

East Inshore and East Offshore Marine Plan Areas Evidence and Emerging Issues Annexes

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Annex 1: Data layers used in marine planning analysis

Marine Policy Statement category	Layer name	Source
Marine Protected Areas	National Nature Reserves (NNR)	Joint Nature Conservation Committee (JNCC) and Natural England
	Marine Conservation Zones (MCZ)	
	Recommended Reference Areas	
	Marine Conservation Zones (MCZ)	
	Recommended Sites	
	Ramsar Sites	
	Sites of Special Scientific Interest (SSSI) Unit Boundaries	
	Inshore Special Protection Area (SPA) With Marine Components	
	Latest offshore Special Area of Conservation (SAC) Sites	
	Inshore Special Area of Conservation (SAC) With Marine Components	
	AONBs	Natural England
SACs and SPAs outside UK waters	Rijkswaterstaat	
Waste disposal	Consented Discharges to Controlled Waters	The Environment Agency
Tourism	Blue Flag Beaches (2009)	Foundation for Environmental Education (FEE)
	Royal Yachting Association (RYA) Marinas	Royal Yachting Association (RYA)
	Royal Yachting Association (RYA) Training centres	Royal Yachting Association (RYA)
	Royal Yachting Association (RYA) Clubs	Royal Yachting Association (RYA)
	Current Royal Yachting Association (RYA) Racing Areas	Royal Yachting Association (RYA)
	Current Royal Yachting Association (RYA) Sailing Areas	Royal Yachting Association (RYA)
	Current Royal Yachting Association (RYA) Cruising Routes	Royal Yachting Association (RYA)

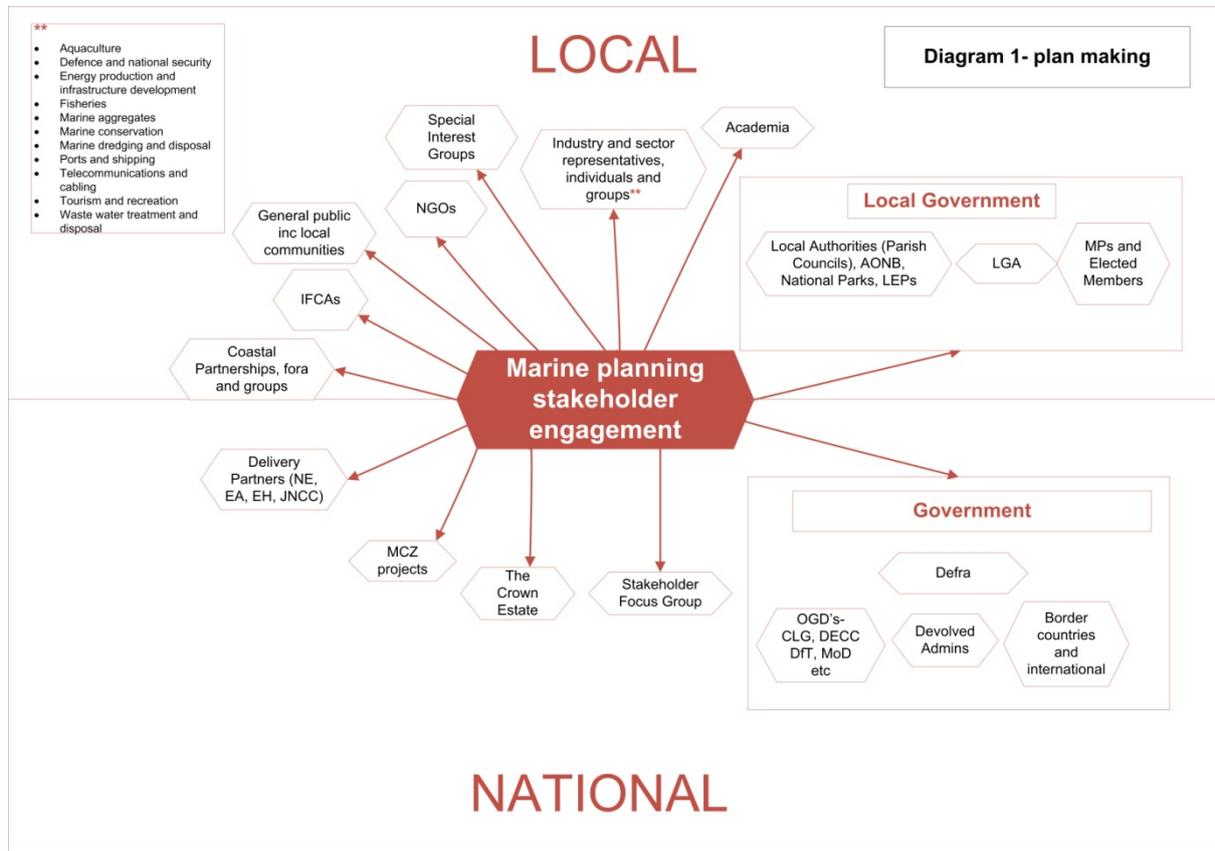
	Activity locations	Ordnance Survey
	RSPB reserves	RSPB
	National Parks	Natural England
	AONBs	Natural England
	Recreational Craft Marinas	Boat launch
Defence	Munitions Dumping Grounds	Ministry of Defence (MoD)
	Military Low Flying Zones (UK) (updated)	Ministry of Defence (MoD)
	Radar Interference	
	Military Practice Areas (updated)	Ministry of Defence (MoD)
	Defence Estate Properties Within 5 km of the Mean High Water Mark (2011)	Ministry of Defence (MoD)
	Safeguarding Data Within 5 km of the Mean High Water Mark (2011)	Ministry of Defence (MoD)
Energy: Nuclear	Nuclear Power Stations (GB)	British Energy Group
Energy: Oil and gas production	Manifold	UKDeal
	Generic Offshore Installations	UKDeal
	Platform	UKDeal
	Protection Structure	UKDeal
	Storage Tank	UKDeal
	Template	UKDeal
	Wells	UKDeal
	Pipelines	UKDeal
	Hydrocarbon Fields	UKDeal
	Current Hydrocarbon Licence Blocks	DECC
	Coal gassification licences	The Coal Authority
	Above ground gas installations	National Grid
	Gas pipeline feeder	National Grid
	Diffuser	SeaZone
	25th and 26th round conditional awards	UKDeal
	Tidal Lease Areas	The Crown Estate
	Wind Farms Round 1 Lease Areas (GB) (2010)	The Crown Estate
	Wind Farms Round 2 Lease Areas (GB) (2010)	The Crown Estate

Renewables	Wind Farms Round 3 Lease Areas (GB) (2010)	The Crown Estate
	Round 1 and Round 2 Wind Farm Extensions	The Crown Estate
	Potential tidal stream resource- technical opportunity	The Crown Estate
	Potential wave energy resource- technical opportunity	The Crown Estate
	Wind farm cables	The Crown Estate
	Electricity substations	National Grid
	Ports	DECC
Ports and shipping	UK Major Ports	UK Major Ports Group (UKMPG)
	Anchoring Areas	Seazone
	International Maritime Organization (IMO) Routing Areas	International Maritime Organization (IMO)
	Recommended Route	Seazone
	Traffic Separation Scheme Areas	Seazone
	Ship to ship transfer sites	Seazone
	Ports	DfT
	Shipping Intensity (2010)	Anatec
Aggregate extraction	Aggregate Application Areas	The Crown Estate
	Aggregate Production Licences	The Crown Estate
	Aggregate Prospecting or Options	The Crown Estate
	Dredge Routes	British Marine Aggregate Producers Association (BMAPA)
	Potential aggregate resource area	The Crown Estate and BMAPA
Disposal sites	Navigational dredging	MMO
	Disposal sites	MMO
	Alternative use of dredged material	MMO
	Miscellaneous disposal	MMO
Cables	Active and Recently Inactive Submarine Cables	SeaZone and KISCA
	Inshore Fishing Effort - Sightings (mobile and static gears)	Centre for Environment, Fisheries and Aquaculture Science (Cefas)

Fishing	UK fishing effort (number of days fished) 2005 - 2007 (mobile and static gears)	Marine Management Organisation (MMO)
	Fish-nursery Grounds	Centre for Environment, Fisheries and Aquaculture Science (Cefas)
	Fish-spawning Grounds	Centre for Environment, Fisheries and Aquaculture Science (Cefas)
	Tonnage landed in plan area ports	MMO
	E.U. Fishing effort- mobile gears	MMO
Aquaculture	Shellfish Production (England and Wales)	Centre for Environment, Fisheries and Aquaculture Science (Cefas)
Carbon capture and storage	Large Dome Structures in the Bunter Sandstone Formation	British Geological Survey
	Aquifers	British Geological Survey
	Redundant Hydrocarbon Fields	UKDeal
	Additional Carbon Capture and Storage (CCS) interest area	The Crown Estate
Habitat sensitivity analysis	East England Combined Habitat Map	Joint Nature Conservation Committee (JNCC)
	MB0102 Foci habitats and species data	See Annex 3
	Pressure or Sensitivity Matrix	Defra MB0102 Project

For further information about any of the data used in the Marine Planning Evidence and Emerging Issues Report or for a more detailed list of data used, please contact the marine planning team at: planning@marinemanagement.org.uk

Annex 2: (i) Stakeholder groups and engagement



(ii) Stakeholder Engagement Meeting Report

Category as per Marine Policy Statement	Key issues	Other comments
<p>Marine protected areas</p>	<p>Concerns expressed by this sector</p> <ul style="list-style-type: none"> • Stakeholders had concerns regarding the gravity of decisions being made set against timescales. • Concerns on the quality of data in the evidence base and confidence levels. • Late admission of some data to projects giving little time for its consideration. • Miscommunications and dissemination of incorrect information. • Stakeholder fatigue in re-submission of data already given to marine conservation zone (MCZ) projects. • If management measures do not ensure that foreign fishing vessels are excluded from MCZs outside of 6 and 12 nautical miles, then UK vessels could be disadvantaged, conservation objectives diminished and minimal stakeholder buy-in. This is significant for marine plans. • Repetition of information supply at MCZ hub meetings utilised time that could have been used for discussions in other 	<p>Comments expressed by this sector</p> <ul style="list-style-type: none"> • Confusion amongst some stakeholders between marine planning and MCZ projects. • Some stakeholders are viewing marine plans as a tool to overrule or resolve local issues, rather than accepting it as a strategic overview. • Concern amongst smaller stakeholders regarding the timeline for delivery of the first marine plans and that this may result in recognition of major stakeholders only. • Desire for MMO to build on contacts established through the MCZ process.

	<p>areas.</p> <ul style="list-style-type: none"> • 	
<p>Comments and concerns of others about this sector</p> <ul style="list-style-type: none"> • Some leisure users felt they received little communication from MCZ project, especially if they were not members of a club or association. Also, the lack of information on management measures made supporting the projects difficult. Both points have implications for sectoral representation and buy-in from stakeholders who may be directly affected by outcomes. • Many industries feel that conservationists do not appreciate the socio-economic impacts of their proposals or restrictions. The powerful green lobby exerts pressure on decision makers to act, even if the supporting evidence is weak or disputed. • Royal Society for the Protection of Birds (RSPB) concerned that there was no consideration in current MCZ projects for protection of seabirds offshore, such as at feeding sites. 		
<p>Defence and national security</p>	<p>Concerns expressed by this sector</p> <ul style="list-style-type: none"> • Some activities are simply not compatible with other uses of the marine environment for health, safety and defence reasons. 	<p>Comments expressed by this sector</p> <ul style="list-style-type: none"> • The importance of including and clearly denoting restricted zones on all charts and maps, whether electronic or paper. • Limited access and remote location of sites means they are important nature reserves and many have designated conservation status.
<p>Comments and concerns of others about this sector</p> <ul style="list-style-type: none"> • Uncertainty about future use, ownership and access to non-operational sites. • Inability to use some non-operational areas due to the presence of live ordnance. 		
<p>Energy production and infrastructure development</p> <p>Wind farms and cable routes</p> <p>Carbon capture and storage</p>	<p>Concerns expressed by this sector</p> <ul style="list-style-type: none"> • Concerns over current ability of National Grid to accommodate power generated by Round 3 wind farms. Disparities in consenting processes and timings add to this problem. There are aspirations for a North Sea strategic transmission network being investigated by The Crown Estate and National Grid. This 	<p>Comments expressed by this sector</p> <ul style="list-style-type: none"> • The Crown Estate working collaboratively with MMO to ensure that lease agreements are in line with draft/adopted marine plans. • Developers have to consider cumulative effects of other windfarm developments in an area. • Not all the inshore seabed

Gas caverns	<p>would allow connectivity between wind farms rather than each wind farm having its own landing point.</p>	<p>is owned by The Crown Estate. Longer and complex leasing agreements needed with private owners to install cable routes.</p>
Power stations	<ul style="list-style-type: none"> • Large areas of wind energy development zones are already taken up by oil and gas licenses, with more developments due in near future. Industries not considered currently compatible, especially with exclusion zones, but potential to co-exist. • Developers have identified commercial fisheries data as the biggest gap in their preparation of zone environmental appraisals. MMO hold the available data as vessel monitoring system (VMS) records. 	<ul style="list-style-type: none"> • Major issues for wind farms in the Wash area are military radar and fishing.

Comments and concerns of others about this sector

- Will wind farms create employment and wealth for the local communities? Seen as a potential development opportunity by some, but locals fear the jobs will go elsewhere or workers will be brought in from outside the area.
- There are cross-boundary issues with Round 3 wind farms such as Dutch fishing vessels on Dogger Bank. Cohabitation with commercial fishing is still an area of concern with disruption only recognised in the short term construction phases of development.
- Fishing industry distrustful of windfarm developers in some areas due to previous poor experiences in Round 1 and/or Round 2.
- Fishermen believe large, multinational companies do not have the same constraints placed on renewable energy as there are on commercial fisheries, citing cable routing through the Wash as an example.
- Fishing industry sees loss of grounds due to turbines and cable routes as key issue, especially for mobile gears. Displacement is a direct consequence – National Federation of Fishermen's Organisations (NFFO) working with Centre for Environment, Fisheries and Aquaculture Services (Cefas) and the Department for Environment, Food and Rural Affairs (Defra) to assess this.
- Major concern with onshore elements of offshore wind development and numbers of new pylons required especially in rural areas where communities do not feel benefits from job creation.
- Difficult to value benefits of renewable energy projects to local economy, including downstream businesses.
- Challenges with public perception of offshore wind efficiency and potential visual impacts, devaluation of property.
- Concerns in many sectors relating to noise implications on marine life, especially during construction phase.

- In some areas the wind industry has led to improvements in port facilities and greater financial input into the local area.
- Fishing industry believes cables must be buried as rock dumping is severely unpopular. Restoration of the seabed after cable laying has caused dispute between fishermen and developers.
- Preference for a small number of large output turbines as opposed to large numbers of low output devices as this may result in greater spacing supporting vessel movements.
- Developers suggested it is a marine planning issue as to how to mitigate potential danger from collisions.
- Offshore wind farm development and construction of gravity bases seen as a growing market for aggregates industry.
- There is a lack of awareness and understanding on carbon capture and storage. It is possible that that no part of a CCS project requires MMO consent, including all infrastructure and decommissioning.
- Gas cavern areas are felt to have an impact on the local fishery by some industry members due to the hypersaline discharge.
- Concerns arise with the construction of new power stations at Sizewell and Bradwell regarding construction related impacts with potential large vessels will be offloading material near to the site, and the cooling systems impact on the marine environment.
- Benefits of marine planning need to be clear to Industry as additional work in relation to licensing equates to extra costs.

Ports and shipping	Concerns expressed by this sector	Comments expressed by this sector
	<ul style="list-style-type: none"> • The practical application of plans, that is licensing decisions and the changes to marine licensing have been of greater concern to this sector so far. • Ports need to develop and adapt to new opportunities and industries, such as servicing offshore energy, containers and RO-RO. 	<ul style="list-style-type: none"> • The MMO socio-economic report did not capture current and near future port developments of some within the sector, such as RO-RO at Ipswich.

- Comments and concerns of others about this sector**
- Recent port development at Great Yarmouth has been blamed for increased coastal erosion.
 - Ship-to-ship oil transfers are potential pollution risk and impacts on seascape. Seen as incompatible with marine protected areas (MPAs).
 - River bed ownership in tidal rivers is complex and can affect rights, responsibilities, vessel moorings, navigation, and so on. Perception that marine planning may place restrictions on developments, such as number of moorings.

- Local development framework (LDF) infrastructure policies may not include ports and harbours, possibly because of the private ownership of these types of facilities.

Marine aggregates	Concerns expressed by this sector	Comments expressed by this sector
	<ul style="list-style-type: none"> Downturn in demand for aggregates in recent years due to economic climate. The discontinuation of Mineral Policy Statement 1, particularly with regards to the hierarchy of extraction for minerals which previously highlighted the value and preference of the extraction of minerals from the marine. 	<ul style="list-style-type: none"> Only small percentage of licensed area is dredged and old areas are surrendered before new areas are licensed. Wind farms can cause significant detours on transit routes from dredging area to port. An ageing fleet of vessels with money spent only on maintenance, not invested in new dredgers.

Comments and concerns of others about this sector

- Questions arose regarding licence payments to The Crown Estate for leasing of seabed and how marine licences fit with The Crown Estate lease in relation to aggregates and wind farms.
- Illustration of areas of interest for the next 25 years is needed on nationally significant mineral resources.
- Perception that aggregate extraction leads to or exacerbates coastal erosion contrary to the established evidence base. Many local authorities and estuary groups would like to see more independent research on this issue.
- Fishing industry believes dredging leaves the ground fallow and removes substrate needed for spawning fish.

Marine dredging and disposal	Concerns expressed by this sector	Comments expressed by this sector
	<ul style="list-style-type: none"> New licensing regime causing concern to small operators previously exempt from licensing, such as small scale maintenance dredging in marinas. 	<ul style="list-style-type: none"> There are charges associated with new licences, adding an additional burden to small operators for activities previously exempt from licensing.

Comments and concerns of others about this sector

- Re-suspension of heavy metals in estuarine waters can impact shellfish beds.
- Smothering of shellfish beds from unskilled dredging and disposal.

Telecommunications cabling	Concerns expressed by this sector <ul style="list-style-type: none"> • Importance of this sector not generally understood or appreciated. 	Comments expressed by this sector <ul style="list-style-type: none"> • Long-established industry with well developed working practices and relationships with other sea users. • Potential for disruption to installation from other marine users undertaking their activities.
Comments and concerns of others about this sector <ul style="list-style-type: none"> • Snagging of cables if they become exposed. • Rock armour unpopular on previously clean ground for mobile fishing. 		
Fisheries	Concerns expressed by this sector <ul style="list-style-type: none"> • Industry declining. Continuous pressure and squeeze on fishing grounds due to other marine operators, against a backdrop of stringent fisheries management measures. • Perception that major industries and lobbies take priority over fisheries in government decisions. 	Comments expressed by this sector <ul style="list-style-type: none"> • Concerns as to how the outputs from the MMO socio-economic study would be used and any negatively impact across marine sectors, particularly fisheries. • Fishing industry opinions and points of view perceived as rarely taken on board in comparison to other marine industries. Information given in the past seems to have been ignored. • Fishing industry attends windfarm, MCZ and other development meetings on a damage limitation basis. • Inshore fleet needs to be versatile in respect of grounds, gear type, target species, seasonality and opportunities. This versatility is being eroded, industry unable to adapt to changes. • Increased pressure from buyers to produce a certified product, such as

		MSC approved, is limiting markets, prices and opportunities for catchers. Direct impacts on profitability, viability and employment.
Comments and concerns of others about this sector <ul style="list-style-type: none"> • Fishermen often unable to substantiate their case due to availability of quality data or lack of internal agreement and cooperation. • Representation is not always representative, many fishermen are independent. • Reluctance of fishing industry to engage or disclose personal, commercial data. 		
Aquaculture	Concerns expressed by this sector <ul style="list-style-type: none"> • Aquaculture identified as potential growth area by government. However, no new shellfish lays currently permitted in Wash due to environmental concerns, but other industries, appear unhindered despite environmental concerns. 	Comments expressed by this sector <ul style="list-style-type: none"> • Industry feels unsupported. • Belief that increased water treatment, and screening has led to reduced food availability coming downstream to filter feeding shellfish. • Water quality affects ability of growers to directly market produce for immediate consumption, affecting their long-term viability.
Comments and concerns of others about this sector <ul style="list-style-type: none"> • Introduction of non-native species can have far reaching consequences. • Environmental concerns about shellfish farmers wishing to protect their stock from natural predators including birds, crabs and starfish. • Environmental concerns about carrying capacity of an area and food supply for indigenous species. 		
Surface water management and waste water treatment and disposal	Concerns expressed by this sector <ul style="list-style-type: none"> • Every estuary has distinctive social, economic and environmental characteristics. These need to be considered at a local level when looking at water management and planning in general. 	Comments expressed by this sector <ul style="list-style-type: none"> • Water security is a key issue for the region with either having too much or too little water. As well as water for irrigation there is also the need to keep the natural water table and river flow in balance to maintain good ecological status.

