SCOTTISH MARINE BILL
REGULATORY IMPACT ASSESSMENT
INDEPENDENT REPORT

BY

ABP MER

ON BEHALF OF

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by

Risk & Policy Analysts Limited,
Farthing Green House, 1 Beccles Road, Loddon, Norfolk, NR14 6LT, UK
Tel: +44 1508 528465 Fax: +44 1508 520758
Email: post@rpaltd. co.uk
Web: www.rpaltd.co.uk

and

ABP Marine Environmental Research Ltd
Waterside House, Town Quay
Southampton, SO14 2AQ

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Prepared by:	Jan Vernon, Technical Director, RPA Rocio Salado, Senior Consultant, RPA Steve Hull, Business Development Director, ABPmer Justine Saunders, Consultant, ABPmer Carolyn George, Green Dart Consulting
Approved for issue by:	Meg Postle, Project Director
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EXECUTIVE SUMMARY

Purpose and Intended Effect

The Scottish Government is committed to delivering a Scottish Marine Bill which will put in place mechanisms to improve stewardship of the seas around Scotland. The policy areas which the Bill aims to act on are:

- marine planning: delivering a new system of marine planning for the sustainable use of Scotland's seas out to 200 nautical miles (nm);
- marine licensing: a streamlined and modernised marine licensing and consent system in order to reduce administrative burden;
- marine conservation: improvement to marine nature conservation to safeguard and protect Scotland's marine assets,, with "ecosystem" at the heart of management and closer integration of marine historic environment site protection with marine nature conservation;
- improving understanding of the seas through science and data generation; and
- a new Scottish marine management organisation, Marine Scotland, to deliver sustainable seas for all.

As part of the legislative process, the Regulatory Impact Assessment sets out the costs, benefits and other impacts of proposed legislation. Science and data generation, and Marine Scotland, are not directly covered by the Bill but are included in the consultation "Sustainable seas for All". They are required for the purpose of the Bill to be achieved and are therefore covered in this RIA.

Marine Planning

There are two main options in relation to marine planning. These are:

- Option 1: no change; and
- Option 2: implement a statutory marine planning system.

Under **Option 1**, there would be little or no formal integrated planning of activities. Although high-level marine objectives might exist, stemming from national and international initiatives, there would be no system to 'unpack' these and to deliver objectives at lower levels in an integrated way. Decision-makers would need to take account of the high level objectives through the licensing system. This Option would risk continuation of the current situation, where conflicts and uncertainty about uses of the marine environment could result in costly delays, less efficient use of marine space and deterioration of the marine environment. There may be some short-term benefits from this option, in that policy-makers, businesses and marine users will not have to change their behaviour. However, it is likely in the longer term that political and economic pressures on the marine environment will ultimately require alternative solutions and consequent modifications in activity.

A **statutory marine planning system** would consist of three tiers; international requirements under the European Marine Strategy Directive and OSPAR objectives; a national marine policy statement, objectives and a Scottish Marine Plan; and 9-13 local plans within Scottish Marine Regions. Not all areas would need plans; they are only necessary where there are activities to plan and the potential for conflicts. There are potential benefits for all stakeholders from marine planning. The scale of the benefits is impossible to quantify, as it will depend on the way in which planning operates in practice, and the specific features of each plan. However, if planning avoids the costs of conflicts, delays and compensatory measures associated with the current system, the benefits could be substantial. A 1% increase in gross added value from the marine economy could generate benefits of £294 million over 20 years (discounted), while more rapid approval of marine energy projects could bring benefits of £5.5 million over 20 years (discounted). There could also be benefits in terms of increased tax revenues. The option would also generate non-economic benefits, from the improved capacity to meet environmental objectives.

The total cost to the Scottish Government of the national marine plan is estimated to total over £7 million over 20 years (discounted), an average cost of nearly £500,000 per year. This cost includes plan preparation and consultation, implementation and review. Local plans could cost an additional £36 million to £66 million over 20 years (discounted), an average annual cost of £2.5 million to £4.5 million, for 9 to 13 plans. The total cost for a marine planning system would therefore be £43 million to £73 million over 20 years (discounted) or an average annual cost of £3 million to £5 million. There will be some additional costs to Historic Scotland, local authorities, other organisations, industry and other stakeholders of participating in the planning process. For local authorities, these are likely to be offset by reduced costs in dealing with planning applications. There could be longer term costs to some industry sectors, if planning results in greater restrictions on activities in specific locations.

There is a further potential option, of implementing a non-statutory planning system. This would still involve collation of marine data and information, accompanied by the setting of marine objectives and priorities. Spatial plans would be developed largely as outlined above, but there would be no statutory requirements for decision-making authorities to act in accordance with them. The main risk with a non-statutory system of planning is that plans, once produced, might not be adhered to. The process and costs involved in developing the plan are largely the same as for a statutory planning system, but with fewer benefits.

Licensing and Enforcement

The current licensing regime in Scotland comprises a variety of licences, seeking either to protect features of the marine and coastal area from the impact of marine development, or to mitigate the impact of developments. The key aim of changing the current system is to deliver an effective, streamlined and modernised licensing system.

There are four main options for streamlining the system of licensing and enforcement. These are:

- Option 1: no change to current arrangements;
- Option 2: amalgamate FEPA Part II, CPA Part II and CAR licences for marine activities into a single licence;
- Option 3: amalgamate CPA Part II, FEPA Part II, CAR licences for marine activities, wildlife, aggregates and any other activity licences into a single licence; and
- Option 4: create an activity-based licensing system.

There are also two sub-options, which could be combined with the main options:

- Sub-option A: controls for capital and maintenance dredging. This sub-option can be combined with Options 1, 2 and 3;
- Sub-option B: following a CAR-type approach for small projects. This sub-option could be combined with any of the options.

Option 1 would maintain the current situation, with 16 types of consent administered by more than ten organisations/departments, at an estimated annual cost of £2.1 million to £2.7 million per year to the Scottish Government, £304,000 to £380,000 to local authorities and £123,000 to SNH, passed on to applicants (industry) in the form of licence fees. The advantages of this option are that no new legislation would be required; all stakeholders are familiar with the current situation and there would be no costs or job losses associated with streamlining the current licensing regime. The main disadvantages are that the objectives of the Scottish Marine Bill would not be met, and the licensing regime would remain complex and resource intensive. The limited evidence that is available, both in Scotland and from elsewhere in the UK, suggests that multiple licenses from a range of licensing bodies with different consultation requirements is not an efficient way to deliver marine environmental objectives.

Option 2 would reduce the number of licence applications required, thus simplifying the licensing application and processing system for both industry and regulators; provide integrated licensing, ensuring that a range of environmental/ecological and navigational issues are considered together and could assist in delivery of both existing obligations and objectives and new ones, for example marine planning and nature conservation. This could generate annual savings to regulatory authorities (Scottish Government and SNH) of £150,000 to £168,000 and annual savings to industry of around £170,000. However, it would require the introduction of new legislation, incurring costs for Government and stakeholders and potentially causing (temporary) disruption to the licensing system; it would require the re-training of staff, both within industry and the regulators and it could potentially lead to the loss of up to one full-time equivalent job within Government due to improvements in efficiency.

Option 3 is similar to Option 2, but would go further by amalgamating the wildlife and aggregate licences with CPA Part 2, FEPA Part 2 and CAR licences for marine activities. This Option would have similar advantages and disadvantages to Option 2 for authorities, but would have the added advantage for industry of providing greater integration in regulating the ecological impacts of marine developments. This could result in direct cost savings to industry of around £177,000 to £197,000 and direct

savings to regulatory authorities (Scottish Government, local authorities and SNH) of £159,000 to £204,000. It could also lead to the loss of up to one full-time equivalent job within Government due to improvements in efficiency.

Option 4 presents an alternative approach to Options 2 and 3, by developing integrated licences for particular activities, such as a renewable energy licence, a port and harbour licence and an aquaculture licence. Further types of licence would be required to cover any other activities. This could generate direct cost savings for the Scottish Government, local authorities and SNH of £342,000 to £515,000 per year and direct cost savings for industry of £512,000 to £672,000 per year. The indirect cost savings to industry, from reduced delays, could be significantly greater. It could also lead to the loss of 2 to 2.6 full-time equivalent jobs within authorities. The key issue with having only activity-based licences is in defining the activities to be licensed. If only a small number of activities are licensed, there is a risk that impacts caused by other activities would not be managed, but a large number of different activity licences would risk repeating the complexities of the current system. However, some consultees felt that this was not a major issue, as a relatively small number of well-defined activities would require licensing. Combining activity-based licences for some activities, with general licences for other activities, would also add to the complexity of the system and fail to achieve the objective of streamlining.

Sub-option A can be combined with Options 1, 2 and 3, or it could be a stand alone option. There is currently no single act which regulates dredging operations in Scotland, although some operations are controlled by the Harbours Act 1964 and the CPA. A FEPA Part 2 disposal licence is normally required to dispose of dredged materials in the sea. However, methods such as hydrodynamic and plough dredging techniques are exempt from FEPA licensing, as the sediments are not raised from the surface of the water and therefore no disposal takes place. The main risk associated with this option relates to the potential impact on hydrodynamic and plough dredging. The total cost to industry of introducing licensing for hydrodynamic and plough dredging may be between £487,000 - £1.2 million per year, depending on the number of occurrences, the quantity of material moved, the associated level of fees charged and the requirement for environmental sampling, modelling, monitoring and reporting. Any increase in the costs may result in a decline in use of the techniques, thereby reducing the environmental benefits. The advantage of the option would be to ensure the full evaluation of the chemical and physical impacts associated with the use of hydrodynamic and plough dredging.

Sub-option B would introduce a simpler system of registration for small, uncontroversial projects. The advantage of this sub-option, which may be introduced along with Options 2, 3 or 4, or as a stand alone option, is that it may reduce the administrative burden and associated costs for both industry and the regulators. The main risk associated with this Option is that it may cause further confusion, as stakeholders will have to distinguish between three different levels of activity in determining whether a licence is necessary for their activities. The net savings are estimated at £121,000 per year.

Marine Nature Conservation

The three main options in relation to nature conservations are:

- Option 1: no change;
- Option 2: make better use of existing measures, e.g. voluntary reserves, marine nature reserves legislation; and
- Option 3: implement new measures and policies out to 200nm.

Under **Option 1**, Scotland would continue to meet the current conservation objectives and legal commitments through existing legislation. There would be no changes to marine nature conservation policy and no new species conservation or site protection measures. This option would not incur additional costs for Government; however, there would be no long-term benefits. The main disadvantage associated with this option is that gaps in the current nature conservation regime would remain; it would not support achievement of existing national and international commitments and could lead to deterioration of the marine environment. If such deterioration resulted in a 1% reduction in the economic value of marine environment-related sectors, this could result in losses of £14 million over 20 years (discounted). There could also be an equivalent loss in the non-economic value of the marine environment.

The main disadvantage associated with **Option 2** is that it might fail to deliver the Government's commitment to establish a network of marine protected areas. While it might prove possible to protect some important sites through existing marine nature reserve provisions, previous attempts at using these powers have generally resulted in failure. Similarly, whilst gaps in species management and protection might be partly addressed by extending the range of species considered under the Biodiversity Duty, this is essentially a non-statutory measure and may not secure the level of compliance necessary to result in measurable improvements. Costs to government will depend upon the number of biodiversity action plans set up (these cost between £23,000 and £500,000 per plan, with surveillance and enforcement costs of around £198,000 per plan) and the number of marine nature reserves (costing £24,000 to £33,000 per reserve to set up and £14,000 to £22,000 per year for surveillance and monitoring). The costs to industry would depend upon the specific controls that were introduced as a result of the option. There may be additional costs to NGOs and individuals, in relation to responding to consultation, of perhaps around £4,000 to £14,000 per consultation.

Option 3 would involve identifying marine ecosystem objectives, new powers to identify, designate or recognise particular locations of biodiversity importance and delivery of site and species protection measures within a marine planning framework. Developing zoning mechanisms within the marine planning system could cost around £485,000; this is part of the cost of marine planning. The main risk is that this could prove to be ineffective in protecting nature conservation features or that there may be gaps in the data required to support formal site protection, leading to delays in identification and protection of a marine protected area network.

There would be costs to Government in developing, implementing and monitoring marine ecosystem objectives and designating marine protected areas. Setting up 10 -

20 new marine protected areas could cost from £6.6m to £15.5m (discounted over 20 years at 3.5%) or £433,000 to £1,020,000 in annual costs. The costs to industry would depend upon the restrictiveness of the protection measures introduced. A partial restriction regime in marine protected areas could cost industry several million pounds if the site was of high value for oil and gas or shellfisheries. However, if the measures resulted in improvements in marine nature conservation management, the benefits could be significant.

Seal Licensing and Conservation

Options for reforming the licensing system for management of seals include:

- Option 1: a 'no change' option, which forms the baseline;
- Option 2: full reform of the existing legislation;
- Option 3: extend licensing to fish farms;
- Option 4: an outright ban on the shooting of seals.

The **'No change'** or **Option 1** entails a potential risk that seal conservation status may not be being adequately although it is not considered to be an actual risk at present. There is also a risk under this Option that seal management across all fisheries sectors may not be on an equal basis. The option will not generate any additional benefits nor give rise to additional costs.

Under **Option 2** the need to apply for a license to shoot seals would be extended beyond the 'close season' to apply all year round and the provision to apply for a license would be extended to fish farmers to protect cages or stock. The current risks to seal conservation, and the risk of unequal treatment of sectors, should be eliminated under this Option 2. The number of licences issued is likely to increase, but is not known by how much; the actual number of seals shot would also increase, but a marked difference is unlikely. Since seal killing will be more closely managed and monitored, the total numbers shot might reduce over time. Extending licensing all year round should reduce the potential risk of any impacts on wildlife tourism. The removal of the 'netsmen's defense' should be compensated for by inclusion in the licence process, but may possibly result in increased damage or loss of fishing gear in a few cases. The potential costs cannot be assessed due to lack of information on the current encounter rates of seals with fishing gear and the level of damage inflicted.

The only reform to the current legislation under **Option 3** would be to extend the licensing powers to fish farms, enabling them to apply for licenses to shoot seals during the close season or under conservation order, for the protection of cages or stock. This Option carries a potential risk to seal conservation status, although this is reduced by the power to introduce seal conservation orders to protect vulnerable populations. It would mean that all fishing sectors would be subject to the same controls and monitoring as required by the EU Habitats Directive. The potential costs to the aquaculture sector would be similar to those under Option 2.

Under **Option 4**, there would be a complete ban on the killing of seals with no exceptions. There are significant increased risks under this Option to aquaculture and wild capture fisheries, through increased damage to fish cages, escape of fish from

damaged cages (which creates a risk to genetic diversity of native salmon stocks as a result of cross-breeding of native and farmed fish) and predation on stock. Option 4 may result in improved seal welfare and conservation, potentially leading to increased growth and economic value of wildlife-related tourism. It is not possible to estimate the potential economic cost to fisheries due to lack of information on the current level and cost of seal impacts on fisheries and aquaculture nor how such damage might change in the absence of control measures. In addition, economic costs may be incurred through increased investment in alternative non-lethal methods of predator defence. Any negative impacts on native fish populations could potentially impact on the significant economic value of these fisheries.

Protecting Scotland's Most Important Marine Historic Assets

The options in relation to protection of Scotland's most important marine historic assets are:

- Option 1: no change; and
- Option 2: implement new measures out to 12 nm.

Under **Option 1**, there would be no change to current arrangements. Scottish Ministers through Historic Scotland would continue to apply the Protection of Wrecks Act 1973 ('the 1973 Act') and Ancient Monuments and Archaeological Areas Act 1979 ('the 1979 Act'). There are ongoing costs to Scottish Government and risks associated with this option. The licensing associated with the 1973 Act is widely considered overly burdensome and experience in Scapa Flow with scheduling under the 1979 Act has also pinpointed difficulties with application of this legislation underwater. As a result, stakeholders with a legitimate interest in designated marine historic assets may continue to experience dissatisfaction with existing provisions. Moreover, existing legislation does not provide the scope to enable Scottish Ministers to protect the full range of marine historic assets that can be found on the seabed.

Option 2 would involve implementing a new system of historic MPAs out to 12 nm for marine historic assets of national importance, similar to that proposed for nature conservation. This is likely to incur one-off transitional costs of £25,000 in 2010-11 and 2011-12, over and above expenditure required for existing mechanisms. There are currently 15 designated/scheduled wrecks under existing provisions. Pending re-assessment, these could be de-designated altogether or included within the new provisions.

Scottish Ministers have indicated that it is not their intention to significantly or rapidly increase the number of designated marine historic assets. However, it seems likely that there will be a modest increase in numbers over time give an expanding knowledge base and a broadening in the scope of what types of historic asset can be protected through the new mechanism. Carrying out prioritised assessments of the most important historic assets for designation as well as ongoing high priority recording/monitoring work on designated sites, advising on management of these, and providing support through management agreements and grant aid is likely to cost Scottish Government £200,000 per year (£4 million over 20 years). The costs to industry would depend upon how restrictive the level of protection introduced.

However, experience under existing legislation suggests that the costs are likely to be relatively small because the designated areas are small (generally circular areas of 100-250 metres radius) and therefore mostly avoidable.

Science and Data

In order to carry forward the range of measures in the Marine Bill, there is a need for further science and a mechanism to agree its interpretation. There is also a need for greater coordination between the academic community and the wider stakeholders and policy makers. The control and organisation of data flows will be key to delivering sustainable development in Scotland's seas.

The options in relation to science and data are:

- Option 1: no change; and
- Option 2: develop a marine science strategy.

Under **Option 1**, there would be no change to current arrangements. Existing marine science activities would continue to be carried out by organisations that are currently responsible for them. Coordination between research activities could be encouraged on an informal basis and through marine planning. The key risk with this option is that it would fail to generate the data needed to deliver the objectives of the Marine Bill. There would also be a related risk of infraction proceedings for failure to comply with the EU Marine Strategy Directive. Option 1 would incur no costs for the development of a new strategy, nor would it result in any substantive disruption to the functioning of marine research. However, any costs arising from current inefficiencies in marine science and data would continue (see Section 4) and, indeed, would be likely to grow as pressure on marine space and resources increases.

Option 2, development of a marine science strategy, would provide a mechanism for directing scientific effort into areas of importance, focusing research effort and allowing stakeholder input into the scale and direction of marine science in Scotland. It could also co-ordinate science and industry involvement, providing more coherent data capture and storage. To provide for monitoring and assessment of Scotland's seas consistently and to rigorous standards, responsibility should lie with a single body. The proposal is that Marine Scotland should take on this role, with the assistance of a group of scientific advisers.

The main benefit of Option 2 would be to allow scientific effort to be directed into areas of importance, focusing research effort into where it could make the greatest contribution to achieving the aims of the Marine Bill. It could also have a significant role in developing objectives to determine the nature of, and limits on, use of the seas within the context of sustainability. A sound scientific basis for identifying uses compatible with sustainability could help to ensure that restrictions on use, and the costs associated with this, were minimised whilst meeting the goal of sustainability. Option 2 could give rise to some additional costs, including those associated with setting up of Marine Scotland and supporting a national database, estimated at around £150,000 per year. If the marine science strategy identified a need for expansion of research effort, there would also be associated costs.

Marine Management Arrangements

The options for marine management arrangements are closely linked to the options on other policy areas, as these will determine the requirements to be managed. There are two main options:

- Option 1: no change; and
- Option 2: set up Marine Scotland as an integrated body with responsibility for policy, marine planning, science, regulation and licensing and compliance monitoring and enforcement.

Under **Option 1**, no Marine Scotland would be set up. Instead, existing activities would continue to be carried out by organisations that are currently responsible for them. These existing organisations could take on any new requirements, such as marine planning. Option 1 would incur no additional costs, but it would have no long-term benefits. It risks marine planning and strategy development becoming an additional tier of regulation, rather than an integral element of marine management. It would also pose a risk of failure to deliver the objective of streamlined decision-making, with continuing potential for inconsistency in decision-making and uncertainty amongst stakeholders about responsibilities for the marine environment. This could potentially be mitigated by introducing statutory requirements for the various organisations to take account of marine planning and to co-operate in achieving its aims.

Under **Option 2**, a new organisation called Marine Scotland would be set up. Its responsibilities would include lead responsibility for marine planning and for underpinning science and data; the current responsibilities of Scottish Government, Fisheries Research Service and the Scottish Fisheries Protection Agency for marine and freshwater fisheries and aquaculture management; lead responsibility on marine nature conservation and responsibility for administering a better integrated system of marine consents. The key risk associated with this Option is that changing existing arrangements could be complex, disruptive and costly. It could also disrupt existing linkages across policy areas and across the marine/terrestrial divide. In order to fulfil its responsibilities, Marine Scotland would require significant resources. The cost of preparatory work to establish Marine Scotland – up until 1 April 2009 – has been estimated at around £400,000. Other additional costs, and some cash releasing efficiency savings, will accrue and may be attributable to establishment/transition (rather than the costs of marine management function delivery). Detailed work is underway to assess these costs and savings more precisely – but which will depend on some strategic and other decisions yet to be taken. Stakeholders responding to the consultation indicated there could also be benefits for local and democratic accountability, if Marine Scotland works in partnership with local authorities.

There are a number of potential variations between these options. For example, Marine Scotland could take on only some of the potential roles under Option 2, or it could act as a 'virtual' integrated body, providing a single interface for stakeholders. The costs of such variations will lie between those of Options 1 and 2.

Overall Impacts

This report has assessed the potential impacts of options, including no action, within a range of different policy areas. The Scottish Government has committed to delivering a Marine Bill which will include:

- marine planning: delivering a new system of marine planning for the sustainable use of Scotland's seas;
- marine licensing: a streamlined and modernised marine licensing and consent system in order to reduce administrative burden;
- marine conservation: improvement to marine nature conservation to safeguard and protect Scotland's marine assets, with "ecosystem" at the heart of management and closer integration of marine historic environment site protection with marine nature conservation;
- science and data generation; and
- a new structure, Marine Scotland, to deliver sustainable seas for all.

Although there is considerable uncertainty over many of the costs and benefits, because they will depend upon the specific measures adopted, the 'do nothing' option has fewer benefits and could incur significant costs, in terms of failure to meet objectives and reduced productivity from the marine environment.

This report has assessed the potential impacts of options, including no action, within a range of different policy areas. The findings indicate that the no change options would risk continuation of the current situation, where conflicts and uncertainty about uses of the marine environment could result in costly delays, less efficient use of marine space and deterioration of the marine environment. There may be some short-term benefits from this option, in that policy-makers, businesses and marine users will not have to change their behaviour. However, it is likely in the longer term that political and economic pressures on the marine environment will ultimately require alternative solutions and consequent modifications in activity.

Although the options for change to the system involve costs for the Scottish Government and for other stakeholders, the benefits are potentially significant. For example, a 1% increase in gross added value from the marine economy could generate benefits of £294 million over 20 years. There would also be significant non-economic benefits.

The analysis indicates that the greatest net benefits are likely to result from a new approach to managing the marine environment which incorporates:

- a new system of statutory marine planning for the sustainable use of Scotland's seas;
- a streamlined and modernised marine licensing and consent system in order to reduce administrative burden;
- implementing new measures and policies for nature conservation (including reform of seal licensing and conservation and new measures to protect Scotland's most important marine historic assets);
- developing a marine science strategy; and

- setting up a new structure, Marine Scotland, to deliver sustainable seas for all.

Although there is considerable uncertainty over many of the costs and benefits, because they will depend upon the specific measures adopted, the benefits of these policy options are likely to outweigh the costs significantly, whilst the 'do nothing' option has few benefits and could incur significant costs, in terms of failure to meet objectives and reduced productivity from the marine environment.

1. TITLE OF THE PROPOSED REGULATION

The title of the proposed regulation is the Marine (Scotland) Bill. It is anticipated that the Bill will be introduced to Parliament in April 2009, with Royal Assent in December 2009.

2. PURPOSE AND INTENDED EFFECT

2.1 Objectives

The Scottish Government is committed to delivering a Scottish Marine Bill which will put in place mechanisms to improve stewardship of the seas around Scotland. For marine planning and marine nature conservation new powers will be granted out to 200 nautical miles (nm) from the territorial baseline. In addition to simplifying existing marine legislation, the proposed Marine Bill aims to enhance the long-term viability and growth of the various marine industries with greater stewardship of Scotland's special marine environment.

The Bill proposes a new legislative and management framework for the delivery of sustainable economic growth in the marine environment, with proposals relating to:

- marine planning: delivering a new system of marine planning for the sustainable use of Scotland's seas;
- marine licensing: a streamlined and modernised marine licensing and consent system in order to reduce the regulatory burden;
- marine conservation: improvement to marine nature conservation to safeguard and protect Scotland's marine assets, with "ecosystem" at the heart of management and closer integration of marine historic environment site protection with marine nature conservation;
- science and data generation; and
- a new structure, Marine Scotland, to deliver sustainable seas for all.

As part of the legislative process, the Scottish Government has contracted Risk & Policy Analysts Ltd (RPA) and ABP Marine Environmental Research (ABPmer) to contribute to the delivery of a Regulatory Impact Assessment (RIA) which sets out the costs, benefits and other impacts of proposed legislation.

2.2 Background

The Scottish coast and sea areas are amongst the most diverse and productive in the world. They support over 8,000 complex and 36,000 single cell species[1]. This includes internationally important species such basking sharks, leatherback turtles,

[1] Seas the Opportunities (2005)

70% of Europe's population of grey seals, as well as internationally important colonies of seabirds; they also support some 16,000 jobs in fishing and aquaculture.

Since the mid 1980s, there has been a significant growth in competition for the use of marine assets and space, leading to a broad range of pressures on the marine area. In addition, a series of legislative changes are also occurring at UK level, European and international level that support the need for change.

At the UK level, the UK Government issued a Draft Marine Bill in April 2008. The Draft Bill sets out legislative proposals with a focus on marine planning and marine conservation. Other measures include:

- the creation of a Marine Management Organisation (MMO);
- reforms to the licensing system;
- reforms to the management of marine fisheries (including a system for administrative penalties), inland and migratory fisheries; and
- access to coastal land.

Consultation on the draft closed on the 26 June 2008; the UK Government published the results of the consultation on 25 September 2008. Overall, respondents were supportive of the proposals for the draft Bill (although they did seek clarification on a number of issues, such as linkages with other legislation and transitional arrangements for the MMO, among others).

At the European level, the Marine Strategy Framework Directive (MSFD), adopted in June 2008, proposes a framework whereby European Marine Regions will be established on the basis of geographical and environmental criteria. Marine strategies will have to be developed by the different Member States in the marine region setting out a programme of cost-effective measures to achieve "good environmental status" by 2021. Marine planning will be a key area of development under the Directive. The MSFD forms the environmental pillar of the EU's maritime policy. In June 2006, the European Commission published a Green Paper, "Towards a Future Maritime Policy for the Union: A European Vision for the Oceans and Seas". The aim of this policy initiative was to balance economic, social and environmental interests in maritime policy. The Green Paper's five main chapters deal with maritime development, quality of life in coastal regions, tools to manage human relations with the oceans, maritime governance, and the European maritime heritage and identity.

Finally, at international level, the Oslo and Paris Convention (OSPAR) obliges signatory countries to develop an ecologically coherent network of well managed marine protected areas by 2010. In this regard, the Scottish Government has voted that it should have the responsibility for delivery of marine nature conservation, including the network of marine protected areas, to meet such international obligations.

2.3 Rationale for Government Intervention

The seas are a major asset for Scotland and generate more than £2.2 billion annually for the Scottish economy. It is widely acknowledged, however, that there has been a major investment shortfall in the monitoring of the marine environment. It is also known that this biologically diverse environment is under pressure from many human activities which, either individually or combined, have the potential to permanently alter the fundamental ecosystem processes. Such pressures stem from direct uses of the sea such as fishing, oil and gas extraction, recreational activities and tourism as well as other pressures originating from anthropogenic sources, i.e. climate change. In some cases such fragile ecosystems may already have been affected (Scottish Government, 2008[2]), for example:

- the population of common seals in Orkney has declined by over 40% since 2001.
- Arctic tern numbers have reduced by 95% between 1986 and 2004;
- the population of bottlenose dolphins in the Moray Firth may have declined between 1990 and 2005;
- some fish stocks are not being harvested sustainably in some Scottish waters;
- a long term increase in salinity is being observed in offshore Atlantic waters. Salinity is much more variable in the North Sea waters;
- whilst overall the primary production of Scottish seas is in a favourable state, changes in the seasonal cycles of zooplankton are potentially vulnerable to climatic changes. Zooplankton are the main diet for many seabirds and the underpinning for marine ecosystems;
- thermal expansion of the sea and melting ice is leading to sea level rise. All Scottish mainland tide gauges have recorded sea-level rise over the last 100 years.
- 2% of the country's coastline is subject to coastal erosion; and
- problems remain with litter on Scottish beaches; 90% of the rubbish contains plastics and 80% comes from land-based sources.

The aim of the Scottish Marine Bill is to manage Scotland's coasts and seas in a way that balances the interests of resource use and resource protection, to create a more stable environment, making it more attractive for long-term investment. Successive enquiries have identified a number of necessary changes[3]:

- to clarify overall objectives for the marine environment and meet them more effectively and affordably;
- to manage growing, often competing demands for use of marine space, including balancing environmental and socio-economic considerations. This includes a need to provide greater certainty for those proposing developments in marine areas;
- to meet existing and new marine obligations and aspirations. We need to develop and implement ecosystem-based approaches to marine management and make improvements to marine nature conservation;
- to improve integration and reduce complexity of marine management and regulation, in line with wider Scottish Government and EU policy aims.

[2] Scottish Government (2008): Scotland's Seas, Towards Understanding their State

[3] SG (2008): A Consultation on Scotland's First Marine Bill.

- to give local communities a stronger voice in marine matters and to ensure accountability at the local and Scottish levels on marine decision making.
- to ensure a strong and coherent Scottish voice and play an effective role in the wider management of UK seas; and
- to lead the way in Scotland on how the seas in North West Europe can be managed to strike the right balance between economic, social and environmental priorities.

Scotland's marine environment has an historical dimension that contributes to its quality and character. Marine historic assets such as historic shipwrecks are also positive contributors to the cultural, economic and social fabric of Scotland. People want to see the most important marine historic assets safeguarded and used sustainably for the benefit of current and future generations. In 2004–2005, the Department of Culture Media and Sport (DCMS) and the devolved administrations carried out a public consultation, *Protecting the Marine Historic Environment, Making the System Work Better*. Responses to this and extensive scoping work concluded that existing mechanisms were no longer fit for purpose. This work resulted in proposals for new legislation to protect the marine historic environment as set out in the White Paper *Heritage Protection for the 21st Century* and subsequently to a draft UK Heritage Protection Bill. In November 2007, Scottish Ministers withdrew from UK-wide marine provisions in the Heritage Protection Bill in favour of legislating on the protection of marine historic assets within the Scottish Marine Bill.

If there were no Government intervention, integrated planning of activities would be constrained, with a continued risk of conflicts between different users of marine and coastal areas, a less efficient use of marine space and deterioration of the marine environment. While it is recognised that considerable efforts have been made by some sectors in recent years to develop more strategic and inclusive approaches to development planning, these remain essentially sectoral initiatives and there continues to be deficiencies in the integration and co-ordination of planning across Government.
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3. CONSULTATION

3.1 Within Government

Government departments and agencies consulted on measures contained within the Bill include the Environment, Education, Economy and Justice Directorates within the Scottish Government, the Fisheries Research Service, Historic Scotland and the Scottish Fisheries Protection Agency.

3.2 Public Consultation

The Scottish Government published *Sustainable Seas for All – a Consultation on Scotland's first Marine Bill* on 14 July 2008, seeking views on proposals for the sustainable management of Scotland's seas and coasts. The Scottish Government was assisted by the Advisory Group on Marine and Coastal Strategy (AGMACS) and the Sustainable Seas Task Force (SSTF) in developing the proposals in the consultation document. AGMACS and the SSTF included representatives of a wide range of interests in the marine environment.

Consultation documents were issued to 1,012 stakeholders in July 2008. The Scottish Government published the results of the consultation on 23 January 2009. A number of additional documents were issued after the launch of the consultation, including a Partial Regulatory Impact Assessment.

Stakeholders involved in the consultation process included the Food Standards Agency (Scotland), the Rural Affairs and Environment Committee of the Scottish Parliament, the Scottish Environment Protection Agency (SEPA), Scottish Natural Heritage (SNH), the Forestry Commission Scotland and the Crofters' Commission. The consultation was also made available on the Scottish Government web site and members of the Scottish Government Marine Directorate held public meetings around Scotland over the consultation period to provide an opportunity for members of the public, relevant organisations, businesses and other interested parties to discuss the proposals.

In preparing the report contributing to the Partial Regulatory Impact Assessment, we also consulted with a number of organisations in order to obtain baseline information and to determine the potential impacts of the options. This Full Regulatory Impact Assessment takes account of the responses to consultation and to a separate consultation undertaken by Scottish Ministers on the detailed proposals for marine historic environment site protection as part of the Scottish Historic Environment Policy (SHEP) series.

4. OPTIONS FOR A NEW SYSTEM OF MARINE PLANNING AND COASTAL ZONE MANAGEMENT

4.1 Options

4.1.1 Introduction

The options for a new system of Marine Planning in Scotland have been developed over many years through a number of initiatives, both in the UK and more locally (e.g. AGMACs, the Sustainable Seas Task Force[4]). The most recent steer on the potential options is provided in Sustainable Seas for All[5].

The manner in which marine planning might be managed, and how the objectives that underpin it might be delivered through licensing and nature conservation initiatives, is closely linked to the options on other policy areas of the Scottish Marine Bill.

At this stage, there are two main options in relation to marine planning. These are:

- Option 1: no change. This represents the baseline for comparison with other options; and
- Option 2: Implement a statutory planning system.

The main features of these options, the potential risks associated with them and the information sources that will be required to support an assessment of the costs and benefits are described in more detail in the rest of this section.

4.1.2 Option 1: No Change to Current Arrangements

Main Features

Under this option, a marine planning system would not be implemented. There would be little or no formal integrated planning of activities. Although high-level marine objectives might exist, stemming from national and international initiatives (UK Marine Bill, European Marine Strategy Framework Directive (MSFD)), there would be no formal system to 'unpack' these and to deliver objectives at lower levels in an integrated way. Decision-makers would need to take account of the high level objectives through the various sectoral licensing systems.

Potential Risks

There are a number of risks associated with this option. These are summarised in Table 4.1.

4 http://www.scotland.gov.uk/Topics/Environment/Water/16440/SSTF

5 Scottish Executive. 2008. Sustainable Seas For All: a consultation on Scotland's first marine bill.

Table 4.1: Summary of Potential Risks of Option 1	
Type of Risk	**Description**
Sectoral conflicts	Without a planning system to provide an integrated and proactive approach to marine management, the marine licensing system on its own may not be effective enough in addressing conflicts that arise between marine activities
Modified, delayed or refused development applications	Lack of clearly expressed and integrated policies could result in unclear and ambiguous requirements for developers. Decision-makers could face significant difficulties in evaluating whether proposed new developments did or did not support the achievement of high-level objectives. This might result in additional and disproportionate requirements being placed on developers to seek to demonstrate how development activities were consistent with the achievement of high-level objectives, leading to uncertainty and delay. Sectoral conflicts among users may also result in further modifications to development designs, and delayed or refused applications. Additional costs would be incurred by public bodies and industry
Cumulative impacts	Lack of an integrated assessment of the cumulative impact of sectoral activities on each other, on the environment, and on society may result in unsustainable development, potentially affecting all those with interests in the Scottish marine environment
Less efficient use of marine space	As pressure for the use of marine resources increases, a lack of planning may result in the inefficient use of marine resources. Spatial planning can investigate the potential to maximise the sustainable economic revenue from a particular resource or site. This may ultimately reduce the amount of marine resource that is 'sterilised' (i.e. excluded from other uses); for example, cables, pipelines and offshore energy installations may exclude the extraction of marine aggregates and fish through dredging
Deterioration of the marine environment	The lack of an integrated system to deliver high-level objectives at the local scale and to assess cumulative impacts from multiple activities may result in continued deterioration of marine ecosystem components on which the economy depends and processes with indirect impacts on the economy, society and other environmental aspects
Lack of preparation and long-term vision	With new technologies being developed and new activities occurring in the marine environment (e.g. carbon capture and storage, renewable energy devices), there is a risk that, without long-term spatial planning, Scotland will be unprepared to deal with the new demands
Inefficient collection and use of data	Without a strategy coordinating research funding and efforts, data collection may remain inefficient, potentially resulting in gaps and overlaps

4.1.3 Option 2: Implement a Statutory Marine Planning System

Main Features

Following the recommendations of SSTF, likely features of a statutory marine planning system would include:

- A **statutory** basis, whereby public authorities are required to make decisions "in accordance with" the plan and appropriate policy documents "unless relevant considerations indicate otherwise";

- A **three-tiered** approach consisting of:
  - an international tier in terms of the MSFD and OSPAR objectives;

  - a national marine policy statement and marine objectives for clean, healthy, safe, productive and biologically diverse seas and a national Scottish Marine Plan; and
  - a local level composed of 9–13 plans within Scottish Marine Regions (SMR). We have assumed that the focus of these plans will be waters within the territorial limit (12 nm), reflecting the relative distribution of pressures. Not all areas will need plans (they are only necessary where there are activities to plan and potential conflicts, e.g. Solway, the Firths, and the West Coast);

- National **marine objectives** that underpin the Scottish marine plan and encompass ecosystem, biodiversity, social and economic elements. There will need to be clear high-level objectives (these should reflect the objectives being developed under MSFD, ICES, OSPAR and the UK Government's vision for Clean, Healthy, Safe Productive and Biologically Diverse Oceans and Seas), which will then be broken down in plans into lower-level objectives, performance indicators and targets. The national marine objectives themselves are part of the baseline but the ability to deliver them will be provided by the marine planning system;

- Planning responsibilities **out to 200 nm**. Although the majority of activities, and therefore planning focus, occurs within 12 nm of the coast;

- **Responsibility for making the plan** will lie with Marine Scotland (the proposed Scottish Marine Management Organisation (SMMO) - see Section 7) for the national marine plan, with Ministers responsible for signing off the plan. At a local level, plan making responsibilities could be delivered in a range of different ways including through local arms of Marine Scotland (possibly supported by local Coastal Partnerships on community and stakeholder engagement), local authorities, or through existing river basin management planning processes under the Water Framework Directive;

- A mechanism for **consultation** on the draft plan as part of the plan making process and provision for **enforcement** of plan policies where required. There are requirements for Strategic Environmental Assessment (SEA) under the Environmental Assessment of Plans and Programmes (Scotland) Regulations 2004 but requirements for public inquiry into a national plan are less clear;

- The plan-making body would have responsibility for co-ordinating the management of relevant **data** and maintaining and making available appropriate information to support marine planning; and

- Finally, the principles of **ICZM** should be considered in the plan-making process. The consultation paper defines Integrated Coastal Zone Management (ICZM) as "a management process that aims to facilitate more integrated working or partnership working on the coast by different interests, including local communities."

The SSTF supported the overall objective for marine planning set out in Table 4.2.

Table 4.2: Overall Objectives of Marine Planning

"The overall objective of marine planning in Scotland is to provide a framework for decision making for the sustainable management of the marine and coastal environment, integrating the interests of resource use and resource protection in a way that:

- *Is founded on the five guiding principles of sustainable development (as listed in "Seas the Opportunity"):*
  - *Living within environmental limits,*
  - *Ensuring a strong, healthy and just society,*
  - *Achieving a sustainable economy,*
  - *Promoting good governance, and*
  - *Using science responsibly;*
- *Maximises the social, economic and environmental value of the marine resource;*
- *Facilitates the sustainable use and enjoyment of this resource; and*
- *Incorporates improved measures to protect and restore the natural marine environment."*

A **Scottish marine planning system** would cover all activities, constraints and obligations in the marine environment around Scotland. It could take the lead on spatial planning for an activity, not withstanding that policy and/or licensing responsibility had not been devolved:

- marine renewable energy;
- biodiversity obligations;
- marine nature conservation measures;
- sea fisheries and inshore fisheries;
- ports and harbours;
- aquaculture;
- activities covered by regimes such as marine licensing and environmental consents including pollution;
- pipelines and cables;
- sand and gravel extraction;
- historic marine environment;
- recreational activities and tourism; and
- the MSFD obligation to achieve 'good environmental status'.

