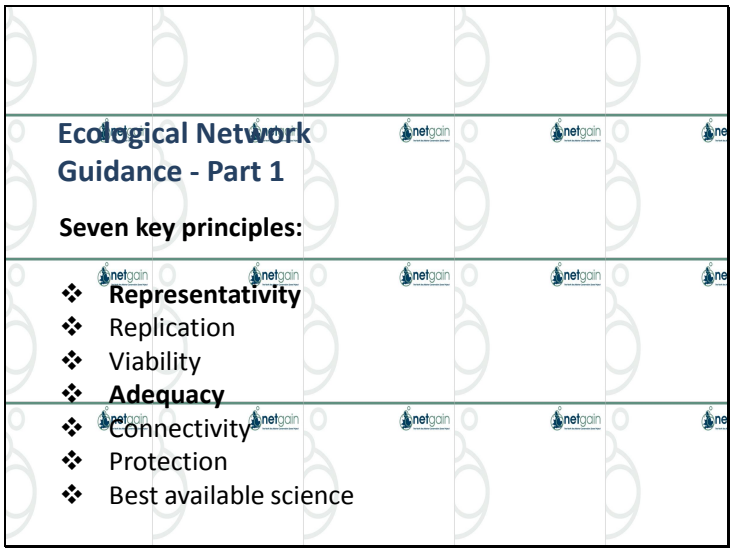
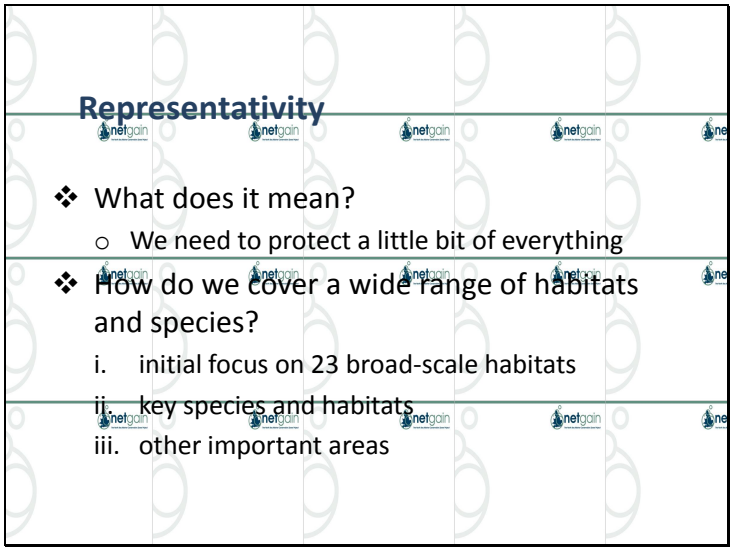


International best practice recognises a series of design principles needed to deliver effective marine protected area networks. The Ecological Network Guidance has seven key principles – which have been derived from the Oslo and Paris Convention (OSPAR).

The interpretation of all these principles must be evidence-driven, based on best available knowledge. The evidence-based interpretations reflect current scientific understanding of the marine environment. Where existing evidence may be lacking or incomplete, international best practice can be reviewed; or alternatively 'rules of thumb', derived from scientific knowledge and understanding, can be developed.

For the first presentation this morning I will discuss just two of these: representativity and adequacy.

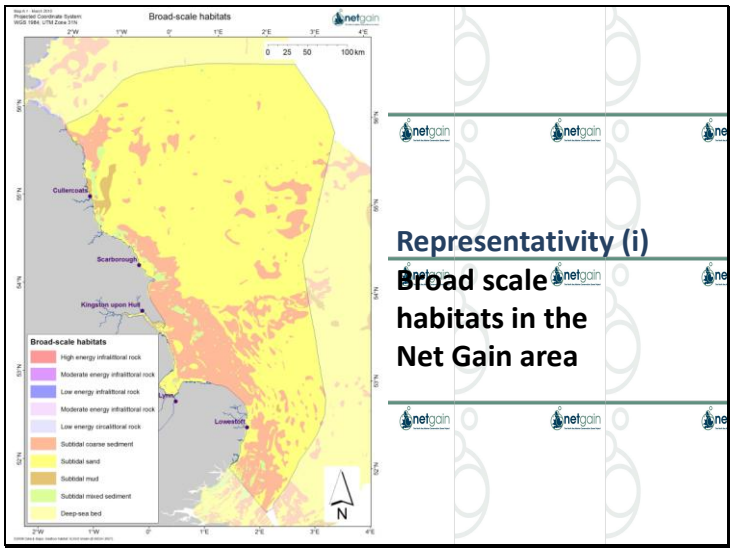


The main message is that Marine Conservation Zones should represent the range of marine habitats and species through protecting all of the major habitat types and associated biological communities that are present in each of the seas in our marine area.

