Value of the impact of Marine Protected Areas on recreation and tourism services

Methodology report prepared for

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Disclaimer

The views and propositions expressed herein are, unless otherwise stated, those of the authors and do not necessarily represent any official view of Defra or any other organisation mentioned in this report.

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Contents

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Glossary of terms

Choice experiment:	A survey technique where people are asked to choose between options with differing levels of variables, for instance price, distance and environmental quality. This enables researchers to identify willingness to pay for a given variable level.
Consumer surplus:	Consumer surplus is the monetary gain obtained by consumers because they are able to purchase a product for a price that is less than the highest price that they would be willing to pay.
Contingent valuation:	A survey technique where people are asked how much they would be willing to pay to achieve a certain outcome.
Discount rate:	The annual percentage rate at which the present value of a future pound, or other unit of account, is assumed to fall away through time.
Discounting:	The conversion of quantities which are distributed over time into today's money (by application of a discount rate based on a preferred rate of interest).
Displacement:	The degree to which an increase in tourism in one area is offset by decreases in tourism elsewhere.
Existence value:	The value placed by people on the continued existence of an asset for the benefit of present or future generations. The latter is sometimes referred to as bequest value. See also 'Use value'.
Hedonic pricing:	Deriving values by decomposing market prices into their constituent characteristics.
Informal recreation:	Informal recreation comprises of non-motorised activities which are easily accessible, require little or no previous experience and may include associated behaviour such as enjoyment of immediate surroundings and views, and relaxation or social discussion. The primary activities in this category are walking, bathing, rock-pooling and other beach recreation such as sand-castle building, picnicking and dog walking.
Non-use benefit/value:	The benefit associated with knowing the resource exists, for current and future generations.
Present value:	The future value expressed in present terms by means of discounting.
Recreation:	Recreation is defined as leisure activities done for enjoyment when one is not working. Many recreational activities will be enjoyed by local residents however tourists will generally take part in recreational activities as well while visiting the area and this may even be the main reason for their visit. The definition of recreation in this study includes both visits by local residents and tourists when engaging in leisure activities.

Revealed preference:	The inference of willingness to pay for something which is non-marketed by examining consumer behaviour in a similar or related market.
Sensitivity analysis:	Analysis of the effects on an appraisal of varying the projected values of important variables.
Stated preference:	Willingness to pay for something that is non-marketed, as derived from people's responses to questions about preferences for various combinations of situations and/or controlled discussion groups.
Switching value:	The value of an uncertain cost or benefit for which the best way to proceed would switch, for example from approving to not approving a project, or from including or excluding some extra expenditure to preserve some environmental benefit.
Tourism:	All activities of visitors including both "tourists (overnight visitors)" and "same-day visitors". To be classified as a "tourism day visit" a trip must: - Involve participation in leisure activities, which may include sports or other outdoor activities. - Have lasted at least three hours (including travel) - Not be an activity which is undertaken "very regularly" - Be in a destination outside the respondent's place of residence (or place of work if this was the start point of the trip). The exceptions to this are trips to special public events, live sporting events and visitor attractions.
Travel cost:	The cost involved in undertaking a trip, including, for instance petrol, accommodation, entry fees and the value of the individual's time.
Uncertainty:	The condition in which the number of possible outcomes is greater than the number of actual outcomes and it is impossible to attach probabilities to each possible outcome.
Use benefit/value:	The benefit associated with using the resource.
Willingness to accept:	The amount that someone is willing to receive or accept to give up a good or service.
Willingness to pay:	The amount that someone is willing to give up or pay to acquire a good or service.

Accronyms

AONB	Areas of Outstanding Natural Beauty
AT	Angling Trust
BMF	British Marine Federation
BSAC	British Sub Aqua Club
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CS	consumer surplus
cSAC	Candidate Special Area of Conservation
EUNIS	European Nature Information System
FTE	Full Time Equivalent jobs
GBDVS	Great Britain Day Visit Survey
GIS	Geographic information system
IFCA	Inshore Fisheries and Conservation Authorities
IUCN	International Union for Conservation of Nature
LNR	Local Nature Reserve
MCPA	Marine and Coastal Protected Areas
MCZ	Marine Conservation Zone
MENE	Monitor of Engagement with the Natural Environment
MNR	Marine Nature Reserve
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
NEA	National Ecosystem Assessment
NGOs	Non-governmental organizations
NNR	National Nature Reserve

NOAA	National Oceanic and Atmospheric Administration
NPV	Net present value
NTZ	No-Take Zone
pppd	per person per day
rMCZs	recommended Marine Conservation Zone
RSPB	Royal Society for the Protection of Birds
SAC	Special Areas of Conservation
SCUBA	Self-contained underwater breathing apparatus
SLR	Sea level rise
SMP	Shoreline Management Plan
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
TCM	Travel Cost Method
TDV	Tourism Day Visits
RNLI	Royal National Lifeboat Institution
RYA	Royal Yachting Association
TDA	Tourism Development Agency
UKCIP	UK Climate Impacts Programme
UNEP	United Nations environment programme
UTM	Universal Transverse Mercator
WHS	World heritage site
WTP	Willingness to pay
WWF	World Wide Fund for Nature

Introduction

Why has this methodology been developed?

The UK is committed to establishing a network of MPAs to conserve marine ecosystems and biodiversity by 2012. The designation of UK MPAs will contribute to the wider OSPAR MPA network and the requirements of the Marine Strategy Framework Directive (MSFD).

MPAs provide a number of opportunities for recreational users to enjoy a good quality marine environment when practicing non-extractive activities such as sailing, diving, kayaking, wildlife watching, etc. (Alban et al, 2006). There are several arguments supporting the development of eco-tourism inside MPAs such as:

- Economic benefits from eco-tourism can be used to compensate the costs from management activities;
- The development of tourism can improve the acceptability of the process (although this is more applicable to MPAs other than MCZs, as the latter has been the result of on-going stakeholder consultation and support, so general acceptability is supposed to be high); and
- The development of ecosystem related tourism can become a political incentive for ecosystem protection.

In November 2012, Defra published its draft impact assessment on the designation of the first tranche of MCZs. The quantification of recreational benefits and tourism in this impact assessment was limited due to lack of evidence. A public consultation was launched and ran from the 13 December 2012 to the 31 March 2013[1].

This report sets out a methodology to assess the benefits of MPA designation on recreation and tourism. This methodology is based on the findings of a literature review on the economics of MPAs on recreation and tourism. A literature review report accompanies this methodology. The methodology has been used to inform the revised Impact Assessment for the designations of MCZs but does not address the estimation of costs of management measures and/or costs to recreational users and the tourism industry as a result of designation and management.

The nature of MPAs means that benefits could arise because of the actual change in environmental conditions and quality of the environment, but benefits could also arise independently to changes in the environment (for instance in the form of a perception of change and/or the increased awareness of the site following designation). The latter suggests that there is a need to take account of the change in marketing potential. On the other hand, the literature review has shown a scarcity of studies investigating perception issues.

[1] A summary of the consultation responses is available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/212695/mcz-consult-sum-resp-20130716.pdf

Below is a diagram showing the draft conceptual framework for the assessment of the value of the impact of MPAs on recreation and tourism. The rationale is based on the terminology and approach adopted by Natural England and Defra for the impact assessment. Key definitions are provided in the glossary of terms. The rationale behind the methodology is depicted in the following figure. The methodology is underpinned by the following key principles:

1. Designation will (most likely) lead to conservation gains that will benefit existing users, improving the quality of the experience which in turn could increase the frequency of visits (NB: this is not always the case, there may be an increase in the frequency of visitation and individuals may just value their experiences more following designation but these benefits are not possible to value at the time of writing this methodology[2]);
2. Designation could lead to improvement in access and facilities (although the evidence from the literature is very sparse) which may result in increased visitation; and
3. Designation could be accompanied by site promotion, which may increase visitor numbers by attracting new visitors (again, the literature review has shown limited numerical evidence on this but it should be recognized as a possibility).

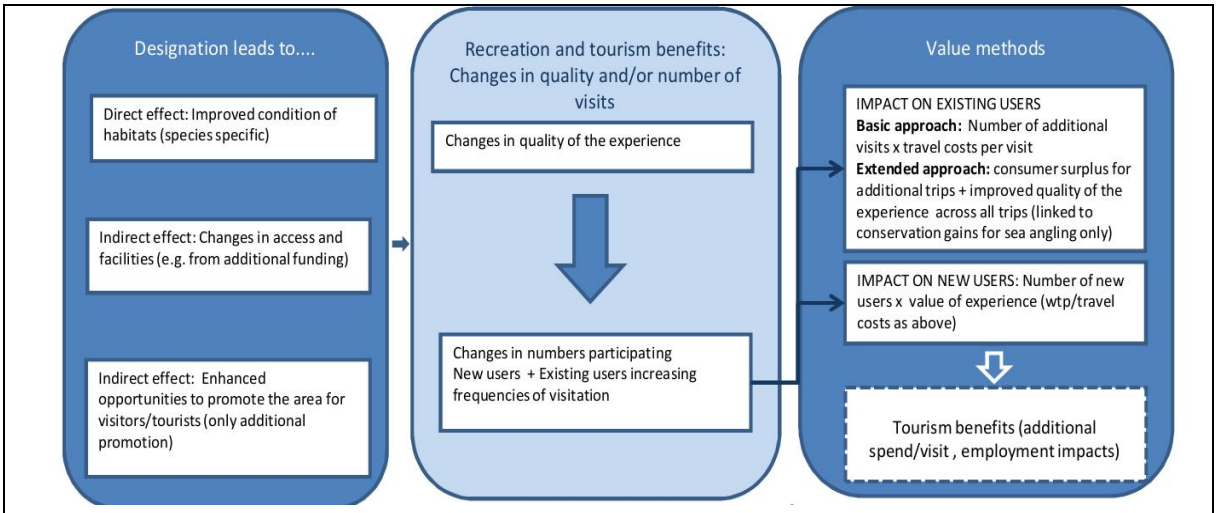

Figure 1: Conceptual diagram of recreation and tourism benefits from Marine Protected Areas

[2] The literature has shown however, that aspects such as improving access can increase visitation by up to 20% in the case of the provision of coastal walks (Barry et al., 2011). However, this is a one-off and may not apply to all cases. Another study on improvements to environmental conditions in coastal Natura 2000 sites revealed an increase probability of staying an extra-night by 15% (Loureiro et al., 2012). Both studies were based in Ireland. Another study in Canada showed increases in visitation of around 6% following designation as a world heritage site (WHS) (Kayahan, 2010).

Who this methodology is intended for

This methodology is intended for Defra economists and any person conducting a benefit assessment of MPA designations.

The methodology has been developed alongside efforts to assess the recreational and tourism benefits of rMCZs but it is intended to be applicable to MPAs more generally, other than just MCZs (although this is a bespoke methodology for the MCZ process). The main text of the methodology is written as to be applicable to MCZs but this could be read interchangeably as MPA. As a result, some steps highlighted below can be shortcut by using evidence available from the MCZ process, in particular with regard to baseline definition and impacts of designation on conservation status (these are highlighted in red in Figure 2). Those sections that apply to MPAs other than rMCZs are provided in italics and can be skipped for the evaluation of MCZs.

Approach

Recreation and tourism are normally terms used interchangeably and different definitions have applied in different contexts. Based on the definitions adopted in this project, recreational benefits arise to users engaging in leisure activities, both local residents and tourists, while tourism benefits capture the benefits to the "tourism-related sector" (including hotels, restaurants and shops), thus benefiting from expenditure by locals as well as tourists[3].

The methodology is structured around different stages. The first step involves a high level categorisation of the site depending on the recreational and tourism value of the site.

The methodology relies on the following sources of information for defining the baseline (each of which will be discussed further at the appropriate point in methodology):

- Marine Planning Portal: this can help to identify facilities supporting recreational uses, as well as to visualise the graphical extent of the MPA.
- The Monitor of Engagement with the Natural Environment (MENE) survey: this source is used for defining the baseline of informal recreation, estimating the benefits using travel costs and other expenditure for estimating tourism benefits. There are a number of issues that need highlighting when using this source, namely:
    - The MENE provides the total number of visits for a number of broader recreational categories which include fishing, general visits to the beach, water sports and wildlife watching as the main purpose of trip. Thus, it may not provide enough detail as to the level of activity for specific recreational categories, such as diving

[3] One of the reasons supporting the decision to adopt this definition is that the units used in this methodology include expenditure by both locals and non-locals.

and/or bird watching. It may also underestimate the recreational benefits derived from multi-purpose trips.

- Sometimes the level of detail will not be sufficient for estimating the number of visits at a specific site so the best level may be the Local Authority.

- StakMap: this source provides information on recreational uses other than informal recreation, such as boating, angling, paddle sports, etc. It reports in terms of number of users per year. Although the spatial distribution of activities appear to be quite accurate (Pers. Comm. 2013[4]), there are a number of shortcomings with this database:

  - As StakMap was a survey of a sample of users, it will systematically underestimate activity levels. Validation of the data for the North West of England revealed that the data only covered 55% of sea angling clubs in the region and 78% of known sea anglers to Defra (Pers. Comm. 2013[1]). No other validations have been undertaken. When using StakMap numbers, the methodology is more likely to underestimate the number of users benefiting from designation. However, due to the uncertainties surrounding the direct and indirect impacts of designation, the figures are believed to be acceptable within the general uncertainty level affecting the ex-ante evaluation of benefits. It is recommended that the numbers are validated on a case by case basis, if time and resources allow.

  - On the one hand, because StakMap did not account for users engaging in more than one activity (Pers. Comm. 2013[5]), it may double-count the number of users when users of different recreational categories are summed. On the other hand, the aggregation could not have counted the same user more than once within the same recreational category (Pers. Comm, 2013[2]);

- Watersports Survey: this is used to estimate the total number of visits by applying the frequencies of participation on the number of users for different recreational categories. The main issue with this is that the average frequencies of participation reflect the average number of trips per user to, most likely, different sites (as opposed to the same site under assessment). This information has been complemented by additional information provided to the consultants on a more recent survey of visitation to specific proposed MPAs on which divers and anglers were asked about visitation to specific sites within the last year[6].

A fundamental assumption of this methodology is that existing visitors will increase visitation rates as a result of designation because of perception aspects and other physical gains, although the

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4 Fran Moore, Pers. Comm.

5 Shaun Lewan, Pers. Comm.

6 As part of the National Ecosystem Assessment (NEA) and conducted by the University of Aberdeen: the value of potential marine protected areas in the UK to divers and sea anglers, to be published in July 2013.

increase in intensity of use will depend on the level of policy change (although the methodology allows you to estimate consumer gains for existing angling trips, refer to Step 3.3.2). There is evidence suggesting that designation can increase the number of annual visits, but figures are rarely provided. The literature review has shown however, that aspects such as improving access can increase visitation by up to 20% (i.e. through the provision of a coastal walk) but this may not always apply. Another study showed that improvement in environmental conditions can lead to an increased probability of staying an extra-night by 15% in the context of coastal Natura 2000 sites but generally there is a gap in the literature establishing a link between designations and visitation rates. Addressing this gap will most likely entail conducting surveys on existing visitors or carrying out contingent behavioural studies that examine the impacts of designation on intensity of use. Alternatively, the methodology can be used to value the baseline by calculating the current number of trips and applying travel costs and/or measures of consumer surplus when considered appropriate.

More information on the different sources can be found in the literature review report. To date, however, the above sources are the best evidence available to define the level of use under the baseline. Yet, validation through internet searches and consultation could be undertaken should time and resources allow. Any estimates generated by the use of this methodology should be interpreted with caution. The methodology allows you to record your assumptions and confidence levels for your estimates. These could be tested under sensitivity analysis. Sensitivity analysis will allow you to assess the effect of changes in the main variables, which should include those that you are the most uncertain about (e.g. visitor numbers, impacts on conservation, changes in frequencies of visitation, etc.).

How is this methodology applied

The methodology is structured around a series of different stages. A case study report applies these different stages and is presented separately but will illustrate how the different stages apply in practice. The different stages are depicted in Figure 2.

It is clear that, even where there is substantial recreational use within an rMCZ, there are instances where designation/further management controls may have limited or zero recreational benefits. There are a variety of situations where this can be the case and consideration of these situations can be used as a means of streamlining the methodology and reducing/eliminating the time required to gather more detailed data on recreational uses and rates of participation (where this is likely to be the most time consuming step in the analysis). As such, a number of breakpoints have been provided throughout the methodology to guide your assessment and are the main aspects to consider when impacts are likely. You do not need to record the answer to each question but may wish to stop the process based on when impacts are considered negligible and/or based on a variety of factors (e.g. low level of use, access, no tourism business related to the activities, etc.).

