

Marine Strategy Framework Directive consultation: UK Initial Assessment and Proposals for Good Environmental status

A joint response from Wildlife and Countryside
Link, Scottish Environment LINK, Wales
Environment Link and the Northern Ireland Marine
Task Force

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Introduction

- The Wildlife and Countryside Link Marine Working Group, the Scottish Environment LINK Marine Task Force, the Wales Environment Link Marine Working Group and the Northern Ireland Marine Task Force work together to achieve better protection for marine wildlife and effective management of all UK seas. Each is a coalition of environmental voluntary organisations, united by their common interest in the conservation and enjoyment of wildlife, the countryside and the marine environment. A list of the constituent members of each coalition is provided in Appendix 1 to this response.
- We welcome the opportunity to provide comments on the Marine Strategy Framework Directive (MSFD) consultation on the Initial Assessment and Proposals for Good Environmental Status (GES) and we are pleased that the UK Government, Northern Ireland Executive, Scottish Government and Welsh Assembly Government have issued this consultation jointly.

Summary of Comments

- We welcome the considerable amount of work and research that the Government, especially Defra and its agencies has undertaken, to complete the Initial Assessment and devise Characteristics, Targets and Indicators for GES. The UK Government has also played a key role in the EU and OSPAR in driving forward work and advising other Member States on determining GES.
- However, in general we are very disappointed with the lack of ambition shown by Government within this consultation. We do not believe that the UK will succeed in achieving GES with the targets that have currently been set. Some of the targets are very weak in comparison with the ambitious targets of other Member States.
- The targets for the Biodiversity Descriptors 1, 4 and 6 do not go beyond implementing the Habitats Directive for benthic habitats which we know is already failing to halt biodiversity loss or adverse affects to benthic habitats within sites, let alone habitats outside. The targets for Descriptor 3 Commercially exploited fish and shellfish are much weaker and at complete odds with the essential policy reform the UK is calling for as part of CFP reform. The target for D10 Litter is very weak proposing an overall reduction in the number of visible litter items, but without a quantifiable and ambitious percentage target, this may not amount to much. Finally, the preferred target for Descriptor 11 Noise is to establish a Noise Registry, which while welcome if more comprehensive, will do nothing to meet the Descriptor unless combined with clear pressure targets too. While we recognise that the aim of the MSFD is not to achieve a completely pristine marine environment, GES should not

be set at the status quo. Restoration of certain habitats and ecosystems is essential. The MSFD was developed in response to an agreed view that the marine environment has suffered damage and that human induced pressures are increasing. Consequently the GES descriptors, indicators and targets must be set at ambitious levels, and not just at levels that are easily achievable within the given timeframe.

- We feel that the lack of ambition in the targets will be reflected in a lack of appropriate measures being implemented, creating a self fulfilling prophecy of very little, if any, progress being made towards ensuring GES. Government has already stated on a number of occasions at MSFD workshops that it plans to do little more than it is presently doing under existing measures and as such we are very concerned that GES will not be achieved. While we support many of the existing measures, especially Marine Protected Areas (MPAs), these sites only protect a small proportion of our seas, with scallop dredging and damaging developments still consented within them. Marine Planning meanwhile is still under development in England especially with regard to taking the ecosystem approach and in making any significant contribution to achieving GES. It is yet to be seen what contribution the Marine Planning System will make in Scotland. The proposals should not be a simple compilation of all the Targets and measures that exist under other legislation. The MSFD poses an opportunity, born by a real necessity, to really extend environmental protection to the whole sea area (and not just to protected areas or species) and to apply measures to all human activities having an impact on the marine environment. This is an opportunity that our generation and one that today's government should not miss.
- We understand that Government does not want to commit to future costly measures and monitoring, but to have no budget, beyond existing budgets, to implement MSFD is foolhardy, given that taking this bare minimum approach will not achieve GES and could lead to infraction procedures. It may also be in Government's interests to submit more ambitious Characteristics and Targets to the EU in the Autumn as we understand that if they are not considered to meet the requirements of the Directive the EU could reject the UK proposals and insist on the UK adopting more stringent Targets in line with the specialist working groups.
- We are pleased that climate change has been identified as a key threat to healthy seas. However, we are concerned that in places the document seems to place climate change outside the category of "anthropogenic drivers". We urge that there is clarity in the document that damage to the marine environment as a result of climate change is a result of an anthropogenic driver and does need to be remedied.
- Finally, we would like to remind Government that our UK seas are in trouble and need action. Only 11 of the 58 main commercial fish stocks found around the British Isles are known to be in a healthy state¹. 28 species of mammals and fish are considered to be threatened in UK seas alone². The majority of marine habitats ranging from predominant sediment habitats to species-rich biogenic reefs to the deep sea, have been fundamentally altered by destructive fishing practices and other human activities and need action and recovery³.