So, put simply, sites should be representative, protecting a little bit of everything.

There are 1000s of species and habitats present in the UK marine area. We must find a practical and biologically meaningful way of representing this wide range of species and habitats.

At the simplest level, this can be done by protecting broad-scale habitats. If a broad habitat type is protected then there will be a trickle down effect of providing protection for more specific habitats and certain groups of species. In all, some 23 broad-scale habitats have been identified for the regional projects to protect - although not all of these will be found in Net Gain's area.

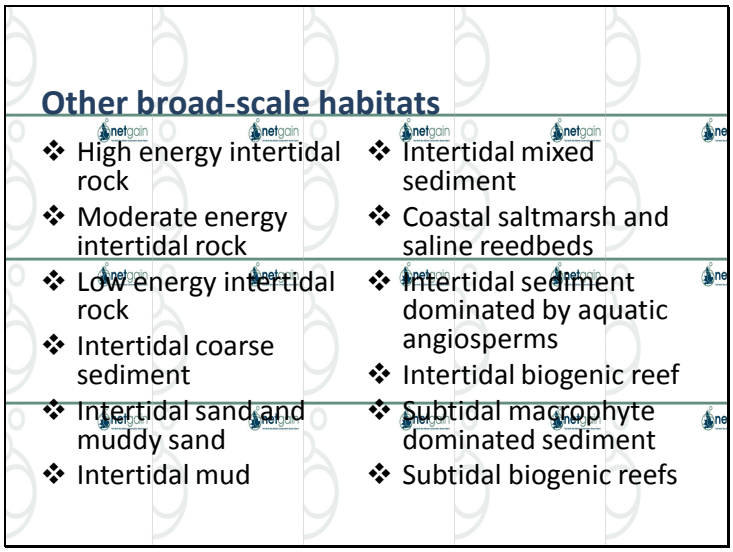


The map here shows some of the broad-scale habitats within the Net Gain area. The brighter, bolder area is the Net Gain project area. Within that we have indicated a number of different broad-scale habitats, predominantly coarse sediment and sand, but also some mud mixed sediment types.

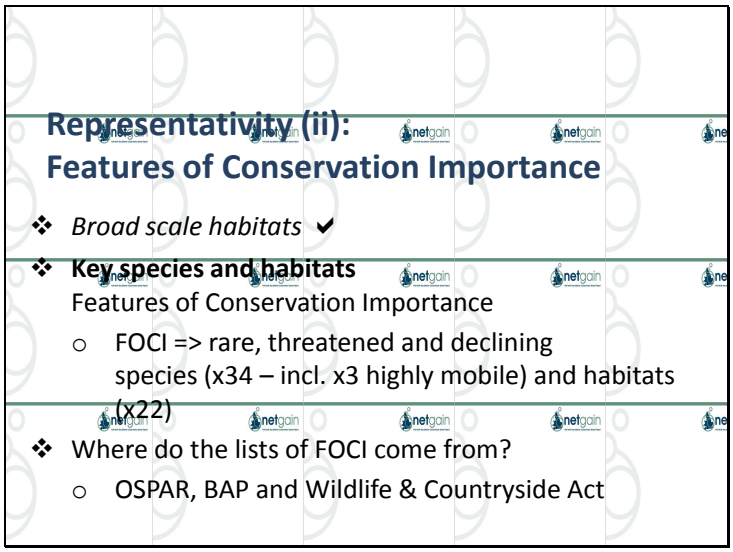
I say that this represents only 'some' of the broad-scale habitats within our area because the data we have at the moment is incomplete. Although the map shown here looks to be fairly complete at the moment we have data for only 10 of the broad-scale habitats. In general these are the 'offshore' (sub-tidal) habitats and we are waiting for information on the inshore, inter-tidal, habitats.

We do have additional finer scale detail for some the habitat types for parts of the northern area and around the Wash – but again this data is very patchy.

This means that what data we are able to show you today is incomplete, but all of Net Gain's habitat data is being updated through new contract work which is expected to be completed in April. By the time of our next meeting we should have a near complete data set to present.



This is a list of the other broad scale habitats which we are awaiting data on – whilst it may be that we need to include some of these habitats in our MCZs, it is possible that some do not occur in our area so there would be no need to consider them in the planning process.