This guidance is supported by a spreadsheet where the findings of the different stages can be recorded. The spreadsheet creates a record of tables to support the assessment (included in the summary sheets) and provides you with a brief description of each step and instructions to follow as

well as sources of information. The benefits assessment spreadsheet is comprised of 22 worksheets. They are grouped as follows:

1. Stage 1: Baseline definition. Comprising:
    a. Sheet 1: records basic information on the site
    b. Sheet 2: collects information on recreational activities under the baseline and levels of activity
    c. Sheet 3: gathers information on level of facilities and access, promotion and awareness supporting the levels of activity
    d. Summary sheet 1: includes a summary of all the previous sheets and categorises the site according to the level of recreational activities and tourism level.
2. Stage 2: Impact screening. Includes the following:
    a. Sheet 4: records the conservation features to be designated
    b. Sheet 5: collects the current conservation status (status under baseline)
    c. Sheet 6: identifies conservation outcomes/objectives, following designation
    d. Sheet 7: screens recreational impacts based on changes in conservation status
    e. Sheet 8: screens the recreational benefits from management activities
    f. Sheet 9: screens recreational benefits from improvements in services
    g. Sheet 10: screens recreational benefits from additional promotion
    h. Sheet 11: screens the tourism benefits
    i. Sheet 12: summary of the screening exercise.
3. Stage 3: Impact evaluation. Comprising:
    a. Sheet 12: qualitative assessment of recreational benefits to existing users
    b. Sheet 13: qualitative assessment of recreational benefits to new users
    c. Sheet 14: qualitative assessment of tourism benefits
    d. Sheet 15: estimates the number of users and trips (this step aims to gather more information on the baseline prior to quantification)
    e. Sheet 16: estimates number of additional visits from existing users
    f. Sheet 17: estimates the increase in number of new users
    g. Sheet 18: estimates values for recreational benefits
    h. Sheet 19: estimates recreational benefits based on consumer surplus

i. Sheet 20: estimates recreational benefits to anglers (based on consumer surplus stemming from conservation gains)

j. Sheet 21: estimates tourism benefits (based on expenditure)

4. Stage 4: Summary of impacts. Comprising:

    a. Sheet 22: accounting for displacement impacts and timing

    b. Summary sheet 4: results of quantification and monetary valuation.

The worksheets allow you to navigate back and forth as you collect more information on the site. The sources of information on the different stages are provided in grey boxes in this document and also in the spreadsheet to assist you throughout the assessment.

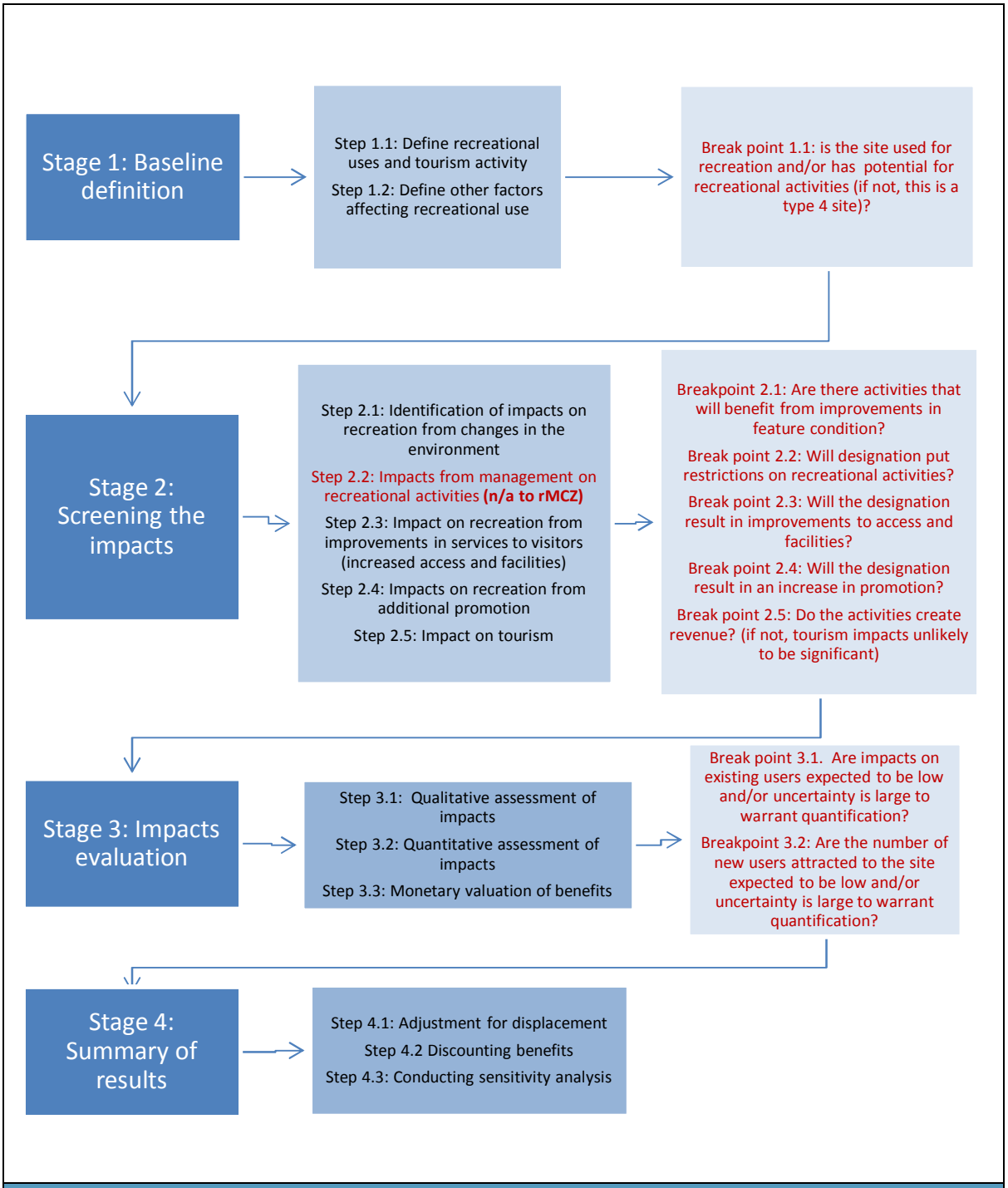


Figure 2: Flow-chart of methodology stages and steps

1 Stage 1: Baseline definition

1.1 Overview of Stage 1

The first stage of the methodology relates to the baseline definition concerning the level of recreational use and tourism levels. Defining the baseline is important as it will be supporting the information the impact assessment will draw on. The aim of this step is to categorise the site in order to estimate whether existing users will be affected by the designation and whether there is potential for new users to be attracted to the site.

Aim of this stage: to define the baseline concerning the level of recreational use and tourism levels and to categorise the site according to the recreational and tourism value.
Information needs for Stage 1

For this step, it is recommended you collect basic information such as:
• Name
• Regional project (if applicable, for rMCZ process only)
• Area (km^2)
• Type, i.e.
  • inshore: Coastal waters within 12 nautical miles (nm)
  ▪ Coastal: up to 1nm
  ▪ Estuarine
  • offshore: >12 nm
• Further description, including overlaps with existing designations (i.e. international, European designation and/or other national designation).
• Type of recreational activities
• Level of recreational activities and tourism, including level of facilities on site, level of access and awareness of site at national, regional or local level

Main sources of secondary data
The main source of information is the MMO marine planning portal, available at: http://planningportal.marinemanagement.org.uk/#. This site also provides information about the facilities at the site. Information on the number of some recreational users is available from StakMap, available at MMO marine planning portal, http://planningportal.marinemanagement.org.uk/# Similarly, the MMO1013 Catalogue of marine recreation spatial data, available at http://www.marinemanagement.org.uk/evidence/documents/Catalogue_of_marine_recreation_spatial_data.xls, provides information on the type of activities and datasets providing information on recreational activities along the coasts. The JNCC website also provides information on the existing designations and features. (http://www.mczmapping.org/#).
This stage is comprised of the following worksheets: Sheet 1: records basic site information Sheet 2: records the recreational uses and level of use (Step 1.1) Sheet 3: records the level of facilities, access and site awareness (Step 1.2)

1.2 Step 1.1: Define recreational uses and levels of use under baseline

Table 1-1 shows the different recreational activities and sub-categories included under the methodology ('activity type' worksheet). The description includes different sub-categories under each of the groups according to the sources of literature used for the development of the methodology. You should pick the ones that apply from the drop-down list.

Table 1-1: Recreation categories and sub-categories

Recreation categories	Description
Informal recreation	Includes walking/hiking and general visits to the beach (strolling, sunbathing, picnicking, swimming, rock-pooling, etc.)
Wildlife conservation	Bird watching Cetacean watching Seal watching
Water sports	Recreational diving Snorkelling Recreational angling Board sports (Windsurfing, surfing and kite boarding) Paddle sports (kayaking, paddle boarding, canoeing, rowing) Sailing Motorboats (jet skis and motorboats)
Other formal recreation along the coast	Harvesting from the foreshore (bait collecting and intertidal gathering) Wildfowling Horse riding Sand yachting Off-roading (use of motorised vehicles such as motorbikes, quad bikes and four-wheel-drive vehicles)

There are different sources of data on the types of activities within a site; these are provided in the next box. The main limitation with these datasets however is that they may not provide a count of visitors engaging in the activities and level of intensity of use but just a record of where the activities take place. Site-specific estimates should be obtained where possible. In some cases, it may not be possible to record the different sub-categories and/or distinguish between the different activities grouped under the sub-categories. Depending on the type of site, namely, coastal, estuarine and/or offshore, some activities may not apply.

Other sources of data on types of activities

Other sources of data on specific activities are provided in the following table.

Table 1-2: Datasets on recreational activities

Subcategories	Datasets
Walking along the coast	http://www.naturalengland.org.uk/ourwork/access/coastalaccess/default.aspx http://www.ramblers.org.uk/ Walks around the country, available at: http://www.grabyourboots.com/
Horse riding	British horse society, lists beaches which welcome horses, available at: http://www.bhs.org.uk/~/media/BHS/Files/PDF%20Documents/Access%20leaflets/Rid

	ing%20on%20Beaches.ashx
Bird watching	http://www.rspb.org.uk/reserves/
Cetacean watching	Record of recent sightings, list of recommended boat operators, etc. available at: http://www.seawatchfoundation.org.uk
Seal watching	Record of recent sightings, list of recommended boat operators, etc. available at: http://www.seawatchfoundation.org.uk
Recreational diving/snorkelling	http://www.divernet.com/ www.snorkeling.co.uk http://www.ukdiving.co.uk/places/coastal/ maps wrecks, dive centres, etc. available at: http://www.finstrokes.com/dive-map.html http://www.extremesportsmap.com/ (data may be poor) http://services.english-heritage.org.uk/NMRDataDownload/ British Sub-Aqua Club (https://www.bsac.com/default.asp)
Sea Angling	Lists sea angling portshttp://www.ukcharterboats.co.uk/acatalog/add_a_boat.html
Sail and powerboat racing	Royal Yachting Association http://www.rya.org.uk/Pages/Home.aspx Data on boat launches, marinas and slipways, available at: http://www.boatlaunch.co.uk/Download.aspx http://www.scottish-enterprise.com/~/media/publications%20archive/About%20Us/economic%20research/Sailing_tourism_in_scotland.ashx
Board sports (surfing, windsurfing, kite boarding, body boarding)	BSUPA, British Stand-up Paddle Association, info on schools around the country available at: http://www.bsupa.org.uk/bsupa-approved-schools/ SLSGB, Surf LifeSaving Great Britain, info on clubs around the country available at: http://www.slsgb.org.uk/find-my-club http://www.extremesportsmap.com/ (data may be poor) http://thewindmap.com/wiki/index.php/Kessingland-UK_and_Ireland Surfers Against Sewage, http://www.sas.org.uk/ http://www.surfinggb.com/ www.ukwindsurfing.com http://www.britishkitesurfingassociation.co.uk/ http://www.forces-of-nature.co.uk/dbdriven/beachguide/beachguide.php
Kayaking/canoeing	British Canoe Union, available at: http://www.bcu.org.uk/ Data on boat launches, marinas and slipways, available at: http://www.boatlaunch.co.uk/Download.aspx Lists places to paddle, available at: http://www.canoekayak.co.uk/ Canoe England, provides info on places to canoe and kayak, available at: http://www.canoe-england.org.uk/our-sport/where-to-paddle/canoe-trails/, also info on clubs around the country, available at: http://www.canoe-england.org.uk/findaclub.aspx http://www.britishrowing.org/ http://www.explorerowing.org/touring
By area:	www.icoast.co.uk/ http://www.washandnorthnorfolkcoastems.co.uk/downloads/PDF/150108%20-annexes.pdf http://www.norfolkcoastaonb.org.uk/ http://www.norfolketc.co.uk/ http://www.eastcoastdiving.co.uk/ http://www.kentwildlifetrust.org.uk/ http://www.suffolkcoastandheaths.org/things-to-do/ http://www.suffolkcoastal.gov.uk/ www.walesactivitymapping.org.uk/

Under this step, the level of activity at the sites is assessed. Sheet 2 includes a drop-down list for ease of completion to record the level of activities (no use, low, moderate high and/or very high use). Some of these will be automatically filled in depending on the type of site (whether it is coastal, estuarine, inshore or offshore). You may be able to enter other recreational activities too. The following box provides you with sources that may help you with the qualitative evaluation of activities under the baseline. You will be able to enter the level of use as follows, considering the average level of use in an average year:

- Very high use: these are very popular sites for a specific recreational category. These sites will have large numbers of both day visitors and tourists taking part in the activity. You could consider these sites to be hot spots for specific activities and/or honeypots more generally.

- High use: these are popular sites for a specific recreational category. These sites will have larger numbers of day visitors than tourists taking part in the activity (although tourists may enjoy a greater number of participation days per trip).

- Moderate use: these sites are mostly used by local people engaging in the activity but the number of day trips by non-locals is not insignificant (e.g. 20% of total visits[7]). Most visits consist of day trips.

- Low use: these sites are mainly used by local residents and/or people living within the vicinity, but not in great numbers. The number of visits conducted by non-locals is very limited;

- No use or sites with very limited potential to improve, due to off-shore location, limited access and little or no facilities which offer investment opportunity..

Examples of the level of use for different sites and activities and sources of data are provided in the next box. It is important to note that StakMap is more likely to underestimate the level of use, as it was based on a survey to a sample of users. Thus, it is recommended that if time allows, figures should be validated with stakeholders, as listed in table 1-3.

Case studies and level of use
The Torbay case study has been classified as having a very high level of use on specific recreational categories, such as informal recreation, and high level of use on other categories, such as angling, wildlife observation and angling. The total number of day trips in 2009 was estimated 2.5m and another 1.1m were tourist trips. The site has a very high level of use for the informal recreational category. Titchwell Marsh on the north Norfolk coast is one of the Royal Society for the Protection of Birds' most visited reserves with an estimated 92,000 visitors a year and the Scottish Seabird Centre on the east Lothian

[7] Based on figures for the Cumbria coast case study, i.e. visits to St Bees in 2010/2011, as reported in MENE. Figures are for general visits to the beach. Other activities such as diving and wildlife watching may involve greater participation by non-locals.

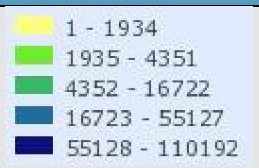
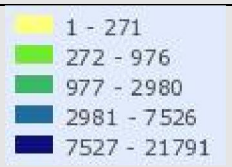
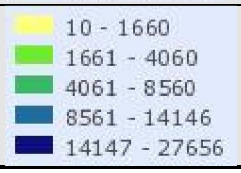
coast had over 284,000 visitors in 2007 (Defra, 2010). These numbers represent very high levels of use. The number of visits reported as birdwatching in the Stour and Orwell is 13,000 visits a year (RSPB, pers. Comm. 2013) which can be considered to be high. The Cumbria Coast attracts 1,000 to 2,000 visits a year for birdwatching, which reflects a moderate level of use.

Information on the number of some recreational users is available from StakMap, available at MMO marine planning portal, http://planningportal.marinemanagement.org.uk/#. When activities have been recorded, different colours are displayed. The level of usage can be categorised according to the different colours, as follows:

- Yellow represents low usage;
- Green represents moderate usage; and
- Blue represents high usage of the site (you may also be able to distinguish between high or very high).

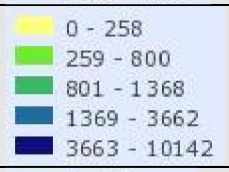
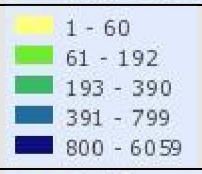
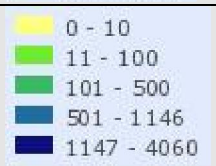
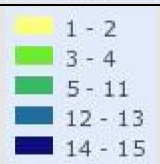
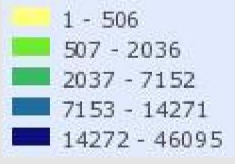
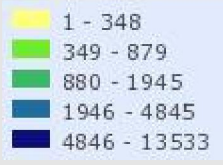
It is important to note that there could be some double-counting among the categories, as interviewees were anonymous and there was no information collected on main use (Pers. Comm. 2013[8]). The risk of this however is not expected to be significant among the recreational categories considered in the dataset. Consultation with CEFAS on the recreational sea angling categories reflect that they may be of the right order of magnitude (although for anglers carried on charter boats the last category is considered to provide numbers which are too high). It is also important to note that the data collected under StakMap was based on a survey of users and aggregate figures are more likely to underestimate the level of use. A validation exercise undertaken for the North West concluded quite a high level of representation of specific recreational categories (i.e. angling and wildfowling) but low representation of diving clubs and/or sailing activities (Pers. Comm., 2013[9]). As a result, you may wish to record higher levels of use than those reported.