¹ ICES (2011). International Council for the Exploration of the Sea stock advice. Unpublished data

² IUCN (2011). International Union for Conservation of Nature Red List of Threatened Species. Version 2011.2. www.iucnredlist.org. [Cited 24 January 2012]

³ Peres, C.A. (2010). Overexploitation. In: N.S. Sodhi, P.R. Ehrlich, ed. 2010. *Conservation biology for all*. Oxford: Oxford University Press. Ch.2.

Charting Progress 2, Northern Ireland's State of our Seas and Scotland's Marine Atlas

- Published in 2010, the Charting Progress 2 Report (CP2) is the result of a structured and co-ordinated approach to the second assessment of the UK seas and forms the foundation of the initial assessment required by the MSFD. In light of the importance of CP2 for future decision-making on the management of UK seas, we are concerned that the current status of UK seas is accurately recorded, wherever that information is summarised. In a number of specific places, we believe that the summarised information on CP2 does not accurately reflect the information in the CP2 report or the feeder reports. We have produced four briefings to compare the findings and messages of the Healthy and Biologically Diverse Seas Feeder Report, with those used in the CP2 Report, the Overview and Government commentary on the following four sections:
 - Cetaceans
 - Deepwater fish, sharks, rays, skates and diadromous fish
 - Marine benthic habitats
 - Waterbirds and seabirds⁴

Scotland's Marine Atlas⁵ draws upon the data used for Charting Progress 2 and its feeder reports, adding more detail where necessary and appropriate to map the state of Scotland's seas. The Atlas shows a worrying trend identified across many habitats and species, for example, the Atlas states that shelf and sub-tidal habitats are facing many threats and deep sea habitats are all in decline. These habitats constitute the vast majority of Scotland's seabed. The findings of this Atlas, Northern Ireland's State of our Seas and CP2, must be better integrated throughout this current MSFD consultation to emphasise the urgent need to address these issues and reverse the declining trends.

Biodiversity (Descriptors 1, 4 and 6)

- We agree with the decision to consider biodiversity, food webs and seafloor integrity (Descriptors 1, 4 and 6) under the same targets and indicators as there is significant crossover between them.

Existing directives and legislation

- Throughout the consultation there are strong links to the Habitats and Birds Directives and the Water Framework Directive (WFD). However, as GES covers the whole marine environment its scope should be broader than these Directives. The Habitats Directive is now 20 years old and in our view has not yet delivered adequate conservation for the priority marine habitats and species for which it was designed.

⁴ http://www.wcl.org.uk/docs/Link_CP2_Statement_31Aug11.pdf

http://www.wcl.org.uk/docs/2011/Link_CP2Briefing_deepwaterfishetc_June2011.pdf

http://www.wcl.org.uk/docs/2011/Link_CP2Briefing_cetaceans_June2011.pdf

http://www.wcl.org.uk/docs/2011/Link_CP2Briefing_waterbirds&seabirds_June2011.pdf

http://www.wcl.org.uk/docs/2011/Link_CP2Briefing_marinebenthichabitats_June2011.pdf

⁵ <http://www.scotland.gov.uk/Publications/2011/03/16182005/0>

While it remains a valuable and integral tool in the management toolbox available for achieving GES it is not going to be sufficient on its own. Given the limited coverage of habitats and species under existing designations, we believe that even with additional national sites progress on this will be insufficient. The development of an ecologically coherent and representative network of MPAs (Natura 2000 and national sites such as Marine Conservation Zones (MCZs) in England and Wales and MPAs in Scotland) throughout UK waters will be a very important contribution to achieving GES. However, the network must sit within a framework of marine spatial planning and management in order for GES to be achieved.

Research Requirements

- Throughout the consultation document there is reference to the need for more research. While we agree there is a requirement for further work in many places the consultation should admit that our levels of knowledge will not increase significantly in the next five years particularly in the current financial climate. It must be agreed that we have to proceed on the basis of best available science, upholding the precautionary approach when in doubt. This approach is in keeping with the EU Working Group GES's criteria which agreed the GES targets and indicators should "pay regard to the Precautionary Principle" and also with the UK guiding principles for sustainable development.

