The project also monitors changes against the measurable targets set out in the management plan and is adaptable based on the results of the monitoring.

iv. Exploring what co-management and an ecosystem based approach means to project partners and local fishermen

A key part of the project explored with project partners and stakeholders what co-management and an ecosystem based approach means to people locally, and within the sphere of their specific work area or organisational remit, this was tackled through written views from the partners organisations and face-to-face meetings with local fishermen.

(a) Views on EBA and co-management from project partners

With a co-management ecosystem based approach in mind, in order to reflect the situation at present, all the steering group members were asked to provide their view on EBA and co-management. Collectively these provide a more formal statement by the project partners that highlights each party's view on an EBA and co-management in the context of the Marine Ecosystems Project.

The intent was to set a clear foundation by recording the views of all parties, in order to develop the Marine Ecosystems Project further. Eight responses were submitted and even though some statements are fairly general, together they reflect an extensive understanding of EBA, the current managing structure, and the positive support and willingness to develop the Marine Ecosystems Project.

The views from project partners are provided in Appendix 6.a.

The responses were very much in keeping with the over-arching principles for an ecosystem based approach and co-management described earlier in the document, with more or less emphasis on certain aspects of this dependent on the role / remit of the responding organisation. Local involvement is valued as is a local collaborative approach to develop appropriate and proportionate responses to local issues.

(b) Views on EBA and co-management from local fishermen

In order to gather views from local commercial fishermen on EBA and co-management a number of face to face discussions were held using:

- focus group meeting

- one on one meetings with the project officer

A wide range of comments were expressed by local commercial fishermen about fisheries management covering local and national issues, and in relation to whether, and how, the wider ecosystem is considered in decision making, and the current governance structures for fisheries management in Wales.

Common themes arising in the comments made are:

- The marine environment
 - Sustains fishermen's livelihoods
 - Can be over-exploited
 - Importance of improving understanding and applying this to decision making
- Fishermen's voices in decision making
 - Not listened to
- Process of fisheries management
 - Slow to get decisions and actions
- Fisheries stocks and fishing effort
 - Too much effort in some areas

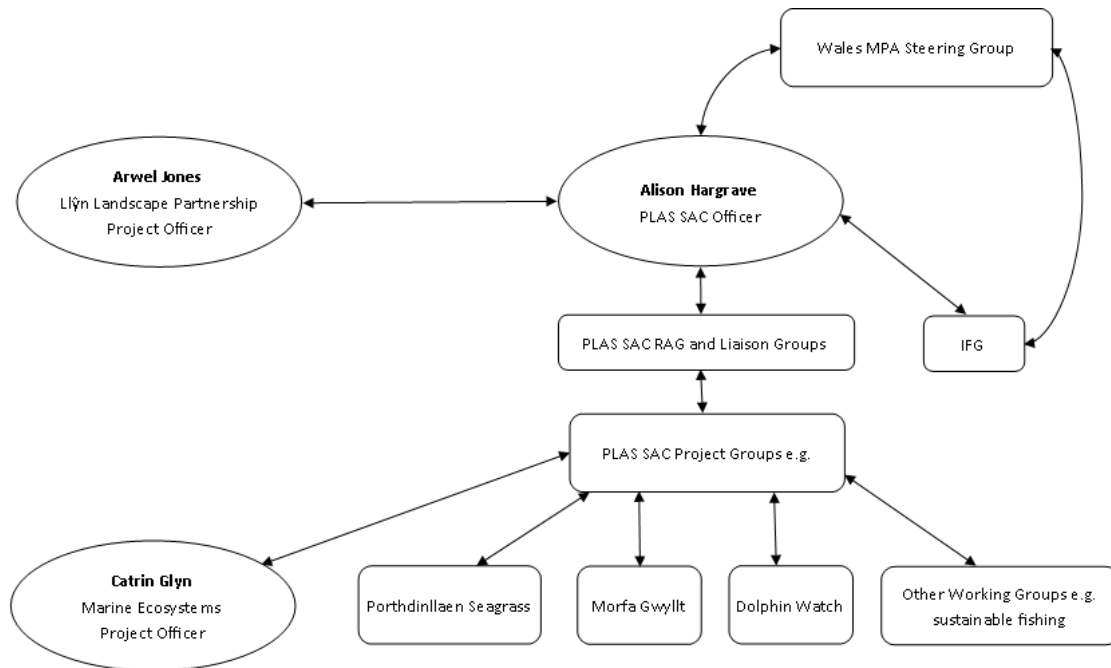
A fuller summary of the comments made in the focus group and one on one meetings is provided in Appendix 6.b and 6.c.