A **local marine plan** might deliver the following features:

- strategic local vision for marine and coastal areas;
- local interpretation of national marine plan and priorities;
- consultation and stakeholder engagement;
- development of local management policies for specific sectors and activities;
- identification of areas of potential conflict and resolving conflict;
- a framework for the granting of development consents;
- identification of areas of sea for potential activity/development;
- identification of areas and actions needed for conserving biodiversity;
- local decision-making for the application of marine nature conservation measures;
- construction of shared principles that could be applied by local public sector organisations in their approach to carrying out activities in the marine area;

- coordination with existing local management plans and existing regimes (which may not be marine in their focus) to ensure joined up delivery of a shared local vision for the marine area; and
- local data and information gathering and coordination to inform the development of the plan.

Potential Risks

There are a number of potential risks associated with this option.

Implementation of a system of marine spatial planning represents a considerable investment and there is always a **risk that it will not achieve the anticipated benefits**. This risk can be mitigated by ensuring that the planning process is adaptable with regular review throughout the plan process and provision for consultation and public hearings.

A second risk is that the system may become **overly complex or bureaucratic**, leading to uncertainty and delay (with associated costs) for developers and excessive costs to Government during the initial plan-making process; or that plans, once produced, are not adhered to. The risks of delay during plan preparation can be mitigated by ensuring that a robust planning process is established, with clear responsibilities and time scales for plan preparation.

Implementation of a statutory system of planning, with a requirement on decision-makers to follow the plan unless material considerations indicate otherwise, should ensure that **the requirements of plans are generally adhered to**. Ensuring that relevant stakeholders are fully engaged in the preparation of plans and that a participative process is developed to support their implementation will improve acceptance and understanding of plan objectives.

Incompatibility among policies may occur between neighbouring marine and terrestrial plans and may cause confusion for users of the system, and reduced effective management. In addition, the boundaries for marine spatial planning are administrative ones (i.e. Scottish and regional borders, seaward limit of 12 nm). Such **boundaries may be artificial** from an ecological perspective and, as a consequence, it may be difficult to deliver an ecosystem approach and integrated nature conservation planning. Ensuring a broad level of early consultation on plans and continued involvement in UK and international planning initiatives will improve the integration of Scottish marine plans with neighbouring marine and terrestrial ones.

4.1.4 Comparison of the Options

Table 4.3 summarises the features of the two options.

Table 4.3: Summary of Options for a New System of Marine Planning and Coastal Zone Management		
	Option 1: No change	**Option 2: Statutory Marine Plan**
Scope	International/UK plan beyond 12 nm only	Three tiered approach: • International/UK; • Scottish plan out to 200 nm; • 9 – 13 local plans within Scottish Marine Regions (SMRs), focused on territorial waters
Objectives	High-level social, economic and environmental objectives will still be required to meet obligations under the Marine Strategy Framework Directive (MSFD), and sustainable development. No plan for interpreting these at lower levels.	High-level social, economic and environmental objectives to be developed. These should reflect Scottish issues as well as broader objectives, e.g. from the MSFD. Lower level objectives delivered through local plans.
Plan-making	No plan	Plan-making body to develop the plan, sign-off by Ministers
Data	Existing responsibilities for data management and co-ordination continue	Plan-making body responsible for management and co-ordination of relevant data
SEA	Regional and sectoral SEA	SEA of plans within a more local context
Appeals	Appeal process limited to licensing decisions	Assuming a similar system to the terrestrial one; no appeal system for national plans but provisions for public inquiry of local plans
Stakeholder involvement	Existing stakeholder engagement activities will continue via local fora.	Each SMR will have a board comprising representatives from the main stakeholder interests
Delivery	Existing responsibilities for delivering objectives will continue. Decisions on licensing etc. will continue to be taken on existing basis.	Authorities will be required to make decisions 'in accordance with the plan' Public bodies will be required to take note of the plan in decisions on licensing etc. Lower tier plans will need to take account of the Scottish Plan
ICZM	Reduced potential for integration with land and coastal based management	SMRs will be responsible for delivering the principles of ICZM

There is a further potential option, of implementing **a non-statutory planning system**. This would still involve collation of marine data and information, accompanied by the setting of marine objectives and priorities. Spatial plans would be developed largely as outlined above, but there would be no statutory requirements for decision-making authorities to act in accordance with them. The plan may only require that public authorities must "have regard to" the plan in making decisions. Public hearings on the plan would also not be part of the process.

The main potential risk with a non-statutory system of planning is that plans, once produced, might not be adhered to. It might be possible to limit this risk to some extent, by ensuring that relevant stakeholders are fully engaged in the preparation of plans and that a participative process is developed to support their implementation. However, as the process and costs involved in preparing a plan are largely the same as

for a statutory planning system but with fewer benefits, this option has not been assessed in detail here.

4.2 Sectors and Groups Affected

As noted above, a planning system (or lack of) affects all activities and interests in the marine environment around Scotland.

Key **industry** sectors affected include:

- marine renewable energy;
- fisheries (finfish and shellfish);
- ports and harbours;
- shipping;
- aquaculture;
- oil and gas extraction and related pipelines
- telecommunication and power cables installation and operation;
- sand and gravel extraction;
- recreational and tourism, and
- other activities covered by regimes such as marine licensing and environmental consents (see Section 5).

Affected **public sector** organisations include those that are responsible for managing and licensing the activities listed above, not all of which are devolved to the Scottish Government. They include not just Scottish Government departments and Agencies (such as Historic Scotland and Scottish Natural Heritage), but also local authorities and regulators, as well as the UK Government.

Other groups affected include recreational users of the marine environment, non-governmental organisations with interests in the marine environment and the general public.

4.3 Benefits

4.3.1 Option 1: No change

There are no additional long-term benefits from Option 1. There may be some short-term benefits, in that policy makers, businesses and marine users will not have to modify their activities. However, it is likely in the longer term, that political and economic pressures on the marine environment will ultimately require alternative solutions and consequent modifications in activity.

4.3.2 Option 2: Statutory Marine Plan

Studies by AGMACS, the SSTF and the Irish Sea Planning Pilot identified a range of potential benefits of marine planning. These are summarised in Table 4.4.

Table 4.4: Summary of Potential Benefits of Marine Planning	
Type of Benefit	**Description**

General	• Reduced planning risk and uncertainty;
	• A more informed site selection process;
	• Delivery of sustainable development;
	• Optimising administrative costs and resources, including:
	  • more efficient management of consent applications;
	  • better understanding of future demands for consents;
	  • improved environmental objective setting; and, possibly
	  • reducing the costs of undertaking sectoral SEAs by virtue of the fact that these can draw strategic information from the plan and the planning process;
	• Meeting international obligations such as the EU Integrated Maritime Policy;
	• Helping to deliver the aims of the EU Marine Strategy Framework Directive for member states to develop national marine strategies to achieve for Good Environmental Status for their waters by 2020; and
	• Improving prospects of increased awareness and ownership of marine conservation features and issues, particularly amongst users, regulators and decision-makers.

Economic	• Allows greater confidence for industry when planning new development and a reduction in conflict between competing users; • Provides for rational allocation of space in the marine environment that will help to deliver a strategic vision for Scottish seas in accordance with government priorities and optimise future allocations; • Promotes efficient use of space and resources, in a way that reduces impacts on other users and the environment.
Environmental	• Ensures there is space for biodiversity and nature conservation measures and places biodiversity commitments at the heart of planning and management; • Safeguards the historic marine environment; • Provides a system of objectives, targets and actions in order to achieve nature conservation objectives; • Provides a broad framework within which to understand and maximise the value of a network of multiple-use sites and highly protected marine areas. • Offers a key tool to pre-empt or address cumulative effects on the natural environment.
Social	• Improves the opportunity for stakeholder involvement, particularly in lower level planning. However, it is important that stakeholder engagement is timely, transparent and not simply focussed on data gathering in order to ensure a more participative decision-making process.

There are potential benefits for the full range of stakeholders from marine planning. The scale of the benefits is impossible to quantify accurately, as it will depend on the way in which planning operates in practice and the specific features of each plan. However, planning could significantly reduce the costs of conflicts, delays and compensatory measures associated with the current system, which can cost from several hundred thousand pounds to millions of pounds per development (see Section 4.4).

For example, the value of Scottish marine renewable energy generation is forecast to reach over £200 million per year by 2017[6]. If marine planning resulted in more rapid

[6] Forum for Renewable Energy Development in Scotland (2004). Harnessing Scotland's Marine Energy Potential. Marine Energy Group Report 2004.

approval of marine energy projects, so that this value was achieved by 2015 instead of 2017, the net present value would be increased by around **£5.5m**[7]. There could also be benefits in terms of increased tax revenues.

Marine related industries and goods and services are estimated to contribute over £2 billion annually to the Scottish economy (see Table 4.5).

Table 4.5: Economic Value of Marine-related Industries and Goods and Services	
Sector	**Gross value added (at 2004 prices)**
Sea fishing	£150 million
Fish farming	£122 million
Fish processing	£481 million
Building and repairing of ships and boats	£313 million
Marine wildlife tourism	£57 million
Other sectors	£1,033 million
Total marine sector	**£ 2,156 million**
Source: Scotland's Seas: Towards Understanding their State	

If reducing conflicts between uses and delays is assumed to increase gross added value by as little as 1%, this would be equivalent to around **£20 million per year**, or a net present value of **£294 million** over the 20 year assessment period.

4.4 Costs

4.4.1 Option 1: No Change

Continuing with the current system of marine management will not result in any additional costs. However, if the risks identified in section 4.1.2 are realised, they may give rise to costs for government, businesses, society and the marine environment. These are discussed below.

Costs of Conflicts of Use

Costs may result from the need to resolve conflicts between different users, marine resources and ecosystem components. For example, the Consultation Document identifies the following potential conflicts among interests in Scotland's seas:

- conflict between the need for development at fixed sites for aquaculture and renewable energy generation and the obstruction this might cause to ease of navigation;
- concerns surrounding the economically important but relatively un-regulated harvesting of seaweeds and potential impacts for fisheries, nature conservation and coastal defence.

[7] Assuming a current value of £5million per year and a constant annual rate of growth to 2017 as a baseline, with a higher annual rate of growth to achieve the same total by 2015 instead

- protecting habitats of species like dolphins and other marine mammals against the needs of commercial operations to exploit the resources of the seabed;
- the need to develop undersea infrastructure against the needs for safety of fishing;
- the need to dredge to keep ports open against the impact on shellfish and aquaculture; and
- needs of green tourism against the impact of commercial exploitation.

Resolving such conflicts will require time and resources for the organisations involved to negotiate and resolve. In extreme cases, they may result in court hearings with costs met by, for example, government, regulators, developers and businesses, Scottish Natural Heritage and environmental NGOs and local fora.

The costs associated with resolution of conflicts are, by their nature, case-specific. Table 4.6 (at the end of this section) summarises a number of examples of conflicts between different economic sectors and between economic activities and environmental objectives. Further detail on these examples is provided in Annex 1. The costs include:

- loss of the value of marine resources (e.g. aggregates) that cannot be exploited because of the presence of conflicting developments (e.g. pipelines), which can amount to millions of pounds;
- costs involved in resolving conflicts (e.g. costs of meetings and consultation, costs of relocating one or more conflicting activities);
- costs to environmental organisations of campaigning against developments that conflict with nature conservation.

Costs of Modified, Delayed or Refused Development Applications

Conflicts among users and unclear environmental requirements may also result in further modifications to development designs, and delayed or refused applications. In the absence of a plan, decision-makers could face significant difficulties in evaluating whether proposed new developments did or did not support the achievement of high-level objectives. This might result in additional requirements being placed on developers to seek to demonstrate how development activities were consistent with the achievement of high-level objectives, leading to uncertainty and delay.

Most of the costs of delays, modifications or refusals will tend to fall on developers. As the example of Dibden Bay illustrates (see Table 4.6), the costs of refusal of major development applications can be very high. In this particular case, costs of £40 million to £50 million were incurred for the consents and public enquiry process. Significant costs are also incurred by the Government through consultation and negotiation on proposals prior to their refusal.

For some projects, it may be possible to accommodate delays within the overall planning and construction timetable for the project. However, for projects on a critical time path, such delays could be extremely costly and jeopardise the viability of the project. An example of this is the Port of Mostyn, where damages of £9 million were awarded for revenue lost due to delays (see Table 4.6).

Stakeholders responding to the consultation indicated that delays in granting planning permission are a particular issue for the aquaculture industry, potentially leading to significant costs through loss of revenue. The lack of a clear planning framework makes it difficult for businesses to identify preferred locations and for local authorities to evaluate applications.

Costs of Compensatory Measures

Conflicts among users and unclear environmental requirements may also result in the need for compensatory measures. There are few examples of industry or Government providing compensatory measures in the marine environment. Where compensation has been provided, this has generally been specifically to meet the requirements of the Habitats and Birds Directives. The main reasons for such requirements have tended to be scientific uncertainties over the scale of impacts, leading to provision of compensation areas significantly larger than the predicted damage. In these cases, the costs are incurred primarily by the developer.

Examples are summarised in Table 4.6 with further detail provided in Annex 1. The major cost is associated with land purchase and scheme construction, which amounted to £3.2 million in the case of Immingham and Hull ports. Licensing and monitoring costs generally add around 10% of the total cost.

Costs of Cumulative Impacts

Lack of an integrated assessment of the cumulative impact of sectoral activities on each other, on the environment and on society may result in unforeseen consequences for all interests. An example is provided in Table 4.5 of where information on cumulative impacts would help in the assessment of risks to environmental objectives.

Table 4.5: Example of the Costs of Cumulative Impacts – Boat Traffic on the Moray Firth
An application has been made for a development on the site of a former fabrication yard in Ardersier. This includes housing, a hotel, a visitor centre and marina. The development is close to the Moray Firth SAC, one of the features of which is a population of bottlenose dolphins. There are concerns over the effect that a marina and associated boat traffic will have on the bottlenose dolphins, particularly this close to areas regularly used by them. To address these issues, a harbour revision order (HRO) and section 75 planning agreement are likely to be put in place. These will specify the need for a leasing scheme for moorings, a sea ranger to help manage boat activity in the area and a research and monitoring programme to confirm that the proposed mitigation measures are working. There are uncertainties over whether the HRO and section.75 agreement are appropriate tools for managing marine recreational activity for the purposes of conservation. This is not the only new marina in areas close to those regularly used by the bottlenose dolphins and it would be useful to have a tool capable of addressing the cumulative effects of increased recreational activity.
Source: Scottish Natural Heritage

Costs of Less Efficient Use of the Marine Environment

As pressure for the use of marine resources increases, a lack of planning may lead to the inefficient use of marine resources. Spatial planning can investigate the potential for interests to overlap and reduce the amount of marine resource that is 'sterilised' (i.e. excluded from other uses). For example, cables and pipelines may exclude the extraction of marine aggregates and fish through dredging. This may result, for example, in the sterilisation of aggregate assets worth millions of pounds (see Table 4.6).

Costs from Deterioration of the Marine Environment

The costs of deterioration relate to the loss of goods and services provided by the marine environment. A number of current risks of deterioration are identified in "Scotland's Seas: Towards Understanding their State" and are discussed further in Section 6 on marine nature conservation.

A summary of the type of costs and potential magnitude is given in Table 4.6 overleaf.

4.4.2 Option 2: Statutory Marine Planning system

Costs to the Scottish Government

Option 2 will give rise to costs for the Scottish Government in preparing plans at the international, national and local level.

Tasks involved in **international planning** are likely to include:

- consultation with national and international cross border partners;
- interacting with other planning authorities, particularly over reserved activities; and
- delivering international commitments to e.g. the MSFD.

The majority of these functions would be required regardless of the implementation of a marine planning system. Therefore, the costs incurred largely in consultation (attending meetings and writing responses) can be considered to be part of the baseline.

Marine planning is a new and developing initiative worldwide and there is therefore limited accessible and comparable data on costs. Some data are available on the costs of preparing terrestrial plans. However, these data need to be used with caution, as terrestrial plans differ from marine plans in a number of key areas:

- terrestrial planning systems benefit from a legacy of over 50 years experience of the planning process resulting in a stream-lined and cost effective system;
- experience has resulted in a large number of detailed policies being developed at national level to avoid and manage potential conflicts between different uses and between different uses and the environment;

Table 4.6: Examples of the Impacts of Conflicts, Delays and Compensatory Measures in the Marine Environment		
Conflict	**Description**	**Economic Impacts & Costs**
Sectoral conflicts		
Offshore Wind and Gas Pipelines	Conflict between a proposed Round 2 wind farm off the Humber Estuary and a pipeline carrying gas from Norway to Easington that was due to become operational in 2007.	(Unknown) costs involved in resolving the conflict (meetings and consultations) and significant costs of re-location of one or other of the projects
Aggregates and Offshore Wind	Conflict over future resource allocation for marine aggregates and a proposed wind farm site for Scarweather Sands off South Wales	Loss of marine aggregate resource (of unknown value).
Aggregates and Pipelines	Assuming a 250 m dredging exclusion zone on either side of the pipeline to protect its integrity and an aggregate resource depth of 2 m, 1 km of pipeline (or cable) laid over an aggregate resource will sterilise 1 million m3 of aggregate resource.	This is equivalent to 1.7 million tonnes of aggregate with a value of £8.5 million at the wharf
Environmental conflicts		
Fisheries	Concerns over the impact of mobile fishing gear on marine life in Lamlash Bay, Isle of Arran, particularly maerl beds.	Significant costs to the Community of Arran Seabed Trust for ten-year campaign on the issue. Marine planning would provide a structure to enable community input to local decision-making, thereby reducing the costs and length of campaigns.
Costs of modified, delayed of refused development applications		
Offshore Wind Farms	Significant populations of Common Scoter were identified at a proposed 90-turbine Windfarm project on Shell Flats (Irish Sea) at an advanced stage of development. An alternative site conflicted with maritime navigation	Significant delays to project and costs involved in failed applications and scoping alternative sites. Developer would not have chosen this site had bird population information been available.
	Significant populations of Red Throated Diver were identified for the London Array, an offshore wind farm of up to 341 turbines off the coast of southeast England.	Costs involved in delays to project and additional monitoring studies
	Scarweather Sands Offshore Windfarm and the unknown impacts of construction-related noise on marine mammals in Swansea Bay.	Delays to the issuing of a FEPA construction licence for the development. £500,000 monitoring programme to improve knowledge of porpoise activity in the Bay
Oil	Application by Melbourne Marine Shipping for ship-to-ship oil transfers in the Firth of Forth, increasing the risk of oil spills by a third in an area considered internationally important for wildlife	Costs of to a number of stakeholders of opposing the application. Such an application might not have been considered under a system of marine spatial planning.

Table 4.6: Examples of the Impacts of Conflicts, Delays and Compensatory Measures in the Marine Environment		
Conflict	**Description**	**Economic Impacts & Costs**
Ports	Port developments for Mostyn in the Dee Estuary has had ongoing licensing issues since the 1990s regarding the potential to affect the estuary as a whole.	Costs to fund studies of the whole estuary with no sharing of costs among other users of the estuary and regulators. Delays in proposals and extensive consultations regarding maintenance dredging costing more than £100,000. Lost revenue from a proposed Ro-Ro terminal of £1.3 million per annum. Ro-Ro operator (P&O) was awarded damages of £9 million for lost revenue.
	Dibden Bay: an area of land proposed for port development was designated as a SSSI and SPA during the development application process.	Failed application and costs of between £40 and £50 million for the consents and public enquiry process.
	Incompleteness of the SPA network at the time added confusion over nature conservation requirements for a proposed Ro/Ro Terminal in Immingham Outer Harbour	Five-month delay to project and costs of legal challenge to all parties involved.
Costs of compensatory measures		
Ports	In 2006, ABP implemented two managed realignment schemes as part of an agreed compensation package for port development impacts at Immingham and Hull. The two managed realignment schemes created new intertidal area of around 60ha, to offset losses of intertidal area of up to 30ha from the two port developments.	Costs to ABP of land purchase and construction – £3.2 million Costs to ABP of obtaining planning consent - £123,000 Monitoring costs - £400,000 over 10 years. Costs to Government (including Agencies and local authorities) – approx £36,000.
	Two separate port developments at Lappel Bank and Fagbury Flats resulted in a total loss of 54ha of intertidal mudflats. At the time of granting planning approval, the areas had not been designated as SPAs. Following a judgement in the European Court, the Government committed to providing compensation measures for these losses in accordance with the requirements of the Habitats and Birds Directives. In 2006, the compensation was provided through a managed realignment scheme.	Costs to the developer of EIA at £88,000. Additional costs of £200,000 were incurred for Project Management (part of which relate to consenting and part to scheme implementation. An additional £300,000 was incurred in relation to legal costs. The site selection process incurred a further £500,000. Unquantified costs to Government. Land purchase and construction costs of £6 million. Monitoring costs of £360,000 over 5 years. Total cost of around £7.5 million.
	The extension of the Trinity III terminal, Felixstowe was predicted to result in a number of impacts to the Stour & Orwell Estuaries SPA. Compensation package included the creation of 16ha of intertidal area at Trimley marshes	Construction cost only of Trimley marshes was £1.2 million
Flood Defence Works	An 80ha managed realignment scheme at Paull Holme Strays on the Humber Estuary was agreed in 2005 as compensation for ongoing and future flood defence works.	Cost to EA of land purchase and construction - £7.5 million

- public acceptance of planning policies over the years has meant that it has been less necessary to collect data to resolve potential conflicts because they are effectively resolved by the policy;
- patterns of 'ownership' of the marine area differ from those in the terrestrial environment and maritime areas are perceived to be a public rather than a private resource;
- the scope of terrestrial planning is also more limited than the arrangements proposed for the marine area in the Marine Bill. For example, some key areas are not addressed by terrestrial planning such as policies relating to the environmental impacts of agriculture and there are fewer environmental objectives for land compared to the marine environment; and
- the environmental information requirements for marine plans are arguably greater because of the more open and connected nature of marine systems.

Two terrestrial plans provide a potential example of the costs of a **national marine plan** for Scotland. These are:

- the National Planning Framework for Scotland; and
- the Wales Spatial Plan.

These plans have a similar scope to that for marine planning, with a focus on sustainable development and are based on broad economic, social and environmental objectives. These plans are described Tables 4.7 and 4.8.

The tasks likely to be involved in preparing a national Scottish marine plan include:

- collation and management of data;
- plan preparation, including setting a marine policy statement, national marine objectives, policies and priorities;
- appraisal of the impacts of the plan;
- implementation of the plan; and
- review of the plan every five years.

Table 4.7: The National Planning Framework for Scotland

The Second National Planning Framework (NPF) for Scotland aims to set out a strategy for Scotland's spatial development to 2030, providing a national context for development plans and planning decisions and helping to inform the wider programmes of government, public agencies and local authorities. The Framework will play a key role in setting out, co-ordinating and integrating strategic development priorities. The legislation requires planning authorities to take the Framework into account in preparing development plans and it will be a material consideration in determining planning applications. Main objectives are for a Scotland that is wealthier and fairer, greener, safer and stronger, smarter and healthier. Preparation of the plan involves the following tasks and timing over almost two years:

- initial engagement on scope and content of the NPF: February-October 2007;
- the issue of NPF2: Discussion Draft;
- revision in the light of reaction to the discussion draft: Spring 2008
- scrutiny of a final draft in Parliament: Autumn 2008
- final considerations and publication of the NPF: Late 2008
- monitoring and evaluation: Ongoing

The NPF2 team comprises five full-time equivalents (FTEs):

- One Assistant Chief Planner
- 2 Senior Planners
- 1 SEA specialist
- 1 administrative assistant

Based on the Scottish Government pay band ranges for 2006[1], the average staff costs per year of the team is likely to be around £175,000. This excludes the costs of overheads.

No public inquiry is required for the NPF. It is submitted to parliament for 60 days' scrutiny and then goes out for public consultation. Under the Planning etc. (Scotland) Bill (2005), Scottish Ministers are to consult such persons or bodies as they consider appropriate in preparing or revising the national planning framework and may appoint a person to conduct an assessment of a planning authority's performance and decision-making. It is likely that a similar process will be adopted for the national marine plan.

Notes:
1. Scottish Executive. 2008. Equal Pay Review of The Scottish Government Main Bargaining Unit Pay System: Fourth Report 2006-07

Table 4.8: The Wales Spatial Plan

The Wales Spatial Plan (WSP) followed a similar process of development. The WSP was adopted by the Welsh Assembly Government in November 2004 with a plan period of 20 years. An SEA and Sustainability Appraisal was not required at the time. Scoping for a combined SEA and SA began in 2005 and was due to be published in 2008.

The costs of the plan, from 2001 to the publication of the plan in 2004, were:

- Preparatory research: £120,000
- Consultation document production: £40,000
- Consultation process: £50,000
- Final document production: £30,000
- Staff costs (based on a team of three for two years): £300,000
- **Total cost: £540,000**

Since its publication, there has been ongoing work on the Wales Spatial Plan. The core team has been expanded and 6 regional co-ordinators are currently developing the work further on a regional basis. The existing team structure comprises:

- 0.5 Head of Division
- 1 Grade 7
- 5 regional Spatial Plan Coordinators
- 1 Senior Executive Officer
- 1.5 Executive Officer
- 1 team support
- 0.5 personal assistant

The total annual staff cost for the Wales Spatial Plan team, estimated by averaging across the 2006 pay scales and including overheads at 87% of staff costs, is £745,500.

The Wales Spatial Plan budget has been set at **£650,000 per year** since 2005. However, it should be noted that the budget has been under-spent in each year. The under-spend is estimated to be around £100,000 for 2007 – 2008. This is due to the co-financing of posts and projects with the Department for Enterprise, Innovation, and Networks (DEIN), which delivers the economic and transport agendas in Wales.

These tasks would largely be carried out by the plan-making body (potentially Marine Scotland, see Section 7) but there would also be costs to other stakeholders (including government departments) in responding to the various consultation documents associated with the plan. Scottish Ministers anticipate that it will take somewhere between 12 to 18 months to draft marine objectives and construct a national marine plan. Allowing time for consultation suggests that the first Plan and objectives could take up to two years to produce.

Data Management

Effective management of the marine environment, both at a national level and local level, is dependent on sound science. Marine planning is likely to require spatially expressed information on a range of marine resources, including historic marine resources, and activities. Although data will also play a role in assisting decision-making in the licensing system and managing nature conservation interests, the costs for both data collation and management are assessed here.

According to the UK Department for Business, Enterprise and Regulatory Reform[8], the average cost for each of the eight offshore energy SEAs (including oil and gas and, more recently, offshore wind) which have been carried out since 1999, and which cover the whole of UK continental shelf, was £2.4 million. This included data collection, which may represent up to 90% of the SEA costs. A significant amount of broad-scale information, including information on the historic marine environment, is therefore already provided through SEA (SEA regions 4 to 7 include Scottish waters out to 12 nm from the baseline) and other data initiatives.

The UK Marine Monitoring and Assessment Strategy (UKMMAS) is putting in place arrangements to improve the co-ordination and reporting of marine assessments, to ensure that they are fit for purpose and to inform progress towards achievement of marine objectives. Furthermore, the Marine Environmental Data and Information network (MEDIN) aims to deliver a data management system, supported within Scotland by funds of £150,000 per year from the Scottish Executive. As part of this initiative, a Geographic Information System (GIS) has been identified as a priority providing a front end portal for users to access data relevant to their areas of interest. These costs may therefore be considered to be part of the baseline.

New data collection is likely to focus on informing areas where potential conflicts are anticipated or where there are gaps. The amount of information required will therefore be largely dependent on the issues and priorities involved in the planning system and are likely to be specific to each Scottish region. The costs of new data collection are therefore included within the costs of local plan preparation (see Table 4.15 below). However, a cost of **£150,000 per year to support a national database** has been assumed as part of the costs of the National Plan.

[8] Formerly the Department for Trade and Industry - DTI

Plan Preparation

The costs presented in Table 4.9 are the direct costs to Marine Scotland for the preparation of a national marine plan. We have assumed that the process and costs are likely to be comparable to that required for WSP. The core team required to develop a national marine plan is likely to be comparable to that for NPF (Table 4.7), excluding the costs of an SEA specialist (the costs of SEA are considered separately below).

Table 4.9: Potential Costs of Preparing the Scottish National Marine Plan[1]	
Activity	**Cost**
Preparatory research	£120,000
Consultation document production	£40,000
Consultation process	£50,000
Final document production	£30,000
Staff costs (based on a core team of 4): - Assistant Chief Planner (£53,000) - 2 x Senior Planners (2 x £31,900) - Administration assistant (£15,100)	£264,000
Total cost of plan preparation	**£504,000**
Notes 1. One-off cost, spread over two years 2. Based on a core team of four, including overheads, for two years	

The cost of developing objectives and policies for sustainable development and nature conservation is assumed to be included in the plan process above. This assessment does not differentiate between the development of objectives for the plan and those that may be required under other UK-level and international obligations (e.g. MSFD). Extensive work has already been carried out on marine ecosystem objectives as part of the MSFD and UKMMAS initiatives. Therefore, there may be cost savings in the development of objectives.

Appraisal of the Impacts of the Plan (SEA)

As for the NPF, an SEA of the Scottish marine plan will be required by the Environmental Assessment (Scotland) Act 2005. SEA is a systematic method for considering the likely effects of plans, programme and strategies on the environment. SEA integrates environmental factors into policy preparation and decision-making. It also has an important role to play in increasing public participation and facilitating openness and transparency in decision-making. From experience with the Wales Spatial Plan and its associated Local Area Statements, it is advisable that SEA is started early enough in the planning process in order to influence development and that the same processes for assessment are used throughout[9].

As noted above, the average cost for each of the eight offshore energy SEAs, which cover the whole of UK continental shelf, was £2.4 million per SEA. If the data

[9] Wales Environment Link (WEL) Statements on the Wales Spatial Plan, September 2007

collection element is removed, an SEA can be estimated to cost £240,000. The full RIA[10] undertaken for transposing the SEA Directive into UK law provides an estimate of £50,000 for an SEA of a regional (terrestrial) plan. The Strategic Assessment for the South West Regional Spatial Strategy was estimated at £70,000 – £80,000.

An SEA of a national marine plan will require more detailed consultation and analysis than that for a regional SEA or terrestrial SA. Taking these examples into account, and allowing for the scope of a national plan and the complexity of marine systems, **£250,000 for an SEA at a national plan level** (covering staff costs of £42,400 and consultation) provides a more realistic and conservative estimate.

Annual Running Costs

The Scottish Government has suggested that 30 to 35 staff would be required overall to resource planning. This includes two coordinators per local plan (i.e. 18-26, costs allocated to local planning below) leaving a small core for national and international planning (i.e. 9-12 staff). Some of these staff will be involved in the ongoing review process. We have therefore assumed that the team required to implement the Scottish national marine plan is likely to be closer to that for the WSP and will consist of a dedicated team of six (Table 4.8). The costs are set out in Table 4.10, based on Scottish Government pay band ranges for 2006[11].

Table 4.10: Annual Costs of the Possible National Scottish Marine Planning Team[1]

Team member[2]	**SE Pay Band**	**Total Average pay**
0.5 x Head of Division	C3	£26,500
2 x Senior Planners	B3	£63,800
2 x Planners	B1	£40,200
1 x Administrative Assistant	A3	£15,100
0.5 x Personal Assistant	A3	£7,600
Salary cost per year		***£153,200***
Overheads (87% of staff costs[3])		£133,300
Total annual cost (2006 salaries)		**£286,500**

Notes:
1. Based on 2006 salary scales
2. Four staff to prepare the plan (see Table 4.9); six to implement the plan; remaining staff will participate in reviews and international planning activities.
3. Based on DCLG 2006 overheads as a percentage of staff costs

Review of the National Plan

Scottish Ministers intend to review and revise the National Marine Plan and objectives on a five-yearly cycle. The UK Marine Bill RIA assumed that review of

10 DETR. 1999. Full Regulatory Impact Assessment on Regulations. www.communities.gov.uk

11 Scottish Executive (2008). Equal Pay review of the Scottish Government Main Bargaining Unit Pay System. Fourth Report, 2006-07.

plans will involve a full repetition of the process involved in initial plan development and is likely to include an SEA.

The full cost of plan preparation probably overstates the more specific requirements of plan revision. However, in the absence of relevant data this is provided as a maximum estimate, i.e. £750,000 per review including SEA. Assuming that it will take two years to develop the plan, over a period of twenty years there will be two full reviews.

Overall Costs to Government of National Plan

A summary of these costs over the 20-year period of this impact assessment is presented in Table 4.11. Further detail of the timing of costs is given in Annex 2.

Table 4.11: Summary of illustrative costs of National Scottish Marine Plans over 20 years, (Present Value Costs, 2008 prices)

Cost category	**Costs**	**Assumptions and Timeline**
Data management	£2,205,000	£150,000 per year from 2009; ongoing
Initial plan preparation	£479,000	£252,000 per year 2009-2010
Initial SEA	£237,000	£125,000 per year 2009 - 2010
Running costs	£3,667,000	£286,500 per year from 2011; ongoing
Review of plan	£730,000	2 reviews @ £504,00 in 2015 and 2020
Total discounted cost	**£7,317,000**	
Average Annual costs	**£498,000**	

Notes
*: Rounded to nearest thousand; figures may not add due to rounding.

Although the specific format of **local marine planning** has not been prescribed it is likely to be developed at the scale of 9 – 13 Scottish Marine Regions (SMRs) and involve the following tasks:

- setting up of steering groups or SMR boards;
- plan preparation: setting local marine objectives, policies and priorities;
- appraisal of the impacts of the plan (SEA);
- public enquiry;
- data management;
- ongoing operation; and
- plan review.

We have assumed that the focus of these plans will be out to the limit of Scottish territorial waters, on the basis that human pressures are most concentrated in this area. The national marine plan could be used to manage the generally lower levels of pressure offshore.

A steering group or board is likely to be appointed to deliver local planning and may include local authorities, marine industries, Local Coastal Partnerships, Inshore Fisheries Groups, RBMP Area Advisory Groups and various recreational interests.

It is not yet clear who will meet the full cost of developing local plans. We have assumed here that the costs of setting up and running boards for SMRs will be met by the Scottish Government.

The costs presented in this section represent the direct costs for the creation and operation of local marine plans. Examples of costs are drawn from the costs involved in comparable existing plans such as:

- Irish Sea Marine Spatial Planning Pilot (MSPP);
- River Basin Management Plans (RBMP);
- English Regional Spatial Strategies (RSS);
- inshore Fisheries Groups;
- the Sustainable Scottish Marine Environment Initiatives (SSMEIs), particularly those in the Clyde;
- the Scottish Coastal Forum;
- the Solway Local Partnership; and
- Area Advisory Groups (AAGs) under the WFD[12].

Setting-up and Running of SMR Boards

Possible models for the SMR Boards include the Boards of National Park Authorities and liaison panels for River Basin Management Plans (RBMP) under the Water Framework Directive.

The Board of the National Park Authority is the principle decision-making body. The Boards are typically composed of locally elected representatives and Scottish ministerial appointments. The Loch Lomond & the Trossachs National Park Board has 25 members and cost £250,000 to run in 2004/05[13]. SNH notes that the composition of the SMR Board will be important and should balance the need for local representation with the need to include expertise and experience on inshore fisheries management, aquaculture and maritime shipping/ports.

The Environment Agency estimated that it incurs costs of £64,000 (personal communication, 2006) to set up each liaison panel associated with RBMPs. This includes the costs of venues, catering, running stakeholder workshops and training courses for staff. Liaison panels have no more than 15 members, except the cross border panels, which may have up to 18. These costs do not take account of time contributed by existing Environment Agency staff or overheads, nor do they cover the costs of developing communication strategies, thus they may represent an under estimate.

12 http://www.sepa.org.uk/wfd/rbmp/

13 SNH. 2006. SNH Advice on Coastal and Marine National Parks: Advice to Scottish Ministers.

For local marine planning, there may be opportunities for cost savings where existing coastal partnerships are already well-developed, e.g. the Solway Local Partnership and fora established for the SSMEIs. Therefore, a cost of **£100,000 per year** is estimated for each SMR Board to cover workshops, training and annual running.

Plan Preparation: Setting Local Marine Objectives, Policies and Priorities

Estimates of the cost of plan preparation were drawn from experiences with the Clyde SSMEI Pilot Project, the Highland Regional Council and the Marine Spatial Planning Pilot (MSPP) in the Irish Sea and the Highland Regional Council, as shown in Table 4.12.

Table 4.12: Examples of the Costs of Local Plan Preparation

Example	**Cost**
SSMEI Clyde Pilot	Total budget over the last three years is £315,000 (pers comm.). However, there are considerable differences between an SSMEI and a statutory plan at a local level. The SSMEI Pilots we instigated by the Scottish Executive in 2002 as a testing process for the management tools available for marine planning. These first plans are not statutory and will not cover the full scope required under the proposed level of planning in the marine bill due to resource constraints. The SSMEI's are also dependent on in-kind contributions from involved agencies and existing voluntary partnership schemes that are not expressed in their running costs.
Highlands Council	Spends £11 million annually on plan-making and development control (plan-making accounts for approximately half of the expenditure, i.e. £5.5 million). The Council is responsible for managing 26,000 km^2 of land, representing 33% of Scotland. If the cost is extrapolated to the whole of Scotland, and divided by 12 (for the average number of local plans), this indicates a possible cost per plan of £1.38 million
Irish Sea MSPP	the Irish Sea MSPP estimated costs for a non-binding plan to be £1 million and assumed that a binding plan would cost twice as much to prepare (£2 million) due to the costs of greater stakeholder consultation, examination in public and the need to provide a robust mechanism for delivering a binding plan. These additional costs of binding plans are covered separately here from plan preparation, therefore the costs to government of plan preparation alone, are unlikely to vary between statutory and non-statutory plans.

Given the examples above, it seems likely that the cost of plan preparation could range from £0.75m to £1.5m, covering the broad range of planning requirements in the different Scottish marine regions. Although each plan is likely to be developed by an independent SMR Board, it is likely that overall direction will come from the national plan-making body (potentially Marine Scotland – see section 7). There are therefore likely to be efficiency savings in plan development over time from the increase in experience within the plan-making body. This saving could amount to around 10%, potentially reducing the cost of this component to **£680,000 to £1.35 million per plan**.

Public Inquiry

Public Inquiry is a mechanism to allow interested parties to raise objections to proposals contained in local terrestrial plans in Scotland. An approach similar to this process could be incorporated into marine planning in Scotland. In order for the process to be unbiased and effective, there needs to be sufficient separation between the original plan-makers and those undertaking the review. It is our understanding that in Scotland, the Scottish Executive Inquiry Reporter's Unit (SEIRU) or Secretary of State[14] meets the cost of Public Inquiries on plans developed by local councils and appoints an independent inspector. It is likely that a unit such as SEIRU will also be responsible for running public inquiry on marine plans.

A comparison may be provided by the Examination in public (EiP) process for Regional Spatial Strategies (RSS) in England. The responsibility for running the EiP on RSS is borne by the Planning Inspectorate (PINS). Examples of the costs are provided in Table 4.13 and are based on discussions with a senior PINS official.

However, the scope of such an inquiry for a local marine plan will be somewhat different from that of a local terrestrial plan. While marine bodies are likely to deal with geographical areas of a comparable size to a terrestrial region, the issues that they deal with are unlikely to be as fine grained and detailed, although they could be more significant, and the number of interested parties is expected to be considerably fewer. It is therefore expected that the costs of running an inquiry for a local marine plan will be at the bottom end of the range in Table 4.13.

Table 4.13: Estimated Average Costs to the Planning Inspectorate of Examinations in Public for English Regional Spatial Strategies

Activity	**Cost per Strategy**
Contribution to the cost of publishing the draft report	£30,000
Recruiting the panel	£10,000
Accommodation: hire of the venue where the EiP is to take place (costs for England outside SE)	£60,000 - £90,000[3]
Panel fees	£90,000 - £120,000[4]
Producing panel report	£30,000 - £40,000
Publishing changes to strategy	£30,000
Publishing final report	£60,000 - £70,000
Total	**£310,000 - £390,000**

Notes:
1. For the East Midlands
2. £10,000 to £15,000 per week for six weeks
3. £30-40,000 /quarter for about three quarters

Source: Planning Inspectorate estimates

In addition, the SMR Boards (or the plan-making body) will incur costs for appearing at the Public Inquiry, addressing the consultation responses, undertaking further research and evidence gathering where necessary. The cost to the South West

[14] Town and Country Planning (Scotland) Act 1997, Chapter 8.

Regional Authority of this activity for EiP was estimated at £600,000. Similar costs could be incurred in Scotland; if so, this could be a significant additional cost for the SMR boards or the plan-making body.

Appraisal of the Impacts of the Plan (SEA)

As noted for the national marine plan, the costs of SEA can range from £70,000 to £240,000. At a local level, the same process will be required as the SEA for the national plan. Assuming some cost savings from experience gained in the process, an estimate of **£200,000 per SEA** is used here.

