Supplementary Advice on Conservation Objectives for Darwin Mounds Special Area of Conservation

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Contents

Introduction

What the conservation advice package includes

The information provided in this document sets out JNCC's supplementary advice on the conservation objectives set for this site. This forms part of JNCC's formal conservation advice package for the site and must be read in conjunction with all parts of the package as listed below:

- Background Document explaining where to find the advice package, JNCC's role in the provision of conservation advice, how the advice has been prepared, when to refer to it and how to apply it;
- Conservation Objectives setting out the broad ecological aims for the site;
- Statements on:
  - the site's qualifying feature condition;
  - conservation benefits that the site can provide; and
  - conservation measures needed to support achievement of the conservation objectives set for the site.
- Supplementary Advice on Conservation Objectives (SACO) providing more detailed and site-specific information on the conservation objectives (this document); and
- Advice on Operations providing information on those human activities that, if taking place within or near the site, can impact it and present a risk to the achievement of the conservation objectives.

The most up-to-date conservation advice for this site can be downloaded from the conservation advice tab in the Site Information Centre (SIC) on JNCC's website.

The advice presented here describes the ecological characteristics or 'attributes' of the site's qualifying feature: Annex I Reefs specified in the site's conservation objectives. These attributes include extent and distribution, structure and function and supporting processes.

Figure 1 below illustrates the concept of how a feature's attributes are interlinked: with impacts on one potentially having knock-on effects on another e.g. the impairment of any of the supporting processes on which a feature relies can result in changes to its extent and distribution and structure and function.

Collectively, the attributes set out in Table 1 describe the desired ecological condition (favourable) for the site's feature. The condition of the feature contributes to its favourable conservation status more widely, as well as the site's integrity. All attributes listed in Table 1 must be taken into consideration when assessing impacts from an activity.

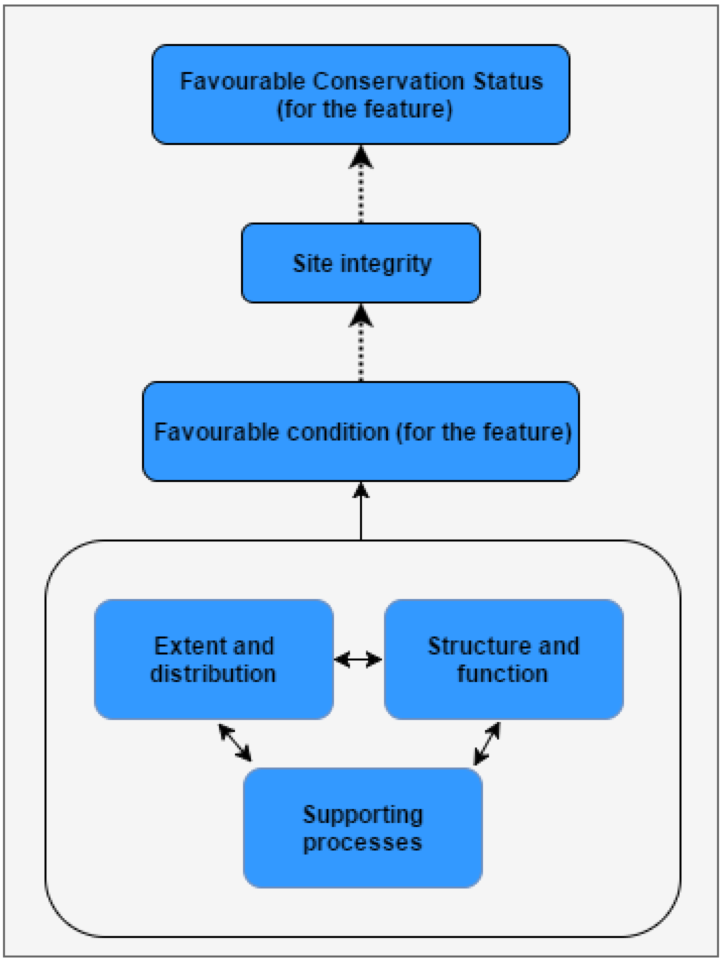

Figure 1. Conceptual diagram showing how feature attributes are interlinked, describe favourable condition and contribute to site integrity and wider favourable conservation status.