v. Findings & recommendations

The Marine Ecosystems Project sits under the RAG and Liaison groups of the PLAS SAC as a 'working' group, alongside other PLAS SAC project such as the Porthdinllaen Seagrass Project. This formation is mirrored by the Llŷn Landscape Partnership which also deliver 'working' groups. The Marine Ecosystems Project links both the marine and terrestrial management together and demonstrates an overlap over sea and land. Having this structure in place allows a fuller view and perspective of an area without any geological borders or a sea/land divide. It also allows for effective liaison and consultation, and information to be distributed and shared through the strategic partnerships of the PLAS SAC, and the Llŷn Landscape Partnership. Through this co-management structure and EBA, actions can be delivered on the 'ground' in accordance to national and future drivers from a government and policy level.

National and future drivers that helps deliver actions against co-management and EBA

Water Framework Directive Ramsar The Well Being & Future Generations Act Environment Act Natural Environment Research Council
Convention on Biological Diversity Area Statements
Marine Strategy Framework Directive



Note to steering group: The above diagram will be of better quality. More text for this section will be added following discussion of the recommendations by the steering group. See section 5 for the draft recommendations.

4.c Fishing for litter

i. Introduction to Fishing for litter

The amount of litter in our seas and on our beaches continues to be a cause for concern. Beach litter surveys indicate that, in general, quantities of litter on UK beaches have increased by almost 90% since 1994, with the density of plastic increasing by 135% in the same period (MCS 2015). Average litter densities on UK beaches are now over 2,000 litter items/km surveyed. A report was commissioned to investigate the possibility of developing a fishing for litter project on Llŷn or whether another approach may be needed. The Fishing for Litter concept in essence is a simple and effective one. Local fishermen are given bags to collect waste that they bring up during normal fishing activities. They are then able to dispose of or recycle

this waste free of charge at participating ports. The waste collected is monitored to try and pinpoint to source of most of the litter and thereby provide potential solutions. The report outlines the legislative drivers and the effects of marine litter on wildlife, and gives an overview of existing schemes in UK and Ireland.

ii. The work carried out under the Marine Ecosystems Project

Different methods were trialled by this report in order to gather information about the current situation in Llŷn regarding commercial fishing, marine litter, and localised issues in Llŷn from the perspective of the fishing industry.

iii. Findings

The full report for this area of work is provided in Appendix 6d(i). The following summarises the findings from the focus group, electronic questionnaire and one to one meetings:

- The primary fishery on Llŷn is static gear (potting for lobster and crabs).
- There isn't much netting (but there are anecdotal comments that some sorts of netting (e.g. beach set netting) are increasing).
- The fishery is undertaken mostly from small boats which might raise issues in terms of use of fishing boats to carry litter bags.
- There are a few dredgers operating but they fish outside of the SAC further offshore. Very little trawling is undertaken within the SAC.
- Fishermen will fix and re fix gear before eventually throwing it away when they can no longer fix it, so there is a strong emphasis on re-using materials where possible.
- Litter and waste is disposed of by fishermen in existing shoreside facilities.

iv. Recommendations

Recommendations for the Marine Ecosystems Project

- Report sightings. Set up a scheme with fishermen so they are aware of how to, and who to reports sightings of problematic/severe marine litter to.
- MCS to show interested fishers how an MSC survey is conducted and how the litter is categorised.
- Further discussion on how fishermen can get involved.

Wales/UK focussed recommendations

- Introduce recycling and disposal facilities for fishing nets and lines at ports and harbours.