The state of our seas

- We are concerned that the UK Government is considering achieving GES by maintaining the current status of the marine environment. The National Ecosystem Assessment⁶ clearly identifies increasing activity in several economic sectors in the marine environment to be putting extra pressure on all sea shelf coastal and estuarine habitats. CP2 Northern Ireland's State of our Seas and Scotland's Marine Atlas⁷ clearly show that the UK's marine environment is seriously degraded in many places: intertidal sediment and rock is declining in all UK regional seas, many or some problems exist for all UK shelf and shallow subtidal sediments and deepwater habitats are declining in all those regional seas where they are present. We believe that the UK Government and Devolved Administrations must adopt a significantly more ambitious approach to achieving GES and should be looking to aid the *recovery* of the marine environment and the habitats and species it supports rather than simply maintaining the status quo.

Baselines

- We are concerned about how the baselines, which GES will be measured against, are being set and we are disappointed that baselines are not being set at all for a number of descriptors. There is a tendency throughout the consultation to promise to set baselines once better knowledge has been gained. We believe this is a misguided approach considering the financial situation Defra and devolved authorities face. We strongly believe the baselines should be set now based on the best available information.
- There is no consistent approach to setting baselines for the biodiversity elements of the MSFD due to perceived varying levels of evidence. Baselines need to be set which are ambitious and where possible (including with the help of expert judgement) reflect a state that as a minimum was considered least impacted by human activities.

⁶ <http://uknea.unep-wcmc.org/Resources/tabid/82/Default.aspx>

⁷ <http://www.scotland.gov.uk/Publications/2011/03/16182005/0>

The current state of the environment is not an adequate baseline, neither are the dates of inception for conservation legislation, as these both represent starting from a degraded base in the first place.

- A lack of data means there is a risk of setting inaccurate baselines. For example, the consultation may be underestimating the historical exploitation of fish. Defra has made it clear that the baselines are not set in stone and will be reviewed on a regular basis. It is essential that any changes made to the baselines on review are made on the basis of access to improved information, therefore enhancing their accuracy, rather than as a response to changing environmental conditions. Otherwise there is a risk of creating sliding baselines.
- Weak baselines will lead to weak targets and weak measures. Targets should be set to achieve the ambitious baseline set for each descriptor. At the very least, this should improve the current state of the descriptor, rather than simply prevent further deterioration.
- We are very concerned that the document suggests that baselines have been deviated from in order to take into account sustainable use of the environment. If the baseline based on past time is a long way from what exists at present then the current use cannot be described as sustainable. Genuinely sustainable use must have the least impact on a species or habitat, otherwise it will be damaging rather than sustainable.
- We are concerned that the UK Government and the Devolved Administrations have misinterpreted the Commission's meaning of GES and have taken an approach which will allow development and fishing to continue at an unsustainable level. The UK and Devolved Administrations want to protect marine waters while at the same time provide for sustainable use of marine resources. We believe it is critical to recognise that a healthy marine environment supports the sustainable use of the marine environment. This is in line with the aims (and spirit) of the Directive itself. Moreover, sustainable development should be defined and understood in terms of the five principles as set out in the UK Sustainable Development Strategy and Scottish Planning Policy (SPP). As set out in the Strategy, the overarching goals of sustainable development are living within environmental limits and a strong, healthy and just society. The vital steps for achieving these goals are a sustainable economy, promotion of good governance and using sound science responsibly.

Table 12 – Proposed characteristics for Descriptors 1, 4 and 6

- **Proposed characteristics for D1:** We support the first characteristic as essential to achieve GES. Ecosystems and components of the ecosystem need to recover to achieve GES particularly seabed habitats that have been trawled.

We support the second characteristic “the abundance, distribution and condition of species and habitats in UK waters reflects, or is consistent with, prevailing environmental conditions” but have concerns with the last part of the sentence “taking into account sustainable use of the marine environment”. While we wholeheartedly support sustainable use of the marine environment we are concerned that as currently drafted the Government's interpretation of sustainability is often different to ours and that this statement may constitute a business as usual scenario, when we know that the present level of activities are having a detrimental impact on marine biodiversity. Sustainability should be understood in terms of the five principles

set out in the UK Sustainability Development Strategy and SPP (see comments above).