		<ul style="list-style-type: none"> • Insufficient coastal input to inland flood strategies. • Inland and coastal groups need to work more closely together.
Comments and concerns of others about this sector <ul style="list-style-type: none"> • Local landowners and residents are often dubious of science behind flood risk management and would like to see more local based interpretation feeding into decisions. • Local stakeholders have raised the lack of management of surface water runoff and storm discharge leading to coastal pollution and reduced water quality for shellfish beds. • Concerns on any relaxation on development on flood plains. 		
Tourism and recreation	Concerns expressed by this sector <ul style="list-style-type: none"> • Balancing access to coastal areas with conservation. • Seascapes, lack of legal definition and guidance for plan making and licensing decisions. 	Comments expressed by this sector <ul style="list-style-type: none"> • Coastal flood defence will have far more input from local communities but will have cost implications. • Increasing use of the sea is leading to a compression of activities (such as yachting routes) and could increase health and safety risks. • Anglers are concerned that information provided in the past did not lead to positive outcomes. • Desire from some within the sector that they should be directly represented on advisory groups connected with marine planning.
Comments and concerns of others about this sector <ul style="list-style-type: none"> • Some within the sector have limited organisation or representation and this may impact on stakeholder engagement. • Lack of variety in tourism in many areas, need to diversify and thus to reduce seasonality. 		
Partner organisations	Concerns expressed by this sector <ul style="list-style-type: none"> • Environment Agency concerned about 	Comments expressed by this sector <ul style="list-style-type: none"> • The Environment Agency advised that there should

	<p>integrating marine plans. Flood and coastal risk management should not be compromised by marine planning.</p> <ul style="list-style-type: none"> • Hierarchy of statutory plans over non-statutory. • Clarity is sought on the independent investigation process for marine planning, how seascape is incorporated into a marine plan and how will plans develop alongside devolved administration waters. • Concern regarding data quality for marine planning and how to handle non-scientific evidence. • Clarity required on the inter-relationship between planning and licensing. • Clarity sought on level of detail within marine plans and limitations of using coarse or large scale info at local level. • Differences between levels of involvement for elected members between marine and terrestrial planning. • Different interpretations and understanding of sustainable development need to be reconciled. • Local authorities may have their aspirations impacted if marine plans reduce or restrict marine developments and industries. Coastal protection and 	<p>be a focus on transitional and estuarine waters.</p> <ul style="list-style-type: none"> • Various coastal groups encourage enterprise in coastal communities, reducing deprivation levels and public sector costs. • Total environment is a government scheme to make licensing simpler for the applicant and thus deliver benefits to local people by reducing the complexities of funding, regulation and delivery of licensing systems. • Marine plans will inform licensing decisions and provide guidance to applicants. • Question as to how relevant of marine plans will be at the uppermost tidal limits of rivers. • Interest regarding monitoring arrangements when plans are in place and frequency of review.
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	maintaining a strong coastal economy are high priorities for local authorities.	
Comments and concerns of others about this sector		
<ul style="list-style-type: none">• Concerns from residents and agriculture about risks of coastal flooding.• Potential conflict between permissible activity in marine and terrestrial planning systems.• How will integration of marine and terrestrial plans are achieved.		

Annex 3: MB0102 Sensitivity matrix

MB0102 pressures: MCZ/MPA Features Sensitivity Matrix. Full Version

Version 1.0

31 August 2010

The tabs within this excel file comprise the sensitivity matrix that was developed under Task 3 of Defra Contract MB0102 ' Accessing and developing the required biophysical datasets and data layers for Marine Protected Areas network planning and wider marine spatial planning purposes'. A simplified version of the matrix has also been produced and is available separately.

The assessments are supported by more detailed information contained within feature-specific proformas. These are presented in Annex G to the accompanying report and are available as separate Excel files.

The matrix contributes to JNCC's features-activities tool which will link the sensitivity of MCZ/MPA features to specific activities based on the linkages between the pressures-features and a separate pressures-activities matrices.

Further advice on the use of the matrix can be obtained from the following members of the Project Steering Group: carole.kelly@defra.gsi.gov.uk; karen.webb@jncc.gov.uk or edward.mayhew@naturalengland.org.uk

The matrix assesses the sensitivity of 108 features (which have been grouped into Broadscale Habitats (based on EUNIS Classification Level 3), Habitats of Conservation Interest and Species of Conservation Interest) to 40 pressures that can be linked to human activities in the marine environment. Full details of the methodology are provided in an accompanying project report: Tillin, H.M., Hull, S.C. & Tyler-Walters, H.T.W., 2010. Accessing and developing the required biophysical datasets and data layers for Marine Protected Areas network planning and wider marine spatial planning purposes. Report No 22 Task 3 Development of a Sensitivity Tool (pressures-MXZ/MPA features).

It should be noted that sensitivity is assessed to a pre-determined benchmark for each pressure. An assessment of not sensitive means that the feature is judged to be not **sensitive at the pressure benchmark**, it does not mean that the feature would be unaffected by the pressure at different levels of intensity, duration, and magnitude to the benchmark.

The sensitivity assessment methodology has involved the following steps:

- Step 1: Block-filling the sensitivity matrix for those pressure x feature combinations where there is no exposure to the pressure.
- Step 2: Undertaking a sensitivity assessment based on a consideration of the resistance and resilience (see scales below) of the feature, to the pressure benchmark.
- Step 3: Assigning a level of confidence to the sensitivity assessment (recorded in pro-formas supplied separately).
- Step 4: Providing an audit trail (recording in pro-formas supplied separately).

The matrix records the sensitivity assessment with a letter code and a colour code (see tables below). For some broadscale habitats and habitat FOCI, assessments are presented as a range of sensitivity, reflecting variations in the sensitivity of the constituent biotopes.

Worksheet codes	
NA	Not assessed
NE	Not exposed
NS	Not sensitive
L	Low sensitivity
M	Medium sensitivity
H	High sensitivity
	Broadscale habitat assessment based on the range of sensitivity of constituent biotopes/species
	Multiple and conflicting assessments made for feature/pressure combination.

The sensitivity assessments are based on combined resistance and resilience categories as shown in the table below.

	Resistance categories			
Resilience	None	Low	Medium	High
Very Low	High	High	Medium	Low
Low	High	High	Medium	Low
Medium	Medium	Medium	Medium	Low
High	Medium	Low	Low	Not sensitive

Resistance (Tolerance)	Description	Resilience	Description
None	Key functional, structural, characterising species severely decline and/or physico-chemical parameters are also affected, such as removal of habitat causing change in habitat type.	Very low	Negligible or prolonged recovery possible – at least 25 years to recover structure and function.
Low	Significant mortality of key and characterising species with some effects on physico-chemical character of habitat.	Low	Full recovery between 10 to 25 years.
Medium	Some mortality of species (can be significant where these are not keystone structural or functional and characterising species) without change to habitat type.	Medium	Full recovery between 2 and 10 years.
High	No significant effects to the physico-	High	Full recovery

chemical character of habitat and no effect on population viability of key/characterising species but may affect feeding, respiration and reproduction rates.

within 2 years.

Annex 3: MB0102 Sensitivity matrix: broadscale feature matrix

Pressure theme	Climate change						
Pressure Broadscale Habitats	Atmospheric climate change	pH changes	Temperature changes - regional/ national	Salinity changes - regional/ national	Water flow (tidal&ocean current) changes - regional/ national	Emergence regime changes (sea level) - regional/ national	Wave exposure changes - regional/ national
Pressure Benchmarks	Increases of 3.5-4.6 °C (winter-summer) by 2050s	Mean 0.2 pH decrease by 2050	1.5-4 °C increase by 2100	0.2 psu decrease by 2100	Peak mean spring tide flow change between 0.1m/s to 0.2m/s over an area >1km ² or 50% of width of water body for > 1 year	Increased ASL of 21 cm by 2050 in London	A change in nearshore significant wave height >3% but <5%.
High energy intertidal rock	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
Moderate energy intertidal rock	M (L)	NA (L)	M (L)	NS (L)	NS-M (L)	NS (L)	NS-M (L)
Low energy intertidal rock	M (L)	NA (L)	M (L)	NS (L)	NS-H (L)	NS (L)	NS-H (L)
Intertidal coarse sediment	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
Intertidal sand and muddy sand	M (L)	NA (L)	M (L)	NS (L)	NS (L)	H (L)	M (L)
Intertidal mud	M (L)	NA (L)	M (L)	NS (L)	NS (L)	H (L)	M (L)
Intertidal mixed sediments	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	M (L)
Coastal saltmarshes and saline reedbeds	M (L)	NA (L)	M (L)	NS (L)	NE (L)	M (L)	M (L)
Intertidal sediments dominated by aquatic angiosperms	M (M)	NA (L)	M (M)	NS (L)	NS-M (H)	H (M)	M (L)
Intertidal biogenic reefs	M (L)	NA (L)	M (L)	NS (L)	NS-M (L)	L-H (L)	M-H (L)
High energy infralittoral rock	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
Moderate energy infralittoral rock	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
Low energy infralittoral rock	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
High energy circalittoral rock	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
Moderate energy circalittoral rock	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS-M (L)
Low energy circalittoral rock	NE (L)	NA (L)	M (L)	NS (L)	NS-L (L)	NE (L)	NS-L (L)
Subtidal coarse sediment	NE (L)	NA (L)	NS (L)	NS (L)	NS (L)	NE (L)	NS (L)
Subtidal sand	NE (L)	NA (L)	M (L)	NS (L)	NS-L (L)	NE (L)	NS (L)
Subtidal mud	NE (L)	NA (L)	M (L)	NS (L)	NS-L (L)	NE (L)	NS-L (L)
Subtidal mixed sediments	NE (L)	NA (L)	M (L)	NS (L)	NS-L (L)	NE (L)	NS-L (L)
Subtidal macrophyte-dominated sediment	NE (L)	NA (L)	M (L)	NS (L)	NS-M (L)	NE (L)	NS-M (L)
Subtidal biogenic reefs	NE (L)	NA (L)	M (L)	NS (L)	NS-M (L)	NE (L)	NS-H (L)
Deep-sea bed	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea rock and artificial hard substrata	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea mixed substrata	NE (L)	NA (L)	NS (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea sand	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea muddy sand	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea mud	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea bioherms	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Raised features of the deep-sea bed	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Vents, seeps, hypoxic and anoxic habitats of the deep sea	NE (L)	NA (L)	NA (L)	NA (L)	NA (L)	NE (L)	NE (L)

Pressure theme	Pollution and other chemical changes						
Pressure Broadscale Habitats	Non-synthetic compound contamination (inc. heavy metals, hydrocarbons, produced water)	Synthetic compound contamination (inc. pesticides, antifoulants, pharmaceuticals)	Radionuclide contamination	Introduction of other substances (solid, liquid or gas)	De-oxygenation	Nitrogen&phosphorus enrichment	Organic enrichment
Pressure Benchmarks	Compliance with all AA EQS, conformance with PELs, EACs/ER-Ls	Compliance with all AA EQS, conformance with PELs, EACs, ER-Ls	An increase in 10 µGy/h above background level.	None proposed	Compliance with WFD criteria for good status	Compliance with WFD criteria for good status	A deposit of 100gC/m ² /yr
High energy intertidal rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Moderate energy intertidal rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Low energy intertidal rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS-H (L)
Intertidal coarse sediment	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Intertidal sand and muddy sand	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Intertidal mud	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)
Intertidal mixed sediments	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Coastal saltmarshes and saline reedbeds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Intertidal sediments dominated by aquatic angiosperms	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	M (M)	NS-M (M)
Intertidal biogenic reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
High energy infralittoral rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Moderate energy infralittoral rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Low energy infralittoral rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
High energy circalittoral rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Moderate energy circalittoral rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Low energy circalittoral rock	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Subtidal coarse sediment	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Subtidal sand	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)
Subtidal mud	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS-H (L)
Subtidal mixed sediments	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Subtidal macrophyte-dominated sediment	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS-M (L)
Subtidal biogenic reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Deep-sea bed	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS-H (L)
Deep-sea rock and artificial hard substrata	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS-H (L)
Deep-sea mixed substrata	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Deep-sea sand	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Deep-sea muddy sand	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Deep-sea mud	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (M)
Deep-sea bioherms	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Raised features of the deep-sea bed	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS-H (L)
Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (M)
Vents, seeps, hypoxic and anoxic habitats of the deep sea	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NA (L)

Pressure theme	Physical loss	
Pressure	Physical change (to another seabed type)	Physical loss (to land or freshwater habitat)
Broadscale Habitats		
Pressure Benchmarks	Change in 1 folk class for 2 years	Permanent loss of existing saline habitat
High energy intertidal rock	M-H (L)	H (L)
Moderate energy intertidal rock	M-H (L)	H (L)
Low energy intertidal rock	H (L)	H (L)
Intertidal coarse sediment	M (L)	H (L)
Intertidal sand and muddy sand	H (L)	H (L)
Intertidal mud	H (L)	H (L)
Intertidal mixed sediments	M (L)	H (L)
Coastal saltmarshes and saline reedbeds	H (L)	H (H)
Intertidal sediments dominated by aquatic angiosperms	NS-M (M)	H (H)
Intertidal biogenic reefs	NS-H (L)	H (L)
High energy infralittoral rock	H (L)	H (L)
Moderate energy infralittoral rock	M (L)	H (L)
Low energy infralittoral rock	M-H (L)	H (L)
High energy circalittoral rock	M-H (L)	H (L)
Moderate energy circalittoral rock	M-H (L)	H (L)
Low energy circalittoral rock	M (L)	H (L)
Subtidal coarse sediment	M (L)	H (L)
Subtidal sand	H (L)	H (L)
Subtidal mud	M (L)	H (L)
Subtidal mixed sediments	H (L)	H (L)
Subtidal macrophyte-dominated sediment	M-H (L)	H (L)
Subtidal biogenic reefs	M-H (L)	H (L)
Deep-sea bed	H (L)	NE (L)
Deep-sea rock and artificial hard substrata	H (L)	NE (L)
Deep-sea mixed substrata	H (L)	NE (L)
Deep-sea sand	H (L)	NE (L)
Deep-sea muddy sand	H (L)	NE (L)
Deep-sea mud	H (L)	NE (L)
Deep-sea bioherms	H (H)	NE (L)
Raised features of the deep-sea bed	H (L)	NE (L)
Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope	H (L)	NE (L)
Vents, seeps, hypoxic and anoxic habitats of the deep sea	NA (L)	NE (L)

Pressure theme	Other physical pressures					
Pressure	Electromagnetic changes	Litter	Introduction of light	Underwater noise	Barrier to species movement	Death or injury by collision
Broadscale Habitats						
Pressure Benchmarks	Local electric field of 1V m ⁻¹ ; Local magnetic field of 10μT.	None proposed	None proposed	MSFD indicator levels (SEL or peak SPL) exceeded for 20% of days in calendar year within site	10% change in tidal excursion, or temporary barrier to species movement over ≥ 50% of water body width.	0.1% of tidal volume on average tide, passing through artificial structure
High energy intertidal rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Moderate energy intertidal rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Low energy intertidal rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Intertidal coarse sediment	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Intertidal sand and muddy sand	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Intertidal mud	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Intertidal mixed sediments	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Coastal saltmarshes and saline reedbeds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Intertidal sediments dominated by aquatic angiosperms	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Intertidal biogenic reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
High energy infralittoral rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Moderate energy infralittoral rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Low energy infralittoral rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
High energy circalittoral rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Moderate energy circalittoral rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Low energy circalittoral rock	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Subtidal coarse sediment	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Subtidal sand	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Subtidal mud	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Subtidal mixed sediments	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Subtidal macrophyte-dominated sediment	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Subtidal biogenic reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea bed	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea rock and artificial hard substrata	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea mixed substrata	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea sand	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea muddy sand	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea mud	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea bioherms	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Raised features of the deep-sea bed	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
Vents, seeps, hypoxic and anoxic habitats of the deep sea	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)

Pressure theme	Biological pressures					
Pressure	Visual disturbance	Genetic modification & translocation of indigenous species	Introduction of microbial pathogens	Introduction or spread of non-indigenous species	Removal of target species	Removal of non-target species
Broadscale Habitats						
Pressure Benchmarks	None proposed	Translocation outside of geographic area; introduction of hatchery-reared juveniles outside of geographic area from which adult stock derives	The introduction of microbial pathogens <i>Bonamia</i> and <i>Martelia refringens</i> to an area where they are currently not present.	A significant pathway exists for introduction of one or more Invasive non-indigenous species (INS) ; creation of new colonization space >1ha. One or more INS in Table C3 (Technical Report) has been recorded in the relevant habitat	Removal of target species that are features of conservation importance or sub-features of habitats of conservation importance at a commercial scale .	Removal of features through pursuit of a target fishery at a commercial scale.
High energy intertidal rock	NS (L)	NA (L)	NS-M (L)	NS-H (L)	M (L)	NS (L)
Moderate energy intertidal rock	NS (L)	NA (L)	NS-M (L)	L-M (L)	M (L)	NS (L)
Low energy intertidal rock	NS (L)	NA (L)	NS-M (L)	L-M (L)	M (L)	NS (L)
Intertidal coarse sediment	NS (L)	NA (L)	NS (L)	NS (L)	NE (H)	NE (H)
Intertidal sand and muddy sand	NS (L)	NA (L)	NS (L)	NS-M (L)	NS-M (L)	NS-M (L)
Intertidal mud	NS (L)	NA (L)	NS (L)	NS-M (L-H)	NS-M (L-H)	M (M)
Intertidal mixed sediments	NS (L)	NA (L)	NS (L)	M (L)	L-M (L)	M (L)
Coastal saltmarshes and saline reedbeds	NS (L)	NA (L)	NS (L)	M (M)	L (M)	NE (H)
Intertidal sediments dominated by aquatic angiosperms	NS (L)	NA (L)	NS (L)	M-H (L)	NS (H)	H (H)
Intertidal biogenic reefs	NS (L)	NA (L)	NS (L)	NS-M (L)	NS-M (M)	M-H (M)
High energy infralittoral rock	NS (L)	NA (L)	NS (L)	NS-L (L)	M (M)	M (L)
Moderate energy infralittoral rock	NS (L)	NA (L)	NS (L)	M (L)	M (M)	M (L)
Low energy infralittoral rock	NS (L)	NA (L)	NS (L)	NS-M (L)	M-H (M)	M (L)
High energy circalittoral rock	NS (L)	NA (L)	NS (L)	NS-M (L)	M (M)	M (L)
Moderate energy circalittoral rock	NS (L)	NA (L)	NS (L)	L-M (L)	NS-M (H)	M-H (M)
Low energy circalittoral rock	NS (L)	NA (L)	NS (L)	NS-M (L)	NS (L)	L-H (L)
Subtidal coarse sediment	NS (L)	NA (L)	NS (L)	NS-M (L)	NS (L)	NS-M (L)
Subtidal sand	NS (L)	NA (L)	NS (L)	NS-M (L)	NS (L)	NS-M (H)
Subtidal mud	NS (L)	NA (L)	NS (L)	NS-M (L)	NS-M (L-H)	M (L-H)
Subtidal mixed sediments	NS (L)	NA (L)	NS-H (L)	L-M (M)	L (M)	M (M)
Subtidal macrophyte-dominated sediment	NS (L)	NA (L)	NS (L)	M-H (L)	NS-H (L)	NS-H (L)
Subtidal biogenic reefs	NS (L)	NA (L)	NS (L)	NS-H (L)	NS-H (M)	NS-H (L)
Deep-sea bed	NS (L)	NA (L)	NS (L)	NS-M (L)	NS-H (L)	NS-H (L)
Deep-sea rock and artificial hard substrata	NS (L)	NA (L)	NS (L)	NE (L)	NS (L)	NS (L)
Deep-sea mixed substrata	NS (L)	NA (L)	NS (L)	NE (L)	NS (L)	H (L)
Deep-sea sand	NS (L)	NA (L)	NS (L)	NE (L)	NS (L)	H (L)
Deep-sea muddy sand	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)	H (L)
Deep-sea mud	NS (L)	NA (L)	NS (L)	NE (L)	L (L)	H (H)
Deep-sea bioherms	NS (L)	NA (L)	NS (L)	NE (L)	NS (L)	H (H)
Raised features of the deep-sea bed	NS (L)	NA (L)	NS (L)	NE (L)	NS (L)	H (L)
Deep-sea trenches and canyons, channels, slope failures and slumps on the continental slope	NS (L)	NA (L)	NS (L)	NE (L)	L-M (H)	L-M (H)
Vents, seeps, hypoxic and anoxic habitats of the deep sea	NS (L)	NA (L)	NS (L)	NE (L)	NA (L)	NA (L)

Annex 3: MB0102 Sensitivity matrix: habitat feature matrix

Pressure theme	Climate change						
Pressure Habitats	Atmospheric climate change	pH changes	Temperature changes - regional/national	Salinity changes - regional/national	Water flow (tidal&ocean current) changes - regional/national	Emergence regime changes (sea level) - regional/national	Wave exposure changes - regional/national
Pressure Benchmarks	Increases of 3.5-4.6 °C (winter-summer) by 2050s	Mean 0.2 pH decrease by 2050	1.5-4 °C increase by 2100	0.2 psu decrease by 2100	Peak mean spring tide flow change between 0.1m/s to 0.2m/s over an area >1km ² or 50% of width of water body for > 1 year	Increased ASL of 21 cm by 2050 in London	A change in nearshore significant wave height >3% but <5%.
Blue Mussel beds (including intertidal beds on mixed and sandy sediments)	M (L)	NA (L)	M (L)	NS (L)	NS (L)	L (L)	M (L)
Burrowed mud	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
Carbonate reefs	NE (L)	NA (L)	NS (L)	NS (L)	NS (L)	NE (L)	NS (L)
Coastal saltmarsh	M (L)	NA (L)	M (L)	NS (L)	M (L)	M (L)	M (L)
Cold-water coral reefs	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Coral carbonate mounds	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Coral Gardens	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Deep-sea sponge aggregations	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Egg wrack beds	M (L)	NA (L)	M (L)	NS (L)	H (L)	NS (L)	H (L)
Estuarine rocky habitats	M (L)	NA (L)	M (L)	NS (L)	NS (L)	H (L)	NS (M)
File/Flame shell beds	NE (L)	NA (L)	M (L)	NS (L)	L (L)	NE (L)	NE (L)
Fragile sponge&anthozoan communities on subtidal rocky habitats	NE (L)	NA (L)	M (L)	NS (L)	M (L)	NE (L)	M (L)
Intertidal mudflats	M (L)	NA (L)	M (L)	NS (L)	NS (L)	H (L)	M (L)
Intertidal under boulder communities	NS (L)	NA (L)	M (L)	NS (L)	NS (L)	M (L)	NS (L)
Inshore deep mud with burrowing heart urchins	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
Kelp and seaweed communities on sublittoral sediment	NE (L)	NA (L)	M (L)	NS (L)	NS (H)	NS (L)	NS (H)
Littoral chalk communities	M (L)	NA (L)	M (L)	NS (L)	NS (L)	H (L)	NS (L)
Maerl beds	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
Maerl or coarse shell gravel with burrowing sea cucumbers	M (L)	NA (L)	M (L)	NS (L)	NS (M)	NS (L)	NS (L)
Horse mussel (Modiolus modiolus) beds	NE (L)	NA (L)	M (L)	NS (L)	M (L)	NE (L)	M (L)
Mud habitats in deep water	NE (L)	NA (L)	M (L)	NS (L)	NE (L)	NE (L)	NE (L)
Musculus discors beds	NE (L)	NA (L)	M (L)	NS (L)	M (L)	NE (L)	NE (L)
Northern sea fan communities	NE (L)	NA (L)	H (L)	NS (L)	NS (H)	NE (L)	NE (H)
Saline lagoons	NE (L)	NA (L)	M (L)	NS (L)	NE (L)	H (L)	NE (L)
Sea-pen and burrowing megafauna communities	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS (L)
Ostrea edulis beds	M (L)	NA (L)	M (L)	NS (L)	NS (L)	M (L)	L (L)
Peat and clay exposures	M (L)	NA (L)	M (L)	NS (L)	NS (L)	H (L)	L (L)
Sabellaria alveolata reefs	M (L)	NA (L)	M (L)	NS (L)	NS (L)	M (L)	H (L)
Sabellaria spinulosa reefs	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	L (L)	NS (L)
Seagrass beds	M (M)	NA (L)	M (M)	NS (L)	NS-M (H)	H (M)	M (L)
Seamounts	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NE (L)
Serpulid reefs	NE (L)	NA (L)	M (L)	NS (L)	H (L)	NE (L)	NA (L)
Shallow tide swept coarse sands with burrowing bivalves	NE (L)	NA (L)	L (L)	NS (L)	NS (L)	NS (L)	NS (L)
Sheltered muddy gravels	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	M (L)
Submarine structures made by leaking gases	NE (L)	NA (L)	M (L)	NS (L)	NE (L)	NE (L)	NE (L)
Subtidal chalk	NE (L)	NA (L)	M (L)	NS (L)	NS (M)	NE (L)	NS (M)
Subtidal mixed muddy sediments	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NE (L)	NS-L (L)
Subtidal sands and gravels	NE (L)	NA (L)	NS (L)	NS (L)	NS (M)	NE (L)	NS (H)
Tide swept algal communities	M (L)	NA (L)	M (L)	NS (L)	L (L)	NS (L)	L (L)
Tide-swept channels	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)