- MCS to see if it is possible to separate commercial and recreational fishing litter in the MCS litter surveys.
- Ensure that the revised Port Reception Facilities (PRF) regulations bring in a 'No special Fee' system Europe wide and extend this to include fishing vessels
- Map the location of areas of greatest litter density in Wales to identify where beach cleans and litter monitoring should be focussed.
- Consider running a larger survey with a wider range of Welsh fishermen (both commercial and recreational and using both mobile and static gear) to determine the levels of litter interaction and identify where a Fishing for Litter pilot project would best be undertaken in Wales.
- Identify other localities in Wales where there is interest in piloting a Fishing for Litter pilot project, learning from the approach taken with this feasibility study.

4.d Pingers – tools to prevent the accidental capture of dolphins, porpoises and seals in fishing gear

i. Introduction to marine mammal entanglement and use of deterrents

The waters surrounding the UK are home to a diverse range of cetacean species, some of which are migratory while others live in resident populations (Reid *et al.* 2003). These populations, like cetaceans worldwide, are under direct threat from a range of anthropogenic forces (Leeney *et al.* 2008). Ship strikes, climate change, habitat destruction, pollution and incidental take (or bycatch) are some of the most immediate threats in British waters (Hammond *et al.* 2013; Harwood, 2001). There is a growing volume of evidence to support the assertion that bycatch is causing large scale mortality of British cetaceans (Parson *et al.* 2010). A total of 18 cetacean species have been recorded in Welsh seas over the last 3 decades (Baines & Evans, 2012)¹. The five most commonly reported cetaceans in Welsh waters are the harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), short-beaked common dolphin (*Delphinus delphis*), Risso's dolphin (*Grampus griseus*) and minke whale (*Balaenoptera acutorostrata*).

ii. The work carried out under the Marine Ecosystems Project

In order to understand the operational experience of bycatch in the fishing industry around Llŷn a meeting was held with local fishermen in October 2015, followed by a series of one to one interviews during October-December 2015 were carried out by the Marine Ecosystems Project Officer. These semi-structured interviews were designed to allow fishermen to offer their views and experiences of bycatch and entanglement without risk of censure.

iii. Findings

The full report for this area of work is provided in Appendix 6d(ii).

The consensus of the fishermen involved in Llŷn fisheries was that bycatch of cetaceans did not occur or if it did they were not aware of it. None interviewed had any personal experience of cetacean entanglement or bycatch and many stated that they had never heard of an incident. The report also highlights that NRW are not aware of any specific evidence of bycatch of marine mammals occurring within Pen Llŷn a'r Sarnau or any Welsh SACs, and there is limited evidence of bycatch of cetaceans and seals in Welsh waters. The majority of bycatch of marine mammals in the UK is through using bottom set nets (e.g. Gill nets) and tends to occur around in UK offshore waters around the Southwest approaches. Although the report didn't recognise a bycatch issue in Llŷn, it does explore options to lower the risk, if an issue should occur in future. These options included:

- Avoid shooting nets at locations where cetaceans are observed feeding or aggregating
- Possible gear modifications
- A flexible approach of temporary zones

iv. Recommendations

- Maintain a dialogue to identify if cetacean entanglement in fishing gear is becoming an issue around Llŷn.
- Should fishing methods or patterns, or cetacean species behaviour or distributions change significantly this assessment will have to be revised and the Marine Ecosystems Project can draw upon the mitigation methods discussed in this study to develop practical and locally relevant management.
- There may be scope to develop reporting by the fishing industry, possibly an anonymised approach to avoid disincentivising participation. This is a sensitive subject and something that will need to be discussed by the EBA project participants to consider whether it is worth pursuing.
- There may be scope within the EBA project to develop partnership approaches to gather data on cetacean numbers and distributions around Llŷn to inform adaptive management.

4.e Code of Conduct for Sea Users

i. Introduction to Code of Conduct

The code of conduct for users of the sea in Gwynedd had dated significantly, so this aspect of the project worked to develop and distribute a new code for the county (the original code was produced in the year 2000 by the Friends of Cardigan Bay).

