|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Title:** Designation of the second tranche of Marine Conservation Zones in waters for which the Secretary of State has responsibility (English inshore, English, Welsh and Northern Irish offshore)    IA No:      Defra 1810  Lead department or agency:  Department for Environment, Food and Rural Affairs  Other departments or agencies: | | | |  | | --- | | Impact Assessment (IA) | | Date: [08th October 2014] | | Stage: Consultation | | Source of intervention: | | Type of measure: Secondary Legislation | | Contact for enquiries: MCZ Consultation Inbox [mcz@defra.gsi.gov.uk](mailto:mcz@defra.gsi.gov.uk) | |  | |  | |  | |  | |  | |  | | | |
| Summary: Intervention and Options | | | **RPC Opinion:** Green | | |
|  | | | | | |
| Cost of Preferred (or more likely) Option | | | | |
| Total Net Present Value | Business Net Present Value | Net cost to business per year (EANCB on 2009 prices) | In scope of One-In, Two-Out? | Measure qualifies as |
| £-31.87m | £-3.40m | £0.18m |  |  |
| What is the problem under consideration? Why is government intervention necessary?  A biologically diverse marine environment is of high value to society and there is evidence that the quality of the UK marine environment has declined over recent decades. Market failure in the marine environment occurs because no monetary price is attached to many goods and services it provides and market mechanisms cannot ensure that actions are fully paid for by users. In such a case, individuals do not have an economic incentive to contribute effort to secure their continued existence. It is necessary therefore for government to intervene and designate sites that will protect nationally representative, rare and threatened and/ or valuable species and habitats and deliver a network of Marine Conservation Zones for significant and long term benefits to both users and non-users. | | | | |

|  |
| --- |
| What are the policy objectives and the intended effects?  The Government aims to have ‘clean, healthy, safe, productive and biologically diverse oceans and seas’. Contributing to an ecologically coherent network of Marine Protected Areas (MPAs) is an essential part of the strategy to achieve this. Marine Conservation Zones (MCZs - a type of MPA) are an essential component of the network. The Government has a legal duty to designate MCZs under the Marine and Coastal Access Act 2009 (MCAA) in order that those sites (taken together with other UK conservation sites) contribute to the achievement of a marine conservation network. The designation of MCZs will help deliver the Government’s aim of a well-managed network of MPAs that is understood and supported. |

|  |
| --- |
| What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)  Option 0 or the “do nothing option” for which no further zones would be designated. This is not a viable policy option because section 123 of the MCAA places a legal obligation on Government to contribute to the creation of a network of marine protected areas including MCZs.  Option 1 (preferred) – designating the 2nd tranche of 23 MCZs and some additional features in the 1st tranche in 2015, identified to fill big ecological gaps in the network and with sufficient supporting evidence (both ecological and economic), thus making a further contribution to the English component of an effective and well-managed network of MPAs as required by MCAA. This option balances ecological benefits of designation with the socioeconomic implications to deliver a proportionate and cost-effective contribution to the MPA network. The phased, evidence based approach undertaken to designate MCZs was announced by Ministers in 2011. |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Will the policy be reviewed? It  be reviewed. If applicable, set review date: 2018 | | | | | | |
| Does implementation go beyond minimum EU requirements? | | | N/A | | | |
| Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base. | **Micro**  Yes | **< 20**  Yes | **Small**  Yes | **Medium**  Yes | | **Large**  Yes |
| What is the CO2 equivalent change in greenhouse gas emissions?  (Million tonnes CO2 equivalent) | | | Traded:  N/A | | Non-traded:       N/A | |

I have read the Impact Assessment and I am satisfied that (a) it represents a fair and reasonable view of the expected costs, benefits and impact of the policy, and (b) that the benefits justify the costs.

|  |  |  |  |
| --- | --- | --- | --- |
| Signed by the responsible: Minister |  | Date: |  |

# Summary: Analysis & Evidence Policy Option 1

Description: Designating a second tranche of 23 MCZs in 2015 identified to fill big ecological gaps in the network and with sufficient supporting evidence (both ecological and economic), thus making a further contribution to the English component of an effective and well-managed network of MPAs as required by MCAA.

FULL ECONOMIC ASSESSMENT

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Price Base Year 2013 | PV Base Year 2015 | Time Period Years 20 | Net Benefit (Present Value (PV)) (£m) | | |
| Low: -51.45 | High: -30.32 | Best Estimate: -31.86 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| COSTS (£m) | Total Transition   (Constant Price) Years | | Average Annual  (excl. Transition) (Constant Price) | Total Cost  (Present Value) | |
| Low | 7.6 | 6 | 1.7 | 30.3 | |
| High | 12.9 | 2.8 | 51.4 | |
| Best Estimate | 7.6 | 1.8 | 31.9 | |
| Description and scale of key monetised costs by ‘main affected groups’  Best estimate average annual costs (undiscounted including transition one off costs): Industry Costs: ports, harbours (£0.123m); oil and gas (£0.049m); commercial fisheries (£0.035m); aggregate extraction (£0.011m); renewable energy (£0.007m); cables (£0.001m); Public Costs average annual: ecological surveys (£1.171m); management (£0.751m); national defence (£0.002m). | | | | | |
| Other key non-monetised costs by ‘main affected groups’  For sectors where the occurrence of future projects is highly uncertain, costs have not been quantified (e.g. archaeology). There are potential impacts on local communities from restriction/ management of fisheries. Other public sector costs such as costs to inform users about MCZs (including setting up educational programmes), advice to public authorities on impacts of proposed licensed activities to MCZs, and costs to the public authorities considering the advice have not been monetised. | | | | | |
| BENEFITS (£m) | Total Transition   (Constant Price) Years | | Average Annual  (excl. Transition) (Constant Price) | Total Benefit  (Present Value) | |
| Low | Optional |  | Optional | Optional | |
| High | Optional | Optional | Optional | |
| Best Estimate | Unquantified | Unquantified | Unquantified | |
| Description and scale of key monetised benefits by ‘main affected groups’  A number of the expected benefits of MCZs have been monetised only for illustrative purposes within this IA. Due to uncertainty concerning the scale of benefits calculated, they have not been included in the summary sheets | | | | | |
| Other key non-monetised benefits by ‘main affected groups’  A combined area of approximately 10,812km2 will be protected by designation of the 2nd tranche MCZs and 252 features. These are likely to result in an increase in final ecosystem services (benefits) such as increases in provisioning (i.e. fish provision), regulating (i.e. climate regulation), supporting (i.e. nutrient cycling) and cultural (i.e. recreational) services. An overall network of marine protected areas is likely to have additional benefits such as conservation of marine biodiversity, protection or enhancement of ecosystem services and recovery of depleted stocks of exploited species. | | | | | |
| **Key assumptions/sensitivities/risks** Discount rate (%) | | | | | 3.5 |
| Following site designation 75% of affected fishing effort (landings value /GVA) assumed displaced and 25% lost (this assumption was tested and validated in the consultation on the 1st tranche of MCZs). In addition, the IA uses various sensitivity scenarios to provide high/ low estimates where possible for application costs associated to future developments from MCZs designation. The need for mitigation of the impacts of licensed activities on broad scale habitats protected by MCZs is negligible due to small footprint of the activities compared to the overall broad-scale area protected. | | | | | |

BUSINESS ASSESSMENT (Option 1)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Direct impact on business (Equivalent Annual) £m: | | | In scope of OITO? | Measure qualifies as |
| Costs: 0.18 | Benefits: Unquantified | Net: -0.18 | Yes | IN |

**Evidence Base** **(for summary sheets)**

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**List of Acronyms**

|  |
| --- |
| AT – Angling Trust |
| BMAPA – British Marine Aggregate Producers Organisation |
| BS – Balanced Seas Conservation Zones Project |
| BSAC – British Sub Aqua Club |
| BSH – Broad Scale Habitat |
| CCS – Carbon Capture and Storage |
| CEFAS – Centre for Environment, Fisheries and Aquaculture Science |
| CFP – Common Fisheries Policy |
| CVM – Contingent Valuation Method |
| DECC – Department for Energy and Climate Change |
| DEFRA – Department for the Environment, Food and Rural Affairs |
| EA – Environment Agency |
| EANCB – Estimated Annual Net Cost to Business |
| EH – English Heritage |
| EIA – Environmental Impact Assessment |
| EMS – European Marine Site |
| ENG – Ecological Network Guidance |
| EU – European Union |
| FCERM – Flood and Coastal Erosion Risk Management |
| FOCI – Feature of Conservation Importance (including HOCI and SOCI) |
| FS- Finding Sanctuary Conservation Zones Project |
| GMA – General Management Approach |
| GVA - Gross Value Added |
| HOCI – Habitat of Conservation Importance |
| IA – Impact Assessment |
| ICES – International Council for the Exploration of the Seas |
| IFCA - Inshore Fisheries and Conservation Authority |
| ISCZ - Irish Sea Conservation Zones |
| JNCC - Joint Nature Conservation Committee |
| MCAA – Marine and Coastal Access Act 2009 |
| MCS – Marine Conservation Society |
| MCZ – Marine Conservation Zone |
| MEA - Millennium Ecosystem Assessment |
| MESAT – Maritime Environmental Sustainability Appraisal Tool |
| MMO – Marine Management Organisation |
| MoD – Ministry of Defence |
| MPA – Marine Protected Area |
| MSFD – Marine Strategy Framework Directive |
| NE – Natural England |
| NG - Net Gain Marine Conservation Zone Project |
| OSPAR – Oslo-Paris Convention for the Protection of the marine Environment of the North-East Atlantic |
| pMPA – Potential Marine Protected Area |
| PO – Producers Organisation (Fishing) |
| PV – Present Value |
| RA – Reference Area |
| RAMSAR sites - marine components of RAMSAR sites[[1]](#footnote-1) |
| RA – Reference Areas |
| SAC - Special Areas of Conservation (SAC)[[2]](#footnote-2) |
| SAP – Science Advisory Panel |
| SNCB – Statutory Nature Conservation Body (collective term for Natural England and the Joint Nature Conservation Committee) |
| SOCI – Species of Conservation Importance |
| SPA - Special Protection Areas (SPA)[[3]](#footnote-3) |
| SSSIs - Sites of Special Scientific Interests[[4]](#footnote-4) |
| UK BAP - UK Biodiversity Action Plan |
| UKHO – UK Hydrographic Office |
| UKMMAS - UK Marine Monitoring and Assessment Strategy |
| UKNEA – UK National Ecosystem Assessment |
| VMS – Vessel Monitoring System, used to track the location of vessels |
| WCA – Wildlife and Countryside Act |
| WFD – Water Framework Directive |

# Policy Background

* 1. With a coastline of over 12,429 km, the UK has a large marine area rich in marine life and natural resources. It is important to recognise that the seas around the UK are not just places of important biological diversity; they also provide us with a variety of goods and services. This makes the marine environment essential to our social, economic and environmental well-being.
  2. To deliver the vision of clean, healthy, safe, productive, and biologically diverse oceans and seas, the Government and Devolved Administrations have committed to contributing to an ‘ecologically coherent’ network of Marine Protected Areas (MPAs). This network will protect rare, threatened and valuable habitats in the seas around the UK, with enough sites to conserve a range of major habitats vital for the health of our marine ecosystems. The network will comprise of Special Protection Areas (SPAs)[[5]](#footnote-5), Special Areas of Conservation (SACs)[[6]](#footnote-6), RAMSAR sites[[7]](#footnote-7), Sites of Special Scientific Interest (SSSIs)[[8]](#footnote-8), and Marine Conservation Zones (MCZs, see Box 1), created under Part 5 of the Marine and Coastal Access Act (MCAA) 2009 in England and Wales. Unlike other types of MPA, designation of MCZs can involve taking social and economic factors into account alongside environmental factors when identifying potential sites. MCZs, however, will complement (not duplicate) other types of designation and provide an essential component of the UK contribution to establishing an ecologically coherent network of MPAs. In the absence of MCZs, the full range of features present in the UK marine area would not be afforded protection.
  3. Department for the Environment, Food and Rural Affairs (Defra) is responsible for the MCZ process for non-devolved UK waters. These are comprised of English inshore waters (inside 12 nautical miles) and offshore waters adjacent to England, Wales and Northern Ireland (to 200 nautical miles or the agreed administrative boundary with neighbouring countries). The Devolved Administrations are running independent projects not examined here.
  4. In 2009 Defra invited the Statutory Nature Conservation Bodies (SNCBs) the Joint Nature Conservation Committee (JNCC) and Natural England (NE) to recommend possible MCZs to the Government which had stakeholder support. The SNCBs set up a project to give sea-users and interest groups (stakeholders including businesses) the opportunity to make recommendations through the establishment of four regional MCZ projects[[9]](#footnote-9). The SNCBs provided the Regional MCZ Projects with guidance on the criteria for selecting a network of MCZs in their regions, based on the OSPAR network design principles[[10]](#footnote-10) (the Ecological Network Guidance (ENG)) and project delivery guidance setting out the process that should be followed to select site locations and complete an Impact Assessment (IA) accompanying the site recommendations.
  5. In September 2011 recommendations for 127 MCZs were submitted to Government. Whilst recognising that the recommendations had come from a stakeholder-led process, significant concerns were raised about the state of the evidence base supporting the recommendations. As a result of these concerns, a Written Ministerial Statement in November 2011 announced that MCZ designations would be made in tranches with the best-evidenced sites designated first, revised the timetable for designation and announced additional funding to support further evidence gathering.
  6. Following evaluation of the recommendations from the Regional MCZ Projects and accompanying impact assessments, formal advice from the SNCBs and advice from the independent Science Advisory Panel, 31 MCZ recommendations were considered suitable for designation in the 1st tranche and consulted on publicly in early 2013. These sites were selected on the basis of providing good ecological benefits that outweighed the costs and where the level of certainty of the evidence was adequate. The accompanying Impact Assessment (Defra 1475[[11]](#footnote-11)) included the option of designating all the recommended sites from the Regional MCZ projects (all 127 sites presented as Option 1) and additionally the benefits and costs of designating the 31 sites proposed for the 2013 tranche of MCZs (known as Option 2). This allowed consultees to compare these two options available to Government against a baseline option of no MCZs.
  7. After careful consideration of the responses and evidence received during the public consultation, 27 MCZs were designated in November 2013 as the 1st tranche[[12]](#footnote-12), covering an area of around 9,700 sq km and protecting 162 features. The supporting impact assessment received a green opinion from the independent Regulatory Policy Committee (RPC).
  8. At this time Defra also announced future plans for MCZs which included a 2nd tranche in 2015 and a 3rd in 2016. These two further tranches aim to complete the English component of the UK’s contribution to an ecologically coherent network of MPAs and contribute to the achievement of good environmental status in our oceans by 2020 as required by the Marine Strategy Framework Directive (MSFD).
  9. The MCAA does not describe specific management actions to be taken for MCZs but places a duty on public authorities to consider the effect (where relevant) of the exercise of their functions on the protected features of an MCZ. The Marine Management Organisation (MMO) and Inshore Fisheries Conservation Authorities (IFCAs) are empowered to make appropriate management decisions on MCZs to ensure their protection. These may include voluntary arrangements, codes of practise, extra license conditions or introduction of byelaws. Any byelaw would be accompanied by an impact assessment and subject to public consultation.
  10. This IA is within the scope of the ‘One In Two Out’ (OITO) as the source of the legislation is domestic. It is classed as an ‘In’ as designation of MCZ sites could lead to the additional regulation of business through any management adopted by regulators to achieve the conservation objectives of the designation. All direct costs and benefits are calculated using OITO methodology in line with Green Book and Better Regulation Framework Manual guidance.

**Box 1: MCZs, Conservation Objectives and Management Measures**

**MCZs** are a type of Marine Protected Area (MPA). They protect areas that are nationally representative and important to conserving diversity and nationally rare or threatened habitats or species they contain. The features listed for designation will ensure the range of marine biodiversity in the UK’s seas is conserved and the condition of features are improved if they are currently in an unfavourable state and thus require additional management measures. A feature is one of the habitats, species or geological features that MCZs are intended to conserve. Examples of features include intertidal mixed sediment (habitat), Native Oyster (species) and North Sea glacial tunnel valleys (geological feature). Unlike other MPAs, designation of MCZs can take into account social and economic factors when identifying potential sites, alongside the best available scientific evidence.

For the purpose of the IA, the social and economic impact of designating MCZs is assessed based on the general management approach (GMA) of ‘maintain’ or ‘recover’ to favourable condition.