We are concerned that the third characteristic suggests that habitats and species can be further reduced and still achieve GES, but we believe they need to increase to achieve GES. We do not think this is overly ambitious, as stated, some measures are in place to enable this such as the Natura 2000 network and CFP reform. We would therefore request this characteristic is re-worded to state: "The extent and natural range of habitats and species is maintained and *increased and* not (being) significantly reduced (nor likely to be so in the foreseeable future) and the specific structures and functions necessary for their long-term maintenance exist and are likely to exist for the foreseeable future.

We support the fourth characteristic where we understand 'conserved' to encompass both conservation and recovery as enshrined in the Marine and Coastal Access Act 2009 and s.68 (11) of the Marine (Scotland) Act 2010.

We support the fifth characteristic but believe it should include the following additional wording: Impacts of human activities do not lead to further degradation of marine habitats or adversely affect species at the population or key functional group level and opportunities are sought to deliver habitat and population recovery where appropriate.

- **Proposed characteristics for D4:** We support these two characteristics. However, we believe that the German consultation document goes further for this descriptor, with the following aims:

The structure and function of food webs and marine habitats are not altered as a result of bycatch, discards or bottom dragged fishing gear, the functional groups of biological features (Annex III, Table 1) or their food resources are not jeopardised. Indicators for this are bycatch and discard rates, as well as population trends for target and non-target species, seabirds, marine mammals and benthic species, and the stage of development of selective fishing practices

- **Proposed characteristics for D6:** We support the first characteristic but feel it is rather too focussed on ecological services such as climate regulation rather than biodiversity. We therefore have proposed a third characteristic.

We support the second characteristic but believe it should say "... are protected to ensure their extent, *condition, biodiversity and* functioning is maintained and, where appropriate, *recovered*".

We believe a third characteristic is needed to cover predominant habitat types as follows "Significant areas of predominant rock and sediment seafloor habitats are protected to ensure their extent, condition, biodiversity and functioning is maintained or recovered from the effects of abrasion and contact with mobile devices."

GES targets – Species

- Paragraph 381 suggests that existing targets have been used wherever possible from the Habitats Directive and OSPAR. This suggests the UK Government has little or no ambition to deliver GES beyond what it has already agreed to implement through existing directives. We believe that the MSFD is about achieving GES throughout the whole marine environment. The Habitats Directive and Water

Framework Directive (WFD) are important but they only concentrate on a limited number of species and features and only focus on part of the marine environment. For example, in the case of the WFD in England, 1 mile out to sea. We welcome work in Scotland exploring how to deliver the 'wider seas measures' pillar of the marine nature conservation strategy, including exploration of how such measures can contribute to protecting Priority Marine Features, including species, in Scottish waters. Whilst awaiting the opportunity to comment in detail on the Scottish proposals, we would welcome a similar approach being committed to *in principle* throughout UK waters.

- We are pleased that the targets for birds are proposed on a baseline set in the past at a time when human pressures were thought to be minimal. We therefore are surprised and disappointed that a similar approach has not also been taken for cetaceans, fish, rocky reefs and sediments. It is important that a consistent approach is taken for all species and habitats.
- We are also disappointed that a suitably precautionary approach has not been taken to cetacean conservation. We would expect every effort to be made to reduce removals to zero, in line with commitments made under the auspices of ASCOBANS. If targets based on removal rates are to be set they must be suitably highly precautionary in recognition of both the small size of some populations (for example inshore populations of bottlenose dolphins and the critically endangered Baltic harbour porpoise).
- The consultation suggests that the baseline for fish is based on the mean value for each species since data has been collected. This suggests that only commercially important species have been considered. We would like all species to be considered. We also believe that it is misleading to use the mean value. Fish stocks have been in decline since at least the 1940s. Baselines founded on data that has been collected after that period will therefore be based on data from an over fished environment.