Data Management

As noted above, SEAs are likely to support a significant amount (£2.2 million per SEA) of the data collation required for marine planning. Data management is likely to take place at a national level.

Based on experience with the Marine Spatial Planning Pilot in the Irish Sea and other databases, the costs of establishing and maintaining a data and information system, which would be needed to support all the proposals in the proposed Scottish Marine Bill, including planning, could range from £200,000 to £10.5 million.

Taking into account the large amount of data provided through existing SEAs, an additional initial investment of £1 million per region is considered a sound estimate.

Annual Running Costs

As noted in relation to the national marine plan above, the Scottish Executive suggests that two full-time equivalents would be required to coordinate each local plan. These staff would be involved in preparation and implementation of the plan. The annual running costs of other local planning initiatives vary considerably. Examples are given in Table 4.14.

Table 4.14: Examples of Running Costs of Local Planning Initiatives

The **Highland Council** is responsible for managing 26,000 km^2 of land, representing 33% of Scotland. The Council has 211 staff and spends £11 million annually on plan-making and development control (plan-making accounts for approximately half of the expenditure). This equates to expenditure of approximately £52,000 per staff member.

The expenditure for the **Loch Lomond & the Trossachs National Park** in the 2005/06 financial year was £7.4 million, based on an average of 133 (full-time equivalent) staff. Approximately 16 of these are involved planning. Therefore, the running costs for the planning component are estimated at £892,000. This is partly funded by income of about £170,000 from planning fees. Overall, running costs for planning equate to £56,000 per staff member.

The **Solway Local Partnership** is a charity overseen by four trustees and is open to everyone interested in the sustainable management of the Solway. Total incoming resources for 2007 were £115,000 from charitable activities (in 2006 this was £116,000). Some of this is allocated to specific research projects and data collation. It also does not include costs for a secretariat, which are hosted and employed by Solway Heritage.

The **Lake District National Park** has 5 staff in development control and 4 in planning policy and

spends £1.3million on development control and £590,000 on forward planning annually. Respectively, this equates to expenditure of £260,000 and £147,500 per staff member.

The marine spatial planning pilot for the **Irish Sea** estimated the ongoing administrative costs for a binding plan at £20,000 per plan, per year. This cost would only be incurred after plan development, i.e. after the first two years.

The **Scottish Coastal Forum** supports nine local coastal fora that cover much of the Scottish Coastline. To implement coastal planning in Scotland, they advise that core specialist staff costs should be covered by an annual grant from the Executive of up to £50,000 per unit. This core funding could be met by match funding for specific projects from more local sources or organisations, potentially giving each unit an annual budget of £100,000 to deliver Integrated Coastal Zone Management in their own area. Currently the SCF runs on a budget of £30,000 for the employment of a part-time Officer and £12,000 for additional projects such as training and running conferences (pers comm., 2008). If a full time equivalent staff member was required at Scottish Government B3 level, with associated pensions and other benefits, an additional £10,000 would be required for staff costs (pers comm., 2008). This equates to a total of £52,000 per staff member.

Three **Inshore Fisheries Group** (IFG) pilots in the Outer Hebrides, the Clyde and the South East have been set up and backed by a total of £300,000 funding. The role of the IFGs is to represent the combined interests of fishermen in their respective areas, to develop management plans for the enhancement and development of inshore fisheries and to generate legislative management proposals. However, IFGs have no statutory duties or powers and it is unclear how far current funding goes towards covering their full costs.

The annual running costs, as shown in Table 4.14, range from £20,000 to £827,000 per organisation. Some of the differences depend on whether they include or exclude costs for data collation and research, plan preparation and review, and implementation and enforcement. Costs per staff member range from £52,000 to £56,000. With two staff members estimated to be required to coordinate local planning, it is likely that **£100,000 per year per plan** will be needed for annual running, implementation and enforcement.

Plan Review

Scottish Ministers intend to set out the timescales for SMRs to develop and review local plans. However, in order to ensure integration with the national plan they are likely to be reviewed on a similar timescale, i.e. every five years.

At this stage, there is no basis for estimating what the costs of such reviews could be, as it will depend on the individual circumstances of each marine plan. The costs could potentially be quite significant, especially in the early years of marine planning, as the process 'beds down'. If major changes to the plan are required there could be a need for widespread consultation and even a further Public Inquiry. For example, the Glasgow and Clyde Valley Structure Plan required a formal alteration in 2005. The Firth of Clyde Marine Spatial Plan has a 20-year vision and sets out a five-year framework to reach this vision. It is expected that this plan will be reviewed and rewritten after five years.

The UK Marine Bill RIA suggested that review of plans would involve a full repetition of the process involved in initial plan development. However, these plans involved a significant data component. In reality, it is unlikely that data costs will

form a significant component of the review process as data will be updated regularly as part of the ongoing management and monitoring of marine objectives. Furthermore, the full cost of plan preparation overstates the more specific requirements of plan revision. If simple amendments are required, such as later on in the planning process, cost of plan revision of local plans may therefore be as low as 20 percent of the original plan preparation cost.

Assuming that it will take two years to develop the plan, over a period of twenty years three full reviews will occur. We estimate that the first review may be quite similar in cost to the original plan preparation but that later reviews will be less involved. Therefore, costs are estimated at roughly 50% of full plan preparation, i.e. **£680,000 to £1.35 million**.

Overall Costs to Government of Local Plans

Based on the discussions and cost examples above, Table 4.15 provides a minimum and maximum total cost estimate for the provision of local plans, based on 9 to 13 SMR plans respectively; Annex 2 provides further detail on the timing of the costs.

Table 4.15 - Summary of Illustrative Costs of Local Planning (Present Value Costs, 2008 prices)

	Assumptions, including cost per plan	**9 plans, lower bound[1]**	**13 plans , upper bound[2]**
Initial plan preparation	• Plan preparation £680,000 – £1,350,000 • Public Inquiry - £310,000 • Appraisal of the plan (SEA): £200,000 • Data collation; £1,000,000 ***Total costs for initial plan preparation: £2,190,000 – £2,860,000, incurred in first two years only for each plan*** ***Assumes plan preparation is phased, with additional plans prepared every 2 years***	£14,355,000	£28,243,000
Implementation	• SMR Boards: £100,000 • Plan management, implementation and enforcement: £100,000 ***Total costs of implementation: £200,000 per plan per year. Costs incurred from 2011, with the number of plans to be implemented increased every two years***	£17,683,000	£26,893,000
Reviews	Total Costs for 2 reviews for each plan over 18 years (every 5 years after initial plan.) at £680,000 – £1,350,000;	£3,936,000	£10,987,000
Total discounted cost		**£35,974,000**	**£66,123,000**
Average annual costs		**£2,448,000**	**£4,499,000**

Notes
1: Assumes 2 plans prepared every 2 years, at lower bound of estimated costs range
2: Assumes 3 plans prepared every 2 years, at higher bound of estimated costs range

Historic Scotland (an executive agency of Scottish Government) has identified that provision of advice on the development, implementation and review of a national marine plan to ensure that it includes satisfactory consideration for the historic environment, advising on SEAs of the national and regional plans (Historic Scotland is a consultation authority under SEA) would cost the Scottish Government around £50,000 per year.

Costs to Industry

As one of the aims of a system of marine planning is to provide better guidance to local regulators, industry is likely to benefit from the proposals. However, some industries have expressed concern that the implementation of a new system of marine planning might have the potential to delay development proposals, particularly during periods of plan preparation. A well-designed planning system should address the needs of all users of the marine environment, including industry, in resolving resource conflicts. Nevertheless, clear transitional arrangements will be necessary to ensure that delays to decision making are avoided.

A planning system may impose restrictions over currently unregulated industry activities, such as algal harvesting and tourism. Therefore, there is the potential for greater restrictions to be imposed on such activities, resulting in further costs for the industry sectors affected. This can be addressed, however, by ensuring that industry is engaged in the planning process, so that such costs can be identified and mitigated as far as possible.

Costs to Others

The direct costs to other stakeholders of marine planning will arise from their participation in the planning process (e.g. in responding to consultations and participating in consideration of plans). The size of these costs will be dependent on how far a plan affects their individual interests and how far they wish to engage in the process.

Historic Scotland has also identified that the development and implementation by Scottish Marine Regions of regional plans should include a budget to allow for sourcing of adequate archaeological advice and information and has suggested that it would be prudent to earmark a figure of £75,000-£140,000 per year for a period of 10 years in the first instance across Scotland (i.e. if there are ten Scottish Marine Regions, this would equate to £7,500 to £14,000 per year for each). If this budget is not built into the direct cost of regional marine planning, there will be a cost to others (e.g. local authority archaeology services) of this magnitude in order to engage with the regional marine planning process.

SMR Boards

Representatives on SMR Boards may include those from local authorities, marine industries, Local Coastal Partnerships, Inshore Fisheries Groups, RBMP Area Advisory Groups and various recreational interests. There will be costs to these groups as part of their role on the board.

However, it may be argued that these functions are already carried out as part of the current marine management regime and the costs associated with this are therefore largely part of the baseline. Furthermore, as marine planning aims to streamline the management process, there may be cost savings. For example, it is possible that, with a development strategy in place, representatives will have fewer contentious development applications to respond to.

Public Inquiry

Costs to local authorities and other stakeholders of the public enquiry can be estimated by the time incurred by participants. The number of participants varies considerably, depending on the number of interested parties and issues raised. Examples of the possible costs include:

- the East of England EiP lasted for 47 days and considered nine matters. There were 18 key stakeholders involved in the consultation process throughout the preparation of the RSS and about 28 participants for each of the matters at the EiP (a total of 252 participants). If these participants each attended for two days on average (a total of 500 person-days), and assuming a daily cost of £500, the cost could amount to £250,000;

- the South West EiP List of Matters and Participants identified nine matters to be discussed; 41 local planning authorities were invited to attend, most of these will be attending for 1-2 days and will be responding to one matter. This amounts to around 54 days of the local planning authorities' time. In addition to this, representatives from the local planning authorities will also be invited to attend some matters on behalf of the strategic planning authorities. Three strategic planning authorities are invited to attend, and this amounts to 63 days. The cost to local planning authorities for participating at an EiP therefore totals 117 days. Assuming a daily staff cost of £500, this is equivalent to a cost of £58,500. There are also additional costs for research and preparing for the EiP etc; however, it is difficult to separate these costs as separate items from the authorities' everyday planning functions.

The costs to participants in public enquiries on marine plans in Scotland could be of a similar order. However, it could be argued that costs of participating in the planning process will be offset by savings in the time taken in responding to contentious development applications.

Social and Environmental Costs

These costs are expected to be minimal as the aim of Marine Planning is to provide benefits for society and the environment from more sustainable management of the marine and coastal environment. However, restriction and zoning measures associated with planning may have implications for recreational activities and the siting of marine protected areas. These impacts are assessed further in Chapter 6 on Marine Nature Conservation.

4.5 Small/Micro Firms Impact Assessment

Almost all of the industry sectors identified in section 4.2 include some small and micro-sized firms.

As one of the aims of a system of marine planning is to provide better guidance to local regulators and industry, small firms are likely to benefit from the proposals.

A well-designed planning system should address the needs of all users of the marine environment, including small-scale activities, in resolving resource conflicts. This may lead to better representation of small firms that tend to be overlooked in such negotiations, particularly if they are not members of a relevant industry body or association.

However, a planning system may impose restrictions over currently unregulated activities, such as algal harvesting and tourism. Many of these activities will be dominated by small businesses. Therefore, there is the potential for greater restrictions to be imposed on such activities resulting in further costs for small businesses. This can be addressed, however, by ensuring that small businesses are engaged in the planning process, so that such costs can be identified and mitigated as far as possible.

4.6 Competition Assessment

The benefits of a system of marine spatial planning include:

- increased transparency from clear policies
- reducing the uncertainty to developers in the marine area,
- allowing the needs of all users to be considered, and
- equal access to information and data on the marine area.

All of these benefits are likely to have a positive impact on competition, by producing a more equitable situation both across and within different industry sectors.

4.7 Enforcement, Sanctions and Monitoring

Responsibility for compliance, monitoring and enforcement of plans would be carried out by the plan-making body, which could be Marine Scotland (see Section 7). Reserved issues would continue to be addressed by the respective departments within the UK Government. The plan would be delivered through the licensing system (see Section 5) and measures for nature conservation (see Section 6).

4.8 Summary

The present value benefits and costs of the two options are summarised in Table 4.16. The annual benefits[15] and costs are presented in Table 4.17.

[15] In most cases our annual figures throughout the report refer to costs per year; in some cases, however, the figures represent annualised costs and benefits from total PV values. We do not believe this is likely to affect the estimates significantly.

Table 4.18 summarises the ability of the two options to meet the overall goals of the Scottish Marine Strategy

Table 4.16: Summary of the Total Present Value Costs and Benefits of Marine Planning in Scotland

	Option 1: No change	**Option 2: Statutory Planning System**
Benefits	• Short term economic benefits in that businesses, government, other public bodies and marine users will not have to change their behaviour. • No environmental or social benefits	• Economic benefit of conflict avoidance: £294 million[1] if it resulted in a 1% increase in value of the marine economy; £5.5 million[1] if it resulted in more rapid approval of marine energy production • Environmental benefits: unquantifiable, but could be significant • Social benefits: improved opportunity for stakeholder involvement
Costs (to Scottish Government)	• No investment required • Potential costs from action required to address the risks	• International Planning: no additional costs • National Plan: £7.3 million[1] • Local Planning: £36 million to £66.1 million[1] for 9 to 13 plans • Historic Scotland has identified potential additional costs of £1.1m to £1.6m, discounted over 10 years
Costs (to Local authorities)	• Unquantified costs in resolving disputes	• Unquantified costs of participation in local planning boards and public inquiries (likely to be offset by reduced costs of dealing with applications)
Costs (to other organisations)	• Costs of campaigning against inappropriate developments	• Limited costs for participation in planning process
Costs (to industry)	• Potential costs to developers from existing conflicts, delays and compensation could be significant - up to £50m per development	• Possible costs to marine environment users from restrictions on activities in specific locations, but can be mitigated by inclusion of industry in planning process • Participation in planning process (local government and other stakeholders): cost-neutral overall
Costs (to other stakeholders)	• Loss of employment if conflicts and uncertainty restrict sustainable development of the marine economy	• Limited costs for participation in planning process
Costs (environmental)	• Failure to meet environmental objectives	• None anticipated

Notes:
1. Net present value costs over 20 years

Table 4.17: Summary of the Annual Costs and Benefits of Marine Planning in Scotland		
	Option 1: No change	**Option 2: Statutory Planning System**
Benefits	• Short term economic benefits in that businesses, government, other public bodies and marine users will not have to change their behaviour. • No environmental or social benefits	• Unquantified (but potentially significant) benefits from reduced conflict • Environmental benefits: unquantifiable, but could be significant • Social benefits: improved opportunity for stakeholder involvement
Costs (to Scottish Government)	• No investment required • Potential costs from action required to address the risks	• International Planning: no additional costs • £498,000 for national plan; • £2.5m to £4.5million for 9 to 13 plans • Historic Scotland has identified possible additional costs of £125,000 to £190,000 per year
Costs (to Local authorities)	• Unquantified costs in resolving disputes	• Unquantified costs of participation in local planning boards and public inquiries (likely to be offset by reduced costs of dealing with applications)
Costs (to other organisations)	• Costs of campaigning against inappropriate developments	• Limited costs for participation in planning process
Costs (to industry)	• Potential costs to developers from existing conflicts, delays and compensation could be significant - up to £50m per development	• Possible costs to marine environment users from restrictions on activities in specific locations, but can be mitigated by inclusion of industry in planning process • Participation in planning process (local government and other stakeholders): cost-neutral overall
Costs (to other stakeholders)	• Loss of employment if conflicts and uncertainty restrict sustainable development of the marine economy	• Limited costs for participation in planning process
Costs (environmental)	• Failure to meet environmental objectives	• None anticipated

Table 4.18: Ability of the Options to Meet the Objectives of the Scottish Marine Strategy		
Objective	**Option 1: No change**	**Option 2: Statutory Planning System**
Ability to meet international obligations (legal)	**Low**: planning would only exist beyond 12 nm (due to UK-level planning). Given that the majority of activities occur within 3 nm of the coast, such an approach is unlikely to sit well with proposed EU policy for maritime planning.	**High**: a tiered system of planning supported by objectives would meet proposed EU Integrated Maritime policy and help to deliver the aims of the MSFD for GES.
Protection of ecosystem services	**Medium**: objectives for protecting ecosystem services exist at a high level, delivered through licensing system. Protection from unregulated activities reliant on voluntary codes of practice.	**High**: tiered system of objectives, performance indicators, targets and actions ensures a high level of protection at all levels.
Certainty with which nature conservation requirements are delivered	**Low**: High-level objectives exist. Delivery of these would rely on the licensing system and levels of understanding of requirements may vary for each sector.	**High**: a statutory and tiered system of objectives provides for greater certainty in the delivery of and improved understanding of conservation requirements.
Ease of and clarity for decision-making	**Low**: no prioritisation of national objectives; Decision makers lack guidance on how to reconcile conflicting objectives locally	**High**: more local objectives provide better guidance for decision makers; zoning system provides a clear steer to decision makers on which objectives should have priority in a given area
Sustainable development and management of economic resources	**Low**: Lack of targeting may impose disproportionate costs	**High**: increasing scope for targeted decision making to ensure that benefits are proportionate to costs
Continuity with terrestrial forms of planning	**Low**: Current approach is not consistent with hierarchical system adopted for terrestrial planning.	**High**: multi-level approach would generally be compatible with terrestrial planning system and the ICZM approach would help to ensure integration of different policies at the land-sea interface, e.g. River Basin Management Plans and Shoreline Management Plans.
Effectiveness of arrangements across administrative boundaries	**Low**: current system unlikely to be consistent with anticipated approaches for English, Northern Irish or UK offshore waters	**High**: would generally be compatible with anticipated approaches for English and Northern Irish territorial and UK offshore waters. Clear boundaries and policies will assist cross-border negotiations.
Degree of integration among differing policies	**Low**: system dependent on separate economic, social and environmental policies with no system for integrating them.	**High**: Development of a marine plan would need to consider and integrate a number of different economic, social and environmental policies. These would likely be expressed through high-level objectives.
Community Involvement	**Low**: limited scope for community involvement as objectives and targets set at national/regional level.	**High**: improved opportunity for local engagement in the development of local objectives and zoning proposals.
Acceptability to stakeholders	**Low**: a prescriptive set of objectives determined at a UK and EU level may be perceived as predetermining the balance of sustainable development and may not be acceptable to economic, environmental and social interests.	**Medium**: acceptability may be determined by the outcomes of the plan (i.e. do plan policies, objectives or targets negatively affect economic or social interests). A timely and transparent stakeholder process may help to support acceptance of the plan.

Table 4.18: Ability of the Options to Meet the Objectives of the Scottish Marine Strategy		
Objective	**Option 1: No change**	**Option 2: Statutory Planning System**
Flexibility – scope for changing objectives and boundaries	**Low**: dependence on the licensing system for delivering objectives means that flexibility would depend on individual sectoral review processes.	**High**: the planning process will provide the necessary flexibility to amend objectives and boundaries through the periodic review process.
Facilitation of cumulative effects and environmental capacity assessments	**Medium**: national/regional objectives provide a framework for addressing environmental capacity limits.	**High**: this framework may be supported by more local objectives/zoning systems in Option 2.
Ability to address unregulated activities	**Low**: unlikely to be an appropriate scale at which to advise on the control of unregulated activities.	**High**: advisory policies for unregulated activities could be included in local marine plans.
Impacts of devolved/reserved responsibilities	**Medium**: regardless of devolution settlements, Scotland will still need to engage with the UK Government and the EU (e.g. Common Fisheries Policies, UNCLOS, IMO & OSPAR) over planning policies to ensure integration and continuity across borders.	**High**: may facilitate negotiations by explicitly stating a strategy for Scotland's waters.
Likely information requirements	**Low**: no prioritisation of objectives. Information requirements may be significantly increased if it is necessary to justify a set of prescriptive marine environmental objectives.	**High**: broad scale information would be required to meet MSFD & agreed UK-level objectives. A potentially significant amount of additional information may be required to support local policies, objectives and targets.

5. OPTIONS FOR A STREAMLINED SYSTEM OF LICENSING AND ENFORCEMENT

5.1 Options

5.1.1 Introduction

The key aim of changing the current marine licensing system in Scotland is to deliver an effective, streamlined and modernised licensing system, with the objective of:

- meeting existing and new obligations and aspirations, including implementation of the EU Marine Strategy Framework Directive, the Environmental Liability and Shellfish Directives, the Birds and Habitats Directives and other international commitments (e.g. OSPAR));
- improving integration, and reducing the complexity, of marine management;
- improving the efficiency and cost effectiveness of resource use; and
- meeting stakeholder requirements.

The current licensing regime in Scotland comprises a variety of licences, seeking either to protect features of the marine and coastal area from the impact of marine development, or to mitigate the impact of those developments. The main marine consents are listed in Table 5.1 (over page).

The Sustainable Seas Task Force (SSTF)[16] concluded that most of the important marine features and activities were covered by the current licensing regime; however, dredging (including dredging in port and harbours, as well as new forms of dredging) could be added to those activities affected. It has been suggested that maintenance and capital dredging should be considered separately.

There are four main options for streamlining the system of licensing and enforcement. These are:

- Option 1: no change to current arrangements. This represents the baseline for comparison with other options;
- Option 2: amalgamate CPA Part II, FEPA Part II and CAR licences for marine activities into a single licence;
- Option 3: amalgamate CPA Part II, FEPA Part II, CAR licences for marine activities, wildlife, aggregates and any other activity licences into a single licence; and
- Option 4: create an activity-based licensing system.

There are also two sub-options, which could be combined with the main options, to address the issue of dredging and small projects. These are:

[16] Sustainable Seas Task Force (2008): **Workshop Report Paper: Licensing and Enforcement**, provided by the Scottish Government.

- Sub-option A: controls for capital and maintenance dredging. This sub-option can be combined with Options 1, 2 and 3;
- Sub-option B: following a CAR-type approach for small projects. This sub-option could be combined with any of the options.

Table 5.1: Summary of Main Marine Consents and Responsibilities in Scotland

Function/Legislation	Underlying Aim	Responsibility
Coast Protection Act (CPA) Part I	Flood defences and coastal erosion protection	SG: Environment – policy and LA-led schemes. LAs – private-led schemes
Coast Protection Act (CPA) Part II	Safety of navigation	SG: Transport
Food & Environment Protection Act (FEPA) Part I	Food safety	Food Standards Agency (Scotland). SFPA enforces area closures
Food & Environment Protection Act (FEPA) Part II	Protection of marine environment (though oil and gas, telecoms etc are reserved)	FRS/SG: Marine
Water Environment/Water Services Act 2003 and Controlled Activities Regulations 2005 (CAR)	Protection of water (incl. marine environment <3 nm)	SEPA/SG: Environment
Electricity Act 1989 (including marine renewables)	Control of electricity generation and distribution/transmission infrastructure	SG: Enterprise, Energy, Tourism
Ports & Harbours Orders	Regulation of harbour developments and activities	SG: Transport
Aquaculture development consents	Control of fish farm siting/development	LAs for new developments. SG: Marine for existing approvals
Minerals dredging	Control of minerals extraction	SG: Planners
Aquaculture: Animal Health Directive	Minimise risk of fish disease introduction	SG: Marine/FRS
Aquaculture: sea lice/containment	Reduce escapes and manage sea lice numbers	SG: Marine/FRS
Wildlife (e.g. European Protected Species) licences	Regulates activities likely to affect protected species etc.	Split between SNH and SG (Environment and Marine)
Conservation of Seals Act 1970	Regulates the control of seals having an impact on a fishery	SG Marine
Intertidal SSSIs	Protection of species, habitats, landforms and 'features'	SNH is consultee/advisor
Protection of Wrecks Act 1973; Ancient Monuments and Archaeological Areas Act 1979; Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997	Built marine heritage protection	Historic Scotland
Fishing vessel licences	To ensure vessel seaworthiness	SG, SFPA

A number of other issues in relation to licensing were raised by the Task Force, including:

- the delivery mechanism for the streamlined marine licensing system;

- formalising the consultation process;
- using a web-based licensing approach;
- establishing an appeals procedure;
- creating timetables for delivering licences;
- recovering the cost of issuing licences; and
- consolidating the enforcement provisions.

These are issues of application, rather than approach, and the effects would therefore be equally applicable across the range of options set out above. We therefore do not assess the impacts of these changes.

5.1.2 Option 1: No Change to Current Arrangements

Main Features

The do nothing option would maintain the current situation, with 16 types of consent administered by more than ten organisations/departments.

There is currently some variation in the applicability of licences at different distances from the coastline, from three nm for CAR to 12 nm for many others. Whilst this could be amended without changing the overall structure of the licensing system, in practical terms this is unlikely to have any impact; for example, CAR activities do not take place beyond 3 nm.

The advantages of this Option are that:

- no new legislation would be required;
- all stakeholders are familiar with the current situation; and
- there would be no costs or job losses associated with streamlining the current licensing regime.

Potential Risks

The main risks associated with this Option are that the objectives of the Scottish Marine Bill would not be met, and the licensing regime would remain complex and resource intensive. In addition, where European Directives are not fully implemented under the current legislation, infraction proceedings may be started which could result in significant costs for the UK Government.

The limited evidence that is available, both in Scotland and from elsewhere in the UK, suggests that multiple licenses from a range of licensing bodies with different consultation requirements is not an efficient way to deliver protection/mitigation. It is also suggested that the current licensing regime in Scotland is not uniformly enforced.

These risks could, potentially, be mitigated, should a decision be taken to make Marine Scotland responsible for licenses (see Section 8 of this report). Making a single body responsible for at least some of the different licences could enhance efficiency and provide greater consistency in licence requirements.

5.1.3 Option 2: Amalgamate CPA, FEPA and CAR Licences

Main Features

Option 2 would amalgamate the licenses currently issued under:

- the Coast Protection Act (CPA) Part 2;
- the Food and Environment Protection Act (FEPA) Part 2; and
- the Water Environment/Water Services Act (CAR) for marine activities.

As a single licence, this Option would extend the applicability of CAR to 12 nm.

These licences are currently administered by three different Scottish Government departments and two Agencies:

- Transport Directorate;
- Fisheries Research Services (FRS);
- Marine Directorate;
- Environmental Quality Directorate; and
- Scottish Environment Protection Agency (SEPA).

This Option would:

- reduce the number of licence applications required, thus simplifying the licensing application and processing system for both industry and regulators;
- provide integrated licensing, ensuring that a range of environmental/ecological and navigational issues are considered together; and
- potentially assist in delivery of both existing obligations and objectives and new ones, for example marine planning (see Section 4 of this report) and nature conservation (see Section 6).

Potential Risks

The key risks associated with this Option are:

- it would require the introduction of new legislation and/or procedures incurring costs for Government and stakeholders and potentially causing (temporary) disruption to the licensing system;
- it would require the re-training of staff, both within industry and the regulators, which could lead to (temporary) disruption of the licensing system; and
- it could potentially lead to job losses within Government departments/ organisations due to improvements in efficiencies.

5.1.4 Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate and Other Activity Licences

Main Features

Option 3 is similar to Option 2, but would go further, by amalgamating the wildlife and aggregate licences with CPA Part 2, FEPA Part 2 and CAR licences for marine activities. In addition to those organisations listed under Option 2, the Directorate of the Built Environment and Scottish Natural Heritage are also currently involved in the administration of these licences. Furthermore, if it is decided to licence other activities such as harvesting seaweed or bait, then these activities could also be included in a single licence under Option 3. This Option could also integrate Environmental Impact Assessment (EIA) into the single licence system, by making the regulator the competent authority for EIA. This would have little impact in practice but would provide a more complete service.

Potential Risks

This Option would have similar advantages and disadvantages to Option 2 but would have the added advantage of providing greater integration with regard to regulating the ecological impacts of marine developments.

5.1.5 Option 4: Create Activity-based Licences

Main Features

Option 4 presents an alternative approach to Options 2 and 3, by developing integrated licences for particular activities. There are three potential activity licences which could be considered:

- renewable energy licence: integrating the Energy Act consent, currently the responsibility of the Enterprise, Energy and Tourism Directorate, with the FEPA/CPA/CAR/wildlife licence;
- ports and harbours licence: integrating FEPA/CPA/CAR etc. with Harbour Orders and the regulation of harbour developments and activities, currently administered by the Transport department; and
- aquaculture: combining all the legal requirements for fish farms and similar activities.

Further types of licence would be required to cover any other activities.

Potential Risks

The key risk with using only activity-based licences is in defining the activities to be licensed. If only a small number of activities are licensed, there is a risk that impacts caused by other activities would not be managed, but a large number of different activity licences would risk repeating the complexities of the current system. However, some consultees have indicated that this should not be a significant risk, as there are only a few, well-defined activities which will require licences.

In addition, new licences would have to be introduced for any new activities which developed. Combining activity-based licences for some activities, with general licences for other activities, would also add to the complexity of the system and could fail to achieve the objective of streamlining.

There is also a risk that this Option could reduce local democratic accountability by removing local authorities from the consent processes, although they would be engaged through local marine planning (see Section 4).

5.1.6 Sub-Option A: Controls on Capital and Maintenance Dredging

Main Features

This sub-option can be combined with Options 1, 2 and 3, or it could be a standalone option.

There is no single act which regulates dredging operations in Scotland, although control of some (but not all) operations is exerted by the Harbours Act 1964 and the CPA. In order to dispose of dredged materials in the sea, a FEPA Part II disposal licence is normally required. However, methods such as hydrodynamic and plough dredging techniques, which involve the relocation of sediment by means other than physical removal and deposition elsewhere, are exempt from FEPA licensing, as the sediments are not raised from the surface of the water and therefore no disposal takes place.

The SSTF suggests licensing all forms of capital dredging and introducing additional mechanisms to control maintenance dredging (these may follow the example of the maintenance dredging protocol in English ports).

Potential Risks

The main potential risk associated with this option relate to the potential impact on hydrodynamic and plough dredging.

Hydrodynamic dredging (particularly water injection dredging) and plough dredging can be a means of retaining sediment within an estuary/coastal system rather than disposing of it at a remote location. This can often be desirable from a nature conservation perspective by maintaining the sediment balance in a system. In circumstances where the material is not particularly contaminated, it often represents a more sustainable option than conventional dredging and disposal techniques. Therefore, the low cost of hydrodynamic and plough dredging acts as an incentive, potentially resulting in environmental benefits. Any reduction in the cost savings may result in a decline in use of the techniques, thereby reducing the environmental benefits.

However, Sullivan (2000)[17] notes that the chemical and physical impacts associated with the use of such dredging techniques are seldom fully evaluated and that, in a few cases, hydrodynamic dredging has been used by ports that have been refused a license to dispose of dredged material at sea, which could result in the spread of contaminated sediment.

5.1.7 Sub-Option B: Following a CAR-Type Approach for Small Projects

Main Features

The Task Force indicates that many licences are issued for small uncontroversial projects each year, where the administrative requirements are not justified by the protection delivered. It is therefore suggested that such projects should be removed from the licensing system. One possible approach is to follow the example of the Controlled Activities Regulations (CAR) structure which provides three tiers of control:

- **general binding rules** for activities which represent a small risk to the water environment;
- **registration** for simple activities where the impacts are predictable but where cumulative impacts are likely; and
- **licences** to control those activities posing the greatest risk to the water environment.

We understand that general binding rules would not be considered acceptable under the Habitats Directive and, therefore, this Option would only follow the top two tiers.

For **registrations**, operators must apply to the regulating authority with details of the scale of the activity and its location. The registration will be valid so long as the activity is carried out according to the terms of the application. There is also an application fee for registrations.

Licences allow for site-specific conditions to be set to protect the water environment from activities that pose a higher risk. Licences can cover linked activities on a number of sites over a wide area, as well as single or multiple activities on a single site. Application fees apply to all licences and subsistence (annual) charges may apply.

The advantage of this sub-option, which may be introduced along with Options 2, 3 or 4 or as a standalone option, is that it may reduce the administrative burden (and associated costs) for both industry and the regulators.

[17] Sullivan N (2000): **The use of agitation dredging, water injection dredging and sidecasting: Results of a survey of ports in England and Wales**, available from www.iadc-dredging.com/downloads/terra/terra-et-aqua_nr78_02.pdf

Potential Risks

The main risk associated with this Option is that it may cause further confusion, as stakeholders will have to distinguish between two different levels of activity in determining whether a licence is necessary for their activities.

5.1.8 Comparison of the Options

Table 5.2 compares the different options with the existing system.

Table 5.2: Summary of Options for a Streamlined System of Licensing and Enforcement

Function/Legislation	Option 1: No change	Option 2	Option 3	Option 4
Coast Protection Act (CPA) Part I	Remains separate	Remains separate	Remains separate	Remains separate
Coast Protection Act (CPA) Part II	Remains separate	Included in combined licence	Included in combined licence	Included in combined licence
Food & Environment Protection Act (FEPA) Part I	Remains separate	Remains separate	Remains separate	Remains separate
Food & Environment Protection Act (FEPA) Part II	Remains separate	Included in combined licence	Included in combined licence	Included in combined licence
Water Environment/Water Services Act (CAR)	Remains separate	Included in combined licence	Included in combined licence	Included in combined licence
Electricity Act 1989 (including marine renewable)s	Remains separate	Remains separate	Remains separate	Included in renewable activity licence
Ports & Harbours Orders	Remains separate	Remains separate	Remains separate	Included in ports activity licence
Aquaculture development consents	Remains separate	Remains separate	Remains separate	Included in aquaculture activity licence
Minerals etc dredging	Remains separate	Remains separate	Included in combined licence	Remains separate
Aquaculture: Animal Health Directive	Remains separate	Remains separate	Remains separate	Remains separate
Aquaculture: sea lice/containment	Included in CAR	Included in combined licence	Included in combined licence	Included in aquaculture activity licence
Wildlife (EPS)/Seals licences	Remains separate	Remains separate	Included in combined licence	Included in activity licences
Intertidal SSSIs	Remains separate	Remains separate	Remains separate	Remains separate
Protection of wrecks/undersea structures	Remains separate	Remains separate	Remains separate	Remains separate
Fishing vessel licences	Remains separate	Remains separate	Remains separate	Remains separate
Controls for capital and maintenance dredging **(Sub-Option A)**	Could be introduced	Could be introduced	Could be introduced	Could be introduced as part of activity licences
CAR approach for small projects **(Sub-Option B)**	Not feasible	Could be introduced for combined licence	Could be introduced for combined licence	Could be introduced for activity licences

5.2 Sectors and Groups Affected

5.2.1 Introduction

A number of different groups will be affected, under the following categories:

- regulating authorities;
- industry and
- other relevant groups.

5.2.2 Regulating Authorities

The Regulating Authorities, average number of licence applications per year and number of full time equivalent (FTE) staff are summarised in Table 5.3 (at the end of this section) and discussed in more detail below.

Fisheries Research Services (FRS)

The Fisheries Research Services (FRS) administers the licences under the Food and Environment Protection Act 1985 (FEPA) Part II. Part II of FEPA is the national legislative framework for the control of substances and articles deposited in the sea, including construction, coastal defences, disposal in and burial at sea.

Under the 1985 Act, a licence is required (subject to certain exceptions) to deposit any substance or article in the sea or under the seabed. FEPA activities account for a significant number of licences in the marine area and give effect to the relevant international agreements in relation to dumping at sea and to some other EC waste management rules.

In practice, there are two major categories under which licences can be applied for. These are:

- a construction licence covering the deposit or placement of materials that it is proposed to use during construction works, land reclamation or beach nourishment; and
- a disposal licence for materials that may be deposited in the sea such as dredged material or fish processing waste.

FEPA licences are also issued for oil dispersants and several specialist categories. In general, construction related licences account for the majority of licences.

There are currently four full time equivalent (FTE) members of staff dealing with around 200 applications for FEPA Part II licences a year, of which 140 consents are granted.

Scottish Government – Transport Department

The Transport Department administers licences/consents under the:

- Coast Protection Act (CPA) Part II Section 34 – Safety of Navigation; and
- Harbours Act 1964.

Part II of the Coast Protection Act 1949 (CPA) is the legislative framework that ensures navigational rights are protected from any negative effects from coastal and offshore operations. Operational responsibility for the CPA is devolved in relation to Scotland within so much of the internal waters and territorial sea of the UK that are adjacent to Scotland and excluding activities in relation to oil and gas and electricity. Many applicants wishing to undertake coastal and offshore operations requiring a FEPA licence will also require a CPA licence. However, unlike FEPA, CPA licences are not currently chargeable to the applicant. There are currently one and a half FTE dealing with around 170 applications for CPA Part II licences a year. The administration of CPA licences is a feature of all four options.

The Harbours Act 1964 concerns the development or redevelopment of a port or harbour in Great Britain. A harbour revision or empowerment order can provide all the necessary powers to enable a harbour authority to carry out necessary works, including works that would otherwise require a separate licence under other rules. The process by which an order is made normally substitutes for the FEPA process (although in practice FEPA licences may be obtained). Impacts that are less directly connected with the creation or revision of a harbour itself, but within the normal scope of FEPA (e.g. depositing at sea material dredged in the course of harbour development) remain licensable in the usual way. There is currently three FTE involved in Port and Harbour Orders work, for which the number of annual applications varies each year. Previous work by RPA *et al*[18] estimates the number of Orders in Scotland to be between seven and twelve per year. The administration of Port and Harbour Orders is a consideration of the fourth option (activity based licensing) only.

Scottish Environment Protection Agency (SEPA)

SEPA is the regulating authority for the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR), which introduce controls over activities in order to protect and improve Scotland's water environment. In the marine environment, aquaculture is affected by CAR, which requires licences for cage/tank fish farms, and other activities may also be covered. It is difficult to disaggregate the proportion of SEPA staff directly involved in marine licensing, as many staff regulate or provide scientific advice in other components of the environment (e.g. air pollution or contaminated land) as well as dealing with activities in the marine, fresh and groundwater environments. Consultation indicates, though, that around 35 FTE are involved in the authorisation, inspection and monitoring of marine activities.

[18] RPA *et al* (2006): **Costs of Existing Marine Management Regimes and Costs of Ambiguous or Unclear Requirements for New Developments in the Marine Area**, Project Code CSA 7207/ME1415, produced for Defra, October 2006.

There are 461 marine cage farms currently licensed and, in any given year, the number of CAR applications varies considerably. However, applications would normally number in tens, perhaps 30-40 applications for modifications to existing sites or for the establishment new sites. As an example of the variability, though, 2008 has so far has been very different because of the arrival of a new sea lice medicine, which has seen over 70 applications in a couple of months.

The administration of CAR registrations/licences is a feature of all four options.

Scottish Natural Heritage/Scottish Government LNH

Wildlife in Scotland is protected by a range of national and international legislation. These laws are designed to protect rare and vulnerable species and make it unlawful to kill, injure, take or sell certain species of wild animals, plants and birds. However, it is also recognised that there are certain circumstances, for example, to protect public health and safety, or to prevent serious damage to agriculture, where it is desirable to licence acts which would otherwise be unlawful. In all cases, the appropriate licensing authority (Scottish Ministers or Scottish Natural Heritage) will only issue a licence under certain circumstances defined in the legislation. SNH has two FTE staff to cover all maritime and terrestrial species, and deal with 5-10 licences per year, whilst licences only account for part of the work of staff in LNH, as there are very few licence applications.

Section 10 of The Conservation of Seals 1970 provides for Scottish Ministers to issue licences to shoot seals for the prevention of damage to fisheries. The current licensing process requires individual fisheries to complete and submit an application form which is subsequently copied to the following organisations for advice:

- NERC's Sea Mammal Research Unit (statutory advisers on seal management),
- Fisheries Research Services (advisers on fisheries),
- and Scottish Natural Heritage (statutory advisers on conservation issues).

Scottish Ministers subsequently consider all the advice presented and decide whether or not to issue a licence and the specific conditions of any licence issued as appropriate. In 2007 a total of 10 licences were issued which permitted the shooting of a maximum of 65 grey and 82 common seals to protect fisheries. A total of 18 grey seals and 43 common were actually shot under these licences.

The consultation document set out two options for future seal licensing. Both of these options will involve some increase in the amount or extent of seal licensing, although this will differ considerably depending on the option selected. It is therefore difficult to be precise about the impact on the numbers of licences, but there is likely to be an increase on the low numbers issued at present.

However, other developments may act to reduce the number of licences. For example, the Moray Firth Seal Management Plan has been operating for the last three years as a pilot for future seal management. It is based on a single licence for 12 fisheries covering most of the Moray Firth region (under normal arrangements each fishery would have its own separate licence). This pilot has proved very successful

and is likely to be extended into other areas. In this context, the overall number of seal licences could reduce over time, with a smaller number of individual licences being issued to cover a larger number of fisheries across a wider area.

