



## Net Gain response to Science Advisory Panel feedback on the 1st iteration.

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## ***Introduction***

This document provides Net Gains response to SAP feedback on the 1<sup>st</sup> iteration. It aims to:

- Distil key points of guidance from the SAP feedback.
- Set out the project team's reaction to the key messages.
- Describe how we have addressed the SAP feedback into our process for the 2<sup>nd</sup> iteration
- Look at points that need to be addressed in future, and points we cannot address.

The document serves as a record of how we are seeking to fulfil our responsibility to incorporate SAP feedback into our process.

We have quoted specific paragraphs of the SAP feedback, followed by the project team's reaction (in italics). We have grouped together quotations from different sections of the original SAP document, where they address similar points, and tried to put them in a logical, thematic order. Not all paragraphs from the original SAP feedback document are included, as not all of them require comment or action.

This document is not a replacement of the full SAP feedback document (which can be downloaded from our website).

## Section 1 SAP feedback specific to Net Gain

### 1. RSG reluctance to submit BAI formally

SAP feedback paragraph 1.1 The project team produced 2 reports – ‘Progress Report & Formal 1st Iteration Submission to the Science Advisory Panel June 2010’ (Rept. a) and the ‘Summary data for Broad Areas of Interest, as identified by Regional Stakeholder Group Members Supplementary information for the Science Advisory Panel June 2010’ (Rept. b). The Formal 1<sup>st</sup> iteration report submitted to the SAP does not propose a draft MCZ network but the additional report (Rept. b) does contain maps of possible BAI. The RSG were particularly sensitive about these maps and did not want them to be included with the main report. They were made available separately to the SAP. Despite that, as the report has been made available to the SAP, it is considered here. The SAP is particularly disappointed that *Net Gain* has not yet been able to create the pMCZ first iteration and that either they or their RSG indicates that this is due to the lack of data.

SAP feedback Paragraph 1.2 The RSG had several data interpretation tools available – the ENG, data availability and use, Marxan and the protection levels and an interim compatibility matrix. Together with the ENG, they used the base map, designated areas (de facto MPAs), ecology and human use information. Net Gain indicated the reliability of the available data and the RSG confirmed some confidence in the ENG and Marxan use but not in the data availability and use, the gap analysis or the protection levels and compatibility matrix. The latter was not used and the RSG indicated that this was a serious constraint in reaching decisions, i.e. how could they assess the repercussions of the designation if they did not know which activities affected which others. This suggests the RSG were more concerned with socio-economic aspects than the ENG criteria.

*Project team reaction: The reluctance of the RSG to submit the BAI formally was as a result of a number of factors. Primarily the RSG had low confidence in the quality of the broad scale habitat data (now we have the confidence layer we can understand why as much of the confidence layer is <50%). As the compatibility matrix was in a very draft format the RSG were reluctant to make decisions that could affect their activities based on a habitat map on which they had low confidence. Due to a mis-communication by the facilitation team at the first Regional Hub, members felt that this was a practise run and that sites would not go forward. Once one Hub had made the decision to not submit BAIs, the other Hubs followed suit. Due to the way the meeting was planned there was also insufficient time for the separate groups to come together and build any form of consensus on BAIs, leaving many with a default colouring of ‘red’ or highly contentious. Rather than risk losing stakeholder support it was decided that these BAIs should not be made public as they were highly likely to change.*

*In reality, the progress achieved by Net Gains RSG at the 1st iteration was not considerably different to that of the other RPs (particularly Balanced Seas which also submitted BAI). Instead it was the decision taken to not submit formally – i.e. a presentational matter - that set us apart from the other projects. Having had the opportunity to meet with the StAP, Dr Peter Ryder was reassured that progress had been made and the RSG were committed to the process.*

*In the planning meetings for the 2nd iteration more time has been devoted to reconciliation of sites and building consensus on draft MCZs to move forward for submission to the SAP.*

## 2. Socio-economic factors V ENG criteria

SAP feedback Paragraph 1.6 The RSG were asked to focus on habitat adequacy as given in ENG and create draft MCZ boundaries but the SAP is concerned that apparently the RSG did not want to or would agree to this. The SAP is also concerned by the impression that the RSG are designating areas based more on their own interests than on the principles outlined in the ENG. They did agree to indicate the BAI and used a traffic light system – indicating broad support, moderate support/moderate contention, or high contention (to produce figure 2.1 Rept. b). This is a reasonable starting point although it appears that some in the RSG had preconceived ideas of the sites to be designated irrespective of the guidelines in the ENG while others were unwilling to place sites on the maps because of possible repercussions. The resulting outputs were then digitised and combined for the 4 areas but as yet there has been no cross-check by the RSG for agreement, hence there are many caveats and no implied consensus.