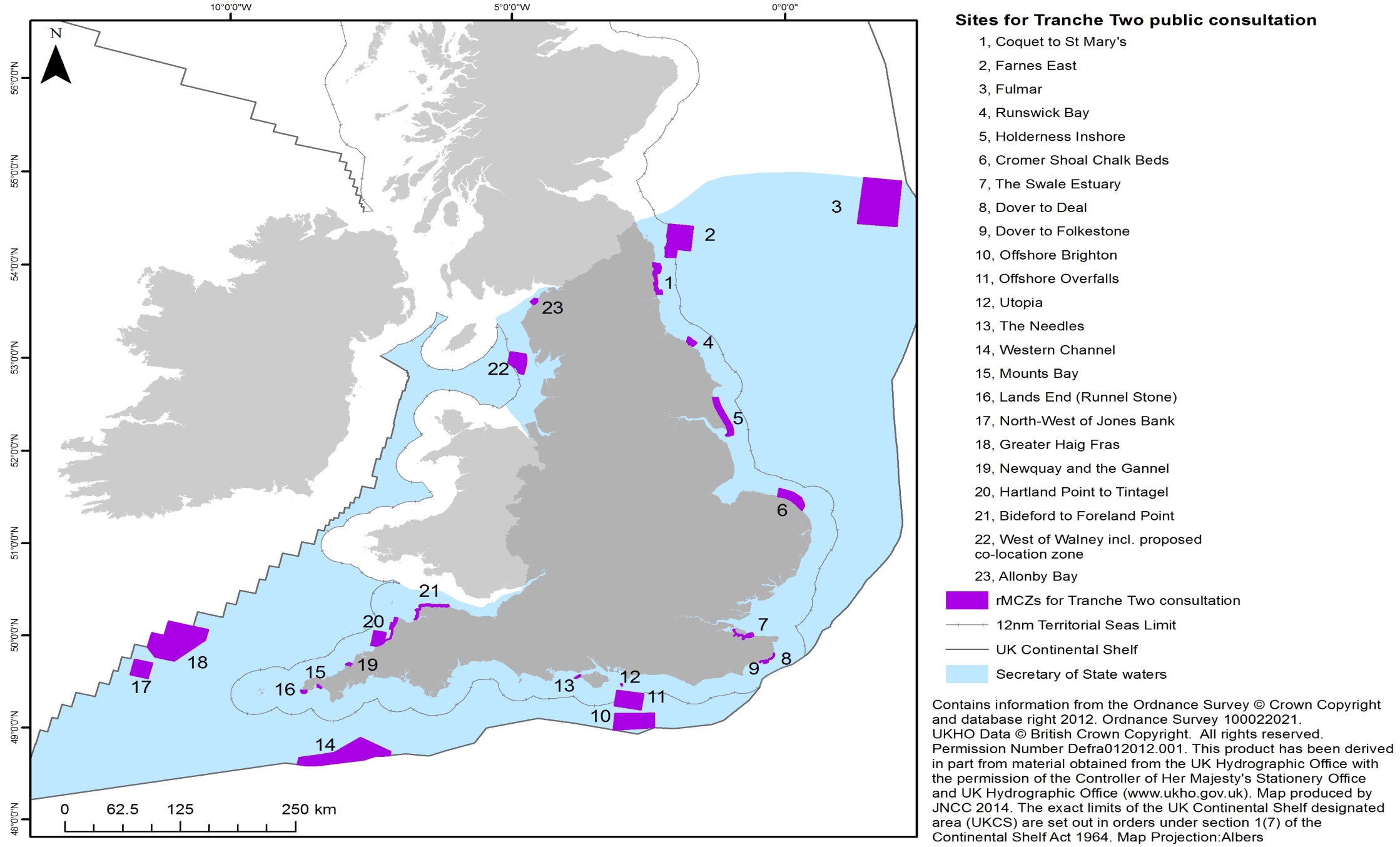
The GMA defines the change in feature condition being targeted, and hence has implications for the management of human activities that may impact on that feature.

Features with a GMA of ‘recover to favourable condition’ are assumed to be currently in unfavourable condition but, with MCZ designation and appropriate management they will recover to favourable condition over time. A feature attains favourable condition when its extent or population is stable or increasing, it has the structure and functions (or habitat) that are necessary for its long-term maintenance, and the quality and occurrence of habitats and the composition and abundance of species are in line with prevailing natural conditions (NE and JNCC, 2011).

Features with a GMA of ‘maintain in favourable condition’ are assumed to be currently in favourable condition. MCZ designation and continued appropriate management will protect the features against the risk of degradation from future, currently unplanned, human activities. Though it is assumed that in most cases mitigation of the impacts of human activities is not currently required, mitigation would, if necessary, be introduced in the future (with the consideration of associated costs and benefits).

# Problem under Consideration

* 1. This IA concerns the selection of the 2nd tranche MCZs for designation in waters for which the SoS is responsible (English inshore waters and English, Welsh and Northern Irish offshore waters) and the addition of features to already designated 1st tranche sites. These proposed sites and additional features are being considered as one package under the 2nd tranche The process for selecting MCZs for the 2nd tranche follows similar principles to the 1stand this IA largely follows the same approach and methodologies used in the IA for the 1st tranche of MCZs., which secured a green rated opinion through the RPC at the final stage post consultation. However, updated data and prices are used and where available new information for the purpose of the assessment of costs and benefits is considered.
  2. Defra initially identified 37 sites in February 2014 from the remaining 96[[13]](#footnote-13) recommendations from the Regional MCZ[[14]](#footnote-14) Projects as suitable candidates for the 2nd tranche. Sites which addressed ‘big gaps**[[15]](#footnote-15)**’ within the network (for example features that are not currently protected in a region, or only a small proportion is protected) were prioritised. Each of the candidate sites were considered in terms of the site’s potential contribution towards an ecologically coherent network of marine protected areas, adequacy of the supporting evidence, and associated social and economic costs and benefits from potential management scenarios.
  3. A period of pre-consultation dialogue with stakeholders ran from February until July 2014, involving meetings with representatives of the main industry sectors affected, conservation NGOs and local stakeholders. JNCC and NE updated their scientific advice on these sites, incorporating data from surveys conducted over the last two years and socio-economic information was also updated using the best available data sources and pre-consultation responses.
  4. In addition to designating 2nd tranche sites, gaps in the network can also be filled by designating additional features in sites that were established in the 1st tranche. These are features that either:
* did not have sufficient scientific evidence when the 1st tranche was designated last year, but subsequent surveys have improved the evidence available making the case for designation;
* were subject to a change in the General Management Approach (GMA) (i.e. a change from ‘maintain’ to ‘recover’) following the first tranche consultation and additional consultation is required to collect evidence on local management or socioeconomic impacts, or
* they are new, recently discovered on the sites, and important to cover ecological gaps
  1. Defra has identified 19 additional features in 10 designated 1st tranche sites that are suitable for inclusion in the consultation together with the recommended 2nd tranche sites. Before designating these features they need to be subjected to consultation and this is why they should be included in this IA. In all cases there are no additional costs to business, above those which would be incurred in the baseline, to designating these additional features in the 1st tranche sites as there are unlikely to be any additional management requirements over and above those already deemed necessary; thus there are no additional costs to those already captured in the previous impact assessment. More details are provided in the cost section and Annex F.
  2. Defra has identified 23 sites that are suitable to take forward to the consultation (Option 1), protecting 252 features (including the 19 features being added to the 10 1st tranche sites) of conservation importance. Fifteen of the sites are in English inshore waters (within 12 nautical miles from the coast) and 5 in English offshore waters (12-200 miles or the median line where our waters meet other Member State limits), with the remaining 3 sites crossing the 12 nautical mile boundary. The total area covered is 10,812 km2: approximately 2,500 km2 in the inshore and 8,300 km2 in the offshore. Further details on the 23 sites 2nd tranche sites are provided in Annex G.
  3. The remaining 14 sites of the original 37 candidate sites announced in February 2014 are not recommended for inclusion in the consultation as they are not a viable policy option as part of the second tranche and so are outside the scope of this impact assessment. Further work is needed on these sites, including discussions with local stakeholders, before they may be ready for consideration for inclusion in the 3rd tranche. These 14 sites are not considered in this impact assessment as they are not being proposed as part of the policy option..
  4. Chart 1 below lists the 23 sites recommended and agreed by Ministers to take forward to the consultation.



**Chart 1: The 23 sites recommended for the 2nd** **tranche of MCZs**

1. **Rationale for government intervention**
   1. A biologically diverse marine environment is of high value to society through the services that it provides and as a basis for human health and livelihoods (OSPAR, 2010). Fish landings and aquaculture from the marine environment have a market value, while non-traded services include flood control, recreation, research and education. Aside from its economic value to society, the natural environment has intrinsic or ‘non-use’ value[[16]](#footnote-16). Recent work by the Nation Ecosystem Assessment Follow-On (2014) supports this and in particular highlights the significant importance of ecosystem services, including less tangible cultural benefits, derived from a good quality marine environment[[17]](#footnote-17).
   2. Human activities are having a detrimental effect on the extent and condition of many diverse marine habitats and their ecosystems. OSPAR[[18]](#footnote-18) (2010) noted that ‘a reduction in the decline in biodiversity is still a long way off’, and that combined pressures from human activities are not fully understood and need to be carefully managed to avoid undesirable impacts. The most threatened marine and coastal habitats in the UK (as identified in the UK Biodiversity Action Plan (UK BAP)) are continuing to decline, and maintaining or increasing the extent and condition of priority habitats is more difficult in coastal and marine areas than in the terrestrial environment (JNCC, 2010).
   3. Alongside climate change the reduction in extent and condition of marine habitats and ecosystems is due to anthropogenic activities, hence the need for government intervention to address market failures associated with public goods and negative externalities to protect valuable features of the marine environment. Market failures occur when the market has not and cannot in itself be expected to deliver an efficient outcome.[[19]](#footnote-19) In the context of the marine environment these can be described as:

* Public goods – A number of goods and services provided by the marine environment such as climate regulation and biological diversity are ‘public goods’ (no-one can be excluded from benefiting from them and consumption of the service does not diminish the service being available to others). The characteristics of public goods mean that individuals do not necessarily have an economic incentive to voluntarily contribute effort or money to ensure the continued existence of these goods (HM Government, 2011a) leading to undersupply or in this case under-protection.
* Negative externalities – Negative externalities occur when damage to the marine environment is not fully accounted for by users. In many cases no monetary price is attached to marine goods and services therefore the cost of damage is not directly priced by the market. Even for those goods that are traded (such as wild fish), market prices often do not reflect the full economic cost, which ends up being borne by other individuals and society.
  1. Government intervention is required to redress both these sources of market failure in the marine environment. Designation of MCZs and associated management measures to conserve features (e.g. habitats, species) will ensure negative externalities are reduced or suitably mitigated by users. Designation will also support continued provision of public goods in the marine environment, for example the features listed for designation will ensure the range of marine biodiversity in our seas is conserved.
  2. In addition, an ecologically coherent network of MPAs will help meet the UK’s commitments to national and European legislation such as the MSFD and international agreements. MCZs are an essential component of this and Government has a legal duty to designate MCZs under the MCAA. The designation of MCZ will help to deliver the Government’s aim of a well-managed network of MPAs that is understood and supported by stakeholders.

# Policy objective and intended effects

* 1. The UK administrations have committed[[20]](#footnote-20) to contributing to an ecologically coherent UK network of MPAs as part of a broad based approach to nature conservation. However, neither English waters nor UK waters are a single ecological entity within a biogeographic[[21]](#footnote-21) context. Our aim therefore is for the UK MPAs to contribute to an ecologically coherent network on a biogeographic basis and as a UK contribution to the wider OSPAR network. The UK is contributing to the development of methodologies through OSPAR and will continue to work with the administrations to agree an approach across the UK.
  2. This network will contribute to achieving Good Environmental Status as required by the MSFD[[22]](#footnote-22) and particularly in helping to ensure that biodiversity and seafloor ecosystems are protected, conserved and where appropriate recovered.
  3. The UK has also made a number of international commitments including delivering a contribution to the ecologically coherent network of MPAs under OSPAR, and by 2020 having 10 per cent of coastal and marine areas within well-connected systems of protected areas which are effectively and equitably managed under the Convention of Biological Diversity[[23]](#footnote-23).
  4. Biodiversity 2020[[24]](#footnote-24) is the Government’s national strategy for people and wildlife and forms part of the UK’s commitments under the Convention of Biological Diversity (CBD). Targets for the marine environment include 25% of English waters to be contained within a well-managed MPA network that helps deliver ecological coherence by conserving representative marine habitats by 2016.
  5. The network required under the MCAA which includes the MCZs in ‘SoS’[[25]](#footnote-25) waters will contribute to meeting these national, european and international commitments. Designation of MCZs will help to ensure that conservation of habitats and species is given greater priority in the regulation and management of human activities, enabling protection of features and conservation objectives to be achieved. The aim of the policy option considered in this impact assessment is to designate the 2nd tranche of MCZs in line with the phased approach announced by the Fisheries Minister in 2011.
  6. Unlike other MPAs, the MCAA allows for the consideration of socio-economic impacts when designating MCZs. Weighing up conservation advantages against socio-economic costs was challenging because some of the economic impacts are expressed in monetary terms while the ecological and economic benefits are expressed largely in qualitative terms.
  7. For example, the 1st tranche of MCZ sites were assessed in terms of their contribution to a network of marine protected areas. The broad requirement for this was that the network should contribute to conservation improvement of the marine environment, represent the range of species and habitats, and that the conservation of a feature may require the designation of more than one site. The SNCBs identified detailed ecological targets[[26]](#footnote-26) to represent these broad requirements which also took account of the OSPAR network design principles which were provided as guidance to the Regional MCZ Projects. The SNCBs formal advice included a detailed assessment of how each MCZ recommended by the Regional Projects contributed to these targets and this is compared to socio-economic considerations to achieve these targets in the most cost effective way.
  8. This 2nd tranche follows the same rationale but differs in that additional information about ecological gaps in the network became available and therefore prospective sites could be considered against these gaps. Additional evidence had been collected for many sites which meant that many now have sufficient ecological evidence to be considered for designation. Socio-economic information and assumptions have also been updated. Some uncertainties on the scale of impacts, which may have precluded consideration of a site in the 1st tranche, have been reduced, for example uncertainty over impacts on the renewables sector where many developments have now been consented so will not incur extra costs as a result of future MCZs designations.

# Description of Options Considered

*Overview of Baseline Option*

* 1. Baseline (option 0) or the “do nothing option” is not a viable policy option in this instance because Section 123 of the MCAA places a legal obligation on Government to contribute to the creation of a network of MPAs. By designating MCZs, Government will have fulfilled this obligation. Also, Ministers have committed to designating MCZ sites in tranches. As such, the ‘do nothing option’ simply provides the baseline against which costs and benefits of the 2nd tranche MCZs are calculated (in line with IA guidance). The baseline encompasses all current protection and legislation, including the features already recognised under European Union (EU) or national lists, as illustrated in Figure 1[[27]](#footnote-27) below and the existing network of Marine Protected areas including the 27 MCZs designated as part of the 1st tranche in November 2013.
  2. Figure 1 shows that the effect of the activity (red triangle) on some of the features (Features of Conservation Importance (FOCI)) is already accounted for as these are already protected under existing legislation thus MCZ designation does not create additional costs.

**Figure 1: Illustrative MCZ and features under baseline**

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* 1. The current condition of features depends on how past and current activity (e.g. fishing, or industry developments) has or has not had an impact on the feature. Location-specific information on the condition of features in the proposed MCZs is not currently available in all locations. Knowledge of feature location and of activities that are occurring in that location was used and Vulnerability Assessments[[28]](#footnote-28) were carried out to assess whether each feature in each MCZ is likely to be in favourable or unfavourable condition and therefore whether a ‘maintain’ or ‘recover’ GMA would be required.
  2. We do not have location-specific information on when the condition of a specific feature is improving or degrading nor do we have evidence about how features will respond to possible impacts. We have therefore assumed that, at the same level of activity as currently experienced, the features will remain in their current favourable or unfavourable condition in the absence of MCZ designation i.e. under baseline conditions[[29]](#footnote-29). In other words, we assume a static baseline rather than a declining baseline where the feature condition continues to deteriorate in the absence of MCZs being designated. This approach is conservative and there is a risk that this assumption underestimates the long-term benefits associated with MCZs designation.
  3. This assumption could be challenged as there is likely to be a continued increase in human use of the marine environment over the 20 years of the IA and there is a risk that action may not be taken to keep this at the current level. Non-MCZ management of such activities may also act to reduce pressures despite increased activity levels e.g. successful implementation of EU fisheries policies and the Water Framework Directive. At a UK-wide scale, there may also be increased pressures on the marine environment from climate change[[30]](#footnote-30). Whilst there is a risk of increasing pressures to the overall marine environment, it is generally not possible to predict the likely changes for specific features in specific locations with our current level of knowledge.
  4. Assumptions on future activities (for example, licence applications for renewable energy developments) were made where feasible on a sector-by-sector basis and validated with industry and government bodies as appropriate.