In Table 1 below, the attributes for the Annex I Reefs – Biogenic (cold-water coral reefs) are listed and a description provided in explanatory notes.

Please note our current understanding of whether the available evidence indicates that each attribute needs to be restored or maintained is not provided. Links to available evidence for the site are provided in the Table below. If you require further site-specific information on the attributes listed for the site's feature please contact JNCC at OffshoreMPAs@jncc.gov.uk.

Table 1: Supplementary advice on the conservation objectives for Annex I Reefs- Biogenic (cold-water coral reefs) in Darwin Mounds SAC.

Attribute: Extent and distribution
Objective: An objective has not been set for this attribute. Links to available evidence are provided below. Please contact JNCC at OffshoreMPAs@jncc.gov.uk for further site-specific information on this attribute.
Explanatory notes Extent refers to the total area in the site occupied by the biogenic habitat and must include consideration of its distribution, i.e. how it is spread out within the site. A reduction in extent has the potential to alter the biological and physical functioning of biogenic habitats. The distribution of a habitat influences the component communities present, and can contribute to the health and resilience of the feature (JNCC, 2004). It is important therefore to conserve the full known extent and distribution of the biogenic habitat within a site. The extent of coral habitats can vary naturally due to environmental conditions, and future increases in temperature and sea-water acidity could lead to a decline in coral extent (Jackson *et al.,* 2014). Thus, activities should not be permitted that are likely to reduce the distribution of the biogenic habitats. Annex I Reefs- Biogenic (cold-water coral reefs) are a biogenic habitat type created by dense aggregations of scleractinian corals. Scleractinian corals are hard reef- forming corals that create calcium carbonate skeletons. The corals may accumulate in places to create large, complex and three-dimensional habitat that and provides a settlement point for benthic organisms. Cold-water coral reefs can develop in a range of marine landscapes and environments, such as seamounts or canyons, and different environmental conditions lead to different types of reef. These reefs can also be home to a diverse assemblage of fish utilising the range of niches occurring both above and within the reef structure (Söffker *et al*., 2011). Annex I Reefs- Biogenic (cold-water coral reefs) usually have a maximum length of 1000 m (Buhl-Mortensen *et al.,* 2010) and can be up to 20 m high (OSPAR, 2009a). Growth rates of many corals are slow, but where they do persist, colonies can live for several thousands of years (Sun *et al.*, 2010; Carreiro-Silva *et al.*, 2013). Some reef-forming cold-water corals however have been recorded growing on average 1.4 cm per year (Sabatier *et al.,* 2012) and other deep-water corals can have growth rates exceeding 2 cm per year (Andrews *et al.,* 2002; Sherwood and Edinger, 2009). Coral habitats completely damaged by physical pressures such as those associated with benthic trawling do not show signs of recovery a decade after such pressure has been removed (Hall-Spencer *et al.*, 2002; Althaus *et al.,* 2009; Williams *et al.,* 2010; Howell *et al.,* 2013; Buhl-Mortensen *et al.* 2013; Buhl-Mortensen, 2017). However, recovery has been observed in areas were some living coral remains after impact (Buhl-

Mortensen *et al.,* 2013; Buhl-Mortensen, 2017). If coral colonies are killed, any recovery of extent and distribution will be influenced by the method of reproduction, dispersal potential, the relative location of a potential source population of reproductive adults and the presence of suitable supporting habitat (Dahl *et al.,* 2012, Fox *et al.,* 2016). Evidence indicates that for some types of cold-water corals, successful recruitment events may occur once a decade (Stone *et al.,* 2015), which could limit recovery. Restoration could be encouraged by transplanting fast-growing corals from other locations.