*Project team reaction: In order to provide a starting point for discussions the Net Gain team developed a Marxan analysis for the 1<sup>st</sup> iteration. As we had not received many of the key ecological datasets at the time of planning we could not include them in this analysis. A trial Marxan test solely based on broad scale habitats, proved futile as many of the offshore broad scale habitats are widespread so, there is flexibility in where a given habitat can be protected. So we chose to use VMS data and windfarm distribution as a way of suggesting narrower areas of search.*

*Although stakeholders do come to the table with their own interests it is disingenuous to suggest that the RSG was more concerned with socioeconomics than meeting the ENG. The approach taken was consistent with Defra guidance note 1 which states that socio-economic factors should carry more weight in shaping the MPA network where there is flexibility in meeting ecological criteria, whereas in areas where there is limited flexibility (e.g. limited distribution habitats) they would carry less weight, i.e. the overall ecological integrity of the network will not be compromised (see Guidance on selection and designation of Marine Conservation Zones (Note 1), published September 2010, pages 12 and 13).*

*We welcome the fact that the SAP has provided some advice on ways in which we can build in additional areas of ecological importance, using ecological data other than EUNIS L3 habitat data, as outlined in table 1 of the SAP feedback document. For the 2<sup>nd</sup> iteration this advice was taken on board where possible. As more ecological data was available the 2<sup>nd</sup> iteration Marxan analysis was run with no socio economic data layers. Instead, the Marxan provided areas of search which met the ENG well, and stakeholders were then able to overlay any other information to assist their planning discussions.*

## 3. Inshore V offshore planning

SAP Feedback Paragraph 1.5 The four RSG hub meetings focussed on EUNIS L3 but considered the data to be of low quality; the SAP questions whether this refers to the accuracy or amount of the data and it is also questioned whether this reinforces the reticence of the RSG to create the pMCZ maps. The RSG used data from UKSeaMap 2010 v2 but there were no intertidal data. The SAP suggests that while not perfect the UKSeaMap 2010 v2 is the best available evidence for many aspects (see paragraph 2.1.3) .

SAP feedback Paragraph 1.12 It is notable that the inshore BAI in general were smaller and more complex/patchy than the offshore areas which were very large areas. This feature is even more notable when the colour coding (showing the contentious nature) was removed/ignored.

SAP feedback Paragraph 1.7 One questions whether the larger offshore BAI areas were due to better inshore knowledge/information or/and a preconception that there are fewer conflicts offshore.

*Project team reaction: Intertidal habitats were not provided as part of the UKSeaMap2010 v2. Intertidal habitats are part of the MB0102 contract; however a draft and not usable version was sent to the Regional MCZ Projects before the 1<sup>st</sup> iteration planning meetings, with the advice of waiting for its update before using it. We took the advice and chose not to look for external sources of intertidal habitat data, to avoid duplication with what was to be delivered within the MB0102 contract. Much of the 1st iteration planning work focused on the offshore area due to the lack of data provided to us on inshore/intertidal habitats. Due to this, at the time of the June Hub meetings we only had specific adequacy targets for 10 of the broad scale habitats which limited the ability of the RSG to plan across the entire project area.*

#### 4. 1<sup>st</sup> iteration progress to meeting the ENG

SAP feedback paragraph 1.9 The Formal Report covers the ENG adequacy principle across the existing MPA areas. It shows that for 2 habitats (the low energy infralittoral rock, high energy circalittoral rock) they exceeded the maximum target; 2 other rock habitats were within the maximum range whereas other habitats were at or below the minimum. The analysis of current de facto MPA was based on the SAC, SPA and pSAC but not pSPA or dSAC (the SAP questions the logic of why possible SAC were included but draft SAC were not). Habitat FOCI were calculated as point records and area-based records and show that for 5 habitat FOCI then 90-100% was found in the region. SAP feedback paragraph 1.8 Despite this, the resulting BAI network has been analysed partly by Net Gain for ENG compliance for broad scale habitats. The BAI are superimposed on EUNIS L3 and show the large area covered (Fig 2.2. Rept. b). The 26 BAI identified give the maximum level of adequacy for 10 habitats (assuming pSAC and pSPA were agreed) with the exception of deep-sea bed (which does not exist in the area) and they exceed the required minimum level of coverage for the named habitats (but there is uncertainty regarding the maximum level). Despite this, 3 of the habitats have no replicates whereas 2 have 14 replicates but there is no further separation of these across the EUNIS  $\geq$ L4 nor is there any information on connectivity. Given the very large area covered by Net Gain, it is possible that many sites will be needed to create the <80km connectivity rule.