*Overview of the preferred Option 1*

* 1. This option involves designating a second tranche of 23 MCZs, together with additional features in first tranche designated sites, in 2015 (preferred option)identified to fill big ecological gaps in the network and with sufficient supporting evidence (both ecological and economic), thus making a further contribution to the English component of an effective and well-managed network of MPAs. This option balances the ecological benefits of designation with the socioeconomic implications to deliver a proportionate and cost-effective contribution to the MPA network.
  2. Option 1 represents all the sites where there is sufficient ecological and socio-economic evidence to be considered as part of the 2nd tranche. There are a number of reasons why additional sites could not be considered for the second tranche, this is due to:
* insufficient evidence in presence and extent of features proposed with further evidence gathering needed,
* significantly high economic costs to one or more sectors which could be reduced with further consideration of potential management options,
* significant unquantified costs to one or more sectors, for example, on some sites where anchoring and mooring would need to be managed but the implications of this were not clear, in terms of potential costs to the ports and recreational sector,
* sites situated within the Welsh offshore area. The Secretary of State will be receiving separate advice with regards to the Silk Commission recommendation to transfer competence to the Welsh Assembly, therefore these sites have not been considered here.
  1. Option 1 represents the maximum number of sites we consider suitable to designate in the 2nd tranche. If during the consultation significant but currently unknown environmental and socio-economic impacts are identified for these particular sites then their inclusion will be reconsidered. Therefore while there is only one policy option above the baseline policy option, the consultation will help refine the final compilation of sites to be included in the 2nd tranche of MCZs.

1. **Costs under the baseline and preferred option**

***Costs under the baseline scenario***

* 1. The baseline includes a number of costs relating to *existing* marine protection and regulation, including the 27 1st tranche MCZs designated in 2013. These are not costs attributed to the designation of 2nd tranche MCZs because they are already incurred or will be incurred in the absence of any further MCZ designations[[31]](#footnote-31). They include:
* Costs of licence applications. In the baseline, applicants for marine developments and some activities have to carry out an assessment of environmental impact of the proposed activity on already designated FOCI, and requirements to meet the existing Water Framework Directive for example. Costs for Environmental Impact Assessments (EIAs) vary depending on project size - a study of 18 EU examples found EIA costs to range from 0.01% to 2.56% of the total development cost with the average being 0.5%[[32]](#footnote-32),
* Mitigation actions. Where a development / action may have an adverse impact on these listed features, licensed industry has to take actions to mitigate these impacts. (e.g. amending location, adding cushioning for cables, micro-siting around features etc),
* Costs to fisheries. Commercial fisheries may incur costs in the baseline due to existing closed areas, quota, and effort and/ or gear restrictions,
* Public sector costs - monitoring of vessels, catches and species stocks; management of existing licence applications and protected areas,
* Some MCZ costs are fixed and not dependent on the number of sites designated (e.g. the aggregates sector). These costs were attributed to the 1st tranche of MCZs and are now in the baseline.

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| Table 1: Summary of baseline costs to private industry and public bodies (all acronyms are explained on page 3). | |
| **Impacted Private Sector** | **Description of baseline costs – no figures included because it is not proportionate or useful to decision making to monetise baseline costs and benefits** |
| Aggregate extraction | Existing costs for obtaining a licence (other than assessment of environmental impact). Mitigation (conditions on where and how operation is carried out) costs may be incurred to avoid damage to features protected under existing legislation and/or designations.This baseline takes also into consideration costs allocated for tranche 1 to the existence an MCz rather than any tranche in particular. as explained in later sections 6.9-6.11 |
| Cables | Licence application costs, including assessment of environmental impact on features of conservation importance (FOCI). Industry undertakes this voluntarily in areas outside of 12nm as there is no legal requirement to do so.  Mitigation activities may be required for some features protected under existing lists, such as micro-siting around features. |
| Coastal development | Licence application costs, including costs of EIA to consider impact on FOCI.  Mitigation (such as moving planned location, using different materials) may be required to avoid damage to these features. |
| Commercial Fisheries | Common Fisheries Policy (CFP) e.g. Limits on commercial fishing of quota stocks, discard bans.  UK fisheries management e.g. IFCA byelaws on vessel size  Conservation e.g. Management of fishing in MPAs e.g. European Marine Sites (EMS), Tranche 1 MCZs  Voluntary codes of conduct. |
| Flood and coastal erosion risk management | Licence application costs, including costs of assessment of environmental impact to consider impact on previously designated FOCI.  Mitigation (such as moving planned location or restrictions on construction activities) may be required to avoid damage to these features. |
| Archaeological heritage | Current costs for licence applications, including licence applications for archaeological activities on Historic Protected Wrecks.  Depending on the scale and type of activity, the MMO or NE may advise that an assessment of environmental impact is undertaken. English Heritage (EH) requires that records of all sites of historic or archaeological interest are considered in any licence application. In some areas, vessel anchoring is restricted in the baseline through restrictions or codes of conducts in place to protect any sensitive features such as archaeological sites or seagrass beds. |
| Oil & Gas | Licence application costs, including costs of assessment of environmental impact to consider impact on previously designated FOCI.  Mitigation activities (such as pipeline routes, chemical release), may be required to avoid damage to these listed features, in the absence of MCZ designation. |
| Ports, harbours, Commercial shipping and disposal sites | Licence application costs, including costs of EIA to consider impact on previously designated FOCI.  Mitigation (such as moving planned location, using different materials, seasonal restrictions) may be required to avoid damage to these features, in relation to port activities such as dredging, disposal, laying and maintenance of moorings and development/expansion. |
| Recreation | Management and best practice advice in relation to potentially damaging activities such as anchoring and wildlife watching.  Specific management of activities in MPAs. |
| Renewable Energy | Licence application costs, including costs of EIA to consider impact on FOCI.  Mitigation (such as adjusting planned cable routes, using different turbine foundations, seasonal restrictions on activity), may be required to avoid damage to these features. |
| **Impacted Public Sector** | **Description of baseline costs** |
| National Defence | Costs of adjusting electronic tools and charts and annual costs of maintaining to include EMS, SPAs, SSSIs, etc., in the absence of MCZs; Additional planning considerations for these sites. |
| Costs to public sector for marine management | Costs to MMO, IFCAs to monitor existing protected features and sites, enforce requirements of Common Fisheries Policy (CFP)[[33]](#footnote-33) and administration of the marine licensing process. |
| Ecological Surveys | SAC and SSSI monitoring; biodiversity monitoring to meet existing requirements under EU legislation carried out by NE and JNCC. |

***Stakeholder engagement process for MCZ designation***

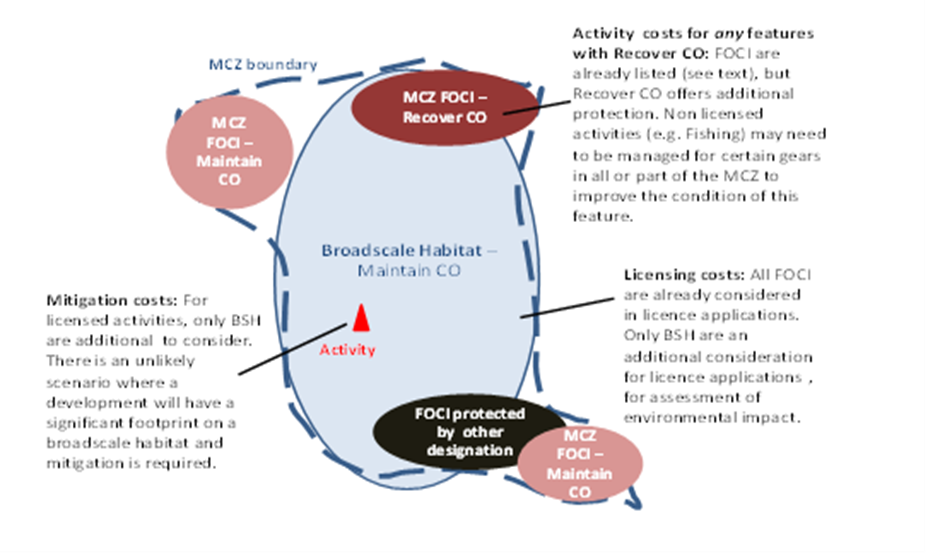
* 1. Box 2 below provides information on stakeholder engagement process for the 2nd tranche MCZ designation. In 2011 and 2012, the regional MCZ projects collected information from stakeholders about the level and type of human activity in each MCZ (or group of sites). This informed the identification of management scenarios and possible and preferred management measures. In addition, during spring 2014 Defra engaged extensively with each sector to verify and update the activity information for the candidate sites. Stakeholders were invited to comment on the activities identified and where possible, on the potential impact of designation on those activities. This process also enabled Defra to verify whether cost assumptions and information associated with certain activities/sectors were accurate (for more information see Annex A and D).

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| **Box 2: The stakeholder engagement process followed to identify management scenarios and industry costs.**   1. The management scenarios that are employed in the analysis for the IA were identified using information about the sensitivity of species and habitats recommended for protection in each MCZ, as well as information about the level and type of human activities in each site collected from stakeholders[[34]](#footnote-34). 2. The management scenarios used in the IA were also informed by advice provided by JNCC and NE on the mitigation that is likely to be needed. This advice did not pre-judge the advice that JNCC and NE will provide (as statutory nature conservation advisers) for specific licence applications or for any future site-specific licensing decision. In collaboration with the relevant regulators, NE developed draft assumptions about the mitigation of impacts of certain licensed activities on features protected by MCZs that could be used for purposes of the MCZ impact assessment. This advice was peer reviewed by industry representatives and has since been reviewed by Defra economists to check it is still appropriate. 3. Specialists in JNCC and NE provided site-specific advice on the mitigation that is likely to be needed for proposed plans and projects *that are not yet consented and could impact on MCZ features*. Defra has engaged with stakeholders for specific sites to try to alleviate any concerns and to be informed of any local specific issues. 4. Defra Economists collaboratively developed draft management scenarios that reflected the mitigation that was likely to be needed, based on the information provided in (1) (2) and (3) above. Baseline data has been updated to reflect the latest and best available information. Activities, and where possible management scenarios, have been updated as part of the pre-consultation process. Additional information submitted by stakeholders during this process has been validated through engagement with appropriate experts in Defra, NE, JNCC, the MMO, Cefas and Environment Agency. 5. Where concerns have been raised that the management scenarios under-estimate the costs of mitigation that would be required, a sensitivity analysis is carried out for all sectors which includes high cost management scenarios where appropriate. Pre-consultation with industry and stakeholder engagement has informed this and new information submitted during the formal consultation will be considered in order to reduce such uncertainties. 6. For all scenarios, industry unit costs are used. The assumptions about management scenarios are appropriately informed by the SNCBs and regulators. The best estimate scenario for sectors was informed by an assessment of likelihood of whether the low or high cost scenarios were the more likely. The IA elements, include cost estimates by government departments, JNCC, NE, stakeholder representatives on the regional MCZ project regional stakeholder groups, and independent experts in environmental economics appointed by Defra. The consultation process will further test the estimates and the assumptions underpinning them. 7. Where there was a potential for high uncertainty and unquantified costs Defra considered that the site should be subject to further assessment and clarification of costs before being considered for designation. Further work will be undertaken on cost estimates for these sites before there is any decision as to whether recommend their designation at a later stage.   . |

***Costs to designate 23 MCZs (preferred option 1)***

* 1. The costs to designate 23 MCZs can be considered in the context of market failures in the marine environment discussed in paragraph 3.3. In particular, management measures to conserve features help address the problem that damage to the marine environment is not always taken into account by users, individuals and businesses alike. In line with Green Book Guidance[[35]](#footnote-35), only *additional* costs and benefits due to MCZs are included – no costs which would have taken place in the absence of MCZs are included. Some features, not included for designation as an MCZ but are located inside the MCZ boundary, already have protection which is part of the baseline as discussed above (see Figure 1). The costs and benefits relating to the protection of these features under current legislation are not included. The costs include only the costs flowing from the *additional* management which is required (and, as described below, the benefits include only the benefits flowing from the *additional* protection which is offered under MCZs – mainly broad-scale habitats referred). Costs and benefits are only included in relation to features which will be designated in the 2nd tranche MCZs in 2015. If any further features in the 2nd tranche MCZ sites are proposed for designation for the 3rd tranche, they will be included in the Impact Assessment for the 3rd tranche, the same way the additional features in the 1st tranche sites are considered here.
  2. Impacts are assessed over a 20-year period. The costs and benefits from designation are long term in nature and hence a 20 year appraisal was considered appropriate (to suit the profile of impacts). Annex D provides a breakdown of the costs each year and it shows that the majority repeat annually or periodically beyond 10 years; meaning a shorter appraisal period would omit several significant industry impacts (e.g. the 15 year license renewal assumption for aggregates). Furthermore, the regional projects which informed the 1st tranche impact assessment and engaged with stakeholders used a 20 year appraisal period meaning the same timeframe facilitates consistency.
  3. Studies used to inform benefits in this IA (e.g. RPA, 2013 & Kenter et al. 2013) also assessed over a 20 year period or longer. Due to the nature of ecosystem service processes, many significant benefits from designation (i.e. improvement in the condition of a feature if currently unfavourable) will not be realised until beyond 10 years, particularly within the marine environment. Therefore 10 years would not capture the full extent of recreational benefits to tourists, anglers and divers and non-use values to the wider public as many features would still be recovering or may have no improvement at all due to time lags. Monetised benefits, despite large uncertainties, are better represented over a 20 year appraisal period and especially when compared to costs for the reasons described in para 6.4.
  4. While the MCZ designations can reasonably be expected to generate costs and substantial benefits beyond 20 years, uncertainty beyond this point makes further analysis challenging. All values are presented as real values in 2013 prices and projected values are given in constant prices. The present value of the costs and benefits has been calculated using a discount rate of 3.5% as per Treasury Green Book guidance.
  5. Figure 2 (shown below) provides an example of what type of *additional features* protected under MCZ designation are likely to lead to additional costs to activities*.*

**Figure 2: Illustrative MCZ with features protected by an existing designation and those protected by the MCZ and is hence additional**



The costs of preferred option can be split into 2 categories as well as the public costs associated with designation:

1. **Activities where limited or no *additional* mitigation is required due to MCZs**, such as when there is a ‘maintain’ GMA, but there are additional costs of obtaining a license, for the assessment of environmental impact on BSH. This includes aggregate extraction, navigational dredging and disposal sites, oil and gas-related activities, port and harbour developments, and renewable energy developments. The operator has to apply for a licence (to the MMO, DECC etc.) in order to carry out the activity. The additional costs associated with considering impacts on MCZs above what would be captured in the absence of MCZ includes familiarisation costs. This is because a business applying for a licensable activity would have to become familiar with all protected areas in proximity to the proposal and estimates provided by industry used in the IA includes the time and associated costs to gather the relevant information on MCZs. A business would only need to become familiar with a designation if it wishes to apply for a licence which requires an appropriate assessment. Existing baseline licensable activity already has consent conditions attached to it which would continue after designation.

For the commercial fishing industry sector there are potential familiarisation costs, as fishermen would have to be aware of the location of designated MCZs and any measures in place to protect them, as part of their fishing operation. However, familiarisation costs have not been monetised here as management at a particular site is decided by regulators (IFCAs and MMO). Where a new byelaw is passed there is an accompanying impact assessment and consultation including stakeholder engagement to inform vessel operators of any new restrictions. As such not all fishermen would need to become familiar with all MCZs and any costs would be accounted for within local IAs. Therefore, it is not feasible or appropriate to calculate familiarisation costs as part of this impact assessment and any attempt to do so would be uninformative to site specific decisions.

In the low cost scenarios, no *additional* mitigation is required for certain sectors since the majority of MCZ features must already be considered in an assessment of environmental impact for licence applications. The additional features, not already considered in licence applications, are mainly broad scale habitats (BSH). Based on current knowledge, offshore BSH tend to cover large areas and therefore the relative size of the footprint of any sector activities is likely to be low. This means that no changes to the *activity itself* or the location is likely to be necessary for these sites. However, the size of inshore BSH are more varied which means that the relative size of the footprint may be larger – this is very site specific and has been assessed on a case by case basis. An assessment of current and known planned activity which overlaps with or is in close proximity to MCZs proposed as part of designation in the second tranche indicates that no additional mitigation will be required to what would be required in the absence of MCZ designation. This assumption will be tested at consultation.

1. **Activity where management will be necessary,** such as when there is a ‘recover’ GMA. The main sectors which will have to change their activities due to designation of MCZs are fisheries and recreation, since many other sectors are already required to mitigate impact on MCZ features of conservation protected on BAP, OSPAR and Wildlife and Countryside Act (WCA) lists, explained below. Management of activities for fisheries and recreation will be put in place by the regulatory authorities after designation[[36]](#footnote-36). These will be determined on a site-by-site basis, considering what is required (based on advice from the SNCBs) to meet a specific site’s conservation objectives. For example, a particular gear type may be shown to damage a feature, and so this gear type may be managed over the specific area of the feature in order to ‘recover’ the feature to favourable condition. Management measures will be drawn up separately and put in place once sites are formally designated. Therefore this IA assesses costs based on the most likely management scenarios, informed by advice from NE and JNCC and relevant stakeholders over the 2 year stakeholder project and by more recent stakeholder engagement to summer 2014. A range of costs is given to account for uncertainty and a best estimate is given. Site-specific scenarios for management and the resulting sector costs are described in Annex A and Annex D respectively.