Following the success of a similar process in Ceredigion recently, discussions were undertaken with the relevant officials and an agreement was put in place to share the same code. This has avoided duplication and will keep consistency across the bay. A new code was drafted for consultation and was issued to the relevant stakeholders and the general public.

ii. The work carried out under the Marine Ecosystems Project

A drop-in session was held on August the 29th, 2015, at Plas Heli, Pwllheli to discuss the draft. The draft and the drop in session were promoted on our social media sites and a copy of the draft was sent to water sports/adventure clubs, local maritime organizations, fishermen and Councillors. An invitation was extended to anyone interested to come and voice their opinions or share any suggestions about the draft, and there were 30 attendees on the day.

iii. Outputs and objectives

The full report for this area of work is provided in Appendix 6d(iii).

The new code will be distributed to everyone who's registered a powerboat or jet ski in Gwynedd and this project will investigate the possibilities regarding raising awareness and distribution of the code. The project will aspire to educate all recreational users of the importance of obeying by the code and will aim towards ensuring a haven for all wildlife in the SAC. This project aims to raise awareness of the new marine code in Gwynedd by launching the code and marketing it to the relevant audience, thus securing public buy-in. This project will also seek to work with Anglesey and Conwy councils to promote this code around the coast of North Wales and work towards an all Wales code.

iv. Recommendations

- Raise awareness of the new marine code in Gwynedd by launching the code and promoting it to the relevant audiences to secure public buy-in.
- Work with Anglesey and Conwy councils to promote this code around the coast of North Wales and work towards both counties adopting the code.
- Explore further distribution methods for the code such as including it in marina handbooks and creating engine stickers for boats that sign up to the code.
- Explore the need for a safety awareness note to be distributed by Gwynedd Council (this is something local sailors have requested).
- Raise awareness of the code of conduct by giving presentations, arranging events, attending shows and through the press.
- Liaise with people on the ground such as beach wardens, Gwynedd Maritime Team, harbour masters etc. to ensure the code is being distributed as effectively as possible.

5. Recommendations

This section brings together the recommendations arising from all elements of the work completed by the Marine Ecosystems Project.

5.a Co-management and EBA

There is clearly support and interest within the fishing community around Llŷn for involvement in decision making and project development for fisheries, as well as with wider marine-related work in the Llŷn area and further afield where relevant to their interests. The direct engagement undertaken through the project has helped individual fishermen feel connected to the project and has helped dialogue between fishermen and the project.

If the work of the Marine Ecosystems Project is to be developed further in terms of co-management and development of new projects, there needs to be a commitment to maintaining the collaborative liaison and working that has been initiated through the PLAS SAC and Marine Ecosystems Project approaches, and which has been identified as a key part of successful sustainable marine natural resource projects elsewhere.

Continuation of the Marine Ecosystems project

- Determine level of interest in continuing and developing the Marine Ecosystems Project.

Governance and project structure

- The Marine Ecosystems Project should continue to operate through joint working with the PLAS SAC. This can continued to be achieved through the Marine Ecosystems project functioning as a specific project group/ task and finish group linked to PLAS SAC, supporting a co-management and EBA basis and ethos.
- A project steering/working group will continue and support delivery of the Marine Ecosystems project. The terms of reference for the steering /working group will set out the roles and responsibilities of the members of the group.
- Clarify the relationship between this governance structure and that for other related projects/work streams such as FLAG, IFG.

Local liaison and project development

- The Marine Ecosystems Project should continue to build on the relationship established between the project and the fishers in Llŷn. Face to face interactions should be an integral part of any future work through the project. This project has the capacity to engage local fishers who are not sitting on any of the groups, and gather their views and comments as evidence from a wider

group of commercial fishermen; this would demonstrate a better reflection of the views of the fishers and a truer reflection of the industry in the PLAS SAC and surrounding area.

- Develop a number of bottom up projects involving managers and stakeholders; gather and fill evidence gaps and deliver site specific management.

5.b Fishing for litter - a feasibility scoping study in Llŷn

Discussion at the focus group meeting acknowledged that litter is a problem for everyone and that tackling it requires engagement from all sectors (statutory bodies, user groups, individuals, businesses, visitors etc). As a result of discussions with fishermen and the findings of the litter feasibility scoping study undertaken through the project, the recommendations are separated to those that would best be taken forward locally, and those which would be more appropriately taken forward at an all-Wales or UK level.