Table 1-3: Recreational activities and values under StakMap

Recreational activity	Description	Values depicted	Additional considerations (linkages to sub-categories as given in Table 1-1)
Sailing	This feature class records the number of people involved in sailing per annum.		
Board sports	This feature class describes the numbers of people involved in windsurfing, surfing and kite boarding.		Includes wind sports and passive boarding sports
Angling from charter boats	This feature class records the number of anglers carried on charter boats.		This feature will have to be added to capture the "recreational fisheries" category but angling from

[8] Communication with Shaun Lewan

[9] Communication with Fran Moore

Recreational angling	This feature class records the number of people per annum involved in recreational angling.		charter boats could indicate potential for tourism benefits.
Divers carried on charter boats	This feature class records the number of divers carried on charter boats.		These features will have to be added to capture the recreational diving category. Diving from charter boats could indicate potential for tourism benefits.
General diving	This feature class records the number of people per annum involved in general diving activities (both scuba and snorkelling).		
Wildlife enthusiasts carried on charter boats	This feature class records the number of wildlife enthusiasts carried on charter boats.		These features will have to be added to capture the main category of "wildlife observation" but will not distinguish between sub-categories. The numbers of wildlife enthusiasts not on charter boats appears to be low, thus it may underestimate the total number of users affected. Charter boat use indicates potential for tourism benefits.
Wildlife enthusiasts	This feature class records the number of people involved in bird watching, mammal watching or botany.		
Motorboats	This feature class records the number of people involved in activities that make recreational use of powered craft (ranging from jet skis to motor cruisers)		Powered board sports and sail and powerboat racing.
Paddle sports	This feature class records the number of people who reported paddle boarding, kayaking, canoeing or any other activity that uses paddles or oars as its means of propulsion.		As in Table 1-2

Information on the number of informal recreational users can be sought through internet searches. MENE contains information on the number of visitors for specific coastal towns which may be useful for more popular sites. MENE also have different recreational categories that could be used to validate the StakMap data. For coastal and estuarine sites, you should consider the recreation along the coasts and arrivals into the coastal towns nearby as an "area of influence". For non-coastal sites, you should consider the coastal towns where there are launching facilities or embarking points as these are likely to be influenced by designation. A link to the MENE survey is provided in the excel methodology.

Information on the number of other formal recreational users along the coast is currently not available. Internet searches may help in establishing the number of users but consultation is likely to be required. As a result, you may underestimate the number of people affected.

Note also that as more information becomes available it may be possible to use data from ongoing MMO evidence gathering under the marine planning process. In this regard the most recent study, Phase 2, has already highlighted some priority gaps and a strategic action plan is being delivered to meet the evidence gathering needs. This includes data on recreational activities (http://www.marinemanagement.org.uk/news/news/130208.htm.

1.3 Step 1.2: Describe other factors affecting recreation and tourism

Sheet 3 will help you to collect further information under the baseline to help assess the type of site. You will collect information on the following aspects that will affect the level of participation:

- Facilities at the site/adjacent to the site supporting recreational activities (e.g. marine, angling and sport fishing centres, water sport training facilities). These can help you to assess the level of activity and the tourism value under the baseline. Where facilities are available it is more likely that the level of activities will be high or very high. In this regard, some of these activities will generate tourism revenues which will help you screen this type of impacts at a later stage;
- Access to the site (travel opportunities, parking and means of access –shore, boat, pier). The more accessible the MPA is, the higher the level of use and potential for tourism to develop;
- Awareness of the site, concerning whether the public is aware of the site at national, regional or just local level and linked to whether the site is marketed widely.

Table 1-4: Attributes affecting visitor numbers for site categorisation

Attributes	Low	Moderate	High
Facilities at the site /adjacent to the site supporting recreational activities	Low presence of facilities to conduct activities (e.g. there are few locally-based charter boats and some are booked months in advance)	There are shops and facilities for the conduct of specific activities but they do not operate throughout the year and only in peak season	There are facilities for the conduct of activities throughout the year (rent of snorkelling and windsurfing equipment)
Access to the site (travel opportunities)	Site is remote with limited public transport. There are no car park facilities and the site is only accessible by boat	There are public transport connections and people travel by private transport (car park facilities are available). The site is accessible by shore and boat	There are specific trips organised around the conduct of specific activities. There is a pier, and can be accessed by boat and from the shore
Awareness of the site	The site is only known to local residents and is not being promoted	The site attracts visitors from the region and not just local visitors. The site is promoted at regional level	People will travel to visit the site because of specific activities and plan their holidays around these. Site is promoted at national/regional level

Sources of data on attributes affecting visitor numbers

Although you may be able to score the site without gathering additional evidence, information from the MMO marine planning portal, available at: http://planningportal.marinemanagement.org.uk/# can help with scoring the site based on the above criteria. This website provides information about a number of facilities at the site and also other designations affecting visitor numbers such as Blue Flag beaches which can be related to the awareness of the site.

Table 1-5: Baseline facilities

Type of facilities/centres	Number	Supporting recreational activities
Angling and sport fishing centres		Recreational fisheries (i.e. Recreational Sea Angling (RSA), Recreational potting)
Aquaria and sea life centres		May support tourism activity
Bird reserves and sanctuaries		Bird watching
Picnic areas		Informal recreation more generally
Visitors centres		All uses
Water sports training facilities (surfing schools, windsurfing schools, scuba diving)		Recreational diving/snorkelling Board sports (surfing, windsurfing, kite boarding, body boarding) Sail/motor cruising Kayaking
Caravanning sites		Informal recreation more generally
Blue Flag beaches		Walking Bathing/swimming Beach recreation (e.g. sports)
RYA clubs		Sail/motor cruising
RYA marinas		Sail and powerboat racing
RYA training centres		Sail/motor cruising Sail and powerboat racing

1.4 Step 1.3: Summary of recreational and tourism value and "broad" site categorisation

On the basis of the above, it is possible to undertake a qualitative assessment of the importance of the site for recreational use and tourism. At this point it will only be necessary to assess the site at a broad level. Further details can be collected at a later stage.

From the information collected on the type of activities and the level of activities, the site should be categorised (done automatically in the excel spreadsheet) as a type 1, 2, 3 or 4 as follows:

1. Type 1: sites that are actively used for tourism and recreation and could be considered "honey pot sites". A honeypot is a particularly popular visitor attraction which attracts tourists (and sometimes locals) in large numbers[10].

[10] Tiscali Encyclopaedia 27 June 2009

2. Type 2: sites that are actively used for tourism and recreation but are not considered to be a honeypot and do not attract visitors in large numbers. These sites have fewer facilities but they are still important in terms of recreational activity level.

3. Type 3: sites not actively used for tourism and recreation but with potential to develop activities. The potential may be realised through additional promotion and/or investment in facilities (e.g. provision of car parks, improved access, etc.).

4. Type 4: these sites are unlikely to be accessible by shore and subject to restrictions on recreation (no navigation area, no anchoring or mooring). These sites are more likely to relate to offshore sites where recreational activities do not currently take place.

Break point 1.1: is the site used for recreation and with potential for recreational activities? If not then is a type 4 site

- For type 4 sites, impacts on recreation and tourism are unlikely to be significant. This is because there is very limited recreation at the site and the opportunities to develop it are limited. However, there could be indirect impacts, for instance, if designation involved protection of key features and/or spawning grounds there may be a spill over effect into the surrounding area. The impacts may thus deliver indirect benefits to recreational anglers. You may wish to seek additional expertise on spill over effects. An assessment of the habitats/features to be protected under this type of site and potential spill over effects will be needed. If spill over impacts are expected, you should redefine the area considered in the assessment and continue with the process below.

- For the other type of sites recreational and tourism impacts are more likely, however, their scale may depend on the type of site, with impacts for type 1 and 2 more likely than for type 3 sites (unless designation of the latter is accompanied by significant improvements in access and facilities and additional promotion).

The excel application will provide you with the broad categorisation for the site, in addition to a number of supporting tables with information on the baseline. Figure 1-1 sets out the rationale for the site categorisation and the likelihood of benefits from designation.

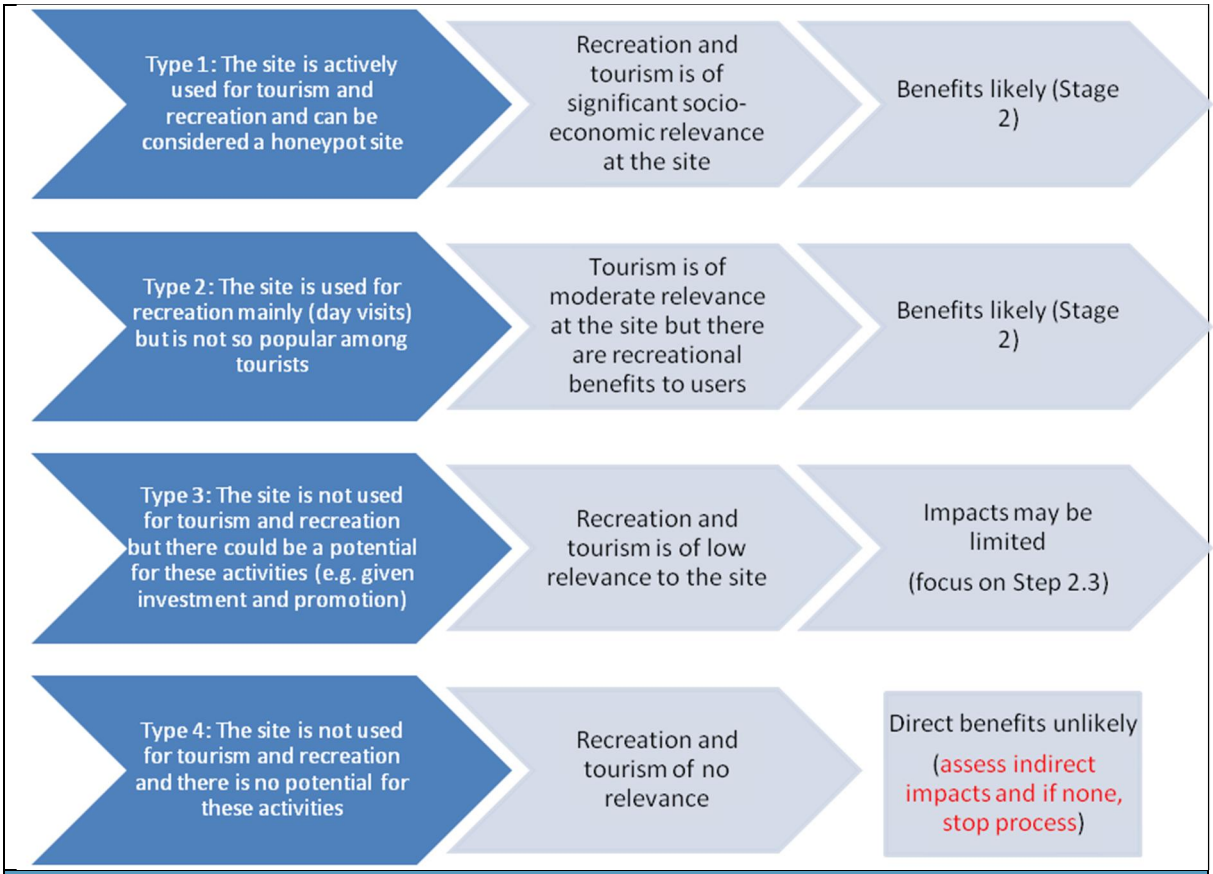


Figure 1-1: Site categories for recreation and tourism _ baseline description

2 Stage 2: Screening the impacts from designation and management on recreation and tourism

2.1 Overview of Stage 2

Aim of this Stage: This stage aims to establish what type of impacts could arise from designation and management on recreation and tourism (directly or indirectly, through conservation gains, management, improvements in access and facilities and/or additional promotion)
Information needs for Stage 2
For this stage you will need information on: • Features up for designation, conservation objectives and linkages to recreational activities under baseline • Management strategies and impacts on recreational activities, directly (management of the recreational activity itself) or indirectly (through management of other uses that could affect the quality of the experience of recreational uses) • The potential impact of designation on the level of access and facilities (through additional funding) • The potential impact of designation on the level of awareness about the site (through additional promotion)
Main sources of data
There is limited available evidence showing that designation alone can improve the level of access and facilities, and evidence on promotion is linked to internationally known sites such as World Heritage Sites (WHS). You may wish to gather primary data for this stage from additional consultation, asking stakeholders whether designation could be used as a tool for site promotion and/or if additional funding may benefit existing users but also bring new users to the policy site.
This stage is comprised of the following worksheets: Sheets 4,5 and 6: collects information on conservation status and objectives of the designation as follows: • Sheet 4: identifies features for designation • Sheet 5: describes current conservation status • Sheet 6: identifies conservation outcome following designation (or conservation objective) Sheet 7: Identifies recreational uses benefiting from changes in environmental quality Sheet 8: Screens recreational benefits from management Sheet 9: Screens recreational benefits from improvements in services (access and facilities) Sheet 10: Screens recreational benefits from additional promotion Sheet 11: Screens benefits to tourism

Designation and management is expected to improve the conservation status of designated features. This methodology focuses on those features that are currently under unfavourable status and whose objective is to 'recover' status. There will be additional benefits flowing from the non-use values (i.e. the value of designation itself) but these are not considered in this methodology.

Benefits may also accrue to users from designation, independent of changes in the quality of the environment, i.e. linked to improvements in access, facilities and promotion. This stage aims to establish what type of impacts could arise from designation and management on recreation and tourism. The stage is divided in the following steps:

- Step 2.1: Screening the impacts on recreation from changes in the environment. This step is aimed at examining the direct effects of the designation on conservation but also examines which of the recreational activities under the baseline may benefit from improvements in the conservation status.
- Step 2.2. Screening impacts from management on recreational activities. As the management strategies for the rMCZ will be decided at a later stage by the IFCAs and the MMO, you could skip to next Step. In the future, as more information becomes available, you may be able to feed in more information on these impacts on recreational activities and tourism;
- Step 2.3: Screening the impacts on recreation linked to improvements in services (changes in access and facilities);
- Step 2.4: Screening the impacts on recreation linked to additional promotion; and
- Step 2.5: Screening the impacts on tourism.

The different steps are illustrated in Figure 2-1.

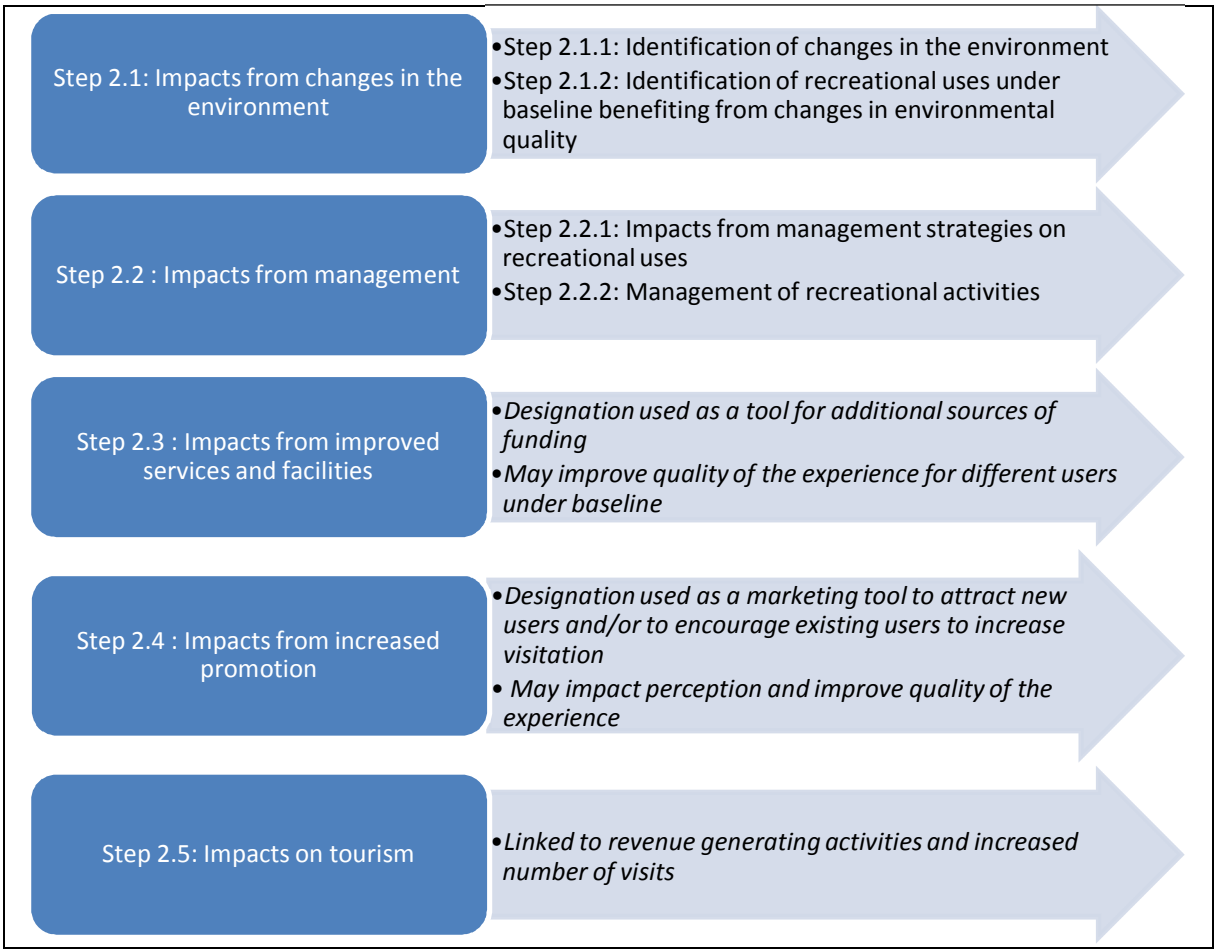


Figure 2-1: Steps under Stage 2, Screening

2.2 Step 2.1: Impacts on recreation from changes in the environment

The next step is to set out the type of recreational uses that may be affected by the conservation status. There is potentially a difference between the nature conservation definition of 'recovery' and the level of visible evidence required to evoke a response from recreational interests. For the purposes of this analysis 'recovery' is defined as[11]:

[11] The reason for adopting this approach is that all types of visitors have expectations and will not deviate from normal visit plans without a strong stimulus. For example, recreational anglers expect quantity and size commensurate with their expenditure and past experience; divers look for exciting experiences that complement past experience or that represent an element of surprise. Casual visitors need to be convinced that they will see something beyond their normal experience.