In the absence of a firm decision on the way forward, this issue is not addressed further in the impact assessment. However, the potential impacts of changes to seals licensing on welfare is discussed in Section 6 of this report.

Scottish Government – Planning Division

The Planning Division within the Directorate for the Built Environment oversees the licensing of marine minerals extraction. There has been very little interest in marine dredging in Scotland to date, with only two extant dredging licences in Scotland. The Environmental Impact Assessment and Natural Habitats (Extraction of Minerals by Marine Dredging) (Scotland) Regulations 2007 came into force in November 2007 and formalise the previous Government View approach.

Local Authorities

The Town and Country Planning (Marine Fish Farming) (Scotland) Order 2007 came into force in April 2007 and extended statutory planning controls to marine fish farms in coastal and transitional waters. This replaced a mix of three main control regimes to provide a consistent approach as well as introducing decision making closer to those affected by marine fish farm developments. These Regulations bring the control of the siting of marine fish farms within the ambit of Scottish planning authorities.

Scottish Government Enterprise Energy and Tourism – Energy Consents Unit

The Electricity Act 1989 licenses the construction, extension or operation of electricity generating capacity within Scottish territorial waters or the Scottish Renewable Energy Zone. These activities are in principle subject to FEPA and CPA licensing in Scotland. However, to simplify the process, the Energy Consents Unit has entered into an agreement with the Scottish FEPA and CPA regulatory authorities enabling applicants to access a single point of application and initial inquiry regarding renewable energy developments. There are three FTE dealing with offshore issues, with only two applications received since 2003, but with three expected in 2008 and a further year on year increase predicted.

5.2.3 Industry

A range of industry stakeholders are affected by the requirements for licensing, including:

- the aquaculture industry;
- marine renewables;
- marine construction; and
- ports and harbours.

Further information on the ports and harbours sector is given in Table 5.3.

Table 5.3: The Ports and Harbours Sector in Scotland

There are approximately 100 ports in Scotland, of which 11 are classified as major ports. These will be affected by proposals to combine existing licensing regimes (whether impact or activity based) as well as to extend licensing to other types of dredging, such as hydrodynamic dredging. Seabed material has to be removed in the course of construction and maintenance of new port facilities and from navigation channels and berths. In 2006, approximately 1.8 million wet tonnes of material was dredged and deposited in approximately 25 licensed sea disposal sites. Whilst sea disposal operations are spread across all Scottish regions, 65% takes place in the Firth of Forth, 20% at sites along the east coast, 15% in the Firth of Clyde and the remainder is scattered around the coast including the islands. Some sea disposal operations are licensed annually, usually the major ports require an annual maintenance dredge, others undertake dredging operations when required and these can be either to maintain channels or berths or are associated with construction works to upgrade or replace existing port facilities.

In 1999, Sullivan (2000) undertook a survey of 250 ports, harbours and marinas in England and Wales; 42% of consultees responded. The results suggested that more than a quarter (27%) of respondents used non-disposal techniques, including:

- ploughing;
- agitation;
- water injection;
- diver; and
- other.

If similar proportions applied in Scotland, these figures would suggest that between 11 and 27 locations may use such techniques, where the lower end of the range is based on the actual respondents (100 x 42% x 27%) and the upper end of the range is based on applying the percentage using these techniques to the total sample (100 x 27%). In practice, it is possible that those who did not respond do not use these techniques and therefore did not find the survey relevant. Thus, the actual number of locations using non-disposal dredging is more likely to be in the lower to mid range.

Sullivan's survey suggested that the plough/bed leveller was the most popular technique (used by ~22% of respondents), whilst hydraulic dredging methods, which include vessel propeller agitation and water injection dredging, were used by more than 10% of respondents. The main use of bed levellers is to move material from inaccessible areas into the path of the main dredging plant and to level the peaks and troughs caused by trailer suction dredgers. As such, the impacts of ploughing are less significant because most of the area has already been disturbed by trailer suction dredging.

Sullivan reports that most port operators found it difficult to define the quantities involved; however, where estimates were made, the upper end of the range was greater than 50,000 wet tonnes per year of material redistributed, in addition to licensed (dredging and) disposal activities. In contrast, where port operators rely solely on hydrodynamic techniques, the quantities are generally small, at less than 5,000 wet tonnes pa. Sullivan (2000) suggests that a major limitation of hydrodynamic dredging techniques is a loss of effectiveness with increasing quantities of material removed. Based on those respondents which were able to estimate the quantities involved, 27% of hydrodynamic dredging locations move more than 30,000 wet tonnes per year.

5.2.4 Other Stakeholders

Each consent procedure varies in its requirements to consult other stakeholders. For example, there are no compulsory consultees for CPA Part II licences or CAR, but there are a number of organisations which are regularly consulted, whereas applications for aquaculture developments have a number of statutory and standard

consultees. These stakeholders, together with the regulating authorities and the industry sectors that are affected by each option, are listed in Table 5.5.

5.3 Benefits

5.3.1 Benefits of Option 1

The benefits of Option 1 are that there will be no costs associated with implementing new legislation. Furthermore, all licensing regimes will continue as at present, with all jobs remaining and no additional costs.

Under Option 1, capital and maintenance dredging, including hydrodynamic dredging techniques, will remain unlicensed. These can be a means of retaining sediment within an estuary/coastal system rather than disposing of it at a remote location. This can often be desirable from a nature conservation perspective to maintain the sediment balance in a system (on which nature depends). In circumstances where the material is not particularly contaminated, it often represents a more sustainable option than conventional dredging and disposal techniques. Therefore, the relatively low cost of hydrodynamic dredging acts as an incentive, potentially resulting in environmental benefits. Any reduction in the cost savings, through introducing licensing requirements, may result in a decline in use of the techniques, thereby reducing the environmental benefits.

5.3.2 Benefits of Option 2

The key benefit from Option 2 would be to reduce any duplication between the CPA, FEPA and CAR licensing regimes. The magnitude of this benefit depends on:

- the number of licences required for a single project; and
- the degree of duplication regarding the information required for each type of licence.

Data from RPA *et al* (2006), which analysed information on FEPA applications in England and Wales, suggest that between 29% and 44% of FEPA applications also required a CPA licence. This provides the basis for assessing the overlap between these two regimes, assuming that there is a similar degree of overlap in Scotland. Furthermore, CAR licensing is not required where FEPA applies, so there is no overlap between these regimes. The only remaining duplication can be where CPA and CAR licensing both apply. Excluding the CPA applications where FEPA applies (58-88) leaves 82-112 CPA applications where CAR could apply, this provides a maximum figure which in practice could be much lower. This is summarised in Table 5.6.

Table 5.4: Regulating Authorities, Number of Applications and Full Time Equivalent Staff

Licence	CPA Part II	FEPA Part II	CAR	Electricity Act 1989	Ports & Harbours Orders	Aquaculture Development Consents	Aggregate and mineral extraction	Aquaculture: sea lice / containment	Wildlife (EPS) / Seals licences
Administrator	SG Transport Directorate	Fisheries Research Services (FRS)	Scottish Environment Protection Agency (SEPA)	SG Enterprise Energy Tourism – Energy Consents Unit Glasgow	SG Transport Directorate	LAs for new & modifications to existing sites. SG for existing sites.	SG Planners	SG FFD	SG LNH / SNH SG FFD
Number of annual applications / consents	170	200 / 140	> 15,000, a large proportion in the marine environment	2 (2003 to date). At least 3 applications expected 2008 with further year on year increase expected	Varies RPA& *ABPmer (2007)* est: 5-12	80-100	Only 2 to date	N/A *Estimated 80 - 100*	SG: very few SNH: 5-10 maritime Seals: 25
Number of staff involved (FTEs)	1.5	4	35	3 (on offshore issues)	3	3	<1	Unknown	2
Average number of staff days per application (based on 200 days per year)	1.8	4	-	<200	50 - 120	4 - 6	<100	1.3	< 4 - 8
Average processing cost (based on £280 per staff day including overheads)	£500	£1,100	-	<£56,000	£14,000	£1,100 - £1,700	~ £28,000	3	< £1,100 - £2,200
Average charge per licence	No charge *RPA & ABPmer (2007) suggests costs likely to be £1,800 - £2,300 in Scotland*	*RPA et al (2006) suggests £6,300 in England £1,430 for case handling; £4,430 for scientific assessment; & £470 for enforcement*	£574 - £2,550	£15,000 - £50,000	£2,000 - £10,000	Max. £14,500 for new developments	£29,000	£1,200 - £1,500	-

Source: Information provided by the Scottish Government, unless otherwise indicated. RPA et al *(2006):* ***Costs of Existing Marine Management Regimes and Costs of Ambiguous or Unclear Requirements for New Developments in the Marine Area****, Project Code CSA 7207/ME1415, produced for Defra, October 2006; RPA & ABPMer (2007): Partial Regulatory Impact Assessment: Draft Marine Works (Environmental Impact Assessment) Regulations 2007, Final Report, Defra, London.*

Table 5.5: Sectors and Groups Affected by Each Option						
	Option 1: No Change	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate and Other Activity Licences**	**Option 4: Create Activity-based Licences**	**Sub-option A: Controls on Capital and Maintenance Dredging**	**Sub-option B: Following a CAR-type Approach for Small Projects**
Licensing Authorities / Regulators	No change	SG Transport FRS SEPA SG FFD	SG Transport FRS SEPA **SG FFD** SNH SG LNH SG Planners	**SG Transport** FRS SEPA **SG FFD** SNH SG LNH SG Planners LAs SG EET	Not currently regulated – a regulating authority would need to be assigned	SG Transport FRS
Industry (including, but not exclusively)	No change	**Aquaculture** Coastal defence Marine works including sea defences and outfalls Utilities pipeworks and cable laying Moorings Scientific surveys Marine renewables General marine construction Sea disposal of dredge material Tracers and biocides Reclamation Artificial reefs Discharge of sea lice chemical treatments from well boats Burial at sea Reserved oil and gas Offsite reinjection of drill	**Aquaculture** Coastal defence Marine works including sea defences and outfalls Utilities pipeworks and cable laying Moorings Scientific surveys Marine renewables General marine construction Sea disposal of dredge material Tracers and biocides Reclamation Artificial reefs Discharge of sea lice chemical treatments from well boats Burial at sea Reserved oil and gas Offsite reinjection of drill	**Aquaculture** Coastal defence **Marine works including sea defences and outfalls** Utilities pipeworks and cable laying Moorings Scientific surveys **Marine renewables** General marine construction Sea disposal of dredge material Tracers and biocides Reclamation Artificial reefs Discharge of sea lice chemical treatments from well boats Burial at sea Reserved oil and gas Offsite reinjection of drill	Ports & harbours	Organisations undertaking minor activities across a range of industry sectors

Table 5.5: Sectors and Groups Affected by Each Option						
	Option 1: No Change	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate and Other Activity Licences**	**Option 4: Create Activity-based Licences**	**Sub-option A: Controls on Capital and Maintenance Dredging**	**Sub-option B: Following a CAR-type Approach for Small Projects**
		cuttings etc. Non-reserved oil and gas within controlled waters Disposal at sea of surplus fish catch Use of dispersants during an oil spill	cuttings etc. Non-reserved oil and gas within controlled waters Disposal at sea of surplus fish catch Use of dispersants during an oil spill	cuttings etc. Non-reserved oil and gas within controlled waters Disposal at sea of surplus fish catch Use of dispersants during an oil spill		
Statutory and Non-statutory Consultees (including, but not exclusively)	No change	FSA NLB MCA **SNH** RYA SEPA SG Transport TCE SFPA SGMD LAs Scottish Water FRS	FSA NLB MCA **SNH** RYA SEPA SG Transport TCE SFPA SGMD LAs Scottish Water FRS SMRU Local District Salmon Fishery Board National Association of Salmon Fishery Boards JNCC	FSA **NLB** **MCA** **SNH** **RYA** **SEPA** SG Transport TCE SFPA SGMD LAs **Scottish Water** **FRS** SMRU **Local District Salmon Fishery Board** **National Association of Salmon Fishery Boards** JNCC Fisheries Committee Crown Estate Historic Scotland RSPB	FSA NLB MCA **SNH** RYA SEPA SG Transport TCE SFPA SGMD FRS	FSA NLB MCA **SNH** RYA SEPA SG Transport TCE SFPA SGMD LAs Scottish Water FRS

Table 5.5: Sectors and Groups Affected by Each Option						
	Option 1: No Change	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate and Other Activity Licences**	**Option 4: Create Activity-based Licences**	**Sub-option A: Controls on Capital and Maintenance Dredging**	**Sub-option B: Following a CAR-type Approach for Small Projects**
				Port/Harbour Authority Harbourmasters Pilots Association MoD CAA BERR BT MSF NATS OFGEM Scottish Fishermen's Federation Scottish Canoe Association RNLI		
Note: Stakeholders in **bold** type are affected by more than one licence type.						

Table 5.6: Overlap between Licence Applications (Based on Annual Applications)			
Licence Type	**CPA**	**FEPA**	**CAR**
CPA			
FEPA	29% – 44% (58 – 88)		
CAR	Maximum 48% – 66% (82- 112)	0%	
Source: based on information provided by the Scottish Government and RPA et al *(2006).*			

Table 5.7 sets out the combined costs of reviewing multiple licence applications. Whilst there are some savings to be made, each licensing procedure has a different purpose, and therefore the degree of overlap in the information required is likely to be more limited. As a starting point, we have estimated that a combined licence reduces the amount of processing by one day for each combined licence, minus one. In other words, if three licences are combined, two processing days are saved. The overall savings per application are assumed to be in the region of 15% of total costs, thus the difference between the number of days saved and 15% of the total is that saved on scientific assessment.

Table 5.7: Combined Costs of Reviewing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Regulating Authorities			
Licence Type	**CPA**	**FEPA**	**CAR**
CPA	2 days processing+ £1,300 - £1,800 for scientific assessment		
FEPA	**Combined total:** 6 days processing + £5,700 - £6,200 for scientific assessment **Estimated saving:** 1 day processing + £1,000 for scientific assessment	4 days processing+ £4,400 for scientific assessment	
CAR	**Combined total:** 4 – 6 days processing+ £2,700 - £3,200 for scientific assessment **Estimated saving:** 1 day processing + £400 for scientific assessment	No overlap / No savings	*Estimated 2 – 4 days processing+ £1,400 for scientific assessment?*
Source: based on data in Table 5.3 – average number of staff days per application and average charge per licence. Average cost of a staff day is assumed to be £280.			

Table 5.8 presents the total costs savings to the regulating authorities, based on the overlap and potential savings identified in Tables 5.5 and 5.6. This suggests that combining the FEPA, CPA and CAR licence regimes may save the regulating authorities in the region of £150,000 to £168,000 per year.

Table 5.8: Total Estimated Annual Benefits for Regulating Authorities of Option 2	
Licence Combination	**Estimated Annual Savings**
CPA/FEPA	1 day processing for 58-88 applications = 58 – 88 days @ £280/day = estimated savings of **£16,200 - £24,600 processing costs** 58 – 88 applications @ £1,000 for scientific assessment = estimated savings of **£58,000 - £88,000 for scientific assessment**
CPA/CAR	1 day processing for 82-112 applications = 82 – 112 days @ £280/day = estimated savings of **£22,960 - £31,360 processing costs** 82 – 112 applications @ £400 for scientific assessment = **£32,800 - £44,800 for scientific assessment**
Total	£47,600 processing costs £103,000 - £121,000 scientific assessment **£150,000 - £168,000 total estimated annual savings**
Based on Tables 5.5 and 5.6. Average cost of a staff day is assumed to be £280. Total average number of CPA applications per year is 170, thus savings relate to either 58+112 applications or 88+82 applications.	

The costs incurred by industry (and thus potential benefits) vary significantly depending on the complexity of the development, as illustrated by Table 5.9.

Table 5.9: Current Costs to Industry						
Type of licence / consent	**Average annual number of applications**	**Application Fee**	**Preparing the Application**	**Preparing Supporting Reports**	**Consultation, Advertising and Publication Costs**	**Total Cost of a Single Application**
FEPA Part II	200	£575 - £34,000 Ave. £5,900	£55 - £19,000 Ave. £4,600	£14,000 - £900,000	£400 - £164,000	£15,000 - £1.1 million
CPA Part II	170	£0	n/a	n/a	n/a	n/a
Harbours Act	5-12	£2,000 - £10,000	n/a	n/a	n/a	£2,000 - £10,000 +
CAR	30-40	Yes	n/a	n/a	n/a	n/a
Electricity Act 1989	3+	£15,000 - £50,000	£77,000 - £110,000	£700,000 - £3.2 million	£55,000 - £300,000	£847,000 - £3.7 million
Aquaculture Development Consents	80-100	Ave. £2,700	n/a	n/a	n/a	£2,700 +
Aggregate and mineral extraction	1	£29,000	£44,000	£164,000 - £394,000	£5,500	£243,000 - £473,000
Aquaculture: sea lice / containment	(information not yet available)	(information not yet available)	n/a	n/a	n/a	n/a
Seals	25	£0	n/a	n/a	n/a	n/a
Wildlife (EPS)	2-10	£0	n/a	n/a	£0	n/a
Source: based on RPA et al *(2006):* ***Costs of Existing Marine Management Regimes and Costs of Ambiguous or Unclear Requirements for New Developments in the Marine Area****, Project Code CSA 7207/ME1415, produced for Defra, October 2006. Values adjusted to £2008.*						

The range of costs reflects the different activities that are being assessed and the different scales at which work is undertaken within each licensing regime. For example, the high estimate for preparing supporting reports for FEPA applications includes £200,000 costs on marine borehole sampling, whilst the lower end of the consultation costs for electricity consents reflects the use of streamlined approaches to consultation, including the use of fora at which forthcoming applications can be discussed.

Table 5.10 sets out the combined costs of preparing multiple licence applications and estimated savings for industry. It is assumed that the same supporting reports are already used for each type of application, where applicable, and thus savings are likely to arise from reduced preparation time and consultation effort, due to a more streamlined approach. Actual data on costs to industry is sparse, thus the figures in the table represent a 'best estimate' only.

Table 5.10: Combined Costs of Preparing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Industry

Licence Type	CPA	FEPA	CAR
CPA	**Average costs:** *Estimate: £2,000 preparation?*		
FEPA	**Combined total:** £6,600 preparation £40,000 consultation **Estimated saving:** *£1,000 preparation?*	**Average costs:** £4,600 preparation *Estimate: £40,000 consultation?*	
CAR	**Combined total:** £4,000 preparation **Estimated saving:** *£1,000 preparation?*	No overlap / No savings	**Average costs:** *Estimate: £2,000 preparation?*

Source: based on Table 5.8.

Table 5.11 presents the total costs savings to industry, based on the overlap and potential savings identified in Tables 5.5 and 5.9. This suggests that combining the FEPA, CPA and CAR licence regimes may save industry in the region of £170,000 per year, assuming all developments requiring a CPA application (170 applications per year) also require either a FEPA or a CAR application. This may not be the case and in practice the benefits to industry may be lower.

Table 5.11: Total Estimated Annual Benefits for Industry of Option 2

Licence Combination	Estimated Annual Savings
CPA/FEPA	58 – 88 applications @ £1,000 estimated savings per application = £58,000 - £88,000 preparation costs
CPA/CAR	82 – 112 applications @ £1,000 estimated savings per application = £82,000 - £112,000 preparation costs
Total	**£170,000 total estimated annual savings**

Source: based on Tables 5.5 and 5.9. Total average number of CPA applications per year is 170, thus savings relate to either 58+112 applications or 88+82 applications.

5.3.3 Benefits of Option 3

Table 5.12 sets out the overlap between the different licences, in order to assess the benefits from Option 3. This builds on Option 2, thus the combined CPA/FEPA/CAR licence is taken as the starting point, to which additional licences are added. However, the additional potential overlap with other licences is much less in this Option, due to the low annual number of wildlife and aggregate licences issued. This could change in future, in particular if changes to seals licences result in larger numbers of licences being issued.

Table 5.12: Overlap between Licence Applications (Based on Annual Applications)

Licence Type	CPA/FEPA/CAR	Wildlife	Aggregate
CPA/FEPA/CAR			
Wildlife	Max. 4% - 30% (5-25)		
Aggregate	1% (<1)	0%	

Table 5.13 sets out the combined costs, to the regulating authorities, of reviewing multiple licence applications. As before, we have estimated that a combined licence reduces the amount of processing by one day for each combined licence, minus one. In other words, if three licences are combined, two processing days are saved (note that for this Option the costs of combining CPA, FEPA and CAR have already been calculated and this now counts as one licence). The overall savings per application are assumed to be lower than in Option 2, in the region of 10% of total costs to reflect a lesser degree of duplication in the information required, thus the difference between the number of days saved and 10% of the total is that saved on scientific assessment.

Table 5.13: Combined Costs of Reviewing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Regulating Authorities

Licence Type	CPA/FEPA/CAR	Wildlife	Aggregate
CPA/FEPA/ CAR	3-5 days processing + £7,000 - £8,000 for scientific assessment		
Wildlife	**Combined total:** 7-13 days processing + £8,000 - £9,000 for scientific assessment **Estimated saving:** 1 day processing + £700 - £1,000 for scientific assessment	<4 - 8 days processing + *Estimated: £1,000 for scientific assessment?*	
Aggregate	**Combined total:** 73 – 75 days processing + £17,000 - £18,000 for scientific assessment **Estimated saving:** 1 day processing + £3,500 - £3,600 for scientific assessment	No overlap / No savings	*Estimated: 70 days processing + £10,000 for scientific assessment?*

Source: based on data in Table 5.3 – average number of staff days per application and average charge per licence. Average cost of a staff day is assumed to be £280.

Table 5.14 presents the total costs savings to the regulating authorities, based on the overlap and potential savings identified in Tables 5.11 and 5.12. This suggests that combining the FEPA, CPA and CAR licence regimes with wildlife and aggregates licensing may save the regulating authorities an additional £9,000 to £36,000 per year, compared to Option 2.

Table 5.14: Total Estimated Annual Benefits for Regulating Authorities of Option 3	
Licence Combination	**Estimated Annual Savings**
CPA/FEPA/CAR/Wildlife[1]	1 day processing for 5-25 applications = 5-25 days @ £280/day = estimated savings of **£1,400 - £7,000 processing costs** 5-25 applications @ £700 - £1,000 for scientific assessment = estimated savings of **£3,500 - £25,000 for scientific assessment**
CPA/FEPA/CAR/Aggregates	1 day processing for 1 application = 1 day @ £280/day = estimated savings of **£280 processing costs** 1 application @ £3,500 - £3,600 for scientific assessment = **£3,500 - £3,600 for scientific assessment**
Total	£1,700 - £7,000 processing costs £7,000 - £29,000 scientific assessment **£8,700 - £36,000 total estimated annual savings**
Source: based on Tables 5.11 and 5.12. Average cost of a staff day is assumed to be £280. *Notes*: 1. The benefits of this combination could increase, if changes to seal licensing result in a larger number of licences being issued.	

Table 5.15 sets out the combined costs of preparing multiple licence applications and estimated savings for industry. As above, it is assumed that the same supporting reports are already used for each type of application, where applicable, and thus savings are likely to arise from reduced preparation time and consultation effort (where applicable), due to a more streamlined approach. Actual data on costs to industry is sparse and the figures in Table 5.14 therefore represent the best estimate.

Table 5.15: Combined Costs of Preparing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Industry			
Licence Type	**CPA/FEPA/CAR**	**Wildlife**	**Aggregate**
CPA/FEPA/CAR	**As for Option 2:** **Assumed savings:** £170,000		
Wildlife	**Combined total:** £5,000 preparation **Assumed saving:** £1,000 preparation	**Average costs:** *£2,000 preparation?*	
Aggregate	**Combined total:** £49,000 preparation **Assumed saving:** £2,000 preparation	No overlap / No savings[1]	**Average costs:** £44,000 preparation
Source: based on Table 5.8 *Notes*: 1. The benefits of this combination could increase, if changes to seal licensing result in a larger number of licences being issued			

Table 5.16 presents the total costs savings to industry, based on the overlap and potential savings identified in Tables 5.11 and 5.14. This suggests that combining the FEPA, CPA and CAR licence regimes with Wildlife and Aggregates licences may

save industry in the region of £177,000 to £197,000 per year, or an additional £7,000 to £27,000 per year compared to Option 2.

Table 5.16: Total Estimated Annual Benefits for Industry of Option 3	
Licence Combination	**Estimated Annual Savings**
CPA/FEPA/CAR	170 applications @ £1,000 per application = £170,000 preparation costs
CPA/FEPA/CAR/Wildlife	5 – 25 applications @ £1,000 per application = £5,000 - £25,000 preparation costs[1]
CPA/FEPA/CAR/Aggregate	1 case @ £2,000 per application = £2,000 preparation costs
Total	**£177,000 - £197,000 total estimated annual savings**
Source: based on Tables 5.7 and 5.14 *Notes*: 1. The benefits of this combination could increase, if changes to seal licensing result in a larger number of licences being issued	

5.3.4 Benefits of Option 4

Option 4 takes an activity-based approach and groups the licences as shown in Table 5.17. In addition to these three activity licences, a combined CPA/FEPA/CAR licence would also be necessary to address any developments that are not covered by the activity licences.

Table 5.17: Potential Activity-Based Licences		
Renewables Licence	**Ports & Harbours Licence**	**Aquaculture Licence**
FEPA CPA Wildlife Electricity Act 1989	FEPA CPA Harbours Act	CPA CAR Aquaculture Development Consents Sea lice Containment Seals Wildlife

Table 5.18 brings together the processing costs for the regulating authorities of the three activity licences and assumes potential direct cost savings in the region of 15%.

Table 5.18: Combined Costs of Reviewing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Regulating Authorities			
Licence Type	**Renewables Licence**	**Ports & Harbours Licence**	**Aquaculture Licence**
FEPA	Assume 1 Construction and 1 Deposit licence required: 2 x 5.5 days processing (due to size of project, based on MCEU administration fees) @ £280 per day + 2 x £4,400 for scientific assessment = £11,900	4 days processing @ £280 per day + £4,400 for scientific assessment = £5,500	n/a

Table 5.18: Combined Costs of Reviewing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Regulating Authorities			
Licence Type	**Renewables Licence**	**Ports & Harbours Licence**	**Aquaculture Licence**
CPA	2 days processing @ £280 per day + £1,300 - £1,800 for scientific assessment =£1,900 - £2,400	2 days processing @ £280 per day + £1,300 - £1,800 for scientific assessment =£1,900 - £2,400	2 days processing @ £280 per day + £1,300 - £1,800 for scientific assessment =£1,900 - £2,400
CAR			2 – 4 days processing @ £280 per day + £1,400 for scientific assessment = £2,000 + £2,500
Wildlife/Seals	< 4 – 8 days processing @ £280 per day + £1,000 for scientific assessment =£1,100 - £2,200	n/a	< 4 – 8 days processing @ £280 per day + £1,000 for scientific assessment =£1,100 - £2,200
Electricity Act	£15,000 (based on current wind farm sizes)	n/a	n/a
Harbours Act	n/a	£14,000	n/a
Aquaculture Development Consents	n/a	n/a	4 – 6 days processing @ £280 per day £12,800 - £13,400 for scientific assessment =£14,500 max
Sea lice Containment	n/a	n/a	3 days processing @ £280 per day + £360 - £660 for assessment = £1,200 - £1,500
Total Combined Costs	**£30,000 - £32,000**	**£21,000 - £22,000**	**£21,000 - £23,000**
Assumed Savings per development (~15%?)	4 days processing @ £280 per day + £3,400 - £3,700 scientific assessment **=£4,500 - £4,800**	2 days processing @ £280 per day + £2,600 - £2,700 scientific assessment **=£3,200 - £3,300**	4 days processing @ £280 per day + £2,000 - £2,400 scientific assessment **=£3,200 - £3,500**

Table 5.19 presents the total estimated direct cost savings to the regulating authorities, based on the overlap and potential savings identified in Tables 5.17, and these range from £342,000 to £515,000. Due to the large number of applications, aquaculture licences would account for the majority of these savings, whilst those attributable to the renewables and ports & harbours licences are much lower. The remaining benefits arise from combining FEPA, CPA and CAR, as in the previous options.

Table 5.19: Total Estimated Annual Benefits for Regulating Authorities of Option 4	
Licence Combination	**Estimated Annual Savings**
Renewables	3 applications per year x £4,500 - £4,800 = £13,500 - £14,400
Port & Harbours	5-12 applications per year x £3,200 - £3,300 = £16,000 - £39,600
Aquaculture	80-100 applications per year x £3,200 - £3,500 = £256,000 - £350,000
Remaining CPA/FEPA	43-80 applications per year x £1,300 = £55,000-£102,000
Remaining CPA/CAR	2-12 applications per year x £780 = £1,600 - £9,400
Total Estimated Benefits	**£342,000 - £515,000**

Table 5.20 sets out the combined costs of preparing multiple licence applications and estimated direct cost savings for industry. If activity licenses resulted in reduced delays in licensing, because of improved efficiency, the potential savings to industry could be considerably greater. As above, it is assumed that the same supporting reports are already used for each type of application, where applicable, and thus savings are likely to arise from reduced preparation time and consultation effort (where applicable), due to a more streamlined approach. Actual data on costs to industry is sparse, so the data in Table 5.19 represent the best estimates.

Table 5.20: Combined Costs of Preparing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Industry			
Licence Type	**Renewables Licence**	**Ports & Harbours Licence**	**Aquaculture Licence**
FEPA	Assume 1 Construction and 1 Deposit licence required: 2 x £5,000 (due to size of project) for preparing the application 1 x £14,000 for supporting reports £40,000 consultation costs = £64,000	£4,600 for preparing the application £14,000 for supporting reports = £18,600	n/a
CPA	£1,800 for preparing the application =£1,800	£1,800 for preparing the application =£1,800	£1,800 for preparing the application =£1,800
CAR			£2,000 for preparing the application = £2,000
Wildlife/Seals	£2,500 for preparing the application =£2,500	n/a	£2,500 for preparing the application =£2,500

Table 5.20: Combined Costs of Preparing Licence Applications (Based on Annual Applications and Average Costs) and Estimated Savings for Industry			
Licence Type	**Renewables Licence**	**Ports & Harbours Licence**	**Aquaculture Licence**
Electricity Act	£77,000 - £110,000 for preparing the application £2 million for supporting reports £178,000 consultation costs = £2.3 million	n/a	n/a
Harbours Act	n/a	£6,000 for preparing the application	n/a
Aquaculture Development Consents	n/a	n/a	£15,000 preparation £30,000 supporting documents £60,000 consultation =£95,000
Sea lice Containment	n/a	n/a	Not available
Total Combined Costs	**£2.3-2.4 million**	**£26,400**	**Estimate: £100,000**
Assumed Savings per development	£4,000 preparation £40,000 consultation **=~£44,000**	£3,000 preparation **=£3,000**	£4,000 preparation **=£4,000**

Table 5.21 presents the total costs savings to industry, based on the overlap and potential savings identified in Table 5.19, and these may range from £352,000 to £472,000. As for the regulating authorities, the majority of these savings are attributable to an aquaculture licence, although a more streamlined approach to renewable licensing also has the potential for savings, particularly in relation to consultation costs.

Table 5.21: Total Estimated Annual Benefits for Industry of Option 4	
Licence Combination	**Estimated Annual Direct Cost Savings**
Renewables	3 applications per year x £44,000 = £132,000
Port & Harbours	5-12 applications per year x £3,000 = £15,000 – £36,000
Aquaculture	80-100 applications per year x £4,000 = £320,000 - £400,000
Remaining CPA/FEPA	43-80 applications per year x £1,000 = £43,000-£80,000
Remaining CPA/CAR	2-12 applications per year x £1,000 = £2,000 - £24,000
Total Estimated Benefits	**£512,000 - £672,000**

5.3.5 Benefits of Sub-Option A

The benefits of licensing capital and maintenance dredging under Option A will arise where hydrodynamic dredging is used as the sole method of dredging. Sullivan (2000) concludes that, when used in conjunction with conventional dredging, from which sea disposal of the material has been licensed, additional adverse impacts from hydrodynamic dredging are likely to be minimal. However, Sullivan (2000) also notes that the chemical and physical impacts associated with the use of hydrodynamic dredging are seldom fully evaluated and that, in a few cases, hydrodynamic dredging techniques have been used by ports that have been refused a license to dispose of dredged material at sea, which could result in the spread of contaminated sediment. Thus, more significant benefits may be observed if any locations are dispersing contaminated sediment.

5.3.6 Benefits of Sub-Option B

Under Option B, a CAR approach to licensing activities would introduce registrations, simple licences and complex licences. Under CAR, the fees for these are £100, £574 and £2,550 respectively. For the purpose of this analysis it is assumed that these fees accurately represent the administrative costs of the regulating authority. Data are not available on what proportion of FEPA and CPA applications would fall under these different categories. In the absence of such data, the following assumptions have been made:

- registration and simple licence costs are applied in similar proportions to the existing CAR prices, taking Band C and Band B as the upper point and midpoint respectively for FEPA activities and £2,300 as the upper point for CPA activities (based on RPA & ABPmer, 2007);
- all renewable developments and port and harbour works (8-15 applications per year) require a complex licence which is equal to the current cost (i.e. no benefits);
- an additional 15 aquaculture applications require a complex CPA licence per year; and
- registration and simple licences each apply to 50% of the remaining FEPA and CPA applications.

Table 5.22 estimates the potential benefits from Option B for the regulating authorities. This indicates that the total benefits of Option B may be in the region of £121,000. These benefits mostly relate to reduced costs for CPA applications and this is because there is not currently a tiered charging system in place for CPA licences against which these reduced costs can be compared. Thus, the average estimated cost of processing CPA licence applications has been used to calculate the benefits of the simple licence, and this may overestimate the benefits compared to the current situation. This would certainly be the case for the benefits of registration, thus the savings are assumed to be in line with those under FEPA to avoid overestimating the associated benefits.

Table 5.22: Potential Benefits of Sub-Option B					
License		**Registration**	**Simple Licence**	**Complex Licence**	**Total Benefits**
FEPA	Assumed cost	£260	£1,500	£3,525+	**£25,000**
	Impact	Reduce cost by £265 for Band A applications Assume this applies to 95 applications per year.	No change (similar costs to Band B) Assume this applies to 95 applications per yea	No change (Band C and above, relates to wind farms and larger developments) Assume this applies to 8-15 applications	
CPA	Assumed cost	£90	£520	£2,300	
	Impact	Assume same relative cost saving as for FEPA Reduce costs by £90 Assume this applies to 70 CPA applications	Assume this reduces lower CPA cost of £1,800 by £1,280 Assume this applies to 70 CPA applications	Assume this applies to 30 CPA applications No change – upper limit of suggested CPA licence costs	**£96,000**
CAR	Existing cost	£100	£574	£2550	No change / no benefits

5.4 Costs

5.4.1 Option 1

Table 5.23 sets out the current average costs per application type for the regulating authorities. These costs are passed on to applicants in the form of licence fees. The costs are based on Scottish data where available and supplemented by data gathered by RPA *et al* (2006) for Defra on the costs incurred in England. The costs have been adjusted to 2008 figures using the Retail Price Index.

Limited information is available on the costs to consultees and other stakeholder arising from existing licensing regimes. Costs could accrue from:

- participation in scoping activities;
- participation in consultation; and
- modifications to licences, including conditions, mitigation or compensation.

Under FEPA, costs incurred from participating in consultation are likely to range from £80 to £22,000, with an average cost of £4,900, whilst costs associated with

renewable consultation are higher, ranging from £1,600 to £62,000. Consultation on aggregate extraction may cost stakeholder organisations in the region of £14,000.

Table 5.23: Current Costs to Regulating Authorities

Regulating Authority	Type of licence/consent	Average annual number of applications	Average cost of processing an application	Total estimated annual cost
Fisheries Research Services	FEPA Part II	200	£5,900	£1,200,000
Transport Department	CPA Part II	170	£1,800 - £2,300	£306,000 – £391,000
	Harbours Act	5-12	£34,000 - £46,700	£170,000 - £560,000
SEPA	CAR			
Enterprise, Energy & Tourism	Electricity Act 1989	3+	£81,600 - £143,000	£245,000 - £429,000
LAs/SG	Aquaculture Development Consents	80-100	£3,800	£304,000 - £380,000
SG Planners	Aggregate and mineral extraction	1	£24,600 - £30,000	£40,000 - £45,000
SG FFD	Aquaculture: sea lice / containment	Estimated: 80 - 100	£1,200 - £1,500	£120,000
	Seals	25		
SG LNH / SNH	Wildlife (EPS)	2-10		£123,000

5.4.2 Costs of Options 2, 3 and 4

The key costs associated with Options 2, 3 and 4 relate to potential job losses to regulating authorities through improved efficiencies in dealing with applications. As individual companies make relatively few applications, efficiency savings are unlikely to reduce their workload to such an extent that jobs are lost. Table 5.24 sets out the potential magnitude of these job losses in the regulating authorities.

Table 5.24: Potential Job Losses in Regulating Authorities

	Option 2	Option 3	Option 4
Estimated savings in processing costs	£47,600	£1,700 - £7,000	£111,000 - £145,000
Number of days work	~170	6 - 26	397 - 518
Potential job losses	<1 FTE	< 1 FTE	~ 2 – 2.6 FTE

5.4.3 Costs of Sub-Option A

The costs of Sub-Option A (controls for capital and maintenance dredging) are based on the experience of the Port of London Authority (PLA), which is understood to be

the only authority to license hydrodynamic dredging techniques at present. These data were collected during previous consultation with the PLA, in 2006.

The majority of, if not all, hydrodynamic and plough dredging techniques are associated with maintenance dredging. Although data from Sullivan (2000) suggest that hydrodynamic and plough dredging may take place at around 11-27 locations in Scotland, the number of occurrences per year may vary, depending on the requirements for maintenance dredging. Stakeholders have also suggested that there may be a case for multi-year applications to cover ongoing maintenance dredging to reduce costs and the potential for delays in renewing licences. These cost savings cannot be quantified, in the absence of a decision on the length of license and the current costs of delays. It is likely that costs for making and approval of multi-year applications could be higher than for single-year applications, to ensure that no adverse effects would arise over the longer period of the licence. However, there could still be significant savings for both government and industry.

The key cost to the regulating authorities would be the cost of authorising licenses for an additional number of activities. Data presented above suggests an average cost per FEPA licence of £5,900 for processing an application. Discussions with the PLA suggest that agreeing the specification for plume dispersion modelling requires additional time, compared to more conventional forms of dredging, as such modelling increases the cost to industry and therefore needs careful explanation, usually involving a meeting. Additional time is also required to read the reports on the modelling. The PLA suggests that this may require two additional days compared to other forms of dredging. At an assumed average cost of £280 per day, this would increase the average cost of licensing non-disposal dredging to £6,500. Thus, the total cost to regulating authorities of 11-27 occurrences per year would be £71,500-£175,500. It is expected that this cost would be recovered from industry in the form of licensing fees, as is currently the case for FEPA licence applications.

More generally, the PLA indicates that licensing hydrodynamic techniques does result in a significant increase in workload for the licensing authority, which should not be underestimated.

Whilst the PLA does not require an environmental impact assessment (EIA) for maintenance dredging (regardless of technique), an alternative view is that water injection dredging creates very high suspended sediment concentrations in the near-bed layer, which have the potential to smother areas of sea bed over which they pass. The near bed plume will be dispersed over time but it could affect sensitive ecological or economic receptors in the vicinity. Therefore, regulators and/or consultees may be more likely to seek an EIA for this type of activity than other types of dredging. This would also depend on the sensitivity of the receiving environment. An initial assumption is that an EIA may be required for hydrodynamic dredging of amounts greater than 10,000 m^3 in situ (roughly equivalent to 30,000 tonnes wet weight).

Data from Sullivan (2000) suggest that around 10% of hydrodynamic dredging activities are undertaken by agitation or water injection and 27% of ports that were able to estimate the quantity of sediments moved by hydrodynamic techniques moved

more than 30,000 wet tones pa. Whilst these latter data may not relate solely to water injection dredging, these are the best data currently available.

Therefore, only one occurrence per year may require an EIA (11 x 10% x 27% to 27 x 10% x 27%). This is consistent with the suggestion that it is the smaller ports which undertake hydrodynamic dredging on its own, and that the techniques become less effective as greater volumes are moved. This also suggests that, if Sub-options A and B were combined, smaller ports undertaking minor dredging activities may be subject to reduced licensing requirements which could further reduce their costs. Based on RPA *et al* (2006), an EIA which takes into account dredging and disposal issues may cost up to £100,000. However, stakeholders have indicated that the costs may be higher, particularly where an Appropriate Assessment is required under the Habitats Directive

Where an EIA is not required, the PLA indicates that an applicant does have to meet a number of requirements before being allowed to undertake either water injection or plough dredging. These requirements include:

- sediment quality sampling, in order to characterise the sediment, is required for all dredging/disposal activities, at a cost of £1,500;

- for dispersive dredging techniques (such as water injection and plough dredging), plume dispersion modelling. This is only appropriate for silting materials and costs in the region of £15,000; and

- water quality and bathymetric monitoring at a cost of £15,000 to £20,000.