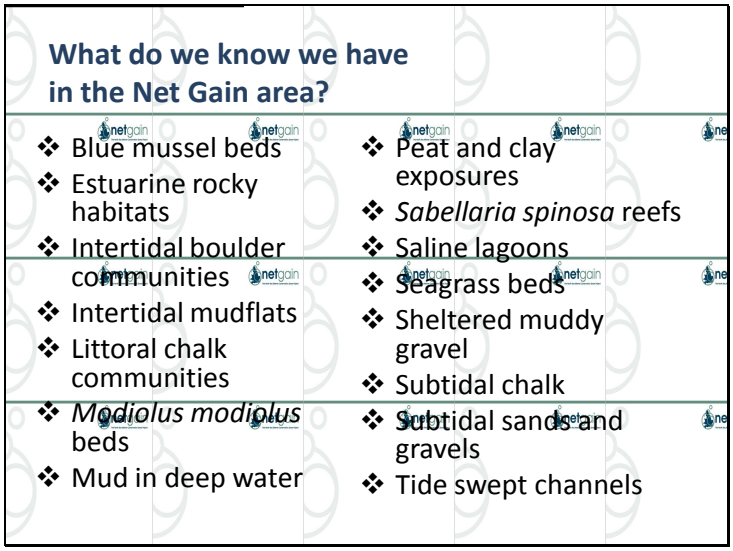
The guidance we have says that - in addition to protecting the range of biodiversity through broad-scale habitat types - rare, threatened or declining species and habitats should be specifically protected in a Marine Protected Area network. This is because:

- some habitats or species may be more vulnerable to natural and human impacts, and therefore require special consideration;
- because they are unique in their biodiversity composition, certain discrete habitats may warrant protection; and
- not all species are closely associated with habitats, particularly pelagic species, and should be considered in their own right.

A number of Features Of Conservation Importance (or FOCI) have been identified from existing international environmental agreements and from national legislation, including
- the Initial OSPAR List of Threatened and/or Declining Species and Habitats;
- the UK List of Priority Species and Habitats (the so-called UK Biodiversity Action Plan or BAP species); and
- species listed under Schedule 5 of the Wildlife & Countryside Act (1981).

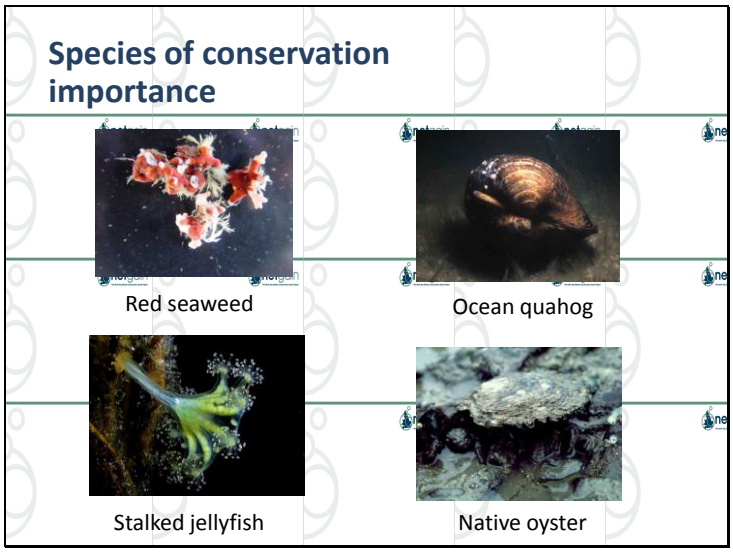
From these lists there are 22 habitats and 34 species of conservation importance that should be protected within the overall network of Marine Protected Areas.

31 of the species listed are of low or limited mobility, which means that they can be protected by protecting discrete areas of the sea.
However, the guidance also lists three species of fish that should be considered – the European eel, the smelt and the undulate ray - and these three species are of course highly mobile. Whilst there is some evidence that site-based protection may be appropriate (for example where there are significant aggregations of each species) there is currently no data to support the clear identification of relevant areas in UK waters.



This is a list of the habitats of conservation importance for which we have known records in the Net Gain area.

As I said before though, the data and maps we currently have are probably incomplete.



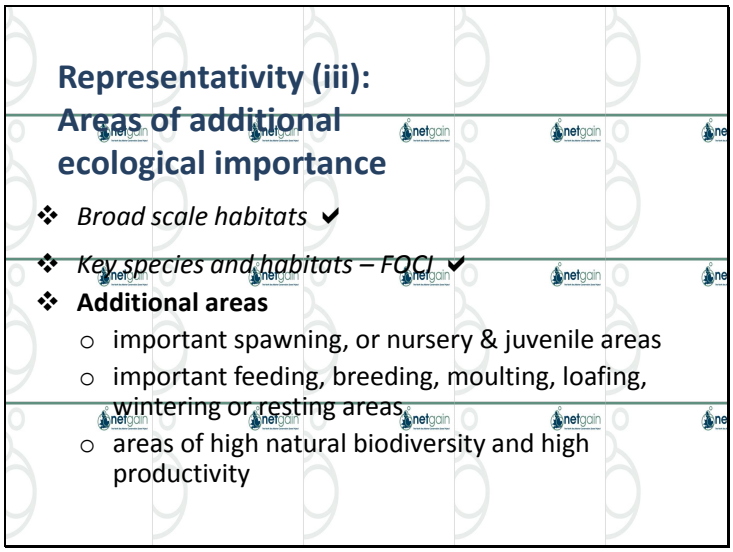
In addition to the habitats of conservation importance we have been provided with lists of species of conservation importance. For some of these species it may be possible to reach their targets for inclusion within a network of marine Protected Areas by protecting their habitats – in effect (although I'm not sure this is the right metaphor to use here) 'killing two birds with one stone' .