*Project team reaction: As the gap analysis had not been provided to us at the time of the 1st iteration, we felt it appropriate to include the existing MPAs in our submission. At the time of the 1st iteration planning meetings, pSACs had concluded the period for public consultation and were therefore included, whereas pSPAs and dSACs had not. Although the BAIs were not formally submitted we are pleased to note that they go a long way to meeting the adequacy targets and provide a good starting point for discussions in the 2<sup>nd</sup> iteration planning meetings.*

#### 5. Cross boundary planning

SAP feedback paragraph 1.14 As a matter of urgency, Net Gain needs to bring together the outputs from the 4 RSG meetings to determine the consistency within their area. Following this they can then consider consistency with *Balanced Seas* and also have discussions relating to adjoining countries. They should also ensure that they use other data, e.g. from the Outer Thames Estuary Regional Environmental Characterisation (2009, MALSF) and the BEEMS Sizewell Studies (British EdF Estuarine & Marine Studies project).

**Project team reaction:** We see this reconciliation of Regional Hub sites in order to meet the ENG targets as being a role particularly relevant to the StAP with their remit to review the recommendations over the whole of the project area. The .ENG criteria of connectivity and replication will be addressed more thoroughly as the RSG starts to define draft MCZs in more detail. Maps of BAI have been obtained from Balanced Seas and have been introduced into the 2<sup>nd</sup> iteration discussions. Whenever available, the team has started to obtain REC data.

## 6. Priorities for the 2<sup>nd</sup> iteration

SAP feedback paragraph 1.13 In summary, the SAP encourage *Net Gain* to make the most of their available data and, in cases where they do not have the time or manpower to obtain all data, for example in transposing and digitising the fishing effort data, then these should be prioritised. The SAP note that *Net Gain* has collected Fishemap questionnaires but these data have not yet been analysed. Hence it is suggested that *Net Gain* should concentrate on areas for which data are lacking rather than on areas where there is already good coverage. Similarly, *Net Gain* should use all available and valid data, irrespective of its age as long as its provenance is guaranteed, i.e. data for stable habitats will be valid whereas single records will have to be treated with caution. (see paragraph 2.1.2) The SAP again emphasises that the analysis has to be on 'best available evidence'. SAP feedback paragraph 1.16 *Net Gain* and their RSG are encouraged to focus on the FOCI and the regional areas of ecological importance, in generating their 2<sup>nd</sup> iteration.

**Project team reaction:** The digitisation of Fishemap has been completed as a priority for the 2<sup>nd</sup> iteration, as has regional data collection and we now have a number of datasets provided by our RSG. We welcome the advice on the use of ecological data provided in table 1 and the use of FOCI to help determine good locations for MCZs where there is flexibility in the underlying broad scale habitat.

## **Section 2. General comments relevant to all the Regional MCZ Projects**

### **1. Appropriate filtering of FOCI data**

SAP Feedback paragraph 2.1.2. Some of the regional projects have adopted a cut-off point of 30 years ago (1980?) for use of records of FOCI species. The SAP considers that there is a balance to be found between caution and the desire to include as many relevant data as possible. If a FOCI is self-perpetuating (i.e., a viable population in a region little impacted over time or a stable habitat) then an old record is as valid as a recent one. There are examples of some rocky reefs and particular shores, where species have been consistently found over decadal time spans and much longer. If a recent survey has evidence that such a FOCI has gone, then it raises the question of whether human interference was the cause of loss. One of the aims of MCZ is to enable recovery of features, such that a location once supporting a particular FOCI could be considered as a site where, all other things being suitable, such a FOCI could re-establish. It is important in these decisions to consider the provenance of the data, and make an informed judgement on what action to take.