Annex I Reefs- Biogenic (cold-water coral reefs) form over hundreds or thousands of years (OSPAR 2009a). The sporadic reproduction of corals and slow growth rates of some species means that population recovery of the corals could take hundreds or thousands of years (Andrews *et al.,* 2002; Sherwood and Edinger, 2009; Carreiro-Silva *et al.*, 2013). In addition, if direct physical pressures are removed from a coral habitat, recovery of extent and distribution is uncertain due to predicted future decreases in ocean pH, which dissolves coral skeletons (Jackson *et al.,* 2014). Therefore, it is important to conserve the extent and distribution of the feature[s] as this cannot be easily be restored.

Extent and distribution within the site
The extent and distribution of Annex I Reefs- Biogenic (cold-water coral reefs) within the site is shown in the site map as Biogenic Reef. For further site-specific information please see the Site Information Centre. For information on activities capable of affecting the protected features of the site, please see Advice on Operations workbook for the site (hyperlink is provided in the box at the top of this document).

Attribute: Structure and function

Objective:
An objective has not been set for this attribute. Links to available evidence are provided below. Please contact JNCC at OffshoreMPAs@jncc.gov.uk for further site-specific information on this attribute.

Explanatory notes
Structure with respect to coral habitats encompasses:

- Coral composition - namely the species, morphology and size of the coral colonies that characterise the community;
- Physical structure of the reef - including the topography of the reef and the available macrohabitats;
- Key and influential species; and
- Characteristic communities present.

Coral composition

Coral colonies are made up of genetically identical polyps. Sessile and mobile benthic organisms may be associated with coral colonies, living on or within the coral tissue and around the colonies (Buhl-Mortensen and Mortensen, 2005; Bo *et al*., 2009; Guilloux *et al*., 2010; Ballion *et al.,* 2012; Mueller *et al.*, 2013; Ballion *et al.,* 2014; De Clippele *et al.*, 2015). The abundance, diversity and composition of associated organisms can vary between coral species, even within the same order (Ballion *et al.,* 2014; Carvalho *et al.,* 2014). A significant positive relationship has been found between both abundance and richness of associated organisms and coral colony size, number of branches and percentage of exposed skeleton (Buhl-Mortensen and Mortensen, 2005; Bo *et al*., 2009; Buhl-Mortensen *et al.,* 2010; Ballion *et al.,* 2012; Carvalho *et al.,* 2014). These characteristics of the coral colony contribute towards its structural complexity, therefore structural complexity of an individual coral colony is likely to be influenced by age and species. Biodiversity may be increased by enhanced structural complexity because of an increase in the heterogeneity of habitats available for other benthic organisms e.g. providing elevated perches for other filter feeders (De Clippele *et al*., 2015) or refugia from predators (Buhl-Mortensen and Mortensen, 2005; Buhl-Mortensen *et al.,* 2010). The size and morphology of corals may also influence their susceptibility to damage from physical pressures such as abrasion, with larger individuals and species with less flexible skeletons more likely to be impacted, and the ability of corals to repair tissue after damage (Mortensen *et al.,* 2005; Henry and Hart, 2005; Stone *et al.,* 2015).

Species composition, and size and age structure of the coral community or communities forming the biogenic habitat, will influence the associated biological community and therefore it is important that these aspects of the habitat should be conserved.

Physical structure of the reef

Physical structure refers to finer scale topography and habitat composition. Physical structure can have a strong influence on the hydrodynamic regime at varying spatial scales in the marine environment as well as the presence and distribution of biological communities (Elliot *et al.,* 1998). Reef size and structure can create sheltered areas and increases sedimentation of particulate organic matter. This can result in higher abundances of associated organisms than surrounding habitats (Morigi *et al*., 2012). Fish species associated with coral reefs have been shown to prefer different altitudes within a reef, and different slope aspects (Söffker *et al.*, 2011; Quattrini *et al.,* 2012). Variations in slope and surface roughness of a reef can increase diversity in benthic communities across the reef (Henry *et al.,* 2009) and so should be maintained.