Of the species of conservation interest outlined in the guidance, we know of records for at least nine species within Net Gain's area, including one of the species of red seaweed that are on the list, the ocean quahog, one of the species of stalked jelly fish from the list, and the native oyster.

Others include:

- the common maerl
- the starlet sea anemone
- the lagoon sand shrimp
- a particular species of amphipod shrimp, and
- the crayfish or spiny lobster

There may be other species from the list given in the guidance – but as yet we do not have the data. This is an important area where your input will be extremely useful.

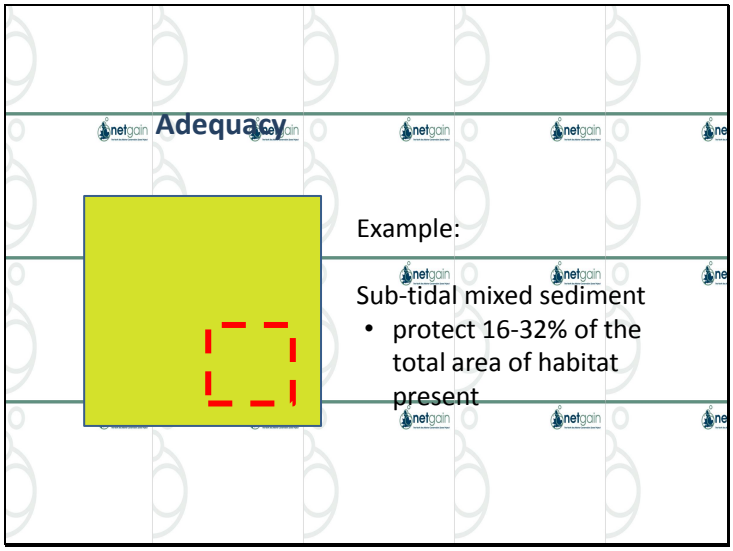


Finally under representativity there is a third category of area that needs to be considered when drawing up a list of representative sites.

These are important ecological areas which, either by themselves or in a network, make a disproportionately greater contribution to ecosystem function, biodiversity, or resilience than their area alone would suggest.

Areas of additional ecological importance would include, for example, important spawning or feeding grounds, or areas which display high natural biodiversity or productivity (so-called biodiversity hotspots).

It is by considering these additional areas that the network will provide protection for the highly mobile species (the three fish species I talked about a few slides back).



Finally in this presentation I'd like to say a few words about the second key principle - adequacy.

Adequacy refers to the overall size of the MPA network and the amount of each habitat or species that is protected within it. We need to protect enough of each habitat and species to

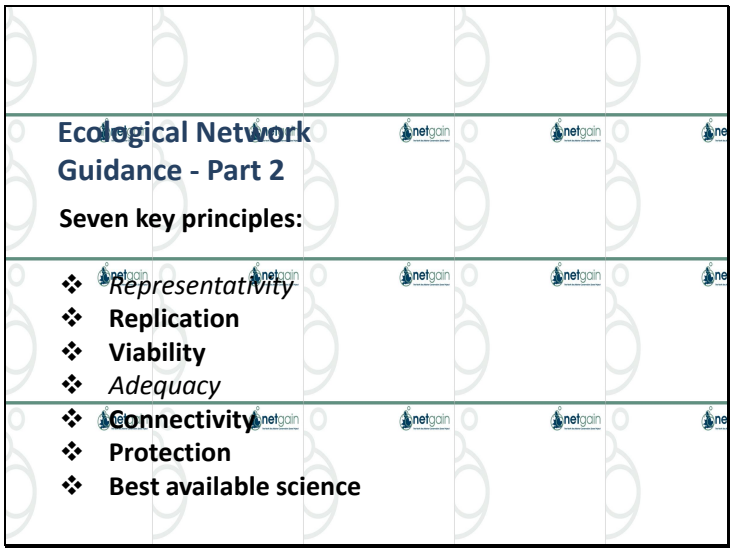
ensure its long-term protection. The areas that we, that you, decide to protect need to protect a sensible proportion of each feature.