There is a problem with single records, particularly of mobile species, and knowledge is required as to whether there have been significant ecological changes in that area since. There is no doubt that many habitats and species in UK seas have greatly changed in the last 200 years, and they have changed most rapidly in the last 60 years. However, old records of the occurrence of species FOCI, and habitat FOCI known to have been seriously impacted (e.g., *Palinurus elephas*, beds of native oysters) are almost certainly unreliable indicators of their continued presence. Again, an informed judgement whether to include or exclude data needs to be made in all such cases. The SAP do not therefore recommend a policy of routinely discarding all data > 30 y old. The precautionary principal would suggest keeping such data within the data base, but perhaps flagging it as “data deficient”. We also caution that some data which may apparently be recent, such as fish and spawning ground distributions, may merely be older data recently packaged in a more modern mapping format, e.g. compare the maps in the original MAFF Atlas from the 1970s, the Fishing Sensitivity Atlas from the 1980s and the more modern data layers – many of these have the same base data.

Where there is an *a priori* justification to remove data, then that case should be made and the process should be auditable. The Regional Teams will have to make judgements on this, and expert opinion could be obtained if necessary. We note that a decision to identify an area as an MCZ should not be based on a single datum, especially if there is doubt concerning such information, but be part of a broader consideration with respect to the eight criteria laid down in the ENG.

**Project team reaction:** *In line with the other Regional Projects, Net Gain initially only mapped out FOCI records from 1980 onwards. As far as the FOCI metadata allowed we used the date of the primary source of the data rather than any more recent collated date. We take note that the SAP does not recommend the routine discarding of earlier data, and have now added earlier data to our FOCI maps. On future versions of our FOCI maps, we will include all records irrespective of age. We will also include older records in the generation of Marxan analysis. This will allow us to identify locations where FOCI have been recorded in the past, which may help identify areas suitable for recovery targets. We also take note that MCZ locations should not be based on a single record of a FOCI, although many FOCI within the Net Gain area only have a single record.*

## 2. Data accuracy and confidence

SAP feedback paragraph 2.1.3 Accuracy of information of seabed types is obviously an issue: The UKSeaMap data layer is the result of substantial work by DEFRA contractors and has been through a process of audit. It should therefore be treated as the “best available evidence” unless specific, reliable data to the contrary are available. Whilst UKSeaMap does give an indication of the sort of seabed types and their distribution, it is clear that some areas that might be selected to represent a particular broadscale habitat may turn-out to be a different broadscale habitat. Where large areas are being considered for MCZ (e.g. offshore) the SAP do not view this as a big problem, as ‘on average’ the EUNIS L3 designation will be correct. UKSeaMap is known to be incorrect at particular locations and if it is being used to identify a small, specific region, then that designation should where possible be supported by evidence from other data layers or additional information.....

SAP feedback paragraph 2.4.2. The final UKSeaMap 2010 map is supposed to have an associated probability layer to show the overall level of confidence in the predicted seabed habitats. The confidence layers show the probability that class selected for that grid cell is correct (e.g. ‘high’ energy, ‘circalittoral’ biological zone). We suggest that the probability level be used as a weighting within the Marxan selection process with areas with low probabilities (i.e. < 50%, representing a 50/50 chance that the area actually is the habitat type). However the weightings might need to be different from just a 1:1 linear weighting - with lower probabilities having exponentially lower weightings as we move below 50% - it is no more than a random chance that these areas are the correct habitat type.

*Project team reaction: The confidence layer was not available for the UKSeaMap 2010 v2 dataset used in the 1st iteration. It has since been provided to us as part of the combined habitats map (UKSeaMap 2010, MESH, Intertidal layer. Confidence is shown in two layers relating to the UKSeaMap 2010 data and the Mesh/Intertidal data. The level of detail provided in the confidence layer is greater than that in the most recent broad scale habitat map (the cleaned combined habitat map, referred to v3, was only provided at Eunis level 3 rather than 4 or 5), so further advice would be needed if it was to be included in Marxan. Due to the late arrival of these data layers this was not possible, so it has not been used to inform the 2nd iteration Marxan. However, both these confidence maps have been presented with the broad scale habitat map in the regional profile for the 2nd iteration planning meetings.*