As described above, for sectors beyond fisheries and recreation some additional mitigation may be required, which has been assessed on a case-by-case-basis. In situations where MCZ designation results in mitigation costs that are prohibitively expensive (relevant for all licence applications), the MCAA (2009) Public Benefit Test will apply[[37]](#footnote-37) – that is, the MMO will determine whether the benefit to the public of proceeding with the proposed development clearly outweighs the risk of damage to the environment that will be created by proceeding with it[[38]](#footnote-38). To be clear, this means that if the cost to society (from not proceeding with the licensed activity) outweighs the ecological cost (of proceeding with the activity measured in terms of market failures), it is unlikely that the activity will be restricted. As stated above, such conflicts are not expected to arise as a result of the designation of these sites. This will be tested at consultation.

1. **Public sector costs** – There are potential costs to the Environment Agency (EA) for additional monitoring relating to Flood and Coastal Erosion Risk Management (FCERM) but an assessment of known current and planned developments indicates that this is unlikely to be the case for the sites proposed for designation as part of the 2nd tranche (Environment Agency, pers. comm. 2014).There are costs to the Ministry of Defence (MoD), IFCAs, the MMO and other regulators for considering impacts on MCZs, MCZ management, monitoring and enforcement, as well as the costs to Defra of ecological surveys and to SNCBs for monitoring and reporting progress to favourable condition. These are not included in the Estimated Annual Net Costs to Business (EANCB) figures because they are costs which fall on the public sector.

***Summary of Sector Specific Methodologies***

* 1. Each sector potentially impacted by the designation of MCZs requires a method to assess additional costs relative to the baseline as a result of designation. As part of the Regional Project process, detailed methodology papers were written in conjunction with the relevant regulators, experts and industry representatives. These methodologies were followed for the 1st tranche IA and are followed in this IA with the best and most up to date data available. In relation to the additional 19 features as mentioned in the above para 2.5 there are no additional costs to business, as there are unlikely to be any additional management requirements over and above those already deemed necessary. The costs presentation is organised as follows:
* The paragraphs below summarise methodologies linking to the relevant methodology papers as mentioned above and providing details of any changes to methodology where relevant - Table 2 provides costs by sector presenting annual costs per year and best, low and high cost scenarios. - Details of assumptions, actual calculations of unit costs, the time profile of costs used and when relevant transitional costs are given in Annex D. Transition costs are classed as one of costs due to the implementation of the policy and do not recur beyond a certain date. Therefore, all periodic costs, such as additional application costs, are not classed as transitional because they occur regularly and are applicable beyond the 20 year IA period with future applications. Details of transitional costs are given in Annex D.

Aggregates

* 1. It is assumed that the impact of aggregate extraction on MCZ features will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO. Two scenarios were developed for the IA: Scenario 1 (also used as the best estimate as it was considered most likely to occur) and Scenario 2 (low cost scenario). Scenario 1 considers areas which have already been granted approval for development, known as existing production licensed areas. There is an additional one-off cost to operators for future licence / licence renewal applications for existing production licence areas within 1 km of an MCZ, based on the need to assess the impacts on broad-scale habitats protected by an MCZ. Scenario 2 considers additional costs for future licence renewals for all existing production licence areas and one-off additional impact assessment costs for all future licence applications only in Strategic Resource Areas which have yet to be granted approval for development identified as overlapping or being ‘in close proximity’ to an MCZ[[39]](#footnote-39). A breakdown of costs for this sector and relative assumptions are given in Appendix D.
  2. In scenario 1 the additional costs for existing production areas were calculated by considering impacts of aggregate activities on the conservation objectives of MCZ broad-scale habitats on a site specific basis.
  3. For scenario 2, only two strategic resource areas are in close proximity to MCZs in the second tranche and so have an attributable (lower) cost associated with them for future licence applications (assuming that they relate to the existence of an MCZ network rather than the 2nd tranche)..

Aquaculture

* 1. Management scenarios have been identified for each MCZ making assumptions about the management of aquaculture that may be needed in order to achieve the conservation objectives of features protected. These scenarios have been used, for the purposes of the IA, to estimate the potential economic impacts of the effects of MCZs on the sector[[40]](#footnote-40).
  2. For the sites being considered as part of the 2nd tranche no management of, or impacts on, aquaculture have been identified. This is because, based on a review of online sources and data from the Crown Estate (pers. comm. 2014), there are no aquaculture sites located in close proximity to any of the sites proposed for the 2nd tranche apart from the private fisheries and mussel seed beds in the Swale Estuary. At this location the GMA is ‘maintain’ and so potentially no management or mitigation of this activity will be required and small-scale aquaculture does not require a marine licence with associated application costs. These assumptions will be tested at consultation.

Archaeological Heritage

* 1. It is assumed that the potential impact of archaeological activities on features protected by MCZs will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO. Based on the advice of English Heritage and the MMO, the IA assumes that all licence applications to English Heritage and the MMO for archaeological activities proposed within MCZs will require additional work to be completed in support of the application, in regards to broad-scale habitats. This is because impacts on certain habitats and species are already currently assessed without MCZs, but not specifically impacts on the broad-scale habitats protected by MCZs (JNCC and NE, 2011a)[[41]](#footnote-41).
  2. Due to a lack of information about future licence applications (where the assets/activities will be, what they will comprise and when they will take place) or suitable historical data with which to forecast future activities, it has not been possible to quantify the impacts of MCZs on archaeological activities. Costs may arise through the mitigation of impacts of the archaeological activities on MCZ features where required and increased costs for future licence applications to undertake activities. As the footprint of archeologically activity is small compared to the size of broad scale habitats, any additional licence costs are expected to be minimal. It is assumed that any additional costs will be incurred to the licence applicant (mainly archaeological bodies/ and research institutions such as universities), the licensing bodies (English Heritage and MMO) and the SNCBs. This will be tested at consultation and if specific activities are planned at particular sites then we can take account of these in the final IA.

Cables (Interconnectors and Telecommunication)

* 1. The cable sector includes the interconnector (power) and telecommunications (telecom) cables sector and the transmission power cables. It is assumed that the impact of cable laying on MCZ features will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO.There will be an additional cost to an operator to conduct an appropriate IA of future cable installation on broad-scale habitats protected by an MCZ. Additional assessment costs will only be incurred for inshore MCZs (from mean high water out to 12nm) as there is no legal requirement to do an assessment of impacts beyond 12nm. No additional mitigation of impacts on features protected by MCZs have been identified. It is also assumed that additional mitigation of impact will not be required for the repair and replacement of existing and future cables beyond 12nm as there is no legal requirement to mitigate impacts beyond 12nm and the footprint of cables is so small compared to broad scale habitats anyway[[42]](#footnote-42).
  2. The locations of future cable routes are not known; therefore, an estimate of the number of potential licence applications over the 20 year IA period was agreed with the UK Cable Protection Committee (UKCPC) during the 1st tranche IA. This estimate was maintained for the 2nd tranche IA. For the 1st tranche IA, the costs were calculated for all potential MCZs and then scaled down proportionally for the sites proposed for designation under the 1st tranche. The same approach was taken for the 2nd tranche IA. Sensitivity analysis is conducted which varies the assumed quantity of applications over the IA period.

**Coastal Development**

* 1. It is assumed that the impact of coastal development on MCZ features will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO. Impacts of designation on planned but yet to be consented coastal developments could include additional licence application costs, including additional analysis costs within the EIA to consider impact on MCZ broad scale habitats and mitigation (such as moving planned location, using different materials) to avoid damage to these features. An assessment of known developments indicated that the 2nd tranche of MCZs will not impact on coastal development as none are sufficiently close to the proposed sites or are expected to interfere with the conservation objectives of the sites[[43]](#footnote-43). Costs associated with some developments are covered under sector specific costs such as ports and harbours and renewables. This assumption will be tested at consultation.

Commercial Fisheries (UK Vessels)

* 1. To establish quantified costs to UK commercial fisheries it is necessary first to establish likely management scenarios for each MCZ, which are based on a General Management Approach (GMA) (see Box 1) relating to the sensitivity of features. These are then used to estimate the economic impact of MCZ management. The SNCBs have published a management advice document[[44]](#footnote-44) that specifies a range of possible management scenarios for each broad gear type[[45]](#footnote-45) (mobile and static) for each feature[[46]](#footnote-46). Management scenarios were refined using stakeholder knowledge and input during the Regional Projects process and refreshed as necessary following updated SNBC advice on features to be designated and their objectives. Full details of the management scenarios used for the purposes of the impact assessment are given in Annex A.
  2. To estimate the economic impact of management scenarios it is necessary to estimate the baseline fisheries activity at each site. For over 10m vessels, activity can be determined through satellite tracking (Vessel Monitoring System (VMS)) which provides revenues per MCZ for each broad gear type based on intensity of fishing in those areas as a proportion of fishing in the entire ICES rectangle area[[47]](#footnote-47); for which revenues are known. For under 10m vessels, which tend to fish inshore areas, data coverage is less good and revenues for an area have to be derived from IFCA sightings data[[48]](#footnote-48).
  3. Using the available information, baseline revenues for each MCZ have been estimated for the years 2010-2012 (a three year average). This is then converted to a gross added value figure using Seafish average GVA ratios[[49]](#footnote-49) for each gear type in each region. As discussed in para 6.7 familiarisation costs to fishers have not been calculated as it is mandatory management measures they would have to become familiar with rather the designations themselves. Regulators (MMO and IFCAs) would produce IAs with any bye-laws to take account of these impacts and inform stakeholders.
  4. As there is likely to be displacement of fishing activity to areas outside of the MCZs, rather than a complete loss of activity, in some areas a displacement assumption of 75% is applied (25% of GVA assumed lost) to the lowest cost management scenario and no displacement assumed (100% of GVA assumed lost) in the high cost management scenario. Where the likelihood between the lowest and highest cost scenario was not known or considered equal the best estimate was halfway between the low and high cost estimate. This is the case for all bottom abrading mobile gears (bottom trawls and dredges) for sites in the 2nd tranche. Where the high cost scenario was considered unlikely (based on SNCB advice and Defra and Regional Project economist expert judgement) the best estimate was 25% of the range between the low and high cost scenarios, which is the case for all static gears (Pots and Traps, Nets, Hooks and Lines). This approach did not generate significant challenge or responses during consultation for the 1st tranche of MCZs and it will be further tested during the consultation. Site specific management assumptions are given in Annex A and sector calculations are given in Annex D.

**Commercial Fisheries (non-UK Vessels)**

* 1. Impacts of management measures on non-UK Vessels in offshore sites have been taken into account in decision making, as all offshore management measures have to be agreed at the EU level in conjunction with the CFP, but these are not included in the assessment of costs of designation in the summary sheets. This is because costs and benefits of regulatory changes to other countries are not considered in UK IAs and this is consistent with IA methodology and guidance. In addition it is not possible or proportionate to assess lost GVA to other countries as each country will have different GVA ratios for different gear types and this information is not easily accessible.
  2. Reasonable efforts have been made during the pre-consultation period to engage with the authorities in the affected member states and this has resulted in estimates of non-UK baseline revenues by gear type for each offshore site[[50]](#footnote-50). Actual impacts on non-UK vessels will depend on profits obtained from MCZ areas and ability to displace to surrounding areas in the event of management. A discussion of the likely impacts of each site on non-UK vessels is given in Annex E. Assumptions will be tested at consultation.

**Oil & Gas & other energy (including carbon capture and storage (CCS) at sea)**

* 1. It is assumed that the impact of Oil, Gas and CCS on MCZ features will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO.A single scenario was developed for the 1st tranche IA, based on the advice of DECC, NE and JNCC. The same scenario is considered for the 2nd tranche which assumes that operators of oil, gas and carbon capture and storage (CCS) installations will incur additional costs for the assessment of environmental impacts completed in support of all future licence applications on broad scale habitats designated within MCZs. Annex D explains the specific assumptions used to derive costs for the 2nd tranche,
  2. For the purposes of the IA it is assumed MCZ habitats and species that are on the OSPAR List (of Threatened and/or Declining Species and Habitats) and on the UK List of Priority Species and Habitats (UK BAP) are already protected and mitigated for outside of MCZs. Additional mitigation would be required for broad-scale habitats, which are not protected under other legislation. The footprint of oil and gas and CCS developments and their pipelines and cables are unlikely to significantly impact on the overall condition of the broad-scale habitat, therefore it is assumed there are no additional mitigation (and therefore cost) will be required for this sector.
  3. The number of applications that will be submitted during the 20 year IA period will be dependent on the number of blocks offered during oil and gas licencing rounds, and the stages of development that are carried out in each of those blocks over the 20 year IA period. For the 1st tranche IA, costs were scaled down based on the number of 1st tranche MCZ s as a proportion of the whole suite of potential MCZ and the same approach is taken with the 2nd tranche. Also for this sector 2 scenarios are envisaged (best and low cost scenarios). Main differences in costs apply mainly to assumptions made behind 26th, 27th and 28th rounds blocks. Annex D provides detailed assumptions regarding this sector, which will be tested during the consultation.

**Ports, Harbours, Commercial shipping and disposal sites**

* 1. The 2nd tranche of MCZs contain sites which encompass ports and harbours seaward limits in their totality; sites which include areas under ports and harbours operational jurisdictions; or sites in close proximity to disposal sites. It is assumed that the impact of ports activity on MCZ features will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO.
  2. There will be additional cost for licence applications, with two scenarios developed for the IA: a low cost scenario and a high cost scenario using different assumptions about future Marine Dredging Protocols to give low (Option B) and high (Option A) cost ranges. The best estimate is the midpoint of this range. Annex D gives further details.
  3. Assumptions were revised for the 2nd tranche IA based on the average number of applicants per MCZ rather than the number of applications for disposal sites as several disposal sites are frequently used by the same business meaning additional assessment costs per application is not realistic as information on the MCZ would only have to be gathered once and updated periodically. This is considered more realistic due to economies of scale as businesses with multiple applications will only have to collect information on the MCZ once per year and use it again.[[51]](#footnote-51) However, the high costs scenario used in this IA include more pessimistic assumptions about additional application costs and assumes a cost per application as a worst case scenario.
  4. For disposal sites the average number of future licence applicants per year per disposal site was assumed to be the same as the average number of businesses applying over the period 2004 to 2013, using data provided by Cefas. A high cost scenario is included based on the cost per application as before but this is considered highly unlikely (MMO, pers. comm. 2014).
  5. For navigational dredging, it was assumed that one maintenance licence application (renewal) is submitted for each navigational dredge area once every three years from year one of the period covered by the IA.
  6. Planned future port and harbour developments were identified via discussions with port and harbour operators during the 1st tranche IA and during pre-consultation for the 2nd tranche. Known site-specific mitigation needs and related costs were included in the 1st tranche assessment. However, no such mitigation was identified for any 2nd tranche MCZs. These assumptions will be tested at consultation and further details are given in Annex D.

**Recreation**

* 1. Recreational activities considered in the 1st tranche IA included angling, boating (pleasure and racing), scuba and snorkelling and shore-based activities such as coastal walking, fossil collecting, rock pooling and wildfowling, The majority of these activities will not be negatively impacted by the designation of MCZs and may even benefit from them.

* 1. Potential management scenarios have been identified for each MCZ (over and above the baseline situation) in relation to recreation activities that may be needed to achieve the conservation objectives of features protected by each MCZ. These assumptions have been used for the purposes of the IA to estimate the potential economic impacts of MCZs on the sector[[52]](#footnote-52).
  2. In general, recreational activities will not interfere with the achievement of conservation objectives of MCZs and would not need to be managed in the event of designation. Furthermore, the expected environmental improvement from the presence of the MCZs should benefit the recreational sector and provide opportunities for greater enjoyment and economic activity. However, some features are sensitive to certain recreational activities such as anchoring therefore recreational boating may have to be managed if such features (e.g. seagrass) have a ‘recover’ conservation objective. Potential management can range from voluntary codes of practice and no anchor zones to mandatory no anchor zones and the use of eco-moorings to prevent abrasion damage to sensitive features. Only one site being considered for the 2nd tranche contains features sensitive to anchoring with a ‘recover’ objective and that is The Needles. However, information provided by stakeholders during pre-consultation[[53]](#footnote-53) indicates that the main anchoring activity is away from the seagrass feature. Therefore, illustrative management scenarios are included for this sector but they are not assumed to incur any monetised costs as it is not expected that they will reduce the number of visitors to the area. However, it is acknowledged that any management imposed around this feature could cause an inconvenience to recreational boaters in the area. Actual management chosen will be done in consultation with stakeholders by the MMO and any byelaws would have their own accompanying impact assessment. These assumptions will be tested at consultation.