To help with this the guidance provides targets for what percentage of each feature should be protected within the MPA network in order to ensure its long-term protection and, where necessary, its recovery.

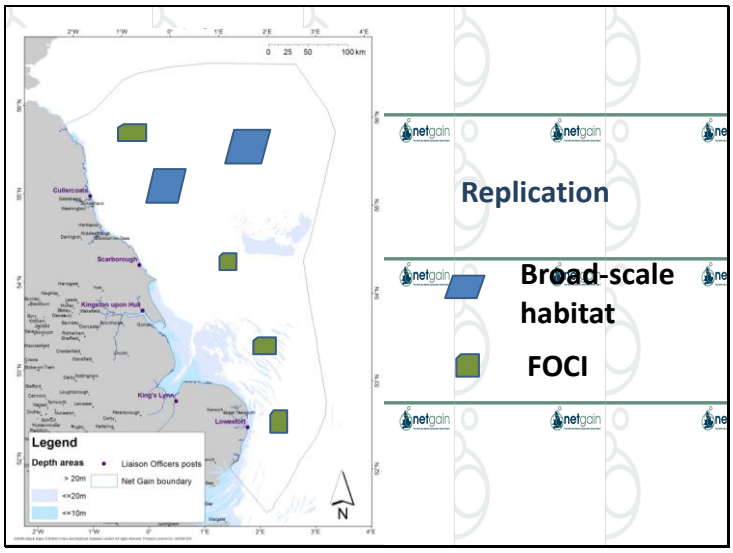
For example, the guidance says that we need to protect 16-32% of the area of sub-tidal mixed sediment, and so could propose a potential MCZ within a given area of mixed sediment as shown here.

By adopting a target-based approach we have clear support for conservation decisions. Equally important is that the process of network design is made transparent and more open to stakeholder involvement.

So that's a quick run through of representativity and adequacy. Before we move on to the remaining principles I'll pass back to ---------- who will lead us through a brief Q&A session.



In the first presentation I covered representativity and adequacy – I'd like to finish off now by briefly discussing the remaining key principles outlined in the guidance for developing networks of Marine Protected Areas.



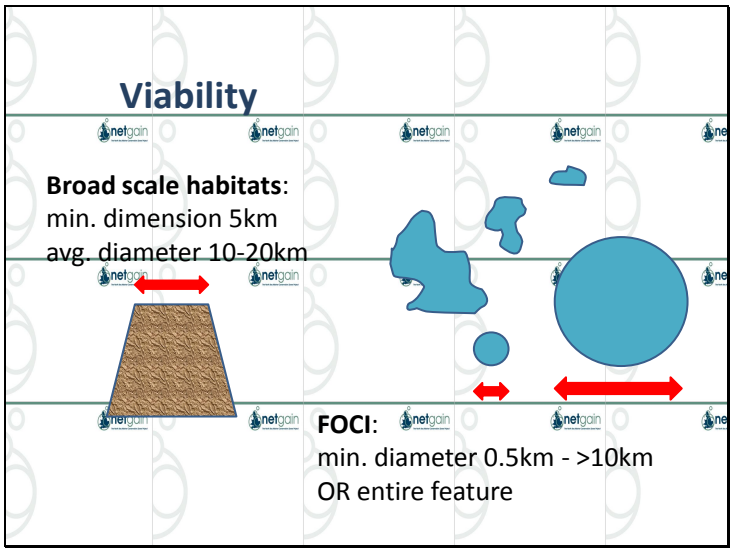
Firstly, replication.

Very simply, there should be two or more MCZ sites for each broad-scale habitat and 3 to 5 examples for each Feature of Conservation Importance in each project area.

Replication is important to safeguard against catastrophes and collapse of populations.

Replication is a form of insurance and spreads the risk of damaging events and long term changes that may negatively affect species and habitats protected by separate MPAs. It also ensures that some of the natural variation found in species' populations and habitats is captured.

Whilst we have been given minimum numbers of replicates, the final number will clearly depend on the number of options we have for each habitat and species. If there's only one example in our area then it would be hard to get two replicates.