Positive changes in the size and/or abundance of habitats and species that give visitors a memorable experience which exceeds their expectations in comparison to a pre-designation visit to the site or to other comparable locations nearby.

2.2.1 Task 1: Identifying changes in the environment

Sheets 4, 5 and 6 in the excel application allow you to record the current and future conservation status and confidence levels. *This step does not require information on the management strategies (and could be fit for purpose to the MCZ process as the management strategies will be agreed at a later stage).*

NB: information concerning the conservation status and objectives of the different rMCZs is likely to be readily available so you should not collect further information but just gather the existing information on the features for designation, their current conservation status and their objectives.

For sites other than rMCZs, one must consider the additional benefits that arise as a result of the designation. Where little or no protection is currently afforded to a site (due to a general lack of designations), improvement in the condition of features arising from better protection and management may improve the quality of the site for recreational users. It follows that habitat improvements may lead to recreational benefits (amongst others). The definitions supporting the IA of the rMCZ could be applied here to define favourable status (in Table 2-1).

Table 2-1: Definition of favourable conservation status

Natural habitats	Species
• Its natural range and areas it covers within that range are stable or increasing; • the species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the next 20 years; and • the conservation status of its typical species is favourable and stable.	• Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats; • the natural range of the species is neither being reduced for the next 20 years; and • there is, and will probably continue to be a sufficiently large habitat to maintain its populations on a long-term basis.
http://www.defra.gov.uk/consult/files/mcz-annex-i-121213.pdf	

Ideally, a dynamic baseline should be considered, in other words the variation in condition without the designation over the 20 year timeframe should be recorded[12]. This is illustrated in the following figure. Baseline 1 represents a situation where favourable condition remains over the next 20 years

[12] The current rMCZ designation process assumes a static baseline due to lack of evidence to define a dynamic baseline. A static baseline depicts the current conservation status subject to current pressures but does not provide for additional pressures to be considered under the no designation scenario. More information may be available in the future that could help to asses this dynamic baseline. A static baseline may underestimate the benefits from designation should the activities cease because of deterioration of the marine environment.

whereas baseline 2 reflects the situation where conservation status undergoes deterioration over the next 20 years, i.e. moving towards unfavourable condition. In the latter case, designation will result in recovery from a lower baseline; thus, the impacts from designation could be expected to be larger.

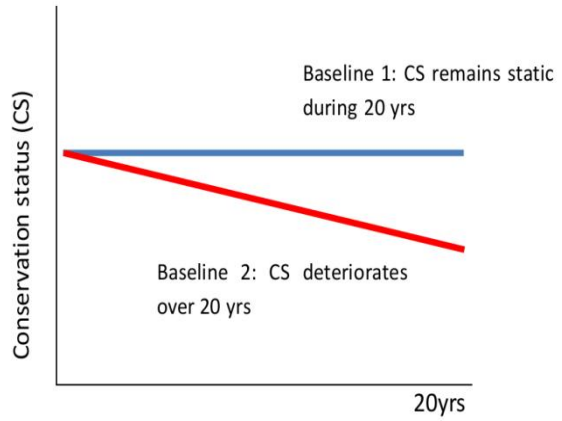


Figure 2-2: Possible baseline conditions without designation

Sources of data on features and conservation status for rMCZs
Information on the conservation status of features of rMCZs is available from the Impact Assessment (Defra (2012): Marine Conservation Zones: Consultation on proposals for designation in 2013, Annex I2 Direct impacts arising from individual rMCZs (Option 2)), in particular Table 1 under each site. This is available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/82716/mcz-i2-rmcz-20121213.pdf NB: JNCC and Natural England note that the assessment of a feature's condition and whether it requires recovery to achieve its conservation objective (or not) is an ongoing process informed by best available evidence. The 'action' (recover/maintain) part of the objective is likely to change over time depending on periodic reviews of evidence on its ecological state, updated activities information and improvements in the definition of favourable condition. Draft attributes specific to MCZ features are under development. Natural England and JNCC are developing targets for each feature's attributes, against which favourable condition will be assessed[13].

[13] These targets will be closely linked to the targets for Good Environmental Status under the Marine Strategy Framework Directive. Although information has been sought in this regard, this was not provided on time for inclusion in the methodology.

Break point 1.1: is the feature likely to be in favourable condition for the next 20 years?

- If the features to be protected are in favourable conditions and will remain in favourable condition, you will need to focus your assessment on the impacts from additional promotion and improvements in access and facilities although benefits could stem from perception aspects.

- If the features are not expected to be in favourable condition, these will require management and conservation gains and will most likely benefit specific recreational users, such as divers, recreational anglers and wildlife watchers.

It is important to record the level of confidence under this step (based on the information available to you at this point) on both the current conservation status and the conservation status without designation. Development of a quantitative approach to assess confidence level in a future conservation status has not been possible as there are few data available showing the rate, type and scale of change observed following temperate MPA designation, and almost none from UK sites. As such, a qualitative assessment of confidence (low, moderate, and high) is all that can be undertaken (see Table 2-2). The impacts can then be revisited as you move through the different stages and gather more data.

Table 2-2: Confidence levels on conservation status	
High	Provided by records and trends analysis (from marine surveys), Seasearch dives, and UKSeaMap 2010. Information about existing pressures (recreational and non-recreational) will indicate whether the site is likely to deteriorate or maintain over time.
Medium	Provided by recent records but trend analysis is limited. May correspond with a medium confidence rating as given in UKSeaMap; more information is needed on existing pressures.
Low	Not enough information on the site to make a judgement on the relative condition of features and of their evolution.

It will be important to record the expected time for recovery of features as well as impacts off-site in some cases. The time for recovery will help with establishing the timing for benefits to be realised (important for discounting purposes under Stage 4). Similarly, impacts off-site may help with the establishment of the "affected area" for the benefit assessment. Information from the literature shows that recovery rates are highly variable. You may need to seek advice from a biologist and record this information on sheet No 6.

2.2.2 Task 2: Identification of recreational uses under baseline benefiting from changes in environmental quality

Benefits to recreational uses of a site are dependent upon the level of linkage between the type of use and the condition of target habitats or species. This means that where there is little or no link between recreational use and improvements in site/species status, conservation enhancement/maintenance measures will have little impact upon the site's recreational potential.

Under this step, you should collect the information on the features and habitats under unfavourable condition, their conservation objectives, supported species with recreational value and the recreational uses affected by their recovery. Worksheet 7 records this type of information.

Break point 2.1: Are there activities under the baseline that will benefit from improvements in feature condition?

Generally you will expect these activities to include diving, recreational sea angling and wildlife watching.

Linkages between conservation and the pursuit of recreational activities

The likely trajectory of increased interest to visitors can therefore be expected to be gradual rather than immediate and will be dependent upon the degree to which physical and biological changes are apparent. For example, big honeycomb worm/rossworm reefs will evoke more interest than small structures and will generate discussion and publicity by word of mouth as well as by providing visual appeal that can be used in marketing the site. Similarly, a site that starts to yield specimen fish will become more attractive to some recreational anglers, whilst greater numbers of fish may consolidate or improve demand for charter boats amongst those anglers who seek volume rather than exceptional specimens. Table 2-3 provides an initial attempt to quantify the likely visitor appeal of the habitats that are listed as requiring recovery at the five case study sites.

Table 2-3: Habitats listed for the case study sites and an estimation of their relative importance for recreational activities. (P = Primary feature of interest; L = feature of limited interest)

Main habitats undergoing 'recovery'	Inter-tidal	Sub-tidal	Likely significance to recreation			
			Public interest	Bird watching	Divers	Fishing
Intertidal coarse sediment	P		L			L
Intertidal biogenic reefs	P		L			P
High energy infralittoral rock		P	L		P	P
Moderate energy circalittoral rock		P	L		L	P
Blue mussel beds (including intertidal beds on mixed and sandy sediment	P	P	P	L	P	L
Honeycomb worm (*Sabellaria alveolata)* reefs	P	L	P	L	P	L
Rossworm reef (*Sabellaria spinulosa*)	L	P	L	L	P	L
Subtidal mud		P	L	L	L	L
Sheltered muddy gravels		P	L	L	L	L
Seagrass beds	L	P	P	L	P	L
Fragile sponge and anthozoan communities		P			P	L
Black guillemot (*Cepphus grille*)			P	P		
Native oyster (*Ostrea edulis*)		P	L	L	P	L
Smelt (*Osmerus eperlanus*)		P	L	L	L	L
European eel *(Anguilla anguilla*)		P	L		L	L
Long snouted seahorse (*Hippocampus guttulatus*)		P	P		P	

Table 2-4 is also provided as guidance with regards the species and activities supported by habitats and broad habitats under the rMCZ designation process (NB: The Table is based on available evidence to date on the linkages between habitats and activities but a gap in the table may be due to a lack of documented evidence rather than a lack of a link).

Table 2-4: Broad-scale habitats and the recreational activities they support

Habitat	Activity	Associated species
Intertidal rock	Angling* Rock pools Surfing	Mussels; Larval fish; Plaice; Mackerel.
Intertidal coarse sediment	Angling	-
Intertidal sand, muddy sand and mixed sediments	Angling Bait collecting Nature watching	-
Intertidal mud	Angling* Bird watching Bait collecting	Fish of commercial importance.
Coastal saltmarshes and saline reedbeds	Angling* Nature watching	Juvenile sea bass.
Intertidal sediments dominated by aquatic angiosperms	Angling* Bait collecting * Nature watching Snorkelling Scuba diving	Fish of commercial importance.
Intertidal biogenic reefs	Angling*	Fish of commercial importance; Temperate rocky reef fish Plaice; Dab; Flounder; Mussels.
Infralittoral rock	Angling*	Lobster and crab.
Circalittoral rock	Angling* Scuba diving	Lobster and crab.
Subtidal sediment	Angling*	Juvenile commercial species; Flatfish; Bass; Shellfish.
Subtidal macrophyte dominated sediment	Angling* Nature watching Snorkelling Scuba diving	Cuttle fish; In the USA - clam, blue crab and scallop; In Northern Europe - epifaunal and infaunal bivalves including scallops, razor clams and clams. The habitat has been shown to significantly reduce mortality in juvenile Atlantic cod.
Subtidal biogenic reefs	Angling* Bait collecting *	Shellfish; Temperate rocky reef fish; Horse mussel fisheries (also used as bait); Bivalves such as the scallops *Pecten maximus* and *Aequipecten opercularis*.
Deep-sea bed	Angling*	Deep-sea demersal fish; black scabbard fish; birdbeak dogfish; orange roughy; rabbit fish; *Chimaeridae*; blue ling; roundnose grenadier; anglerfish.
Saline lagoons	Angling*	Pike; Perch.

	Nature watching Bird watching	
Submarine structures made by leaking gases	Angling*	
Submerged or partially submerged sea caves	Scuba diving Boating and kayaking	
Blue mussel beds	Angling* (mussel fisheries)	Mussels.
Cold water coral reefs	Angling*	Commercial fisheries.
Coral gardens	Angling	Perhaps commercial fisheries.
Estuarine rocky habitats	Angling* Nature watching Rock-pooling	
File shell beds	Angling*	Commercial fisheries.
Fragile sponge and anthozoan communities on subtidal rocky habitats	Angling* (sea urchins) Nature watching Scuba diving	
Intertidal under boulder communities	Angling Bait collecting Boulder turning Nature watching	
Littoral chalk communities	No direct beneficial ecosystem services were identified.	
Maerl beds	Angling	Epifaunal and infaunal bivalves including scallops, razor clams and clams; Queen scallops; Soft clam *Mya arenaria*; Atlantic cod.
Horse mussel beds	Angling*	Commercial fisheries; Shellfisheries species; Bivalves such as the scallops; Atlantic cod.
Mud habitats in deep water	Angling	Commercially targeted fish and shellfish; *Nephrops norvegicus* and other crustaceans.
Deep-sea sponge aggregations	Angling	Commercially important fish species such as redfish, cod and ling
Seapens and burrowing megafauna	Angling* Nature watching	Commercially targeted fish and shellfish species, including *Nephrops* fisheries.
Native oyster *Ostrea edulis* beds	Angling	Native oyster *Ostrea edulis*
Peat and clay	No direct beneficial	

exposures	ecosystem services were identified.	
Sabellaria reefs	No direct beneficial ecosystem services were identified.	
Seagrass beds	Angling Nature watching Snorkelling Scuba diving	*Sepia officionalis* (cuttlefish); In the USA - shellfish harvesting for clam, and blue crab and scallop; Cockle harvesting; marine finfish fisheries; Lugworm, *Arenicola marina*, and catworm, *Nephtys hombergi* (for bait).
Sheltered muddy gravels	Angling* Bait collecting	Commercially targeted fish and shellfish; *Venerupis senegalensis* and *Mercenaria mercenaria*.
Subtidal chalk	No direct beneficial ecosystem services were identified.	Commercially targeted fish and shellfish species; sand eels.
Subtidal sands and gravels	Angling*	
Tide swept channels	No direct beneficial ecosystem services were identified.	
*These activities have been mentioned in Fletcher et al (2012), however, they may have been referred to in a commercial sense rather than from a recreational view point.		
Source: Fletcher et al (2012): Marine ecosystem services; Description of the ecosystem services provided by broad-scale habitats and features of conservation importance that are likely to be protected by Marine Protected Areas in the Marine Conservation Zone Project area, Natural England Commissioned Report NECR088, Natural England. Further information on different activities also provided in http://www.ukmarinesac.org.uk/activities/recreation/r06.htm		

2.3 Step 2.2: Impacts from management on recreational activities

This step relates to impacts from management on recreational activities both directly, through management of recreational activities themselves, and indirectly, through the management of other activities which may benefit recreational uses (e.g. reduced mortality through fisheries management and/or reduced spatial conflict).

2.3.1 Task 1: Management of recreational activities

It is expected that MCZ management will result in small restrictions on recreational activities, affecting only a small part of the MCZ (or so-called reference areas). As a result this step is only relevant for MPAs other than MCZs.

Generally for the assessment of impacts, the management of recreational activities should be one of the first steps in the impact screening phase. Table 2-5 in the shaded box below provides you with

guidance as to the type of management activities that could have an impact on recreational activities. The key question under this step can be formulated as follows:

Break point 2.2: Will designation put restrictions on recreational activities?

- If the answer is yes, you should record information on these restrictions. There could be costs to recreational users and tourism but it is important to record the timing of such restrictions as there could be longer term gains once restrictions are stopped. Similarly there could be benefits due to reduced conflict between recreational users (e.g. motorised vehicles and wildlife observation).
- If the answer is no, you should continue with the assessment.

Sources of data on impacts from management on recreational activities

The following table is provided for guidance only on the type of management that could be applied on recreational activities.

Table 2-5: Possible management measures on recreational activities

Measure	Sub-sector	Activity affected	Management scenarios
Measures which may be implemented in the 31 MCZs [cited in relation to Torbay, Beachy Head West, Kingmere, Hilbre Island Group, Medway Estuary]	Anchoring, mooring and marker buoys	Restrictions on anchoring may impact activities such as recreational fishing, scuba diving, snorkelling, racing, charter boats, etc.	- Creation of no-anchoring zones for recreational vessels (over certain habitats/features) (except in emergency circumstances) - Seasonal closure to anchoring (over certain habitats/features) - Relocation of race marker buoys - Restrictions on areas where marker buoys are permitted - Prohibition of race marker buoys - Substitution of traditional mooring with eco-mooring (if suitable sites are available)
	Recreational angling	Anglers, charter boats	- Seasonal closure to recreational angling
	Various recreational activities	Recreational activities	- Creation of zones where it is prohibited to carry out recreational activities (e.g. in areas of peat and clay exposures and blue mussel beds)
	Dredging for recreational activities	Recreational activities	- Future licence applications for navigational dredging within 1 km/5 km of MPA will need to consider the potential effects of the activity on the features protected, which will bring additional costs.