Pressure theme	Hydrological changes (inshore/local)					
Pressure Habitats	Temperature changes - local	Salinity changes - local	Water flow (tidal current) changes - local	Emergence regime changes - local	Wave exposure changes - local	Water clarity changes
Pressure Benchmarks	A 5 °C change in temp for a one month period, or 2° C for one year	Increase from 35 to 38 units for one year or Decrease in salinity by 4-10 units for a year	Peak mean spring tide flow change between 0.1m/s to 0.2m/s over an area >1km ² or 50% of width of water body for > 1 year	Intertidal species (and habitats not uniquely defined by intertidal zone) A 1 hour change in the time covered or not covered by the sea for a period of 1 year. Habitats and landscapes defined by intertidal zone An increase in relative sea level or decrease in high water level of 1 mm for one year over a shoreline.	A change in nearshore significant wave height >3% but <5%	A change in one rank on the WFD scale, e.g. from clear to turbid for one year
Blue Mussel beds (including intertidal beds on mixed and sandy sediments)	L (L)	NS (L)	NS (L)	M (L)	M (L)	L (L)
Burrowed mud	M (L)	L (L)	NS (L)	NE (L)	NS (L)	NS (L)
Carbonate reefs	NS (L)	NS (L)	NS (L)	NE (L)	NS (L)	NS (L)
Coastal saltmarsh	NA (L)	NS (L)	M (L)	M (L)	M (L)	NS (L)
Cold-water coral reefs	H (L-H)	H (H)	H (M)	NE (L)	NE (L)	NS (L)
Coral carbonate mounds	H (L)	H (L)	H (L)	NE (L)	NE (L)	NS (L)
Coral Gardens	H (L)	H (L)	H (L)	NE (L)	NE (L)	NS (L)
Deep-sea sponge aggregations	H (H)	H (H)	NE (L)	NE (L)	NE (L)	NS (L)
Egg wrack beds	NS (L)	L (L)	H (L)	M (L)	H (L)	NS (L)
Estuarine rocky habitats	L (M)	L (L)	NS (L)	M (L)	NS (L)	NS (L)
File/Flame shell beds	NS (L)	M (L)	L (L)	NE (L)	NE (L)	NS (L)
Fragile sponge&anthozoan communities on subtidal rocky habitats	M (L)	H (L)	M (L)	NE (L)	M (L)	NS (L)
Intertidal mudflats	L (H)	L (H)	NS (H)	M (L)	M (L)	NS (L)
Intertidal under boulder communities	L (L)	L (L)	L (L)	L (L)	NS (L)	NA (L)
Inshore deep mud with burrowing heart urchins	M (L)	NA (L)	NS (L)	NE (L)	NS (L)	NS (L)
Kelp and seaweed communities on sublittoral sediment	L (M)	NS (L)	NS (H)	L (L)	NS (H)	L (L)
Littoral chalk communities	M (L)	L (L)	NS (L)	L (L)	NS (L)	H (L)
Maerl beds	H (L)	H (M)	NS (L)	NS (L)	NS (L)	H (L)
Maerl or coarse shell gravel with burrowing sea cucumbers	H (L)	H (M)	NS (L)	NE (L)	NS (L)	H (L)
Horse mussel (Modiolus modiolus) beds	H (L)	L (M)	M (L)	NE (L)	M (L)	NS (L)
Mud habitats in deep water	NE (L)	NA (L)	NE (L)	NE (L)	NE (L)	NE (L)
<i>Musculus discors</i> beds	NS (L)	M (L)	M (L)	NE (L)	NE (L)	H (L)
Northern sea fan communities	H (L)	NA (L)	NS (H)	NE (L)	NE (H)	NS (L)
Saline lagoons	NS (M)	L (M)	NE (L)	NE (L)	NE (L)	M (L)
Sea-pen and burrowing megafauna communities	M (L)	M (L)	NS (L)	NE (L)	NS (L)	NS (L)
<i>Ostrea edulis</i> beds	M (L)	H (L)	NS (L)	NS (L)	L (L)	NS (L)
Peat and clay exposures	NA (L)	NS (L)	NS (L)	L (L)	L (L)	NS (L)
<i>Sabellaria alveolata</i> reefs	H (M)	NS (L)	M (L)	M (L)	H (L)	NS (L)
<i>Sabellaria spinulosa</i> reefs	NS (L)	L (L)	L (L)	NE (L)	NS (L)	NS (L)
Seagrass beds	NS (M)	NS (M)	NS-M (H)	L-M (M)	M (L)	L-H (L-M)
Seamounts	H (L)	H (L)	H (L)	NE (L)	NE (L)	NS (L)
Serpulid reefs	NS (L)	H (L)	H (L)	NE (L)	NE (L)	NS (L)
Shallow tide swept coarse sands with burrowing bivalves	L (L)	L (L)	NS (L)	NS (L)	NS (L)	NS (M)
Sheltered muddy gravels	NA (L)	NS (L)	NS (L)	NS (L)	M (L)	M (L)
Submarine structures made by leaking gases	NE (L)	NE (L)	NE (L)	NE (L)	NE (L)	NE (L)
Subtidal chalk	M (L)	NS (M)	NS (M)	NE (L)	NS (M)	NS-M (M)
Subtidal mixed muddy sediments	M (L)	NS-H (L)	NS (L)	NE (L)	NS-L (L)	NS-L (L)
Subtidal sands and gravels	NS (L)	L (L)	NS (M)	NE (L)	NS (H)	NS (H)
Tide swept algal communities	L (L)	L (L)	L (L)	L (L)	L (L)	L (H)
Tide-swept channels	NA (L)	NS (L)	NS (L)	NS (L)	NS (L)	NS (L)

Pressure theme	Pollution and other chemical changes						
Pressure Habitats	Non-synthetic compound contamination (inc. heavy metals, hydrocarbons, produced water)	Synthetic compound contamination (inc. pesticides, antifoulants, pharmaceuticals)	Radionuclide contamination	Introduction of other substances (solid, liquid or gas)	De-oxygenation	Nitrogen&phosphorus enrichment	Organic enrichment
Pressure Benchmarks	Compliance with all AA EQS, conformance with PELs, EACs/ER-Ls	Compliance with all AA EQS, conformance with PELs, EACs, ER-Ls	An increase in 10 µGy/h above background level.	None proposed	Compliance with WFD criteria for good status	Compliance with WFD criteria for good status	A deposit of 100gC/m ² /yr
Blue Mussel beds (including intertidal beds on mixed and sandy sediments)	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Burrowed mud	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Carbonate reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Coastal saltmarsh	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Cold-water coral reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Coral carbonate mounds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Coral Gardens	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Deep-sea sponge aggregations	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Egg wrack beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
Estuarine rocky habitats	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)
File/Flame shell beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Fragile sponge&anthozoan communities on subtidal rocky habitats	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Intertidal mudflats	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)
Intertidal under boulder communities	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Inshore deep mud with burrowing heart urchins	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Kelp and seaweed communities on sublittoral sediment	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Littoral chalk communities	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Maerl beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NA (L)
Maerl or coarse shell gravel with burrowing sea cucumbers	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NA (L)
Horse mussel (<i>Modiolus modiolus</i>) beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Mud habitats in deep water	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (M)
<i>Musculus discors</i> beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Northern sea fan communities	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Saline lagoons	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	M (L)
Sea-pen and burrowing megafauna communities	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (M)
<i>Ostrea edulis</i> beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Peat and clay exposures	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
<i>Sabellaria alveolata</i> reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Sabellaria spinulosa</i> reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Seagrass beds	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	M (M)	NS-M (M)
Seamounts	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Serpulid reefs	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NA (L)
Shallow tide swept coarse sands with burrowing bivalves	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Sheltered muddy gravels	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
Submarine structures made by leaking gases	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Subtidal chalk	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	L (L)
Subtidal mixed muddy sediments	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
Subtidal sands and gravels	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)
Tide swept algal communities	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	M (L)
Tide-swept channels	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)

Pressure theme	Physical loss		Physical damage					
Pressure Habitats	Physical change (to another seabed type)	Physical loss (to land or freshwater habitat)	Siltation rate changes (low)	Siltation rate changes (high)	Penetration and/or disturbance of the substrate below the surface of the seabed	Shallow abrasion/penetration: damage to seabed surface and penetration	Surface abrasion: damage to seabed surface features	Physical removal (extraction of substratum)
Pressure Benchmarks	Change in 1 folk class for 2 years	Permanent loss of existing saline habitat	5cm of fine material added to the seabed in a single event.	30cm of fine material added to the seabed in a single event.	Structural damage to seabed >25mm	Damage to seabed surface and penetration ≤25mm	Damage to seabed surface features	Extraction of sediment to 30cm
Blue Mussel beds (including intertidal beds on mixed and sandy sediments)	M (M)	H (L)	L (M)	H (L)	M (L)	M (L)	M (L)	M (L)
Burrowed mud	M (L)	H (L)	NS (M)	M (M)	M (L)	M (M)	M (M)	M (H)
Carbonate reefs	No Evid. (L)	H (L)	NS (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)
Coastal saltmarsh	H (L)	H (H)	L (M)	M (M)	M (M)	M (M)	M (M)	H (H)
Cold-water coral reefs	H (H)	H (L)	H (H)	H (H)	H (H)	H (H)	H (H)	H (H)
Coral carbonate mounds	H (H)	H (L)	H (L)	H (L)	H (L)	H (H)	H (H)	H (H)
Coral Gardens	H (H)	H (L)	H (L)	H (L)	H (L)	H (H)	H (H)	H (H)
Deep-sea sponge aggregations	H (H)	NE (L)	H (H)	H (H)	H (H)	H (H)	H (H)	H (H)
Egg wrack beds	H (H)	H (H)	H (L)	H (L)	H (H)	NE (L)	NS (M)	H (H)
Estuarine rocky habitats	M (L)	H (L)	NS (L-H)	L (L)	M (L)	M (L)	NS (L)	NE (L)
File/Flame shell beds	H (H)	H (L)	H (L)	H (L)	H (M)	H (M)	M (M)	H (M)
Fragile sponge&anthozoan communities on subtidal rocky habitats	H (L)	H (L)	H (L)	H (L)	H (L)	H (L)	H (L-H)	H (L)
Intertidal mudflats	H (L)	H (L)	NS (H)	L (H)	L (H)	L (H)	L (H)	M (H)
Intertidal under boulder communities	M (L)	H (L)	L (L)	M (L)	H (L)	M (L)	M (L)	NE (L)
Inshore deep mud with burrowing heart urchins	M (L)	H (L)	NS (L)	M (L)	M (L)	L (L)	L (L)	M (L)
Kelp and seaweed communities on sublittoral sediment	M (L)	H (L)	NS (L)	M (L)	M (L)	L (L)	L (L)	M (M)
Littoral chalk communities	H (L)	H (L)	NS (L)	NS (L)	M (L)	M (L)	NS (L)	M (L)
Maerl beds	H (L)	H (H)	H (L)	H (L)	H (M-H)	H (M)	H (L)	H (M)
Maerl or coarse shell gravel with burrowing sea cucumbers	H (L)	H (H)	H (M)	H (L)	H (M-H)	H (M)	H (L)	H (M)
Horse mussel (Modiolus modiolus) beds	H (H)	H (L)	M (L-M)	H (M)	H (M)	H (M)	M (M)	H (M)
Mud habitats in deep water	H (L)	NE (L)	H (L)	H (L)	H (M)	H (M)	NS (M)	H (M)
Musculus discors beds	NA (L)	H (L)	(H) (L)	H (L)	H (L)	H (L)	M (L)	H (L)
Northern sea fan communities	M (M)	H (L)	M (L)	M (M)	M (M)	M (M)	M (M)	M (M)
Saline lagoons	H (M)	H (L)	M (L)	H (L)	M (L)	M (L)	M (L)	H (M)
Sea-pen and burrowing megafauna communities	M (L)	H (L)	L (M)	M (L)	M (L)	M (L)	M (L)	M (L)
Ostrea edulis beds	H (H)	H (L)	H (L)	H (L)	H (M)	H (M)	M (M)	H (M)
Peat and clay exposures	H (H)	H (H)	NS (H)	L (M)	L (M)	NS (H)	NS (H)	L (M)
Sabellaria alveolata reefs	H (L)	H (L)	NS (L)	L (L)	H (L)	H (L)	L (H)	H (L)
Sabellaria spinulosa reefs	H (L)	H (L)	NS (M)	M (L)	H (L)	H (M)	L (M)	H (L)
Seagrass beds	M (L)	H (H)	L-H (L)	M-H (L)	H (L-H)	H (H)	L-M (L-M)	H (L-H)
Seamounts	H (H)	NE (L)	H (M)	H (M)	H (M)	H (M)	H (M)	H (M)
Serpulid reefs	H (L)	H (L)	L (M)	M (M)	M (M)	H (M)	M (M)	H (M)
Shallow tide swept coarse sands with burrowing bivalves	M (L)	H (L)	NS (M)	L (M)	L (M)	L (M)	L (M)	M (M)
Sheltered muddy gravels	M (L)	H (L)	M (M)	H (M)	M (M)	M (M)	M (M)	H (L)
Submarine structures made by leaking gases	No Evid. (L)	H (H)	NS (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)
Subtidal chalk	H (H)	H (H)	L (H)	M (L)	M (M)	L (L)	L (L)	M (M)
Subtidal mixed muddy sediments	H (L)	H (L)	NS (L)	M (L)	H (L)	H (L)	M (L)	H (L)
Subtidal sands and gravels	M (H)	H (L)	NS-M (M-H)	NS-M (M-H)	L-M (M-H)	L-M (H)	NS-H (M-H)	M (H)
Tide swept algal communities	L (L)	H (L)	NS (H)	NS (H)	M (H)	M (H)	L (H)	M (H)
Tide-swept channels	H (H)	H (H)	NS (H)	L (L)	H (M)	M (M)	M (M)	H (M)

Pressure theme	Other physical pressures						Biological pressures	
Pressure Habitats	Electromagnetic changes	Litter	Introduction of light	Underwater noise	Barrier to species movement	Death or injury by collision	Visual disturbance	Genetic modification & translocation of indigenous species
Pressure Benchmarks	Local electric field of 1V m ⁻¹ ; Local magnetic field of 10µT.	None proposed	None proposed	MSFD indicator levels (SEL or peak SPL) exceeded for 20% of days in calendar year within site	10% change in tidal excursion, or temporary barrier to species movement over ≥ 50% of water body width.	0.1% of tidal volume on average tide, passing through artificial structure	None proposed	Translocation outside of geographic area; introduction of hatchery-reared juveniles outside of geographic area from which adult stock derives
Blue Mussel beds (including intertidal beds on mixed and sandy sediments)	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Burrowed mud	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Carbonate reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Coastal saltmarsh	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Cold-water coral reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Coral carbonate mounds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Coral Gardens	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Deep-sea sponge aggregations	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Egg wrack beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Estuarine rocky habitats	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
File/Flame shell beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Fragile sponge & anthozoan communities on subtidal rocky habitats	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Intertidal mudflats	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Intertidal under boulder communities	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Inshore deep mud with burrowing heart urchins	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Kelp and seaweed communities on sublittoral sediment	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Littoral chalk communities	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Maerl beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Maerl or coarse shell gravel with burrowing sea cucumbers	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Horse mussel (<i>Modiolus modiolus</i>) beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Mud habitats in deep water	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
<i>Musculus discors</i> beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Northern sea fan communities	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Saline lagoons	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Sea-pen and burrowing megafauna communities	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
<i>Ostrea edulis</i> beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Peat and clay exposures	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
<i>Sabellaria alveolata</i> reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
<i>Sabellaria spinulosa</i> reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Seagrass beds	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Seamounts	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Serpulid reefs	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Shallow tide swept coarse sands with burrowing bivalves	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Sheltered muddy gravels	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Submarine structures made by leaking gases	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Subtidal chalk	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Subtidal mixed muddy sediments	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Subtidal sands and gravels	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Tide swept algal communities	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)
Tide-swept channels	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NS (L)	NE (L)

Introduction of microbial pathogens	Introduction or spread of non-indigenous species	Removal of target species	Removal of non-target species
The introduction of microbial pathogens <i>Bonamia</i> and <i>Martelia refringens</i> to an area where they are currently not present.	A significant pathway exists for introduction of one or more Invasive non-indigenous species (INS) ; creation of new colonization space >1ha. One or more INS in Table C3 (Technical Report) has been recorded in the relevant habitat	Removal of target species that are features of conservation importance or sub-features of habitats of conservation importance at a commercial scale .	Removal of features through pursuit of a target fishery at a commercial scale.
NS (L)	M (L)	M (H)	M (H)
NS (L)	M (L)	M (H)	M (H)
NS (L)	NS (L)	NS (L)	M (L)
NS (L)	M (M)	L (M)	NE (L)
NS (L)	NE (L)	NS (L)	H (H)
NS (L)	NE (L)	NS (L)	H (H)
NS (L)	NE (L)	NS (L)	H (H)
NS (L)	NE (L)	NS (L)	H (H)
NS (L)	M (H)	NS (H)	NS (L)
M (L)	H (L)	L (L)	NS (L)
NS (L)	H (L)	NS (L)	H (L)
NS (L)	M-H (L)	NS (L)	H (L)
NS (L)	M (H)	M (H)	M (M)
NS (L)	M (L)	M (L)	NS (L)
NS (L)	NS (L)	NS (L)	M (L)
NS (L)	M (H)	NS (L)	NS (L)
NS (L)	M (L)	M (L)	NS (L)
NS (L)	H (L)	H (L)	H (L)
NS (L)	H (L)	H (L)	H (L)
NS (L)	H (L)	H (H)	H (L)
NS (L)	NE (L)	L (L)	H (H)
NS (L)	M (L)	NS (L)	M (L)
NS (L)	M (L)	NS (L)	M (M)
NS (L)	M (L)	NS (L)	M (L)
NS (L)	NS (L)	M (L)	M (L)
H (L)	H (L)	M (L)	NS (L)
NS (L)	NS (L)	NS (L)	L (L)
NS (L)	NS (L)	NS (L)	H (M)
NS (L)	NS (L)	NS (L)	H (M)
NS (L)	M-H (L-M)	NS (H)	H (H)
NS (L)	NE (L)	NS (L)	H (H)
NS (L)	M (L)	NE (L)	M (L)
NS (L)	NS (L)	NS (M)	L (L)
NS (L)	M (L)	M (M)	M (M)
NS (L)	NS (L)	NS (L)	M (L)
NS (L)	M (L)	NS (M)	L (M)
NS (L)	M (L)	L (M)	M (M)
NS (L)	NS-M (L)	NS-M (L)	NS-M (L-M)
NS (L)	M (H)	L (H)	L (L)
NS (L)	M (L)	NS (L)	M (L)