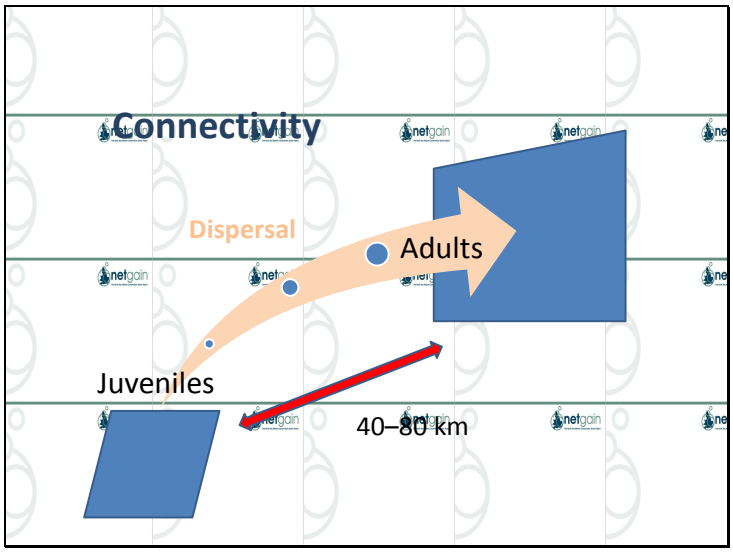
Viability should ensure each site is of sufficient size to accommodate the movements of species, thereby ensuring the sites are self-sustaining.

Many species in the sea move relatively short distances as eggs, larvae, juveniles and adults. For such species, even relatively small protected areas may be able to support self-sustaining populations that are replenished from local reproduction.

However, for more mobile species, smaller protected areas means less effective protection. Locating protected areas in places that are important to such species - such as spawning sites, nursery grounds and migration bottlenecks - could provide valuable protection to highly mobile species.

The guidance suggests that protected areas of broad-scale habitat types should be at least 5km along their shortest edge and, on average, should be 10 to 20km across.

For Features of Conservation Importance – either habitats or species – the recommended size for protected areas varies according to what particular habitat or species is being considered. The recommended sizes range from 0.5 to more than 10km across, although ,for a few features, the entire area of habitat or range of particular species should be protected.



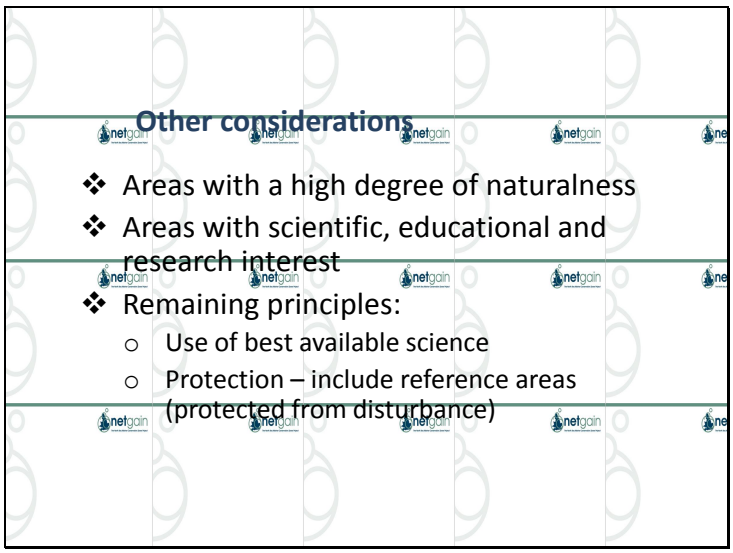
Connectivity – the network of Marine Protected Areas should seek to maximise and enhance the linkages between individual Marine Protected Areas and, at the larger scale, between the regional networks.

Connectivity enables mutual support between sites within the network – at its simplest, sites must be close enough together for larvae and adults to move between them.

For many marine species dispersal distances may be significantly larger than can be contained in one protected area. In this case it is not possible to simply identify a single area to protect the species - as the offspring/adults may disperse beyond the site's boundary with few left to replenish the local population. We need to look at creating a network of sites where each area is able to benefit others.

Protected areas must therefore be located close enough to one another to allow exchange at different life stages.

As a general guide, different examples of protected areas for a given species should be placed within 40-80km of each other.

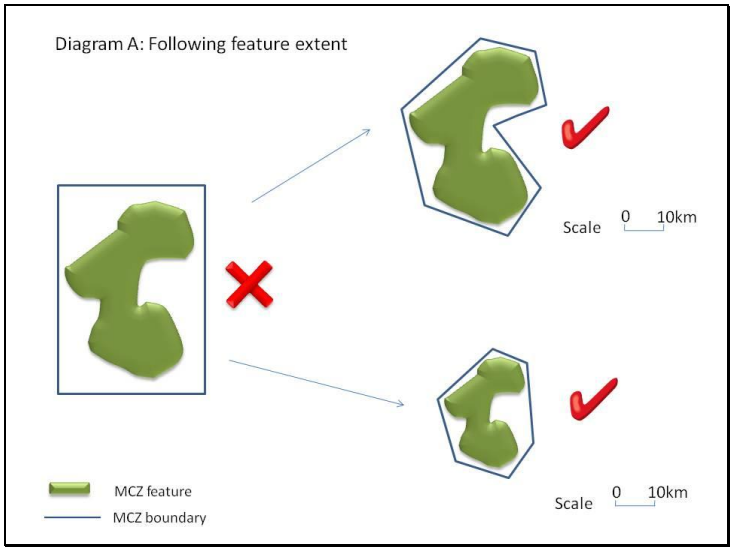


Other considerations for sites to be included within the network are specific sites with a high degree of naturalness or areas that are important because of their scientific, educational or research interest.