Measures which have been identified in other MPAs.	Recreational angling	Anglers, charter boats	- Zone closures to recreational angling - Catch and release only areas
	Recreational diving	Scuba diving, snorkelling	- Fees levied upon scuba divers or other users. - Diving permits
	Various recreational activities	Various recreational activities	- Ban on jet skis - Ban on all human derived disturbances, such as wildfowling, bait collecting (as in reference zones or in areas with strict protection) - No human entry

Source:

Congressional sportsmen's foundation and American Sport fishing association (nd): Marine Protected Areas - A Threat to Recreational Fishing. available at: http://advocacy.shimano.com/publish/content/advocacy/en/us/index/government_affairs/marine_protected_areas.download.-Par30parsys-0002-downloadFile.html/A%20Threat%20to%20Recreational%20Fishing.pdf

Defra (2012): Annex I2. Site specific Impact Assessment materials (Option 2). available at: https://www.gov.uk/government/consultations/marine-conservation-zones-consultation-on-proposals-for-designation-in-2013

Department of Environmental Affairs and Tourism (2008): Marine recreational activity; Information brochure 2008-2009. available at: http://www.sanparks.org/docs/general/marine_rec_brochure.pdf

Green E and Donnelly R (2003): Recreational Scuba Diving In Caribbean Marine Protected Areas: Do The Users Pay? Ambio, 32 (2), available at: http://www.icran.org/pdf/wcmc.pdf

National Geographic webpage, Marine Protected Area. available at: http://education.nationalgeographic.co.uk/education/encyclopedia/marine-protected-area/?ar_a=1NOAA (2012): Marine Protected Areas (MPAs) No Anchoring Areas. available at: http://www.gc.noaa.gov/gcil_mpa-naa.html

2.3.2 Task 2: Impacts from management strategies on recreational uses

When information is available on the management strategies, an assessment can be made of the impact of different management activities on recreation and tourism through, for example, the reduction of spatial conflict, reduced mortality of fish species when commercial fisheries are managed, etc. Because the impacts of the management strategies can also be reflected on the conservation status, care is needed to avoid double-counting. You should record your findings in Sheet 8.

2.4 Step 2.3: Impact on recreation from improvements in services to visitors (increased access and facilities)

Under this step the possibility of additional investment to improve access and facilities at the site should be identified as an indirect impact from designation.

Designation can be used as a tool to seek additional funding to promote green tourism but could also bring business together to improve the existing services. Improvements in access and facilities may benefit existing users but also could bring in new visitors. Investment in facilities can include:

- car parks to enable more people to visit;
- visitors centres, cafes, shops to enable more people to spend (these attractions may also attract more visitors and encourage them to stay longer, they may also attract visitors coming from further afield); and
- hotels, restaurants (unlikely to be a direct result of designation but could bring knock-on benefits if more people are coming to the area); and
- provision of toilets.

Although there is abundant literature on the negative impacts on conservation of providing recreational facilities, there is currently not enough evidence that designation could change the level of access and facilities. This is a gap in evidence which future studies and evaluations of MCZs should address. Moreover, business may be able to fund improvements or seek potential funding sources following designation[14]. Generally, you would expect these impacts to be more likely to accrue for type 2 and 3 sites; as type 1 sites may already have a good provision of facilities. However, you should not rule this out either. The level of support towards designation and stakeholder engagement could be a good indication of the possibility of this indirect effect arising (should time allow you could canvass stakeholders on this particular aspect).

Break point 2.3: Is there likely to be an improvement in access and facilities that will benefit the recreational use (e.g. road access, parking, slipway, etc.)?

Results of this screening should be recorded in Sheet 9. This worksheet allows you to record the assessment based on improved access and facilities expected for a specific recreational category and/or tourism more generally. You may conclude however that this is unlikely and that benefits are not expected to arise in this regard.

[14] A report by WWF (2007) sets out a number of funding sources available to MPAs. The Regional Growth and Coastal Communities Funds can also be a source of funding for new infrastructure supporting green tourism opportunities. Examples of such initiatives are provided at: https://www.gov.uk/government/policies/supporting-economic-development-projects-in-coastal-and-seaside-areas--4/supporting-pages/the-coastal-communities-fund

2.5 Step 2.4: Impacts on recreation from additional promotion

Existing promotion vehicles lie within the capacity of NGOs and special interest groups whose journals and newsletters will give access to important audiences. These groups need to be engaged in the process and must recognise that some of the effort may be beneficial to other partner organisations rather than themselves. Designation can be used as a marketing tool to promote the site and thus can have an indirect effect on existing users but also bring new users.

Designation can help improve investment in knowledge provision or promotion of the site by means of the following:

- provider-based (e.g. information provided by boats to encourage more visits);
- activity-based (e.g. interpretation boards, self-guide leaflets to encourage better experience (but also knowledge of opportunity));
- location-based (e.g. production of leaflets, guides to attract people to area, specific pages/sections on web-sites – by local tourist board, local authority, wildlife trust, etc.); and
- generation of new industry (e.g. use of activity as a new angle from which to sell an area, branding, "food hub").

It is important to record the impact on changes on the above that may in turn affect the number of visits.

Break point 2.4: Considering the current status of the site, is designation likely to increase awareness and promotion of the site for any of the recreational uses?

Results of this screening should be recorded in Sheet 10. Similar to the improvements in the level of access and facilities, promotion may be more likely for type 2 and 3 sites; although tourist boards and the tourism industry at honeypot sites could also use the designation as a label to promote nature-based tourism.

2.6 Step 2.6: Impacts on tourism

This step is aimed at screening the impacts of designation on the tourism industry, in other words, the impacts on the businesses that provide goods and services to visitors (as opposed to recreational benefits which aim to measure the gains to the users). Under this step you should consider the level of facilities provided to the site, as described earlier in Section 1.2.2, and also the number of businesses supporting the pursuit of economic activities (e.g. information on recreational users carried by charter boats is available from StakMap). Other activities will be facilitated by guided tours. The first question is:

Break point 2.5: Do the recreational activities create revenue for the area?

You should record your findings in Sheet 11. When recreational activities are supported by facilities (as recorded in Step 1.2) tourism benefits are likely and you should undertake Stage 3. Tourism benefits will be larger the greater the volume of non-residents visiting the policy site. When facilities and businesses are limited, benefits will be limited to recreation and you could stop the assessment of benefits to tourism. This may be more the case for sites more frequently used by local visitors and for specific types of recreational uses, such as informal recreation.

Sources of data on attributes affecting visitor numbers
The MMO marine planning portal, available at: http://planningportal.marinemanagement.org.uk/# can help in providing information about facilities creating revenue. In addition, some of the StakMap categories provide information about the level of use of charter boats for conducting recreational activities that should be used to screen the impacts. Internet searches can also help to establish whether there are businesses conducting activities around recreational uses.

2.7 Step 2.5: Summary of the screening

Summary sheet 2 provides you with summary tables for all the information collected so far that can be used to support your assessment and the next Stage. The tables set out the results of the screening, in other words, they highlight impacts expected through protection of habitats and species but also show impacts as a result of the promotion of activities and the additional funding that may be made available through designation.

3 Stage 3: Impacts evaluation from designation and management on recreation and tourism

3.1 Overview of Stage 3

This stage is aimed at a more detailed evaluation of impacts on recreation and tourism. It is important to appreciate that "tourist trips" include both day trips and overnight visits by non-residents. Most visitor expenditure impacts arise through commercial provision associated with nature, or (more substantially) through visitor's spending money on accommodation, food and drink, gifts, travel, activities, etc. The "tourism-related sector" (including hotels, restaurants and shops) is broader than the tourism sector, since it benefits from expenditure by locals as well as tourists. Under this stage, you will calculate the benefits to the tourism related sector as unit values used in this methodology are those reported by MENE which include spend such as food and drink, hire of equipment, maps\guidebooks\leaflets, gifts\souvenirs and admission fees.

The evaluation will be first undertaken in qualitative terms, and when impacts are considered to be low, these should be described in qualitative terms only. When impacts are expected to be moderate to large, quantification is recommended.

Aim of this Stage: This stage is aimed at a more detailed evaluation of impacts on recreation and tourism by evaluating the economic benefits to existing and new (non-repeat) users, in terms of increases in the quality of the experience and/or new site visits.
Information needs for Stage 3
For this stage you will need information on: • Number of existing users, to redefine the baseline • Frequencies of visitation • Travel costs • Other expenditure, as tourism revenue • Number of businesses linked to recreational activities and tourism more generally
Main sources of data
Main sources of data for this stage include: • MENE survey • StakMap survey There is evidence suggesting that designation can increase the number of annual visits, but figures are rarely provided. The literature has shown however that aspects such as improving access can increase visitation by up to 20% (i.e. through the provision of a coastal walk) but this may not always apply. Another study showed that improvement in environmental conditions can lead to an increased probability of staying an extra-night by 15%, in the context of coastal Natura 2000 sites. Another study in Canada showed increases in visitation of around 6% following designation as a WHS (refer to literature review report for

more information on these studies). You may wish to gather primary data for this stage from additional consultation, asking stakeholders whether designation could be used as a tool for site promotion and/or additional funding that may benefit existing users but also bring new users to the policy site. Different default assumptions are also provided for you in terms of increased visitation. Alternatively, you may wish to apply gains in consumer surplus across the existing users and frequencies of visitation as a proxy of the benefits for specific recreational categories (but the current literature only provides this for angling benefits-refer to table 3-7).
This stage is comprised of: Qualitative assessment sheets: Sheet 12: Qualitative assessment of recreational benefits to existing users Sheet 13: Qualitative assessment of recreational benefits to new users Sheet 14: Qualitative assessment of tourism benefits Quantitative assessment sheets: Sheet 15: Estimates the number of users and trips (this step aims to gather more information on the baseline prior to quantification). Sheet 16: Estimates number of additional visits from existing users Sheet 17: Estimates increase in number of new users Monetary assessment sheets Sheet 18: Estimates values for recreational benefits based on travel costs Sheet 19: Estimates recreational benefits based on consumer surplus Sheet 20: Estimates recreational benefits to anglers (based on consumer surplus for conservation gains) Sheet 21: Estimates of tourism benefits (based on expenditure)

3.2 Step 3.1: Qualitative assessment of impacts

3.2.1 Step 3.1.1: Assessing the recreational impacts on existing users

The first step is to assess in qualitative terms the impacts on the existing recreational activities. You can do this in Sheet No 12.

It is important to remember that the level of impacts will be related to the actual level of usage. For those highly popular sites (type 1) and/or those that are visited by people when they visit the area (i.e. already important for casual visitors, such as type 2 sites), the impact might be that the sites become more important to those visitors already heavily involved in the activity, i.e. they now perceive it to be better with improved quality of experience and, as a result, they may increase their frequency of visits. On the other hand, type 3 sites may need significant improvements in facilities and services accompanied by promotion in order to see significant improvements in the quality of the experience.

Under this step you should describe the level of impacts on the quality of the experience for each recreational use under the baseline as follows (although you should assess these against the type of use):

- Very significant or significant increase in the quality of experience. There would be an improvement that is clear for almost all visitors to see in key features that attract visitors and/or significant improvements in access and facilities, for instance provision of slipways, walkways, car park facilities and/or a visitor centre. There will be significant promotion of the site as a destination for nature-based tourism.

- Moderate increase in the quality of experience. There would be an improvement in key features but these are likely to be limited to specialised activities such that only certain types of visitors would notice an improvement; investment in access and facilities and promotion will be mainly limited to these specific activities.

- Small increase in the quality of experience. There would be an improvement in features that attract visitors, but this may be limited to improvements to a particular aspect of value to those undertaking specialised activities with little or no benefit for more general visitors. Investment in access and facilities and site promotion is unexpected. Any increase in quality is likely to be limited to just a small aspect of the specialised activities.

Although this assessment will focus on those recreational categories that you identified as having an impact, it is important that you justify the reasoning behind the qualitative assessment (based on information collected under Stage 2). It is also important that you record the level of confidence in the assessment as this can be tested later on under the sensitivity analysis. Consultation is likely to be required for this step as this will increase the confidence in the assessment.

You should then consider the following:

Break point 3.1: Are impacts on existing users expected to be small and/or uncertainty is large to warrant quantification?

- If the answer is yes, you could stop the assessment here. In the summary of conclusions (Stage 4), you may highlight these impacts and caveats regarding uncertainty.

- If the answer is no, you will proceed with the quantification of impacts for that specific recreational category.

The following grey shaded box provides you with examples of qualitative assessment from the case study sites.

Examples - Qualitative description on impacts
For Torbay, the impacts on recreational angling are considered to be moderate. Benefits for anglers primarily depend on the reduction in mortality following management measures that affect the commercial fishery. If overall mortality of fish in the MCZ is reduced, there are likely to be some increases in biomass of fish in the MCZ (pers. comm. 2013). Benefits are thus mainly related to the conservation gains to habitats supporting species with recreational value. The site has a considerable amount of facilities, and access is regarded as good. The impacts on the level of access and facilities are not expected to be significant. As a result, any benefits to the informal recreational

users are only expected to be small (although visitors may perceive the site to be better following designation).

MCZ designation could be used for site promotion. The site is already known as the English Riviera and is popular among tourists and recreational users. The benefits following promotion are not expected to be significant.

3.2.2 Step 3.1.2: Assessing the recreational impacts on new users

Under this step you will assess whether the possibility of the site attracting new visitors, non-repeat visitors, is expected to be large, moderate or low.

Generally you will expect the impacts of this type to be more significant for type 2 and type 3 sites than for type 1, as the latter are already popular. Evidence from literate shows, for instance,

- Torbay: 85% of visitors were on a repeat visit to the resort – thus only 15% were non-repeat visitors.
- Most of the visitors to the Merseyside coast were on a repeat visit[15] (over 90%).

Yet, it will depend foremost on the level of promotion following designation as well as the level of impacts on conservation and improvement in access and facilities.

You could then describe these impacts as follows:

- Low impacts: designation is unlikely to significantly increase the number of new visitors coming to the site (e.g. due to small gains in quality of the experience when compared to alternative sites).
- Moderate impacts: there could be a moderate increase in the number of non-repeat visitors and they will enjoy a better quality of experience (e.g. based on a better quality environment and better provision of facilities) and/or similar quality of experience as current users (when no-displacement).
- Large impacts: increases in the number of new visitors are expected to be significant and the quality of the experience is expected to be significantly better than at alternative sites, when applicable, and/or similar to those of existing users.

You will be able to record your assessment in Sheet 13.

Break point 3.2: Are the number of new users attracted to the site expected to be low and/or uncertainty is large to warrant quantification?

[15] http://www.seftoncoast.org.uk/pdf/merseyside_summary.pdf

- If the answer is yes, you could stop the assessment here. In the summary of conclusions, you may highlight these impacts and caveats regarding uncertainty.
- If the answer is no, you will proceed with the quantification of impacts.

NB: It needs to be borne in mind that crowding effect may affect the quality of the experience. Crowding impacts are very site specific so there are no well-defined rules about when such impacts may detract from the quality of the experience. This will be most likely for sites that are highly popular for specific recreational activities. You could test for these types of impacts under your sensitivity analysis by reducing the level of impact (and consequently the number of additional trips).

3.2.3 Step 3.1.3: Qualitative assessment of tourism impacts

From Stage 2, you will have screened whether tourism impacts are likely, based on whether recreational activities generate revenue. Excel sheet 14 will allow you to characterise the recreational activities with the level of spending and tourism revenue. The level of spend may vary according to activity but you may need to consider whether the recreational activities are conducted by residents or tourists, i.e. non-residents, as follows:

- Large spend: there would be a significant increase in new visits linked to activities that generate larger revenue (e.g. charter boats for wildlife watchers and divers, accommodation) and/or most new visits are expected from non-local visitors;
- Moderate spend: there would be moderate increases in the number of visits and hence, the level of spend and tourism benefits (e.g. these increases are linked to activities which generate revenues and/or could be mostly undertaken by local visitors).
- Small spend: there would be increases in new visits but these are expected to be low in number and as a result of local residents. They are likely to involve activities not attached to revenue such as informal recreation.

It is important that you collect information on the type of business affected, e.g. hotels, restaurants and shops, charter boats offering diving trips, etc. Information collected under the baseline on the level of facilities will help you to assess the tourism related sectors affected (in addition StakMap provides information on charter boat activities you could draw on). You could acknowledge the opportunities for new business ventures linked to specific recreational activities. It is important that you define the area that could be influenced by designation.

Break point 3.1: Are impacts on the tourism industry expected to be low and/or uncertainty is large to warrant quantification?

Generally, and based on findings from Step 3.1.1 and 3.1.2 above, you could conclude that when impacts on recreation are expected to be low, the impacts on tourism could be expected to be low and finish the assessment of recreational and tourism benefits here. If you consider the impacts to be moderate to large, you are advised to proceed with the quantification of impacts.

Summary Sheet 3 will provide you a summary of your qualitative assessment and assumptions.

3.3 Step 3.2: Quantitative assessment of impacts

3.3.1 Step 3.2.1: Estimating the additional number of visits by existing users

Under this step you will have to estimate the number of existing users and the percentage of those affected:

- For benefits linked to conservation gains: only the recreational uses dependent on the quality of the feature will have to be accounted for. These are most likely to be divers, recreational sea anglers and wildlife watchers.
- For benefits linked to improvements in access and facilities/promotion: the number of users could include most recreational categories; but the percentage of these affected will depend on the type of facilities provided and level of promotion (e.g. provision of slipways will benefit recreational boat anglers but not shore anglers, as a result, you will have to estimate the percentage of boat anglers of the total recreational sea angler group; provision of car park facilities will benefit most users).

A fundamental assumption of this methodology is that existing visitors will increase visitation rates as a result of designation because of perception aspects and other physical gains although the increase in intensity of use will depend on the level of policy change (although the methodology allows you to estimate consumer gains for existing angling trips, refer to Step 3.3.2). Under this step, you will calculate the increase in the number of visits by existing users as follows[16]:

- Very significant. This is equivalent to an increase of in excess of 20% in the frequency of visits by existing users.
- Significant. This is equivalent to an increase of 10-20% in the frequency of visits by existing users.
- Moderate. This is equivalent to an increase of 5-10% in the frequency of visits by existing users.