**Renewables**

* 1. The renewable sector includes wind, wave and tidal power developments. It is assumed that the impact of renewable energy on MCZ features will be managed under the existing marine licensing framework, as provided for under the MCAA and administered by the MMO.
  2. The assumptions were based on advice from NE, the JNCC, MMO and DECC in terms of how these bodies anticipate their advice to developers would differ for consents in the presence of a MCZ designation. This represents what actions they would expect of the developer over and above the assessment of environmental impact that is already undertaken in the absence of a MCZ, which includes the assessment of impact on broad scale habitats which are no protected under other legislation[[54]](#footnote-54).
  3. Since the Regional Projects presented recommendations in 2011 and the designation of the 1st tranche of MCZs in 2013, there is greater certainty in where developments are and impacts of MPAs on renewables. Designation of special areas of conservation (SACs), which have similar conservation objectives to MCZs, has shown that licence conditions imposed on developments that overlap with SACs to be minimal compared to the situation in the absence of the designation. Furthermore, costs are assumed for yet to be consented wind developments and, according to Crown Estate data (pers. comm. 2014) and pre-consultation research and engagement, no such developments overlap with MCZs being proposed as part of the 2nd tranche. Therefore there are no attributable costs to the second tranche of MCZs for Wind developments. West of Walney is being co-located with a wind farm development that is already consented and there is a meeting scheduled with developers to discuss concerns. No monetised impacts on this particular development above those which would be incurred in the baseline anyway are expected. There are some costs associated with potential wave and tidal power developments which are explained further in annex D. These assumptions will be tested at consultation.

**Summary of Public Sector Costs Methodology Flood and coastal erosion risk management (FCERM)**

* 1. It is assumed that the potential impact of FCERM activities on features protected by MCZs will be managed under the existing marine licensing framework, as provided for under the Marine and Coastal Access Act 2009. The management scenario is based on site-specific projects near MCZs that are likely to incur an additional cost for future FCERM licence applications, which are anticipated to result in additional monitoring or mitigation costs for operators (the Environment Agency and / or Local Authorities). Advice for each MCZ was provided based on an assessment of whether the proposed FCERM activity is a) likely to take place in the site, b) likely to take place near to sensitive MCZ features, and c) whether the scale and type of FCERM activity anticipated would impact on the conservation objectives of the MCZ features[[55]](#footnote-55).
  2. Research and local engagement and data from the Crown Estate (pers. comm. 2014) in the pre-consultation period for the sites considered for designation as part of the 2nd tranche indicates that there are no planned FCERM developments in close proximity to the sites that would incur additional costs as a result of designation. This assumption was confirmed by the Environment Agency (pers. comm. 2014) and will be tested further at consultation.

**National Defence**

* 1. As a public authority and operator, MoD is required under the MCAA to carry out its functions and activities in a way that will further, or least hinder, the conservation objectives of MCZs. To assist in meeting its environmental obligations, MoD has developed a Maritime Environmental Sustainability Appraisal Tool (MESAT). This will include operational guidance to reduce significant impacts of military activities on MCZs. For the purposes of the IA, it is assumed that MoD will incur additional costs in adjusting MESAT and other MoD environmental assessment tools in order to consider whether its activities will impact on the conservation objectives of MCZs (MoD, pers. comm., 2011). It will also incur additional costs in adjusting electronic charts to consider MCZs.
  2. These costs were calculated on the basis of the MCZ network as a whole and for the 1st tranche IA they were scaled down to the proportion of sites included in that tranche. The same approach is being taken for the 2nd tranche. This methodology was agreed with MoD and updated costs for officers’ time were provided during the pre-consultation period (pers. comm. 2014).

**Management measure implementation, enforcement and surveillance**

* 1. Cost estimates are provided for management measures, where it is assumed that additional management is needed in each MCZ for recreational and fishing activity. Costs have not been estimated for sites where it is anticipated that no additional management of recreation and/or fishing activity is needed. Depending on the distance of the MCZ from the coastline, the responsibility to implement and enforce the management of these activities falls to one of two types of public authority: the MMO, IFCAs. The IFCAs are responsible for managing fishing activity in inshore sites (within 6nm) and the MMO are responsible for managing recreational activity. For sites beyond 6nm the responsibility for the implementation and enforcement of management lies with the MMO[[56]](#footnote-56).
  2. For the proposed 2nd tranche sites likely management scenarios have been updated following the latest advice from the SNCBs and management unit costs assumptions have been updated following engagement with the MMO and IFCAs during pre-consultation (pers. comm. 2014).

**Ecological Surveys**

* 1. In the event of designation the Secretary of State has a duty to report to Parliament every six years on the extent to which the conservation objectives for each MCZ has been achieved as well as the extent to which MPA network as a whole contributes to the conservation or improvement of the marine environment in the UK marine area. To accomplish this, the SNCBs, may be required to carry out ecological surveys of sites to monitor feature condition. NE has responsibility for inshore sites (within 6nm), JNCC has responsibility for offshore sites (beyond 12nm) and they have joint responsibility for sites between 6 and 12nm. Estimates of the costs of each site have been provided by the SNCBs (pers.comm.2014) and applied as appropriate.

**Anticipated costs to human activities that will be impacted on by 2nd tranche MCZ designation**

The following table 2 summarizes average annual costs for each sector. More details, including annual breakdown of costs, totals and present values can be found in Annex D.

Table 2: Average annual undiscounted costs[[57]](#footnote-57) of 2nd Tranche Marine Conservation Zones

|  |  |  |  |
| --- | --- | --- | --- |
| **Private Sector** | **Methodology, assumptions and sources** | **Best estimate scenario** | **Low / High cost scenarios** |
| Aggregate extraction | Aggregate extraction in or near MCZs mapped.  Consultation with industry and British Marine Aggregates Producers Association (BMAPA) during Regional Project Process provided cost estimates for licence applications and mitigation, including proportion of consultancy fees (external costs) as well as developer time (internal cost, including overheads) and this was updated to 2013 prices. The additional cost per license application is estimated to be £28k. | **£0.011m/yr**  **Licence applications** within 1km of an MCZ need to assess potential impact of activity on an MCZ (at additional one-off additional cost of £0.028m each). Each licence renewed after 15 years. 2 applications occurring in year 2017 and recurring in 2032, 2 applications occurring in year 2026 , and 2 applications 2028 | **£0.003m/yr - £0.011m/yr**  Sensitivity around number of licence applications and mitigation requirements.  **Low cost:**  Additional EIA costs for licence applications for strategic resource areas that overlap with or are in close proximity to an MCZ (2 applications at 1 site).  **High cost**: **As best estimate** |
| Aquaculture | Aquaculture activity in and near each proposed MCZ mapped during the Regional Project Process and updated during local pre-consultation engagement in summer 2014. | **No anticipated costs**  Based on current information, there are no aquaculture sites in close proximity to 2nd tranche MCZs apart from in the Swale Estuary This sector will not be impacted as a result of the 2nd tranche as no mitigation or management is expected and no licence applications are required in the Swale estuary. | **N/A** |
| Cables | Existing cables and known future cable routes mapped.  Assumes additional cost to an operator of assessing impacts of future cable installation on broad-scale habitats protected by a MCZ. Since the location of future cable routes are not known, the number of potential licence applications were calculated for all MCZs and scaled down proportionally for the sites in the preferred option.  Increased cost to operator of additional assessment of environmental impact upon MCZ features (broad-scale habitats only) for one licence application for one future cable installation is **estimated to be £10K** based on cost estimates provided by industry. | **£0.001m/yr**  Existing or operational cables will not be impacted upon by MCZs.  4 new Licence applications in each years of 2019, 2024, 2029 and 2034 **(total 16 licences over 20 years)[[58]](#footnote-58)** for the 99 inshore sites initially proposed by the Regional Project process. This was scaled down proportionally for the 18 inshore sites recommended for designation in this IA (including those which are partially within 12nm). This results in costs of £0.007m in each of the above mentioned years. | **£0.001m/yr - £0.002m/yr**  Sensitivity around number of licence applications over 20 years  **Low cost scenario:** 2 licence applications in each year of 2019, 2024, 2029 and 2034 **(total of 8 licenses over 20 years)** for 99 sites, This was scaled down for the sites recommended for designation resulting in costs of £0.004m in each of the above mentioned years.  **High cost scenario:** 6licence applications each year of 2019, 2024, 2029 and 2034 (**total of 24 licenses over 20 years)**. The costs are scaled resulting in costs of £0.011m in each of the above mentioned years. |
| Coastal Development | Known coastal developments mapped for each MCZ and assessed for potential impact on conservation objectives. No impacts or mitigation anticipated. | **No anticipated costs** | N/A |
| Commercial Fisheries (UK) | Fishing activity in each MCZ uses methodology from MCZ fisheries Model. Value of Landing information provided by VMS data for over 10m vessels and IFCA inshore sightings data for under 10m vessels (2010 -2012 data).  **Costs are due to management of some fishing activities.** Gear types affected and management required are specific to the **site and the feature which the MCZ** is designated to protect. Management scenarios for each MCZ are summarised in **Annex A.**  Costs are measured as loss in GVA i.e. the value of landings associated with the relevant area of fishing grounds, minus costs associated with these landings.  The default of 75% displacement (and 25% loss) of fishing activity is based on low overlap of the MCZs with core fishing grounds.  ***Confidence:*** *Medium, Sites with high, uncertain costs to non-UK fleets are assessed separately as not part of the cost of designation to the UK economy. Figures for fleet earnings have been updated with the latest and best available information.* | **£0.035m/yr**  Best estimate for each gear type is either the mid-point of the high and low management scenarios for each site for ‘mobile’ gears (assumed bottom trawls and dredges) or 25% of the range of management scenarios for ‘static’ gears (pots & traps, nets, hooks and lines) (detailed in **Annex A**). This is based on the assumption that static gears are less likely to face the most stringent management option for sites because their impact on the features proposed for designation are generally less than bottom abrading mobile gears. | **£0.000m/yr - £0.354m/yr**  A range of management scenarios and displacement assumptions included:  **Scenario 1:** Lowest potential management scenario. Assume 25% of value affected is lost.  **Scenario 2**: Numerous displacement percentages were considered. The highest potential management scenario, with no displacement of fishing to other areas, *i.e. 100% of overlapping fishing GVA is lost* |
| Archaeological heritage | Archaeological data sourced from numerous locations including consultation responses provided locations of currently designated sites and recorded finds. Archaeological surface recovery of artefacts and full site excavations will be prohibited in MCZs with exposed peat and clay beds with a ‘recover’ conservation objective but this is not applicable to the 2nd tranche sites, as none have this feature in an unfavourable condition. Diver trails, visitors and non-intrusive surveys will be unaffected in MCZs. Vessels can no longer anchor over sensitive features such as seagrass beds. | **No impact monetised**. | N/A |
| Oil & Gas & other energy (including carbon capture and storage (CCS) at sea) | Current activity mapped (including 26th 27th and 28th Rounds) and potential future oil & gas developments assessed in each MCZ project area. Additional costs for licence application resulting in increased developer time (internal costs, including overheads) and external costs for additional assessment of environmental impact. Estimates provided by industry representatives, split at the discretion of industry between external consultant costs and internal time.  Please see Annex D for the profile of undiscounted costs and further detail on the calculation of costs.  ***Confidence:*** *DECC are content with assumptions of future licence numbers and additional costs.* | **£0.049m/yr**  Costs are based on additional application costs for different phases on oil, gas and CCS developments and the number of such activities likely to be affected by sites in the 2nd tranche.  Please see Annex D with cost breakdown and further detail on calculations. | **£0.035m/yr - £0.064m/yr**  **Assumptions the same for best-estimate apart from the number of future licence applications.**  **Low cost scenario:** Oil& Gas: Number of future licence applications in blocks in the 26th Round with a ‘significant discovery’ or ‘fallow block with discovery’ 25% lower than best estimate. 50% less for remaining blocks.  **High cost scenario:** Oil& Gas: Future licence numbers 25% higher than that used for the best estimate for those with ‘significant discovery or fallow block with discovery’. 50% higher for remaining blocks.  Costs were scaled down as per best estimate. Please see Annex D with cost breakdown and further detail on calculations. |
| Ports, Harbours, Commercial shipping and disposal sites | Current activity mapped (i.e. ports, harbours, disposal sites and navigational dredges). Details of known proposed future developments reviewed. Estimates provided by industry. This includes external costs for consultants (based on the average of two estimates from two UK environmental consultancy firms).  Please see Annex D for further information on cost estimates and calculations. | **£0.123m/yr** | **£0.121m/yr - £0.270m/yr**  **Sensitivity around licence applicant and application numbers and mitigation requirements.**  **Low cost scenario:** Licence applications, and applicants for disposal sites, required within 5km of MCZ (navigational dredging, disposal and future port developments) incur additional one-off costs.  **High cost scenario**: Licence applications within 5km – including all future applications (i.e. costs based on number of applications for disposal sites rather than applicants as a worst case scenario). It also includes incorporating MCZ features into existing / planned Maintenance Dredging Protocols[[59]](#footnote-59).(for navigational dredging only). Annex D for information on the assumption around MDPs. Site-specific mitigation costs were advised by NE. This scenario presents a low and high estimate (please see Annex D for more information). |
| Recreation | Recreation activity in and near each MCZ was mapped as part of the Regional Project process and updated through local engagement during pre-consultation, alongside vulnerability assessments of the sensitivity of features to the activities taking place. Anchoring and mooring may need to be managed at one site (The Needles) due to the presence of a ‘recover’ seagrass feature. However, information provided by stakeholders the overlap with main anchoring and moorings in the area is minimal and so any management would represent an inconvenience and may be done on a voluntary basis. Any mandatory management would require stakeholder engagement and its own accompanying impact assessment if empowered through a bye-law. See Annex A for indicative management scenarios at this site. | **No anticipated monetary costs.** | **N/A** |
| Renewable Energy | Existing and planned activity mapped against MCZs. Crown Estate and MMO provided information of potential future developments within the next 20years. There are additional costs for licence applications for developments near MCZs, to assess the impact on MCZ broad scale habitats.  Information provided by stakeholders MMO, NE, Cefas and the Crown Estate (pers. comm. 2014) has indicated no yet-to-be consented renewables cables interact with the sites proposed for designation for the 2nd tranche. This assumption will be tested at consultation. | **£0.007m/yr**  The best estimate is costs to wave and tidal developments for additional EIA costs during licence applications. This is results in 3 additional application costs in 2015, 4 in 2020 and 1 in 2030 affecting 7 sties.  For wave and tidal energy, the additional one-off licence cost is estimated to be £0.013m per MCZ (uprated 2013 price) based on 8 developer estimates and £0.005m (uprated 2013) per MCZ broad scale habitat based on an estimate from Scottish Power (pers. comm. 2011). This is then weighted appropriately per site ((£0.005m x number of broad scale habitats proposed for designation + £0.013m x 8) / 9) leading to slightly different application costs per site depending on the number of broad scale habitats designated | **No sensitivity**  Based on local engagementand data from the Crown Estate (pers. comm. 2014) no impacts on wind developments are anticipated. Therefore the only costs are attributable to Wave and Tidal Developments and there is no sensitivity range on these costs. |
|  |  |  |  |
| **Public Sector** | **Methodology, assumptions and sources** | **Best estimate scenario** | **Low / High cost scenarios** |
| Flood and coastal erosion risk management | MCZs assessed in relation to proposals in Shoreline Management Plans (SMPs). Based on advice from NE and the Environment Agency (pers. comm. 2014) no costs will be incurred by the Environment Agency or local authorities as a result of the sites proposed for designation in the 2nd tranche for monitoring, additional assessment costs or mitigation of activities.  ***Confidence:*** *High but consultation may reveal currently unknown developments in close proximity to MCZs which would need to be taken into account in final IA.* | **No costs anticipated**  No additional mitigation costs are anticipated as a result of 2nd tranche MCZs. | N/A |
| National Defence | National Defence activity in and near to all potential MCZs assessed. Costs provided by MoD (pers. comm. 2014).  ***Confidence:*** *Anticipated costs are generic and may differ depending on the scale and nature of the military activities in each MCZ.* | **£0.002m/yr**  Costs provided by MoD.  One-off cost of adjusting electronic tools and charts (£0.025m) and annual costs of maintaining (to ensure that MCZs are featured in planning for operations/ training) – of £0.015m/yr in the first 4 years, reducing to £0.010m/yr thereafter; Costs of additional planning considerations.  Costs scaled down for 23 sites (to 18%) as the costs applied for all the 127 sites | No sensitivity |
| Costs to public sector of managing MCZs  (management and enforcement) | Costs provided by local authorities, landowners, IFCAs, MMO and Defra. For the preferred option, only the cost of enforcement/surveillance of MCZ management measures is included in the headline figures in the IA Summary (i.e. excluding implementation costs).  ***Confidence:*** *Estimates don’t take account of possible cost savings of introducing one management measure that covers multiple MCZs or risk based prioritisation of monitoring.* | **£0.751m/yr**  Best estimate is the midpoint of the high and low cost scenarios. | **£0.709m/yr - £0.793m/yr**  **Sensitivity around management.**  **Low cost scenario**: looks at both non-regulatory and regulatory management measures.  **High cost scenario**: only regulatory management measures for all MCZs.  Both assume that only regulatory measures will be implemented in MCZs outside 6nm for commercial fisheries. This is because it is assumed it is impractical to implement non-regulatory measures such as voluntary agreements outside these limits |
| Ecological Surveys | Annual costs to public sector for ecological surveys for baseline surveys and monitoring only. Costs for offshore sites based on similar surveys and provided by JNCC. Costs for inshore sites based on cost estimates provided by NE and applied to number of features in each site.  ***Confidence:*** *costs provided by NE and JNCC based on previous experience of similar surveys, however there is still uncertainty in the level of detail and monitoring which will be required.* | **£1.171m/yr**  Best estimate is the low scenario as it is considered most likely as an outcome by JNCC and NE. | **£1.171m/yr - £1.969m/yr**  **Sensitivity around overlap with European SACs/SPAs to combine survey resources.**  **Low cost scenario**: Assumes **50%** of overlap with European SCAs/SPAs, based on the overlap with European sites. This reduces the cost of baseline surveys.  **High cost scenario**: assumes that there is no overlap with SACs/SPAs |
|  |  |  |  |
| **Non-UK** | **Methodology and sources** | **Best estimate scenario** | **Low / High cost**  **scenarios** |
| Non-UK commercial fisheries vessels | Figures for non-UK vessels were gathered in pre-consultation from all relevant member states. These are not included in the summary figures or the EANCB calculation, but informed the site selection decision. Sites with unknown, potentially high costs to non-UK vessels have been excluded from the preferred option. See Annex E for discussion and site specific details. | **N/A** | N/A |