Site selection should be based on the best available science. However, this doesn't mean that patchy data (for example) would be ignored. It is more a case of making sure that, where there are more than one source of data available, the quality of what is actually used is not compromised but the best of what is available is taken forward. Lack of full scientific certainty should not be a reason for dismissing possible sites.
Also, where there is a clear link between the distribution of a particular species and a certain habitat type, there is some scope for using the existence of the habitat as a basis for site selection for species protection.

The network is likely to include a range of levels of protection for specific habitats or species from highly protected areas where no damaging activities are allowed to areas where only minimal restrictions would be needed to protect the site's features. These different levels of protection will be based on the conservation objectives for each site. However, as a basic principle it is expected that, for each species or habitat, there will be at least one example of a reference area where all extraction, deposition or human-derived disturbance has been removed or prevented.

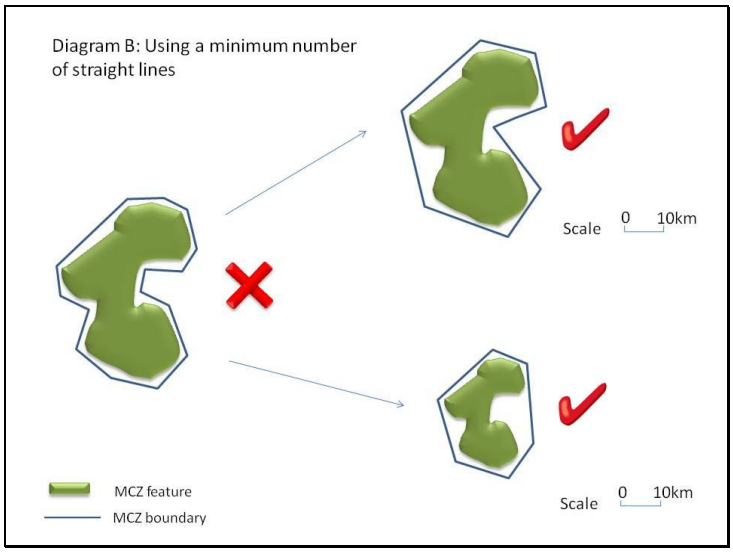
To round off with, I'd just like to share some of the guidance on drawing boundaries around protected areas.
The following five slides aim to give you an idea of some of the more practical considerations you will need to take into account when recommending sites.



It is important to set the boundaries so they are easy to follow, understand, enforce etc.

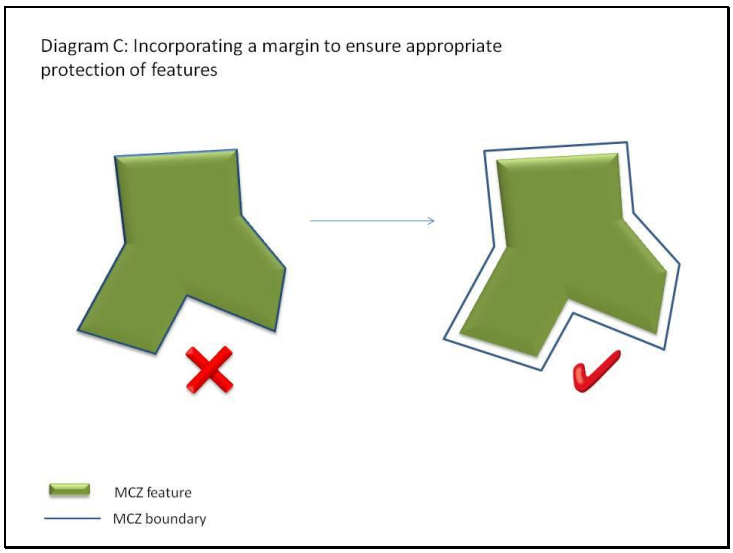
MCZ boundaries should follow feature extent (where appropriate), whilst:
using a minimum number of straight lines and ensuring as compact a shape as possible.

So rather than a simple large box, it is better to 'trim' the boundary to better fit the area to be protected.