## 3. Data gathering and portfolios for site proposals

SAP feedback paragraph 2.1.5. The final outcome of the MCZ identification process must be an ecologically coherent network of MCZ, fulfilling the ENG criteria and guidelines. Spatial and temporal heterogeneity is an intrinsic part of the natural world and this means variability and uncertainty within data sets is considered “normal”, and fully accepted within the scientific community. Decisions on the ecological merits of designating a particular area or site as a MCZ cannot be made solely on the basis of data-driven metrics, as a situation where all the data exist in perfect form, is a utopia. The metrics can only provide pointers to areas that might be suitable for MCZs, i.e. they are decision-support rather than decision-taking. Not all data contributing to a final decision on an MCZ network will be suitable or available in GIS format, but that should not prevent such data from being used. Conclusions on the overall ecological importance of particular areas have to be collated from various sources and presented to the RSG so that they are aware of the relative importance of particular BAI for ecology. The SAP encourage the

regional teams to develop portfolios of ecological information for each BAI, detailing the additional merits of particular sites, e.g. biodiversity hotspots, important plant areas for marine algae, species that are rare or threatened and locations of scientific interest and to list the evidence relating to that site. Annotated maps of each area using information from all sources will then create a defensible resource. This will enable the SAP to offer a scientific commentary on the merit of such areas as MCZs. Such portfolios would also be a useful start point for cataloguing future conservation objectives and for the design of monitoring strategies required to determine whether those objectives are being met. More generally, data collected during the MCZ project should be retained for future reference, subject to whatever privacy restrictions that are placed upon them.

*Project team reaction: Although the project team did not develop portfolios of information on BAIs for the 2nd iteration planning meetings (due to the low level of agreement achieved for those BAIs and subsequent revision pending) we shall do so at the next iteration. We plan to work alongside the SNCBs and NGOs to provide this detailed information on the ecological merits of each draft MCZ.*

#### **4. Supplementing protection within existing MPAs**

SAP feedback paragraph 2.1.1. .....It is very important though, that Regional Projects distinguish habitats for which existing MPAs were designated from other habitats which lie within the boundaries of these MPAs. Management measures are generally directed towards protecting only the former, not the latter. One of the important intentions of the Marine Act is to extend protection to a much wider and more representative range of marine habitats and species than is currently given via other legal means (e.g. Natura 2000 or Ramsar). A critical role of the Regional Projects is to consider existing MPAs for enhanced protection, whereby habitats (and their associated species) within existing MPA boundaries but not protected adequately can be given MCZ status. MCZs are designed to produce multiple benefits, and overlaying them across SACs, SPAs, Ramsar sites etc., will broaden the range of benefits delivered by these areas. To achieve this requires that Project Teams must distinguish what is protected from what is not within existing MPAs. Until this is done, such habitats should not be included in calculations of representation, replication or connectivity in the regions.

*Project team reaction: Until recently, Regional MCZ Project teams have not been in a position to distinguish between what is protected and what is not protected within the existing MPAs, as we depend on advice from the statutory nature conservation bodies for this. Their advice is being delivered in the form of a national-scale gap analysis, covering Natura 2000 sites, SSSIs and Ramsar sites. At the 1st iteration the full gap analysis was still outstanding. The gap analysis was provided prior to the RSG meetings in October, and the Adequacy targets and Marxan analysis took account of this piece of work. However we were later advised that the detail of the gap analysis may be incorrect, so our 2nd iteration will need to be caveated on that basis.*

*The RSG will continue to look at any win wins to be gained from overlapping MCZs with existing MPAs.*

#### **5. Treatment of existing zoning in the planning process for MCZs**

SAP feedback paragraph 2.2.2. Some Regional Projects have drawn attention to what they call 'de facto' MPAs. These may include, for example, fishery zoning agreements, or areas with restricted access such as munitions dumps. If the activity for which an area is currently zoned does not

preclude benefits from MCZ protection, then it can be considered for the creation of an MCZ. However, the site should not be counted as an existing MPA. This is because there is no guarantee that the area will continue to receive the 'protection' that it has at present. Fishery zoning arrangements can be changed, for example. The purpose of MCZs is to provide enduring protection to the seas around England. That can only be done by giving sites statutory protection.