***Costs to Business (Equivalent Annual Net Costs Business)***

* 1. Costs to business have been calculated in line with the Better Regulation Framework manual[[60]](#footnote-60). These are calculated as full economic costs – figures have been provided directly from industry during the 2 years of informal consultation as part of the Regional Projects process. External costs (i.e. costs for additional consultant time) use the mid-point of a range of quotes from UK consultancy firms. Internal costs have been provided by industry themselves and calculated in line with the Green book and Standard Cost Model methodology i.e. incorporate wage costs as well as overheads plus national insurance and overhead costs. Some figures are not split into external and internal costs, but the full figure was provided at the discretion of industry or validated by industry, incorporating full costs. Details of assumptions, actual calculations of unit costs and the time profile of costs used are given in Annex D.
  2. Assumptions had to be made on e.g. the number of licence applications and likely mitigation. This was verified with industry representatives on a case-by-case basis. This uncertainty is also tested in the sensitivity analysis, as described in table 2. Depending on the sector, the site and the likelihood of mitigation, the best estimate is either the low-cost scenario, high cost, or a weighted average of low and high cost scenarios. This has been agreed with industry for each sector and is described in table 2.
  3. This figure is illustrative only, based on potential scenarios of costs. Decisions on the actual management (and resulting costs) will be taken on a site-by-site basis by the MMO and IFCAs, with consultation process and if required an associated regulatory IA. These costs are taking a best estimate of what these costs *may* be.
  4. Within the baseline option it is assumed that existing government policies and commitments related to the marine environment are fully implemented and achieve their desired goals. Particularly significant are commitments to implementation of the Environmental Impact Assessment Directive and the Water Framework Directive. In light of this, the IA assumes that no mitigation of impacts of water abstraction, discharge or diffuse pollutions is required over and above that which will be provided to achieve the objectives of the Water Framework Directive through the River Basin Management Plan process.

**The figures result in an EANCB figure of 0.18m/yr (2009 prices and 2010 base year). The PV cost to industry is £3.40m discounted over 20 years (PV base year is 2015). The benefits have not been monetised other than indicatively so this only reflects costs.**

***Risks, sensitivities and limitations of costs methodology***

* 1. The Sectoral Approach adopted makes it difficult to make links between sectors, which may mean that benefits (and reduction in costs) of co-location are missed, or potential additive impacts are not quantified. This is likely to be an issue for a very small number of sites only and has been discussed at a site-level, with no adjustment in cost data due to uncertainty. On-going research is being carried out on the benefits of co-location which will inform future work.
  2. For many sectors, including Oil & Gas, National Defence, aspects of Renewable energy, some of the assumptions for this IA *cannot* be site specific, because in most circumstances it is not yet known where future developments will be or what they will comprise. Assumptions and results of sensitivity analysis have been taken at a regional level and verified with relevant industry representatives[[61]](#footnote-61).
  3. There is uncertainty in the displacement of fishing activity assumption. The full range of possibilities is tested through sensitivity analysis, with a high cost scenario presenting no displacement (i.e. all catch in this area lost). Further information from the previous consultation was incorporated in the Impact Assessment. These assumptions will be tested through evaluation of the MCZs. In addition, restricting fishing activity within MCZs or certain areas raises the potential for an increase in environmental damage outside MCZs due to displaced fishing activity. There is insufficient scientific or socioeconomic evidence on this displacement and any resulting environmental impact to incorporate into costs estimates.

*Small and Micro Business Impact Assessment*

* 1. The sectors which will be directly managed as a result of the designation of MCZs are fisheries and potentially recreation through restrictions on anchoring and mooring over sensitive features. These sectors are made up almost entirely of micro and small businesses as they are individual boat owners with no or small crews and local yacht and sailing clubs. The recreational sector may face restrictions at one site over the seagrass feature (The Needles) but this represents an inconvenience rather than a monetised impact and visitors to or use of the area is not expected to change. While some fishing businesses may own multiple boats, it is prudent to assume that all businesses in this sector are small and micro for the purposes of the IA. Therefore, it is not appropriate to exclude these businesses from management measures as it would not be possible to achieve the conservation objectives of designations and the best estimate cost of £0.035m/yr to UK commercial fisheries is assumed to therefore fall entirely on small and micro businesses. The UK fishing fleet in 2012 had 6,042 vessels and employed 12,450 fishermen (MMO, 2013[[62]](#footnote-62)). Statistics are provided on a devolved administration basis but in reality Scottish vessels will fish English inshore and English, Welsh and Northern Irish offshore waters and vice versa so all these vessels are potentially in scope. UK vessels landed 627 thousand tonnes of sea fish (including shellfish) into the UK and abroad with a value of £770 million in 2012 (MMO, 2013).
  2. Other sectors impacted through additional costs for assessing impacts of their licenced activities on the conservation objectives of designated broad scale habitats are covered by existing licencing legislation, which cannot be influenced by MCZ designations. This legislation already contains its own exemptions and thresholds for different sized businesses and projects which should limit the impact of designations of small and micro businesses. The main sectors impacted, oil and gas and ports and harbours, are made up of larger businesses with significant contributions to UK GDP and so impacts assess here are insignificant in relation to their scale. The additional analysis which is attributable to the designation of MCZs in the second tranche is minimal compared to the analysis that would be required in the baseline anyway. No developments have been identified which would require mitigation and consultation responses will be used to refine impacts on small and micro businesses as necessary.

1. **Benefits**
   1. The marine environment provides us with many benefits, such as food in terms of fish and shellfish, and gives millions of people the chance to enjoy sailing, angling, watching birds and other wildlife and provides environmental resilience. These can be described as ‘Ecosystem Service’ benefits. Ecosystem services are defined as services provided by the natural environment that benefit people (Defra, 2007), several of which can be considered public goods as discussed in para 3.3. More recently, the UK National Ecosystem Assessment Follow-on (NEAFO, 2014) has underlined the value of the marine environment and benefits derived from its ecosystem services. The NEAFO both recognised the need to take proper account of the benefits of marine conservation measures in decision making but also the challenges and lack of economic evidence currently available for doing so. As such, this section contains illustrative benefits from the designation of tranche 2 MCZs using the latest available literature including qualitative and quantitative examples.
   2. The ecosystem services that may be provided by the marine environment (and MCZ features) have been assessed under the categories set out in Table 3 based on those in NEAFO work package 4 (figure 4.S.2 p.3)[[63]](#footnote-63).

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| Table 3: Ecosystem services considered in the IA | |
| **General Ecosystem service categorisation** | **Final ecosystem services assessed in the IA** |
| Provisioning | Food (wild, farmed)  Fish feed (wild, farmed, bait)  Fertiliser and biofuels  Ornaments and aquaria  Medicines and blue biotechnology |
| Regulating | Healthy Climate  Prevention of Coastal Erosion  Sea Defence  Waste burial / removal / neutralisation |
| Cultural | Tourism and nature watching  Spiritual and cultural well-being  Aesthetic benefits  Education and research  Health benefits |

***Benefits under baseline***

* 1. Section 5 above states that in the baseline option features are assumed to continue in their ‘favourable’ or ‘unfavourable’ condition over the 20 year period (i.e. their condition will not deteriorate).This is due to a lack of site-specific knowledge on the change in feature condition (see paragraphs 5.3 and 5.4 above). In the IA we therefore assume that there will be no significant change in benefit levels (or ecosystem services) under the baseline i.e. we adopt a conservative approach by assuming a static baseline rather than a declining baseline where the feature condition continues to deteriorate leading to lower ecosystem service in the absence of MCZs being designated. Table 4 below shows some of the existing benefits of the UK marine environment using the ecosystem services framework. While not all of these benefits are specific to the MCZs under consideration they help illustrate the substantial benefits people derive from the marine environment

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| --- | --- | --- |
| Table 4: Existing benefits of the UK marine environment | | |
| Provisioning | Food (wild, farmed)  Fish feed (wild, farmed, bait)  Fertiliser and biofuels  Ornaments and aquaria  Medicines and blue biotechnology | In 2012, the GVA of fishing, aquaculture, processing and preserving was £2.0bn[[64]](#footnote-64) |
| Regulating | Prevention of Coastal Erosion and Sea Defence  Healthy Climate  Waste burial / removal / neutralisation | £1.5bn yr total value storm buffering and flood control (meta-analysis)[[65]](#footnote-65); £300m 2004 value, avoidance cost of building flood control measures)[[66]](#footnote-66)  £0.4-8.47bn yr 2002 values, avoidance cost; £6.74bn yr-1 marine Carbon-sequestration 2004 value, avoidance cost[[67]](#footnote-67)  Beaumont et al (2008) and Clarkson (2002) identifies the economic value of regulating services to the UK at £420m to £8.5bn. However, this value is for all of UK seas rather than the features the MCZ protects. |
| Cultural | Tourism and nature watching  Education and research  Spiritual and cultural well-being  Aesthetic benefits  Health benefits | Between March 2012 and February 2013, 284m leisure visits were made to the coast including coastal towns in England[[68]](#footnote-68). In 2013, 14.1m UK adults participated in water sports and other water-based leisure activities, including boating, sea angling and coastal walking.[[69]](#footnote-69)  .  An Oxford Economics (2013) report valued Marine Science and Marine Technical Consultancy at £0.3bn and £0.5bn GVA in 2011 respectively[[70]](#footnote-70).  Work package 4 of the NEAFO reviewed the literature on cultural ecosystem services and in 2012 prices derived willingness to pay figures per household in England of a willingness to pay of £75 per year to holt loss of biodiversity and ecosystem services on the coastal shelf (McVittie & Moran, 2010). This equates to £1.65bn if multiplied by the estimated 22m households in England in 2012. |
| *Notes of the table:*  *These are estimates of the UK marine environment rather than specific to MCZs (unless specified otherwise)* | | |

***Benefits under preferred option: Designate 23 MCZs***

* 1. Designation of 23 MCZs and the additional features from the 1st tranche will help to conserve the range of biodiversity in UK waters as well as contribute to the productivity of the seas in the long term. A combined area of 10,812km2 will be protected by the designation of the 2nd tranche of MCZs and 252 features (habitats, species, geological and geomorphologic features) will be conserved. It will complement (not duplicate) other types of designation and provide an essential component of the UK contribution to establishing an ecologically coherent network of MPAs. In the absence of MCZs, the full range of features present in the UK marine area would not be afforded protection.
  2. MCZ designation brings benefits from the:
* flows of ecosystem services from specific features and habitats that MCZs will protect. Under the preferred option, only features that are in unfavourable state (and would continue to be unfavourable in the absence of MCZs) *and* have been assigned a ‘recover objective’ are considered to yield additional benefits. Similarly, some features are already protected by existing legislation and benefits from these features are not considered additional to MCZ designation unless they are offered a higher level of protection under MCZs,
* cumulative ecosystem service benefits of an overall network of protected areas, which these sites will contribute to along with other designations.
  1. The different types of ecosystem service benefits expected to improve due to the 2nd tranche MCZ designation are assessed in detail in this section. Where possible additional benefits from the 2nd tranche MCZ designation have been quantified (see table 6). Relevant research has been used to further monetise some of these benefits; although due technical uncertainty of the estimates means these have largely been presented as illustrative only. See Annex B and C for information on some of these studies.
  2. There is a lack of scientific and economic research on the marine environment suitable for adapting for use in benefits evaluation and this is acknowledged as a challenge in the literature beyond this IA[[71]](#footnote-71). This is because of both scientific uncertainty and the lack of traded markets for some of the benefits anticipated from MCZs. Growth in sectors which are expected to directly benefit from the designation of MCZs such as recreation and tourism is difficult to attribute to MCZ as there are many factors which contribute to growth. In addition, any observed increase in fisheries productivity (stock levels) would be difficult to attribute solely to MCZs as there are always many contributing factors to fisheries productivity. Future evaluation of MCZs and research anticipated to stem from designation is likely to enhance our quantified evidence in this area.

***Benefits from designation of specific features and habitats in the 2nd tranche MCZs***

* 1. Many of the specific features of MCZs have been shown to contribute to ecosystem services. Improved condition of these features can therefore increase the flow of specific ecosystem services and the resulting benefit. As described in the baseline (in the absence of MCZ designation) there are a number of features which already have some level of protection through existing lists of habitats and species requiring protection[[72]](#footnote-72) and other types of protected area e.g. EMS. Benefits from MCZs will therefore flow from additional features which are offered protection under MCZ designation and that will receive an increased level of protection through this. MCZ features with a ‘recover’ GMA are expected to improve to favourable condition and features with a ‘maintain’ GMA are expected to remain in favourable condition under MCZ designation.
  2. By including only the benefits flowing from the features for which condition will improve due to MCZ designation i.e. those with a ‘recover’ GMA, the IA provides a conservative benefits estimate. There will be benefits from protecting features in their current favourable state (i.e. with GMA ‘maintain’) as this will protect them from an increase in future activity. In the absence of information of the likelihood of changes in activities (in these very specific MCZ locations), the IA does not include an assessment of the benefits of preventing potential future degradation to those features.
  3. Table 5 below provides the list of ecosystem services that are derived from the features proposed for the 2nd tranche of MCZs. It also provides a quantification of benefits in terms of the size of the feature (where information on extent of feature is missing record numbers or sample observations are provided). Benefits from recreational services have been monetised for illustrative purposes. Finally, the table also provides information on the certainty of realising these benefits (which is based on confidence on presence of these feature).