[16] There is no evidence from the literature on changes to the frequency of participation following designation of MPA. As a result, these percentages are proposed based on limited evidence. A study by Barry (2011) suggesting an increase in frequency of visitation of 19% for the provision of improved access (i.e. a coastal trail) to a range of beach users including water sports participants in Silverstrand, close to Galway, Ireland. You can adapt these to suit the case study assessment, based on site knowledge and/or other location based site surveys conducted. More moderate estimates are available for a Wold Heritage Site (WHS) in Canada. Kayahan (2010) estimated a 6.2% increase in tourist visitation following the designation of WHS.

- Small. This is equivalent to an increase of up to 5% in the frequency of visits by existing users.

- No increases in the number of visits expected (derived from no improvements in the quality of the experience).

Note that the above figures assume that all current visitors under the baseline are impacted by the changes (as highlighted in the screening phase) and increase their frequency of visitation. Therefore, the figures have been assumed to be this low. It is recommended that these percentages are revisited as more information becomes available following designation. This will entail conducting surveys on existing visitors or contingent behavioural studies that examine the impacts of designation on intensity of use.

To undertake this step you will need to redefine the baseline in terms of gathering more information about the number of current users and trips under the baseline, to be recorded in Sheet 15. The main sources of information are as follows:

- For informal recreation, the main source of information to date is MENE data. This is given as number of trips. As a result you could just apply the percentage increment on the number of visits depending on the qualitative descriptions of impacts conducted earlier.

- For other recreational activities, StakMap data provides you with estimates of the number of users that you will have to convert to number of trips. The following table shows the frequency of participation for the average number of trips based on a recent survey conducted on divers and anglers for the National Ecosystem Assessment (NEA)[17] and other recreational uses (based on Watersport Participation Survey 2012). You may need to adjust this according to the type of site. For instance, a honeypot site will be visited once or twice a year by a person but the number of participation days per visit may be greater. These are more likely to be visitors staying in the vicinity, with potentially greater benefits for the tourism sector.

Table 3-1: Average frequency of participation _England

Recreational activity	Average frequency of participation
Walking (over 2 miles)	13.2
General visits to the Beach (strolling, sunbathing, picnicking, swimming, etc.)	9.9
Wildlife watching	No information
General diving (scuba and snorkelling)	2.99[1]
Recreational angling	6.05[1]
Board sports (windsurfing, surfing and kite boarding)	6.1
Paddle sports (kayaking, paddle boarding, canoeing, rowing)	6.7
Sailing	5.2
Motorboats (jet skis and motorboats)	5.4

[17] Provided to consultants as part of study consultation.

Table 3-1: Average frequency of participation _England	
Recreational activity	**Average frequency of participation**
Sources: 1: Pers. Comm. These figures represent the average participation across a pool of rMCZ sites based on an interactive mapping exercise conducted on divers and anglers as part of the NEA. Frequencies per rMCZ have been provided and used in the case study report. Water sports participation survey 2012	

The excel sheet provides you with some default assumptions based on average across the literature and StakMap data; but you should aim to redefine these according to your earlier description of the site. You may need to undertake consultation.

3.3.2 Step 3.3.2: Estimating the number of new users (i.e. non-returned visitors)

Under this step you will calculate what the additional number of users coming to the site is, in other words the number of trips from visitors that have not been at the site in the last year. This may depend on the type of site; type 2 and 3 may benefit from more significant increases depending on the improvements in the quality of the experience and level of promotion.

There is some evidence that designation increases visitor numbers but the literature does not provide specific numbers on the % increases. As a result, you could compare your site with a similar site nearby and assess whether the increase in visitor numbers are likely. You will have to take into account the number of additional trips by existing users (as calculated in Step 3.2.1) in order to avoid overestimating the number of new users to the site. An example is provided for you in the next box.

Example - calculating visits by new users for the Stour and Orwell

It is likely that promotion and designation of the Stour and Orwell may attract new users. Currently the number of informal recreational visits in the Stour and Orwell is estimates at around 99,000. An alternative site offering similar recreational opportunities is the Colne estuary. Figures from the MENE survey indicate 165,950 visits to the Colne estuary. However, it is unlikely that the Stour and Orwell will command an increase of 66% in the number of annual visits. A more reasonable increment of 10% will entail an increase of c.10,000 visits per year, that could not be expected to be displaced (as the Colne estuary will also be designated). Additional visits by existing users were estimated to range from 5,000 to 10,000 which should be taken off the total additional visits in order not to overestimate the benefits. Thus, these could be taken off the total estimated number of visits. The maximum increment in the number of visits is 5,000 additional visits per year.

You should record your findings in Sheet No17 which provides you the opportunity to record both a lower and an upper range.

3.4 Step 3.3: Monetary valuation of benefits

Under this step, you will value the benefits to existing and new users from increased participation and better quality of experience. Benefits will be estimated using the travel costs method for the additional number of visits[18] for each different recreation category. The use of the travel cost method will most certainly underestimate the benefits to recreational users, as it will not account for consumer surplus. The availability of benefit transfer values for estimating changes in value of consumer surplus, i.e. the willingness to pay over and above the actual expenditure for different recreational uses, is limited to very few recreational categories[19]. The most applicable values are given below.

3.4.1 Step 3.3.1: Recreational benefits based on travel costs approach

MENE data will allow you to extrapolate average travel costs by type of activity for specific locations (by creating pivot tables to the nearest geographical unit available). This is done in Sheet 18.

Recreation and tourism activities are assumed to be the main purpose of trips and therefore 100% of the travel costs from the MENE data are included. The costs of travelling will apply to the number of additional trips conducted (but you will need to adjust for displaced visits later on). These costs represent the costs to the consumer to travel to the area where the recreational activity takes place (coastal town, fishing area, harbour and beach). In addition, however, there will be costs from conducting the activity. These costs are accounted for under the tourism impacts (as revenues to business), and therefore they are not replicated here in order to avoid double-counting.

Due to the nature of MENE the average will include both local and domestic tourist visitors. Should you have information on the level of participation by both groups you could apply different travel costs estimates (MENE does provide the possibility of distinguishing by origin of the trip). You will be able to record the assumptions and level of confidence. In order to assess the confidence level, MENE can provide you with the number of counts (people surveyed) as well as standard deviation. When the count is low and/or the standard deviation is significant you could record your confidence as low.

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[18] The travel costs of current visitors shall apply to new trips from new visitors. This may underestimate the benefits (as new visitors may be travelling longer distances to come to a new site) but current evidence is not available to estimate this and this may necessitate a case-by-case approach with further data gathering (although MENE survey shows that people tend to travel longer distances for designated sites).

[19] The literature review has revealed a significant scarcity of studies reporting consumer surplus that are applicable to the UK. In most cases studies reflect expenditure and WTP to avoid deterioration of conservation, as opposed to improvements in conservation status. The literature review report provides further explanation as to the reasons why these values have been chosen.

Table 3-2 is also provided as default values by region (should you not find a suitable Local Authority for your site listed under MENE). This is also based on MENE data. It needs to be borne in mind that average costs include local and non-local visitors. Due to the fact that this is estimated at regional level, it may underestimate the impacts for type 1 sites which will command longer travelling distances. MENE also allows an analysis by county. This is given in Annex 1, should you prefer to use more disaggregated figures.

Table 3-2: Default estimates for travel costs - Regional averages		
Recreational activity	**Average of actual distance travelled (Miles)**	**Average of travel and parking (£)**
Fishing		
East of England	22	5
North East	9	1
North West	6	4
South East	21	11
South West	16	106
Yorkshire and the Humber	29	73
General visits to a beach/coast (sunbathing, paddling in the sea, picnicking, swimming outdoors, walking)		
East of England	18	11
NA	11	
North East	6	4
North West	9	10
South East	9	7
South West	12	12
Yorkshire and the Humber	18	11
Water sports	24	20
East of England	27	3
North East	15	0
North West	27	22
South East	23	1
South West	24	29
Yorkshire and the Humber	15	50
Wildlife watching	17	14
East of England	36	18
North East	8	15
North West	11	1
South East	7	7
South West	23	24
Yorkshire and the Humber	24	10
Grand Total	12	10

3.4.2 Step 3.3.2: Recreational benefits based on consumer surplus (for specific recreational categories)

An extended approach will include valuation of gains in consumer surplus due to increased visitation and quality of the visits. Based on the literature review findings to date, this will only be applicable to three types of recreational categories:

- Informal recreation;
- Recreational sea angling; and
- Wildlife watching (in particular seals).

The following consumer surplus value would apply to the number of additional visits to calculate the annual gain to the recreational users or recreational benefits from the increased number of trips. You should record your findings in sheets No 19.

Table 3-3: Benefit Transfer for consumer surplus for additional visits from existing users (£2012[20])

Recreation categories	Notes	Upper bound	Medium bound	Lower bound
Informal/ water sports recreation	This may include a range of informal and formal recreational users (upper and medium bound could apply to sites where there are more recreational opportunities, e.g. long beach with coastal trail, bathing/swimming, rock-pooling and lower bound to sites where access is more limited and smaller beaches). Lower bound is for sites where alternatives are available. (as based on Eastbourne example).	£25.88[1] per trip	£13.83[1] per trip	£2.68[2] per trip
Recreational sea anglers[3]	These values are from the Drew Report and reflect the consumer surplus of two different models[21], based on travel costs (TC). The values are across all anglers in the sample. The upper bound assumes TC of £24.36 and the lower bound £8.62 per trip. Medium bound is the average among the lower bound and the upper bound. The upper bound may apply to sites where the majority of anglers are boat anglers and the lower bound when the majority are shore based anglers. *It is recommended you adjust these values by the TC reported under Step 3.3.1 (by adding TC in brackets minus the TC as given in Step 3.3.1)*	£105.26 per angling day *(£24.36 TC/trip)*	£87.11 per angling day *(£16.49 TC/trip)*	£68.96 Per angling day *(£8.62 TC/trip)*
Seal watching[4]	This value is likely to underestimate the consumer surplus and reflects the WTP for seeing seals in the wild. A slightly smaller value was reported for seeing the seals in a sanctuary.	£9.98 per trip		

[20] Prices updated by CPI for the recreation and culture category, available at: http://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/saveselections.asp

[21] The basic model was based on travel costs from home to shore fishing site or boat embarkation point. The extended model added car parking charges, plus charter boat or own boat costs per trip.

1: Barry L et al (2011): Improving the recreational value of Ireland's coastal resources: A contingent behavioural application, Marine Policy 35 (2011) 764–771.
2: King O (1995): Estimating the value of marine resources: a marine recreation case, Ocean and Coastal Management. Vol. 27, No. 1-2.
3: Drew Associates (2004): Research into the Economic Contribution of Sea Angling
4: Bosetti, V. and D. Pearce (2003), 'A study of environmental conflict: the economic value of Grey Seals in southwest England', Biodiversity and Conservation, Vol. 12, pp. 2361-2392.

In addition, you could apply the values in Table 3-4 when the following conditions apply:

1- When there is recreational sea angling at the site;

2- When changes in conservation status are expected to impact the quality of the experience (from information collected under Step 2.1).

The values should apply to all recreational angling trips (both existing and new users) in order to estimate the benefits to sea anglers. The values should apply according to scale of impacts. Findings should be recorded in sheet 20. In most cases, small to moderate improvement will be expected (of up to 5% increase in size, based on consultation with Cefas, 2013). As a result, the value given by Lawrence (50% increase in size) is unlikely to be applicable (yet provided as a reference you may want to consider sensitivity testing when the number of habitats recoverable is expected to be significant in size and/or vital in importance to specific species).

Table 3-4: Benefit Transfer for consumer surplus related to changes in conservation status (£2012)

Source	Values (2012 values)	Change being valued	Notes
Drew Associates (2004)[1]	£0.22 per trip	Small to moderate improvement - increase in size of 1%	Need to apply to number of total trips for conservation gains but could apply the % increase proportionally.
	£8.86 per trip	Moderate improvement	Greater diversity of catch
Lawrence (2005)[2]	£13.27 per trip	Significant improvement – increase in size of 50%	From no fish to fish, or increases of 50% in size

1: Drew Associates (2004): Research into the Economic Contribution of Sea Angling
2: Lawrence K S (2005): Assessing the value of recreational sea angling in South West England

You could also apply the above values when no increases on the number of visits are expected but benefits could accrue to existing anglers due to conservation gains.

3.4.3 Step 3.3.3: Tourism benefits to business operators and other services

Benefits can result in an increase of profits arising from the provision of services such as food, accommodation, ground transport or from entry pricing and excursion fees. The fees payable by the users will accrue to business operators. These will vary according to the different recreational uses:

1- For charter boats carrying divers/anglers: the additional revenue will be a function of the fees x additional trips;
2- For the tourism sector in general, the average spend will be available by region/county (obtained through a pivot table from MENE data at the most appropriate geographical level) and could apply to the number of additional trips as a proxy of the benefits.

The average spend for different regions is duplicated in the next table. These values may underestimate the total expenditure, particularly for type 1 sites, as they are averaged across local/day visits and tourism spend. On the other hand, MENE data may be available for honeypot sites according to different recreational uses. The worksheet also provides you with estimates at regional level based on Visit England Day Visitors' Survey that you may consider to be more appropriate.

Table 3-5: Default estimates for other expenditure_Regional averages	
Recreational activity	**Average other spend (£ per trip)**
Fishing	9
East Midlands	89
East of England	4
London	
North East	0
North West	6
South East	1
South West	8
Yorkshire and the Humber	23
General visits to a beach/coast (sunbathing, paddling in the sea, picnicking, swimming outdoors, walking)	3
East Midlands	9
East of England	2
London	7
NA	
North East	0
North West	3
South East	2
South West	2
Yorkshire and the Humber	6
Water sports	11
East Midlands	0
East of England	4
London	0
North East	0
North West	12
South East	14
South West	13
Yorkshire and the Humber	11
Wildlife watching	2
East Midlands	0
East of England	2
London	0
North East	1
North West	0

Table 3-5: Default estimates for other expenditure_Regional averages	
Recreational activity	**Average other spend (£ per trip)**
South East	2
South West	4
Yorkshire and the Humber	0

Other proxies of value would be jobs and employment created: e.g., numbers of jobs supported directly or indirectly by MCZ designation. Employment is generated or sustained by visitor spending and, conventionally, visitor expenditure impacts are converted into full time equivalent employment (FTE) impacts. Table 3-6 is given as an estimate of the number of jobs supported by seaside tourism.

One approach would be to divide the annual additional spend by the average regional wages by service sector whilst considering expenditure on intermediate goods and other overheads. Hargreaves-Allen, V. et al (2011)[22] estimated the mean number of job supported by MPAs to be 123 per km^2. This could be used as an upper value as another estimate although this was linked to MPAs protecting coral reefs (so may overestimate some habitat designations).

There are other models to estimate employment impacts but these can have significant information requirements, i.e. the Cambridge Tourism Economic Impact Model.

Table 3-6: Estimated average year-round employment directly supported by seaside tourism, by town, 2006/8			
Location	**No. of jobs**	**Location**	**No. of jobs**
Greater Blackpool	19,400	Porthcawl	1,400
Greater Bournemouth	12,100	Porthmadog	1,400
Greater Brighton	11,900	Hunstanton	1,300
Torbay	9,200	Ilfracombe	1,300
Isle of Wight	7,900	Lowestoft	1,300
Great Yarmouth	5,600	Padstow	1,300
Newquay	5,300	Whitstable/Herne Bay	1,300
Southport	5,300	Aberystwyth	1,200
Thanet	4,800	Dartmouth	1,200
Llandudno/Colwyn Bay/Conwy	4,600	Brean	1,100
Scarborough	4,200	Cromer	1,100
Southend-on-Sea	3,400	Felixstowe	1,100
Weymouth	3,400	Hayling Island	1,100
Eastbourne	3,300	Looe	1,100
Hastings/Bexhill	3,200	Seaburn	1,100
Southsea	2,900	Lymington	1,000
Skegness	2,800	Aldeburgh	900
St Ives	2,600	Hemsby	900
Tenby	2,600	Lyme Regis	900
Cleethorpes	2,500	Swanage	900
Ingoldmells	2,500	Frinton/Walton	800

[22] Hargreaves-Allen, V., Mourato, S., and E.J. Milner-Gulland (2011), 'A Global Evaluation of Coral Reef Management Performance: Are MPAs Producing Conservation and Socio-Economic Improvements? Environmental Management, Vol. 47, pp. 684-700.

Table 3-6: Estimated average year-round employment directly supported by seaside tourism, by town, 2006/8			
Weston-super-Mare	2,500	Hopton	800
Falmouth	2,300	Pwllheli	800
Bridlington	2,200	Redcar	800
Morecambe/Heysham	2,100	Salcombe	800
Minehead	2,000	Sheringham	800
South Shields	2,000	Camber	700
Whitby	2,000	Fowey	700
Clacton	1,900	Grange-over-Sands	700
Rhyl/Prestatyn	1,900	Isle of Sheppey	700
Dawlish/Teignmouth	1,800	Mablethorpe	700
Greater Worthing	1,800	Primrose Valley	700
Folkestone/Hythe	1,700	St. Davids	700
Penzance	1,700	Burnham	600
Bognor Regis	1,600	Cayton Bay	600
Exmouth	1,600	Deal	600
Bude	1,500	Harwich	600
New Brighton	1,500	Lynton/Lynmouth	600
Sidmouth	1,500	Saundersfoot	600
Whitley Bay	1,500	Seahouses	600
Kessingland	1,400	Selsey	600
Mumbles	1,400	Southwold	600
Christina Beatty, Steve Fothergill, Tony Gore and Ian Wilson (2010): The Seaside Tourist Industry in England and Wales Employment, economic output, location and trends			

4 Stage 4: Summary of results

4.1 Overview of Stage 4

Under this stage you will adjust the benefits for both the existence of alternative sites and timing. This latter aspect is called discounting. Discounting only applies when impacts have been quantified monetarily. Under this stage, you will also undertake sensitivity analysis of the main factors of uncertainty.