The PLA considers that an assessment of the effects of dredging on water quality at the dredge site and the sediment quality of the receiving environment is an integral part of the licensing process. Therefore, the provision of sediment samples is a requirement of all new dredging applications and samples must be provided once every two to three years for ongoing maintenance dredging operations.

For 11-27 occurrences, of which one requires an EIA, the cost to industry of providing reports for a licence application may be in the region of £415,000 - £1 million. In addition to this, the licensing authorities would be expected to charge license fees which may result in an additional cost of £71,500-£175,500 to industry.

Therefore, the total cost to industry of introducing licensing for hydrodynamic techniques may be between £487,000 and £1.2 million per year, depending on the number of occurrences, the quantity of material moved, the associated level of fees charged and the requirement for environmental sampling, modelling, monitoring and reporting.

Sullivan (2000) notes that one incentive for using hydrodynamic dredging methods is their relatively low costs, thus the addition of an EIA or modelling/monitoring requirements would reduce the cost savings to industry. In general, Sullivan (2000) found that the smaller ports tended towards sole use of hydrodynamic dredging, whilst

larger ports used hydrodynamic dredging to dredge inaccessible areas to their main dredging plant or to level areas following a dredging campaign. In response to Sullivan's survey, many small ports claimed that hydrodynamic dredging is the only cost effective way of maintaining water depths, and that small operators may be forced to close if any restrictions were placed on techniques such as ploughing.

Similarly, stakeholders have indicated that any restrictions that impose additional costs on the operation of Scottish ports could place them at a competitive disadvantage compared to English ports.

An additional issue raised by stakeholders is the potential costs associated with appeals. As indicated at the beginning of this section, this is a matter of administration rather than process and, as such, any impacts will be equally applicable across all options.

5.4.4 Costs of Sub-Option B

The costs of Sub-Option B cannot be quantified but they relate to the potential difficulties associated with distinguishing between different levels of activities and their associated impacts. However, both FEPA and CAR currently apply tiered charging schemes and so the additional impacts are likely to be minimal.

5.5 Small/Micro Firms Impact Assessment

Many of the industry sectors identified in Section 5.2 include some small and micro-sized firms. However, the impact on small firms will be limited, as it is generally larger companies which undertake significant developments requiring more than one licence. The exception to this is likely to be in the aquaculture industry, where multiple licences are regularly required. However, small firms are likely to benefit equally from the proposed options and should not incur disproportionate costs.

As one of the aims of a reforming the licensing system is to simplify and streamline the approach, small firms are likely to benefit from the proposals. Simplified procedures under Option B may be of particular benefit to small firms.

5.6 Competition Assessment

The benefits of a streamlined and modernised licensing system are:

- improved efficiency and cost-effectiveness;
- equal treatment of all marine activities; and
- reduced complexity of marine management.

All of these benefits are likely to have a positive impact on competition, by producing a more equitable situation both across and within different industry sectors.

5.7 Enforcement, Sanctions and Monitoring

Responsibility for compliance, monitoring and enforcement of the revised licensing arrangements would be carried out by the relevant regulating authorities as at present, with some improvements in efficiency. Alternatively, this could fall under the remit of Marine Scotland (see Section 7). Reserved issues would continue to be addressed by the respective departments within the UK Government

5.8 Summary

A streamlined and modernised licensing system for the marine environment would provided benefits by delivering marine environment objectives and will be a key delivery mechanism for marine planning and nature conservation measures.

Four licences account for the majority of the applications under the current licensing system; FEPA, CPA, CAR and Aquaculture Development Consents. Therefore the greatest cost savings, compared to the current situation, occur where the duplication between these licences is removed. Although this is a feature of Options 2, 3 and 4, the additional amalgamation of wildlife and aggregate licences under Option 3 with FEPA/CPA/CAR does not significantly increase the benefits due to the low number of applications for these licences.

Whilst Option 4 may achieve the greatest savings, it could remove direct control for aquaculture planning issues from the local authorities, reversing the relatively recent introduction of such powers. Such a move is unlikely to be popular with local authorities and would also require industry to develop relationships with a new set of regulators. Not including aquaculture development consents in Option 4, though, would significantly reduce the benefits of this Option.

Sub-option A could significantly increase costs for industry, particularly as the regulating authorities would look to recover costs in the form of licence fees. However, the exact number of occurrences of hydrodynamic dredging is uncertain. The addition of this sub-option would provide a more consistent approach to licensing marine activities by addressing dredging activities that are not currently licensed.

Sub-option B may result in some savings; however these are assumed to be limited to small projects requiring FEPA and CPA licences. As FEPA already has a tiered charging system, the main benefits relate to CPA licences but these are uncertain as there is no charging system currently in place for CPA. By combining FEPA, CPA and CAR under Options 2, 3 or 4 it is likely that similar benefits would occur anyway, due to the existing approaches of FEPA and CAR.

Table 5.25 summarises the annual costs and benefits of the licensing options, whilst Table 5.26 summarises the total costs and benefits. The estimated benefits range from £230,000 to £1.2 million and are in the region of 10-15% of current costs. The impact on employment within the regulating authorities (and industry) is expected to be negligible.

Table 5.25: Summary of the Impacts of Options for Streamlining Licensing – Annual Costs / Savings by Option						
	Additional Savings/Costs of Options					
	Option 1: No Change	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate and Other Activity Licences**	**Option 4: Create Activity-based Licences**	**Sub-option A: Controls on Capital and Maintenance Dredging**	**Sub-option B: Following a CAR-type Approach for Small Projects**
Additional savings for Regulating Authorities (Government, local authorities and other organisations)	Baseline – no change	£150,000 - £168,000	£159,000 - £204,000	£342,000 - £515,000	Not quantified	~£121,000
Additional direct cost savings for Industry	Baseline – no change	£170,000	£177,000 - £197,000	£512,000 - £672,000	Not quantified	Cost savings passed to industry through lower fees
Additional costs to Regulating Authorities (Government, local authorities and other organisations)	Baseline – no change	Not quantified – costs associated with revising legislation and re-training/moving staff	Not quantified – costs associated with revising legislation and re-training/moving staff	Not quantified – costs associated with revising legislation and re-training/moving staff	Recoverable through licensing fees	Not quantified, may be significant
Additional costs to Industry	Baseline – no change	Not quantified – costs associated with re-training staff	Not quantified – costs associated with re-training staff	Not quantified – costs associated with re-training staff	£487,000 - £1.2 million	Not quantified, may be significant
Net Savings [Costs] from Option	**0**	**£320,000 - £338,000**	**£336,000 - £401,000**	**£854,000 - £1,187,000**	**[- £487,000 - £1.2 million]**	**£121,000**
Employment Impacts for Regulating Authorities (Government, local authorities and other organisations)	Baseline – no change	– <1 FTE	– <1 FTE	– 2-2.6 FTE	+ 1.3 – 3.1 FTE	Not quantified

Table 5.26: Summary of the Impacts of Options for Streamlining Licensing –Total Present Value Costs / Savings by Option (£m, £2008)						
	Additional Savings/Costs of Options					
	Option 1: No Change	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate and Other Activity Licences**	**Option 4: Create Activity-based Licences**	**Sub-option A: Controls on Capital and Maintenance Dredging**	**Sub-option B: Following a CAR-type Approach for Small Projects**
Additional savings for Regulating Authorities (Government, local authorities and other organisations)	Baseline – no change	£2.2 million - £2.5 million	£2.3 million - £3 million	£5 million - £7.6 million	Not quantified	~£1.8 million
Additional savings for Industry	Baseline – no change	£2.5 million	£2.6 million - £2.9 million	£7.5 million - £9.9 million	Not quantified	Cost savings passed to industry through lower fees
Additional costs to Regulating Authorities (Government, local authorities and other organisations)	Baseline – no change	Not quantified – costs associated with revising legislation and re-training/moving staff	Not quantified – costs associated with revising legislation and re-training/moving staff	Not quantified – costs associated with revising legislation and re-training/moving staff	Recoverable through licensing fees	Not quantified, may be significant
Additional costs to Industry	Baseline – no change	Not quantified – costs associated with re-training staff	Not quantified – costs associated with re-training staff	Not quantified – costs associated with re-training staff	£7.2 - £17.6 million	Not quantified, may be significant
Net Savings [Costs] from Option	**0**	**£4.7million - £5 million**	**£4.9 million - £5.9 million**	**£12.6 million- £17.4 million**	**[- £7.2 - £17.6 million]**	**£1.8 million**
Employment Impacts for Regulating Authorities (Government, local authorities and other organisations)	Baseline – no change	– <1 FTE	– <1 FTE	– 2-2.6 FTE	+ 1.3 – 3.1 FTE	Not quantified

6. OPTIONS FOR POWERS TO DELIVER MARINE NATURE CONSERVATION

6.1 Options

6.1.1 Introduction

Options for improving the delivery of marine nature conservation were discussed in a Sustainable Seas Task Force (SSTF) workshop and this section largely draws on the workshop report[19], supported by further consultation with Scottish Natural Heritage and other SSTF and papers included in Sustainable Seas for All.

There are three main options in relation to nature conservations:

- Option 1: no change. This represents the baseline for comparison with other options;
- Option 2: make better use of existing measures, e.g. voluntary reserves, marine nature reserves legislation;
- Option 3: implement new measures and policies out to 200nm, through alignment of the Scottish & UK Marine Bills.

The consultation document describes the current three-pillar approach to marine nature conservation with specific measures for (I) wider seas, (II) species conservation, and (III) site protection. It recommends developing this approach further, along with the identification of overarching marine ecosystem objectives. Each option is discussed below in relation to these three pillars, with a number of sub-options under each. Not all of the changes in the consultation document need new legislation to implement them.

Changes to seal licensing are considered separately in section 6.9, and integration of historic environment site protection in section 6.10, where the options relating to these changes are outlined.

Marine nature conservation objectives may also be delivered through other policy areas of the Scottish Marine Bill, such as improvements to the licensing regime (see Section 5) and marine planning (see section 4). Overlaps with these policies are highlighted below.

6.1.2 Option 1: No Change

Under this option, Scotland would continue to seek to meet the current conservation objectives and legal commitments through existing legislation and the deficiencies identified in Section 2.3 would remain. There would be no changes to marine nature

[19] Sustainable Seas Task Force, Workshop Report Paper – Marine Nature Conservation. Edinburgh, 9 April 2008.

conservation policy and no new species conservation or site protection measures. Existing measures are detailed below.

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Pillar I: Wider Seas Measures

Some participants at the SSTF Workshop felt that adequate provisions for wider seas measures already existed under an assemblage of different powers (both national and international). These include existing fisheries management measures, requirements of EIA and SEA legislation and other EU Directives on hazardous substances etc.

However, the latest report on the State of Scotland's Seas[20] provides evidence that more work is required in order to meet a range of wider seas marine objectives. Wider seas objectives and targets often have an international dimension and the mechanisms for supporting their achievement nationally could be strengthened in the marine environment. In particular, more consideration is needed on how to meet objectives of the Water Framework Directive and EU Marine Strategy Framework Directive.

Pillar II: Species Conservation Measures

The protection of some species, for example all species of cetaceans, is required by EU law and implemented in Scotland within the 12 nm zone by the Conservation (Natural Habitats &c) Regulations 1994 (as amended). Some other marine species are protected within 12nm by the Wildlife and Countryside Act 1981 amended by the Nature Conservation (Scotland) Act 2004. Wild birds are already fully protected under the Birds Directive as transposed by the Wildlife and Countryside Act 1981.

The consensus at the SSTF workshop appeared to be that current protection for species in the wider environment in which they are found is adequate for the zone within 12nm. However, a recent report on Scottish biodiversity indicators[21] reported declining status in the abundance of breeding seabirds. There have also been local declines in the abundance of common seals.

Pillar III: Site Protection Measures

The main site protection measures applying in Scottish waters include:

- Sites of Special Scientific Interest (SSSI) (generally extend only down to Mean Low Water Mark);
- 35 Special Areas of Conservation (SAC) for the marine habitats and species listed in Annexes I and II of the EC Habitats Directive (92/43/EC);
- 49 Special Protection Areas under the EC Birds Directive (79/409/EEC) covering the breeding habitats of seabirds down to low water mark; and
- Ramsar Sites under the 1972 Ramsar Convention on Wetlands.

[20] Baxter, J.M., Boyd, I.L., Cox, M., Cunningham, L., Holmes, P., Moffat, C.F., (Editors), 2008. Scotland's Seas: Towards Understanding their State. Fisheries Research Services, Aberdeen. pp. 174.

[21] Scottish Government. 2007. Scotland's Biodiversity Indicators. The Scottish Government, Edinburgh. pp. 50.

The limitations of existing legislation, the importance of Scotland's marine biodiversity and Scotland's commitment to international initiatives on marine protected areas (MPA), such as OSPAR, were recognised by the SSTF.

Potential Risks

There are a number of risks associated with this option:

- continued gaps in the current nature conservation regime: it would not address the weaknesses identified in existing marine nature conservation legislation. There would be a risk that the impacts of human activities on important areas not protected by European sites would lead to further declines in marine species and habitats;

- failure to meet obligations: it would not support achievement of existing national and international commitments on MPAs, e.g. to establish a network of marine protected areas (OSPAR) and absence of new MPAs could affect the potential to achieve good environmental status under the European Marine Strategy Framework Directive (MSFD);

- deterioration of the marine environment: a weak and less balanced nature conservation system may result in increased potential for detrimental changes over time or, in the most extreme cases, irreversible damage to ecosystems and a consequent irreversible degradation in the provision of the ecological goods and services on which we rely. Examples of current environmental deterioration are summarised in Table 6.1; and

- lack of a strategy for site protection may result in protection of 'best-of' sites only, with continued deterioration of representative habitats.

Table 6.1. Examples of Deterioration in Ecosystem Services and Features in Scotland
• 16 out of 21 Scottish fish stocks, including cod and Atlantic salmon, are beyond sustainable limits. • Important marine species and habitats, including common skate and seagrass beds, are in severe decline. • Seabird colonies are failing due to a shortage of food. Hundreds of guillemots are reported to have died of starvation across Scotland, especially on the west coast, with birds even swimming upstream into central Glasgow. • The population of common seals in Orkney has declined by over 40% since 2001. • Arctic terns numbers have reduced by 95% between 1986 and 2004. • A long-term increase in salinity is being observed in offshore Atlantic waters. Salinity is much more variable in the North Sea waters. • Changes in the seasonal cycles of zooplankton are potentially vulnerable to climatic changes. Zooplankton are the main diet for many seabirds and underpin marine food webs. • PCBs have been found at levels in harbour seals' blubber in some areas around Scotland that would result in adverse health effects for the seals. • Nitrogen concentrations are elevated above background levels in the Firths of Clyde and Forth and significantly higher in the South Esk and Ythan rivers which serve a large agricultural industry. • 12% of Scotland's coastline is subject to coastal erosion. • Marine litter continues to be a problem on Scottish beaches.
Sources: Scottish Environment Link[22] and Scotland's Seas: Towards Understanding their State[23]

6.1.3 Option 2: Make Better Use of Existing Measures

Pillar I: Wider Seas Measures

Wider seas measures under this option could include:

1. Extending the application of economic instruments, such as accreditation schemes for farmed salmon, the provisions for decommissioning of fishing vessels to reduce fishing effort, the support to renewable energy generation projects through the Renewables Obligation Scotland and structural funding.
2. Ensuring that sectoral policies took full account of nature conservation requirements.
3. Ecosystem-based approaches being implemented through marine planning, inshore and offshore.

Pillar II: Species Conservation Measures

Species conservation measures under this option would comprise:

1. Extending protection to some new species, or improving the protection for certain species that are already protected in some form, through amendment of existing schedules in the Wildlife and Countryside Act (WCA).
2. Enhancements to other conservation measures, e.g. reinforcement of the Biodiversity Duty contained in the Nature Conservation (Scotland) Act 2004 and

[22] Scottish Environment Link (2007). A Marine Bill for Scotland: Urgently needed to sustain Scotland's seas

[23] FRS, SEPA and SNH (2008). Scotland's Seas: Towards Understanding their State

establishing new species or habitat action plans and/or improving on delivery of existing plans.

Additional species and habitats that might require further protection will be those most at risk. Examples may include:

- black guillemots (*Cepphus grylle*);
- arctic terns (*Sterna paradisaea*);
- common seals (*Phoca vitulina*);
- common skate (*Raja batis)*;
- burrowing anemones (e.g. *Cerianthus lloydii* and *Cereus pedunculatus*);
- seagrass beds (*Zostera* species); and
- flameshell reefs (*Limaria hians*).

Black guillemots and Artic terns are already specified under Annex I of the Birds Directive and common seals under Annexes II and V of the Habitats Directive, providing a good level of statutory protection. Others, such as the common skate, seagrass beds, and burrowing anemones are already included in the list associated with the Biodiversity Duty but might benefit from more statutory forms of protection, e.g. under the Wildlife and Countryside Act 1981

Pillar III: Site Protection Measures

Site protection measures under this option could include making better use of existing marine nature reserves legislation (for example using marine nature reserve provisions into the subtidal area or establishing voluntary reserves.

Statutory marine nature reserves may be established under the Wildlife and Countryside Act 1981 to conserve, and provide opportunities for the study of, marine flora and fauna and geological and physiographical features of special interest and are restricted to within 3 nm. The marine nature reserve arrangements are based on the voluntary approach and are thus dependent on securing the co-operation of all the local interests concerned - e.g. fishermen, divers, local authorities - to agree the detailed provisions for protecting each site. Voluntary approaches are also heavily dependent on external funding. Perhaps as a consequence, there are only three designated marine nature reserves supported by bylaws - Lundy Island (in England), Skomer Island (in Wales) and Strangford Lough (in Northern Ireland) – together with many non-statutory marine nature reserves established by agreement between non-governmental organisations, stakeholders and user groups. The UK Marine Bill includes provisions to repeal this legislation in England and Wales.

Potential Risks

The main risk associated with Option 2 is that it might fail to deliver the Government's commitment to establish a network of marine protected areas. While it might prove possible to protect some important sites through the marine nature reserve provisions of the Wildlife and Countryside Act 1981, previous attempts at using these powers have generally resulted in failure.

Similarly, whilst gaps in species management and protection might be partly addressed by extending the range of species considered under the Biodiversity Duty or related mechanisms, this is essentially a non-statutory measure and may not secure the level of compliance necessary to result in measurable improvements.

Furthermore, decommissioning schemes targeted at reducing general effort by some fisheries, or pressure on some commercial fish stocks, may not lead to benefits for other key species or on habitats of wider biodiversity importance.

6.1.4 Option 3: Implement New Statutory Measures and Policies

Pillar I: New Wider Seas Measures

Wider seas measures under this option would comprise:

1. A new marine planning framework out to 200nm (see Section 4). This could be provide the main mechanisms for management of MPAs and delivery of MPA conservation objectives (e.g. through licensing decisions or zoning damaging activities away from features of conservation importance) and therefore will link into supporting Pillar II and III objectives;
2. Identification of new marine ecosystem objectives to deliver nature conservation. These are likely to be developed via marine planning (see Section 4).

Option 3 may also consider measures applicable to commercial fisheries within a system of marine spatial planning and, therefore, might include additional measures for cod and Atlantic salmon.

Pillar II: New Species Conservation Measures

Species protection measures considered within the new marine planning framework and marine ecosystem objectives, as above. Additional species for which further conservation measures might be required were identified under Option 2.

Pillar III: New Site Protection Measures

Site protection measures under this option might comprise:

1. New flexible powers introduced for Scottish Ministers to identify, designate or recognise particular locations of biodiversity importance and demonstration/ research areas. 'Sustainable Seas for All' outlined that sites could fulfil international and national priorities and site proposals from communities may be considered.
2. Other measures considered within the new marine planning framework e.g. marine ecosystem objectives and zoning in marine plans (subject to content of local plans).

The new sites under the Scottish Marine Bill are termed marine protected areas. The Scottish Government estimates that 10-20 new sites may be needed, of which

approximately 10 would be taken forward for their national/international biodiversity importance (over and above Natura sites inside 12 nm around Scotland[24]) and the remainder could be for demonstration/research purposes or in light of community proposals.

A further 10 new MPAs may be designated by Scottish Ministers in offshore waters adjacent to Scotland under the powers included in the UK Marine Bill. However, the provisions for offshore nature conservation arise from the UK Marine Bill, and therefore the costs for the 10 offshore nature conservation sites should be allocated to that Bill, rather than the Scottish Marine Bill.

Existing marine Natura sites hold other species and habitats recognised by OSPAR that could be nominated as OSPAR marine protected areas for these additional features but the management of the Natura features may be sufficient to protect these other features recognised by OSPAR. There are currently 35 SACs for coastal and marine habitats inside 12 nm and a further two are being considered to complete the SAC list in Scottish inshore waters.

The Scottish Government proposes to prioritise a network approach to identifying new MPAs for biodiversity and to consider contribution to national priorities when considering other proposals from communities. The costs have been estimated on the basis that 10 sites would be identified in 2009-10 and 2010-11 with additional survey and consultation of 5 sites in 2010-11 and a further 5 in 2011-12

Potential Risks

The main risks associated with this option are that the marine planning system could prove to be ineffective in protecting nature conservation features. This is particularly the case offshore (which is covered by the UK Bill) where enforcement is more expensive and more difficult and where strict protection may not be achievable without amendment to international legislation (e.g. common fisheries Policy, UNCLOS). A further risk is that the level of detailed information sought by some stakeholders to support formal site protection may not be readily met, or there may be other data gaps, leading to delays in identification and protection of a marine protected area network.

These risks may be mitigated by seeking to ensure that the design of the marine planning system provides adequate protection to important nature conservation features (including where necessary negotiation at an international level) and that a sufficient investment in data collection is made to support site protection measures.

Any site protection measures that displace activities elsewhere may also result in increased environmental impacts and sectoral conflicts in areas outside the sites. Any restrictions on leisure activities might reduce the economic benefits of nature conservation to society.

[24] Outline of Additional Costs Associated with Extension of Devolution for Nature Conservation and the Potential Costs of Marine Planning.

6.1.5 Comparison of the Options

Table 6.2 compares the main features of the three options.

Table 6.2: Summary of Options for Powers to Deliver Marine Nature Conservation

	Option 1: Do Nothing	**Option 2: Better Use of Existing Measures**	**Option 3: New Measures and Policies**
Pillar I: wider seas measures	Continue with use of existing measures contained in a range of separate sector-based legislation	Extend use of economic instruments (such as accreditation schemes, grants and structural funding) Better integration of environmental considerations into sectoral policies	New marine planning framework (see section 4). New marine ecosystem objectives (see section 4).
Pillar II: species conservation measures	Continue with current species protection measures	Add to list of species receiving strict protection Enhanced non-legislative measures (biodiversity duty and species action plans)	Species protection measures considered within the new marine planning framework and marine ecosystem objectives (see Section 4).
Pillar III: site protection measures	Continue with use of current measures, i.e. SACs and SPAs	Amend and/or make better use of existing marine nature reserves legislation and voluntary reserves	New powers to designate locations of biodiversity importance. Marine planning e.g. MEOs, possible zoning of other nature conservation features within the new marine planning framework (subject to content of regional plans).

6.2 Sectors and Groups Affected

Key business sectors that could be affected by measures for marine nature conservation are listed below. However, not all sectors are likely to be affected by each measure; MPAs in particular would be managed for the features of interest and the Scottish Government anticipates that in most cases social and economic uses are likely to be compatible with protection:

- marine renewable energy;
- fisheries (finfish and shellfish);
- ports and harbours;
- shipping;
- aquaculture;
- oil and gas extraction and related pipelines
- telecommunication and power cables;
- sand and gravel extraction;
- recreational and tourism companies, and

- other activities covered by regimes such as marine licensing and environmental consents.

Government sectors affected include those responsible for designing, implementing and enforcing measures, responsibilities that may or may not be devolved to the Scottish Government. They include not just only departments of the Scottish Government but also local authorities and other regulators.

Social and environmental groups affected include non-governmental organisations, individual members of society and society as a whole through the educational value, cultural heritage and other non-use values such as bequest and existence values of the marine environment.

This Impact Assessment also considers risks, costs and benefits to the natural environment as a whole encompassing all ecosystem services and components.

6.3 Benefits

6.3.1 Introduction

The aim of Options 2 and 3 outlined above is to improve the state of the marine environment compared to the current situation within a framework that promotes sustainable economic growth. This gives rise to economic, social and environmental benefits; the extent of these benefits will depend on the degree of improvement of the state of the environment that each Option achieves. This is very difficult to determine, because of remaining uncertainties about the cause-effect linkages. We therefore discuss first the potential range of benefits that could be achieved through improvements in the marine environment, then the benefits specific to each option and to each pillar of marine nature conservation.

6.3.2 Potential Benefits from Improvements in the Marine Environment

As indicated in Table 6.1, there are a number of examples of deterioration in the Scottish marine environment which could continue under Option 1. Options 2 and 3 seek to improve the delivery of marine nature conservation, resulting in an overall improvement in the state of the marine environment. Improvements in ecosystem components (e.g. fish stocks) or processes (e.g. nutrient loads) will provide indirect benefits for the economy, society and other environmental aspects.

This section outlines these benefits and where possible assigns a value to these. Although these benefits will vary among the different measures, the precise extent of variation is difficult to determine.

Economic Benefits

The current economic value of the marine environment to the Scottish economy is estimated over £2 billion per year (at 2004 prices, see Table 4.5). Table 6.3 indicates the economic value of sectors directly related to the quality of the marine

environment; this total over £970 million per year. Nature conservation measures which enhance the sustainability of these sectors could therefore ensure that these significant economic benefits are retained.

Table 6.3: Current Economic Value Associated with Marine Ecosystem Component in Scotland
• Marine and coastal areas support around 50,000 marine-related jobs (excluding oil extraction and leisure/tourism)[1]; • In 2006, 379,200 tonnes of live fish worth £368.5 million was landed[1]; • Sea-fishing supports an industry worth £149.5m to the Scottish economy (Gross Value Added (GVA) at 2004 prices)[1]; • Scotland accounts for 90% of the UK's farmed fish, with a farm gate value of £300million[2] (GVA of £121.7million[1]); • The total revenue from leisure and small commercial marine industries in Scotland was estimated to be £98.9million with a value added of £35.3million[3]; and • Marine wildlife tourism supports over 2,500 jobs and earns £57m of revenue[2].
Sources: 1. Scottish Government (2008). Scotland's Seas: Towards understanding their state (Chapter 5). 2. Scottish Executive(2005). Seas the Opportunity: A strategy for the long-term sustainability of Scotland's coasts and seas. 3. BMF(2008). UK leisure and small commercial marine industry. Key Performance Indicators.

Social and Environmental Benefits

The RIA for the UK Marine Bill provided some monetary valuations of the social and economic value of various ecosystem goods and benefits. These are summarised in Table 6.4. The table indicates that social benefits could be at least equal to the economic benefits of marine biodiversity. As Scotland accounts for over 55% of the UK marine area out to 6 nm, where the majority of benefits occur, this could imply potential social and environmental benefits to Scotland of over £7 billion per year. However, the values are subject to significant uncertainty.

Table 6.4: Environmental and Social Benefits from UK Marine Biodiversity		
Good/Service	**Annual value (2004 prices)**	**Robustness of estimate**
Leisure and recreation	£11,770 million	Over estimate
	£602 million	Under estimate
Cultural heritage and identity	Valuation data not available	Valuation data not available
Cognitive values	£317 million	Over estimate
Option use value	Valuation data not available	Valuation data not available
Non Use values – Bequest and Existence	£500 million – £1,100 million	Under estimate
Raw materials	£82 million	Under estimate
Food provision	£513 million	Under estimate
Total	**Approx. £14 billion**	**Significant uncertainty**
Source: Defra (2008): Marine Bill White Paper RIA		

The specific environmental benefits of improvements in marine nature conservation management include:

- reducing the current risk of the deterioration of marine biodiversity and ecosystem services;
- the conservation of marine species and habitats able to support biodiversity in general, particularly biologically mediated habitats such as maerl and horse mussel beds;
- reduced disturbance from anthropogenic perturbations, improving the resilience and resistance of marine ecosystems to absorb natural fluctuations in their environment from e.g. climate related changes;
- reductions in the concentrations of pollutants, improving levels of immune system health and fecundity of species such as seals and bivalves; and
- protection of natural habitats and processes, restoring natural functions for flood and erosion protection.

6.3.3 Benefits of Specific Options

Option 1

There are no new long-term benefits associated with Option 1. There may be some short-term benefits under this option, in that policy-makers, businesses and marine users will not have to change their behaviour. However, it is likely in the longer term, that political and economic pressures on the marine environment will ultimately require alternative solutions and consequent modifications in activity.

Option 2

Option 2 should lead to an improvement in the marine environment, with the potential to achieve some of the benefits described above. The benefit of making better use of existing measures under Option 2 is that the systems are already in place and understood by all stakeholders. Therefore, fewer costs will be incurred by government and regulators in designing new measures, consulting on them and implementing them.

Option 3

By developing a more systematic approach to management of the marine environment, Option 3 should enable a greater improvement in the marine environment than Option 2, thus generating greater economic, social and environmental benefits. The benefits of Option 3 are largely related to measures introduced through a new system of marine spatial planning. Some of these benefits are discussed in Section 4. Benefits specific to nature conservation include:

- the development of a network of marine protected areas, which will enable international agreements under OSPAR to be met and contribute to ecosystem health;
- marine planning, marine ecosystem objectives and a network of protected areas also provide the potential to develop a greater understanding of ecosystem

function through associated environmental monitoring programmes and data collection; and
- a suite of marine ecosystem objectives will better enable an ecosystem approach to be adopted in the wider management of the marine environment.

6.3.4 Specific Benefits of Each Pillar of Marine Nature Conservation

Different benefits are also associated with the different pillars of marine nature conservation.

***Wider Seas Measures**:*

- often provide an overall framework at a broader level to underpin lower level nature conservation efforts. Marine ecosystem objectives, for example, are a useful integrating tool that would span local plan boundaries because they would reflect the ecosystem scale and national priorities;
- provide a system of integrating nature conservation with sectoral activities. For example, the RIA for a £5 million fishing vessel decommissioning scheme in the South West of England[25] (2007) noted that environmental benefits would be improved if teamed with a long term plan reducing the number of days at sea per year that a vessel can fish.

Species Conservation Measures:

- can be targeted towards vulnerable species;
- can consider the entire lifecycle needs of the species (e.g. ontogenetic shifts in habitat requirements), its migratory movements;
- can be applied at an appropriate scale for the population size.

Site Protection Measures:

The level of benefit from site protection measures (e.g. marine protected areas) is greatly dependant on the objectives and the level of protection afforded. The benefits of marine protected areas have been discussed by a number of authors. Those specific to site protection include:

- prevention of physical damage and degradation of marine habitats;
- support the recovery and restoration of degraded habitats;
- community and ecosystem benefits such as greater complexity of food webs and increased primary and secondary productivity;
- higher densities, biomass, size and diversity of certain species or groups of species; and
- provision of reference areas for studying and improving understanding of the impacts of human activities on the marine environment and natural systems.

[25] Defra (2007): **Explanatory Memorandum to the Decommissioning of Fishing Vessels Scheme** 2007, No. 312.

6.4 Costs

6.4.1 Costs of Option 1: No change

Continuing with the current marine nature conservation regime will not result in any direct additional costs to businesses and government. However, if any of the risks identified in Section 6.1.2 are realised, they will ultimately result in continued deterioration of the marine environment. This will have potential costs for government, businesses, society and the marine environment. These are of two types:

- costs from deterioration of the marine environment; and
- costs from failure to meet international obligations.

Costs from Deterioration of the Marine Environment

The costs of deterioration relate to the loss of and damage to goods and services provided by the marine environment. Given our limited understanding of the marine environment, it is difficult to predict exactly what losses might be incurred and to what degree, but it is likely that if action is delayed now the responses needed in future will be more acute and some changes may be irreversible. Generally, it is extremely difficult to assign an economic value to any of these losses. However, previous losses of marine components and processes can provide indications of the potential impacts. Examples of these are shown in Table 6.5.

Table 6.5: Examples of Impacts Associated with Losses of Marine Components and Processes	
Example	**Impacts**
Braer oil spill incident off the Shetland Islands in January 1993[1]	The oil spill led to: • contamination of seawater and marine fauna; • the need for extensive surveys of sediments, habitats and wild and farmed fisheries (fin and shell-fish) for evidence of pollution; • potential impacts for 18 salmon farm and 3 mussel farm sites in affected area for pollution damage; • the destruction of two year classes of farmed salmon stock, compensated for through three separate agreements totalling approximately £21 million; • the destruction of 5,500 tonnes of salmon and mussels; • closure of grounds to fishing on 8 January 1993. Restrictions were lifted for on whitefish on 24 April 24 1993; for crustaceans, with the exception of Nephrops, in September 1994; for shellfish, particularly, scallops and queens, in February 1995 and finally for mussels and Nephrops in May 2000; • economic impacts on fish processing companies in Shetland requiring compensation; • potential damage to salmon and white fish prices; • £45 million had been paid out in compensation by October 1995, settling 2,000 claims. A further £3.7 million of claims had still not been settled by 2001.
Over-fishing of North Sea herring[2]	Landings of North Sea herring into Scotland were reasonably stable in the 1960s and the beginning of the 1970s, averaging 20,000 to 30,000 tonnes. During this period, high fish mortality resulted in a rapid decline in the spawning stock biomass, leading to a collapse in the industry, with complete closure of this fishery between 1978 and 1982. The fishery opened again in 1983 and landings of North Sea herring into Scotland reached a peak of over 70,000 tonnes in 1986. Since then, a number of management measures have been put in place, both nationally and internationally, to restore the North Sea herring populations
Collapse of seasonal Atlantic bluefin tuna populations[3]	The populations off northern Europe (North Sea) collapsed in the early 1960s. Norwegian catches briefly exceeded 10,000 tons per year in the early 1950s. International over-exploitation from fishing (not just of tuna but also their prey of herring) is suspected to have led to the population's demise.
Newfoundland cod fishery	The fishery was closed in July 1992, affecting 40,000 Canadians in an industry valued at $500 million a year at the time. The demise of the fishing was due to over-exploitation, negligent fishing practices (e.g. discarding) and poor stock management. Cod stocks never recovered and cod is now listed as "vulnerable" on Canada's endangered species list
Sources: 1. http://www.homarusaquafish.co.uk and http://news.bbc.co.uk/1/hi/scotland/1279022.st 2. FRS (2001). Managing Scotland's Herring Stocks. Pelagic News, July 2001. http://www.marlab.ac.uk/Uploads/Documents/HerringStocks.pdf 3. http://www.sciencedaily.com/releases/2007/08/070805124347.htm	

The value of some marine ecosystem components in Scotland that might be at risk of deterioration can be inferred from the current value of associated industries. These were shown in Table 6.3 as totalling around £974 million per year. If deterioration in the environment reduced the value of these sectors by only 1%, this would indicate a net present value cost of more than £14 million over 20 years. As the non-economic value of the marine environment is estimated to be at least as great as the economic

value, there could also be losses of more than £14 million over 20 years in non-economic value.

Failure to Meet International Obligations and Commitments

Failure to meet international obligations and commitments on conservation may result in damage to Scotland's reputation and fines may arise from failures in meeting EC legal obligations. The EU Marine Strategy Framework Directive places an obligation on all member states to achieve good environmental status within their respective waters by 2020 and measures include MPAs in response to international agreements. Failure by Scotland to achieve this could result in the start of infringement proceedings by the European Commission and, in extreme cases, may culminate in expensive legal action[26].

Such action is not without precedent. In 2005, the Commission launched infringement proceedings against eight member states, including the UK, for failing to adequately monitor how effectively their populations of cetaceans - whales, dolphins and porpoises - were being protected.

A more significant landmark case was that brought against France for letting undersized fish be offered for sale, twice; one infringement in 1991 and again in 2005[27]. France was ordered to pay both a periodic penalty payment of €58 million every six months that it failed to meet compliance and a lump sum fine of €20 million for serious and persistent failure to comply with Community law.

Although full legal action is generally avoided by taking corrective action, this represents a very realistic and potentially expensive risk. Ultimately, improvements in marine nature conservation, particularly the establishment of a network of marine protected areas, may be legally enforced upon Scotland.

6.4.2 Costs of Option 2

The measures envisaged under Option 2 will give rise to a number of costs:

- costs to **government** in setting up the measures; these are discussed in more detail below in relation to each pillar.
- costs to **industry** are also discussed below in relation to each pillar;
- costs to **society** and the **environment** are likely to be minimal, as the measures are designed to enhance the value of the natural environment. There may be some additional costs to NGOs and individuals in responding to consultations associated with the measures.

[26] The UK Government is the contracting party to the EU Commission and would therefore be responsible for responding to this (and meeting associated legal costs and fines).

[27] EC (2005). Financial penalties for Member States who fail to comply with judgements of the European Court of Justice: European Commission clarifies rules. Memo/05/482.

Costs of Pillar I: Wider Seas Measures

A range of **economic instruments** is used to influence activity in the marine environment. Examples include accreditation schemes for the salmon industry, the provisions for decommissioning of fishing vessels to reduce fishing effort or the support to renewable energy generation projects through Renewables Obligation (Scotland) (ROS). More information on these measures is provided in Table 6.6 below.

The costs of economic instruments largely fall to Government and may be minimal in terms of running an accreditation scheme or significant, for decommissioning of fishing vessels.

Table 6.6: Economic Instruments in the Marine Environment

Decommissioning of fishing vessels	The Scottish Executive announced in March 2001 that £25m in funds, approved by the EC, would be available for the decommissioning of fishing boats in a bid to reduce the size of Scottish fleets and preserve dwindling white fish stocks in the North Sea. The scheme is supported by the Scottish Statutory Instrument 2003 No. 87 The Fishing Vessels (Decommissioning) (Scotland) Scheme 2003, Financial Instrument for Fisheries Guidance (FIFG) (Council Regulation EC 2792/1999), and The Fisheries Act 1981. The grant received by each fisherman is dependent on the size of the vessel. 99 vessels were approved for decommissioning under the earlier 2001 scheme and 93 have been approved or have applied under the 2003 scheme.
Renewables obligations certificates	The Renewables Obligation (Scotland) (ROS) is a key part of Scottish policy to reduce CO_2 emissions and tackle climate change. The ROS requires licensed electricity suppliers to ensure that specified and increasing amounts of the electricity they supply are from renewable sources. Scottish Ministers have set a target of 18% of electricity generated in Scotland to be renewables electricity by 2010, rising to 40% by 2020. Without the financial support provided by the ROS, most forms of renewable electricity would not be economic and the Executive would not achieve its targets for increasing the supply of electricity from renewable sources.

Sources:
List of vessels decommissioning under the Fishing Vessels Decommissioning Scotland Scheme 2001 and 2003 - http://www.scotland.gov.uk/Publications/2003/12/18705 and http://openscotland.gov.uk/Publications/2002/07/15154

To achieve **better integration of environmental considerations into sectoral policies**, policies would need to be reviewed and assessed for how well they integrate nature conservation objectives and amended accordingly. Policies already undergo regular review so, in this sense, there would be little cost to regulators. However, costs to industry may be significant, depending on the additional restrictions imposed. The key areas are those where sectoral activities have a large impact on the marine environment. Table 6.7 provides examples of such sectors.