Different habitats can occur across a cold-water coral reef (Buhl-Mortensen *et al.,* 2010; Lancaster *et al.,* 2014):

- **Living coral tissue** – dense areas of living cold water coral reef colonies. Within areas of live reef there are additional microhabitats, such as the tissue of living corals, surfaces of exposed coral skeletons, spaces within coral skeletons and the gaps between coral branches.
- **Dead coral framework communities –** dead coral reef framework can support communities of species that create biogenic habitats, such as sponges and non-reef forming corals, along with communities of other organisms such as hydroids, bryozoans and ascidians
- **Coral rubble communities –** coral rubble creates a potentially mobile environment and therefore supports unique communities of meiofauna that are adapted to this
- **Coral sediment communities –** infaunal and epifaunal communities associated with the coral sediment.

As conditions vary between these habitats, populations and diversity of associated benthic communities also differ between them (Mortensen and Fosså, 2006; Roberts *et al.,* 2008; Henry *et al.,* 2009; Purser *et al.,* 2013; Buhl-Mortensen, 2017). As a result, the presence and extent of these macrohabitats generate biodiversity across cold-water coral reefs and therefore all need to be conserved.

Key and influential species

Key and influential species are those that have a core role to play in determining the structure and function of a biogenic habitat. For example, species that increase vertical complexity and provide a substrate for epibionts to colonise and use as an elevated perch (Braga-Henriques *et al.*, 2010). The main key and influential species within coral habitat features will be the coral community itself, however there may be other species such as sponges or bryozoans that also provide additional physical structure and habitat complexity. The tube dwelling polychaete *Eunice norvegica* lives in close association with cold-water corals particularly *Lophelia pertusa,* stealing food particles from the coral host (Mueller *et al.,* 2013). The presence of the worm has been observed to almost quadruple calcification rates of corals (Mueller *et al.,* 2013) suggesting that its presence can influence reef development.

Changes to the spatial distribution of communities across coral habitats could indicate changes to a feature and as a result how it may function (JNCC, 2004). It is therefore important to conserve the key and influential species of biogenic habitats within a site to avoid diminishing biodiversity and ecosystem functioning and to support their conservation status (JNCC, 2004; Hughes *et al.*, 2005).

Characteristic communities

The variety of biological communities present make up the habitat and reflect the habitat's overall character and conservation interest. Characteristic communities include, but are not limited to, representative communities, for example, those covering large areas, and notable communities, for example, those that are nationally or locally rare or scarce such as those listed as OSPAR threatened or declining, or known to be particularly sensitive to anthropogenic activities. *Lophelia reefs* are listed on the OSPAR threatened and/or declining habitats list, and this includes the characteristic communities associated with them (OSPAR, 2009a; OSPAR, 2010a; OSPAR, 2010b). Cold water coral reefs have also been recognised as Vulnerable Marine Ecosystems (VMEs) by the International Convention for the Exploration of the Sea (ICES).

Biological communities found within and on coral habitats can vary depending on the corals creating the habitat, location, and depth, as well as fine-scale physical, chemical and biological processes. A range of species have been found to have commensal or parasitic associations with deep-water coral species, some of which are obligate relationships (Buhl-Mortensen and Mortensen, 2004) such as strong associations of the brittlestar *Ophiomusium lymani* with bamboo corals (Henry and Roberts, 2014). Biological communities associated with coral habitats typically include filter feeders, such as ascidians, bryozoans, zoantherians, brittlestars and shrimp (Buhl-Mortensen and Mortensen, 2005; Bo *et al*., 2009; Buhl-Mortensen *et al.,* 2010; De Clippele *et al.,* 2015; Carreiro-Silva *et al.,* 2017) which use the vertical structure created by corals as elevated perches to improve feeding (De Clippele *et al.,* 2015). As coral habitats develop in areas with relatively high currents, communities found in sediments within coral habitats are adapted to physical disturbance (Raes and Vanreusel, 2006). The characteristic communities associated with living coral colonies usually includes copepods that have evolved to be endoparasites in coral tissue (Buhl-Mortensen and Mortensen, 2005; Baillon *et al.,* 2012; De Cippele *et al.,* 2015). Coral rubble becomes covered with a biofilm, which supports communities of organisms that feed on this (Raes and Vanreusel, 2006).

It is important to conserve the natural spatial distribution, composition, diversity and abundance of the main characterising biological communities of the coral habitat within the site to avoid diminishing biodiversity and ecosystem functioning within the habitat and to support its health (Hughes *et al.*, 2005).