Aim of this Stage: This stage is aimed at adjusting the benefits to account for displacement impacts. You will also undertake discounting and conduct sensitivity analysis.
Information needs for Stage 5
For this stage you will need information on: • The number of alternative sites • When the benefits are expected to accrue • Where the main sources of uncertainty are throughout the assessment
Main sources of data
The main source of information on alternatives is the MMO marine planning portal, at: http://planningportal.marinemanagement.org.uk/#. The site allows you to measure the distance between the policy site and alternative sites and to compare the facilities across sites in order to assess whether sites are substitutes. Consultation is likely to be needed in order to assess when the benefits are expected to accrue.
This stage is comprised of sheet 22: Accounting for displacement impacts and timing. In order to conduct sensitivity analysis, you will make the necessary changes and save it as a new document.

4.2 Step 4.1: Adjustment for displacement

The number of new visits to a site is closely linked to the number of alternative sites. Displacement impacts will have an effect on the scale of benefits. Displacement is important when presenting the results at a regional or national level. This is because spend transferred from one location to another does not account for a net gain, but simply a transfer and hence is not considered to be a benefit in economic terms. In order to assess the displacement effect, the consideration of alternative sites and travelling distances will be of use.

When no alternative sites are available or the number of alternative sites offering similar recreational experiences is low, you will continue with the analysis. When alternative sites are moderate in number or high, the key question is:

Breakpoint 4.1: Are the new visits (i.e. repeat and non-repeat visitors) likely to be drawn in their majority from these alternative sites?

If the answer to the above question is yes, there will be benefits at the local level but when aggregating across a number of sites the net benefits will be negligible (as new users will just represent a transfer). The most likely scenario is that some of the new visits will indeed be from alternative sites whereas others will not. In this case, you may wish to estimate the percentage of visits which will be totally "new" as opposed to just "displaced", as the latter will just be a transfer of tourism benefits. This can be done on the basis of the number of alternative sites whilst bearing in mind the baseline prior to designation and the policy change. Displacement is more likely between sites that are nearby and categorised within the same typology (as they are more likely to share characteristics that cannot be easily replicated following designation). In other word, a designation may lead to improved access at a policy site which may benefit the existing users. As such, the site may attract visitors from sites that are similar and within average travelling distances, but may not attract visitors if alternative sites still offer a better quality of experience (because of inherit site characteristics and other features affecting site selection, as given in Table 2-10). Displacement is more likely when the alternatives offer a lower quality of experience following designation and the case study site experiences improvements. Displacement impacts are particularly relevant for tourists and not for local visitors.

Table 4-1 provides you with advice as to the type of attributes that users look at when choosing a site. Examples of how to look at the number of alternative sites based on the case study report are provided in the shaded box below.

Table 4-1: Attributes for considering alternative sites

<table>
<tr><th>Activities</th><th>Factors for site selection and usage</th><th>Average distance travelled</th></tr>
<tr><td>Informal recreation[1]</td><td>Beach characteristics (width, vegetation),
Beach awards (Blue Flag),
Environmental surroundings (nature reserve behind the beach), and
The proximity of facilities (car park, pier, toilet)</td><td>For sites that are highly popular, travelling distance can increase significantly as people will conduct tourism around these sites. The following table presents information from MENE on the actual travel distances by region (averaged across local/day visits and tourists).
<table>
<tr><th>General visits to a beach/coast (sunbathing, paddling in the sea, picnicking, swimming outdoors, walking)</th><th>Average of actual distance travelled (miles)</th></tr>
<tr><td>East Midlands</td><td>30</td></tr>
<tr><td>East of England</td><td>18</td></tr>
<tr><td>North East</td><td>6</td></tr>
<tr><td>North West</td><td>9</td></tr>
<tr><td>South East</td><td>9</td></tr>
<tr><td>South West</td><td>12</td></tr>
<tr><td>Yorkshire and the Humber</td><td>18</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th colspan="3">Table 4-1: Attributes for considering alternative sites</th></tr>
<tr><th>Activities</th><th>Factors for site selection and usage</th><th>Average distance travelled</th></tr>
<tr><td>Diving and snorkelling (including spearfishing and diver harvesting)[2]</td><td>Water clarity;
Weather;
Biodiversity and marine life;
Wrecks;
Points of interest;
Currents and water movement;
Entry (this is important for shore diving); and
Depth (Shallow depths near shore are normally preferable).</td><td>Travel distance is hard to estimate. An assumption made in the past is that an average diver probably dives between 30-40 times a year and probably travels 30 miles (however, dedicated divers are willing to travel longer distances and plan international holidays around diving) (Pers. Comm., 2013[23]). The following table presents information from MENE on the actual travel distances by region (averaged across local/day visits and tourists).

<table><tr><td>Water sports</td><td>Average of actual distance travelled (miles)</td></tr><tr><td>East Midlands</td><td>71</td></tr><tr><td>East of England</td><td>27</td></tr><tr><td>North East</td><td>15</td></tr><tr><td>North West</td><td>27</td></tr><tr><td>South East</td><td>23</td></tr><tr><td>South West</td><td>24</td></tr><tr><td>Yorkshire and the Humber</td><td>15</td></tr></table></td></tr>
<tr><td>Angling[3]</td><td>The abundance of fish;
The availability of target species;
The ease of fishing;
The beauty of the place;
Accessibility;
Weather; and
Proximity.</td><td>Most shore angling is likely to be undertaken at sites within a few miles of an angler’s home, although competition or specimen anglers may travel much farther, and tourists may go recreational sea angling during holidays. Boat anglers may travel long distances in order to fish aboard high-performing charter vessels or to access favoured locations.
The following table presents information from MENE on the actual travel distances by region (averaged across local/day visits and tourists).

<table><tr><td>Fishing</td><td>Average of actual distance travelled (miles)</td></tr><tr><td>East Midlands</td><td>30</td></tr><tr><td>East of England</td><td>22</td></tr><tr><td>North East</td><td>9</td></tr><tr><td>North West</td><td>6</td></tr><tr><td>South East</td><td>21</td></tr><tr><td>South West</td><td>16</td></tr><tr><td>Yorkshire and the Humber</td><td>29</td></tr></table></td></tr>
<tr><td>Kayaking and board sports[4]</td><td>Water conditions (calm, rough, etc.);
Accessibility for launching; and
The beauty of the place.</td><td>As for water sports data from MENE</td></tr>
</table>

[23] Jane Maddock

<table>
<tr><th colspan="3">Table 4-1: Attributes for considering alternative sites</th></tr>
<tr><th>Activities</th><th>Factors for site selection and usage</th><th>Average distance travelled</th></tr>
<tr><td>Wildlife observation [5]</td><td>Diversity of sea life
The beauty of the place;
Accessibility;
Weather; and
Proximity.
Crowding</td><td>The following table presents information from MENE on the actual travel distances by region (averaged across local/day visits and tourists).
<table><tr><td>Wildlife watching</td><td>Average of actual distance travelled (miles)</td></tr><tr><td>East Midlands</td><td>70</td></tr><tr><td>East of England</td><td>36</td></tr><tr><td>North East</td><td>8</td></tr><tr><td>North West</td><td>11</td></tr><tr><td>South East</td><td>7</td></tr><tr><td>South West</td><td>23</td></tr><tr><td>Yorkshire and the Humber</td><td>24</td></tr></table></td></tr>
<tr><td>Boating[6]</td><td>Launching or mooring
Availability of safe anchorages
Currents and water movements
Depth
Beauty of the place
Fees</td><td>Most of the users use nearby coastal areas but data from MENE on the average distance travelled as for water sport could also apply here.</td></tr>
<tr><td>Wildfowling [7]</td><td>Generally wildfowlers focus on their own locality. A spot with plenty to see and hear is an important factor for many wildfowlers. Where they go wildfowling may depend on what species are being targeted, whether shooting is important or whether the location and activity is enough</td><td>Most wildfowling is likely practised by people living in relatively close proximity to the site, because of the need for detailed knowledge on tides, bird flight times and directions and because of access to shooting often being controlled by clubs.</td></tr>
<tr><td colspan="3">[1:] Coombes, et al (2009)
[2:]http://www.divesitedirectory.co.uk/uk.html#overview and http://www.subsurfaceprogression.com/AbaloneDiving.htm
[3:] http://www.medmpaforum2012.org/sites/default/files/medpan.rec_.fish_._english_web_version.pdf http://www.um.es/empafish/files/Deliverable%2022.pdf, Drew Associates (2004), Lawrence, K. S. (2005)
[4:] Hynes S and Hanley N (2004)
[5:] Loomis et al (2000)
[6]: http://schoolofsailing.net/choosing-an-anchorage.html
[7]: http://www.shootinggazette.co.uk/shootfeatures/536865/TOP_FIVE_Best_wildfowling_spots_in_the_UK.html
MENE data</td></tr>
</table>

Number of alternatives for conducting recreational activities - Examples
Torbay is not considered to have alternative sites offering similar recreational opportunities across the different recreational uses. It needs to be noted however that Skerries Bank and Surrounds (which is within average travelling distances according to the averages given for the south west) have similar types of recreational users but in smaller numbers (there are not as many facilities) so the number of alternative sites is considered to be low. There are alternative sites close to the Stour and Orwell. The site has close ecological links with the Hamford Water and Mid-Essex Coast SPAs, lying to the south on the same coast, and the Wallasea Island, a RSPB reserve, and South Essex Marshes to the south for sightseeing. Of the 31 sites put forward for designation in 2013 the Blackwater, Roach and Colne Estuaries is nearby (it is approximately 26 miles from Ipswich to Brightlingsea). According to Stakmap both sites offer similar activities but there seem to be more anglers on charter boats at the Blackwater, Roach and Colne Estuaries. Therefore the number of alternative sites is considered to be moderate. Some displacement may thus be possible (this will represent a transfer in some of the additional expenditure from one location to another). There are a number of alternatives to Tamar for informal recreation and sailing activities. South Devon is an AONB and sailing activities are recorded in Plymouth Sound and Estuaries SAC, which is an RYA sailing area. Whitsand and Looe Bay offer similar types of activities, in particular sailing and angling, as does Yealm estuary. There may be some displaced visits from these sites as a result of improvement at Tamar Estuary. The number of alternatives is thus recorded as moderate to high. There are a number of historic wrecks around Folkestone rMCZ that are only accessible by boat. Recreational angling and sailing also takes places outside the nominated area (with sailing activities being more popular to the east of the recommended site). Thus, the number of alternatives is recorded as moderate to high. There are a number of alternative sites within the area close to the Cumbria Coast rMCZ. These include sites at Silecroft, Haverigg and Whitehaven. To the south, the Duddon Estuary is popular among informal recreational users and organised activities include guided walks around sands and mud flats at low tide, wading through the River Duddon to the coastal town of Millom. Morecambe Bay is also popular for informal recreation, wildlife watching and sailing. The number of alternative sites to Cumbria coasts rMCZ is thus considered to be moderate to high.

When alternative sites are high, the net benefits are unlikely to amount to a significant amount. You will have to take into account the existence of alternative sites. It is important to note that the methodology only considers alternative sites within each recreational activity and not the possibility of displacement between activities. Sheet 22 will allow you to take into account displacement impacts. Guidance as to how to take into account displacement is provided in the next box.

Guidance to assess displacement impacts

There will be little or no market displacement if there are no alternatives and designation is to cause people to increase the number of trips taken (switching expenditure from non-holiday items or from savings) or if the effect is to cause a switch from an overseas trip to a domestic trip. When the alternatives provide a better quality of the experience, the impacts are more likely to be low to moderate at most, but the latter situation will only occur when significant policy changes are expected from designation (i.e. significant improvements in conservation, access and facilities and additional promotion). Interestingly, a study commissioned by the Department for Culture, Media and Sport on how tourism marketing influenced the holiday decision concluded that 17% of respondents stated that they were influenced to take a holiday rather than stay at home and the range of displacement was between 50% and 75%[24].

Displacement is also more likely for holiday destinations, i.e. type 1 sites, as people have a more or less fixed budget in terms of time and money. There are no fast rules on how to assess displacement impacts and these may depend on the type of activity. Some activities such as angling are more likely to occur in the vicinity so displacement is less likely. Other activities such as bird watching and diving may command longer travelling distances and displacement is likely to be greater. Displacement is more likely when there is a significant policy change that will make the quality of the experience significantly greater than at alternative sites.

Table 4-2 suggests some adjustment rates based on the level of displacement, and in turn, the level and quality of alternative sites.

Table 4-2: Displacement ready reckoner

Level	Description	Displacement
No displacement	No other sites affected	0%
Low	There are expected to be some displacement effects, although only to a limited extent	25%
Medium	About half of the activity would be displaced from an alternative location	50%
High	A high level of displacement is expected to arise	75%
Total displacement	All the new visits will be displaced	100%

Source: based on English Partnerships (2004): Additionality Guide, A Standard Approach to Assessing the Additional Impacts of Project, Method Statement, September, English Partnership, London p21.

[24] Department for Culture, Media and Sport Tourism Marketing Return on Investment (2012):The Impact of Displacement Final Report: October 2012 Report Prepared for DCMS by: Optimal Economics TNS, Research International, available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/77592/Displacement_Final_Report.pdf

4.3 Step 4.2: Discounting benefits

Discounting allows comparison of benefits that are experienced in different time periods, based on the principles of time preference (people prefer to receive goods and services now rather than later). Discounting takes all the different value flows for future years and converts them into today's equivalents, so they can be compared, and added, to give "Net Present Value" (NPV), the discounted sum of all future costs and benefits of a project or decision[25].

Under this step you will discount your benefits using the following formula:

$$D_n = \frac{1}{(1+r)^n}$$

D_n is the discount factor, where:

- r is the recommended discount rate, 3.5%; and
- n is the year when benefit arise.

For example, benefits of £150 at the middle of year 5 have a present value at the middle of year 0 of:

£150 x(1/(1+0.035)^5)= £150 x 0.8420 = £126.30

The excel spreadsheet, Sheet 22, will help you with your discounting. You will have to estimate when you are expecting the benefits to arise and when they will be expected to reach their maximum. NB: The benefits may arise at different stages depending on whether they are linked to conservation, promotion and investment in facilities. Promotion of the site derived benefits may accrue earlier than conservation and/or investment related ones.

Discounting – Establishing the year when benefits arise
You may need to apply different starting years according to the recreational category and the reasons supporting the benefits (i.e. conservation, promotion and/or improvements in services). Benefits to informal recreational users from increased visitation following promotion may arise earlier than those benefits linked to conservation gains (i.e. anglers). The absolute point at which such changes may become apparent cannot be judged with any accuracy. At each site the starting point will differ and there is insufficient data to say with any confidence how far the habitat is from 'favourable condition' or more importantly the condition that gives it greater profile than competing attractions. As a first step in defining this 'recovery', Table 4-3 provides a first order attempt of the time required for benefits associated with feature recovery to become apparent.

[25] Generally, inflation can be ignored in economic analysis, with all prices and values being expressed at today's price levels. It is only necessary to account for price changes for specific resources if these are expected to change out of line with inflation – that is, if the relative prices are expected to change.

Table 4-3: Biology of the main components							
	Reproduction	Longevity	Predator pressure	Potential to form biogenic structures	Increase in size with age	Recovery to noticeable benefits (years)	
						Divers	Fishers
Algae	Free-living gametes	Variable: long	Molluscs Echinoderms	Yes	Yes	3-5	
Sea grass	Seeds + rhizomes			Yes	Yes	3-5	
Worms	Free-living gametes/larvae	Short	Fish Crustacea	Ross/ Honeycomb worms	Some	5-10	
Molluscs	Free-living gametes/larvae	Medium/ long	Fish Crustacea Echinoderms	Some (reefs)	Yes	5	
Sponges/ Bryozoans	Free-living gametes/larvae	Medium/ long	Fish? Crustacea?	Yes	Yes	3-5	
Echinoderms	Free-living gametes/larvae	Medium/ long	Fish Crustacea	No	Yes	3-5	
Crustacea	Free-living gametes/larvae	Medium/ long	Fish Man	No	Yes	3-5	
Fish*[1] *[2]	Free-living larvae	long	Fish Man	No	Yes	5-10	5-10
Specimen fish						10-20	10-20
Birds		20+ years	N/A	No	N/A	5-10	

*[1] Including sea horses

*[2] Note that highly migratory fish are unlikely to benefit from small MCZs

1. Based on this initial analysis the benefits to recreation from MCZ designation are likely to start to become apparent between 3 and 5 years after implementation of remedial measures (not designation) and are most likely to be yielding experiences that are sufficient to justify behavioural shifts after between 5 and 10 years, with the greatest benefits occurring in excess of 10 years after management measures are introduced restricting activities causing significant negative impacts.