Table 6.7: Examples of Integration of Environmental Considerations into Sectoral Policies
Fisheries The Commercial Strategy for Scottish Langoustines (Nephrops) was developed by representatives of the Scottish seafood industry in order to ensure sustainability, protect the viability of the fishery and the livelihoods of Nephrops fishermen. The strategy aimed to improve quality practices and set new standards in the industry. The organisation was awarded funding by the Scottish Executive to continue its work and to implement the advice of the Working Group to industry. Measures included a permit to limit the number of vessels less than 10 million and flexibility to increase mesh sizes. The value of Nephrops landed into Scotland by UK vessels in 2004 was worth £57.2 million. RIAs were prepared for the Sea Fish (Specified Sea Areas) (Regulation of Nets and Other Fishing Gear) Order 2001 and the Prohibition of Fishing with Multiple Trawls Order 2001. These orders set out certain technical conservation measures, for example, to protect haddock and other whitefish stocks in the North Sea through twine thickness restrictions and the incorporation of square mesh panels in Nephrops and whitefish mesh. The measures were considered to provide a benefit to juvenile whitefish stocks in the North Sea and the West of Scotland. Associated costs included: • adjustments to nets (estimated £185,000); • marginal losses of marketable fish - it was suggested that these would be offset by catches of larger fish through longer term improvements in stocks; and • minor administrative costs associated with familiarisation with the new requirements. A further RIA was prepared for the Prohibition of Fishing for Scallops (Scotland) Order 2003, which aimed to limit fishing pressure by restricting the maximum number of dredges that could be applied by vessels. It was estimated that the measure would lead to an unspecified reduction in income for around 12 vessels (around 10% of the Scottish scallop fleet).
Aquaculture Potential conditions for licences to improve environmental considerations might include requirements for better control of escapes and sea lice infestations. For example, more than 1.7 million farmed salmon have escaped into the wild from salmon farms in Scotland since 1998[1].
Source: 1. Scottish Environment Link. 2007. A Marine Bill for Scotland: Urgently needed to sustain Scotland's seas.

Costs of Pillar II: Species Conservation Measures

Biodiversity action plan-related expenditure in Scotland (terrestrial and marine) currently totals approximately £92 million per annum and is expected to increase to £97 million by 2010/11 at 2005/06 prices[28]. However, some habitat action plans and species action plans were considered to be resource constrained. The estimated shortfall in biodiversity funding in Scotland was £42.7 million in 2005/06.

Costs for extending the Biodiversity Duty to include new habitats and species can be estimated from the costs of establishing individual habitat action plans and species action plans[23] across the whole of the UK.

The total estimated annual costs for 12 marine habitat action plans ranged from £900,000 to £6 million per year. Therefore, the average cost for a single marine habitat action plan could be estimated to range from £76,000 to £501,000. This

[28] GHK Consulting (2007) UK Biodiversity Action Plan: Preparing Costings for Species and Habitat Action Plans: Updating Estimates of Current and Future BAP Expenditures in the UK

average is likely to be an over-estimate, as cost savings would be available from the work carried out for other marine habitat action plans (e.g. research, surveys, monitoring, communications and publications). However, as an example, the cost of assessing and/or monitoring the quality of a single *Modiolus* bed is likely to be in the region of £20,000 per year. The actual annual cost will vary, depending on the extent of the habitat, the status of the habitat, the number of issues facing its conservation status, the targets set for the management of the habitat and the stage at which the plan is (i.e. new plans often have higher initial costs associated with research).

Similarly, the average annual cost per species action plan was £55,900, varying from £23,200 for plants to £39,000 for invertebrates and £206,000 per year for vertebrates. As an example, the estimated costs for delivering the Basking Shark species action plan were £220,000 per year in the five years to 2003/04 and £216,000 per year in the five years to 2008/09. These costs are summarised in Table 6.8.

Table 6.8: Estimated Costs for Basking Shark Species Action Plan

Action	Costs		Comments
	2003/4	2008/9	
Site safeguard and management	£2,800	£0	Implementation of sea fisheries orders and issuing MAFF statutory instrument to restrict fishing in certain areas
Species management and protection	£400	£0	Developing case for inclusion in EU Directives
Advisory	£12,600	£12,600	Developing and disseminating code of conduct; dissemination of other materials to raise awareness of good practice
Research	£150,000	£150,000	Research by professional scientists (3 year research contract involving 28 days per year offshore in both first and second five year periods)
Publicity and communications	£5,000	£5,000	Raising awareness through articles and publications
Total costs (2000 prices)	**£170,800**	**£167,600**	
Total adjusted costs (at 2005 prices)	£199,800	£196,100	At 2005 prices (based on 17% increase in GDP deflator 2005/6 compared to 1998/9)
Total adjusted costs (2005 prices, including administration)	**£219,800**	**£215,700**	**Including administrative costs at 10%**

Source:
GHK Consulting (2006) UK Biodiversity Action Plan: Preparing Costings for Species and Habitat Action Plans. Reviewing the costs of delivering individual species action plans

The estimated total cost of delivering this species action plan was updated in 2006 to £151,000 per year for the following five years (to 2011), due to lower research costs. These costs are for the whole of the UK. Costs for a species action plan in Scotland alone are unlikely to be much less than this, as the same actions would be required, albeit on a smaller scale.

The species already listed under the Biodiversity Duty could be given more statutory protection through legislation such as the Nature Conservation (Scotland) Act. The costs to government of amending existing legislation would relate to tasks such as carrying out consultations, preparation of draft and final documents, and obtaining

sign off by ministers. Costs for habitat action plans and species action plans would provide a relevant comparison here, although the additional costs to enforcement agencies of monitoring compliance could add a significant amount. A likely estimate of surveillance and enforcement is £198,000 per species/habitat at 2005 prices based on budgets for surveillance of offshore SACs[29].

Costs of Pillar III: Site Protection Measures

The costs of designating marine nature reserves can be obtained from existing reserves; Lundy Island (in England), Skomer Island (in Wales) and Strangford Lough (in Northern Ireland). Two of these examples are detailed in Table 6.9.

Table 6.9: Costs of the Implementation and Management of MNRs

	Skomer	**Lundy**
Date of designation	1990	1986
Total quantified running costs	£405,000 to date; approx £24,000/yr	£695,200 to date; approx £33,100/yr
Method of protection	South Wales Sea Fishery Committee bylaws (prohibiting the use of dredges and beam trawls and scallop fishing); voluntary codes of conduct; designated SPA. Potential no-take bylaw put on hold.	Devon SFC bylaws (including a no-take zone in 2003)
Costs of bylaws	Existing bylaw costs: • Development £7,000 (1/4 SW SFC officer time over a year) Advertising £3,000 (SW SFC) Costs of no-take bylaw: • Development £15,000 (1/2 SW SFC officer time over a year) • SW SFC attendance at committee meetings £2,000 • Other SW SFC staff £1,000 • Advertising £3000 (CCW)	Existing bylaw costs: Development £1,000 (Devon SFC) Advertising £2,500 (Devon SFC) Producing and reviewing the management scheme £3,000-£4,000 (English Nature)
Monitoring	Unquantified	£391,600 from 2003/04 to 2007/08 (FIFG, English Nature, WWF & in-kind contributions)
Other Unquantified costs	In-kind contributions by CCW Costs to others of attending meetings	
Enforcement costs	SW SFC: £22,000 / yr	English Nature and the Landmark Trust: £5,000 / yr (staff time, operation of patrol vessel) Devon SFC: £9,100 per year (patrolling 6 times a year £5,000; meetings £2,000; informal stakeholder visits £2,500)

[29] Defra (2005). Marine Biodiversity Conservation Resource Needs 2006/7 - 2010/11

Table 6.9: Costs of the Implementation and Management of MNRs		
	Skomer	**Lundy**
Compliance issues	Incidents in 2005 related to: • Disturbance to seals - entanglement in lines and harassment; • Disturbance to cliff nesting seabirds - two instances; • Angling – litter and line entanglement; • 1 instance of anchoring in a restricted area; and • instances involving commercial charter vessels.	Compliance is currently achieved through co-operation with stakeholders and is thought to be effective, with few reported incidents
Sources	SW SFC & CCW pers comm.; CCW (2005) Skomer annual report; SW SFC annual report.	Devon SFC, pers. comm.;

Two examples of the costs of voluntary reserves are provided in Table 6.10 below. The costs do not differ greatly from those incurred in the use of statutory measures in Table 6.9 above. However, due to the lack of enforcement powers, the benefits are often lower.

Table 6.10: Costs of the implementation and management of voluntary reserves		
Scheme	**St. Agnes No Take Zone**	**Lyme Bay**
	No-take zone	Voluntary scallop dredge exclusion zone
Total Quantified Costs	£260,000 to date; approx £26,000 per year	£441,829 to date; approx £74,000 per year
Date of establishment	1997	2001
Size of reserve	0.5 km^2	6 km^2
Set up costs	Costs to Cornwall County Council were £5,500. Additional set up costs were incurred by the Cornwall Wildlife Trust, estimated as £1080.	Unknown, but DWT have contributed £375,000 over the past 15 years. Fishermen formed the South West Inshore Scallopers Association to facilitate consultation. Each member (70+) paid £50 for the first year. Total: £3,500.
Annual operating costs	£22,617 in 2002/03 including: • officer costs of £17,143, • purchase of equipment £758, • interpretation and promotion £1,916	Estimated at £37,000
Unquantified costs	In-kind contributions for a roadshow, Seasearch surveys and Cornwall SFC officer time. Lost income to fishermen	Additional costs incurred by DFPO, DSFC, local fishermen, EN, DCC.
Sources of funding	English Nature: £4,864 in 2002/03, FIFG: £22,254 in 2002/03.	DWT, SWISA
Compliance	Collapse of the voluntary scheme due to non-compliance by one individual some time after the five-year demonstration trial was launched in 2002. Seasearch surveys revealed evidence of lobster potting in 2003	Initially successful, but evidence in 2006 of reef damage. 60 sq mile exclusion zone given statutory backing in 2008 (statutory instrument 2008 No. 1584).

6.4.3 Costs of Option 3

Option 3 involves the development of a new system of marine spatial planning, supported by marine ecosystem objectives, improvements in species protection and MPAs, in order to achieve a coordinated approach to the three pillar levels of conservation. The costs of establishing a marine planning system are discussed in Section 4 of this report. The more detailed costs of identifying and implementing marine ecosystem objectives and site protection are assessed here. Section 6.9 outlines the estimated costs of improvements to seal legislation.

There are two main areas to be considered in assessing the costs of implementing marine ecosystem objectives:

- the costs (mainly to government) of developing, implementing and monitoring the marine ecosystem objectives and assessing their success (direct costs); and
- the costs (mainly to industry) of the programmes and measures that will be needed to deliver the marine ecosystem objectives (indirect costs).

Indicative costs of measures to achieve marine ecosystem objectives can be derived from the costs of previous marine management measures and judgements on the likely requirements for future additional measures. However, a high degree of uncertainty is associated with such estimates because:

- the suite of marine ecosystem objectives and any associated targets have not yet been defined;
- the mechanisms by which measures may be implemented and what, if any, trade-offs there might be with social and economic objectives is unclear; and
- the timescales for achievement of the objectives have not been defined.

Marine ecosystem objectives would be a component of the marine planning system and the estimates in Section 4 include these costs.

Costs of Marine Ecosystem Objectives to Government

The direct costs to Government of **implementing marine ecosystem objectives** are associated with:

- development of a suite of agreed objectives and indicators;
- implementing the objectives through policy and legislation (for example through marine planning, conditions in licences etc);
- research, monitoring and assessment of the ecological status of marine ecosystem objectives;
- communication and publicity;
- advisory roles, e.g. providing general advice and information to fisheries policy makers, oil exploration and production companies etc.;
- monitoring compliance; and

- enforcement in relation to specific breaches of marine ecosystem objectives (although this is likely to be addressed through licensing controls or habitat/species protection controls).

Information on direct costs for more site-specific local objectives is available from, for example, implementing schemes for the management for European Marine Sites and implementing targets for habitat and species actions plans. However, a more appropriate example for identifying the costs of marine ecosystem objectives at a national scale may be the Irish Sea pilot. Relevant measures and costs include those associated with the North Sea Pilot project to meet Ecological Quality Objectives developed by the OSPAR Commission. These costs are summarised in Table 6.11.

Table 6.11: Estimated costs of Ecological Quality Objectives Monitoring from the North Sea Pilot Project

Ecological quality element	**Estimated costs**
Proportion of oiled Common Guillemots among those found dead or dying on beaches	The costs depend on the nature of the monitoring programme and the length of the coastline. Assuming that the survey work is done by volunteers, costs are estimated at £1,200 per country plus travel costs for the volunteers, which vary according to the country. The cost of international co-ordination by the lead country is estimated at £10,500.
Local sand-eel availability to black-legged Kittiwakes	If volunteer observers are used for monitoring, then the extra costs associated with this objective are small, perhaps £5,900 in total for the North Sea. If dedicated researchers were to be employed to monitor colonies, then costs would be substantially higher. Cost estimates therefore depend on agreement on implementation.
Changes/kills in zoobenthos in relation to eutrophication	Costs covered by the monitoring required for the OSPAR Comprehensive Procedure and the EC Water Framework, Nitrates and Urban Waste Water Directives. Additional assessment work is likely to be very small.
Imposex in dog whelks (*Nucella lapillus*)	Costs covered for the most part by commitments under the OSPAR Coordinated Environmental Monitoring Programme.
Source: Table 7.1 from OSPAR Commission (2006). Report on the North Sea Pilot Project on Ecological Quality Objectives. Costs converted from € to £.	

Costs of Site Protection Mechanisms to Government

Additional site protection measures for Scotland may be implemented within marine planning (see Section 4) and therefore be associated with an overall strategy for marine nature conservation. The costs associated with the Irish Sea Pilot provide some indicative costs of implementing such a strategy for Scotland (Table 6.12). These costs will be attributable to marine planning (see Section 4).

Table 6.12: Costs of Developing a Nature Conservation Strategy for a Typical Regional Sea	
Task	**Cost**
Engagement of regional sea governments and stakeholders	£15,000
Develop and implement a communication strategy	£100,000
Data collection and mapping	£95,000
Assess socio-economic context of the regional sea	£25,000
Marine landscapes: identify, map, assess, characterise.	£75,000
Nationally important marine areas: identify, network, map,	£35,000
Nationally important marine features: identify, map.	£30,000
Conservation objectives: identify targets with stakeholders.	£30,000
Develop a draft zoning plan and management measures.	£80,000
Total cost	**£485,000**
Source: Vincent *et al*, 2004	

Examples of the potential costs to Government of implementing and managing **site protection measures** are provided by the Irish Sea Marine Spatial Planning Pilot and from implementing the Birds and Habitats Directives. Table 6.13 outlines the likely costs of designating 10-20 new sites inside 12nm.

It is likely that considerable cost savings can be achieved in the implementation of new marine protected areas. Collaboration with existing data collation initiatives and studies can reduce the costs of survey and monitoring. Site selection can be partly addressed through the marine spatial planning system.

The options on designation of an MPA are via a Statutory Instrument or by administrative order. The costs to the Scottish Government of developing Statutory Instruments are estimated at between £3,000 and £4,000 per instrument.

The costs of better recognising OSPAR and other habitats and species in SACs will be much lower and are likely to be zero in most if not all cases, as the features are already being protected and monitored either directly or indirectly.

Table 6.13: Summary of Costs to the Scottish Government for Implementing New Site Protection Measures			
Activity	**Cost per site[1]**	**Average cost for 10 new inshore sites**	**Average cost for 20 new inshore sites**
Survey costs	£100,000 -£120,000	£1,000,000 - £1,200,000	£2,000,000 - £2,400,000
Site Selection	£20,000 - £25,000	£200,000 - £250,000	£400,000 - £500,000
Consultation	£50,000	£500,000	£1,000,000
Management schemes	£23,000	£230,000	£460,000
Statutory Instruments	£3,000 - £4,000	£30,000 - £40,000	£60,000 - £80,000
Total One Off Costs	***£196,000 – 222,000***	**£**1,960,000 - £2,220,000	***£3,920,000 - £4,440,000***
Implementation – reviewing of consents	£1,000	£10,000	£20,000
Monitoring[4]	£150,000	£1,500,000	£3,000,000
Enforcement	£12,000	£120,000	£240,000
Total Costs over 20 yrs, undiscounted		**£8,865,000 - £9,125,000[6]**	**£19,850,000- £20,370,000[7]**
Total Costs over 20 years, discounted		**£6,583,000 -6,830,000**	**£15,030,000 – £15,515,000**
Average annual cost		**£433,000- £449,000**	**£988,000- £1,020,000**

1. *Source*: Defra (2008): UK Marine Bill White Paper RIA
2. Assuming 50% cost saving from existing SAC data and structure
3. Assuming 90% cost saving from existing SAC management activities
4. 5-yearly monitoring cycle
5. Not incurred in the first year
6. Assumes 5 sites in 2009, and 5 sites in 2010.
7. Assumes 5 sites in 2009, 10 sites in 2010 and 5 sites in 2011.

Costs to Industry of Site Protection Measures

The costs to industry of complying with site protection measures for marine protected areas were assessed for England, Wales and UK offshore waters in a report for Defra[30]. None of the scenarios outlined in the Defra study equate to the proposed method of managing the new MPAs that would be designated in Scotland under the new power[31].

It is difficult to estimate the costs to other organisations of complying with any specific management requirements associated with individual MPAs in Scotland, particularly since decisions will be taken on a case by case basis and the Scottish Government predicts that, in most cases, social and economic uses are likely to be compatible with the protection of the features for which a site is selected. The estimated range in potential costs per site by sector is shown in Table 6.14, which is derived from the Defra study and fisheries estimates for Scotland. The upper ranges represent the worst case scenario rather than the actual intended policy.

30 ABPmer, RPA & Jan Brooke (2007): **Cost Impact of Marine Biodiversity Policies on Business**, report to Defra, 6 December, 2007

31 Sustainable Seas for All, paragraphs 143 – 145.

Table 6.14: Range of Discounted Present Value Costs to Industry of Complying with Measures Associated with Marine Protected Areas	
Sector	**Costs per site[1]**
Telecommunication cables	£0 - £55,000
Power cables	£0 - £41,000
Offshore wind energy	£0 – £537,000
Wave energy	£0 - £90[2]
Tidal energy	£0 – £16,000
Oil and gas	£0 – £2,047,000[3]
Fisheries	£0 – £780,000[4]

Source:
Drawn from the costs of partial restriction measures in ABPmer *et al*, 2007, together with Scottish Government estimates in relation to fisheries. The costs are dependent on the marine protected area network scenario that was used in the study and the extent of spatial overlap with the marine resource (lower end of the range assumes no incompatibility between uses and protection of the site).
Notes:
1. No total is provided, as it is unlikely that a single area will require measures for all sectors.
2. The degree of overlap was estimated to be low and, as it is a developing industry, it is predicted that mitigation costs of associated activities can be avoided by careful site selection.
3. High cost for oil and gas largely due to costs of monitoring and directional drilling to avoid laying pipelines through sensitive habitats.
4.. The upper figure is the estimated value in terms of net loss (in undiscounted 2007 prices) of closing an area to fisheries. The figure is based on the higher estimate of fleet activity in the vicinity of areas in Scotland under consideration as new Natura sites for seabirds. It is not intended that these proposed areas for seabirds would be closed to fisheries.

Costs to Others

Non-governmental organisations may incur costs due to activities such as input into consultation exercise, providing evidence etc. These actions are often deemed discretionary (i.e. the activities would be carried out anyway). However, there are a number of functions that NGOs carry out, such as monitoring, executing research and site management, that might otherwise fall to Government under a more formal conservation strategy. The study for Defra indicated that, for a single organisation for a single marine protected area, one-off costs (e.g. providing site evidence and consultation) can range from £3,900 to £13,900 and annual operating costs (e.g. monitoring and site management) from £14,350 to £39,850[32].

6.5 Small/Micro Firms Impact Assessment

If proposals for improved marine nature conservation result in improvements to marine resources, this could result in benefits for small fisheries and tourism operators that rely on those resources for business. However, there may be a need for

[32] ABPmer, RPA & Jan Brooke. 2007. Cost impact of marine biodiversity policies on business. The Marine Bill. Report to Defra, 6 December, 2007

restrictions to some economic activities on a case by case basis in MPAs and there are likely to be complicated trade offs. For example, increases in seal population numbers might benefit for tourism but could have adverse impacts on small salmon fisheries.

The increased restrictions and measures associated with nature conservation proposals are expected to result in further costs for small firms. However, many of these measures are more likely to result in modifications to activities, rather than preventing them from taking place.

6.6 Competition Assessment

New measures for nature conservation are not expected to have a significant impact on the number or range of suppliers, to limit the ability of suppliers to compete or to reduce suppliers' incentives to compete vigorously. Measures would be applied equitably across the various sectors.

6.7 Enforcement, Sanctions and Monitoring

Responsibility for compliance, monitoring and enforcement of nature conservation measures would lie with the Scottish Government. These responsibilities could be taken on by Marine Scotland (see Section 7). Reserved issues would continue to be addressed by the respective departments within the UK Government. Certain of the measures would be delivered through the licensing system (see Section 5).

6.8 Summary

Table 6.15 summarises the impacts of the three options for delivering marine nature conservation. Table 6.16 compares the ability of the options to meet the overall goals of the Scottish Marine Strategy.

Table 6.15: Summary of the Impacts of Options to Deliver Marine Nature Conservation			
	Option 1: Do Nothing	**Option 2: Better Use of Existing Measures**	**Option 3: New Measures and Policies**
Benefits			
	No long-term benefits	Potentially significant economic, social and environmental benefits from improvement to the quality of the marine environment No costs associated with development of new measures	Potentially greater economic, social and environmental benefits from improvement to the quality of the marine environment Development of a network of Marine Protected Areas to meet international agreements. Potential to develop a greater understanding of ecosystem function through monitoring programmes and data collection Would enable an ecosystem approach to the management of the marine environment
Costs to Government			
Pillar I: wider seas measures	Failure to meet international obligations – e.g. OSPAR, Berne Convention, Biodiversity Convention (costs range from minimal to tens of millions of pounds)	Decommissioning schemes (e.g. £25million from the EC for fishing vessels); Sectoral funding (e.g. renewables obligation); Sectoral policies (e.g. Nephrops strategy);	Marine planning (see section 4 for costs); Marine ecosystem objectives: monitoring: £6,000 - £12,000 per year
Pillar II: species conservation measures	Failure to meet international obligations – e.g. OSPAR, Berne Convention, Biodiversity Convention (costs range from minimal to tens of millions of pounds)	Habitat action plans: £76,000 – £501,000 per year Species Action Plans: £23,000 – £206,000 per year Surveillance and enforcement: £198,000 per action plan	Marine planning (see section 4 for costs); Marine ecosystem objectives: monitoring: £6,000 - £12,000 per year
Pillar III: site protection measures	Failure to meet international obligations – e.g. OSPAR, Berne Convention, Biodiversity Convention (costs range from minimal to tens of millions of pounds)	Marine nature reserves: Set up and running: £24,000 – £33,000 per year Monitoring: Surveillance & enforcement: £14,000 – £22,000 per year Voluntary reserves: Set up and running: £26,000 – £74,000 Surveillance: no separate cost	New marine protected areas: £433,000 to £1,020,000m per year for 10 - 20 sites Zoning: costs included in marine planning (see section 4)

Table 6.15: Summary of the Impacts of Options to Deliver Marine Nature Conservation			
	Option 1: Do Nothing	**Option 2: Better Use of Existing Measures**	**Option 3: New Measures and Policies**
Costs to Local Authorities			
	Potential impacts from loss of and damage to goods and services provided by the local marine environment	Participation in consultation on measures: cost neutral overall;	Participation in consultation on measures: cost neutral overall
Costs to Other Organisations			
	Potential impacts from loss of and damage to goods and services provided by marine environment	Participation in consultation on measures: cost neutral overall;	Participation in consultation on measures: cost neutral overall NGO costs of consultation and monitoring £14,000 - £40,000 per site
Costs to industry			
	Loss of and damage to goods and services provided by the marine environment: £14 million[1], assuming a 1% reduction in output	Participation in consultation on measures: cost neutral overall; Costs of compliance (e.g. £185,000 for adjustments to nets, loss of income)	Participation in consultation on measures: cost neutral overall; Costs of compliance: Zoning: potential cost £200 – £500 per site Marine protected areas: maximum potential cost £6.2 million – £8.5million per site
Costs to others			
	Loss of social and environmental value from deterioration of the marine environment could also total £14 million[1], assuming a 1% deterioration	Costs of consultation on measures	Costs of consultation on site measures: £4,000 - £14,000 per year
1. Net present value over 20 years, discounted at 3.5%			

Table 6.16: Comparison of other factors among the overall suite of measures within each Option			
	Option 1: Do Nothing	**Option 2: Better Use of Existing Measures**	**Option 3: New Measures and Policies**
Ability to meet international commitments (legal)	Reduced	Gaps in network of marine protected areas	Good
Level of protection of ecosystem services	Reduced	Good but reduced consideration of ecosystem approach	Higher where measures are applied and enforced
Sustainable development and management of economic resources	Reduced	Limited to sectoral policies	Achieved through marine planning
Degree of integration among differing policies	Reduced	Reduced	Achieved through marine planning
Degree of stakeholder involvement	Reduced	Improved but not coordinated potentially leading to fatigue	Improved and coordinated through planning and marine ecosystem objectives
Flexibility	Reduced	Legislation such as Wildlife and Countryside Act difficult to change	Provision of emergency measures and 5-yearly review of plans

6.9 Seal Licensing and Conservation

6.9.1 Introduction

Conservation of seals is currently dealt with under several pieces of legislation as detailed below:

- the Conservation of Seals Act 1970 (CoSA) prohibits the taking / injuring or killing of seals during the closed season (1 June – 31 August for common seals; 1 September – 31 December for Grey Seals) or in areas subject to a Conservation Order. The Act allows the shooting of seals outside of the closed season using an appropriate firearm and endorsed license. The act also allows for licenses to be granted to shoot seals during the closed season or under conservation order for the 'protection of fisheries' and for seals to be shot without license under 'netsmen's defense' to prevent seals causing damage to nets or fisheries catches if the seal is within the 'vicinity' of the nets.

- EU Habitats Directive: under the Habitats Directive both grey seals and common seals are identified as protected species for which Special Areas of Conservation (SAC) must be designated, and measures taken within the SACs to preserve the conservation status of each species.

- Conservation of Seals (Scotland) Order 2004: year round restriction on the shooting of common and grey seals within the Moray Firth.

- Conservation of Seals (Scotland) Order 2007: year round restriction on the shooting of common seals in the Northern Isles and in an area between Stonehaven and Dunbar on the East Coast of Scotland.

The Moray Firth Seal Management Plan has trialled a new licensing system, where one license is issued to cover an entire area incorporating numerous District Salmon Fishery Boards (DSFB). It is hoped to disseminate this new system into other areas of Scotland and into other industry sectors.

All shootings reported under the Moray Firth Seal Management Plan are compared against a local Potential Biological Removal (PBR) recommendation[33]. This is the number of animals that can be taken from a population without affecting their conservation status[34]. It is intended that PBR figures will be used to guide the maximum numbers allowed to be shot under license for both options for amendment of the CoSA.

It is proposed in the Marine Bill to amend the Conservation of Seals Act 1970 to improve and clarify the level of protection afforded to seals while at the same time balancing this with the need to maintain sustainable fisheries and aquaculture. This

[33] Ian Walker, Scottish Government, pers. Comm.

[34] Calculated by the Sea Mammal Research Unit

section outlines the options considered for seal management and what is known about the risks of each. Where possible the potential costs and benefits are outlined.

The current situation (as of 2008) with respect to licences is as follows:

- total number of licenses issued to shoot seals under the CoSA 1970: 10
- total number of common seals authorised to be shot: 28
- total number of grey seals authorised to be shot: 23.

The licensing system requires annual reporting of the number of actual seals shot. Final returns are not due until 15 May 2009. However, the returns to date have reported 20 common seals and 9 grey seals shot. Three licenses are outstanding, authorising a maximum of 4 common and 8 grey seals to be shot. Therefore, the final number of seals culled for 2008/09 within the closed season could total 24 common seals and 17 grey seals.

There is at present no official reporting of seals killed outside close seasons or outside areas covered by seal conservation orders. A recent informal survey of fish farms, salmon netsmen and local DSFB suggested that less than 1000 seals were killed in 2008[35].

6.9.2 Options

Two options for reforming the licensing system for the management of seals were proposed in the Marine Bill consultation document and are outlined below (Options 2 and 3). A 'No change' option and a further option involving an outright ban on shooting seals are considered here solely for the purposes of the RIA.

Option 1: 'No Change' Option

As noted above, this option is considered solely for the purposes of the RIA, as it represents the baseline for comparison with the other options.

Option 2: Full Reform

Under this option, several reforms would be made to the existing legislation. The need to apply for a license to shoot seals would be extended beyond the 'close season' to apply all year round and the provision to apply for a license will be extended to fish farmers to protect cages or stock. Fish farmers do not currently have this licensing facility. The 'netsmen's defense', which allows the shooting of seals in the vicinity of nets and catches without requiring a license to do so, will be removed.

Option 3: Extend to Fish Farms

The only reform to the current legislation under Option 3 would be to extend the licensing powers to fish farms, enabling them to apply for licenses to shoot seals

[35] Ian Walker, Scottish Government, pers comm.

during the close season or under conservation order, for the protection of cages or stock. The 'netsmen's defense', permitting fishermen to shoot seals in the vicinity of nets to prevent damage to nets or catches, would be retained. This defence would also be extended to fish farms.

Proposed modifications to the netsmen's defense if option 3 is adopted include better definitions of the circumstances in which the defense can be used (definitions of "vicinity" and fishing net or fishing tackle"), and possible restrictions on using the netsmen's defense, for example in SACs or in areas covered by a seal conservation order. There will be a new requirement to report all shootings whether under licence or not.

Option 4: An Outright Ban on the Shooting of Seals

Although not proposed in the consultation paper, many responses to the consultation voiced support for a complete ban on the killing of seals with no exceptions, on the grounds of animal welfare and public support for a total prohibition on killing seals.

6.9.3 Sectors and Groups affected

Key business sectors affected by measures for seal management include:

- wild capture sea fisheries;
- salmon fisheries;
- aquaculture (fish farms);
- anglers; and
- wildlife tourism companies and other tourism-related businesses

Government sectors affected include departments of the Scottish Government responsible for licensing and relevant authorities, including Scottish Natural Heritage (SNH) and District Salmon Fisheries Boards (both responsibility for safeguarding the conservation interests of seal and salmon Special Areas of Conservation). Research institutes that need to be consulted with include the Fisheries Research Service (FRS) and Sea Mammal Research Unit (SMRU).

Social and environmental groups affected include non-governmental organisations, individual members of society and society as a whole through perception of seal welfare and conservation.

6.9.4 Potential Risks

Option 1: 'No Change' Option

Under the current CoSA 1970, there are no limitations on the number of seals that can be shot outside of 'close' seasons or outside areas covered by a seal conservation order and there is no requirement to report the number of seals shot. Similarly, there are no limitations to the number of seals that can be shot and no requirement to report

the number of seals shot under the 'netsmen's defense'. This entails a potential risk that seal conservation status may not be being adequately protected, although it is not considered to an actual risk at present.

The numbers of common seals have reduced in some regions in the last five years; the causes of this are unknown but may involve natural, incidental or deliberate causes. The lack of reliable information on the total numbers of seals shot makes it difficult to compare the impact of this against natural mortality or incidental deaths. This limits the scientific understanding of seal population dynamics.

There is also a risk under this Option that seal management across all fisheries sectors may not be on an equal basis.

Option 2: Full Reform

The current risks to seal conservation should be eliminated under Option 2. The number of licences issued to shoot seals is likely to increase from the present level as a result of the extension to fish farms and year round application, but is not known by how much. The actual number of seals shot under licence will also increase from current levels, but it is unlikely that this will result a marked difference in the total number of seals killed (an estimated 1,000 outside the licence process in 2008). It might be argued that, since seal killing will be more closely managed and monitored, the total numbers shot might reduce over time.

Option 3: Extend to Fish Farms

Extending licensing powers to fish farms will enable these businesses to apply for licence to shoot seals during closed season or within conservation orders. This would allow for limits to be set on the number of seals shot during closed season and would require reporting of numbers shot.

There will still be no regulation on the numbers of seals which can be shot outside close season or outside areas with conservation orders. There will, however, be a new requirement to report these shootings. There will be no limitations to the number of seals that can be shot under the 'netsmen's defense'. There will, however, be a new requirement to report the number of seals shot. In addition, the application of this 'netsmen's defense' option will be restricted to areas not covered by a seal conservation order.

This Option carries a potential risk to seal conservation status, although this risk is reduced by the power to introduce seal conservation orders to protect vulnerable populations.

Option 4: Outright Ban on the Shooting of Seals

Implementation of Option 4 will remove all of the existing legal mechanisms for managing seal impacts on fisheries and fish farms with consequent impacts on these sectors.

There are significant increased risks under Option 4 to aquaculture and wild capture fisheries. Existing seal impacts on the aquaculture industry include damage to fish cages, escape of fish from damaged cages (which creates a risk to the genetic diversity of native salmon stocks as a result of cross-breeding of native and farmed fish) and predation on stock. These will increase if fish farmers are unable to remove individual seals that are not deterred by non-lethal methods during the open season. Existing seal impacts on fisheries include damage to nets, damage to catches and predation on catches. These impacts will increase with the removal of current legal mechanisms to shoot seals to protect fisheries.

In Scotland, there is a history of conflict between seals and salmon fisheries. Like both common and grey seals, the Atlantic Salmon is listed in Annex II of the EC Habitats Directive, requiring Special Areas of Conservation to be designated and measures to be taken to preserve the species' conservation status. Removing the legal mechanism to manage seal populations may increase the risk to conservation objectives for Atlantic Salmon, particularly in terms of genetic diversity.

6.9.5 Benefits

***Benefits to Fisheries and Aquaculture*:**

The direct benefits of Options 2 and 3 for the fisheries and aquaculture sectors (i.e. from increased protection from seal damage) will depend on the change in the number of seals killed and the extent of damage avoided. The value of these sectors to the Scottish Economy in 2006 was:

- aquaculture: £382 million[36]
- wild capture fisheries: £308 million[37]

In addition Option 2, extending licensing powers to fish farms, would mean that all fishing sectors (fisheries, netting stations and aquaculture) would be subject to the same controls and monitoring as required by the EU Habitats Directive.

Option 3, extending the redefined netsmen's defence to fish farms, would also mean that all fishing sectors (fisheries, netting stations and aquaculture) would be subject to the same controls and monitoring as required by the EU Habitats Directive.

There are no benefits for fisheries or aquaculture under Option 4.

Benefits to Seal Welfare and Conservation:

There would be no additional benefits for seal welfare and conservation under the No Change option.

[36] http://www.scotland.gov.uk/Topics/Fisheries/Fish-Shellfish

[37] http://www.scotland.gov.uk/Publications/2007/09/12153002/17

Under Option 2 the following benefits may be realised:

- extension of licensing powers all year round and removal of the netsmen's defense would result in all seal management (shooting) being conducted under license, enabling improved reporting and monitoring of total seal mortality and employment of Potential Biological Removal (PBR) figures will improve maintenance of seal conservation status;

- for example, the Moray Firth Seal Management Plan significantly reduced the impact of shooting on the local common seal population within two years of implementation[38].

Under Option 3, extension of licensing powers to fish farms and restriction and redefinition of the 'netsmen's defense' would allow the limitation of seal shooting in respect of vulnerable seal populations in areas covered by seal conservation orders.

Benefits to Tourism

Wildlife-related tourism is estimated to be worth £160 million (2006)[39] to the Scottish economy.

The 'No Change' Option has no benefits for tourism.

Option 2 may allow for consideration of the importance of local tourism interests as part of the licence process as under the Moray Firth Seal Management Plan.

Option 3 has no benefits for tourism.

Option 4 may result in improved seal welfare and conservation, potentially leading to increased growth and economic value of wildlife-related tourism.

6.9.4 Costs

Economic Costs to Fisheries and/or Fish Farms

The direct cost to fisheries and/or fish farms of applying for licences under the various options and the costs of meeting licensing requirements is dealt with in Section 5. This section, therefore explores any indirect cost impacts to the industry as a result of each option. The values of these sectors to the Scottish Economy in 2006 were aquaculture: £382 million[40]; wild capture fisheries: £308 million[41].

- 'No Change' Option: there is likely to be no change in current economic costs;

38 Butler, 2008
39 http://www.wild-scotland.org.uk/FileAccess.aspx?id=528
40 http://www.scotland.gov.uk/Topics/Fisheries/Fish-Shellfish
41 http://www.scotland.gov.uk/Publications/2007/09/12153002/17

- Option 2: the removal of the 'netsmen's defense' should be compensated for by inclusion in the licence process, but may possibly result in increased damage or loss of fishing gear in a few cases. The potential costs cannot be assessed without knowing the current encounter rates of seals with fishing gear and the level of damage inflicted;

- Option 3: the restriction and redefinition of the 'netsmen's defense' should be compensated for by inclusion in the licence process but may possibly result in increased damage or loss of fishing gear in a few cases in areas covered by seal conservation orders. This is difficult to assess without knowing the current encounter rates of seals with fishing gear and the level of damage inflicted.

- Option 4: the removal of all legal options to shoot seals to protect fisheries or fish farms will result in increased damage to fishing gear or catches, fish farm cages and increased predation on stock or catches. It is not possible to estimate the potential economic cost to fisheries without estimates of the current level and cost of seal impacts on fisheries and aquaculture nor assumptions concerning how such damage might change in the absence of control measures. In addition, economic costs could be incurred through increased investment in alternative non-lethal methods of predator defence, such as Acoustic Deterrent Devices (ADDs) (the cost of one ADD is approximately £20,000[42] and tensioned netting for fish farms; however, these may not always achieve the reduction in predation sought.

Economic Costs to Tourism

The wildlife tourism industry has been estimated to generate around £9.3 million annually to the economy of the Highlands and Island regions of Scotland[43] and to have generated £2.34 million in the Moray Firth area in 1998[44]. Overall, the annual value of wildlife tourism in Scotland is estimated to be £160 million (2006)[45].

- 'No Change' Option (Option 1): there have been no notable impacts on national tourism to date, but there is a potential risk that seal shooting outside close seasons and outside areas covered by seal conservation orders might result in impacts on local wildlife tourism.

- Option 2: extending licensing to all year round should reduce the potential risk of any impacts on wildlife tourism; i.e. the Moray Firth seal Management Plan takes account of local tourism interests through the licensing process.

- Option 3: restricting and redefining the netsmen's defence in areas covered by seal conservation orders will perhaps have some benefits for tourism but on a much

[42] Jane Dodd, Scottish Natural Heritage, pers comm.
[43] Parsons, E.C.M. (2003) Seal Management in Scotland: Tourist Perceptions and the Possible Impacts on the Scottish Tourism Industry. Current Issues in Tourism, Vol. 6, No. 6, p540-546
[44] Butler et al. 2008
[45] http://www.wild-scotland.org.uk/FileAccess.aspx?id=528

smaller scale than those arising from Option 2 and it will carry risks like the no change option.

- Any option which results in significantly greater numbers of seals being killed may have a detrimental impact on the revenue of the tourism industry.

- Option 4: recreational fisheries are of important economic value to the Scottish economy. For example, sea angling created a net annual expenditure of £15.6 million in the Highlands and Islands in 2003[46]. The potential impacts of removing all legal options to manage seals populations will include increased predation on wild fish stocks and/or increased risks to wild fish populations through seal-related damage to fish farms and consequent escapes of farmed fish (see Environmental Costs). Any negative impacts on native fish populations could potentially impact on the economic value of these fisheries. In addition, alternative non-lethal predator controls, to protect fisheries from seal damage and predation, include Acoustic Deterrent Devices (ADDs), some of which may affect the behaviour of seals and/or cetaceans[47]. This could potentially impact on wildlife-related tourism if it caused avoidance by seals, whales, dolphins and/or porpoises of areas popular for wildlife watching. It is not possible to assess the potential risk this may present to tourism until further research on non-lethal predator defences has been conducted.

Environmental Costs

Extension of licences to fish farms, considered under Options 2 and 3 and the extension year round under Option 2 will result in an increased number of seals shot under licence. It is, however, not possible to assess whether or not the total numbers of seals shot may increase because of the lack of precise information on the numbers of seals shot outside close seasons or outside areas covered by seal conservation order.

The loss of any animal represents an environmental cost. An ecosystem services approach that analyses the non-use benefits of ecosystem components may provide some direction here, however, the science and understanding behind this approach is still developing. Currently it is impossible to put an economic value on the contribution that a single seal makes to the marine environment and in the support of ecosystem services. Qualitative values may be noted in regard to aspects such as food web provisioning, whereby seals may play a top-down role in controlling food webs through natural levels of predation. Reduction or removal of predators has been known to have devastating consequences for other species in closely linked ecosystems (e.g. linkages between baleen whales, killer whales, seals, sea urchins and kelp forests on the North Pacific coast of America[48])..

46 www.ssacn.org/wp-content/themes/cutline-3-column-split-11/papers/HI%20RSA%20report.pdf.