Annex 3: MB0102 Sensitivity matrix: species feature matrix

Pressure theme	Climate change						
	Atmospheric climate change	pH changes	Temperature changes - regional/ national	Salinity changes - regional/ national	Water flow (tidal&ocean current) changes - regional/ national	Emergence regime changes (sea level) - regional/ national	Wave exposure changes - regional/ national
Pressure Species							
Pressure Benchmarks	Increases of 3.5-4.6 °C (winter-summer) by 2050s	Mean 0.2 pH decrease by 2050	1.5-4 °C increase by 2100	0.2 psu decrease by 2100	Peak mean spring tide flow change between 0.1m/s to 0.2m/s over an area >1km ² or 50% of width of water body for > 1 year	Increased ASL of 21 cm by 2050 in London	A change in nearshore significant wave height >3% but <5%.
<i>Anotrichium barbatum</i>	M (L)	NA (L)	No Evid. (L)	NS (L)	M (L)	No Evid. (L)	M (L)
<i>Cruoria cruoriaeformis</i>	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Dermocorynus montagnei</i>	NE (L)	NA (L)	NA (L)	NS (L)	NS (L)	NE (L)	NS (L)
<i>Lithothamnion corallioides</i>	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Padina pavonica</i>	M (L)	NA (L)	NS (L)	M (L)	M (L)	NS (L)	NA (L)
<i>Phymatolithon calcareum</i>	M (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Alkmaria romijni</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	NS (L)	NE (L)	H (L)
<i>Armandia cirrhosa</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	H (L)	NE (L)	NS (L)
<i>Gobius cobitis</i>	M (L)	NA (L)	No Evid. (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Gobius couchi</i>	M (L)	NA (L)	No Evid. (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Hippocampus guttulatus</i>	NE (L)	NA (L)	M (L)	NS (L)	M (L)	NE (L)	M (L)
<i>Hippocampus hippocampus</i>	NE (L)	NA (L)	M (L)	NS (L)	M (L)	NE (L)	M (L)
<i>Victorella pavida</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	NE (L)	NE (L)	NE (L)
<i>Arachnanthus sarsi</i>	NE (L)	NA (L)	NA (L)	NS (L)	H (L)	NE (L)	NS (L)
<i>Alcyonium hibernicum</i>	NE (L)	NA (L)	NA (L)	NS (L)	M (L)	NE (L)	M (L)
<i>Amphianthus dohmii</i>	NE (L)	NA (L)	H (L)	NS (L)	NS (L)	NE (L)	NE (L)
<i>Edwardsia timida</i>	M (L)	NA (L)	NA (L)	NS (L)	M (L)	NE (L)	NA (L)
<i>Eunicella verrucosa</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	NS (L)	NE (L)	NS (L)
<i>Halicystus auricula</i>	M (L)	NA (L)	M (L)	NS (L)	L (L)	H (L)	M (L)
<i>Leptopsammia pruvoti</i>	NE (L)	NA (L)	NA (L)	NS (L)	NS (L)	NE (L)	NS (M)
<i>Lucernariopsis campanulata</i>	M (L)	NA (L)	M (L)	NS (L)	L (L)	H (L)	M (L)
<i>Lucernariopsis cruxmelitensis</i>	NE (L)	NA (L)	M (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Parazoanthus anguicomus</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	No Evid. (L)	NE (L)	No Evid. (L)
<i>Nematostella vectensis</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	NS (L)	NE (L)	NS (L)
<i>Gammarus insensibilis</i>	NE (L)	NA (L)	L (L)	NS (L)	NE (L)	NE (L)	NE (L)
<i>Gitanopsis bispinosa</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	NE (L)	NE (L)	NE (L)
<i>Mitella pollicipes</i>	M (L)	NA (L)	NS (L)	NS (L)	NS (L)	NS (L)	NS (L)
<i>Palinurus elephas</i>	NE (L)	NA (L)	NS (M)	NS (L)	NS (L)	NE (L)	NS (L)
<i>Leptometra celtica</i>	NE (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)	NE (L)
<i>Arctica islandica</i>	NE (L)	NA (L)	NA (L)	NS (L)	L (L)	NE (L)	NE (L)
<i>Atrina pectinata</i>	NE (L)	NA (L)	NA (L)	NS (L)	L (L)	NE (L)	L (L)
<i>Caecum armoricum</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	H (L)	NE (L)	No Evid. (L)
<i>Glossus humanus</i>	NE (L)	NA (L)	No Evid. (L)	NS (L)	L (L)	NE (L)	L (L)
<i>Ostrea edulis</i>	M (L)	NA (L)	NS (M)	NS (L)	NS (L)	NS (L)	M (L)
<i>Paludinella littorina</i>	M (L)	NA (L)	NA (L)	NS (L)	NS (L)	NA (L)	H (L)
<i>Tenellia adspersa</i>	M (L)	NA (L)	NS (L)	NS (L)	NS (L)	NA (L)	NA (L)

Pressure theme	Hydrological changes (inshore/local)					
Pressure Species	Temperature changes - local	Salinity changes - local	Water flow (tidal current) changes - local	Emergence regime changes - local	Wave exposure changes - local	Water clarity changes
Pressure Benchmarks	A 5 °C change in temp for a one month period, or 2° C for one year	Increase from 35 to 38 units for one year or Decrease in salinity by 4-10 units for a year	Peak mean spring tide flow change between 0.1m/s to 0.2m/s over an area >1km ² or 50% of width of water body for > 1 year	Intertidal species (and habitats not uniquely defined by intertidal zone) A 1 hour change in the time covered or not covered by the sea for a period of 1 year. Habitats and landscapes defined by intertidal zone An increase in relative sea level or decrease in high water level of 1 mm for one year over a shoreline.	A change in nearshore significant wave height >3% but <5%	A change in one rank on the WFD scale, e.g. from clear to turbid for one year
<i>Anotrichium barbatum</i>	NS (M)	H (L)	M (L)	No Evid. (L)	M (L)	M (L)
<i>Cruoria cruoriaeformis</i>	H (L)	H (M)	NS (L)	NS (L)	NS (L)	H (L)
<i>Dermocorynus montagnei</i>	H (L)	H (L)	NS (L)	NS (L)	NS (L)	M (L)
<i>Lithothamnion corallioides</i>	H (L)	H (M)	NS (L)	NS (L)	NS (L)	H (L)
<i>Padina pavonica</i>	NS (M)	H (L)	M (L)	H (L)	H (M)	H (L)
<i>Phymatolithon calcareum</i>	H (L)	H (M)	NS (L)	NS (L)	NS (L)	H (L)
<i>Alkmaria romijni</i>	NS (L)	L (L)	H (L)	NE (L)	H (L)	M (L)
<i>Armandia cirrhosa</i>	No Evid. (L)	H (L)	H (L)	No Evid. (L)	H (L)	NS (L)
<i>Gobius cobitis</i>	L (M)	L (L)	NS (L)	NS (L)	NS (L)	L (L)
<i>Gobius couchi</i>	L (M)	L (L)	NS (L)	NS (L)	NS (L)	L (L)
<i>Hippocampus guttulatus</i>	M (L)	No Evid. (L)	M (L)	NE (L)	M (L)	NS (L)
<i>Hippocampus hippocampus</i>	M (L)	No Evid. (L)	M (L)	NE (L)	M (L)	NS (L)
<i>Victorella pavida</i>	No Evid. (L)	NS (L)	NE (L)	NE (L)	NE (L)	No Evid. (L)
<i>Arachnanthus sarsi</i>	M (L)	NE (L)	H (L)	NE (L)	NS (L)	M (L)
<i>Alcyonium hibernicum</i>	NS (L)	NE (L)	M (L)	NE (L)	M (L)	M (L)
<i>Amphianthus dohmii</i>	H (L)	L (L)	NS (L)	NE (L)	NE (L)	NS (L)
<i>Edwardsia timida</i>	L (L)	NA (L)	M (L)	M (L)	NA (L)	M (L)
<i>Eunicella verrucosa</i>	NS (M)	NE (L)	NS (L)	NE (L)	NS (L)	H (L)
<i>Halicystus auricula</i>	L (L)	NS (L)	L (L)	M (L)	M (L)	M (L)
<i>Leptopsammia pruvoti</i>	H (M)	H (M)	NS (M)	NE (L)	NS (M)	NS (M)
<i>Lucernariopsis campanulata</i>	L (L)	NS (L)	L (L)	M (L)	M (L)	M (L)
<i>Lucernariopsis cruxmelitensis</i>	L (L)	NS (L)	NS (L)	L (L)	NS (L)	L (L)
<i>Parazoanthus anguicomus</i>	No Evid. (L)	No Evid. (L)	No Evid. (L)	NE (L)	No Evid. (L)	No Evid. (L)
<i>Nematostella vectensis</i>	M (L)	L (L)	NS (L)	NE (L)	NS (L)	NS (L)
<i>Gammarus insensibilis</i>	L (L)	L (L)	NE (L)	NE (L)	NE (L)	H (L)
<i>Gitanopsis bispinosa</i>	NE (L)	NE (L)	NE (L)	NE (L)	NE (L)	NE (L)
<i>Mitella pollicipes</i>	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)	NA (L)
<i>Palinurus elephas</i>	NS (M)	H (L)	NS (L)	NE (L)	NS (L)	No Evid. (L)
<i>Leptometra celtica</i>	NE (L)	NE (L)	NE (L)	NE (L)	NE (L)	NE (L)
<i>Arctica islandica</i>	H (L)	NS (L)	L (L)	NE (L)	M (L)	NE (L)
<i>Atrina pectinata</i>	L (L)	NA (L)	L (L)	NE (L)	L (L)	M (L)
<i>Caecum armoricum</i>	No Evid. (L)	H (L)	H (L)	NE (L)	No Evid. (L)	H (L)
<i>Glossus humanus</i>	No Evid. (L)	NS (L)	L (L)	NE (L)	L (L)	M (L)
<i>Ostrea edulis</i>	H (L)	L (L)	NS (L)	M (L)	M (L)	NS (L)
<i>Paludinella littorina</i>	M (L)	L (L)	NS (L)	L (L)	H (L)	NA (L)
<i>Tenellia adspersa</i>	NS (L)	NS (L)	NS (L)	H (L)	NA (L)	NS (L)

Pressure theme	Pollution and other chemical changes						
	Pressure Species	Non-synthetic compound contamination (inc. heavy metals, hydrocarbons, produced water)	Synthetic compound contamination (inc. pesticides, antifoulants, pharmaceuticals)	Radionuclide contamination	Introduction of other substances (solid, liquid or gas)	De-oxygenation	Nitrogen&phosphorus enrichment
Pressure Benchmarks	Compliance with all AA EQS, conformance with PELs, EACs/ER-Ls	Compliance with all AA EQS, conformance with PELs, EACs, ER-Ls	An increase in 10 µGy/h above background level.	None proposed	Compliance with WFD criteria for good status	Compliance with WFD criteria for good status	A deposit of 100gC/m ² /yr
<i>Anotrichium barbatum</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
<i>Cruoria cruoriaeformis</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Dermocorynus montagnei</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
<i>Lithothamnion corallioides</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
<i>Padina pavonica</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
<i>Phymatolithon calcareum</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	H (L)
<i>Alkmaria romijni</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Armandia cirrhosa</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Gobius cobitis</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Gobius couchi</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Hippocampus guttulatus</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Hippocampus hippocampus</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Victorella pavida</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Arachnanthus sarsi</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Alcyonium hibernicum</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Amphianthus dohmii</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Edwardsia timida</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Eunicella verrucosa</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Halicystus auricula</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Leptopsammia pruvoti</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Lucernariopsis campanulata</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Lucernariopsis cruxmelitensis</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Parazoanthus anguicomus</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Nematostella vectensis</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Gammarus insensibilis</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Gitanopsis bispinosa</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Mitella pollicipes</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Palinurus elephas</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	M (L)
<i>Leptometra celtica</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Arctica islandica</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (H)
<i>Atrina pectinata</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	M (L)
<i>Caecum armoricum</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Glossus humanus</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Ostrea edulis</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (M)
<i>Paludinella littorina</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Tenellia adspersa</i>	NS (L)	NS (L)	NS (L)	NA (L)	NS (L)	NS (L)	NS (L)

Pressure theme	Physical loss	
	Physical change (to another seabed type)	Physical loss (to land or freshwater habitat)
Pressure Species		
Pressure Benchmarks	Change in 1 folk class for 2 years	Permanent loss of existing saline habitat
<i>Anotrachium barbatum</i>	H (L)	H (L)
<i>Cruoria cruoriaeformis</i>	H (L)	H (H)
<i>Dermocorynus montagnei</i>	H (L)	H (L)
<i>Lithothamnion corallioides</i>	H (M)	H (L)
<i>Padina pavonica</i>	H (M)	H (L)
<i>Phymatolithon calcareum</i>	H (L)	H (H)
<i>Alkmaria romijni</i>	H (M)	H (H)
<i>Armandia cirrhosa</i>	M (L)	H (L)
<i>Gobius cobitis</i>	NA (L)	H (L)
<i>Gobius couchi</i>	NA (L)	H (L)
<i>Hippocampus guttulatus</i>	M (L)	H (L)
<i>Hippocampus hippocampus</i>	M (L)	H (L)
<i>Victorella pavida</i>	H (H)	H (L)
<i>Arachnanthus sarsi</i>	L (L)	H (L)
<i>Alcyonium hibernicum</i>	M (M)	H (L)
<i>Amphianthus dohmii</i>	H (M)	H (L)
<i>Edwardsia timida</i>	M (L)	H (L)
<i>Eunicella verrucosa</i>	H (M)	H (L)
<i>Halicyclstus auricula</i>	M (L)	H (L)
<i>Leptopsammia pruvoti</i>	H (M)	H (L)
<i>Lucernariopsis campanulata</i>	M (L)	H (L)
<i>Lucernariopsis cruxmelitensis</i>	M (L)	H (L)
<i>Parazoanthus anguicomus</i>	No Evid. (L)	H (L)
<i>Nematostella vectensis</i>	H (L)	H (L)
<i>Gammarus insensibilis</i>	NS (M)	H (L)
<i>Gitanopsis bispinosa</i>	No Evid. (L)	NE (L)
<i>Mitella pollicipes</i>	M (L)	H (L)
<i>Palinurus elephas</i>	H (H)	H (M)
<i>Leptometra celtica</i>	No Evid. (L)	NE (L)
<i>Arctica islandica</i>	H (L)	H (L)
<i>Atrina pectinata</i>	NA (L)	H (L)
<i>Caecum armoricum</i>	H (M)	H (M)
<i>Glossus humanus</i>	M (L)	H (L)
<i>Ostrea edulis</i>	H (H)	H (L)
<i>Paludinella littorina</i>	No Evid. (L)	H (L)
<i>Tenellia adspersa</i>	NA (L)	H (L)

Pressure theme	Physical damage						
	Pressure Species	Siltation rate changes (low)	Siltation rate changes (high)	Penetration and/or disturbance of the substrate below the surface of the seabed	Shallow abrasion/penetration: damage to seabed surface and penetration	Surface abrasion: damage to seabed surface features	Physical removal (extraction of substratum)
Pressure Benchmarks		5cm of fine material added to the seabed in a single event.	30cm of fine material added to the seabed in a single event.	Structural damage to seabed >25mm	Damage to seabed surface and penetration ≤25mm	Damage to seabed surface features	Extraction of sediment to 30cm
<i>Anotrichium barbatum</i>	H (L)	H (L)	H (L)	H (L)	H (L)	H (L)	H (L)
<i>Cruoria cruoriaeformis</i>	H (L)	H (L)	H (M-H)	H (M)	H (L)	H (L)	H (M)
<i>Dermocorynus montagnei</i>	H (L)	H (L)	H (L)	H (L)	H (L)	H (L)	H (L)
<i>Lithothamnion corallioides</i>	H (L)	H (L)	H (M-H)	H (M-H)	H (L)	H (L)	H (M)
<i>Padina pavonica</i>	M (M)	H (L)	H (M)	H (M)	H (M)	H (M)	H (M)
<i>Phymatolithon calcareum</i>	H (L)	H (L)	H (M-H)	H (M)	H (L)	H (L)	H (M)
<i>Alkmaria romijni</i>	H (L)	H (L)	M (L)	M (L)	M (L)	M (L)	H (L)
<i>Armandia cirrhosa</i>	NS (L)	No Evid. (L)	M (L)	M (L)	M (L)	M (L)	H (L)
<i>Gobius cobitis</i>	L (L)	L (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Gobius couchi</i>	L (L)	L (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Hippocampus guttulatus</i>	NS (L)	NA (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Hippocampus hippocampus</i>	NS (L)	NA (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Victorella pavida</i>	M (L)	H (L)	H (L)	H (L)	H (L)	H (L)	H (L)
<i>Arachnanthus sarsi</i>	M (L)	M (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Alcyonium hibernicum</i>	M (L)	M (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Amphianthus dohmii</i>	H (L)	H (M)	H (M)	H (M)	H (M)	H (M)	H (M)
<i>Edwardsia timida</i>	M (L)	M (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Eunicella verrucosa</i>	H (L)	H (M)	H (M)	H (M)	H (M)	H (M)	H (M)
<i>Halicystus auricula</i>	NA (L)	NA (L)	H (L)	H (L)	H (L)	H (L)	H (L)
<i>Leptopsammia pruvoti</i>	M (M)	H (M)	H (M)	H (M)	H (M)	H (M)	H (M)
<i>Lucernariopsis campanulata</i>	NA (L)	NA (L)	H (L)	H (L)	H (L)	H (L)	H (L)
<i>Lucernariopsis cruxmelitensis</i>	NS (L)	M (L)	M (L)	L (L)	L (L)	L (L)	M (L)
<i>Parazoanthus anguicomus</i>	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)
<i>Nematostella vectensis</i>	NS (L)	L (L)	M (L)	L (L)	L (L)	L (L)	M (L)
<i>Gammarus insensibilis</i>	NS (L)	H (M)	H (M)	H (M)	H (M)	H (M)	H (M)
<i>Gitanopsis bispinosa</i>	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)
<i>Mitella pollicipes</i>	NS (L)	NS (L)	M (L)	M (L)	M (L)	M (L)	M (L)
<i>Palinurus elephas</i>	NS (L)	M (L)	H (H)	H (H)	NS (H)	H (H)	H (H)
<i>Leptometra celtica</i>	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)
<i>Arctica islandica</i>	NS (L)	H (L)	H (H)	H (H)	NS (L)	H (M)	H (M)
<i>Atrina pectinata</i>	M (L)	H (L)	H (L)	H (L)	M (L)	H (L)	H (L)
<i>Caecum armoricum</i>	H (L)	H (L)	L (L)	NS (L)	NS (L)	H (L)	H (L)
<i>Glossus humanus</i>	NS (L)	H (L)	H (H)	H (H)	NS (L)	H (M)	H (M)
<i>Ostrea edulis</i>	H (L)	H (L)	M (M)	M (L)	M (L-M)	M (M)	M (M)
<i>Paludinella littorina</i>	H (L)	H (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)	No Evid. (L)
<i>Tenellia adspersa</i>	H (L)	H (L)	L (L)	L (L)	L (L)	M (L)	M (L)

Pressure theme	Other physical pressures					
Pressure Species	Electromagnetic changes	Litter	Introduction of light	Underwater noise	Barrier to species movement	Death or injury by collision
Pressure Benchmarks	Local electric field of 1V m ⁻¹ ; Local magnetic field of 10μT.	None proposed	None proposed	MSFD indicator levels (SEL or peak SPL) exceeded for 20% of days in calendar year within site	10% change in tidal excursion, or temporary barrier to species movement over ≥ 50% of water body width.	0.1% of tidal volume on average tide, passing through artificial structure
<i>Anotrichium barbatum</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Cruoria cruoriaeformis</i>	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
<i>Dermocorynus montagnei</i>	NS (L)	NA (L)	NA (L)	NS (L)	NE (L)	NE (L)
<i>Lithothamnion corallioides</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Padina pavonica</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Phymatolithon calcareum</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Alkmaria romijni</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Armandia cirrhosa</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Gobius cobitis</i>	NS (L)	NA (L)	NA (L)	M (L)	L (L)	M (L)
<i>Gobius couchi</i>	NS (L)	NA (L)	NA (L)	M (L)	L (L)	M (L)
<i>Hippocampus guttulatus</i>	NS (L)	NA (L)	NA (L)	M (L)	M (L)	H (L)
<i>Hippocampus hippocampus</i>	NS (L)	NA (L)	NA (L)	M (L)	M (L)	H (L)
<i>Victorella pavida</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Arachnanthus sarsi</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Alcyonium hibernicum</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Amphianthus dohmii</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Edwardsia timida</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Eunicella verrucosa</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Halicyclastus auricula</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Leptopsammia pruvoti</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Lucernariopsis campanulata</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Lucernariopsis cruxmelitensis</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Parazoanthus anguicomus</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Nematostella vectensis</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Gammarus insensibilis</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	L (L)
<i>Gitanopsis bispinosa</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Mitella pollicipes</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Palinurus elephas</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Leptomera celtica</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Arctica islandica</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Atrina pectinata</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Caecum armoricum</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Glossus humanus</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Ostrea edulis</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Paludinella littorina</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)
<i>Tenellia adspersa</i>	NS (L)	NA (L)	NA (L)	NS (L)	NS (L)	NS (L)

Pressure theme	Biological pressures					
Pressure Species	Visual disturbance	Genetic modification & translocation of indigenous species	Introduction of microbial pathogens	Introduction or spread of non-indigenous species	Removal of target species	Removal of non-target species
Pressure Benchmarks	None proposed	Translocation outside of geographic area; introduction of hatchery-reared juveniles outside of geographic area from which adult stock derives	The introduction of microbial pathogens <i>Bonamia</i> and <i>Martelia refringens</i> to an area where they are currently not present.	A significant pathway exists for introduction of one or more Invasive non-indigenous species (INS) ; creation of new colonization space >1ha. One or more INS in Table C3 (Technical Report) has been recorded in the relevant habitat	Removal of target species that are features of conservation importance or sub-features of habitats of conservation importance at a commercial scale .	Removal of features through pursuit of a target fishery at a commercial scale.
<i>Anotrichium barbatum</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	M (L)
<i>Cruoria cruoriaeformis</i>	NS (L)	NE (L)	NS (L)	H (L)	NE (L)	H (L)
<i>Dermocorynus montagnei</i>	NS (L)	NE (L)	NS (L)	M (L)	NE (L)	NS (M)
<i>Lithothamnion corallioides</i>	NS (L)	NE (L)	NS (L)	H (L)	H (L)	H (L)
<i>Padina pavonica</i>	NA (L)	NE (L)	NS (L)	H (L)	NE (L)	NS (L)
<i>Phymatolithon calcareum</i>	NA (L)	NE (L)	NS (L)	H (L)	H (L)	H (L)
<i>Alkmaria romijni</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	L (L)
<i>Armandia cirrhosa</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	L (L)
<i>Gobius cobitis</i>	NA (L)	NE (L)	NS (L)	NS (L)	NE (L)	NE (L)
<i>Gobius couchi</i>	NA (L)	NE (L)	NS (L)	NS (L)	NS (L)	H (L)
<i>Hippocampus guttulatus</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	H (H)
<i>Hippocampus hippocampus</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	H (H)
<i>Victorella pavida</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	L (L)
<i>Arachnanthus sarsi</i>	NA (L)	NE (L)	NS (L)	NS (L)	NS (M)	M (L)
<i>Alcyonium hibernicum</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	M (L)
<i>Amphianthus dohmii</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	H (M)
<i>Edwardsia timida</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	M (L)
<i>Eunicella verrucosa</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	H (M)
<i>Halicyclastus auricula</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (H)	H (H)
<i>Leptopsammia pruvoti</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	NS (M)
<i>Lucernariopsis campanulata</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (H)	H (H)
<i>Lucernariopsis cruxmelitensis</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (H)	NS (L)
<i>Parazoanthus anguicomus</i>	NA (L)	NE (L)	NS (L)	NS (L)	NS (L)	No Evid. (L)
<i>Nematostella vectensis</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	NS (L)
<i>Gammarus insensibilis</i>	NA (L)	NE (L)	NS (L)	L (L)	NS (L)	L (L)
<i>Gitanopsis bispinosa</i>	NA (L)	NE (L)	NS (L)	NS (L)	NS (L)	No Evid. (L)
<i>Mitella pollicipes</i>	NA (L)	NE (L)	NS (L)	NS (L)	NE (L)	NE (L)
<i>Palinurus elephas</i>	NA (L)	H (L)	NS (M)	NS (L)	H (M)	NS (M)
<i>Leptometra celtica</i>	NA (L)	NE (L)	NS (L)	NS (L)	NS (L)	NA (L)
<i>Arctica islandica</i>	NA (L)	NE (L)	NS (L)	NS (L)	NS (L)	H (L)
<i>Atrina pectinata</i>	NA (L)	NE (L)	NS (L)	H (L)	NS (L)	H (L)
<i>Caecum armoricum</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	NS (L)
<i>Glossus humanus</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	M (L)
<i>Ostrea edulis</i>	NA (L)	NE (L)	H (M)	H (L-M)	H (H)	NS (L)
<i>Paludinella littorina</i>	NA (L)	NE (L)	NS (L)	NS (L)	NE (L)	NE (L)
<i>Tenellia adspersa</i>	NA (L)	NE (L)	NS (L)	M (L)	NS (L)	NS (L)