SAP feedback paragraph 2.2.3. ...The SAP's advice is that it is wrong to rule out consideration of an area for designation of a MCZ on the grounds of inconvenience to one or more particular sectors. Wind farms, for example, may be suitable for MCZs (although not for Reference Zones).... Avoiding existing or planned wind farms in the MCZ planning process could also put severe constraints on opportunities to protect certain marine habitats.....The same principle should apply in relation to other uses of the sea. .... The best approach, in the opinion of the SAP, is not to avoid shipping channels for protected areas, but to ensure that there are also other representatives of the habitats to be protected that are not within shipping channels.....The guiding principle in considering existing zoning should be that if the area contains ecologically important habitats or species, then it should be considered for the establishment of a MCZ. Given the pressure on the marine environment, the aim should be to collocate compatible activities whenever possible. Socio-economic data on uses and pressures will be useful in deciding among candidate sites for MCZs of similar ecological value. However, such data should not be used to narrow the initial choice of possible places to protect.

**Project team reaction:** *We take note of the fact that we can consider all kinds of existing zoned or restricted areas into consideration for MCZs, but that they can only count towards the overall network if we recommend that they become an MCZ.*

*We take note of the SAP's advice that co-location of MCZs and shipping channels is acceptable, as long as the same features are also protected outside shipping channels. We also take note of the SAP's view that co-location of wind farms and MCZs is acceptable, except for Reference Zones. We will view this advice within the context of wider policy guidance and compatibility matrices.*

## 6. Incorporating areas of additional ecological importance

SAP feedback paragraph 2.4.1. .....Additional data and knowledge must be used to make informed decision that ensure with a high level of confidence that areas that are of ecological importance (and worth protecting) are the locations ultimately chosen for inclusion within a MCZ. SAP feedback paragraph 2.4.2. There are other data layers now, or soon to be available (please see the table below). A simplistic approach to using at least the sets of biological and bio-physical data is to assess the implications of taking them together. This can be done by adding up how often an area of possible interest occurs across all the relevant data layers.....

**Project team reaction:** *We take note of the recommendation to implement a scoring system for different locations, based on adding together how many ecological data layers they intersect.*

*Rather than carry out a scoring system we plan to develop new Marxan scenarios based on ecological datasets and the ENG criteria and present "summed solutions". Like a scoring system, a summed solution will pick up areas where many layers of ecological value stack on top of each other. Unlike a pure scoring exercise, however, Marxan scenarios also give an indication of the utility of a planning unit within the context of a whole network configuration. In a simple scoring system, "1" versus "6" does not necessarily mean that the "1" is less*

important to protect: the one feature present there might not occur anywhere else – a Marxan summed solution will pick this up, a map of scores will not.

The Marxan analysis will be combined with other ecological datasets in the 2nd iteration planning meetings, so in effect the stakeholders will find the “highest scoring” locations by looking at the maps of ecological data layers together with Marxan.

SAP feedback Table 1 – paragraph 2.4.2. (The original SAP document listed this set of advice in a table; so we have interspersed the PT reaction row-by-row.)

Data layer	USE
<b>Biological data</b>	
FOCI species (benthic, non-mobile)	As prescribed in the ENG - the area has higher preference (weighting) if the species is present
<i>PT Reaction: Already done; will be integrated into any future Marxan scenarios</i>	
FOCI habitats	As prescribed in the ENG - the area has higher preference (weighting) if the habitat is present
<i>PT Reaction: Already done; will be integrated into any future Marxan scenarios</i>	
Biodiversity	Weight areas of higher biodiversity higher in Marxan If data are available, weight even higher if diversity is in more than one classification level (i.e. high diversity in benthic and pelagic organisms)
<i>PT Reaction: Benthic biodiversity data was received in draft in mid September 2010, but cannot yet be published. When we get permission, it will be mapped, and integrated into any future Marxan scenarios. We do not have pelagic diversity data available.</i>	
Benthic production	Weight areas of higher benthic production higher in Marxan
<i>PT Reaction: We have no information on benthic production and will not get any. A pilot study was done for MB102 which determined that it was not feasible to map benthic productivity.</i>	
EUNIS levels 4 & 5	Use E4 and E5 layers where confidence layers are high (perhaps use only probability of occurrence > 50%)
<i>PT Reaction: As of October 2010, we have been supplied with confidence scores for the combined UKSeaMap 2010 and MESH broad scale habitat map. For much of the Net Gain area the confidence layer is &gt;50%; only areas covered by MESH surveys exceed that value. The confidence layers will be displayed on the habitat maps to inform stakeholder discussions.</i>	
Modelled density and foraging habitat for common seabirds	Higher density of seabirds indicates availability of catchable prey and therefore indications of areas of high productivity and high trophic transfer so higher densities can be used to weight Marxan towards higher probability of selection. Areas of low density can be downgraded and have much lower weights in Marxan. Different species indicate different habitat types - i.e. surface feeders indicate areas of upwelled (turbulent) water where prey is brought to the surface and deeper diving birds indicate abundance of bottom associated and schooling pelagic fishes.
<i>Project team reaction: Due to the late delivery of key dependencies to the Regional MCZ projects the Marxan analysis was delayed until the week prior to the Regional Hub meetings. There was not sufficient time to run the Marxan analysis on all datasets, however the Regional Hubs were required to consider these datasets by the use of a proforma for each site.</i>	
Fish spawning areas	Use the number of different species that use the same location for spawning by adding a point for each species - the sum being a surrogate for ecological