Function

Functions are ecological processes that include sediment processing, secondary production, habitat modification, supply of recruits, bioengineering and biodeposition. These functions rely on the supporting natural processes and the growth and reproduction of corals, and associated biological communities (Armstrong *et al.,* 2014).

These functions can occur at a number of temporal and spatial scales and help to maintain the provision of ecosystem services locally and to the wider marine environment (ETC, 2011). Ecosystem services typically provided by these habitats include:

- Nutrition: Coral habitats are potentially an important link in the flow of carbon between the pelagic and benthic environment (Cathalot *et al.,* 2015)*.* Cold-water coral species secrete mucus which becomes a source of dissolved and particulate organic matter for the ecosystem. Sponge species can feed on this and it is incorporated into sponge detritus (Rix *et al.,* 2016), which is then consumed by higher trophic levels. This may serve to increase the availability of prey species to predators through enhancement of biological diversity, potentially providing refugia from predators (Stone *et al.,* 2015), locations to lay eggs (Henry *et al.*, 2016) or nurseries (Ballion *et al.,* 2012) for fish species. There is some evidence that the abundance of certain commercial fish species is higher within coral habitats compared to non-coral habitats (D'Onghia *et al.,* 2012; Pham *et al.,* 2015).
- Climate regulation: Dead coral skeletons are a long-term store of carbon (Armstrong *et al.,* 2014), although the coral calcification process emits carbon dioxide. Ocean acidification is expected to corrode the skeletons of dead deep-water scleractinian corals although cold-water coral reefs shallower than ~150 m, are not expected to be subject to corrosion as they will remain above the aragonite saturation horizon (Jackson *et al.,* 2014).
- Provision of recruits: The larvae of corals have a planktonic phase giving the potential for long distance dispersal. A coral habitat can create a supply of recruits to establish new or help maintain existing coral habitats elsewhere (Wright *et al.,* 2015; Fox *et al.,* 2016).
- Provision of biochemical and biotechnological products: Chemicals extracted from corals have been shown to have applications in the pharmaceutical industry (Sawadogo *et al.,* 2015; Ruiz-Torres *et al.*, 2017).

It is critical to ensure that the extent and distribution of coral habitats within a site, along with the composition of any key, influential and characteristic biological communities are conserved to ensure the functions they provide are maintained.

Structure and function within the site
For further site-specific information on the structure and function of the feature within the site, please see the Site Information Centre. For information on activities capable of affecting the protected features of the site, please see the Advice on Operations workbook for the site (hyperlink is provided in the box at the top of this document).

Attribute: Supporting processes

Objective:

An objective has not been set for this attribute. Links to available evidence are provided below. Please contact JNCC at OffshoreMPAs@jncc.gov.uk for further site-specific information on this attribute.

Explanatory notes

Biogenic habitats and the communities they support rely on a range of natural processes to support function (ecological processes) and help any recovery from adverse impacts. For the site to fully deliver the conservation benefits set out in the statement on conservation benefits, the natural supporting processes of hydrodynamic regime, physical topography, supporting habitat and water and sediment quality must remain largely unimpeded.

Hydrodynamic regime

Hydrodynamic regime refers to the speed and direction of currents, seabed shear stress and internal and surface wave exposure. These mechanisms circulate food resource and propagules, influence water properties by distributing dissolved oxygen, and facilitate gas exchange from the surface to the seabed (Hiscock *et al.,* 2004; Mienis *et al.*, 2007; Hosegood and van Haren, 2004; Wagner *et al.,* 2011).