Habitat	IOS_CON	DEOX	DEOX_CON	NPE	NPE_CON	OE	OE_CON	PCH	PCH_CON	PL	PL_CON	SRCL	SRCL_CON	SRCH	SRCH_CON	PDS	PDS_CON	SHAB	SHAB_CON	SUAB	SUAB_CON	PR	PR_CON	EMC	EMC_CON	LITT	LITT_CON	LIGH	LIGH_CON	NOIS	NOIS_CON	BSM	BSM_CON	
	1	0	1	0	1	0	1	3	1	3	1	1	1	1	1	3	1	3	1	2	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	1	3	1	3	1	1	1	3	1	3	1	3	1	2	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	1	2	1	3	1	1	1	1	1	0	1	0	1	0	1	0	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	1	3	1	3	1	2	1	2	1	2	1	1	3	1	3	2	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	3	3	1	3	1	0	3	1	3	1	3	1	3	0	3	3	3	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	1	2	1	3	1	2	1	3	1	3	1	3	1	2	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	2	3	1	3	3	1	2	2	2	2	2	2	2	2	2	2	3	3	0	1		1		1	0	1	0	1
	1	0	1	2	2	2	2	2	2	3	3	3	1	3	1	3	2	3	3	2	1	3	2	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	1	3	1	3	1	1	1	3	1	3	1	3	1	2	1	3	1	0	1		1		1	0	1	0	1	
A3.1	1	0	1	0	1	0	1	3	1	3	1	0	1	3	1	2	1	2	1	2	1	2	1	0	1		1		1	0	1	0	1	
A3.2	1	0	1	0	1	0	1	2	1	3	1	0	1	3	1	3	1	2	1	2	1	2	1	0	1		1		1	0	1	0	1	
A3.3	1	0	1	0	1	0	1	3	1	3	1	1	1	3	1	3	1	3	1	2	1	2	1	0	1		1		1	0	1	0	1	
A4.1	1	0	1	0	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
A4.2	1	0	1	0	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
A4.3	1	0	1	0	1	0	1	2	1	3	1	2	1	2	1	2	1	2	1	2	1	2	1	0	1		1		1	0	1	0	1	
A5.1	1	0	1	0	1	0	1	2	1	3	1	2	1	2	1	2	1	2	1	3	1	3	1	0	1		1		1	0	1	0	1	
A5.2	1	0	1	0	1	0	3	3	1	3	1	2	1	3	1	2	1	2	1	1	1	3	2	0	1		1		1	0	1	0	1	
A5.3	1	0	1	0	1	3	1	2	1	3	1	1	1	2	1	2	1	2	1	2	1	2	1	0	1		1		1	0	1	0	1	
A5.4	1	0	1	0	1	0	1	3	1	3	1	0	1	2	1	3	1	3	1	2	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	2	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	0	1	3	1	3	1	2	1	3	1	3	1	3	1	2	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	3	1	3	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
A6.1	1	0	1	0	1	3	1	3	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
A6.2	1	0	1	0	1	3	1	3	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
A6.3 or A6.4	1	0	1	0	1	3	1	3	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
A6.5	1	0	1	0	1	3	2	3	1	0	1	3	1	3	1	3	2	3	2	3	2	3	2	0	1		1		1	0	1	0	1	
	1	0	1	0	1	3	1	3	3	0	1	3	1	3	1	3	3	3	3	3	3	3	3	0	1		1		1	0	1	0	1	
	1	0	1	0	1	3	1	3	1	0	1	3	1	3	1	3	1	3	1	3	1	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1	3	2	3	1	0	1	3	1	3	1	3	2	3	3	3	3	3	1	0	1		1		1	0	1	0	1	
	1	0	1	0	1		1		1	0	1		1		1		1		1		1		1	0	1		1		1	0	1	0	1	

Habitat	DIBC	DIBC_CON	VD	VD_CON	GMTI	GMTI_CON	MP	MP_CON	INS	INS_CON	RTS	RTS_CON	RNTS	RNTS_CON
	0	1	0	1		1	2	1	3	1	2	1	0	1
	0	1	0	1		1	2	1	2	1	2	1	0	1
	0	1	0	1		1	2	1	2	1	2	1	0	1
	0	1	0	1		1	0	1	0	1	0	3	0	3
	0	1	0	1		1	0	1	2	1	2	1	2	1
	0	1	0	1		1	0	1	2	1	2	1	2	2
	0	1	0	1		1	0	1	2	1	2	1	2	1
	0	1	0	1		1	0	1	2	2	1	2	0	3
	0	1	0	1		1	0	1	3	1	0	3	3	3
	0	1	0	1		1	0	1	2	1	2	2	3	2
A3.1	0	1	0	1		1	0	1	1	1	2	2	2	1
A3.2	0	1	0	1		1	0	1	2	1	2	2	2	1
A3.3	0	1	0	1		1	0	1	2	1	3	2	2	1
A4.1	0	1	0	1		1	0	1	2	1	2	2	2	1
A4.2	0	1	0	1		1	0	1	2	1	2	3	3	2
A4.3	0	1	0	1		1	0	1	2	1	0	1	3	1
A5.1	0	1	0	1		1	0	1	2	1	0	1	2	1
A5.2	0	1	0	1		1	0	1	2	1	0	1	2	3
A5.3	0	1	0	1		1	0	1	2	1	2	1	2	1
A5.4	0	1	0	1		1	3	1	2	2	1	2	2	2
	0	1	0	1		1	0	1	3	1	3	1	3	1
	0	1	0	1		1	0	1	3	1	3	2	3	1
	0	1	0	1		1	0	1	2	1	3	1	3	1
A6.1	0	1	0	1		1	0	1	0	1	0	1	0	1
A6.2	0	1	0	1		1	0	1	0	1	0	1	3	1
A6.3 or A6.4	0	1	0	1		1	0	1	0	1	0	1	3	1
A6.5	0	1	0	1		1	0	1	0	1	1	1	3	3
	0	1	0	1		1	0	1	0	1	0	1	3	3
	0	1	0	1		1	0	1	0	1	0	1	3	1
	0	1	0	1		1	0	1	0	1	2	3	2	3
	0	1	0	1		1	0	1	0	1		1		1

Annex 3b: FOCI species and scoring their sensitivity against the pressure

OrigName	PCH	PCH_CON	SHAB	SHAB_CON
Alkmaria romijni	3	2	2	1
Amphianthus dohrnii	3	2	3	2
Anotrichium barbatum	3	1	3	1
Arachnanthus sarsi	1	1	2	1
Arctica islandica	3	1	3	3
Armandia cirrhosa	2	1	2	1
Arrhis phyllonyx	NULL	NULL	NULL	NULL
Ascophyllum nodosum	NULL	NULL	NULL	NULL
Atrina fragilis	NULL	NULL	NULL	NULL
Atrina pectinata	NULL	1	3	1
Caecum armoricum	3	2	0	1
Cruoria cruoriaeformis	3	1	3	2
Dermocorynus montagnei	3	1	3	1
Edwardsia ivelli	NULL	NULL	NULL	NULL
Edwardsia timida	2	1	2	1
Eunicella verrucosa	3	2	3	2
Funiculina quadrangularis	NULL	NULL	NULL	NULL
Gammarus insensibilis	0	2	3	2
Gitanopsis bispinosa	NULL	1	NULL	1
Gobius cobitis	NULL	1	2	1
Gobius couchi	NULL	1	2	1
Haliclystus auricula	2	1	3	1
Hippocampus guttulatus	2	1	2	1
Hippocampus hippocampus	2	1	2	1
Hippocampus ramulosus	NULL	NULL	NULL	NULL
Hippocampus ramulosus	NULL	NULL	NULL	NULL
Leptopsammia pruvoti	3	2	3	2
Lithothamnion corallioides	3	2	3	2
long spined seahorse	NULL	NULL	NULL	NULL
Lucernariopsis campanulata	2	1	3	1
Lucernariopsis cruxmelitensis	2	1	1	1
Mitella pollicipes	2	1	2	1
Native oysters	NULL	NULL	NULL	NULL
Nematostella vectensis	3	1	1	1
Ostrea Edulis	3	3	2	1
Pachycerianthus multiplicatus	NULL	NULL	NULL	NULL
Pachycordyle navis	NULL	NULL	NULL	NULL
Padina pavonica	3	2	3	2
Palinurus elephas	3	3	3	3
Paludinella litorina		1	NULL	1
Phymatolithon calcareum	3	1	3	2
Styela gelatinosa	NULL	NULL	NULL	NULL
Sunset cup coral	NULL	NULL	NULL	NULL
Swiftia pallida	NULL	NULL	NULL	NULL
Tenellia adspersa	NULL	1	1	1
Thyasira gouldi	NULL	NULL	NULL	NULL
Victorella pavida	3	3	3	1

Annex 3c: FOCI habitats and scoring their sensitivity against the pressure

Habitat	PCH	PCH_CON	SHAB	SHAB_CON
Blue Mussel Beds	2	2	2	1
Carbonate mounds	3	3	3	3
Carbonate reef		1		1
Coastal Saltmarsh	3	1	2	2
Cold Water Coral Reefs	3	3	3	3
Deep sea sponge aggregations	3	3	3	3
Estuarine Rocky Habitats	2	1	2	1
File shell beds	3	3	3	2
Fragile sponge and anthozoan communities on subtidal rocky habitat	3	1	3	1
Fucus vesiculosus	3	3	0	1
Intertidal Boulder Communities	2	1	2	1
Intertidal Mudflats	3	1	1	3
Littoral Chalk Communities	3	1	2	1
Maerl Beds	3	1	3	2
Modiolus modiolus beds	3	3	3	2
Musculus discors beds		1	3	1
Ostrea edulis beds	3	3	3	2
Peat and Clay Exposures	3	3	0	3
Sabellaria alveolata reefs	3	1	3	1
Sabellaria spinulosa reef	3	1	3	2
Saline lagoons	3	2	2	1
Sea Pens and Burrowing Megafauna Communities	2	1	2	1
Seagrass Beds	2	1	3	3
Serpulid reefs	3	1	3	2
Sheltered Muddy Gravels	2	1	2	2
Sublittoral mixed muddy sediments	3	1	3	1
Subtidal chalk	3	3	1	1
Subtidal sands and gravels	2	3	2	3
Tide swept communities	1	1	2	3

Annex 4: Activities pressures with pressure codes

Sector	Layers Used to represent activity footprint	Sector and activity	Description	MB102 Marine Biodiversity R&D Programme	Pressure code
Aggregates	Aggregate Dredging Activity, 2010 (TCE)	Aggregates - Direct Effects	Passage of drag head	Physical removal (extraction of	PR
				Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion: damage to seabed surface features	SUAB
				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
				Water Flow (tidal current) changes - local	WCL
		Aggregates - Indirect effects	Altered Seabed Bathymetry	Emergence regime changes - local	ERL
				Wave Exposure Changes	WEL
				Water Clarity	WC
		Aggregates - Indirect effects	Smothering effects from sediment plumes	Siltation Rate Changes (High)	SRCH
				Siltation Rate Changes (Low)	SRCL
Aggregates - Indirect effects	Alteration of seabed beforems	Physical removal (extraction of	PR		
Cables	Cables_500m_footprint	Construction of devices	Disturbance through increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD
				Water Clarity	WC
		Cables - Dredging ploughing or jetting to bury cable	Smothering effects from sediment plumes	Siltation Rate Changes (High)	SRCH
				Siltation Rate Changes (Low)	SRCL
		Cables - Installation activities (anchors, ploughs etc)	Abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion: damage to seabed surface features	SUAB
		Cables - Armouring to prevent scour	Direct loss of habitat	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
				Physical change to another seabed type	PCH
Cables - Cable operation	EMF from cable operation	Electromagnetic Changes	EMC		
Coastal erosion	N/A	Construction of devices	Disturbance through increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD
				Water Flow (tidal current) changes - local	WCL
		Coastal Erosion features	Alteration to sediment transport and wave/tidal processes	Emergence regime changes - local	ERL
				Wave Exposure Changes	WEL
		Coastal Erosion features	Physical loss of habitat and seabed	Physical Loss	PL
				Physical change to another seabed type	PCH
		Coastal Erosion features	Obstruction of birds, fish and	Barrier to species movement	BSM
Renewables - Tidal reach and stream	N/A	Construction of devices	Disturbance trough increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD
				Physical change to another seabed type	PCH
		Construction of devices	Small scale smothering from construction vessels or leveling of seabed	Water Clarity	WC
				Siltation Rate Changes (High)	SRCH
		Construction of devices	Piling or drilling causing noise	Siltation Rate Changes (Low)	SRCL
				Underwater noise	NOIS
		Construction of devices	Cables on surface causing abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion: damage to seabed surface features	SUAB
		Cables - Armouring to prevent scour	Rock armour and hard structures causing loss of habitat	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
				Physical change to another seabed type	PCH
		Operation of structure	Hydro dynamic effects of operation	Water Flow (tidal current) changes - local	WCL
				Wave Exposure Changes	WEL
		Operation of structure	Tidal barrages and othe infrastructure posing a barrier to birds, mammals and fish movement	Barrier to species movement	BSM
				Death or injury by collision with infrastructure	DIBC
Cables - Cable operation	EMF from cable operation	Electromagnetic Changes	EMC		
Renewables - Wave	N/A	Construction of devices	Disturbance trough increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD
				Physical change to another seabed type	PCH
		Construction of devices	Small scale smothering from construction vessels or leveling of seabed	Water Clarity	WC
				Siltation Rate Changes (High)	SRCH
		Construction of devices	Piling or drilling causing noise	Siltation Rate Changes (Low)	SRCL
				Underwater noise	NOIS
		Construction of devices	Cables on surface causing abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion: damage to seabed surface features	SUAB
		Cables - Armouring to prevent scour	Rock armour and hard structures causing loss of habitat	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
				Physical change to another seabed type	PCH
		Operation of structure	Hydro dynamic effects of operation	Water Flow (tidal current) changes - local	WCL
				Wave Exposure Changes	WEL
		Operation of structure	Infrastructure posing a barrier to birds, mammals and fish movement	Barrier to species movement	BSM
				Death or injury by collision with infrastructure	DIBC
Cables - Cable operation	EMF from cable operation	Electromagnetic Changes	EMC		
Renewables - Wind	Blyth Wind Farm Area (TCE), Round 1 Wind Farms Lease (GB), Round 2 Wind Farms Lease (GB), Round 3 Wind Farms Zone (GB), Wind Farm Demonstration Sites (GB), Round 1-2 Wind Farm Extensions (GB)	Construction of devices	Disturbance trough increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD
				Water Clarity	WC
		Construction of devices	Increased turbidity due to construction vessels and cable laying	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion: damage to seabed surface features	SUAB
		Construction of devices	Loss of habitat to piles and scour protection	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
				Physical change to another seabed type	PCH
		Construction of devices	Gravity foundations cause greater habitat loss	Physical change to another seabed type	PCH
				Water Clarity	WC
		Construction of devices	Piling or drilling causing suspended sediments	Siltation Rate Changes (High)	SRCH
				Siltation Rate Changes (Low)	SRCL
Construction of devices	Piling or drilling causing noise	Underwater noise	NOIS		
		Water Clarity	WC		
Construction of devices	Grouting used in construction could enter water colum				
Construction of devices	Scour of seabed around piles	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB		
		Surface abrasion: damage to seabed surface features	SUAB		

Wind Farm Cables (England)				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
		Construction of devices	Rock armour and hard structures causing loss of habitat	Physical change to another seabed type	PCH	
		Operation of structure	Infrastructure posing a barrier to birds, mammals and fish movement	Barrier to species movement	BSM	
		Operation of structure	Death or injury by collision with infrastructure	Death or injury by collision	DIBC	
		Cables - Dredging ploughing or jetting to bury cable	Smothering effects from sediment plumes	Water Clarity	WC	
		Cables - Installation activities (anchors, ploughs etc)	Abrasion	Siltation Rate Changes (High)	SRCH	
				Siltation Rate Changes (Low)	SRCL	
				Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB	
				Surface abrasion: damage to seabed surface features	SUAB	
				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
Cables - Armouring to prevent scour	Rock armour and hard structures causing loss of habitat	Physical change to another seabed type	PCH			
Cables - Cable operation	EMF from cable operation	Electromagnetic Changes	EMC			
Defence	Military Practice Areas	Military Practice	Noise- Sonar	Underwater noise	NOIS	
		Military Practice	Noise- Explosions	Underwater noise	NOIS	
	Military Low Flying Zones, UK (MOD)	Military Practice	Litter	Litter	LITT	
		Military Practice	Noise- Low Flying	Underwater noise	NOIS	
Navigational Dredging and dredge material disposal	Dredged Areas (UKHO)	Dredging process	Removal of habitat through excavation	Physical Removal	PR	
		Dredging process	Burial of habitat from dredging activity	Siltation Rate Changes (High)	SRCH	
	Spoil Grounds (UKHO)	Disposal of dredged materials	Burial of habitat at disposal site	Siltation Rate Changes (Low)	SRCL	
				Siltation Rate Changes (High)	SRCH	
			Siltation Rate Changes (Low)	SRCL		
		Disposal of dredged materials	Turbidity increase from suspended sediments	Water Clarity	WC	
		Disposal of dredged materials	Dredging activity causing noise and vibration	Underwater noise	NOIS	
		Disposal of dredged materials	Introduction of contaminated sediments into habitats	Non-synthetic compound contamination	NSCC	
				Synthetic compound contamination	SCC	
			Nitrogen and phosphorous enrichment	NPE		
			Organic enrichment	OE		
	Large capital or maintenance dredging (indirect effects)	Changes to hydrography and morphology through altered bed levels	Emergence regime changes - local	ERL		
	Large capital or maintenance dredging (indirect effects)	Changes to sediment budget	Water Flow (tidal current) changes - local	WCL		
Large capital or maintenance dredging (indirect effects)	Contaminated sediments and water quality	Non-synthetic compound contamination	NSCC			
		Synthetic compound contamination	SCC			
		Nitrogen and phosphorous enrichment	NPE			
		Organic enrichment	OE			
Oil and gas exploration	3D Seismic Survey Areas (DECC) 2007 - 2009	Surveys	Seismic surveys creating noise and vibrations	Underwater noise	NOIS	
		Manifold, Offshore Installation (generic), Platform (point), Protection Structure, Template, Wells (point)	Construction of devices	Disturbance through increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD
	Construction and operations		Footprint of drilling and operational structures inducing loss of habitat	Physical change to another seabed type	PCH	
	Construction and operations		Footprint of drilling and operational structures inducing scour	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB	
				Surface abrasion: damage to seabed surface features	SUAB	
				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
	Construction and operations		Rock armour and hard structures causing loss of habitat	Physical change to another seabed type	PCH	
	Construction and operations		Smothering effects from drill cuttings and drill mud	Water Clarity	WC	
	Operation of structure		Infrastructure posing a barrier to birds, mammals and fish movement	Barrier to species movement	BSM	
	Operation of structure		Death or injury by collision with infrastructure	Death or injury by collision	DIBC	
	Emissions, discharges and waste		Dissolved salt, crude oils, gasses (hydrogen sulphide, solids, sand and production chemicals from reservoir)	Salinity changes - local	SCL	
				Non-synthetic compound contamination	NSCC	
				Synthetic compound contamination	SCC	
				Introduction of other substance (solid, liquid or gas)	IOS	
				Radionuclide contamination	RNC	
	Pipelines (line)		Pipelines - Dredging ploughing or jetting to bury cable	Smothering effects from sediment plumes	Water Clarity	WC
				Pipelines - Installation activities (anchors, ploughs etc)	Abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration
			Surface abrasion: damage to seabed surface features			SUAB
				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
Pipelines - Armouring to prevent scour	Direct loss of habitat	Physical change to another seabed type	PCH			
Carbon capture and storage	Gas Storage Areas (GB)	Construction of devices	Disturbance through increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD	
		Pipelines - Dredging ploughing or jetting to bury cable	Smothering effects from sediment plumes	Water Clarity	WC	
		Operation of structure	Infrastructure posing a barrier to birds, mammals and fish movement	Barrier to species movement	BSM	
		Pipelines - Installation activities (anchors, ploughs etc)	Abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB	
				Surface abrasion: damage to seabed surface features	SUAB	
				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
		Pipelines - Armouring to prevent scour	Rock armour and hard structures causing loss of habitat	Physical change to another seabed type	PCH	
		Potential leak of CO2	Ocean Acidification			
Recreation		Need to research				
Recreational sea angling and diver fishing	N/A	All habitats	Litter from fishing activity	Litter	LITT	
		All habitats	Removal of species	Removal of target species	RTS	
		Intertidal habitats	Trampling and disturbance of habitats and species			
		Subtidal habitats	Some abrasion through placement of anchors	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB	
		Surface abrasion: damage to seabed surface features	SUAB			
		Penetration and/or disturbance of the substrate below the surface of the seabed	PDS			
Shellfish Aquaculture	Habitat layer does not	Intertidal and Subtidal sediments	Mussel lays on sediments cause	Physical change to another seabed type	PCH	