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| --- | --- | --- | --- |
| Table 5: Benefits from protection of MCZ features and designation of sites in the 2nd tranche | | | |
| **Ecosystem service** | **Description** | **Quantification** (where possible) | **Certainty** |
| Non-use / bequest values | Some groups are often keen that features and sites are preserved even if they are not currently using them and hence derive non-use benefits from protecting the site. These non-use values tend to be: option value (the value of retaining the possibility of using a site in the future, including the value of avoiding irreversibility of harm (c.f. Arrow & Fisher 1974; Farber, Costanza & Wilson 2002)); bequest value (the value of securing the site for future generations) and existence value (the value of knowing that the site and its sea life is secured regardless of any other benefits). | Based on Willingness to Pay estimates derived from Kenter et al study[[73]](#footnote-73) (i.e. asking the hypothetical question - how much do you want to donate to protect the site?) one-off non-use value of protecting the sites to divers and anglers alone estimated at **£137m to £284m (Best estimate £211m)** to protect 23 of the designated sites[[74]](#footnote-74).  Further explanation on the estimates is provided in Box 4, Annex C and paras 7.10 to 7.14 | *Med - High confidence* in existence of features  High confidence that there will be a non-use benefit (welfare increase).  Low confidence in the scale of the benefits |
| Research and education | MCZ research and monitoring will contribute to our understanding of marine ecosystems and potential beneficial uses of marine species. Improvement in knowledge will support more effective marine planning and licensing in UK waters. The scale of research benefit depends on the scale of *additional* information gathered and the ability of information to enable better decisions to be made in the marine environment. There are specific research gaps in the effectiveness of MPAs in temperate areas and the role of biodiversity in ensuring the resilience of ecosystem service provision, to which these MCZs could contribute.  Shore-accessible MCZs likely to benefit the greatest number of people for educational uses. Any educational benefits for visitors (including school groups) to MCZs or the coast nearby will depend on the quality of public education and interpretation material provided. MCZ designation may aid site managers in accessing funding to develop such material. | Estuaries, rocky bottom and coral reefs are of particular interest to researchers but designation of all features (GMA set at recover or maintain) is likely to improve the understanding of these ecosystem services | *Med - High confidence* in existence of features; *relatively high confidence* that there will be a benefit to research and education due to these designations |
| Fish and shellfish for human consumption | Managing damaging activities and the resulting habitat and species recovery can lead to improvements in populations of fish and shellfish. There is fairly strong evidence[[75]](#footnote-75) that MCZs could result in improvements in populations of less mobile species such as shellfish (including crustaceans). For mobile species, the scale of benefit depends on the reduction in fishing mortality and the scale of spillover effect resulting from improved habitats and protection of nursery grounds. | CEFAS have provided an expert opinion that spillover benefits, increased catches as a result of MCZs, may be 0-15% of catch lost from the MCZ, which has the potential for benefits to commercial fishing as well as recreational anglers.  In this tranche features designated that will support this service include: Intertidal sediments (28 features over 10 sites), coastal saltmarshes (one feature), Infralittoral rock , deep sea bed ( mud habitats in deep water features in 5 sites), , and Seagrass beds (features in 2 sites) are all relevant habitats[[76]](#footnote-76) for fish. | *High confidence* in existence of features; *fairly high confidence* in impact on provisioning services for shellfish;very *low confidence* in impact on provisioning services |
| Natural hazard protection | Some habitats can provide natural hazard protection, in the form of erosion control when the gradual loss of land is mitigated by coastal habitats, or in terms of sea defence services avoiding sea flooding and inundation (Turner, 2013:4) | Mudflats, intertidal wetlands are habitats of high importance for natural hazard protection. Estuaries and coral reefs are also important. These will be protected in the 2nd tranche of MCZs.  It is highly uncertain whether a change in the condition of features will impact the level of natural hazard protection. | *High confidence* in existence of features; *low confidence* in impact on regulating services |
| Environmental resilience | Protecting a wide range of species and habitats can increase resilience to natural and human pressures[[77]](#footnote-77) By protecting and enhancing biodiversity, MCZs will help to ensure that natural and human pressures are absorbed by the marine environment, reducing degradation, irreversible damage and potential cuts in all (final) marine ecosystem services. Greatest benefits of resilience come from replication and from protecting a wide range of species and habitats, many of which will respond differently to natural or human pressures. There is additional benefit in protecting these features when the marine environment outside of MCZs is under additional pressures. Major threats to marine ecosystems are anticipated as a result of climate change include rising sea temperatures, rising sea levels, greater frequency of storms, increases in the occurrence of severe storm surges, and changes in the timing of plankton production, composition and distribution[[78]](#footnote-78). See discussion in para 7.15 below, of the anticipated overall benefits of an MCZ network. | The full range of different features and habitats is important, especially those which are not protected by other designations (such as broad-scale habitats). | *High confidence* in existence of features; *medium confidence* in impact on environmental resilience. |
| Gas and climate regulation | Certain habitats are efficient sequesters of carbon and contribute to gas and climate regulation. Management of MCZs may reduce human pressures on these habitats that may result in a net increase in the rate of carbon sequestration. | In the 2nd tranche a number of features which are particularly efficient sequesters of carbon: Intertidal mud, coastal salt marshes and saline reed beds the deep-sea bed (mud in deep waters) and seagrass beds.[[79]](#footnote-79)  Studies have valued the carbon benefit of certain relevant habitats *in their entirety*, for example, Beaumont et al (2010) valued saltmarshes at e.g. £6,100-62,200/km/yr[[80]](#footnote-80). Andrews et at (2000) valued the carbon benefit of mudflat and salt marsh sediments at £12/ha/yr. However, MCZ designation will only change the quality of these habitats, rather than complete creation (or loss) of habitat. Carbon value relating to MCZ designation will therefore be lower for each of these habitats. Scientific evidence on the value of improving the condition of marine habitats is not available. | *High confidence* in existence of features; *medium confidence* in impact on carbon sequestration. |
| Regulation of pollution (nutrient recycling ) | MCZs also contribute to regulation of pollution (nutrient recycling). To the extent that MCZs will contribute to healthier and more diverse ecosystems, they are anticipated to aid the environment’s capacity to process waste and protect the regulating capacity of the marine environment. | Subtidal sediment habitats can act as pollution sinks, aided by the fauna resident within them[[81]](#footnote-81)  Salt marshes and seagrass beds are thought to be particularly good regulators of pollution. | *High confidence* in existence of features; *low confidence* in impact on regulation of pollution. |

* 1. It can be seen from Table 5 that, as for the 1st tranche, a lot of the 2nd tranche and additional 1st tranche features provide valuable ecosystem services (resulting in increase in human welfare) even if it has not been possible to fully quantify or monetise these benefits.
  2. Some monetary estimates of MCZs have been recently estimated by Kenter et al (2013)[[82]](#footnote-82). This report investigated the recreational use and non-use values of UK divers and sea anglers for 22 Scottish potential Marine Protected Areas (pMPAs), 119 English recommended MCZs and 7 existing Welsh marine SACs using a combination of monetary and non-monetary valuation methods and an interactive mapping application to assess site visit numbers. The results are based on an online survey with 1683 divers and sea anglers run between Dec 2012 and Jan 2013.

**Box 3: Monetisation of recreational benefits**

**Use and Non-use values – Willingness to Pay by divers and angers to protect the marine areas designated as MCZs**

Cultural services that will be attributable to designation of sites have been assessed by a team of researchers from University of Aberdeen in partnership with the Marine Conservation Society (MCS), British Sub Aqua Club (BSAC) and the Angling Trust (AT). Kenter et al carried out a case study on the value of marine protected areas to divers and anglers as a part of the follow on phase of the UK National Ecosystem Assessment using a combination of primary valuation (online survey of anglers and divers) and benefits transfer, monetary (choice experiment and contingent valuation) and non-monetary valuation [[83]](#footnote-83).

Based on their results per site (using contingent valuation method (CVM)), it is estimated that UK divers and anglers are willing to pay to **£137m to £284m (Best estimate £211m)** one off to protect 23 sites in 2013 prices. These estimates refer to non-use values obtained from Kenter study but adjusted to the 23 MCZs.. Authors state that their CVM design can be thought of as eliciting an insurance value. Donations requested from respondents can be thought of as a premium to pay for the avoidance of harm to environmental goods of value[[84]](#footnote-84). They considered motivation for paying this premium to be associated with three sources of non-use value: option value (the value of retaining the possibility of using a site in the future, including the value of avoiding irreversibility of harm (c.f. Arrow & Fisher 1974; Farber, Costanza & Wilson 2002)); bequest value (the value of securing the site for future generations) and existence value (the value of knowing that the site and its sea life is secured regardless of any other benefits

In addition, the study says that MPAs would safeguard an annual recreational value currently worth £1.87 - 3.39 bln for England alone (excluding benefits of restrictions on other users and contingent on designation not significantly restricting diving and angling). This value is only an indicative use value and not adjusted to the 23MCZs

Annex C provides a summary of the methodology used to arrive at these estimates. The limitations of the methodology highlighted for tranche 1 apply also to tranche 2, This is the reason why such benefits are only considered indicatively

* 1. The estimates in Box 3 and Annex C provide an indication that there are potentially high benefits for recreational users from protecting these sites. The results presented in Box 3 have not been adjusted to reflect new information on feature certainty or boundary changes made in the site consideration. Uncertainty over the scale of benefits means they have not been used in the summary sheets.

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* 1. . Discussing limitations of the non-use estimates the authors note there may be some framing bias in responses and that use of a voluntary contribution payment vehicle may not fully reveal individual values. Also the respondents were also asked to provide a hypothetical donation to a hypothetical site, which may result in bias of benefits (although budget constraints are emphasised)[[85]](#footnote-85) and the estimates value individual’s perception to restricting the sites rather than actual ecological protection following designation. Finally, the results presented in Box 3 have not been adjusted to reflect new information on feature certainty or boundary changes made in the site consideration[[86]](#footnote-86).

***Anticipated overall benefits of an Marine Protected Area network***

* 1. MPAs already exist in the form of EMS designated under the EU Habitats and Birds Directives, Sites of Special Scientific Interest (SSSI) Ramsar sites and 27 MCZs. The candidate MCZs have been chosen to add to and complement these, to contribute towards an overall network of MPAs. An overall network of MPAs, including a range of representative habitats sites and enough spatial areas to offer resilience and enable mobile species to move between these. These additional benefits, described below, will be beyond the site-specific benefits described above.
  2. By protecting a range of representative features from across the marine environment, the Government is protecting biodiversity and the genetic diversity within this. This creates biological resilience - as conditions in the marine environment change, there are species and habitats remaining which can adapt to these changed conditions. More resilience comes with replication of features and habitats, to safeguard against any loss and to capture natural variation within features. Recent studies have also found a link between higher levels of biodiversity and a lower spread of disease[[87]](#footnote-87).
  3. Mobile fish species are considered likely to benefit from MPAs when these protect key life stages or provide areas where fishing pressure is reduced or removed. An improvement in conditions for mobile fish species is likely to benefit commercial fishermen, recreational anglers, as well as potentially increasing non-use value, from knowledge that these species are being protected, i.e. an increase in recreational services, non-use values, as well as provisioning services as described in the table above.
  4. While existing sites have not been specifically designed to protect mobile fish species some of the 23 MCZs include breeding nursery areas and management measures taken to protect the features are likely to result in reduced fishing pressures in some sites.

*Risks, uncertainties and sensitivities*

* 1. The IA assumes that features will continue to remain in their ‘favourable’ or ‘unfavourable’ condition over the 20 year period (i.e. their condition will not deteriorate). This is due to a lack of site-specific knowledge on the change in feature condition (see Section 5 and paragraphs 7.3, 7.5 and 7.8 above). This could potentially underestimate the benefits.
  2. It has been challenging to quantify the increase in benefits arising from ecological improvements in the features following designation. It is even harder to estimate the network benefits from designating tranches of sites. While there is strong evidence (as presented in table 6) to support the likelihood of an increase in ecosystem services, given the uncertainty it has been hard to pin down the extent of increase in these services and what they mean monetarily. This is likely to result in a relative bias against the benefits versus the costs. To overcome this, this IA has provided an indication of the scale of the benefits anticipated by providing an illustration of recreational benefits in monetary terms. Defra is currently carrying out research to understand how best to value these marginal improvements in ecosystem services.
  3. Designating in tranches may mean that vulnerable MCZ features may continue to incur damage, particularly for those at higher risk, prior to eventual designation. This may incur risks to achieving the ‘network’ benefits described above. This is in part mitigated by a risk based approach to designation (where some high risk sites are proposed for designation) and the risk of damage remains while these data certainty issues are resolved.

# MCZ Post implementation Review Plan

* 1. Following designation of MCZs regulatory authorities will put in place the management measures necessary to meet the conservation objectives taking into account any requirements to consider social and economic impacts and for local consultation with stakeholders (e.g. when implementing byelaws). MCZ sites are expected to be subject to a rolling programme of monitoring to ensure that the measures being taken are resulting in the anticipated improvements to feature condition. The MCAA requires the Secretary of State to report every 6 years on the degree to which MCZs and the MPA network are achieving objectives, stating steps that may be necessary for success. The MCAA allows MCZ designating orders to be reviewed, amended or revoked, and the Government intends to keep MCZs under review, making alterations to boundaries, conservation objectives or management where supported by evidence. This will incorporate new data on features (habitats or species) and on the effect of pressures, and allows for changes required to meet new laws and policies. Defra will also keep the ecological coherence of the network under review taking account of any new scientific developments, which may give rise to additional designation or de-designation of MCZs. Any future designations or de-designations will be accompanied by an impact assessment setting out the costs and benefits of such changes.

# Conclusion

* 1. There are large benefits to designating 23 sites. A combined area of 10,812km2 will be protected by the designation of MCZs and 252 features (habitats, species, geological and geomorphologic features) will be conserved. This is expected to result in an increase in final ecosystem services (benefits) such as increases in provisioning (i.e. increase in fish provision), regulating (i.e. climate regulation) and cultural (and recreational) services. An overall network of marine protected areas (including a range of representative habitat sites) is likely to have additional benefits such as increase in biological resilience to adapt to changed conditions.
  2. The total estimated quantified economic costs of the 23 sites proposed for designation in 2015 ranges from £2.049m/yr to £3.473m/yr and best estimate is £2.151m/yr. This gives a present value of between £30.32m and £51.45m and a best estimate of £31.86m over the 20-year timeframe of the IA. **The best estimate equivalent annual cost to business is £0.18m/yr** **(2009 prices 2010 base year)**. The main costs to industry are for ports and shipping (£0.123m/yr), Oil, Gas and CCS (£0.049m/yr) and commercial fisheries (£0.035m/yr).

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 1: Summary of additional costs for designating 23 MCZs** | | | |
| **Impacted Private Sector** | **Best Estimate Cost £m/yr**  (**low - high**) | **Best estimate PV Costs £m**  **(low –high)** | **Description of Costs** |
| Aggregate extraction | **0.011m/yr**  **(0.003-0.011)** | 0.156m  (0.037 – 0.156) | Licence application costs, to collect more information on impact on designated features[[88]](#footnote-88). These costs are additional to the cost incurred for Tranche 1. Some costs associated with aggregates where were presented in the Tranche 1 IA are due to the existence of an MCZ network and hence not specific to Tranche 2 and so have not been included here as they are part of the baseline costs. |
| Aquaculture | **No costs anticipated as a result of tranche 2** | **No costs anticipated as a result of tranche 2** | No costs to aquaculture are anticipated as a result of tranche 2. There is some aquaculture activity near certain sites the Swale Estuary but this is not anticipated to be impacted as all features are maintain GMA and it does not require a licence.. |
| Cables | **0.001m/yr**  **(0.001-0.002)***[[89]](#footnote-89)* | 0.020m  (0.010-0.031) | Licence application costs for future developments, to collect more information of impact on BSH. Mitigation costs are very unlikely, since the footprint of cables is anticipated to be small compared to the extent of BSH, especially in offshore sites. |
| Coastal Development | **Non- monetised** | **Non- monetised** | Additional un-monetised costs unlikely. |
| Commercial Fisheries (UK only) | **0.035m/yr**  **(0.000-0.354)** | **0.519m**  **(0.004-5.202)** | Site and gear specific restrictions on fishing activities, for example restricting trawling in specific sections of an MCZ, where a particular feature is present. Costs are the best estimate of the range of management scenarios, with an assumption of 75% displacement. These are calculated as loss in Gross Value Added (GVA), as for all sectors. High scenario includes sensitivity of loss of *all* affected fishing GVA. |
| Historic Environment | **Not possible to monetise** | **Not possible to monetise** | Licence application costs, to collect more information on impact on designated features. Site-specific potential non-monetised cost – where potential intrusive archaeological activity could be restricted where anchoring restrictions in place. |
| Oil & Gas (including carbon capture storage at sea) | **0.049m/yr**  **(0.035- 0.064)** | 0.763m  (0.529 - 0.997) | Licence application costs for future developments, to collect more information specifically of impact on BSH.  Mitigation costs for future developments are very unlikely, since the footprint of oil & gas is likely to be small compared to the extent of BSH, especially in offshore sites. However, since there is uncertainty in the location of future developments, there remains an additional unlikely un-monetised cost. |
| Ports, harbours, Commercial shipping and disposal sites | **0.123m/yr**  **(0.121 –0.270)** | 1.825m  (1.805 –3.987m) | Licence application costs for future applications to collect more information of impact on BSH.  Unknown potential future costs have been minimised by changing MCZ boundaries to exclude costs where possible |
| Recreation | **No anticipated monetised costs** | **No anticipated monetised costs** | Management of anchoring and mooring at the Needles is potentially need to protect the seagrass feature there. However, this is not expected to have significant impacts as data indicates areas away from the feature are used. |
| Renewable Energy | **0.007m/yr** | **0.123m** | Licence application costs for future developments, to collect more information specifically of impact on BSH. |
| ***Total annual and PV costs to private sector*** | **0.227m/yr**  **(0.167 – 0.708)** | **3.40m**  **(2.508 – 10.495)**  **PV 2015 base year; 2013 prices** |  |
|  |  |  |  |
| **Impacted Public Sector** | **Cost £m/yr**  **(low-high)** | **PV cost £m**  **(low-high)** | **Description of Costs** |
| Environment Agency (for FCERM) | **No costs anticipated as a result of tranche 2** | **No costs anticipated as a result of tranche 2** | Potential licence application costs to Environment Agency for any future developments – additional costs to consider impact on broad scale habitats; plus potential one off cost for additional monitoring where required. |
| National Defence | **0.002m/yr** | 0.035m | Costs of adjusting electronic tools and charts and annual costs of maintaining; Additional planning considerations |
| Costs to public sector of managing MCZs | **0.751m/yr**  **(0.709 - 0.793)** | 11.078m  (10.441 - 11.715) | Costs to MMO, IFCAs and Defra for enforcing management measures. |
| Ecological Surveys | 1.171m/yr  (1.171-1.969) | 17.346m  (17.346-29.198) | Costs of baseline surveys and costs of monitoring to JNCC and NE. |
| ***Annual and PV costs to public sector*** | **1.924m/yr**  **(1.882 – 2.765)** | 28.22m  (27.822 – 40.948) |  |
|  |  |  |  |
| ***Overall annual and PV costs*** | **2.152m/yr**  **(2.049 - 3.473)** | 31.87m  (30.33m – 51.44m) | Annualised total costs for public and private sector |
| Notes:   * The annual costs (m/yr) for each sectors (including public costs) are total costs (transition plus annual) averaged of the 20 year period (2015 to 2034), presented in 2013 prices. The EANCB figure of £0.18m/yr is calculated by converting the figures to 2009 prices and 2010 base year. | | | |

* 1. The main costs to government under preferred option are £0.751m/yr (best estimate) for management and enforcement of sites, £1.171m /yr (best estimate) year for survey work as well as small costs to national defence (£0.002m/yr). In addition there are some costs that have not been quantified.. Costs associated with sectors where future projects were highly uncertain have not been quantified (archaeology, oil and gas; ports, harbours and shipping; laying of inter-array cable protection). It has also not been possible to quantify impacts on local communities from restriction/management of fisheries. Other public sector costs such as costs to inform users about MCZs (including setting up educational programmes), advise public authorities on impacts of proposed licensed activities to MCZs, and costs to the public authorities considering the advice. These costs have been described qualitatively.
  2. The costs analysis in the IA has benefitted from a pre- consultation process for all 23 sites considered and for all sectors affected as discussed above. This has resulted in costs being assessed on a very detailed basis, with assumptions often varying by site. Details of calculations by sector is given in Annex D.