Cold-water corals feed on zooplankton and other organic matter, therefore cold-water coral habitats require hydrographic conditions that result in a supply of sufficient organic matter to the seabed. Coral habitats occur where hydrodynamic conditions re-suspend particulate organic matter (POM) from the seabed into the water column, or where downwelling brings a fresh supply of POM from the sea surface (Mienis *et al.*, 2007; Davies *et al.,* 2009). The presence of various coral species is influenced by current velocities (Jones *et al.,* 2009; Tracey *et al*., 2011). Moreover, the shape and orientation of coral reefs and carbonate mounds can be driven by the prevailing currents (Davies *et al.,* 2009; girard -Mortensen *et al.*, 2010; Järnegren and Kutti, 2016). Although corals require water movement to supply them with POM, feeding rates can reduce at high velocities (Purser *et al.,* 2010) suggesting that coral habitats may require a certain range of current velocities to develop. The hydrodynamic regime transports coral larvae as well as food. Changes to the hydrodynamic regime can alter the source and number of new recruits to coral habitats (Fox *et al.,* 2016). Morphology of sponges can be influenced by local hydrodynamics (De Clippele *et al*., 2017). Hydrodynamic regime also effects the movement, size structure and sorting of sediment particles, and can therefore influence the supporting habitat.

If is therefore important to conserve the prevailing hydrodynamic regime, in order to maintain the supply of food and larval recruits, and the supporting habitat of the coral habitats.

Physical topography

The hydrodynamic conditions required by corals are generated by the interaction of water currents and topographic features that strengthen internal tides (Davies *et al.*, 2009), generate internal waves (Mienis *et al.*, 2007) or increase mixing and primary productivity in shallower water (Roberts *et al.,* 2009). Coral habitats therefore tend to develop on continental slopes, along ridges and on topographic structures such as seamounts and carbonate mounds (Hall-Spencer *et al.*, 2007, Davies *et al.,* 2009, Tracey *et al.,* 2011; Tong *et al.,* 2012; Tong *et al.,* 2013). Hydrodynamic regime, specifically the direction of prevailing currents, influence the growth and morphology of carbonate mounds themselves, which can influence the type and distribution of biogenic communities occurring on the mounds (Wheeler *et al.* 2007). At a more local scale, coral colonies prefer elevated areas of seabed (Tong *et al.,* 2012; Tong *et al.,* 2013) to give them access to faster flowing water. This suggests that the surface topology of the seabed could influence density and distribution of non-reef forming corals within coral habitat features.

There are three types of reef forms; inherited reef forms have a morphology that reflects the underlying seabed; developed reef forms have a large-scale morphology that has developed independent of the underlying seabed; and wall reef forms that occur on vertical slopes (Järnegren and Kutti, 2016). For inherited and wall reefs, the physical structure of the reef and therefore the associated biodiversity is dependent on the underlying topography.

Supporting habitat

Most species of coral require hard substratum to attach to (e.g. Stone *et al.,* 2015), however some bamboo corals and sea-pens grow on sandy and muddy sea beds (Buhl-Mortensen *et al.,* 2010; Raes and Roberts, 2014). For reef forming corals, initial colonisation only requires a very small area of available hard substratum, such as a single pebble. After initial colonisation, the coral itself can provide hard substrata for subsequent colonies to develop (Buhl-Mortensen *et al.,* 2010). Species composition and density of colonies characterising other coral habitats will be influenced by the availability and type of underlying substratum.

Water and sediment quality

Contaminants may affect the quality of coral habitats through a range of effects on different species within the habitat, depending on the nature of the contaminant (JNCC, 2004; UKTAG, 2008; EA, 2014). It is important therefore to avoid changing the natural water quality and sediment quality properties of a site and as a minimum ensure compliance with existing Environmental Quality Standards (EQS) as set out below.

Environmental Quality Standard (EQS)

The targets listed below for water and sediment contaminants in the marine environment are based on existing targets within or the Water Framework Directive (WFD) and require concentrations and effects to be kept within levels agreed in the existing legislation and international commitments as set out in The UK Marine Strategy Part 1: The UK Initial Assessment 2012.

Aqueous contaminants must comply with water column annual average (AA) Environmental Quality Standards (EQSs) according to the amended Environmental Quality Standards Directive (EQSD) (2013/39/EU) or levels equating to (High/Good) Status (according to Annex V of the Water Framework Directive (WFD) (2000/60/EC), avoiding deterioration from existing levels.

Surface sediment contaminants (<1 cm from the surface) must fall below the OSPAR Environment Assessment Criteria (EAC) or Effects Range Low (ERL) threshold. For example, mean cadmium levels must be maintained below the ERL of 1.2 mg per kg. For further information, see Chapter 5 of the Quality Status Report (OSPAR 2010c) and associated QSR Assessments.