	overlap activity Footprint		physical loss, smothering and production of mussel mud	Siltation Rate Changes (High) Siltation Rate Changes (Low)	SRCH SRCL	
		Intertidal and Subtidal sediments	Shellfish nets causes organic enrichment and sedimentation	Nitrogen and phosphorous enrichment Organic enrichment	NPE OE	
		Subtidal sediments	Shellfish and mussel cause smothering of bethic habitats	Water Clarity Siltation Rate Changes (High) Siltation Rate Changes (Low)	WC SRCH SRCL	
		Subtidal sediments	Shellfish and mussel cause eutrophication	Nitrogen and phosphorous enrichment Organic enrichment	NPE OE	
		Any subtidal habitat	Offshore mussel ropes causing smothering and abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB	
				Surface abrasion: damage to seabed surface features	SUAB	
				Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
				Water Clarity	WC	
				Siltation Rate Changes (High) Siltation Rate Changes (Low)	SRCH SRCL	
		Any habitat	Introduction of GM populations	Genetic modification and translocation of indigenous species	GMTI	
		Any habitat	Introduction of non indigenous species	Introduction or spread of non-indigenous species	INS	
		Intertidal habitats (oyster tressels)	Physical loss due to footprint	Physical change to another seabed type	PCH	
		Intertidal habitats (oyster tressels)	Alteration of community due to introduction of hard structure	Physical change to another seabed type	PCH	
		Intertidal habitats (oyster tressels)	Changes to benthos from biodeposition	Nitrogen and phosphorous enrichment Organic enrichment	NPC OE	
		Intertidal habitats (oyster tressels)	Accumulation of shells	Siltation Rate Changes (High) Siltation Rate Changes (Low)	SRCH SRCL	
Intertidal habitats (oyster tressels)	Trampling and disturbance of habitats and species					
Shipping	Shipping density layer	Operations	Disturbance trough increased anthropogenic activity. Vessel movements etc.	Visual Disturbance	VD	
		Collision with fish and mamals	Death or injury by collision with infrastructure	Death or injury by collision	DIBC	
		Oil pollution	Contamination of habitats and species	Non-synthetic compound contamination Synthetic compound contamination	NSCC SCC	
		Polution risk	Risk toxic, non toxic, nutrient and organic enrichment	Non-synthetic compound contamination	NSCC	
				Non-synthetic compound contamination	NSCC	
				Synthetic compound contamination	SCC	
		Species changes	Intoduction of non native species through ballast water and hull fouling	Radionuclide contamination	RNC	
	Nitrogen and phosphorous enrichment Organic enrichment			NPE OE		
	Intoduction ballast water	Stagnant water causing deoxygenation	Genetic modification and translocation of indigenous species Introduction or spread of non-indigenous species	GMTI INS		
	Anchoring Areas	Ships at anchor	Direct damage and abrsion of seabed	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS	
			Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB		
			Surface abrasion: damage to seabed surface features	SUAB		
Water Quality		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff	Temperature	Temperature Changes - local	TCC	
		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff	Turbidity increase from suspended sediments	Water Clarity	WC	
		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff	Salinity	Salinity changes - local	SCL	
		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff	Nutrient content	Nitrogen and phosphorous enrichment	NPE	
		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff	Organic matter	Organic enrichment	OE	
		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff	The presence of toxic substances	Non-synthetic compound contamination	NSCC	
		Inputs from land based activities e.g. CSO's, manufacturing and rural runoff		Non-synthetic compound contamination	NSCC	
		Synthetic compound contamination	SCC			
		Radionuclide contamination	RNC			
Fishing (no VMS)	Inshore Fishing (by gear type) (sightings)	Static Gears	Surface abrasion	Surface abrasion: damage to seabed surface features	SUAB	
			Shallow abrasion from dragged anchors	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB	
			Penetration	Surface abrasion: damage to seabed surface features	PDS	
			Removal of target species	Removal of target species	RTS	
		Mobile Gears	Shallow abrasion from dragged anchors	Shallow abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion	Surface abrasion: damage to seabed surface features	SUAB
				Surface abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Penetration	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
				Removal of non target species	Removal of non-target species	RNTS
			Removal of target species	RTS		
	VMS 2007_2010	Static Gears	Shallow abrasion from dragged anchors	Surface abrasion	Surface abrasion: damage to seabed surface features	SUAB
				Shallow abrasion from dragged anchors	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Penetration	Surface abrasion: damage to seabed surface features	PDS
				Removal of target species	Removal of target species	RTS
		Mobile Gears	Shallow abrasion from dragged anchors	Shallow abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Surface abrasion	Surface abrasion: damage to seabed surface features	SUAB
				Surface abrasion	Shallow abrasion/penetration: damage to seabed surface and penetration	SHAB
				Penetration	Penetration and/or disturbance of the substrate below the surface of the seabed	PDS
Removal of non target species				Removal of non-target species	RNTS	
		Removal of target species	RTS			

Annex 5: Shoreline management plan management policy implications

Sector	Marine conservation	Defence and national security	Energy production and infrastructure development	Ports and shipping	Marine aggregates	Marine dredging and disposal	Telecommunications cabling	Fisheries	Aquaculture	Surface water management and waste water treatment and disposal	Tourism and recreation
Management policy definition (from shoreline management plan Defra guidance)											
Hold the line (HtL): Hold the existing defence line by maintaining or changing the standard of protection. This policy should cover those situations where work or operations are carried out in front of the existing defences (such as beach recharge, rebuilding the toe of a structure, building offshore breakwaters and so on) to improve or maintain the standard of protection provided by the existing defence line. You should include in this policy other policies that involve operations to the back of existing defences (such as building secondary floodwalls) where they form an essential part of maintaining the current coastal defence system.	If defence structure (either building a new structure or maintenance of existing) is within a designation/buffer zone, relevant permissions will need to be sought to carry out work (and possible mitigation measures in the form of compensatory habitat maybe required).	This sector is active along the East Plan area coastline but this measure would not impact on these activities.	This would be a compatible measure in terms of bringing cabling onshore & locating land-based infrastructure as the management measure would maintain the existing line. There might be short-term impacts on defences while cabling is crossing the defence and so consideration would need to be taken not to change the risk of flooding during this time. Installation of cables can also impact on sediment movement. Any temporary or permanent landing point (to bring materials onshore for land based	Port infrastructure e.g. Harbour walls, can play a part in delivery of HtL. This sector maybe used to provide materials for HtL and so the source and routes for the materials for this would need highlighting (shipping navigation). HtL activities can impact on sediment movement, possibly having a knock-on effect for the management of ports and shipping routes.	Sector may provide materials (sand/gravel) for HtL and so need to be aware of where the materials come from and where they are being used. Dredging for aggregates and navigation has the potential to affect sandbanks and the shoreline.	Marine dredging materials could provide sand to HtL but permission would need to be sought to ensure the material is suitable to bring onshore. Dredging material can be utilised to maintain / recondition natural defences (e.g. saltmarsh) in front of HtL structures.	This would be a compatible measure in terms of bringing cabling onshore & locating land-based infrastructure as the management measure would maintain the existing line. There might be short-term impacts on defences while cabling is crossing the defence and so consideration would need to be taken not to change the risk of flooding during this time. Installation of cables can impact on sediment movement.	Coastal squeeze can occur where a coastline is maintained (through HtL policy) and sea level rise is occurring. Shallow, coastal areas often act as nursery grounds for juvenile fish. If these areas are inundated more regularly (due to sea level rise), this can impact on the quality and suitability of the area as nursery grounds. This also has a knock-on effect on coastal birds.	HtL has implications for coastal squeeze (linked to sea level rise) which can in turn, have potential impact on the aquaculture industry.	Any work to maintain the current line may impact on surface water outfalls or any outfall pipes. Sea level rise implications may require movement of pipe.	HtL may cause short-term implications for this sector if work is needed to maintain the line. In the long term, this measure should benefit the sector by maintaining coastline which could be used for recreational/tourism activities but beaches maybe impacted by the defence and may need replenishment. In areas where it is a defended promontory with no beach, it will be important to consider the type of structure as 'hard' defence may impact the area. Softer, more natural defences would reduce the visual impact and improve the amenity of the area.

<p>Advance the line (AtL): by building new defences on the seaward side of the original defences. Using this policy should be limited to those policy units where significant land reclamation is considered.</p>	<p>Moving defence structures maybe at the loss of natural habitat and thus compensatory habitat maybe required. Relevant permissions for work would need to be sought where activity is within a designation/buffer zone.</p>	<p>This sector is active along the East Plan area coastline but this measure would not impact on these activities.</p>	<p>This would be a suitable measure (once work is completed) to bring cabling onshore & locate land-based infrastructure. There could be short-term implications during AtL work as installation work can impact on sediment movement.</p>	<p>Extending current defences (and the resulting impact on sediment movement) near ports & shipping routes could have implications for the management of this sector. The material for AtL work may come via this sector and this would need to be highlighted.</p>	<p>Sea defences do not extend to areas where marine aggregate extraction occurs. Applications for marine aggregate licenses require a coastal impact assessment, as part of an EIA, to ensure coastal processes are not accelerated by the proposed activity.</p>	<p>This measure may have implications for dredging & disposal within existing ports/marinas. D&D activities would have to be aware of any works or new defences located near ports, pipelines, outfalls or tunnels. Vice versa, dredging activities would need to ensure they do not undermine any new defences. Dredged material could</p>	<p>This would be a suitable measure (once work is completed) to bring cabling onshore. There could be short-term implications during AtL work as installation work can impact on sediment movement.</p>	<p>This measure may have an impact on coastal fisheries causing short-term disturbance during the works and possibly effecting access to juvenile nursery grounds and migratory routes in the long term.</p>	<p>Inshore aquaculture could be impacted by physical works to AtL (sediment dispersal).</p>	<p>Any work to AtL may have implications for existing outfall structures. Any new proposals for outfalls into the sea would need to consider coastal erosion and flooding issues.</p>	<p>This measure may have short-term implications for this sector during the physical works. In the long term, this measure may benefit this sector because it will provide protection for coastal areas that benefit from tourism & recreation.</p>
<p>No active intervention (NAI): where there is no investment in coastal defences or operations.</p>	<p>If this policy requires a change in management this may have an impact on the existing environment and so consideration would need to be taken as to the impact of the change on the environment. Relevant permissions for work would need to be sought where activity is within a</p>	<p>This sector is active along the East Plan area coastline but this measure would not impact on these activities.</p>	<p>This measure may have an impact on coastal and on-land infrastructure & cabling because there may be ongoing erosion & flooding in the area which could damage infrastructure. Installation work can also impact on sediment movement and thus having an impact on the nature of the environment. A change in management may</p>	<p>It is unlikely this measure would occur where a NAI policy is in measure. Any existing ports may maintain their own defences but this may be in contradiction to the SMP policy so it would refer to marine licensing for a decision for any works wanted to be carried out. NAI coupled with predicted sea level rise could impact on ports and shipping activity.</p>	<p>This measure will not impact on aggregate dredging however aggregate extraction may impact on a NAI coastline. This policy may release previously retained cliff sediment to nourish beaches and thereby reduce the need for dredging for beach feeding.</p>	<p>Withdrawal of maintenance may impact on levels of dredging in ports/marinas, particularly if flooding and erosion occurs. Changes in management measure could require different levels of dredging/port management.</p>	<p>This measure may have an impact on coastal and on-land infrastructure & cabling because there maybe ongoing erosion & flooding in the area which could damage infrastructure. Installation work can also impact on sediment movement and thus having an impact on the nature of the environment. A change in management may cause these impacts.</p>	<p>NAI may impact on flood risk and/or erosion, reducing or enhancing the quality of fish/shellfish spawning grounds.</p>	<p>NAI has implications for the current aquaculture industry as NAI may require a change in management.</p>	<p>If this measure is being taken where an outfall/any type of pipe is located, then this has implications for the structure (exposure or damage to structure). A change to the management regime of the surface water outfalls/disposal pipes maybe required due to a change in management to allow natural processes.</p>	<p>This measure could impact the sector because coastal areas maybe returning to natural processes causing changes to the existing nature of the area. Depending on available funding, some abandoned defences may become unsafe and could impact on access to the coastline for recreational use.</p>
<p>Managed realignment (MR): by allowing the shoreline to move backwards or forwards, with management to control or limit movement (such as reducing erosion or building new defences on the landward side of the original defences). MR is often used to deliver habitat requirements.</p>	<p>Depending on the location, this could create marine habitat (saltmarsh etc...) and encourage more flora & fauna to the area though there would be a short-term impact (during the physical work) on the local environment, including temporary sediment release. Relevant permissions for work would need to be sought where activity is within a designation/buffer zone.</p>	<p>This sector is active along the East Plan area coastline but this measure would not impact on these activities.</p>	<p>Landing cabling/infrastructure onshore at MR areas would impact on the natural environment and tidal inundation could damage infrastructure. Installation work can impact on sediment movement.</p>	<p>This measure would not occur at a port. MR often requires a new defence on the landwards side of the existing defence and thus material may need to be provided for this via ports and shipping routes. New ports or existing ports near MR sites could be impacted by siltation so a change in dredging activity may be required.</p>	<p>This measure is unlikely to impact on aggregate dredging but the material for any realigned defence may come from this activity. MR policy may release previously retained cliff sediment to nourish beaches and thereby reduce the amount of dredging needed for beaches.</p>	<p>Dredged materials could be used for any realigned defences required (dependent on permissions to use the material).</p>	<p>Landing cabling at MR areas would impact on the natural environment and tidal inundation could damage infrastructure. Installation work can impact on sediment movement.</p>	<p>MR can create (sometimes compensatory) habitat for spawning grounds and brings migratory routes closer.</p>	<p>MR has implications through temporary sediment release during physical works for the aquaculture industry.</p>	<p>This measure has implications for existing outfall structure as realignment of the flood defence (banks rather than groynes) could expose structures to damage that need to be re-engineered.</p>	<p>Initial works to realign an area of flood defence may have short term impacts on the sector. Depending on the existing use of the area, there may also be issues of access (e.g. to water borne activity), sediment / coastal process changes, land use changes and access on surrounding land area, use of the area post re-alignment for recreation (fishing, sailing, mooring, swimming) and environmental (new habitat) and economic - new water / environmentally based businesses. In addition enabling development to fund the re-alignment may also</p>

Annex 6: Summary of sub-national policy analysis output

This annex sets out a summary of the policy excerpts identified through a review of planning authority documents held by bodies along the coast of the East Inshore marine plan area. The method, set out in Chapter 2 of this document, drew out policies identified as being marine relevant. Policies identified are set out as relevant to key activities (Marine Policy Statement Chapter 3) for marine planning and informed development of Chapter 4 sections in this report.

The sub-national analysis process also identified policy relevant to detailed considerations for marine planning (Marine Policy Statement Chapter 2, Part 6 including marine ecology and biodiversity, air quality, noise, ecological and chemical water quality, seascape, historic environment, climate change adaptation and mitigation, coastal change and flooding). Policies identified as being relevant to detailed considerations were provided for use in the sustainability appraisal process. It should be noted that policies are drawn from a variety of adopted and draft documents and we are aware that document development is a continuous process. We will be updating our records as we are made aware of changes but for the purposes of gaining an overview over the plan area, we have taken the view that content in both adopted and draft documentation should inform the evidence base.

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1.1 Marine protected areas

The UK Marine Protected Area (MPA) Network, to be substantially completed in 2012, will comprise a range of national and European designations. This network will be a key tool to achieving good environmental status as required by the Marine Strategy Framework Directive (MSFD). As such, policies summarised below describe how planning authorities bordering the plan area currently take

steps towards ensuring maintenance or improvement of designated sites or recognised areas of local value that may be located near to or within (partially or wholly) the marine plan area.

- East Cambridgeshire: Provides protection for the biodiversity value of land and buildings and seeks to minimise harm to or loss of environmental features. Developments must provide appropriate mitigation measures, reinstatement or replacement of features and/or compensatory work that will enhance or recreate habitats on or off site where harm to environmental features and habitat is unavoidable. Opportunities for creation, restoration, enhancement and connection of natural habitats must be maximised. Proposals which would cause harm to sites of national importance for wildlife or geology will not be permitted unless the need for, and benefits of development in that location outweigh the potential harm to nature conservation interests.
- East Riding of Yorkshire: Core Strategy policies apply to Flamborough Head, Bempton Cliffs and Spurn Head designated areas as well as the emerging policy in place to avoid development that is likely to have a detrimental impact on the Humber Estuary, River Derwent and River Ouse designated areas.
- Norfolk Coast Area of Outstanding Natural Beauty (AONB): Seeking to improve understanding of, and planning for, changes to landscape and biodiversity. Developing and promoting understanding of the areas key qualities of natural beauty, particularly those less understood and valued at present. Quality and diversity of landscape character and distinctive wildlife habitats and species, and their ability to adapt to change, to be achieved by maintaining and improving the condition of key land, intertidal and sea habitats, managing the consequences of coastal change to recognise and safeguard landscape character, biodiversity, historic and cultural identity and community wellbeing value; development of ecological networks that extend link and buffer these habitats; taking opportunities to reduce and manage adverse impacts on the landscape and seascape from past development and activities, and from those outside direct partners' management.
- North East Lincolnshire: Maintaining a commitment to protect and enhance the designated Humber Estuary sites. Adopting a proactive approach to the resolution of conflicting estuary interests, recognising the need to maintain the integrity of the Humber Estuary biodiversity sites, recognising the potential set back of flood defences as a means of addressing sea level rise whilst not compromising the estuary's environmental and biodiversity qualities.
- North Norfolk: All development must ensure no adverse effects on the Broads Special Area of Conservation (SAC), particularly all new major developments at Stalham with regards to storm water runoff, or on European wildlife sites. Development proposals that would cause a direct or indirect adverse effect to nationally designated sites, areas or protected species will not be permitted unless: they cannot be located on alternative sites that would cause less or no harm, the benefits of the development clearly outweigh the impacts on the features of the site and the wider network of natural habitats, and prevention, mitigation and compensation measures are provided. Where there is reason to suspect the presence of protected species applications should be accompanied by a survey assessing their presence and, if present, the

proposal must be sensitive to, and make provision for, their needs. Development proposals that would be significantly detrimental to the nature conservation interests of nationally designated sites will not be permitted. Development proposals where the principal objective is to conserve or enhance biodiversity or geodiversity interests will be supported in principle.

1.2 Defence and national security

No sub-national policies were identified relating to Defence and National Security.

1.3 Energy production and infrastructure development

Development control in favour of renewable energy

Specific targets and locations

- East Cambridgeshire: Target for development greater than 10 dwellings or greater than 1,000 square metres non-residential space must have at least 10 per cent of energy requirements from decentralised renewable or low carbon sources.
- East Lindsey: Major developments to have 10 per cent of energy from renewable sources.
- Fenland: Proposals over 500 square metres or with greater than 10 dwellings should provide at least 10 per cent of power from renewable energy sources.
- North Norfolk: Development proposals over 1,000 square metres or greater than 10 dwellings need to get 10 per cent of energy from renewables rising to 20 per cent in 2013.
- North Norfolk: Development over 100 dwellings should incorporate 20 per cent of power from renewables.
- Selby: Has a local target of generating 32 megawatts (MW) from renewable energy schemes by 2021.
- York: ensure that targets of 38.7 MW of installed renewable electricity capacity by 2020, and 39.8 MW of installed renewable electricity by 2031 is exceeded through either on-site or off-site production.

General, local authority-wide approaches

- Boston: positive response to renewable energy development considering no significant effect on protected sites, residential amenity, seascape and heritage or character of the area.
- East Cambridgeshire: Positive response to renewable energy development considering no significant effect on protected sites including national or local nature conservation importance and green belt land, residential amenity, seascape and heritage or character of the area including views of Ely Cathedral.
- East Lindsey: Support sustainable development, sustainable construction and energy efficiency and have a net benefit on local and global environment.
- East Lindsey: Support the district's energy contribution from renewable sources.

- East Riding of Yorkshire: positive response to renewable energy development considering no significant effect on protected sites, residential amenity, seascape, and development of local economy and heritage/character of the area.
- East Riding of Yorkshire: Precautionary approach should be taken if the developer cannot provide evidence to show that negative impacts won't occur or can't identify effective mitigation measures.
- Fenland: positive response to renewable energy development considering no significant effect on protected sites, residential amenity, seascape and heritage or character of the area.
- Great Yarmouth: Promote use of renewable energy projects including biomass, marine, waste, solar and wind sources.
- Kingston-upon-Hull: Support renewable energy projects providing no environmental impacts including residential amenity and European protected sites.
- North Norfolk: All developments encouraged to incorporate on site renewables with regard to the North Norfolk design guide.
- North Norfolk: Support for renewable energy taking account of environmental, landscape and highway safety.
- Norwich: Development should minimise use of non renewable high carbon energy sources.
- Selby: Strategic development sites to derive the majority of energy needs from renewable sources. Mainly consider biomass and combined heat and power schemes.
- Selby: Support renewable energy projects providing no environmental impacts including residential amenity.
- South Norfolk: Development should minimise use of non renewable high carbon energy sources.
- York: Is taking an energy hierarchy approach to ensuring low carbon energy potential is realised.

Exploring opportunities and promoting innovation

- Broadland, Norwich and South Norfolk: Temporary planning permission available to perform trial runs of projects or when the source of power is temporary, such as landfill gas. These structures have to be dismantled if operations cease.

Described approaches to enable development of renewable energy infrastructure and/or technology, in some cases offshore renewables specifically

- East Riding of Yorkshire: Promotes sustainable development by supporting economic clusters for renewable energy technology sector, encouraging renewable energy generation in appropriate locations.
- North East Lincolnshire: Identifies the Humber Employment Zone, (552 hectares) stretching between and inclusive of the commercial port areas of Grimsby and Immingham Ports, including nationally significant estuary land, as a key strategic site for development. Land closest to the estuary (explicitly land east of an existing railfreight line) will be safeguarded for uses that genuinely need to be located close to the estuary. Future allocations will need

to preserve the integrity of the Humber Estuary Natura 2000 sites. This will necessitate the establishment and management of appropriate habitat areas within this zone.