47 Quick et al. (2004) A survey of antipredator controls at marine salmon farms in Scotland. Aquaculture 230, 169-180.

48 Simenstad, C. A., Estes, J. A., and Kenyon, K. W. 1978. Aleuts, sea otters, and alternate stable-state communities. Science, 200: 403–411.Estes, J. A., and Duggins, D. O. 1995. Sea otters and kelp forests

The removal under Option 4 of all legal options to shoot seals to protect fisheries or fish farms will result in increased damage to aquaculture cages and subsequent escape of farmed fish. In some cases this may be reduced by use of non-lethal predator defences, but these are not necessarily practical or effective in all cases and in others cannot be used because of potential impacts on other species. There is likely to be an increased risk to wild fish populations through increased numbers of escapes from fish farms resulting in the spread of disease, compromises to genetic integrity (resulting in a reduced fitness to survive in the wild) and increased competition amongst wild fish populations

Social Costs

Some surveys indicate that approximately 70% of the public in Scotland think it should be illegal to kill seals (Parsons, 2003; Scott, N.J. & Parsons, E.C.M. (2001). This suggests that under all the options there will be continued impacts on social values, but Option 1 potentially minimises these.

6.9.5 Summary

Table 6.17 summarises the impacts of the different options for seal licensing and conservation.

Table 6.17: Summary of the Impacts of Options for Seals Licensing and Conservation[1]

	No change Option 1: Restricted to closed season and fisheries; netsmen's defense	**Option 2**. Extended year round and to fish farms, removal of netsmen's defense	**Option 3.** Extend licensing to fish farms; netsmen's defense remains but restricted to areas outside seal conservation orders	**Option 4**: No seal control
Fisheries	Risk that seal management across all fisheries sectors may not be equal; No change in costs or benefits.	Costs: from increased damage to nets – unquantifiable but small. Benefits: seal management across all fisheries sectors equal.	Costs as for Option 2 but smaller; Benefits as for Option 2.	Costs: from increased damage to nets / catches – unquantifiable; No benefits.
Aquaculture	No change in costs or benefits.	No change in costs; Benefits from reduced damage to fish farm structures and stocks	Costs and benefits as for Option 2	Costs: from increased damage to cages, escape of fish and predation on stock – unquantifiable;

in Alaska: generality and variation in a community ecological paradigm. Ecological Monographs, 65: 75–100; Estes, J. A. *et al*. 1998. Science 282: 390-391.

				No benefits.
Tourism	Costs: potential loss of local tourism income - unquantifiable; No benefits	No costs Benefits: risk of loss of tourism income significantly reduced	Costs: potential loss of local tourism income (not quantifiable); No benefits	Cost from increased damage to recreational fisheries - unquantifiable Possible benefit from increased seal welfare and improved conservation - unquantifiable
Seal welfare & conservation	Unquantifiable cost from loss of seals; Cost within closed season currently 20 common and 9 grey seals; max of 28 and 23 allowed respectively; Cost outside closed season unknown; Lack of data on 'deliberate' mortality; Reduced understanding of seal populations dynamics	Unlikely to be a change in costs, i.e. loss of seals; Benefits: greater controls over seal shootings and the way in which these are carried out. Increased understanding of seal population dynamics.	Unlikely to be a change in costs, i.e. loss of seals; Cost outside closed season unknown; Lack of data on 'deliberate' mortality; Reduced understanding of seal populations dynamics	Benefits: improved seal welfare, possible improved understanding of seal population dynamics and conservation status. No costs
Social values	Potential unquantified non-use costs associated with social values.	Potential unquantified non-use costs associated with social values.	Potential unquantified non-use costs associated with social values.	Potential unquantified non-use costs associated with social values
1. Direct impacts from licensing changes are addressed in Section 5				

6.10 Integration of Historic Environment Site Protection

6.10.1 Introduction

The UK is party to the European Convention on the Protection of the Archaeological Heritage, known as the 'Valletta Convention', which requires that the historic environment, on land and underwater, is protected and that change is undertaken on the basis of sound evidence. If Scottish Ministers did not carry out these duties the UK would be in breach of its international obligations.

The information in this section is based upon a separate marine consultation undertaken by Scottish Ministers on the detailed proposals for historic environment site protection as part of the Scottish Historic Environment Policy (SHEP) series.

6.10.2 Options

There are two options available to Scottish Ministers; 'no change' (Option 1) and Option 2, implementing a new system of historic marine protected areas (MPAs) out to 12 nm.

Option 1

Main features

Scottish Ministers (through Historic Scotland) already have legislation in place to protect marine historic assets out to 12 nm. Under this option, there would be no change to current arrangements. Scottish Ministers through Historic Scotland would continue to apply the Protection of Wrecks Act 1973 ('the 1973 Act') and Ancient Monuments and Archaeological Areas Act 1979 ('the 1979 Act'). At present in Scottish waters, there are eight wrecks designated under the 1973 Act and 7 underwater scheduled wrecks under the 1979 Act.

Potential risks

Responses to the UK-wide review by DCMS and the devolved administrations *Protecting the Marine Historic Environment Making the System Work Better* suggested that many in the heritage sector consider that existing mechanisms for protecting the marine historic environment are insufficient. Responses indicated concerns about the inflexibility of the licensing mechanisms (under the 1973 Act) - these require a licence from Scottish Ministers merely to dive on a 'look but don't touch basis' on an important but relatively robust historic wreck - and about the limitations of the Protection of Wrecks Act 1973 – it can only be used to protect shipwrecks, thereby under-representing the full range of marine historic assets that exist on the seabed. Historic Scotland's experiences in Scapa Flow with application of the 1979 Act underwater have also pinpointed difficulties with scheduling, in particular, an explicit 'defence of ignorance' and doubt as to whether the recovery of artefacts loose on the surface of a wreck or the seabed could be successfully challenged under the legislation. Under this option, Scottish Ministers through Historic Scotland would continue to apply legislation that is widely considered ineffective and burdensome. Stakeholders with a legitimate interest may continue to experience dissatisfaction with existing provisions.

At a time when Scottish Government is developing a new marine management system and new mechanisms are being adopted for marine planning and nature conservation, retention of existing historic environment protection mechanisms at sea may no longer easily conform to wider Scottish Government policy and may lead to a degree of confusion for government, sea-users and industry.
The UK Government remains committed to bringing forward improvements in England and Wales through the Heritage Protection Bill as soon as parliamentary time allows. If Scotland does not follow suit, Scottish Ministers through Historic Scotland will continue to apply the same legislation as it does at present.

Option 2

Main Features

This option would involve implementing a new system of historic marine protected areas (MPAs) out to 12 nm (no such mechanism is proposed under the UK Marine Bill for 12-200 nm). This mechanism will involve a discretionary power for Scottish Ministers to designate a MPA for the purpose of protecting marine historic assets of national importance.

Once the new legislation is in place, Scottish Ministers have indicated that it would not be their intention to significantly or rapidly increase the number of designated marine historic assets, but rather to improve the effectiveness of the law to safeguard Scotland's most important marine historic assets for future generations. The mechanism will allow Scottish Ministers to protect a broader range of historic assets than is possible under existing legislation. It will also be possible to tailor controls more effectively by an assessment of the threats to each specific site, avoiding burdensome licensing where at all possible.

The protection of the remaining seven wrecks of the German High Seas Fleet scuttled in Scapa Flow in 1919 provides a useful example of how this new legislation could help to improve effectiveness and streamline administration for regulators and stakeholders. These scheduled monuments could instead be designated as historic MPAs, with the effect that there would be no defence of ignorance, or doubt as to whether recovery by divers of loose artefacts from the seabed could be challenged under the law. Additionally, dive boat owners would not have to apply for a licence for their visitors simply to dive on a 'look but don't touch basis.'

Potential risks

The approach proposed has not been tried in relation to historic environment protection. Therefore, if the proposed legislation does not itself prove to be fit for purpose, then it is possible that the intended clearer structure for the protection of the marine historic environment will not be put in place. However, this risk can be mitigated to a certain extent by Historic Scotland working closely with those responsible for management of the marine environment (potentially Marine Scotland – see Section 8) to ensure that there is consistent and transparent implementation of this new legislation, that clear guidance is developed to accompany the new provisions and that this guidance is widely promoted to existing stakeholders.

There is a risk that the approach proposed will result in some divergence with mechanisms elsewhere in the UK. To a certain extent, this can be mitigated by continued close liaison between Historic Scotland and officials from Department of Culture Media and Sport, English Heritage, CADW (Wales), and DoENI (Northern Ireland), through the forum of the UK-wide Advisory Committee on Historic Wreck Sites.

6.10.3 Sectors and Groups Affected

There are many diverse groups with a legitimate interest in the marine historic environment and who may be affected by protection of historic assets. The key stakeholders are likely to include marine renewable energy, fisheries (finfish and shellfish), ports and harbours, aquaculture, oil and gas extraction and related pipelines, telecommunication and power cables, sand and gravel extraction, recreational diving groups, and diving tourism operators.

A range of public bodies accountable to Scottish Ministers might have a specific interest or role under these options – they include Historic Scotland, the Royal Commission on the Ancient and Historical Monuments of Scotland, and local authorities through their historic environment advisory services.

6.10.4 Benefits

Option 1

There will be no new benefits associated with this option.

Option 2

Under this option, a broader range of marine historic assets will be eligible for protection, better reflecting Scotland's marine historic environment.

Sea-users applying for authorisation under the new system could benefit through being able to apply for licences that cover a range of activities and multiple persons, or (in the case of diving on a robust historic wreck designated as a historic MPA) not having to apply for a licence at all to dive 'on a look but don't touch basis'. It is also likely that the need for repeat applications is greatly reduced. These simplification measures are likely to be beneficial to sustainable economic growth in the tourism sector.

By adopting a more integrated approach with that proposed for nature conservation, there may be additional opportunities for integration in matters such as enforcement at sea, as well as any consent work, reporting to parliament and consultation. This simplification may result in efficiency savings and a more effective, clearer system for industry and sea-users. It has not however been possible to quantify these benefits.

6.10.5 Costs

There are two main areas to be considered in assessing the costs of implementing marine historic environment site protection options:

- the costs (mainly to government) of assessing, implementing, promoting, supporting and monitoring a designation programme (direct costs); and
- the costs to industry and sea-users in relation to designated historic assets (indirect costs).

Direct Costs to Government

There are direct costs to government associated with ongoing delivery of **Option 1**. Historic Scotland has limited access to a UK-wide field contract for archaeological services in support of the Protection of Wrecks Act 1973. The current contract is likely to ends in March 2011. Due to the contractor's responsibilities elsewhere in the UK, a supplementary cost to Scottish Government is deemed to be necessary in order to maintain a minimum credible level of service from April 2011 and to allow timely and adequate responses to ad-hoc discoveries of important new sites and for monitoring existing designated assets. The numbers of designated historic assets is likely to increase very gradually. Given the small scale of designated historic assets, it is not envisaged that there will be significant additional indirect costs to sea users and industry compared with what is the case at present.

Under **Option 2**, Scottish Ministers have indicated that their intention is not substantially or rapidly to designate large numbers of new sites offshore. However, under this option, a wider range of marine historic asset types will be eligible for designation, in order to reflect the full range of historic assets that exist offshore. Based on levels of knowledge and the history of designation strategy to date, Historic Scotland has indicated that the existing 15 designated assets offshore might double in number over ten years. Implementing the new provisions at a minimum credible level is likely to incur one-off transitional costs of £25,000 in 2010-11 and 2011-12, over and above required expenditure using existing mechanisms. This will allow existing designated wrecks and underwater scheduled monuments to be re-designated under the new system. The support structures envisaged in Option 1 would also be in place under Option 2.

The costs to Government under the two options are summarised in Table 6.18

Table 6.18: Summary of Costs to Government of Options for Integration of Historic Environment Site Protection

Option	**Costs by year**	**2010-11**	**2011-12**	**2012-13**
Option 1 – existing provisions delivered at a minimum credible level	Assessment, advice, monitoring, reporting, support	£80,000	£200,000	£200,000
	Total	**£80,000**	**£200,000**	**£200,000**
Option 2 - implementing a new system of historic site MPAs at a minimum credible level	Transitional costs	£25,000	£25,000	£0
	Assessment, advice, monitoring, reporting, support	£80,000	£225,000	£200,000
	Total	**£105,000**	**£250,000**	**£200,000**

Costs to Industry and Other Sea Users

There will be no new costs to industry and other sea users under Option 1, although the existing costs and uncertainties will remain.

Under Option 2, as at present, historic MPAs are likely to continue to be small in size, usually focussed around one specific archaeological site (although there is some

potential for groups of assets, e.g. the existing scheduled wrecks in Scapa Flow,) to form one slightly larger protected area). Given the small scale of these MPAs, it is not anticipated that there will be significant additional costs to sea users and industry compared to Option 1. Indeed, by relaxing requirements to obtain licences for all marine historic assets for 'diving on a look but don't touch basis', there should be cost savings and new opportunities for sustainable tourism. Historic Scotland has not, however, been possible to quantify these costs and savings.

6.10.6 Small/Micro Firms Impact Assessment

Under Option 1, the continued requirement for visitor licences under the Protection of Wrecks Act 1973 will have an impact on small firms.

Under Option 2, the intention is to reduce the regulatory burden as much as possible and this should reduce costs for small firms, such as charter boat diving operators, in terms of administration and effort. Beyond that, the controls in place on historic MPAs are more likely to result in modifications to activities, rather than preventing them from taking place.

6.10.7 Competition Assessment

Under Option 1, there is a risk that retention of a licensing system under the Protection of Wrecks Act 1973 could continue to generate competitive conflicts between sea-users who have similar interests in designated wreck sites.

Changes to the management mechanisms proposed under Option 2 are likely to resolve these issues. Historic Scotland is not aware of any other competition impact under either of these options.

6.10.8 Enforcement, sanctions, monitoring

Decisions on licensing will continue to be made on the basis of field assessment and informed professional judgement by Historic Scotland. Compliance will be tested in the same manner as now, that is, through reporting and inspection. Historic Scotland will continue to lead on this area of work though there may be opportunities for close cooperation with Marine Scotland to improve the effectiveness of enforcement at sea.

7. SCIENCE AND DATA

7.1 Options

7.1.1 Introduction

To realise the aims of delivering a sustainable marine environment, and to meet obligations such as those under the Marine Strategy Framework Directive, decisions need to be backed by robust and informative science and research. A report on the State of Scotland's Seas: Towards Understanding their State was published in 2008. The Scottish Government is working towards producing a comprehensive State of Scotland's seas report in 2010. Considerable work on marine science and data has already been carried out, and this will need to continue in order for Scotland to achieve good environmental status, as required by the Marine Strategy Framework Directive.

More information is needed, though, to establish a comprehensive socio-economic picture of particular activities or specific geographic areas, including the knowledge base offshore in relation to the historic environment, and to develop an understanding of the likely impacts of changes in economic activity in a small area and the consequent social effects. The Scottish Government also needs to improve its understanding of climate change and the likely impacts of this on the seas around Scotland, and more information on Scotland's deeper offshore waters to assess their health and cleanliness.

Fisheries Research services (FRS) is the Scottish Government Agency for the provision of expert scientific and technical advice on marine and freshwater fisheries, aquaculture and the protection of the aquatic environment. Data and information on the seas are collected by a range of bodies, most notably fishermen and the oil and gas industries.

In order to carry forward the range of measures in the Marine Bill, there is a need for further science and a mechanism to agree its interpretation. There is also a need for greater coordination between the academic community and the wider stakeholders and policy makers. The control and organisation of data flows will be key to delivering sustainable development in Scotland's seas. This suggests that some form of geographical information system (GIS) will be necessary.

7.1.2 Option 1: No Change to Current Arrangements

Main Features

Under this option, there would be no marine science strategy and no change to current arrangements. Instead, existing marine science activities would continue to be carried out by organisations that are currently responsible for them.

Coordination between research activities could be encouraged on an informal basis; there would also need to be additional data gathering in the context of marine planning, if this was taken forward (see section 4). Marine planning would also provide a basis for involvement of stakeholders and policy-makers.

Potential Risks

The key risk with this option is that it would fail to generate the data needed to deliver Ministers' aim of sustainable economic growth in the marine environment and the objectives of the Marine Bill and the implementation of the EU Marine Strategy Directive. There would also be a related risk of infraction proceedings for failure to comply with the Directive.

7.1.3 Option 2: Develop a Marine Science Strategy

Main Features

Development of a marine science strategy would provide a mechanism for directing scientific effort into areas of importance, focusing research effort and allowing stakeholder input into the scale and direction of marine science in Scotland. It could also co-ordinate science and industry involvement, with a view to providing more coherent data capture and storage.

In order to provide for monitoring and assessment of Scotland's seas consistently and to rigorous standards, responsibility should lie with a single body. A range of possible bodies could take on this role. The proposal is that:

- Marine Scotland (see section 8) should take on this role, with the assistance of a group of scientific advisers;
- FRS's marine science capabilities and resources should be integrated into Marine Scotland;
- As it is unclear how legislation can contribute to taking forward the agenda on data gathering and information flow, the Marine Bill should allow for secondary legislation as deemed necessary, e.g. for setting data storage and collection standards;
- Marine Scotland should also take forward the development of GIS. Further work and analysis will be necessary, to scope the system and to decide whether Scotland does this in isolation of jointly with other UK departments.

Potential Risks

The key risk associated with this Option is that integrating the FRS into Marine Scotland could be complex, disruptive and costly. The likelihood of these risks is

relatively high, but they are mainly short-term, arising during the set-up of Marine Scotland and the time it takes to 'bed in' (see Section 8). Stakeholders responding to consultation on the Partial RIA also identified a potential risk of loss of FRS's impartiality and neutrality.

There is also a risk that creating a separate GIS system for Scotland could increase costs, while causing problems for the integrated management of the seas around the UK and potential difficulties in meeting the requirements of the Marine Strategy Framework Directive. One respondent to the consultation on the Partial RIA indicated that there is a need for an EU-wide GIS system.

7.2 Sectors and Groups Affected

The sectors and groups affected would include those currently responsible for marine research and data (FRS, the academic community, fishermen and the oil and gas industry) and users of the data, which could include any of the organisations listed in Table 7.1.

Table 7.1: Sector and Groups affected by Options on Science and Data

Industry sectors

- marine renewable energy;
- fisheries (finfish and shellfish);
- ports and harbours;
- shipping;
- aquaculture;
- oil and gas extraction and related pipelines
- telecommunication and power cables installation and operation;
- sand and gravel extraction;
- recreational and tourism, and
- other activities (potentially) covered by regimes such as marine licensing and environmental consents (see Section 5).

Public sector

- Scottish Government departments, agencies and non-departmental public bodies (such as the Royal Commission on Ancient and Historic Monuments of Scotland);
- UK Government departments and agencies;
- other devolved administrations in the UK;
- local authorities.

Others

- interest groups and the general public.

7.3 Benefits

7.3.1 Benefits of Option 1

Benefits could arise under Option 1 if existing organisations are required to co-ordinate on an informal basis and through the introduction of marine planning (see Section 4). Option 1 would also avoid the potential disruption caused by integration of FRS into Marine Scotland (see Section 8).

7.3.2 Benefits of Option 2

The main benefit of Option 2 would be that it would provide a mechanism for directing scientific effort into areas of importance, focusing research effort into where it could make the greatest contribution to achieving the aims of the Marine Bill. It would also enable coordination of industry involvement, allowing for more coherent data capture and storage, with potential cost savings for both industry and the public sector.

A science and data strategy could also have a significant role to play in developing objectives to determine the nature of, and limits on, use of the seas within the context of sustainability. A sound scientific basis for identifying uses compatible with sustainability could help to ensure that restrictions on use, and the costs associated with this, were minimised whilst meeting the goal of sustainability.

7.4 Costs

7.4.1 Costs to Government

Option 1

Option 1 would incur no costs for the development of a new strategy or integration of FRS into Marine Scotland, nor would it result in any substantive disruption to the functioning of marine research. However, any costs arising from current inefficiencies in marine science and data would continue (see Section 4) and, indeed, would be likely to grow as pressure on marine space and resources increases.

Option 2

Option 2 could give rise to some additional costs, including those associated with setting up of Marine Scotland and transfer of FRS, which are discussed in Section 8. If the marine science strategy identified a need for expansion of research effort, there would also be associated costs.

Section 4 of this report discusses the costs associated with data needed to deliver marine planning. Because of the range of data already available, it conclude that new data collection is likely to focus on informing areas where potential conflicts of use are anticipated or where there are gaps. The amount of information required will

therefore be largely dependent on the issues and priorities involved in the planning system and are likely to be specific to each Scottish region. A cost of **£150,000 per year to support a national database** was assumed.

Based on experience with the Marine Spatial Planning Pilot in the Irish Sea and other databases, the costs of establishing and maintaining a data and information system, which would be needed to support all the proposals in the proposed Scottish Marine Bill, including planning, could range from £200,000 to £10.5 million. Taking into account the large amount of data provided through existing SEAs, an additional initial investment of **£1 million per region**, a total of £9 million to £13 million, is considered a sound estimate.

The costs involved in setting up a separate Scottish GIS are unclear at this stage. The UK Marine Bill Impact Assessment estimated capital costs for a GIS for the UK Marine Management Organisation of £4.3 million, with annual running costs of £86,900 per year for hardware and software maintenance and data management. This would give total set up and management costs over 20 years of around £5.6 million. A similar order of magnitude might be anticipated for a Scottish system. Some stakeholders have indicated, in response to consultation, that integration between existing databases is a major concern that needs to be addressed.

Section 4 of this report noted that the Marine Environmental Data and Information network (MEDIN) aims to deliver a data management system, supported within Scotland by funds of £150,000 per year from the Scottish Executive. As part of this initiative, a Geographic Information System (GIS) has been identified as a priority providing a front end portal for users to access data relevant to their areas of interest. The costs of a GIS may therefore be considered to be part of the baseline.

7.4.2 Costs to Other Stakeholders

Option 1

Option 1 would not result in any disruption to the functioning of marine research and thus there would be no costs to stakeholders associated with disruption. However, any costs arising from current inefficiencies in marine research would continue.

Option 2

There should not be any additional ongoing costs to other stakeholders from Option 2**.** However, there may be some initial costs in becoming familiar with the new arrangements. There may also be indirect short-term costs of disruption, as Marine Scotland is set up. These costs are discussed in Section 8.

7.5 Small/Micro Firms Impact Assessment

Almost all of the industry sectors identified in Box 7.1 include some small and micro-sized firms.

Option 1 will not pose additional costs for small firms; however, any current costs arising from current inefficiencies could continue and may rise as pressures on marine space and resources increase over time.

Option 2 could benefit small firms, as better data could improve the efficiency and effectiveness of marine management, reducing delays and uncertainty, which could be particularly significant for small firms.

7.6 Competition Assessment

Neither Option 1 nor Option 2 is likely to have any adverse impact on competition.

7.7 Enforcement, Sanctions and Monitoring

Under Option 1, responsibility for marine science and data gathering measures would remain with the organisations currently responsible. Under Option 2, these responsibilities could be taken on by Marine Scotland. Further consideration is needed as to the extent to which GIS development is taken forward in isolation by Scotland or jointly with other UK departments.

7.8 Summary

Table 7.2 summarises the costs and benefits from the different options related to science and data.

Table 7.2: Summary of Impacts of Options Related to Science and Data

	Option A: no change to current arrangements	**Option B: develop a marine science strategy**
Benefits	Short-term benefits in that potential disruption caused by integration of FRS into Marine Scotland would be avoided	Potentially significant benefits from improved coordination and direction of research and data gathering.
Costs to Government	Potential costs from current inefficiencies continue	Additional costs related to integration of FRS into Marine Scotland – attributed to set-up of Marine Scotland (see section 8). Data costs attributable to planning: £150,000 per year for national data base plus set up costs of £1 million per regional plan. Costs of separate Scottish GIS system could be of the order of £5.6 million over 20 years.
Costs to Others	Potential costs from current inefficiencies continue	Possible short-term costs from disruption and becoming familiar with new arrangements

8. OPTIONS FOR MARINE MANAGEMENT ARRANGEMENTS

8.1 Options

8.1.1 Introduction

In order to deliver the objectives of the Marine Bill, there will need to be an effective system of management for the marine environment. A range of options has been identified in relation to marine management arrangements; the two extremes of this range are:

- Option 1: no substantive change to current management arrangements. This represents the baseline for comparison with other option; and

- Option 2: set up Marine Scotland as an integrated body with responsibility for policy, marine planning, science, regulation and licensing and compliance monitoring and enforcement to the limits of devolved responsibilities.

There are a number of potential variations within and between the two options. For example, Marine Scotland could take on only some of the potential roles under Option 2, or it could act as a 'virtual' integrated body, providing a single interface for stakeholders. The impacts of such variations will lie between those of Options 1 and 2.

Clearly, the options for marine management arrangements are closely linked to the options on other policy areas of the Scottish Marine Bill, as these will determine the requirements to be managed. For example, if no system of marine planning is set up, there will be no need for management of the planning process. Similarly, any changes to the licensing regime will affect the workload associated with licensing. However, any costs and benefits associated with setting up a system of marine planning or changes to licensing are attributable to those policy options, and not to the options on management arrangements. This section focuses solely on the difference in costs and benefits between delivering other policy options through Marine Scotland and through the current management arrangements.

In the remainder of this section we describe the main features of Options 1 and 2; set out the potential risks that an option could incur, the likelihood of their occurrence and potential mitigation options; and discuss how they could be implemented.

8.1.2 Option 1: No Change to Current Arrangements

Main Features

Under this option, no Marine Scotland would be set up. Instead, existing activities would continue to be carried out by organisations (including relevant parts of Scottish Government) that are currently responsible for them. Any new activities, for example marine planning, would be allocated to one or more of these existing organisations.

The existing organisations could also be required, through statutory provisions if necessary/appropriate, to co-ordinate, integrate and streamline management and regulatory activity, systems and processes. Agreed marine objectives would be pursued through planning, strategy development and partnership working, in a form of 'virtual integration'.

Potential Risks

The key risk with this option is that it would fail to deliver Ministers' aim of sustainable economic growth in the marine environment and the objectives of the Marine Bill, in particular the potential new function of marine planning (see Section 4) and the implementation of the EU Marine Strategy Directive. There would also be a related risk of infraction proceedings for failure to comply with the Directive. There is a risk of marine planning (if introduced) and strategy development becoming an additional tier of regulation, rather than an integral (core) element of marine management. It would also pose a risk of failure to deliver the objective of streamlined decision-making, with continuing potential for inconsistency in decision-making and uncertainty amongst stakeholders about responsibilities for the marine environment. It would fail to deliver efficiency benefits in terms of reduced costs for both Government and industry – for example from integrated and streamlined consenting processes and better co-ordinated and integrated compliance monitoring arrangements (including, notably, through better utilisation of expensive sea-going assets).

The likelihood of the risk of failure to deliver effective marine planning is quite high; however, it could potentially be mitigated by introducing statutory requirements for the various organisations to take account of marine planning and to co-operate in achieving its aims.

The risk of failure to deliver streamlined decision-making could also be mitigated, partly at least, by a requirement for cooperation amongst decision-makers and, potentially, by having a single interface for stakeholders on marine management. This role would probably need to be taken by part of the Scottish Government and could include, for example, a single web portal for all aspects of marine environmental management.

Finally, there is a risk that inefficient collection and use of data may also arise without a strategy from a single organisation coordinating research funding and efforts. The impacts could include additional costs of research and data collection and sub-optimal decision-making, by regulatory bodies and industry, on marine management and development issues.

8.1.3 Option 2

Main Features

Under Option 2, a new marine management organisation (Marine Scotland) would be set up, integrating new and expanded roles and responsibilities with the existing marine management functions of a number of currently separate organisations. It would have an overarching role to promote sustainable economic growth in a marine context, balancing the range of interests and considerations, with detailed responsibilities including:

- lead responsibility for **marine planning** in Scotland (if introduced) and responsibility for underpinning **science and data**;
- the current responsibilities of the Scottish Government, Fisheries Research Service and the SFPA for marine and freshwater **fisheries and aquaculture** management;
- lead responsibility on marine **nature conservation**, with Scottish Natural Heritage retaining its statutory advisory responsibilities;
- responsibility for administering a better integrated and streamlined system of **marine consents.** The precise activities will depend on the outcome of options on the consents system (see Section 5) but there are two main sub-options:
  - Marine Scotland takes responsibility for administering all marine consents, including any combined marine consents; or
  - Marine Scotland takes responsibility for administering only some of the consents, but acts as a 'front door' for applicants for all consents;
- ensuring more consistent, efficient and effective monitoring of, and action on, **compliance**, in liaison with others; and
- over-arching responsibility to ensure **sustainable management** of marine and coastal areas.

The necessary resources for Marine Scotland to fulfil its responsibilities would be provided through a mix of transferring existing funding provision alongside responsibilities and functions from current organisations, some new funding provision and savings from efficiencies (for example, from combining services and integrating and streamlining currently separate processes).

Potential risks

The key risk associated with this Option is that changing existing arrangements could be complex, disruptive, costly and detrimental to industry/Scottish interests overall. However, these risks are mainly short term, arising during the set-up of Marine Scotland and the time it takes to 'bed in'. These risks could be mitigated by managing the timing and phasing the set up of Marine Scotland and the transfer of responsibilities to it. New responsibilities, such as marine planning, can be taken up immediately by Marine Scotland, once the legislation is in place. By contrast, transfer of licensing responsibilities, for example, could be phased, in connection with any changes to the licensing regime (see Section 5), to ensure continuity and minimise disruption and delay.

There are also potential risks associated with the disruption of existing linkages, including 'horizontal' linkages across policy areas and across the marine/terrestrial divide. These risks are potentially longer term but could be mitigated by putting into place arrangements for Marine Scotland to continue to cooperate and coordinate with other organisations on these issues.

An additional risk is the availability of sufficient resources and expertise to operate an integrated licensing system, if introduced (see Section 5). A possible mitigation strategy would be to use Marine Scotland as a single access point to the licensing framework, rather than carrying out all licensing work itself. Under this scenario, for instance, Marine Scotland would act as the one stop shop/front door for licensing, but SEPA would in fact continue to regulate impacts in the water environment under CAR. This option would be similar to the variant of Option 1 of having a single interface for stakeholders on marine management.

8.1.4 Comparison of the Options

Table 8.1 summarises and compares the features of the two options.

Table 8.1: Summary of Options for Powers to Deliver Marine Management Arrangements

	Option A: no change to management arrangements	**Option B: set up Marine Scotland**
Marine Planning (if introduced)[49]	Would be carried out by existing organisations (probably Scottish Government department(s), possibly assisted by SEPA)	Carried out by Marine Scotland
Fisheries and aquaculture management	Existing organisations remain responsible: • **Scottish Government** (Marine Directorate) • **SFPA**: monitoring and compliance assets/activity and local fishing vessel licensing • **FRS:** research and scientific advice, some regulation • **Local authorities**: planning and development for new and modification to existing fish farms out to 3nm	Carried out (wholly or mainly) by Marine Scotland
Marine nature conservation	SNH, SFPA, FRS, Scottish Government retain current responsibilities	Marine Scotland leads, including on Marine Strategy Framework Directive implementation, with two sub-options: • SNH retains statutory adviser role and wider natural heritage "promotional roles"; and • SNH retains statutory adviser role only
Licensing[50] and consents	Scottish Government, SEPA,FRS, SNH, Local Authorities and Historic Scotland retain their existing responsibilities	Either: 1. Marine Scotland is responsible for administering all marine consents; or 2. Marine Scotland administers some consents, responsibility for others is retained by existing organisations (i.e.

[49] Dependent upon the options for marine planning and integrated coastal zone management (see Section 4)
[50] Depending on options for a streamlined system of licensing and enforcement (see Section 5).

Table 8.1: Summary of Options for Powers to Deliver Marine Management Arrangements		
	Option A: no change to management arrangements	**Option B: set up Marine Scotland**
		SEPA for inshore waters, Historic Scotland for marine historic assets and local authorities for coastal protection and flood prevention schemes). There are two main sub-options: • local authorities keep consents for fish farming out to 3nm; • local authorities do not keep consents role on fish farming In each case, Marine Scotland could act as a 'front door'
Compliance and enforcement	SFPA (fisheries), SEPA (pollution control/CAR), police and others retain their current responsibilities	Carried out (wholly or in large part) by Marine Scotland, with enhanced co-ordination and co-operation with others
Marine data co-ordination and research	Scottish Government, SFPA, FRS, SNH, SEPA retain current responsibilities and initiatives, such as Marine Science Scotland and work under UKMMAS	Led and coordinated by Marine Scotland, including development of: • geographical information system(s) (GIS); • Marine Science Strategy; • national seabed survey; • increased monitoring for the purposes of Marine Strategy Framework Directive and creation of performance indicators

8.2 Sectors and Groups Affected

The stakeholders affected by options on marine management arrangements are all of those carrying out activities, or having other interests, in the marine environment. They are listed in Table 8.2.

Table 8.2: Sector and Groups affected by Options on Marine Management Arrangements
Industry sectors • marine renewable energy; • fisheries (finfish and shellfish); • ports and harbours; • shipping; • aquaculture; • oil and gas extraction and related pipelines • telecommunication and power cables installation and operation; • sand and gravel extraction; • recreational and tourism, and • other activities (potentially) covered by regimes such as marine licensing and environmental consents (see Section 5). *Public sector* • Scottish Government departments, agencies and non-departmental public bodies; • UK Government departments and agencies; • Other devolved administrations in the UK; • local authorities; • existing research communities. *Others* • interest groups and the general public.

Under **Option 1**, there will be limited change to the current situation. Existing roles and relationships would, largely, be maintained, but with relationships needing to be developed on new/expanded functions (such as marine planning) and to improve on co-ordination of respective organisations' activities. There would be no body with an overarching marine management role, capable of taking a holistic, balanced view and to whom stakeholders might look as the principal marine management authority. Sectors which face delays and uncertainties due to lack of coordination under the current situation (see Sections 4 and 5) will continue to do so, with growing demands on marine space and resources increasingly likely to exacerbate that position.

Under **Option 2**, all of these sectors will face changes to their current arrangements and relationships. This could lead to short-term disruptions, as both the sectors and Marine Scotland become familiar with the new arrangements and processes. New relationships would need to be developed between Marine Scotland and the various sectoral interests, based on a more holistic view of the marine environment and its management.

8.3 Benefits

8.3.1 Benefits of Option 1

Benefits could arise under Option 1 if existing organisations are required, through statutory provisions if necessary/appropriate, to co-ordinate, integrate and streamline management and regulatory activity, systems and processes. In this case, Option 1 could address some of the costs of lack of co-ordination, and potentially delay, identified in Sections 4 and 5. It could also address some of the current problems for the marine environment arising from lack of coordination, outlined in Section 4 and Annex 1.

8.3.2 Benefits of Option 2

Option 2 could generate significant benefits in co-ordinating the actions needed to meet the Scottish Government's marine objectives and to achieve its overarching aim of sustainable economic growth. This will particularly be the case if new obligations, such as marine planning (see section 4) or integrated licences (see section 5), are introduced. This could both increase the certainty that the objectives will be met and generate efficiency savings.

Overall, there are a number of areas of potential efficiency savings:

- **Enforcement**: the SFPA vessels could assist with monitoring and enforcement of nature conservation policies (as indeed they currently do in the offshore zone adjacent to Scotland under a service level agreement with Defra) and a wider range of marine licensing and consent conditions;

- **Data**: bringing together data and resources currently held by FRS, SFPA and SG – and with scope to co-ordinate and integrate more widely with SEPA, SNH and others - provides an obvious basis for more comprehensive and better co-ordinated research and data to meet the significant data needs of marine planning and management;

- **Planning**: the creation of Marine Scotland could improve the delivery of planning functions (if marine planning is introduced) by setting out national-level issues and perspectives and on which regional/local plans could build and ensuring links to terrestrial planning and Integrated Coastal Zone Management. In addition, there could be benefits from the coordination of planning and licensing within a single organisation. Developers will be better able to assess the likely outcome of the applications as the plans will set a clearer context for decision making; and

- **Combined/shared corporate and support services**: there is evident scope for efficiency savings – allowing resources to be redirected back in to front line delivery – from integrating currently separate corporate and support service activities and assets of SFPA, FRS and SG in particular. These are discussed further in section 8.4.1 below.

By ensuring that licensing decisions take account of marine plans and nature conservation objectives, Marine Scotland will be able intervene where devolved activities threaten to damage fishing grounds or the wider ecosystem, giving rise to additional environmental benefits. These benefits are difficult to quantify, however, as it will depend on the number of damaging activities that are halted, the speed with which this can be achieved and the level at which marine objectives are set. Some examples of the potential benefits are given in Section 6.

The Impact Assessment for the UK Marine Bill identifies a range of benefits from setting up a Marine Management Organisation. These are shown in Table 8.3. None of the benefits are quantified in the Impact Assessment.

Table 8.3: Potential Benefits of a Marine Management Organisation

- greater certainty for stakeholders in their approaches to Government, from bringing more functions within a single contact point;
- environmental benefits from the effective delivery of functions, especially nature conservation functions, the integration of fisheries and environmental management and enhanced enforcement powers;
- enhanced knowledge management and an expanded knowledge base, by enabling Government to make best use of marine data across marine management functions; and
- maximising sustainable economic benefits from marine resources through providing an effective delivery body for its functions.

Source:
Defra (2008). UK Marine Bill Impact Assessment

For Scotland, however, the benefits will depend on the final status of Marine Scotland, i.e. whether it is a Non-Departmental Public Body, an Agency or part of the Scottish Government. Establishing Marine Scotland as part of the Scottish Government would seem to offer the most benefits in terms of the potential to integrate policy and delivery functions (subject to the availability of appropriate

flexibilities and business support arrangement to ensure effective operations); and greatest scope for efficiencies (notably in combining new with existing functions and shared service provision). There are, however, some attendant sensitivities about bringing together policy, science and enforcement functions, which would need to be managed.

8.4 Costs

8.4.1 Costs to Government

Option 1

Option 1 would incur no costs for the setting up or running of a new organisation and would not result in any substantive disruption to the functioning of marine management. However, any costs arising from current inefficiencies in marine management would continue (see Sections 4 and 5) and, indeed, would be likely to grow as pressure on marine space and resources increases. Current duplication of corporate and support service provision across separate organisations, with associated costs, would continue. There would also be costs associated with any new requirements, such as marine planning or changes to nature conservation requirements, including the costs of compliance monitoring and enforcement. These costs are addressed in the sections on the relevant policy options.

The costs of this option will thus be the current costs of existing organisations responsible for marine management, together with the additional costs of any new activities (such as marine planning – see Section 4). Consultation with the Scottish Government (Marine Directorate and others), SEPA, FRS, SNH, SFPA and local authorities has provided a range of estimates of current costs. These are shown in Table 8.4.

Table 8.4: Ongoing Costs to Government of Marine Management Arrangements – Option 1		
Activity	**Responsibility**	**Costs**
Marine Planning (if introduced)[51]	Probably Scottish Government department(s) and local authorities (with regards to some aspects of fish farming to the 3nm limit), plus possibly SEPA (in relation to river basin management plans)	Likely to require 30-35 additional staff overall (costs £1.2 million to £1.6 million per year) National planning: average annual cost: £498,000; local planning: average annual cost £2.6m - £4.7 (allocated to marine planning - see Section 4)
Fisheries and aquaculture management	Scottish Government SFPA Local authorities FRS	Scottish Government: around £3.3million per year SFPA: £24.4 million for 2008/9 (includes all tasks) Local authorities: not known FRS: included in budget shown below
Marine nature conservation	SNH SFPA Scottish Government	SNH: £1.1 million (costs of Coastal and Marine Ecosystems Unit, 2007/8) SFPA: included in budget shown above Scottish Government: see above
Licensing[52] and consents	Scottish Government, SEPA, Local Authorities	£1.4 million to £3.1 million per year
Compliance and enforcement	SFPA (fisheries) SEPA (pollution control/CAR, aquaculture) FRS (FEPA) police	SFPA: included in budget shown above SEPA: approx £1.3 million[1] FRS: included in budget shown below (Potential additional requirement for 5-10 new staff)
Marine data co-ordination	Scottish Government, SFPA, FRS, SEPA	FRS**:** £29.5m for 2008/9 SFPA: included in budget shown above
Total	**Excluding marine planning** **Including marine planning**	**£61 million to £63 million (plus unknown costs) per year** **£64 million to £68 million (plus unknown costs) per year**
Notes: Source: Scottish Budget Spending Review 2007 1. Based on estimate of 35 FTE for marine-related activities, from a total staff of 1,300 and a total budget of £49.5 million in 2008/9		

Option 2

Option 2 could give rise to some additional costs.

In order to fulfil its responsibilities, Marine Scotland would require significant resources. The costs of preparatory work to establish Marine Scotland – up until 1 April 2009 – have been estimated at around £400,000 to £500,000. This represents largely the salary and related costs of staff in the SG Marine Transition Unit working on transition issues, plus associated consultancy work and support. Other staff, in the Scottish Government, FRS and SFPA, are contributing to transition work, with their costs being met largely from within existing resource provision.