2. It should also be borne in mind that once critical interest features gain value as recreational assets there may then be a need to limit recreational activities that impact upon them. For example, demand for specimen fish by anglers may lead to significant increases in mortality amongst such fish and consequently angling pressure may have to be regulated.

4.4 Step 4.3: Conducting sensitivity analysis

Based on the level of uncertainty recorded earlier you may wish to conduct a sensitivity analysis. The following sensitivity analyses are recommended if you believe that the uncertainty is high:

1- Variation in the frequencies of users' visitation and/or participation in activities;

2- Variation in the number of new users following designation (i.e. non-repeat users); and

3- Exclusion of consumer surplus based benefits. This will more likely underestimate the benefits but will provide you with a more conservative estimate of the level of benefits. You may wish to do this when the costs of implementing the MPAs are not expected to be significant and could assess whether the inclusion of consumer surplus may tip the balance between benefits and costs.

4- Variation in the start year for benefits to arise. You may wish to do this when you are uncertain as to when the conservation gains will be attained or are uncertain as to when the provision of facilities and access and promotion may lead to benefits in visit numbers.

The excel spreadsheet will have to be saved again re-running changes based on the above. When the percentages changes in the level of benefits under the sensitivity analysis are considered significant in comparison with the main assessment, you may wish to gather more evidence to reduce the level of uncertainty. On the other hand, the scale of change will have to be assessed against the costs of implementation in order to consider switching values. Switching values may help you to define future management strategies. In other words, when the costs of implementation are significant, benefits may need maximising by encouraging promotion, so new visitors are attracted to the site and/or examining the needs of existing users in order to improve facilities.

Annex 1: MENE data-travel costs county level

Activity and region	Average of actual distance travelled (Miles)	Average of travel and parking	Count of travel and parking
Fishing	18	49	46
East of England	22	5	4
Essex	11	0	1
Norfolk	18	0	1
Suffolk	40	9	2
North East	9	1	6
Durham	2		
Northumberland	21	2	3
Tees Valley	7	0	1
Tyne & Wear	1	0	2
North West	6	4	5
Cheshire	1		
Cumbria	16		
Lancashire	2	5	4
Merseyside	12	0	1
South East	21	11	9
East Sussex	23	0	4
Hampshire	6	0	1
Isle of Wight	3		
Kent	37	24	4
West Sussex	6		
South West	16	106	16
Bristol and Bath	1		
Cornwall & Isles of Scilly	17	18	5
Devon	10	50	5
Dorset	25	226	6
Somerset	16		
Yorkshire and the Humber	29	73	6
North Lincolnshire/Humberside	9		
North Yorkshire	73	88	5
South Yorkshire	4	0	1
General visits to a beach/coast (sunbathing, paddling in the sea, picnicking, swimming outdoors, walking)	11	9	2867
East of England	18	11	322
Essex	9	6	154
Norfolk	42	33	70
Suffolk	16	5	98

Activity and region	Average of actual distance travelled (Miles)	Average of travel and parking	Count of travel and parking
North East	6	4	314
Durham	7	2	65
Northumberland	13	8	40
Tees Valley	3	3	133
Tyne & Wear	6	4	76
North West	9	10	343
Cheshire	14	7	7
Cumbria	9	21	91
Lancashire	9	8	154
Merseyside	8	3	91
South East	9	7	667
East Sussex	16	14	113
Hampshire	8	7	145
Isle of Wight	5	2	192
Kent	11	6	142
West Sussex	7	6	75
South West	12	12	927
Bristol and Bath	8	8	18
Cornwall & Isles of Scilly	11	19	243
Devon	10	5	348
Dorset	16	14	211
Gloucestershire	9	0	9
Somerset	14	15	98
South Gloucestershire	2		
Yorkshire and the Humber	18	11	294
North Lincolnshire/Humberside	12	8	128
North Yorkshire	23	14	157
South Yorkshire	12	2	7
Yorkshire (unspecified)	1	0	2
Water sports	24	20	50
East of England	27	3	8
Essex	27	3	7
Norfolk	46		
Suffolk	20	5	1
North East	15	0	2
Durham	6		
Northumberland	31		
Tees Valley	5	0	1
Tyne & Wear	8	0	1
North West	27	22	3

Activity and region	Average of actual distance travelled (Miles)	Average of travel and parking	Count of travel and parking
Cheshire	60		
Cumbria	1	0	1
Lancashire	29	33	2
Merseyside	31		
South East	23	1	7
East Sussex	27		
Hampshire	27	1	3
Isle of Wight	27	3	2
Kent	9		
West Sussex	14	0	2
South West	24	29	29
Bristol and Bath	1	0	1
Cornwall & Isles of Scilly	28	23	8
Devon	22	38	17
Dorset	21	9	2
Somerset	1		
South Gloucestershire	120	0	1
Yorkshire and the Humber	15	50	1
North Lincolnshire/Humberside	18	50	1
North Yorkshire	13		
Wildlife watching	17	14	151
East of England	36	18	11
Essex	34	28	2
Norfolk	48	8	4
Suffolk	23	22	5
North East	8	15	9
Durham	6	0	1
Northumberland	10	28	4
Tees Valley	3	10	1
Tyne & Wear	13	4	3
North West	11	1	30
Cheshire	4	2	1
Cumbria	8	4	1
Lancashire	10	1	24
Merseyside	19	7	4
South East	7	7	38
East Sussex	12	0	2
Hampshire	7	4	6
Isle of Wight	6	7	14
Kent	9	6	15

Activity and region	Average of actual distance travelled (Miles)	Average of travel and parking	Count of travel and parking
West Sussex	4	70	1
South West	23	24	56
Bristol and Bath	6	100	1
Cornwall & Isles of Scilly	12	13	19
Devon	16	7	17
Dorset	52	41	12
Somerset	31	51	7
Yorkshire and the Humber	24	10	7
North Lincolnshire/Humberside	18	7	4
North Yorkshire	40	20	2
South Yorkshire	2	0	1

Annex 2: Considering longer timeframes

This stage concerns the evaluation of impacts over longer timeframes, i.e. longer than 20 years. The rationale for considering scenarios is the range of uncertainties affecting the recreational and tourism value of MPAs. These scenarios consider a time-horizon of 50 years.

Owing to the plethora of studies on scenarios and in order to minimise confusion about the ideology behind each one, the social values underlying the scenarios are kept similar to those that are already in use. Thus, there are four scenario types:

- The World Markets scenario assumes the prevalence of materialist and libertarian social values operating within interdependent and globalised governance systems;
- The Fortress Britain scenario assumes individualistic and conservative social values, and a reinforcement of a national governance system and identity;
- The Local Stewardship scenario assumes tolerant, community-oriented social values encouraging co-operative self-reliance and regional development; and
- The Global Commons scenario attempts to reconcile growth and sustainability, where sustainability is seen from a global perspective, including the maintenance of biodiversity, the protection of global commons (the atmosphere, oceans and wilderness areas) and fair access to environmental resources.

The different scenarios are depicted in the following figure along two axes. At one end of the horizontal axis ('Individual'), values are dominated by the drive towards private consumption and personal freedom. At the other end ('Community'), values are shaped by concern for the common good. Considering the vertical axis, ('Interdependence'), the power to govern is distributed away from the national state level and regional and national boundaries become more permeable. At the other end of the spectrum ('Autonomy') economic and political power is retained at national (Fortress Britain) and regional (Local Stewardship) levels.

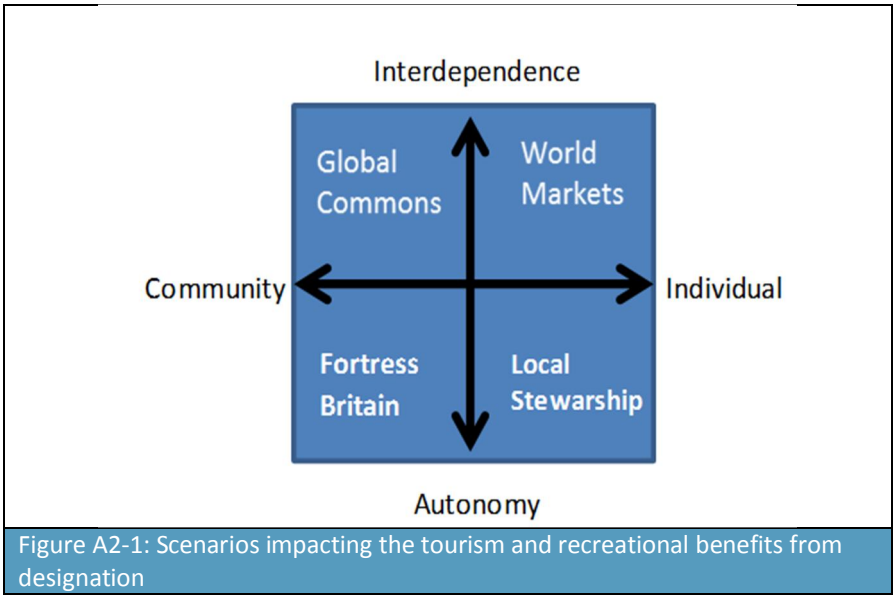

Figure A2-1: Scenarios impacting the tourism and recreational benefits from designation

The main drivers of change are considered to be the following (in no particular order):

- Economic development: including growth, energy development, transport links, access and facilities.
- Cultural attitudes towards the environment (which in turn will influence the type of economic development).

Although climate change may have an impact on the distribution and level of activities and it has been argued that warmer climates may encourage UK residents to spend their summers within the UK, the UKCIP's interface (in particular UKCIP 09) allows projections for some important variables that could affect tourism and recreational activities such as sea temperature, salinity and storm surges for UK water but these are only available for a medium emission scenario and for the longer term, 2070-2099. Because of these, such variables are not presented here (as the coverage for all scenarios has not been possible).

4.5 The World Markets scenario

The World Markets scenario is driven by the push for economic growth characterised by increased liberalisation of trade. International trade barriers have dissolved and consumption in society is high. Cheap airline carriers continue to operate and access to travel is easier. Outside designated areas, it is likely that there will be significant development both onshore and offshore, especially for renewable energy development. The focus will be on increasing profitability and, with increased global competition, it will be essential to reduce costs to compete in a global marketplace.

Generally, there could be an increase in the level of activities in the short term due to the population having greater disposable incomes. People will still favour warmer climates in the Mediterranean and further afield for holidays but may increase day visits during the summer to English resorts. Domestic tourism is also likely to become more popular, especially on the south coast.

There is likely to be an increase in demand for leisure activities which may put some locations under increasing pressure as they reach their carrying capacities. Under this scenario, there will be a risk that some sites may be unable to expand, which may create recreational opportunities elsewhere. This may drive coastal destinations to become increasingly homogenised with similar hotels, marinas, beach facilities and coastal attractions especially developed to satisfy demand for recreational activities not directly linked to the quality of MCZ features, e.g. boating. The quality of the experience may thus reduce.

Sea level rise (SLR) and coastal squeeze are likely to happen to the detriment of habitats for certain species in specific regions. There is high certainty that SLR will affect MPAs in the east of England and the South East more significantly. The east of England will see greater wave heights than other regions (MCCIP, 2010).

There is a 'risk' that honeypot sites and type 1 sites (e.g. Cleyb and Titchwell) may disappear but there is also the probability of new sites being re-created to offset losses (type 3 sites).

The following table summarises how the value of recreation and tourism may vary according to sites. Note that under this scenario there may also be potential for developing type 4 sites, sites that are not used for tourism and recreation and with less potential. Impacts will be similar to those type 3 sites.

Table A2-1: Impact on recreational and tourism value of sites under the World Market Scenario

Type 1 site: Actively used for tourism and recreation	Type 2: Actively used for tourism and recreation but not honeypot	Type 3: Not used for tourism and recreation but there could be a potential for these activities (e.g. given investment and promotion)
The sites may get closer to carrying capacities and tourism may put increasing pressure on the management of the MCZ/MPA Most activities will continue but some activities may be lost due to climate change impacts + less interest for wildlife observation The quality of the experience will decrease as designations become more similar to satisfy demand	There will be more business related to visiting the site There may be more activities developed, with revenues to businesses but producer surplus will more likely be reduced (due to increased competition) The quality of the experience will decrease but people will have reduced costs of travel to visit the site	There will be more business related to visiting the site There will be new visits and people may benefit from increased proximity with gains in consumer welfare There may be more activities developed with revenues to business
Overall recreation and tourism value: ↓↓	Overall recreation and tourism value: ↓	Overall recreation and tourism value: ↑

4.6 Fortress Britain

This scenario assumes that people aspire to personal independence and material wealth within a nationally rooted cultural identity. Market values are dominant but the scope of the markets is limited where they are perceived to be at odds with national interest.

Under the Fortress Britain scenario, domestic tourists will increasingly visit UK resorts which will increase the importance of the regeneration of tourist venues such as promenades and piers. The trend towards overseas travel will decline and the number of international visitors will reduce. However, access to travel will become more difficult due to increased prices of fuel due to the lack of imports and self-reliance on national sources of energy.

This scenario corresponds to a medium emission scenario under UKCIP09.

Table A2-2: Impact on recreational and tourism value of sites under Fortress Britain		
Type 1 site: Actively used for tourism and recreation	**Type 2: Actively used for tourism and recreation but not honeypot**	**Type 3: Not used for tourism and recreation but there could be a potential for these activities (e.g. given investment and promotion)**
The sites may get closer to carrying capacities and tourism may put increasing pressure on the management of the MCZ/MPA Most activities will continue but some activities may be lost due to climate change impacts The quality of the experience could increase but there could be negative impacts as well due to overcrowding and increased costs of transport (reducing frequency of visits)	There may be more activities developing with revenues to business and positive impacts on the tourism sector The quality of the experience could increase but people will have increased costs of travel to visit the site so impacts are uncertain, as people may travel to the site less frequently	These sites could be invested in as people will not travel abroad for their holiday There will be new visits and people may benefit from increased proximity with gains in consumer welfare There may be more activities developed with revenues to business
Overall recreation and tourism value: ↓	Overall recreation and tourism value:?	Overall recreation and tourism value: ↑

4.7 Local Stewardship

Under the Local Stewardship scenario people aspire to sustainable levels of welfare in local communities. People are very protective of their local area and belongings, but have a strong sense of national identity. Resources are limited and are tightly controlled, but consumption remains high.

Under this scenario, local communities will capitalise on existing infrastructure and may be able to further develop any sense of uniqueness. Most of the activities that are currently taking place under the baseline will continue.

Domestic visitors will increase their visits to English destinations. Sites with higher visitor numbers will include coastal sites, and short breaks and day visits are likely to increase. The total number of visitors to coastal sites is expected to increase but these are expected to mainly be domestic. This scenario corresponds to a level of medium emissions, similar to the Fortress Britain scenario, although emissions are not as high. Impacts on the marine environment include increasing ocean acidification but the risk of losing habitats to SLR is not as high as in Fortress Britain and lower than under the World Markets scenario.

Under this scenario, each individual destination will develop its own character. Destinations will provide a more eco-friendly experience, with sustainable values reflecting the local environment. The value of the experience will increase, as people's attachment to the destination will be enhanced by the sense of uniqueness.

Table A2-3: Impact on recreational and tourism value of sites under Local Stewardship		
Type 1 site: Actively used for tourism and recreation	**Type 2: Actively used for tourism and recreation but not honeypot**	**Type 3: Not used for tourism and recreation but there could be a potential for these activities (e.g. given investment and promotion)**
Most activities will continue but there may be some displacement impacts from these sites as other sites develop their own character so the impact on total number of visitors uncertain The quality of the experience could increase (less overcrowding) but there could be negative impacts too due to increased costs of transport (reducing frequency of visits)	Seaside towns which may focus on specific activities as selling points increase the value of the visit Revenues to business and positive impacts on the tourism sector The quality of the experience could increase but people will have increased costs of travel to visit the site so impacts uncertain, as people may travel to the site less frequently	These sites could be invested in as people will not travel abroad for their holiday There will be new visits and people may benefit from increased proximity with gains in consumer welfare There may be more activities developing with revenues to business
Overall recreation and tourism value: ?	Overall recreation and tourism value: ↑?	Overall recreation and tourism value: ↑

4.8 Global Commons

Under the Global Common scenario, people develop strong links with nature and the effort is focused on balancing economic, social and environmental welfare. Yet, people are globally connected, and policy is coordinated at the EU and international level. International travel will be discouraged and taxes on fuel will be raised by governments.

The conservation importance of MCZs is expected to grow both in the short and in the long-term. However, there will be expected changes due to climate change but the impacts are likely to be minimised by a more nature-based approach to management of the coast.

Because SLR is expected to be lower than in other scenarios, the loss of beaches and habitats could also be expected to be smaller. This in turn will maintain activities related to wildlife observation in the longer term.

Table A2-4: Impact on recreational and tourism value of sites under Global Commons		
Type 1 site: Actively used for tourism and recreation	**Type 2: Actively used for tourism and recreation but not honeypot**	**Type 3: Not used for tourism and recreation but there could be a potential for these activities (e.g. given investment and promotion)**
Tourism may be more sustainably managed but there could be some restrictions on some activities The quality of the experience could increase	There may be more activities developing with revenues to business and positive impacts on the tourism sector The quality of the experience could increase but people will have increased costs of travel to visit the site so impacts will be uncertain, as people may travel to the site less frequently	There will be new visits and people may benefit from increased proximity with gains in consumer welfare There may be more activities developing with revenues to business
Overall recreation and tourism value: ↓	Overall recreation and tourism value: ?	Overall recreation and tourism value: ↑