- Waveney: Lowestoft will be a focus for regeneration with the development of a renewable energy cluster of businesses and growth of the knowledge economy. A renewable energy cluster and power park of around 8 hectares will be promoted in the Lake Lothing and harbour area of central Lowestoft, especially focused on expanding existing development in the Ness Point and outer harbour area.

1.4 Ports and shipping

Protection and promotion of sites

- Encouraging the use of existing port facilities and supporting infrastructure to enable diversification of users and commodities; Boston Docks railway line which is safeguarded for transport of steel; East Riding of Yorkshire safeguarding existing wharf facilities and other sites on the Aire and Calder canal, river Ouse, Humber Estuary and elsewhere.
- General support in planning terms for the development of industrial and business uses in port areas: Wisbech Port Area in Fenland.
- Maximising opportunities around ports to include the diversification of the energy sector; biomass opportunities as in North Lincolnshire.

Identification and protection of new sites

- Setting aside land for port and shipping activities where site features are known to be advantageous.
- East Riding: approximately 200 hectares of land allocated at Hedon Haven and reserved for economic uses that primarily require access to the deep water estuarial channel. Rail links to marine infrastructure maintained by safeguarding land. Following identification as part of the Humber Renewable Energy Super Cluster Enterprise Zone.
- North East Lincolnshire: 552 hectares stretching between and inclusive of the commercial port areas of Grimsby and Immingham identified for economic development. Land closest to the estuary will be safeguarded for uses that genuinely need to be located close to the estuary.
- North Lincolnshire: South Humber Bank ports will be supported by safeguarding around 900 hectares of land in and around the port complexes for estuary related development. Support the continued growth of the chemical and renewable energy industries. Improved road and rail access.
- North Lincolnshire: Extending port related development northwards from Immingham Port to East Halton Skitter.
- South Holland: Within the area adjacent to the sea port at Sutton Bridge (13 hectares), planning permission will be granted for port related uses.
- Great Yarmouth: Proposed reclamation 30 hectares of coastal land at South Denes to support wind turbine manufacture in a designated Enterprise Zone.

Identification of sites at which intensification of activities may occur

- East Riding: Ports and wharves at Goole and Howdendyke.

- Suffolk Coastal: Retention, expansion and consolidation of Felixstowe Port. In addition to the Felixstowe South re-configuration works that are currently underway, this includes provision of additional sites for necessary supporting port related uses.

Supporting renewal and expansion

- Kingston-upon-Hull: The port will be a focus for manufacturing, distribution and servicing activities requiring direct links to the Humber, including those related to renewable technologies, as well as establishing the Green Port (a concept aiming to develop the renewable industry across Hull with a primary focus on the ports including regeneration of Alexandra Dock for the manufacture and dispatch of offshore wind turbines).
- Waveney: A renewable energy cluster and power park of around 8 hectares will be promoted in the Lake Lothing and harbour area of central Lowestoft, especially focused on expanding existing development in the Ness Point and outer harbour area.
- North East Lincolnshire: Regeneration of Grimsby Fish Docks.
- Encouraging modal shifts to water from other modes and improving facilities to increase uptake.
- Doncaster: Making improvements to travel choices for new developments and improvements to accessibility for freight.
- Great Yarmouth: Modernising passenger and freight intermodal interchange facilities to achieve more operational efficiency
- Kingston-upon-Hull: Improving road, rail and waterway access and encouraging potential users to sites to make best use of rail and water freight handling facilities.
- North Lincolnshire: Enhancing South Humber Ports to provide opportunity to transfer goods by trans-shipping from the southern and south eastern UK ports as well as offering berths for transporting goods by barge/boat.
- East Riding of Yorkshire and Kingston-upon-Hull: Encouraging waste management via water transport as an alternative to road where possible.

1.5 Marine aggregates

- East Riding of Yorkshire and Kingston-upon-Hull: Proposals for the redevelopment of the existing wharf sites or development close to the existing wharf sites at Alexandra Dock and the Queen Elizabeth dock which would prejudice their use as wharves for the importation and processing of marine aggregates and other imported minerals will not be permitted.
- East Riding of Yorkshire and Kingston-upon-Hull: Marine aggregates development associated with the landing, storing and transporting of marine won aggregates will be allowed if it will not adversely impact on the Humber Estuary Special Protection Area (SPA), SAC, Ramsar site and site of special scientific interest (SSSI), and it will not adversely affect the local transport network, or the amenity or operation of existing land uses. If development is in a geographical priority area, as identified in the Hull City Plan, it must accord with the area's regeneration scheme.

- Kingston-upon-Hull: Existing facilities for aggregates handling will be safeguarded, particularly in locations accessible to the rail network, and the rivers Hull and Humber.

East Riding of Yorkshire: Meet the need for mineral resources in a manner which safeguards natural assets and the heritage of the area, quality of life of its communities, to be achieved through plan policies as well as influencing the decisions of others concerning the effects of off-shore minerals dredging on coastal erosion on the Holderness Coast.

1.6 Marine dredging and disposal

- Norfolk Broads National Park: Adequate water depths will be maintained for safe navigation, and the disposal of dredged and cut material will be carried out in ways that mitigate unavoidable adverse impacts on the environment. Beneficial use of dredgings will be encouraged.

1.7 Telecommunications cabling

No sub-national policies were identified relating to Telecommunications cabling.

1.8 Fisheries

- Norfolk Coast AONB: Management of local fisheries should contribute positively to the special qualities of the area. The local sea based economy is to be developed and diversified in a sensitive and sustainable manner developing local and national identity and value for local sustainable fishing products that support conservation.
- North East Lincolnshire: Land closest to the estuary (explicitly land east of the railfreight line) will be safeguarded for uses that genuinely need to be located close to the estuary. Opportunities may also arise through the regeneration of Grimsby Fish Docks.

1.9 Aquaculture

While no specific aquaculture policies were identified, it was noted that in North Norfolk in particular, farm diversification was being encouraged within the context of other plan considerations.

1.10 Surface water management and waste water treatment and disposal

- East Riding of Yorkshire: Waste management development to make use of rail and water transport to meet operational requirements.
- Fenland: Development proposals should contribute towards the cost of providing infrastructure that may include drainage/flood prevention and environmental management.

- Ipswich: Development to be approved only where it meets requirements to: not increase flood risk elsewhere; provide adequate protection if the development is at risk; meet water efficiency requirements.
- Kingston-upon-Hull: waste management development to make use of rail and water transport to meet operational requirements.
- North Norfolk: Focus on Fakenham, Holt and North Walsham as principal settlements designated for development. The development must demonstrate that there is adequate capacity in sewage treatment works, there is ensure no adverse effects on European sites and surface water run-off is addressed to ensure no adverse impacts on the Broads (hydrology or SAC) or localised river catchments.

1.11 Tourism and recreation

Diversification and/or strengthening of the tourism and recreation offer

General, non area specific policies include:

- East Lindsey: Quality tourism to be developed including diversification of facilities and providing opportunities for enjoyment of the wild coast and countryside.
- East Riding of Yorkshire: Tourism developments that strengthen and broaden the tourism offer, particularly in towns and coastal areas, will be encouraged.
- North Norfolk: The tourist industry will be supported by retaining a mix of accommodation and diversified by encouraging new accommodation and attractions, helping to extend the season.
- Waveney: Redevelopment of existing sites will be encouraged where it increases the range and/or quality of tourist facilities and accommodation.
- Waveney: A more diverse and high quality tourism offer will be encouraged that seeks to lengthen the tourism season, increase the number of visits, provide job opportunities and sustain the tourism economy. However this growth should not be at the expense of the natural and cultural assets on which it is based.

Steps to be taken at specific locations include:

- Boston: Proposed marina in Witham Town that would provide access to Royal Yachting Association (RYA) racing areas at the mouth of the Wash.
- East Lindsey: Encouragement of new businesses that extend and diversify the tourism market, offer all-year round employment opportunities and contribute directly to the local economy, with a focus on coastal settlements between Mabelthorpe and Skegness.
- Great Yarmouth: Focus on habitat creation and enhancement, including a proposed new broad at Runham Vauxhall. Existing tourism offers including the Golden Mile (seafront between Euston Road and the Pleasure Beach) to be protected.
- King's Lynn and West Norfolk: Developing facilities to extend Hunstanton's tourism offer across the year, acknowledging and being sympathetic to the valuable natural assets of the town and surrounding area.

- North Lincolnshire: Existing tourist facilities and infrastructure will be protected and enhanced and the development and promotion of sustainable tourism focusing on the area's natural and built assets will be supported, particularly the Humber Estuary, Thorne and Crowle Moors and market towns.
- North East Lincolnshire: Seafront and resort regeneration focused on Cleethorpes and rural tourism ventures. Maintaining the high standard of water quality and attraction of Cleethorpes Beach, contributing to the regeneration and renaissance of Grimsby and Cleethorpes, widening the tourist offer, drawing on local character and culture, and improving the quality of places and spaces.
- Suffolk Coastal: For Felixstowe in particular, the regeneration of the resort area to achieve a thriving seaside town and port, attractive to residents of all ages and address issues of deprivation, particularly at the southern end.

Protection and promotion of existing tourism and recreation offers

Specific development control and considerations

- East Cambridgeshire: In the case of marinas and moorings, development would not impede navigation or lead to hazardous boat movements, harm the quality of the fisheries or conflict with traditional river uses such as fishing, sailing and rowing.
- King's Lynn and West Norfolk: Heritage features of Hunstanton are to be maintained while in the Southern Seafront area, modern, high quality architecture will be promoted.
- Norfolk Broads National Park: Employment site and skilled workforce management for the marine and tourism industries and in specialist craft skills on which the distinctive character of the Broads relies.
- Norfolk Coast AONB: Harbours should be used in a responsible manner with due regards to the sensitive habitats and wildlife.
- North Norfolk: Proposals should demonstrate that they will not have a significant detrimental effect on the environment.
- North Norfolk: In Sheringham and Wells, pedestrian access, informal recreation and appearance are managed as features crucial to the town's attractiveness to residents and visitors.
- North Norfolk: New build attractions and serviced accommodation may be permitted in the 'resorts and hinterland' and 'rural' Tourism Asset Zones of the Countryside where they are in close proximity and have good links to, the Principal and Secondary Settlements.
- Suffolk Coastal: Proposals for tourism will take in to account the resort of Felixstowe, a priority for new tourist activity, and nearby Heritage Coast as well as AONB designations.
- Waveney: Existing tourism uses will be protected.

Research, integration and awareness raising:

- Norfolk Coast AONB: The AONB is aiming to develop its understanding of current and future visitor numbers so as to manage pressures and avoid significant effects.

- Norfolk Coast AONB: Aim to raise awareness within tourism sector and local communities of the importance and sensitivities of key species and habitats as well as improving management of recreation activities that impact on sensitive habitats and wildlife.
- Suffolk Coast and Heaths AONB: Developing annual campaigns to promote sustainable tourism within business. It is also seeking to establish good practice examples of sustainable tourism activities within the AONB.
- Suffolk Coast and Heaths AONB: Working with stakeholders to develop a consistent and integrated approach to implementing coastal access. Increase in the provision of information to enable people to enjoy the AONB in a sustainable way.

Addressing transport or access as part of tourism and recreation development

- King's Lynn and West Norfolk: Public transport links with coast and rural areas are to be enhanced as well as development of improved walking and cycle access
- Norfolk Broads National Park: Low impact tourism will be promoted by measures including improved access
- North Norfolk: Long distance walking and cycling routes and heritage trails will be promoted and enhanced.
- Waveney: New tourism development will normally be located in or close to Lowestoft and the market towns, the larger village coastal resorts of Corton and Kessingland, and other villages where local services, facilities and public transport reduce the need to travel by car.

Annex 7: Renewable energy

Renewable wind energy schemes within the East Inshore and East Offshore plan areas¹

Schemes completed

Wind farm	Location	Region	Turbines	Power	MW	Developer
Lynn and Inner Dowsing	5 kilometres Skegness	East Midlands	54	3.6	194.4	Centrica Operational
Scroby Sands	3 kilometres north east Great Yarmouth	East of England	30	2	60	E.ON UK Operational

Schemes under construction

Wind farm	Location	Region	Turbines	Power	MW	Developer
Greater Gabbard	26 kilometres off Orford, Suffolk	Thames Estuary	140	3.6	504	SSE Renewables, RWE Npower Renewables
Lincs	8 kilometres off Skegness	East of England	75	3.6	270	Centrica, DONG, Siemens Project Ventures
London Array I ²	24 kilometres off Clacton-on-Sea	Thames Estuary	175	3.6	630	DONG Energy, E.On Renewables, Masdar
Sheringham Shoal	Sheringham, Greater Wash	East of England	88	3.6	316.8	Scira Offshore Energy Ltd
London Array II	24 kilometres off Clacton-on-Sea	Thames Estuary	0	0	370	DONG Energy, E.On, Masdar Under Construction

¹ Baseline data supplied by Renewables UK

² London Array straddles the East Inshore and Offshore plan areas together with the South East plan area.

Schemes approved

Wind farm	Location	Region	Turbines	Power	MW	Developer
Humber Gateway	Withernsea	Yorkshire and Humber	77	0	230	E.ON UK
London Array II	24 kilometres off Clacton-on-Sea	Thames Estuary	0	0	370	DONG Energy, E.On, Masdar Under Construction

Schemes submitted

Wind farm	Location	Region	Turbines	Power	MW	Developer
Docking Shoal	14 kilometres from North Norfolk coast	East of England	100	0	540	Centrica In Process
Dudgeon	32 kilometres north of Norfolk	Greater Wash	168	0	560	Warwick Energy In Process
Race Bank	27 kilometres from North Norfolk coast	East of England	88	0	620	Centrica In Process
Westermost Rough	8 kilometres from the coast.	Greater Wash	80	0	240	DONG Energy In Process

Sites awarded

Wind farm	Region	Estimated MW	Developer	Status
Triton Knoll	Greater Wash	1,200	RWE NPower renewables	In Process

Extensions to Round 1 and Round 2 sites

Wind farm	Original project name	MW capacity	Developer	Status
Galloper Wind Farm	Greater Gabbard	504	SSE and RWE Npower	Proposed extn to Gabbard In Process

Round 3 offshore wind zones

Wind farm	Region	MW capacity	Developer (owner)
Dogger Bank	North Sea	9,000	Forewind Consortia (SSE, RWE Npower, Statoil and Statkraft)
Hornsea	North Sea	4,000	Mainstream Renewable Power, Siemens Project Ventures
Norfolk Bank	Southern North Sea	7,200	East Anglia Offshore Wind Ltd (Scottish Power and Vattenfall)

Annex 8: Species tonnage for landings of 10 tonnes or over (2010)

Port landing	Brown shrimps	Cod	Crabs: Velvet (Swim)	Crabs: (CP mixed sexes)	Haddock	Lemon sole	Lobsters	Mussels	Nephrops (Norway lobster)
Blakeney		0.0		17.7			2.3		
Boston	68.9							100.0	
Brancaster Staithe	5.2			10.4			2.1		
Bridlington		15.4	12.9	1754.2	0.4	0.4	322.7		2.0
Grimsby	27.9	983.5	21.7	554.8	149.8	28.6	75.0		32.0
Hornsea		0.2		32.5			38.1		
Hull		1.4		0.9		1.4	0.2		
King's Lynn	723.1	0.1				0.0	0.0	74.0	
Wells	8.6	0.3	4.1	313.3			24.5		
Withernsea		0.1	0.0	20.0	0.0		9.5		1.4
Grand total	833.7	1001.2	38.7	2703.8	150.2	30.3	474.5	174.0	35.4

Port landing	Pink shrimps	Plaice	Sole	Thornback ray	Whelks	Whiting	Grand total
Blakeney			0.0		0.3		20.3
Boston	1.0		0.0	0.0			170.0
Brancaster Staithe	0.3		0.0	0.3	17.4	0.0	35.8
Bridlington		0.7	2.1	2.9	455.1	2.7	2571.5
Grimsby		617.5	1.7	16.9	44.6	31.8	2585.8
Hornsea							70.8
Hull		17.8	4.8	0.1		0.2	26.8
King's Lynn	18.0		2.5	0.4	13.7	0.0	831.8
Wells		0.0	0.0	0.2	211.1		562.1
Withernsea		0.0					31.1
Grand total	19.3	636.0	11.2	20.9	742.1	34.8	6906.0

Annex 9: Hard constraints in future analysis

Wind: Non-technical model setup				
Exclusions (hard constraints)				
Input feature	Provider	Buffer (metres)	MMO layers used	MMO East plan area
The Crown Estate activities				
Active cable	The Crown Estate	500	Submarine cables	y
Petroleum industry pipelines	British Geological Society	500	Pipelines (line)	y
Aggregate dredging – production licence	The Crown Estate	n/a	Aggregate dredging production licences (GB)	y
Option extended – aggregates	The Crown Estate	n/a		?
Dredging option – aggregates	The Crown Estate	n/a		n
Standard option – aggregates	The Crown Estate	n/a		n
Application – dredging	The Crown Estate	n/a	Aggregate application areas (GB)	n
Current aquaculture leases	The Crown Estate	n/a	Aquaculture current leases (Scotland)	y
Pending aquaculture leases	The Crown Estate	n/a		n
Round 1 wind farm lease	The Crown Estate	n/a	Round 1 wind farms lease (GB)	y
Round 2 wind farm lease	The Crown Estate	n/a	Round 2 wind farms lease (GB)	y
Round 1-2 wind farm extension	The Crown Estate	n/a	Round 1-2 wind farm extensions (GB)	y
Scottish Wind Farm Exclusivity Award	The Crown Estate	n/a	N/A	n
Blyth Wind Farm Area	The Crown Estate	n/a	Blyth Wind Farm Area (TCE)	y
Wind farm demonstration sites	The Crown Estate	n/a	Wind farm demonstration sites (GB)	y
Round 1 Exclusion Zone	The Crown Estate	n/a	N/A	?
Live tidal leases	The Crown Estate	n/a	Tidal lease areas (The Crown Estate)	y
Live wave leases	The Crown Estate	n/a	Wave lease areas (The Crown Estate)	y
Gas storage leases	The Crown Estate	n/a	Gas storage areas (GB)	y
Existing activity				
International Maritime Organization (IMO) routing – excluding ABTAs	ANATEC	1852	IMO routing (polygon)	y
Munitions dumps	The Crown Estate	n/a	IMO routing (line)	y
Offshore helicopter platform safety zones	UK DEAL	0 - 5556 (0 - 3nm)	Munitions dumps	y
Offshore mine – The Boulby Extension	The Crown Estate	1000	Not used	y
			Boulby Potash Mine (Cleveland Potash)	y
Existing structures				
Protected wreck exclusion buffer	The Crown Estate	n/a	Protected wreck sites (and war graves), English Heritage	y
Designated wrecks – Wales	Cadw	500	N/A	n
UK offshore wells	UK DEAL	500	wells	y
UK deal safety zones	UK DEAL	n/a	safety_zone	y
UK deal subsurface	UK DEAL	500	surface_infrastructure	y
UK deal surface	UK DEAL	500	subsurface_infrastructure	y
Operational anemometers in UK Waters	The Crown Estate	500	N/A	n
Other exclusions				
Isle of Man 12 nautical mile area	SeaZone Solutions Limited	n/a	-	n
UK coastline (generalised to 100 metres)	SeaZone Solutions Limited	n/a		n

**Aggregates: Combined technical and non-technical model setup
Exclusions (hard constraints)**

Input feature	Provider	Buffer (metres)	MMO layers used	In the MMO East plan areas?
The Crown Estate activities				
Active cable	The Crown Estate	250	Submarine cables	y
Active pipelines	The Crown Estate	250	Pipelines (line)	y
Current aquaculture leases	The Crown Estate	n/a		n
Pending aquaculture leases	The Crown Estate	n/a		n
Round 1 wind farm lease	The Crown Estate	n/a	Round 1 wind farms lease (GB)	y
Round 2 wind farm lease	The Crown Estate	n/a	Round 2 wind farms lease (GB)	y
Round 1-2 wind farm extension	The Crown Estate	n/a	Round 1-2 wind farm extensions (GB)	y
Scottish Wind Farm Exclusivity Award	The Crown Estate	n/a		n
Blyth Wind Farm Area	The Crown Estate	n/a		n
Wind farm demonstration sites	The Crown Estate	n/a		n
Round 1 Exclusion Zone	The Crown Estate	n/a	N/A	?
Live tidal leases	The Crown Estate	n/a	Tidal lease areas (The Crown Estate)	y
Live wave leases	The Crown Estate	n/a	Wave lease areas (The Crown Estate)	y
Gas storage leases	The Crown Estate	n/a	Gas storage areas (GB)	y
Existing activity				
IMO routing – excluding ABTAs	ANATEC	n/a	IMO routing (polygon)	y
			IMO routing (line)	y
Munitions dumps	Royal Haskoning	n/a	Munitions dumps	y
Existing structures				
Protected wreck exclusion buffer	The Crown Estate	n/a	Protected wreck sites (and war graves)	y
UK offshore wells	UK DEAL	500	wells	y
UK deal safety zones	UK DEAL	n/a	safety_zone	y
UK deal subsurface	UK DEAL	500	surface_infrastructure	y
UK deal surface	UK DEAL	500	subsurface_infrastructure	y
Operational anemometers in UK waters	The Crown Estate	500	Not used	n
Other exclusions				
SeaZone Bathymetry Surface for UK Wat	SeaZone Solutions Limited	n/a		n
Isle of Man 12 nautical mile area	SeaZone Solutions Limited	n/a		n
UK coastline (generalised to 100 metres)	SeaZone Solutions Limited	n/a		n