**References**

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1. Sites designated as Wetlands of International Importance under the Ramsar Convention (1971). [↑](#footnote-ref-1)
2. Required by the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna). [↑](#footnote-ref-2)
3. Required by the Wild Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds) [↑](#footnote-ref-3)
4. Designated under the Wildlife and Countryside Act 1981 (as amended). [↑](#footnote-ref-4)
5. Required by the Wild Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds). [↑](#footnote-ref-5)
6. Required by the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna). [↑](#footnote-ref-6)
7. Sites designated as Wetlands of International Importance under the Ramsar Convention (1971). [↑](#footnote-ref-7)
8. Designated under the Wildlife and Countryside Act 1981 (as amended). [↑](#footnote-ref-8)
9. <http://jncc.defra.gov.uk/page-2409> [↑](#footnote-ref-9)
10. Oslo and Paris Commission (Ospar) Guidance on Developing an Ecologically Coherent Network of Ospar Marine Protected Areas, (Reference number 2006-3) [↑](#footnote-ref-10)
11. https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/82721/mcz-designate-ia-20121213.pdf [↑](#footnote-ref-11)
12. Four features were also dropped from the MCZ process at this time [↑](#footnote-ref-12)
13. Four sites were dropped from the MCZ process after the 1st tranche consultation [↑](#footnote-ref-13)
14. https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/285304/pb14141-mcz-update-201402.pdf [↑](#footnote-ref-14)
15. The MPA network is being designed to fulfil a number of OSPAR guiding principles that were developed to assist in interpreting the concept of an ecologically coherent network. These include principles to ensure the network best represents the range of species, habitats and ecologically processes; to ensure the network is well distributed in space; and is resilient through adequate replication of protection where possible. [↑](#footnote-ref-15)
16. There are two forms of intrinsic value: anthropocentric and non-anthropocentric. Anthropocentric value is the intrinsic value assigned by humans to nature, which has practical implications for policy. Non-anthropocentric value is the value that nature has ‘in itself’. As explained in Defra (2007), ‘While it is recognised that the natural environment has intrinsic value i.e. is valuable in its own right, such non-anthropocentric value is, by definition, beyond any human knowledge’. [↑](#footnote-ref-16)
17. <http://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=2&ved=0CCwQFjAB&url=http%3A%2F%2Fuknea.unep-wcmc.org%2FLinkClick.aspx%3Ffileticket%3D5L6%252Fu%252B%252FrKKA%253D%26tabid%3D82&ei=EhEcVMHQKYPcOvrngbgD&usg=AFQjCNG6rghjwAc6Sc8EB8mqdwwV3JB6uA> [↑](#footnote-ref-17)
18. The OSPAR Convention is the current legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic. Work under the Convention is managed by the OSPAR Commission, made up of representatives of the Governments of 15 Contracting Parties and the European Commission, representing the European Union [↑](#footnote-ref-18)
19. HMT Green Book https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/220541/green\_book\_complete.pdf [↑](#footnote-ref-19)
20. UK Marine Policy Statement [↑](#footnote-ref-20)
21. OSPAR maritime area divided into regions based on physical and biological features such as depth, temperature and seabed flora and fauna [↑](#footnote-ref-21)
22. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056 [↑](#footnote-ref-22)
23. <http://www.cbd.int/sp/targets/> [↑](#footnote-ref-23)
24. https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/69446/pb13583-biodiversity-strategy-2020-111111.pdf [↑](#footnote-ref-24)
25. English inshore and English, Welsh and Northern Irish offshore waters [↑](#footnote-ref-25)
26. The Ecological Network Guidance: <http://jncc.defra.gov.uk/pdf/100608_ENG_v10.pdf> [↑](#footnote-ref-26)
27. All FOCI are subject to one or more of the following national and multi-lateral agreements: OSPAR List of Threatened and/or Declining Species (features that are considered to be under threat or in decline, and may be rare or particularly sensitive); UK BAP Priority Habitats and Species (features of international importance, at high risk or in rapid decline, as well as habitats that are important for key species); Wildlife and Countryside Act, Schedule 5 (species likely to become extinct from the UK unless conservation measures are taken, and species subject to an international obligation for protection). [↑](#footnote-ref-27)
28. A vulnerability assessment takes into account information on fishing and recreational activity in an area alongside best available science on sensitivity of features to activities. Stakeholders were given the chance to amend based on local knowledge. [↑](#footnote-ref-28)
29. (Note that features considered to be in ‘unfavourable’ condition are those which would have a ‘recover’ conservation objective in MCZs and features considered to be in ‘favourable’ condition are those which would have a ‘maintain’ conservation objective if it were to be designated in an MCZ). [↑](#footnote-ref-29)
30. Threats to marine ecosystems as a result of climate change are described in OSPAR (2010) [↑](#footnote-ref-30)
31. Note that, consistent with Impact Assessment guidance, we assume that these previous policies have been effectively implemented [↑](#footnote-ref-31)
32. Costs in excess of 1% of capital costs were the exception, and occurred in relation to particularly controversial projects in sensitive environments, or where good EIA practice had not been followed , from ‘EIA- a study on costs and benefits’ <http://ec.europa.eu/environment/eia/eia-studies-and-reports/eia-costs-benefit-en.htm> [↑](#footnote-ref-32)
33. The **Common Fisheries Policy** (**CFP**) is the fisheries policy of the European Union (EU). http://ec.europa.eu/fisheries/reform/ [↑](#footnote-ref-33)
34. Information on the sensitivity of MCZ features to human activities was provided through research commissioned by Defra .

    The SNCBs, JNCC and Natural England, then undertook updated vulnerability assessments in summer 2014 that were informed by the research and other best available data. [↑](#footnote-ref-34)
35. https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent [↑](#footnote-ref-35)
36. . Where regulatory measures will be used, there will be consultations on a site by site basis, where stakeholders will have a chance to comment. Regulatory measures will be subject to an Impact Assessment. [↑](#footnote-ref-36)
37. See s.126(7)(b) and (c) and the MMO’s assessment process for MCZ licence applications- <http://www.marinemanagement.org.uk/licensing/documents/guidance/13.pdf> [↑](#footnote-ref-37)
38. and, if so, the applicant can satisfy the MMO that they will undertake or make arrangements for the undertaking of measures of equivalent environmental benefit to the damage which the act will or is likely to have in or on the MCZ. To weigh up societal and ecological costs, the MMO will use information supplied by the applicant with the licence application, advice from the SNCBs, other Government Departments, Local Authorities, Local Enterprise Partnership, the Marine and Coastguard Agency and others where appropriate. [↑](#footnote-ref-38)
39. Annex H2 Approach for assessing impacts on aggregate extraction, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-39)
40. Annex H3 Approach for assessing impacts on aquaculture, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-40)
41. Annex H4 Approach for assessing impacts on archaeological heritage, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-41)
42. Annex H6 Approach for assessing impacts on cables (interconnectors and telecom cables), http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-42)
43. No specific methodology paper was developed previously as such impacts would be assessed on a site by site and project by project basis [↑](#footnote-ref-43)
44. http://www.naturalengland.org.uk/Images/MCZ-fish-impacts\_tcm6-26384.pdf [↑](#footnote-ref-44)
45. Gear type refers to the type of commercial fishing gear used, which are grouped into categories. Static fishing gear refers to gears such at pots and set nets, mobile gear refers to gears that are towed through the water such as demersal towed nets. [↑](#footnote-ref-45)
46. Annex H7 Approach for assessing impacts on commercial fisheries, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-46)
47. ICES use statistical rectangle areas for the gridding of data to make simplified analysis and visualisation of fishing effort, landings and revenues. [↑](#footnote-ref-47)
48. For information on how under 10m fishing revenues are calculated, see Cefas paper MB0117 [http://icesjms.oxfordjournals.org/cgi/reprint/fsu115?ijkey=FaJLWLjv39vUkSN&keytype=ref](http://icesjms.oxfordjournals.org/cgi/reprint/fsu115?ijkey=FaJLWLjv39vUkSN&keytype=ref%20)  [↑](#footnote-ref-48)
49. http://www.seafish.org/research-economics/industry-economics/seafish-fleet-economic-performance-data [↑](#footnote-ref-49)
50. All member states provided the required information during the period April 2014 – July 2014 apart from France despite multiple requests. However, French authorities previously provided data on revenues as part of the Regional Projects and so those estimates have been used. Spanish impacts are assessed qualitatively as they were not able to provide quantified data. Please see Annex E for details. [↑](#footnote-ref-50)
51. In addition, use of scenario 1 as the low cost estimate has been removed as it is likely that applications beyond 1km will have to consider impacts on MCZs (MMO, pers. comm. 2014). [↑](#footnote-ref-51)
52. Annex H13 Approach for assessing impacts on recreation, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-52)
53. RYA and local recreational sector interests [↑](#footnote-ref-53)
54. Annex H14 Approach for assessing impacts on renewable energy, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-54)
55. Annex H14 Approach for assessing impacts on flood and coastal erosion risk management (coastal defence), http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-55)
56. Annex H14 Approach for assessing costs of management measure implementation, enforcement and surveillance, http://publications.naturalengland.org.uk/publication/1940011. [↑](#footnote-ref-56)
57. These costs are additional to the baseline (i.e. attributable to MCZs) and represent full financial costs (includes wages, overheads and NI) averaged over 20 years. Annex D contains more detail on sector and site specific costs. [↑](#footnote-ref-57)
58. 16 licence applications for cables (either power or telecom) will be submitted over the 20-year period of the IA (4 in each regional MCZ project area within 12nm, 1 one in each regional MCZ project area at the end of each 5-year period).This is for the 99 inshore sites of the 127 sites recommended [↑](#footnote-ref-58)
59. A Maintenance Dredging Protocol (MDP) comprises a baseline document that describes all current maintenance dredging and establishes a baseline against which new applications are assessed in the context of the Habitats Directive (JNCC and Natural England, 2011a). MDPs potentially present cost savings to the ports and harbour sector in the longer term as they are able to undertake the assessment of environmental impact for a number of future licence applications for navigational maintenance dredges using the same baseline data. See method paper H12 <http://publications.naturalengland.org.uk/publication/1940011> for information on MDPs. [↑](#footnote-ref-59)
60. <https://www.gov.uk/government/publications/better-regulation-framework-manual> [↑](#footnote-ref-60)
61. It has not been possible to publish all anticipated additional costs to specific MCZs (across all sectors) and developments in the IA because of the commercial sensitivity of some of the data. Such information has been aggregated and presented in the IA. It has not been possible to verify cost estimates provided by industry. [↑](#footnote-ref-61)
62. https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/329268/Sections\_1-3.pdf [↑](#footnote-ref-62)
63. http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=KLy76Rak0WQ%3d&tabid=82 [↑](#footnote-ref-63)
64. ONS ABS - ONS Annual Business Survey http://www.ons.gov.uk/ons/publications/re-reference-tables.html?edition=tcm%3A77-330927 [↑](#footnote-ref-64)
65. UK National Ecosystem Assessment, 2011 from Fletcher et al (2012). Total value of service assuming it is present in all UK coastal wetland. [↑](#footnote-ref-65)
66. Beaumont et al., 2006 [↑](#footnote-ref-66)
67. UK National ecosystem assessment (2011) and Beaumont et al. (2006), from Fletcher et al (2012) [↑](#footnote-ref-67)
68. Natural England Monitor of Engagement with the Natural Environment , 2012 -2013 http://publications.naturalengland.org.uk/publication/5331309618528256?category=47018 [↑](#footnote-ref-68)
69. Watersports and leisure participation survey 2013 http://www.rya.org.uk/SiteCollectionDocuments/sportsdevelopment/Watersports\_survey\_Market\_Review\_2013\_Executive\_Summary\_.pdf [↑](#footnote-ref-69)
70. http://www.oxfordeconomics.com/publication/open/239345 [↑](#footnote-ref-70)
71. Results from the National Ecosystem Assessment marine work package 4 state that there is a huge lack of valuation evidence (primary evidence) in this area. [↑](#footnote-ref-71)
72. E.g. Ospar list of threatened and declining species and habitats, etc [↑](#footnote-ref-72)
73. http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=Mb8nUAphh%2bY%3d&tabid=82 [↑](#footnote-ref-73)
74. [↑](#footnote-ref-74)
75. Regional project Methodology Documents Annex H5 [↑](#footnote-ref-75)
76. Fletcher et al (2012) [↑](#footnote-ref-76)
77. (Hughes and others, 2005; Tilman, Reich and Knops, 2006; in Beaumont and others, 2006). [↑](#footnote-ref-77)
78. OSPAR (2010) [↑](#footnote-ref-78)
79. Fletcher et al (2012). [↑](#footnote-ref-79)
80. (DECC 2010 carbon price) Based on carbon sequestration rate of 0.64 - 2.19 tC/ha/yr (from Cannell et al. 1999), which is equivalent to 2.35 – 8.04 tonnes CO2;converted to km2 for comparison with area of feature [↑](#footnote-ref-80)
81. (Beaumont and others, 2006; Fletcher and others, 2012; Austen and others, 2011.) [↑](#footnote-ref-81)
82. Kenter et al (2013) <http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=Mb8nUAphh%2bY%3d&tabid=82> [↑](#footnote-ref-82)
83. Kenter et al (2013) <http://uknea.unep-wcmc.org/LinkClick.aspx?fileticket=Mb8nUAphh%2bY%3d&tabid=82> [↑](#footnote-ref-83)
84. This ‘non use value’ is mainly measuring the willingness to pay to protect features from an uncertain future risk and an insurance against future harm and degradation. The researchers state that knowing the precise risk of harm is not essential. They provide the example of home insurance - it seems likely that the vast majority of those who take up building or home contents insurance, while they have risk preferences generally, have little quantitative knowledge on the actual risk of fire or theft. Then, it is the value of the goods and general level of risk aversion that determine willingness to pay, rather than the actual specific risk to the object of value. [↑](#footnote-ref-84)
85. Hausman, Jerry, Contingent valuation: from dubious to hopeless. Journal of Economic Perspectives 26(4):43-56, 2012; http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.26.4.43 [↑](#footnote-ref-85)
86. Kenter et al. study also provided visitor estimates and use recreational values per site. These aggregate estimates at a site level have not been used in the Impact assessment. This is because of the uncertainty around the visitor numbers. The visitor estimates were based on self-reported visits and estimates of individual visit numbers also appear to be high compared to the very small number of existing studies. The limited size of the angler sample meant that anglers’ visits at highly popular sites might have been underestimated while visits at less popular sites might have been overestimated [↑](#footnote-ref-86)
87. Johnson, P.T.J., Preston, D.L., hoverman, J.T., Richgels, K.L.D. (2013) Biodiversity decreases disease through predictable changes in host community competence. Nature 494, 230-234. [↑](#footnote-ref-87)
88. [↑](#footnote-ref-88)
89. [↑](#footnote-ref-89)