	<p>importance.</p> <p>Use species specific information to understand the area in more detail. For example, if a fish species produces pelagic eggs in that area it can be assumed to be good area for connectivity to productive habitats 'downstream'. If a fish species produces benthic (adhering) eggs - assume that area needs pristine bottom type - no activities allowed that would affect the bottom substratum. Use stakeholder fishing knowledge for more site specific uses.</p>
<p><i>PT Reaction: The data we have for spawning and nursery areas (from CEFAS surveys) is very broad scale only. It will not be possible to consider concepts such as "upstream" / "downstream" in terms of connectivity. Even "scoring" areas based on how many species use a location for spawning / as a nursery ground may be misleading, given the coarse resolution of the data.</i></p> <p><i>As of October 2010 we have received information from the Environment Agency on several estuaries in terms of their importance as nursery and spawning grounds, and may be able to take on board the recommendation to differentiate between fish species that produce benthic eggs and those that do not, in order to be able to make appropriate assumptions about management.</i></p>	
Fish nursery areas	<p>Use the number of different species that use the same location as a nursery area by adding a point for each species - the sum being a surrogate for ecological importance.</p> <p>Use species specific information to understand the area in more detail. Areas of nursery need to contain higher primary production and/or locations of cover/camouflage.</p>
<p><i>PT Reaction: See the reaction to the "Fish spawning areas" advice.</i></p>	
Fishing data	
Fishing effort (VMS)- each different gear types	Use each gear type individually as each gear implies a different range of species targeted and add up a 'prevalence' index for potential fish species and use as a weight for ecological importance.
Fishing effort (Fishermap) each different gear types	Use each gear type individually to the extent that each gear implies a different range of targeted species and add up to create a collective index for potential fish species and a surrogate for ecological importance.
<p><i>PT Reaction: This advice has been retracted, and we will not be taking this forward.</i></p>	
Bio-physical data	
Seasonal oceanic thermal fronts	Areas of high primary productivity and locations of predictable foraging of many mobile and higher tropic order animals, i.e. seabirds, marine mammals, basking sharks. Therefore the locations of fronts should be considered areas of higher ecological importance and should weight these areas higher in Marxan.
Physical data	
Marine Processes (banks )	Banks / troughs areas of abrupt topographically change most likely have higher levels of productivity within 5 to 10 km range but this production may only be sub-surface. Therefore the locations of banks or troughs should be considered an area of high primary production and of higher ecological importance.

## 7. ENG criteria of Replication – biogeography and separation considerations

SAP feedback paragraph 2.5.2. The ENG definition of replication states "taking biogeographic variation into account." Figure 4 in the ENG (p. 27) illustrates the 12 JNCC Regional Seas for UK waters and these appear to be reasonable divisions when considering replication in relation to biogeography. There is a risk that if a replicate of a feature falls into a different biogeographic zone

from the one in which it is designated within a RP area, if the feature is lost, then a replicate in a different biogeographic zone will not serve to conserve all aspects of the feature: species might be lost or not occur. Therefore, if possible, if a feature occurs in more than one biogeographic zone within a RP area, then MPAs for that feature should be in each biogeographic zone and each have replicates within its biogeographic zone. This could result in more than two replicates of a particular habitat or FOCI in a region, and RSG should accept this as a consequence of biogeography. This spread will also help safeguard against unexpected disasters and collapse of species populations in one location and ensure that natural variation within features is captured. SAP feedback paragraph 2.5.3. The ENG states that "Replicates should be spatially separate." Spatial separation is important to minimize the risk of an ecological catastrophe removing both replicates. The site and physical and temporal scale of the catastrophe and the nature of residual wind and water currents will determine whether features are sufficiently far apart for at least one to be unaffected. However for planning purposes a precautionary rule of thumb is suggested. The ENG states that MPAs of similar habitats should be separated where possible by no more than 40-80 km. For replicates, spatially separate could be therefore be interpreted as c. 80 km which might be enough to allow one replicate to escape damage in the event of a small scale event and in the absence of strong residual interconnecting currents. The SAP believes that this is the minimum separation of replicates that should be permitted in the design of the MPZ networks and hopes that greater separation than this will be achieved generally. Provided at least this separation is achieved the SAP believes that replicates could be located in a sufficiently large MCZ.