Oil and gas Exclusions (hard constraints)				
Input feature	Provider	Buffer (metres)	MMO layers used	MMO East plan area
The Crown Estate activities				
Active cable	The Crown Estate	500	Submarine cables	y
Petroleum industry pipelines	British Geological Society	500	Pipelines (line)	y
Aggregate dredging – production licence	Royal Haskoning	n/a	Aggregate licensed areas	y
Current aquaculture leases	The Crown Estate	n/a		n
Round 1 wind farm lease	The Crown Estate	n/a	Round 1 wind farms lease (GB)	y
Round 2 wind farm lease	The Crown Estate	n/a	Round 2 wind farms lease (GB)	y
Round 1-2 wind farm extension	The Crown Estate	n/a	Round 1-2 wind farm extensions (GB)	y
Blyth Wind Farm Area	The Crown Estate	n/a		n
Wind farm demonstration sites	The Crown Estate	n/a		n
Live tidal leases	The Crown Estate	n/a	Tidal lease areas (The Crown Estate)	y
Live wave leases	The Crown Estate	n/a	Wave kease areas (The Crown Estate)	y
Gas storage leases	The Crown Estate	n/a	Gas storage areas (GB)	y
Existing activity				
IMO routing – excluding ABTAs	ANATEC		IMO routing (polygon)	y
			IMO routing (line)	y
Munitions dumps	Royal Haskoning		Munitions dumps	y
Offshore helicopter platform safety zones	UK DEAL		not used	y
Offshore mine – The Boulby Extension	Royal Haskoning		Boulby Potash Mine (Cleveland Potash)	n
Existing structures				
Protected wreck exclusion buffer	The Crown Estate	n/a	Protected wreck sites (and war graves)	y
UK offshore wells	UK DEAL	500	wells	y
UK deal safety zones	UK DEAL	n/a	safety_zone	y
UK deal subsurface	UK DEAL	500	subsurface_infrastructure	y
UK deal surface	UK DEAL	500	surface_infrastructure	y

Annex 10: Extent of Marine Legislation

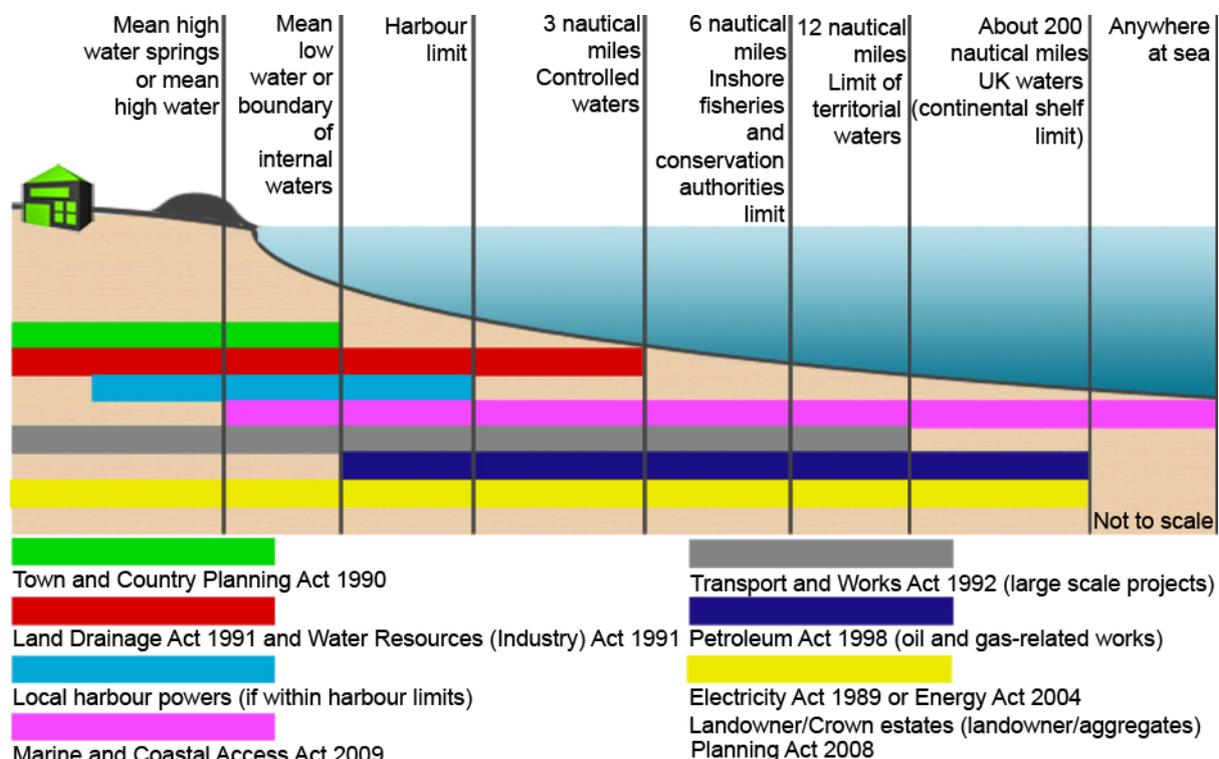
Geographical extent of principal marine works: England and Wales

There are many pieces of legislation that are relevant for carrying out marine works in England and Wales. The nature and location of these works will change the licences, consents or permissions required.

For more information on where the legislation is applicable, please see our diagram that shows the geographical extent of each of the major pieces of legislation.

The information contained in the diagram is also below, listed by legislation.

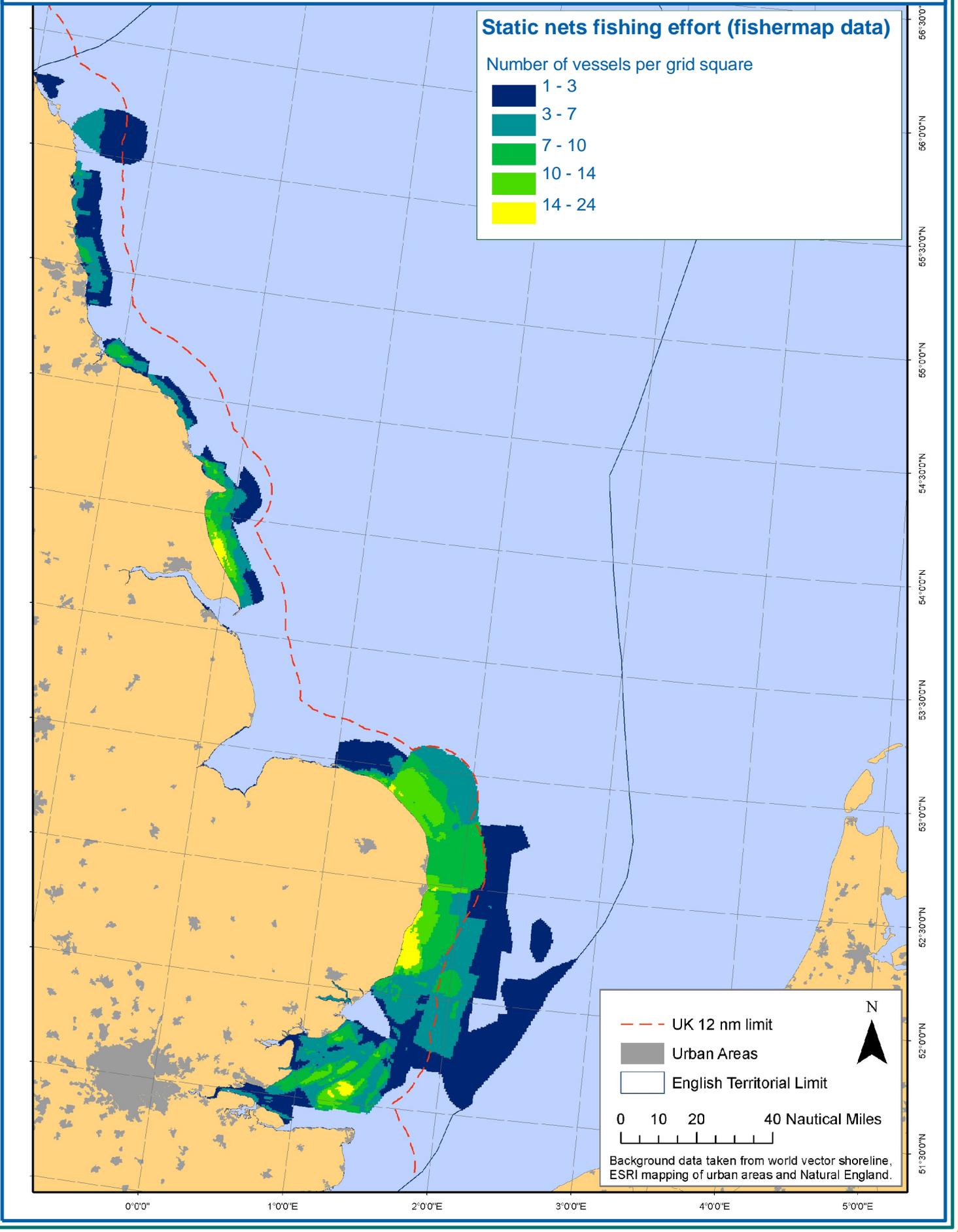
- Town and Country Planning Act 1990: on land up to mean low water or boundary of internal waters.
- Land Drainage Act 1991 and Water Resources (Industry) Act 1991: on land up to 3 nautical miles (controlled waters).
- Local harbour powers (if within harbour limits): on land up to harbour limit.
- Marine and Coastal Access Act 2009: from mean high water springs or mean high water to anywhere at sea.
- Transport and Works Act 1992: this is for large-scale projects and applies on land up to 12 nautical miles (limit of territorial waters).
- Petroleum Act 1998: from mean high water springs or mean high waters to 12 nautical miles (limit of territorial waters).
- Electricity Act 1989, Energy Act 2004, landowner/Crown estates and Planning Act 2008: on land up to 12 nautical miles (limit of territorial waters)



Annex 11a: Fisherman static nets fishing effort

Please note- These maps have only recently been received by the MMO and are to be subject to a full quality assessment by both Natural England and the MMO during spring 2012.

January 2012- This map has been produced using the ETRS89 Lambert Azimuthal Equal Area Coordinate Reference System



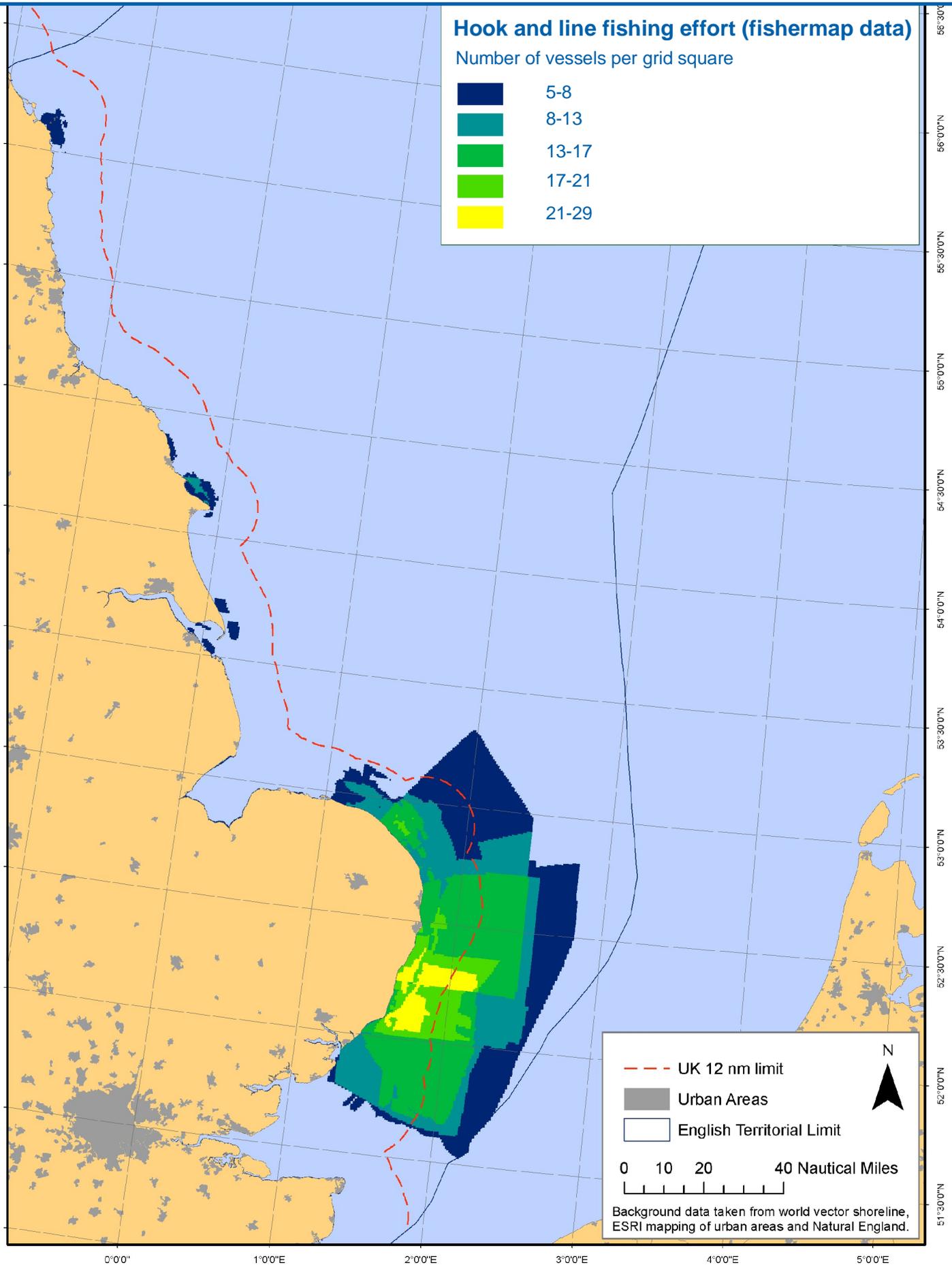
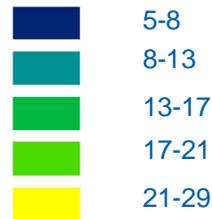
Annex 11b: Fisherman hook and line fishing effort

Please note- These maps have only recently been received by the MMO and are to be subject to a full quality assessment by both Natural England and the MMO during spring 2012.

January 2012- This map has been produced using the ETRS89 Lambert Azimuthal Equal Area Coordinate Reference System

Hook and line fishing effort (fisherman data)

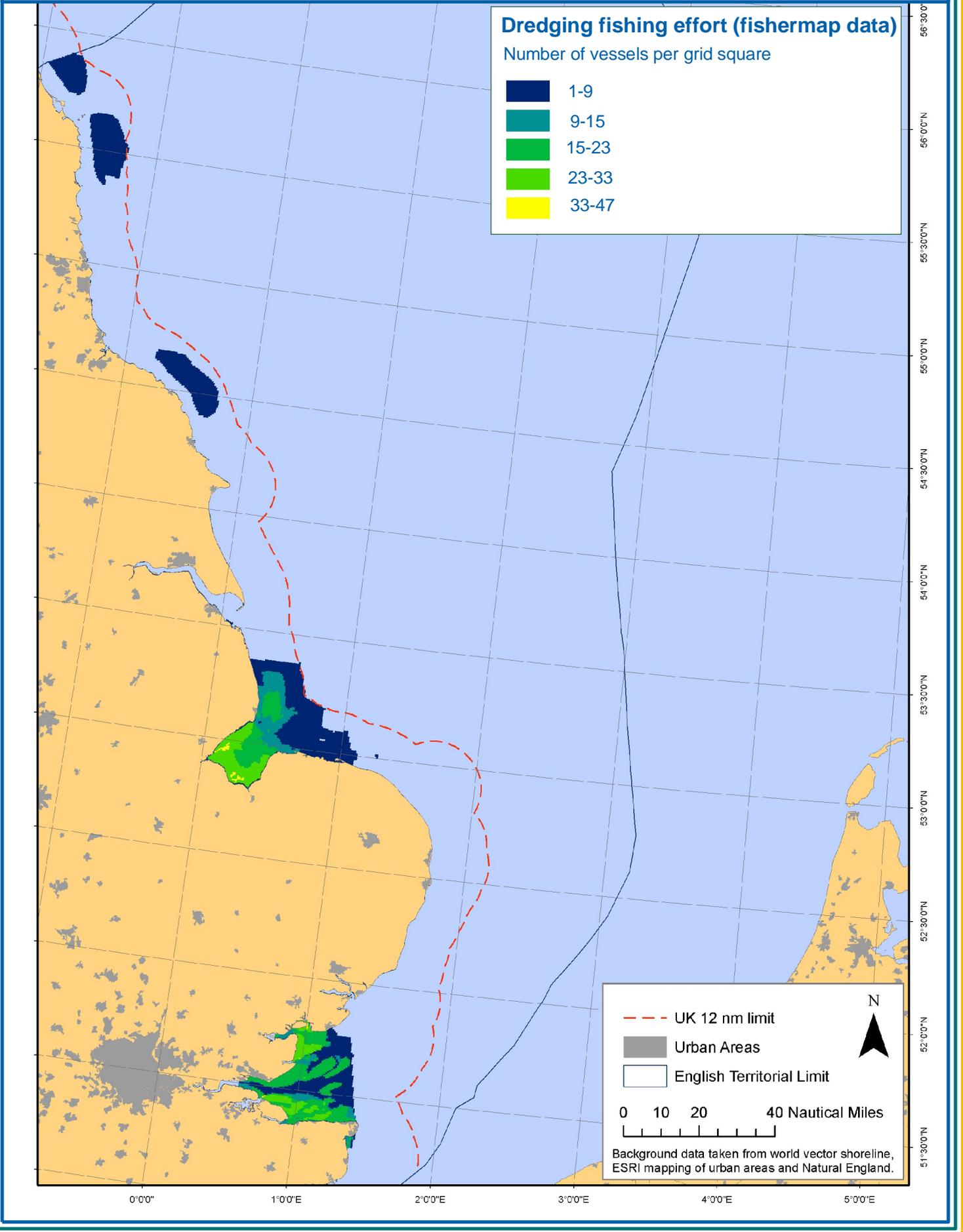
Number of vessels per grid square



Annex 11c: Fisherman dredging fishing effort

Please note- These maps have only recently been received by the MMO and are to be subject to a full quality assessment by both Natural England and the MMO during spring 2012.

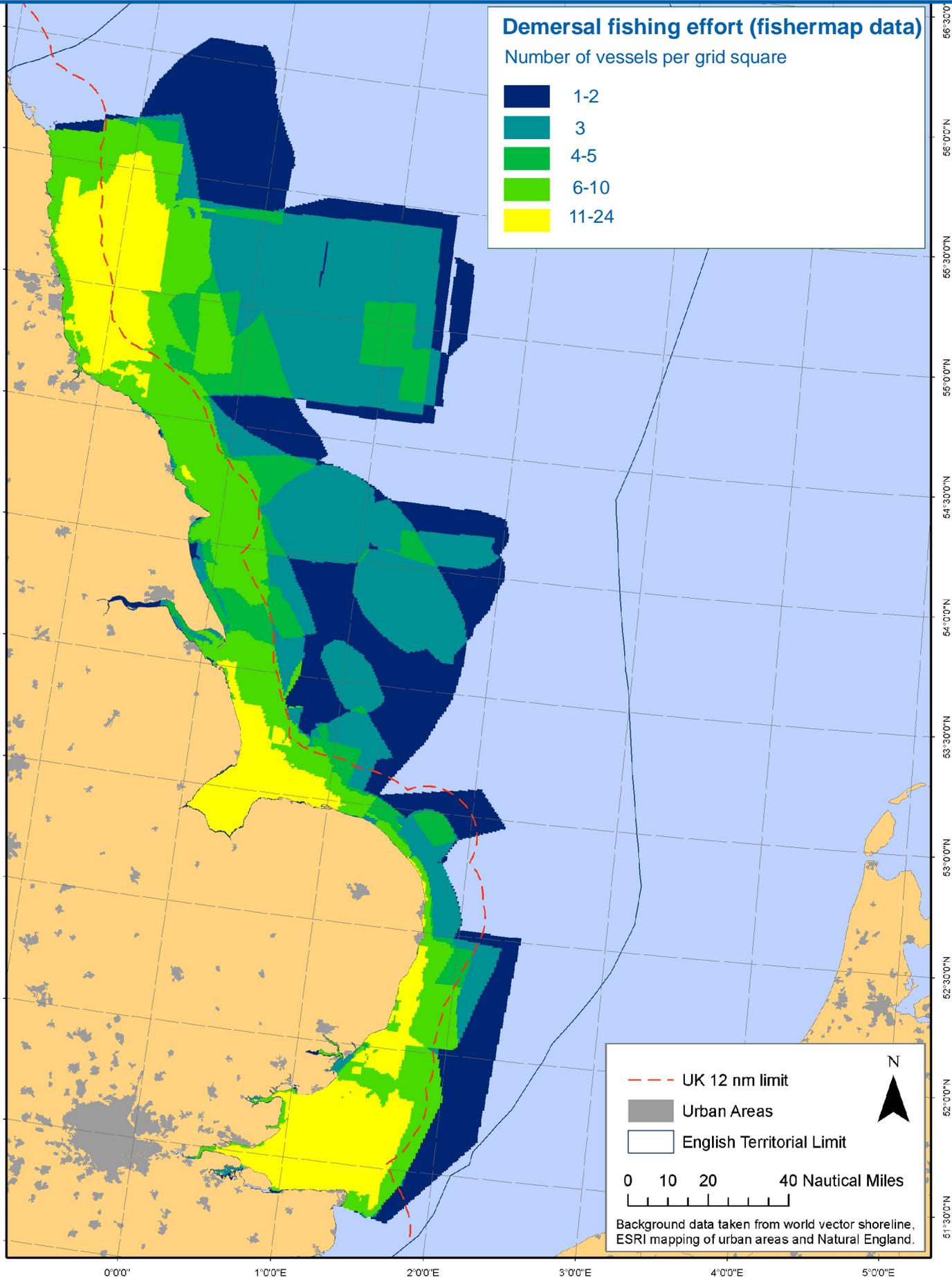
January 2012- This map has been produced using the ETRS89 Lambert Azimuthal Equal Area Coordinate Reference System



Annex 11d: Fisherman demersal fishing effort

Please note- These maps have only recently been received by the MMO and are to be subject to a full quality assessment by both Natural England and the MMO during spring 2012.

January 2012- This map has been produced using the ETRS89 Lambert Azimuthal Equal Area Coordinate Reference System



Annex 11e: Fisherman pots and traps fishing effort

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January 2012- This map has been produced using the ETRS89 Lambert Azimuthal Equal Area Coordinate Reference System