Given the nature of the fishery locally around Llŷn it is considered that the best focus of effort to address the local beach/marine litter problem is through specific actions that can be taken forward at a local level. To this end the recommendations for the Marine Ecosystems Project are focussed on identifying priorities for action to help address marine litter around Llŷn and reduce locally-sourced litter that ends up in the marine environment around Llŷn and on local beaches.

i. Recommendations for the Marine Ecosystems Project

- Report sightings. Set up a scheme with fishermen so they are aware of how to, and who to reports sightings of problematic/severe marine litter to.
- MCS to show interested fishers how an MSC survey is conducted and how the litter is categorised.
- Further discussion on how fishermen can get involved.

ii. Wales/UK focussed recommendations

However, it is also recognised that there are other recommendations that could be taken forward by others, in other parts of Wales, to address litter issues elsewhere, for example in areas with different fisheries where litter entanglement is more of an issue and where the Fishing for Litter project could be taken forward more along the lines as in other parts of the UK.

- Map the location of areas of greatest litter density in Wales to identify where beach cleans and litter monitoring should be focussed.
- Consider running a larger survey with a wider range of Welsh fishermen (both commercial and recreational and using both mobile and static gear) to

determine the levels of litter interaction and identify where a Fishing for Litter pilot project would best be undertaken in Wales.

- Identify other localities in Wales where there is interest in piloting a Fishing for Litter pilot project, learning from the approach taken with this feasibility study.
- MCS to see if it is possible to separate commercial and recreational fishing litter in the MCS litter surveys.
- Ensure that the revised Port Reception Facilities (PRF) regulations bring in a 'No special Fee' system Europe wide and extend this to include fishing vessels
- Introduce recycling and disposal facilities for fishing nets and lines at ports and harbours.

5.c Cetacean Entanglement around Llŷn and Mitigation: Evidence Review

This study identified that there is not an issue with cetacean entanglement in the current fishing activity around Llŷn. As a result, the recommendations for the Marine Ecosystems Project focus on maintaining a dialogue about this issue and a being able to identify if it is becoming a problem. Should this be the case, the project can look at implementing mitigation measures, such as those presented in the study report, to address the issue.

- Maintain a dialogue to identify if cetacean entanglement in fishing gear is becoming an issue around Llŷn.
- Should fishing methods or patterns, or cetacean species behaviour or distributions change significantly this assessment will have to be revised and the Marine Ecosystems Project can draw upon the mitigation methods discussed in this study to develop practical and locally relevant management.
- There may be scope to develop reporting by the fishing industry, possibly an anonymised approach to avoid disincentivising participation. This is a sensitive subject and something that will need to be discussed by the EBA project participants to consider whether it is worth pursuing.
- There may be scope within the EBA project to develop partnership approaches to gather data on cetacean numbers and distributions around Llŷn to inform adaptive management.

5.d Gwynedd's Marine Code

By working with Ceredigion Council, the Marine Ecosystems Project has developed a new Marine Code for Gwynedd, based on the already in place Ceredigion Marine Code. Consultation work and stakeholder engagement has been undertaken to develop this code and it has gained significant support from the public. The project has

secured an agreement with Gwynedd Council that the code will be adopted and distributed. The recommendations for future developments of the code are:

- Raise awareness of the new marine code in Gwynedd by launching the code and promoting it to the relevant audiences to secure public buy-in.
- Work with Anglesey and Conwy councils to promote this code around the coast of North Wales and work towards both counties adopting the code.
- Explore further distribution methods for the code such as including it in marina handbooks and creating engine stickers for boats that sign up to the code.
- Explore the need for a safety awareness note to be distributed by Gwynedd Council (this is something local sailors have requested).
- Raise awareness of the code of conduct by giving presentations, arranging events, attending shows and through the press.
- Liaise with people on the ground such as beach wardens, Gwynedd Maritime Team, harbour masters etc. to ensure the code is being distributed as effectively as possible.