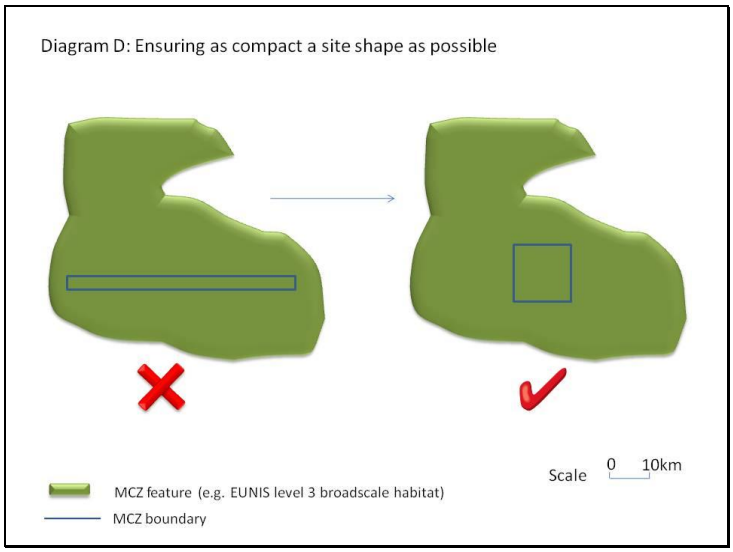


However, when doing this trimming, you need to be reasonable and not use too many short lines to try to capture ALL of the detail.

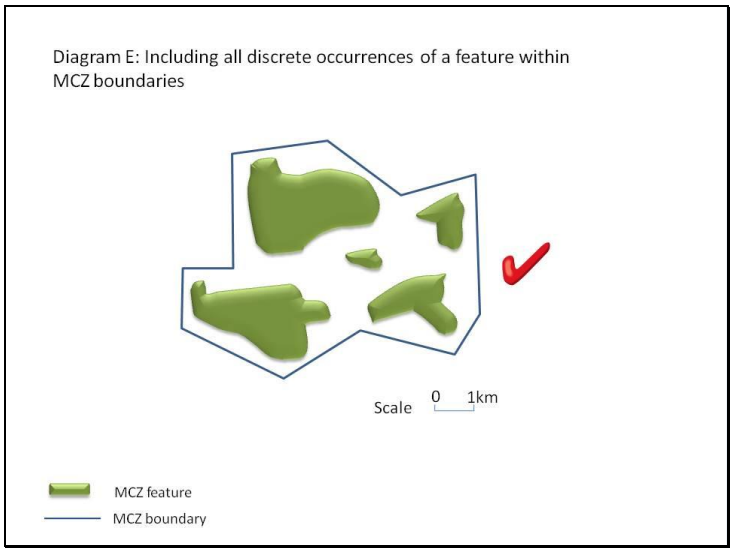
Rather than a site boundary that exactly follows the extent of a feature there should be a little bit of compromise.



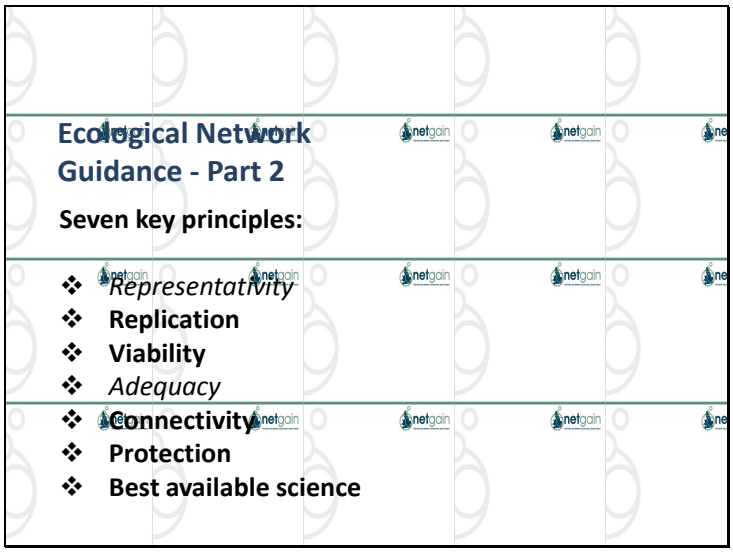
To ensure better protection for some features it may be appropriate to include a buffer, or margin, when drawing the site boundary.



When selecting a site within an area of broad-scale habitat (for example, remember the guidance to protect 16-32% of sub-tidal mixed sediment) the boundary should be drawn to protect as compact a shape as possible.



Finally, where there are close but separate examples of a habitat or species that you want to protect, then consider including a number of separate examples (possibly even all of them) within the boundary of a single site.



So that's the remaining principles outlined. As before, I'll pass back to Steve and Cathy who will lead us through a Q&A session.