51 Dependent upon the options for marine planning (see Section 4)

52 Depending on options for a streamlined system of licensing and enforcement (see Section 6).

Other additional costs, and some cash releasing efficiency savings, will accrue and may be attributable to establishment/transition (rather than the costs of marine management function delivery). Detailed work is underway to assess these costs and savings more precisely – but which will depend on some strategic and other decisions yet to be taken. The major cost elements are anticipated to relate to:

- IT integration;
- HR-related issues associated with re-structuring and re-organisation

There are, however, expected to be cash release and/or efficiency savings from:

- integration/rationalisation of senior management, corporate and business support structures; and
- integrating new with existing functions, for example by combining marine planning with wider marine policy and strategy roles and responsibilities, thereby reducing resource needs compared to having separate arrangements; and
- reduced governance requirements/costs, for example by removal of the current requirement for separate external audit of the accounts of FRS and SFPA and the production of separate plans and annual reports.

IT Integration

The SG Marine Directorate and the SFPA, which it is planned would form part of Marine Scotland, largely operate within the Scottish Government (SCOTS) IT and electronic document handling (eRDM) arrangements. This facilitates email, diary and document sharing etc. Fisheries Research Services operates its own, separate arrangements, which amongst other things provide appropriate capabilities to support science-based IT applications.

It will be essential for Marine Scotland to operate on the basis of integrated IT arrangements. If Marine Scotland were to be established as part of SG, that means operating within SCOTS arrangements. At the same time, there is a need to continue to provide for science-based applications.

A feasibility study is underway to explore related technical and other issues, costs and options related to IT integration; this is expected to report shortly. That will inform choices and related (transition and ongoing operating) costs for Marine Scotland's IT systems and management arrangements.

HR Costs of Structural and Organisational Change

Structural and organisational changes – including those referred to above – will inevitably impact on some existing posts and individuals. New opportunities are likely to arise as a consequence of new functions and responsibilities planned for Marine Scotland (such as in relation to Marine Planning), which may allow some re-deployment of affected individuals within the organisation. However, there may be

some re-deployment within the wider Scottish Government, with potential associated costs such as re-location expenses.

The costs of any such moves are extremely difficult to forecast currently, and depend a) on decisions on key elements of organisational change, its timing etc; and b) any harmonisation and/or re-deployment costs, which will depend on the circumstances of the individuals/moves concerned. However, we understand the intention is not to enforce mobility provisions (for non senior staff), so overall re-deployment costs are not anticipated to be high.

Integration/rationalisation of Senior Management Structures

Work is on-going to establish a fit for purpose senior management structure for Marine Scotland but it is inevitable that there will be a degree of integration/rationalisation from which will accrue cash releasing efficiency savings in due course. It is difficult to estimate precisely what that saving might be in advance of decisions of the shape of the new senior management, and lower level, structure..

Integrating/Rationalising Corporate and Business Support Services

Bringing together currently separate organisations offers opportunities to integrate and rationalise some services/support arrangements – though regard has to be had to the need for Marine Scotland to be responsive and able to deliver effectively its front line services. Any changes to existing arrangements need to be carefully managed to ensure continuity of business – as part of a 'managed evolution' approach to development of Marine Scotland's role and responsibilities.

Again, work is underway to explore in more detail options, and related costs/savings, for integrated (including, where appropriate, shared) service delivery. This includes in relation to IT, HR, Finance, Estates, fleet (vessel, aircraft, vehicle) management and procurement functions and responsibilities: and options for staff and resources to be integrated either into wider SG arrangements or inside Marine Scotland.

Integrating new and existing functions

Integrating new functions, for example related to marine planning, extended marine nature conservation measures and better integrated licensing and compliance monitoring activity, alongside existing roles and responsibilities inside a single, integrated structure will allow for synergies, savings and efficiencies compared to the structures and support arrangements that would be required should roles and responsibilities be held separately/amongst diverse organisations. Precise comparators are difficult, but the expectation would be of relatively substantive savings in annual running costs as a consequence of reduced staff requirements.

Reduced governance requirements

SFPA and FRS are currently subject to external audit arrangements and are required to produce separate corporate and operational plans and annual reports. Bringing

governance and reporting requirements together into a single body will (depending on its status and even allowing for some additional costs arising out of an elective, pro-active approach to 'publicity') produce annual cost savings potentially in excess of £100,000.

Overall estimate of cash releasing efficiency savings arising from integration / rationalisation activity

As noted above, it is difficult at this stage to be precise on cash-releasing and efficiency savings, as a result of current uncertainties, for example about the numbers and grades of posts likely to be impacted upon by integration/rationalisation activity. Transition from current arrangements will take time and will involve some (in some cases potentially substantive) cost. However, initial estimates suggest that, after an initial transition management period, there will be cash releasing and/or efficiency savings of the order of £1 million to £1.5 million annually as a consequence of the establishment of integrated marine management delivery arrangements. These could be affected, for example, by the one-off costs and ongoing savings benefits of the early severance/retrial scheme. However, it is uncertain at this time what the impacts of this will be. These efficiencies would be available to contribute to efficiency targets and/or to the costs of the additional functions to be undertaken by Marine Scotland as a result of the Marine Bill.

In addition to its central operation, it is likely that Marine Scotland would need a local presence, in order to carry out its enforcement role and to facilitate stakeholder involvement in marine planning. This could be delivered either through existing regional offices of the organisations that would make up Marine Scotland or through the creation of new offices, potentially in partnership with existing bodies such as local authorities. .

8.4.2 Costs to Other Stakeholders

Option 1

Option 1 would not result in any disruption to the functioning of marine management and thus there would be no costs to stakeholders associated with disruption. However, any costs arising from current inefficiencies in marine management would continue (see Sections 4, 5 and 6). There could be costs associated with new requirements (such as marine planning). However, these costs are a result of the relevant policy options, rather than the means of delivery, and thus are allocated to those policy options.

Option 2

There should not be any additional ongoing costs to other stakeholders from Option 2**.** However, there will be some initial costs in becoming familiar with the new arrangements. These should be minimised, as Marine Scotland will be made up of existing organisations and staff changes are expected to be limited. There may also

be indirect short-term costs of disruption, as the organisation is set up. These should be minimised if the switch of functions to the Marine Scotland is carefully managed.

8.5 Small/Micro Firms Impact Assessment

Almost all of the industry sectors identified in section 8.2 include some small and micro-sized firms.

Option 1 will not pose additional costs for small firms; however, the current costs arising from uncertainties and delays could continue and seem likely to rise as pressures on marine space and resources increase over time.

Option 2 could benefit small firms, as the improved efficiency and effectiveness of marine management could reduce delays and uncertainty, which could be particularly significant for small firms. Cost increases to small companies could arise, but these will stem from the different policies, as highlighted in the relevant sections (e.g. planning, conservation), rather than from setting up Marine Scotland alone. Having a single contact point for all aspects of marine management, rather than needing to contact a number of different bodies, could also particularly benefit small firms.

8.6 Competition Assessment

Neither Option 1 nor Option 2 is likely to have any adverse impact on competition. Option 2 is likely to have a positive impact on competition, by producing a more equitable situation both across and within different industry sectors from new marine planning and licensing and enforcement arrangements.

8.7 Enforcement, Sanctions and Monitoring

Under Option 1, responsibility for compliance, monitoring and enforcement of marine management measures would remain with the organisations currently responsible. Under Option 2, these responsibilities could be taken on by Marine Scotland. Reserved issues would continue to be addressed by the respective departments within the UK Government, in consultation and collaboration, hopefully, with Marine Scotland.

8.8 Summary

Table 8.5 summarises the costs and benefits from the different options related to marine management. Although there are limited costs in the short terms under Option 1, continuing with the current system, there is potential that the objectives of the Marine Bill will not be met and that current inefficiencies will continue. There will

be some on-off costs in setting up Marine Scotland, but potential longer-term benefits are expected from increased efficiency.

Table 8.5: Summary of Impacts of Options to Deliver Marine Management Arrangements

	Option A: no change to management arrangements	**Option B: set up Marine Scotland**
Benefits	Short-term benefits in that government, other public bodies and marine users will not have to change their behaviour	Potential benefits from efficiency improvements in: • enforcement • data • planning • staff and operational cost savings from integration/rationalisation (estimated at £1 million to £1.5 million per year) Greater certainty for stakeholders
Costs to Government	Potential failure to meet objectives Potential costs from current inefficiencies continue	Set-up costs: around £400,000 - £500,000 plus as yet unquantified additional costs, likely to be offset by efficiency gains No net additional running costs solely as a consequence of establishment of Marine Scotland.
Costs to Others local authorities, other organisations, industry, stakeholders)	Potential costs from current inefficiencies continue	Possible short-term costs from disruption and becoming familiar with new arrangements

9. SUMMARY AND RECOMMENDATIONS

9.1 Summary

This report has assessed the potential impacts of options, including no action, within a range of different policy areas. The Scottish Government has committed to delivering a Marine Bill which will include:

- marine planning: delivering a new system of marine planning for the sustainable use of Scotland's seas;
- marine licensing: a streamlined and modernised marine licensing and consent system in order to reduce administrative burden;
- marine conservation: improvement to marine nature conservation to safeguard and protect Scotland's marine assets, with "ecosystem" at the heart of management;
- closer integration of marine historic environment site protection with marine nature conservation;
- science and data generation; and
- a new structure, Marine Scotland, to deliver sustainable seas for all.

Tables 9.1 to 9.11 summarise the annual costs and benefits for the different groups and the different options. In some cases, the tables present the range of costs and benefits. In most cases though, benefits and costs are described in qualitative terms as estimates could not be calculated. Because of this, it is difficult to compare the cost and benefits from the Options. Moreover, there is considerable uncertainty over many of the costs and benefits, because they will depend upon the specific measures adopted.

Table 9.1: Annual Costs to Scottish Government

Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Unquantified costs in resolving disputes	£2.6 million to £4.5 million (plus £125,000 to £190,000 for Historic Scotland)	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Baseline cost: £2.1 million - £2.7 million (recovered through industry fees).	Minor unquantified costs	Minor unquantified costs	Minor unquantified costs t
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Unquantified costs (potentially £m)	Will depend on numbers of measures adopted (examples of costs include: Habitat action plans:	Monitoring marine ecosystem objectives: £6,000 - £12,000	n/a

Table 9.1: Annual Costs to Scottish Government				
		£76,000 – £501,000 per plan Species Action Plans: £23,000 – £206,000 per plan Surveillance and enforcement: £198,000 per plan Marine nature reserves: £38,000 - £55,000 per reserve Voluntary reserves: £26,000 – £74,000 per reserve)	Designating 10 - 20 new inshore sites: £433,000 to £1,020,000	
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	Unquantified costs (as current but risk of failure could increase in future)	Unquantified costs of issuing licences to fish farms (probably recouped by the fees) and of changes to legislation	Unquantified costs of issuing licences to fish farms (probably recouped by the fees) and of changes to legislation	Unquantified costs but costs of changes to legislation and consultation likely to be significant
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	£200,000 for designation/monitoring via existing mechanisms at minimum credible level £170,000 to £250,000 per annum to enhance data quality for marine planning system	Transitional costs of £25,000 for two years to transfer to Historic MPA system; In addition £170,000 to £250,000 to enhance data quality for marine planning system	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Costs included within specific policy areas	Costs included within specific policy areas	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Continuing costs from current inefficiencies	Costs neutral overall with potential for some efficiency savings	n/a	n/a

Table 9.2: Annual Benefits to Scottish Government				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Minor short-term benefits only	Unquantifiable (but potentially significant) benefits	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Avoidance of costs of change	Cost savings: £150,000 - £168,000	Cost savings: £159,000 - £204,000	Cost savings: £86,00 - £165,000[1]
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Minor short-term benefits	Not quantified but could be significant	Not quantified but could be greater than Option 2	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No significant benefits	Not quantified (current risk eliminated)	Not quantified (risk eliminated but to a lesser extent than Option 2)	Not quantified
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No benefits	Benefits not quantifiable	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Benefits included within specific policy areas	Benefits included within specific policy areas	n/a	n/a
Marine management –	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Minor short-term benefits	Cost savings estimated at £1 million to £1.5 million	n/a	n/a

Table 9.3: Annual Costs to Local Authorities				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Unquantified costs (potentially significant)	Unquantified costs (likely to be offset by cost reductions)	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Baseline costs: £304,000 - £380,000 (recovered through licence fees	Minor unquantified costs	Minor unquantified costs	Minor unquantified costs
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Unquantified potentially significant costs	Participation in consultation of measures but expected to be cost neutral overall	Cost neutral overall	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No changes in costs	Not quantified	Not quantified	Not quantified
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No additional costs (existing costs and uncertainties will remain)	No significant additional costs expected but not quantified	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Costs included within specific policy areas	Costs included within specific policy areas	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Potentially significant continuing costs	Limited short-term costs	n/a	n/a
[1]: Excludes the costs of aquaculture from total costs as calculated in Table 5.25.				

Table 9.4: Annual Benefits to Local Authorities				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Minor short-term benefits	Unquantified (but potentially significant) benefits	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Minor short-term benefits	No significant change	No significant change	£256,000 - £350,000 cost savings
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Minor short-term benefits	Minor short-term benefits	Not quantified but could be significant	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No significant costs	Not quantified	Not quantified	Not quantified
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No significant costs	Not quantified	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Benefits included within specific policy areas	Benefits included within specific policy areas	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Some benefits possible	Potentially significant in longer term	n/a	n/a

Table 9.5: Annual Costs to Other Organisations				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Potentially significant costs	Limited costs	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Baseline cost £123,000 – (recovered from industry)	Minor unquantified costs	Minor unquantified costs	Minor unquantified costs
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Potentially significant unquantified impacts from	Participation in consultation of measures but expected to be cost neutral overall	Potential costs of £14,000 – £40,000 per site so could range from £140,000 to £800,000 for 10 to 20 sites (but over different time periods)	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No significant costs	Not quantified (but biodiversity benefits will be significant)	Not quantified (biodiversity benefits but not as great as for Option 2)	Costs of consultation but not expected to be significant
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No significant additional costs	No significant additional costs	n/a	n/a
Science and data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Current costs continue	No significant impacts	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Current costs continue	Limited short-term costs	n/a	n/a

Table 9.6: Annual Benefits to Other Organisations				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Minor short-term benefit	Unquantified (but potentially significant) benefits	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Minor short-term benefit	Unquantified (probably minor) savings	Unquantified (probably minor) savings	Unquantified (probably minor) savings
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Minor short-term benefit	Potentially significant economic, social and environmental benefits	Potentially greater environmental benefits	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No significant costs	Not quantified but potentially significant economic, social and environmental benefits	Not quantified but potentially significant social and environmental benefits	Costs of consultation
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No benefits	Benefits could be significant but not quantified	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	No benefits	Some potential benefits	n/a	n/a
Marine management –	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Some potential benefits	Potentially significant benefits in longer-term	n/a	n/a

Table 9.7: Annual Costs to Industry				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Potentially significant	Possible short terms term and longer term costs	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Baseline licence fees £2.6million - £3.2 million	Limited costs	Limited costs	Limited costs
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Potentially up to £14million,	Participation in consultation of measures but expected to be cost neutral overall (costs of compliance, e.g. £185,000 for adjustments to nets, etc but will vary according to specific controls although expected to be lower than Option 3)	Costs of compliance potentially significant (up to £6.2m to £8.5m per site for MPA; less for zoning alone)	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No change	Not quantified but would be related to increased damage or loss of fishing gear in a few cases. Expected to be small.	Not quantified. Potential loss of local tourism income.	Not quantified. Would be related to increased damage or loss of fishing gear and damages to cages (costs to aquaculture)
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No additional costs (as for current costs and uncertainties)	No significant costs (maybe consultation)	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Current costs continue	No significant impacts	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Current costs continue	Limited short term costs	n/a	n/a

Table 9.8: Annual Benefits to Industry				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Minor short-term benefit	Potential benefits of up to £20m	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	Minor short-term benefit	Cost savings: £170,000	Cost savings: £177,000 - £197,000	Direct cost savings: £512,000 - £672,000 (Indirect cost savings could be significantly higher)
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Minor short-term benefit	Potential longer-term benefits	Potentially significant longer term benefits	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No change	Not quantified but expected to be significant for instance to wildlife tourism and aquaculture	Not quantified	Significant for some industry such as wildlife tourism
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No benefits	Opportunities for sustainable tourism (not quantified)	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	No benefits	Some potential benefits	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Some potential benefits	Potentially significant	n/a	n/a

Table 9.10: Annual Costs to Other Stakeholders				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Potential for loss of employment	Limited costs	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	No change	Potential loss of up to 1FTE	Potential loss of up to 1FTE	Potential loss of 2 to 2.6 FTE
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Up to £14million	Cost neutral overall	Cost neutral overall	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	Significant costs potentially in the future	No significant costs	No significant costs	No significant costs
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No additional costs	No costs	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	Current costs continue	No impacts anticipated	n/a	n/a
Marine management	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Current costs continue	Limited short term costs	n/a	n/a

Table 9.11: Annual Benefits to Other Stakeholders				
Marine Planning	**Option 1: No change**	**Option 2: Statutory planning system**	**(No Option 3)**	**(No Option 4)**
	Minor short-term benefits	Some (unquantified) benefits	n/a	n/a
Licensing	**Option 1: No change**	**Option 2: Amalgamate CPA, FEPA and CAR Licences**	**Option 3: Amalgamate CPA, FEPA, CAR, Wildlife, Aggregate etc. licences**	**Option 4: Create activity-based licences**
	No job losses	No significant impact	No significant impact	Some (unquantified) benefits
Marine Nature Conservation	**Option 1: No change**	**Option 2: Better use of existing measures**	**Option 3: New measures and policies**	**(No Option 4)**
	Minor short-term benefits	Potentially significant economic, social and environmental benefits	Potentially greater economic, social and environmental benefits	n/a
Seal licensing	**Option 1: No change**	**Option 2. Extended year round and to fish farms, removal of netsmen's defense**	**Option 3. Extend licensing to fish farms; netsmen's defense restricted to areas outside seal conservation orders**	**Option 4: No seal control**
	No significant costs	Not quantified (but biodiversity benefits will be significant)	Not quantified (biodiversity benefits but not as great as for Option 2)	Costs of consultation but not expected to be significant
Historic environment	**Option 1 – No change**	**Option 2 -Implement a new system of historic site MPAs**	**(No Option 3)**	**(No Option 4)**
	No changes	Benefits from conservation	n/a	n/a
Science and Data	**Option A: No change**	**Option B: Develop a marine science strategy**	**(No Option 3)**	**(No Option 4)**
	No benefits	Some potential (unquantified) benefits	n/a	n/a
Marine management –	**Option A: no change**	**Option B: Set up Marine Scotland**	**(No Option 3)**	**(No Option 4)**
	Some potential benefits	Potentially significant	n/a	n/a

9.2 Recommendations

This report has assessed the potential impacts of options, including no action, within a range of different policy areas. The findings indicate that he no change options would risk continuation of the current situation, where conflicts and uncertainty about uses of the marine environment could result in costly delays, less efficient use of marine space and deterioration of the marine environment. There may be some short-term benefits from this option, in that policy-makers, businesses and marine users will not

have to change their behaviour. However, it is likely in the longer term that political and economic pressures on the marine environment will ultimately require alternative solutions and consequent modifications in activity.

Although the options for change to the system involve costs for the Scottish Government and for other stakeholders, the benefits are potentially significant. For example, A 1% increase in gross added value from the marine economy could generate benefits of £294 million over 20 years. There would also be significant non-economic benefits.

The analysis indicates that the greatest net benefits are likely to result from a new approach to managing the marine environment which incorporates:

- a new system of statutory marine planning for the sustainable use of Scotland's seas;
- a streamlined and modernised marine licensing and consent system in order to reduce administrative burden;
- implementing new measures and policies for nature conservation (including reform of seal licensing and conservation and new measures to protect Scotland's most important marine historic assets)
- developing a marine science strategy; and
- setting up a new structure, Marine Scotland, to deliver sustainable seas for all.

Although there is considerable uncertainty over many of the costs and benefits, because they will depend upon the specific measures adopted, the summary tables indicate that the benefits of the preferred policy options are likely to outweigh the costs significantly, whist the 'do nothing' option has few benefits and could incur significant costs, in terms of failure to meet objectives and reduced productivity from the marine environment.

ANNEX 1

EXAMPLES OF THE IMPACTS OF CONFLICTS IN THE MARINE ENVIRONMENT

A1.1 SECTORAL CONFLICTS

Offshore Wind and Gas Pipelines

A Round 2 Windfarm was reportedly proposed, and a site subsequently allocated, off the Humber Estuary. Towards the end of the process, a conflict was identified with a pipeline carrying gas from Norway to Easington that was due to become operational in 2007. If this conflict had been properly identified earlier in the process, there would have been no need to resolve the conflict and to re-locate one or other of the projects at a potentially significant cost.
(Source: English Nature, together with some confirming information from the Renewable Power Association)

Aggregates and Offshore Wind

Scarweather Sands (off South Wales) was identified in the Welsh Assembly Marine Aggregate Dredging Policy (MADP) as a safeguarded future resource area for marine aggregates. Separately, a wind farm was proposed for Scarweather Sands. This progressed almost all of the way through the consent process before consideration was given to the implications for marine aggregates. The wind farm site has now secured approval and the area is no longer safeguarded for aggregates.
(Source: English Nature and the British Marine Aggregates Producers Association)

Aggregates and Pipelines

A pipeline laid through an existing marine aggregate production licence area may sterilise a significant volume of licensed and consented aggregate resource. There is no data available at present on the cost implications of this sterilisation. However, in terms of a rough order of magnitude, assuming a 250 m dredging exclusion zone on either side of the cable to protect its integrity and an aggregate resource depth of 2 m, 1 km of pipeline (or cable) laid over an aggregate resource will sterilise 1 million m^3 of aggregate resource. This is equivalent to 1.7 million tonnes of aggregate with a value of £8.5 million at the wharf (i.e. the financial value of the resource rather than the economic added value). This example highlights the fact that conflicts can still arise between activities consented under the current regime and that the potential cost of these is very large (Source: BMAPA). BMAPA noted that some major assumptions underlay this estimate - namely that the distribution of the resource thickness and quality is consistent across the entire area. Nevertheless, BMAPA concluded that the costing gave a good indication of the potential financial implications of poorly informed planning.

A1.2 CONFLICTS WITH ENVIRONMENTAL OBJECTIVES

Mobile Fishing Gear use in Lamlash Bay

The Community of Arran Seabed Trust (COAST) has run a ten-year campaign against the use of mobile fishing gear in Lamlash Bay due to concerns over the impacts on marine life, in particular, maerl beds. A system of marine spatial planning provides a structure that better enables involvement of the local community in decision-making. They argue that with such a system in place they would not have had to wait 10 years to have their petition and evidence on the case heard by the Scottish Parliament Environment and Rural Development Committee.
(Source: Scottish Environment Link (2007). A Marine Bill for Scotland: Urgently needed to sustain Scotland's seas)

Ship-ship oil transfers in the Firth of Forth

An application was made by Melbourne Marine Shipping in 2007 for ship-to-ship oil transfers in the Firth of Forth. This would increase the risk of oil spills by a third in an area considered internationally important for wildlife. The application has met widespread opposition from the affected local councils (Fife, Edinburgh and the Lothians), Scottish Executive, Scottish Natural Heritage and the public. The issue is complicated by a number of weaknesses in the current management system:

- 8 pieces of legislation/regulations are relevant to the dispute;
- The Maritime and Coastguard Agency could only consult on changes to oil spill contingency plans. It had no overall powers of consent;
- Scottish Ministers has no powers to reject the plans since oil transfer is a reserved matter;
- There is no formal process for the public to object to the plans except through limited consultations;
- Forth Ports, a commercial organisation with a vested interest in the scheme, are recognised as the competent authority that can make a final decision on whether to consent or not;
- A complaint was made to the European Commission but due to the above issues it is not clear where responsibilities lie.

Such conflicts would be minimised if a system of marine spatial planning were in place that identified appropriate areas for oil transfer that did not threaten nature conservation interests. It would also facilitate stakeholder involvement in such decisions and clarify the process of consent and responsibility.
(Source: Scottish Environment Link (2007). A Marine Bill for Scotland: Urgently needed to sustain Scotland's seas)

Port Mostyn

Although the Port of Mostyn has had ongoing licensing issues since development in the early 1990s, this example focuses on more recent experiences surrounding applications for maintenance dredging. The Port applied to DfT for CPA licence in Oct 2001, to MCEU for FEPA for dredge removal in Oct 2001 and for dredge

disposal in July 2003. The Environment Agency Wales were involved under the Land Drainage Act 1991 following application for consent in August 2003. Therefore the Regulators involved in this case were the Environment Agency, WAG and Department for Transport (DfT) with the EA leading the case. The Regulators decided that they must act in concert on any action under the various process arrangements of the different bodies. From the point of view of the main consultant involved in the EIA for the Port, this resulted in:

- delay due to difficulties in convening meetings between the Regulators for their internal communications and for communications with the Port;
- attendance at meetings by many people, there were generally more than ten and on some occasions more than fifteen for the Port development;
- tendency to be over-cautious. Marine projects always carry an element of risk and the more people involved in taking a decision on such projects, tends to lever the decision towards the ultra-cautious end of the spectrum;
- tendency to require more studies and data interpretation than was required to achieve an informed position on the issues;
- involvement of technical administrators and managers in scientific detail for which they were not qualified or not up to date on current knowledge;
- an involvement of higher levels of management in each of the regulatory bodies to 'make sure' all was in strict order and that their organisation would not subsequently be vulnerable to criticism.

The additional costs incurred as a result of matters listed above are estimated to be over £100,000. In addition, the Port incurred commercial costs associated with delays, unclear requirements and changing of position by the Regulators. The development undertaken by the Port including the navigation channel cost £17.5 million. This development was then frustrated by the absence of consents to maintenance dredge resulting in lost revenue from the Ro-Ro terminal of £1.3 million per annum. In addition the Ro-Ro operator (P&O) claimed damages in excess of £20 million for the failure to maintain navigation - the claim was settled at £9.0 million.

Port developments such as that at Mostyn in the Dee Estuary have the potential to effect the estuary as a whole and the Regulators were firmly of the view that supporting studies therefore needed to cover the whole of the estuary. However, although the Habitats Regulations were issued in 1994 there had been no significant strategic monitoring of the Dee Estuary in the late 1990's and early 2000s. As a consequence, the Port has been required to fund studies of the whole estuary with no sharing of costs among other users and regulators of the estuary. One exception to this was the recent development of LiDAR surveys in 2003 and 2006.

Shell Flats Offshore Wind Farm

Three Round 1 proposals to site 30 turbine wind farms on Shell Flats (Irish Sea) were subsequently merged into one 90-turbine project. At around the same time as the site was awarded to the consortium, the developer's environmental surveys in support of the application identified the Common Scoter (a red list bird). Further investigation revealed that the site was very significant indeed, supporting up to 20,000 birds,

making it the second most important site for the bird in the British Isles. The importance of the site until this time had not been realised by conservation agencies or others.

As time progressed it was realised that the significance of the site could not be ignored. English Nature reportedly worked with the developer over a period of two to three years to identify an alternative site. The location of the proposed development was moved slightly northwards, to obtain a balance between the conflicts. It was only then recognised that the new proposed location for the development impinged on maritime navigation, in particular, with the Isle of Man Ferry (which, if the development proceeded would have to divert around the site).

Negotiation continues concerning the development. However, the developer's position is that the wind farm will be completed at this location and the navigation route will have to be diverted. Interestingly, the developer acknowledged that, had it been known that the site was so environmentally significant, the proposal would probably not been lodged in that location. It was also acknowledged that, had migration and bird data been available from the oil and gas SEA for the area (SEA6) this would have enabled the developers to identify the environmental conflict at the outset, and this would have had a significant bearing on where to locate the wind farm proposals in the first place.
(*Source: Scottish Power and English Nature*)

London Array

Plans to build the London Array, an offshore wind farm of up to 341 turbines off the coast of southeast England, were approved by ministers in December 2006. Studies have been underway since 2001 and the application for a consent was submitted in June 2005. Studies over the last two years have identified that the area is important for the Red Throated Diver (an Annex 1 species under the Birds Directive), which until the studies had been undertaken had not been previously known. The area may soon be designated as an SPA under the Habitats Directive. Ministers indicated that they would approve the 90 square mile (230 sq km) development only if a first phase of 175 turbines did not damage a 7,000-strong bird colony that spends the winter on waters nearby. Swale Borough Council refused permission for a substation in Graveney, Kent.
(Source: English Nature and The Guardian (19.12.2006) 'World's biggest offshore wind farm approved for Thames estuary site')

Scarweather Sands Offshore Windfarm

Uncertainties surrounding the implications of construction-related noise on marine mammals in Swansea Bay resulted in delays to the issuing of a FEPA construction licence for the development. The main uncertainty related to the usage of Swansea Bay by harbour porpoise and resulted in the developer committing to a £500,000 monitoring programme to improve knowledge of porpoise activity in the Bay. The costs of delay in obtaining the FEPA licence have been considerable but have not been quantified.
(Source: English Nature and the British Marine Aggregates Producers Association)

Dibden Bay Container Terminal

The incompleteness of the SPA network at the time that the Dibden Bay Container Terminal was being promoted resulted in an area of land proposed for port development being subject to SSSI and SPA designation during the development application process. This complication created additional work for the project promoter in seeking to comply with the requirements of the Habitats Directive. The application was subsequently refused, partly on nature conservation grounds.

The final cost of the consents and public enquiry process for the proposed Dibden Bay container terminal was estimated by ABP at between £40 and £50 million. The developer's application was not successful owing to a number of environmental conflicts that might have been more explicit had marine planning been in place.

Immingham Outer Harbour Ro/Ro Terminal

The incompleteness of the SPA network resulted in a legal challenge to the Secretary of State for Transport's proposal to grant a Harbour Revision Order (HRO) to ABP for the construction of a ro/ro terminal in the Humber Estuary. The challenge was brought by a rival port developer inter-alia on the basis that the Secretary of State had incorrectly applied the test for imperative reasons of over-riding public interest (IROPI).

The Immingham Outer Harbour ro/ro terminal involved the loss of 22ha of intertidal area on the Humber Estuary. The area was designated as a provisional Special Protected Area at the time of the application for an HRO. The project promoter had treated the area as if it was already designated as an SPA and a comprehensive mitigation and compensation package had been agreed with statutory and non-statutory stakeholders. In making the case for the Order, the Secretary of State had suggested that the project should proceed on the grounds of IROPI as defined in the Habitats Directive. The legal challenge suggested that, in line with a previous judgement from the European Court of Justice (ECJ) - the so called Basses Corbieres judgement, the Secretary of State should have considered IROPI in the narrower context set out in the Birds Directive, which could have resulted in the Order being refused.

The legal challenge was not upheld and the Department for Transport (DfT) was awarded costs. The costs to all the various parties in relation to the legal challenge have not been disclosed but are likely to have been significant. In addition, the legal hearing resulted in a delay of five months to the construction programme.
(*Source: ABP*)

Immingham Outer Harbour/Quay 2005

In 2006, Associated British Ports implemented two managed realignment schemes as part of an agreed compensation package for port development impacts at Immingham and Hull. The two managed realignment schemes created new intertidal area of

around 60ha, to offset losses of intertidal area of up to 30ha from the two port developments.

At the time of the developments, the affected intertidal areas were designated as provisional SPA and SAC. However, ABP was mindful of the need to take account of their potential status and committed to providing a comprehensive compensation package for the developments. The costs to ABP of constructing the compensation measures, including costs associated with obtaining planning consent were approximately £3.3m (Source: ABP internal accounts). The costs to Government (including Agencies and local authorities) are estimated by ABP to be around £36,000, based on attendance at meetings and correspondence.

Lappel Bank/Fagbury Flats

In the late 1980s/early 1990s, the UK Government approved two separate port developments at Lappel Bank in the Medway estuary (Kent) and Fagbury Flats in the Orwell Estuary (Suffolk) which resulted in a total loss of 54ha of intertidal mudflats.

At the time of granting planning approval, the areas had not been designated as Special Protection Areas under the Birds Directive, although they clearly contributed to supporting bird populations of qualifying interest. The UK Government took the view that, because the areas were not designated, there was no requirement to provide compensation measures under the Directive. Following a judgement in the European Court, the Government committed to providing compensation measures for these losses in accordance with the requirements of the Habitats and Birds Directives. In 2006, the compensation was provided through a 107ha managed realignment scheme at Wallasea on the Crouch Estuary (Essex) at a cost of around £7.5m.
(*Source: ABPmer*)

While the Lappel Bank/Fagbury Flats case provides an example of an avoidable cost to Government, similar levels of cost would probably have been incurred by the relevant developers had a clearer interpretation of the requirements of the Birds Directive been available at the time that the development applications were determined.

Extension of Felixstowe Trinity III Terminal

The extension of the Trinity III terminal was predicted to result in a number of impacts to the Stour & Orwell Estuaries SPA, including direct loss of around 3ha of intertidal area within the footprint of the port development and enhanced erosion of intertidal areas within the SPA as a result of sediment interruption. A comprehensive mitigation and compensation package was put in place involving:

- Creation of 16ha of intertidal area at Trimley marshes;
- Intertidal sediment recharge schemes at Shotley and Trimley;
- Sediment by-pass scheme to minimise risks of intertidal erosion.

The cost of creating the new habitat at Trimley Marshes was £1.2m. The sediment by-pass scheme has effectively been cost neutral as a result of careful choice of dredging

plant to deliver the sediment by-pass scheme in accordance with the requirements of the mitigation agreement.
(Source: Port of Harwich official)

Paull Holme Strays

In 2003, the Environment Agency implemented an 80ha managed realignment scheme at Paull Holme Strays on the Humber Estuary as agreed compensation for ongoing and certain future flood defence works on the estuary. The cost of delivering the compensation was approximately £7.5million.
(Source: Philip Winn, EA, pers.comm.)

ANNEX 2

TIMING OF COSTS OF NATIONAL AND REGIONAL MARINE PLANNING

Table A2.1: Timings and Costs for Scottish National Plan																					
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
Undiscounted Costs (£000, 2008 prices) Incurred in Each Year																					
Data management	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150	150
Initial plan preparation	252	252	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial SEA	125	125	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Running costs	0	0	287	287	287	287	287	287	287	287	287	287	287	287	287	287	287	287	287	287	287
Review of the plan	0	0	0	0	0	0	504	0	0	0	0	504	0	0	0	0	0	0	0	0	0
Total (undiscounted)	527	527	437	437	437	437	941	437	437	437	437	941	437	437	437	437	437	437	437	437	437
Discounted Costs (£000, 2008 prices)																					
Discount rates	0.97	0.93	0.90	0.87	0.84	0.81	0.79	0.76	0.73	0.71	0.68	0.66	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.50	0.49
Data management	145	140	135	131	126	122	118	114	110	106	103	99	96	93	90	87	84	81	78	75	73
Initial plan preparation	243	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Initial SEA	121	117	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Running costs	0	0	258	250	241	233	225	218	210	203	196	190	183	177	171	165	160	154	149	144	139
Review of plan	0	0	0	0	0	0	396	0	0	0	0	334	0	0	0	0	0	0	0	0	0
Total (discounted)	**509**	**492**	**394**	**380**	**368**	**355**	**739**	**331**	**320**	**309**	**299**	**622**	**279**	**270**	**261**	**252**	**243**	**235**	**227**	**219**	**212**

Table A2.2: Timings and Costs for Regional Plans										
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Discount rates	0.966184	0.933511	0.901943	0.871442	0.841973	0.813501	0.785991	0.759412	0.733731	0.708919
Lower bound (9 plans in total, 2 prepared every 2 years @lower range of estimated costs)										
Undiscounted Costs	Plans 1 and 2		Plans 3 and 4		Plans 5 and 6		Plans 7 and 8		Plan 9	
Initial costs preparation	1,890,000	1,890,000	1,890,000	1,890,000	1,890,000	1,890,000	1,890,000	1,890,000	945,000	945,000
Implementation			400,000	400,000	800,000	800,000	1,200,000	1,200,000	1,600,000	1,600,000
Reviews							680,000		680,000	
sub-totals	1,890,000	1,890,000	2,290,000	2,290,000	2,690,000	2,690,000	3,770,000	3,090,000	3,225,000	2,545,000
Discounted Costs										
Initial costs preparation	*1,826,087*	*1,764,335*	*1,704,672*	*1,647,026*	*1,591,329*	*1,537,516*	*1,485,523*	*1,435,288*	*693,376*	*669,928*
Implementation			*360,777*	*348,577*	*673,579*	*650,801*	*943,189*	*911,294*	*1,173,970*	*1,134,270*
Reviews							*534,474*		*498,937*	
Sub-totals	*1,826,087*	*1,764,335*	*2,065,449*	*1,995,603*	*2,264,908*	*2,188,317*	*2,963,186*	*2,346,582*	*2,366,282*	*1,804,198*
Upper bound (13 plans in total, 3 plans every 2 years @ upper range of estimated costs)										
Undiscounted costs	Plans 1 to 3		Plans 4 to 6		Plans 7 to 9		Plans 10 to 12		Plan 13	
Initial costs preparation	3,840,000	3,840,000	3,840,000	3,840,000	3,840,000	3,840,000	3,840,000	3,840,000	1,280,000	1,280,000
Implementation			600,000	600,000	1,200,000	1,200,000	1,800,000	1,800,000	2,400,000	2,400,000
Reviews							2,025,000		2,025,000	
Sub-totals	3,840,000	3,840,000	4,440,000	4,440,000	5,040,000	5,040,000	7,665,000	5,640,000	5,705,000	3,680,000
Discounted Costs										
Initial costs preparation	*3,710,145*	*3,584,681*	*3,463,460*	*3,346,338*	*3,233,177*	*3,123,842*	*3,018,205*	*2,916,140*	*939,176*	*907,416*
Implementation			*541,166*	*522,865*	*1,010,368*	*976,201*	*1,414,784*	*1,366,941*	*1,760,954*	*1,701,405*
Reviews							*1,591,632*	-	*1,485,805*	-
Sub-totals	*3,710,145*	*3,584,681*	*4,004,626*	*3,869,203*	*4,243,545*	*4,100,043*	*6,024,621*	*4,283,081*	*4,185,935*	*2,608,821*

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Table A2.2: Costs and Timings for Regional Plans (contd)											
Year	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2077**	**2028**	**2029**
Discount rates	0.684946	0.661783	0.639404	0.617782	0.596891	0.576706	0.557204	0.538361	0.520156	0.502566	0.485571
Lower bound (9 plans, 2 plans every 2 years @ lower range of estimated costs)											
Undiscounted costs											
Initial costs preparation	n/a										
Implementation	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
Reviews	680,000	680000	680000	680000	340000	680000		680000		340000	
sub-totals	2,480,000	2,480,000	2,480,000	2,480,000	2,140,000	2,480,000	1,800,000	2,480,000	1,800,000	2,140,000	1,800,000
Discounted Costs											
Initial costs preparation	*n/a*										
Implementation	*1,232,902*	*1,191,210*	*1,150,927*	*1,112,007*	*1,074,403*	*1,038,071*	*1,002,967*	*969,050*	*936,280*	*904,619*	*874,028*
Reviews	*465,763*	*450,013*	*434,795*	*420,092*	*202,943*	*392,160*	-	*366,086*	-	*170,872*	-
Sub-totals	*1,698,665*	*1,641,223*	*1,585,722*	*1,532,099*	*1,277,346*	*1,430,231*	*1,002,967*	*1,335,136*	*936,280*	*1,075,491*	*874,028*
Upper bound (13 plans, 3 plans every 2 years @ upper range of estimated costs)											
Undiscounted costs											
Initial costs preparation	n/a										
Implementation	2,600,000	2,600,000	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000	2,800,000
Reviews	2,025,000	2,025,000	2,025,000	2,025,000	675,000	2,025,000		1350000		675000	
Sub-totals	4,625,000	4,625,000	4,825,000	4,825,000	3,475,000	4,825,000	2,800,000	4,150,000	2,800,000	3,475,000	2,800,000
Discounted costs											
Initial costs preparation	*n/a*										
Implementation	*1,780,859*	*1,720,637*	*1,790,332*	*1,729,789*	*1,671,294*	*1,614,777*	*1,560,171*	*1,507,411*	*1,456,436*	*1,407,184*	*1,359,599*
Reviews	*1,387,015*	*1,340,111*	*1,294,793*	*1,251,008*	*402,901*	*1,167,829*	-	*726,788*	-	*339,232*	-
Sub-totals	*3,167,874*	*3,060,748*	*3,085,125*	*2,980,797*	*2,074,195*	*2,782,606*	*1,560,171*	*2,234,199*	*1,456,436*	*1,746,416*	*1,359,599*