*Project team reaction: We intend to follow the criteria given in the ENG that the stated number of replicates should be sought within the Regional Project area, and not within the Regional Seas. Net Gain has two regional seas (biogeographic regions) within its project area which would result in a doubling of the number of replicates required if we were to follow the SAP advice.*

*We intend to follow the criteria given in the ENG that replicates should be separated by 40-80km. Further advice has been sought from the authors of the ENG which has confirmed that feature replicates can either be 'spatially separate' MCZs or within a single large MCZ if the patches are 40-80km apart. Replicates cannot be the same continuous feature. A word of caution was given that under the connectivity guidelines, MPAs should be well distributed across the regional MCZ project area. By identifying replicates only in large MCZs we may find that MPAs are not well distributed across Net Gains project region.*

## 8. Reference Zones

SAP feedback paragraph 2.3. The Ecological Network Guidance refers to Reference Zones as areas where "all extraction, deposition, or human-derived disturbance is removed or prevented." The regional projects have sought guidance from the SAP on what Reference Zones should be protected from. ...The purpose of Reference Zones, as set out in the ENG, is: "Areas of reference provide a key opportunity to demonstrate the unimpacted state of a broad range of marine features, in the context of prevailing environmental conditions." There is some ambiguity over what protection is intended by Reference Zones in the ENG. It goes on to define Reference Conditions as "the state where there are no, or only very minor, changes to the hydromorphological, physico-chemical, and biological quality elements which would be found in the absence of anthropogenic disturbance." In the definition of 'favourable condition' it states that reference conditions should be reached within several reporting cycles (i.e. a couple of decades) if all "extractive, depositional and other damaging activities are prevented"....

The above wording now refers to human-derived 'damage' rather than disturbance. The question is, whether 'potentially damaging activities' should be excluded completely or managed at levels that prevent significant damage from occurring. This is a very important distinction to make for two reasons. The first is that it has a major impact on who can use the zone, and the second, which logically follows from the first, is on how much stakeholder and public support there will be for such zones. Furthermore, in describing the concept, the ENG refers to reports by PISCO that review global experience with 'highly protected marine reserves', rather than strict protection zones. Such zones exclude extractive, damaging and depositional activities, but permit well-managed, no take or killing activities such as wildlife watching, scuba diving, snorkelling, kayaking etc....

In view of the above arguments, the SAP recommends that Reference Zones follow global practice in marine management and be defined as equivalent to 'highly protected marine reserve' zones. This would, in its view, lead to more representative and better supported proposals of sites for Reference Zones, and probably more sites put forward for this level of protection. This approach is sensible given that there are, in any case, limits to the human uses and impacts that can be excluded from Reference Zones, such as pollutants, invasive species, climate change effects, the right of innocent passage of vessels that is enshrined in the UN Law of the Sea, etc. It doesn't make sense to alienate all users in the pursuit of an unattainable standard of no-human disturbance.

*Project team reaction: Guidance provided to us from the national MCZ Project in October 2010 will be used to define Reference Zones.*

## **9. Conservation Objectives**

SAP feedback paragraph 2.6 Although the timescale of the drafting of conservation objectives is dependent to some extent upon further guidance from the SNCBs – annex 5 of the ENG – the SAP believes that iteration 2 of the Regional Project proposals would benefit from the drafting of such objectives for pMCZs as soon as possible.

*Project team reaction: The guidance on conservation objectives is still in draft form at the time of delivering our 2nd iteration planning meetings. We will not be in a position to include detailed conservation objectives therefore in the 2nd iteration. However, we have developed some software which will allow us to formulate basic draft conservation objectives for those draft MCZs in the 2nd iteration. These will detail the features of the draft MCZ, the target condition (and possibly an indication if we need to maintain or recover the features to that condition) and any management discussions held to date.*