There are little data on the impact of aqueous and sediment contaminants on cold-water coral species, therefore no tolerance thresholds have been established for cold-water coral habitats. The general standards described above apply to these habitat features until more habitat specific information is available.

The following sources of information are available regarding historic or existing contaminant levels in the marine environment:

- Marine Environmental and Assessment National Database (MERMAN);
- The UK Benthos database available to download from the Oil and Gas UK website;
- Cefas Green Book;
- Strategic Environmental Assessment Contaminant Technical reports available to download from the British Geological Survey website;
- Charting Progress 1: The State of the UK Seas (2005) and Charting Progress 2: The State of the UK Seas (2014).

Water quality
The water quality properties that influence these habitats include salinity, pH, temperature, suspended particulate concentration, nutrient concentrations and dissolved oxygen. They can act alone or in combination to affect habitats and their communities in different ways, depending on species-specific tolerances. In fully offshore habitats these parameters tend to be relatively more stable, particularly so for deeper waters, although there may be some natural seasonal variation. Water quality properties can influence the abundance, distribution and composition of coral habitat features and associated communities at relatively local scales (Elliott *et al.*, 1998; Gray and Elliott, 2009).

Spawning in sea-pens has been shown to occur at specific water temperatures (Baillon *et al.,* 2013) and cold-water corals in laboratory experiments began to die at temperatures above 8.7°C (Leifman, 2016). This suggests that coral habitat features can only develop and survive within a specific range of water temperatures, and this is likely to be species specific.

Increased concentrations of sediment in the water column can have a negative impact on corals by reducing feeding activity, preventing access to oxygen and damaging corals by becoming embedded in their surface (Allers *et al.*, 2013; Leifman, 2016). *Lophelia pertusa* can tolerate short term increases in sedimentation, however burial of living coral tissue for more than a day resulted in death (Allers *et al.*, 2013). Responses to increases in suspended particles are likely to vary between coral species, nature of suspended sediment and presence of other species in the community (Girard *et al*., 2016; Leifman, 2016). As coral colonies feed on suspended particles, coral habitat features do require a supply of particulate organic matter to the seabed. Changes to water quality that reduces the supply of particulate organic matter and nutrients to corals may be detrimental.

Scleractinian cold-water corals create their skeleton from aragonite, which is a mineral of calcium carbonate. Atmospheric carbon dioxide emissions are lowering the amount of aragonite in seawater in a process called ocean acidification (Jackson *et al*., 2014). This threatens deep-water scleractinian coral reefs and communities as seawater is becoming corrosive to their skeletons.

It is important therefore to avoid changing the natural water quality of a site as a minimum to ensure compliance with existing EQS as set out above until thresholds specific to coral habitats have been identified.

Sediment quality
Various contaminants are known to have different effects on the species that live in or on coral habitats. These include heavy metals like mercury, arsenic, zinc, nickel, chromium and cadmium, poly-aromatic hydrocarbons (PAHs), poly-chlorinated biphenyls (PCBs), organotins

(TBT) and pesticides such as hexachlorobenzene. These can impact species sensitive to particular contaminants (e.g. heavy metals), and bioaccumulate within organisms thus entering the marine food chain (e.g. polychlorinated biphenyls) (OSPAR Commission, 2009b; OSPAR Commission, 2010d; OSPAR Commission, 2012). There is little research into the impact of sediment contaminants on corals, particularly from deep cold-water systems. If contamination occurs, this can lead to intolerant conditions and result in a change to typical species composition. It is therefore important to ensure sediment quality is maintained by avoiding activities that may cause resuspension of existing or the introduction of new contaminants. As a minimum, it is important to ensure compliance with existing EQS as set out above until thresholds specific to coral habitats have been developed.

Supporting processes within the site

For further site-specific information on the structure and function of the feature within the site, please see the Site Information Centre. For information on activities capable of affecting the protected features of the site, please see Advice on Operations workbook for the site (hyperlink is provided in the box at the top of this document).

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