Table 13 – Proposed characteristics, targets and indicators for marine mammals

- We are concerned that no targets have been set for cetaceans except for bottlenose dolphins throughout this section. In line with what was agreed at ASCOBANS we would expect efforts to continue to reduce incidental takes to zero. ASCOBANS has agreed an interim objective “to restore populations to, or maintain them at, 80% or more of carrying capacity” (ASCOBANS, 1997). We believe GES for cetaceans would not be achieved if human impacts are at such levels that there is less than a 95% probability that a population would be restored or maintained at 80% or more of its carrying capacity.
- Population condition: Maximum limits need to be set at a population level for mortalities caused by human impacts. These limits should be set using procedures that have been demonstrated to meet conservation objectives while allowing for uncertainty. National targets for transboundary populations also need to ensure that the combined mortality for the whole population is within these limits. A component of the SCANSII project was to develop methods to determine appropriate limits to bycatch of small cetaceans and this work has indicated that the commonly used limit of 1.7% of the best population estimate and even a more precautionary 1% are generally too high to meet the ASCOBANS conservation objective described above.

- Bottlenose dolphin populations, especially in the South West of England, have declined significantly in the last 10 years. Although the cause of this decline is not fully understood, there is sufficient evidence of declines to set targets limiting activities known to have negative impacts including non-lethal effects.
- The marine mammal targets are focused on maintaining the current status quo, i.e. existing distributions, population sizes, population condition, productivity, abundance / distributions. There is no recognition in the targets that, for some species, recovery is required. Paragraph 202 of the consultation report, along with Charting Progress 2 and the Feeder Report, describes cetacean populations in the Eastern Channel as in a poor condition and only in a moderate condition in the Western Channel and Celtic Sea, the Irish Sea and the Minches and Western Scotland. Allowing cetacean populations to recover to and maintain their full historical abundance will require targets to limit disturbance and protect habitat quality in addition to limiting direct mortalities. Furthermore, from Charting Progress 2 and the Feeder Report it can be seen that only five of the twenty-eight species of cetacean identified from UK waters are assessed as having a favourable conservation status, although for the rest the status is either unknown or impossible to assess. However, the European Environment Agency's NW European waters assessment for the five most abundant species in the UK finds only the bottlenose dolphin to be in a favourable status, with harbour porpoise and minke whale assessed as unfavourable – inadequate and white-beaked dolphin and fin whales assessed as unknown. We believe that, for Good Environmental Status to be achieved, all cetacean populations in each region should be assessed as being in a good condition.

Table 14 – Proposed characteristics, targets and indicators for birds

- Charting Progress 2 and the Feeder Report show that currently 62.5% of waterbird species, for which data is presented, have decreased in the decade from the late 1990s, while similar long term declines are evident from the data presented for a number of seabird populations. For example, herring gull and roseate tern numbers have declined by more than 50% since 1969 and declines have also been seen in a range of other bird species (see previous paragraph) and falls in breeding success are also being recorded, for example common guillemot (see paragraph 226). Paragraph 26 of the consultation document reports that in 2004, 2005 and 2007, the mean breeding success of a sample of 21 seabird species was at its lowest since monitoring began in the mid-1980s.
- We welcome recognition therefore that additional targets are needed to meet GES targets for seabirds and waterbirds, as targets under the Birds Directive alone will be insufficient to meet GES for all aspects of bird distribution, abundance and condition. We do not, however, see any further resources identified to monitor these targets and allocated to the MSFD, aside from some extra monitoring of invasive mammals. Reliance on already monitored species should not limit the species considered or reduce incentives for additional monitoring, especially given that several functional groups are not being considered until 2018.
- We support the setting of baselines at a past state considered to have been least impacted by human activities, though this does not seem to be defined for each species in the individual targets. The setting of these baselines will be crucial, as the targets represent deviations from this baseline for each species. An 80% target (for birds that lay one egg) is only acceptable, for example, if this represents 80% of a baseline at a period of significantly higher seabird abundance than current conditions.

- We support more ambitious options being presented, and that they should apply to as many species as possible. Option 1 would accept that GES had been achieved despite one in four species of marine bird not being considered by targets. However, Option 2 would only accept that GES was achieved if one in ten species of marine bird do not fulfill the GES criteria. Given the abundance targets already include a percentage decline, the wider targets must cover as many species as possible.
- We welcome targets for no non-native mammals on seabird colonies but this is not explicitly identified in the targets in the main consultation. Since the introduction of non-indigenous species to bird nesting sites has been a significant problem, and has previously led to complete eradications of seabirds from certain islands in the past, there will presumably be some overlap between these Descriptors with Descriptor 2.
- We believe that, not only is Option 2 a more precautionary approach and will provide a higher level of confidence that GES will be achieved, it is also necessary to provide a better chance of restoration of key bird species which have experienced declines in recent years including eider, shelduck, tufted duck, ringed plover, redshank, curlew, red-legged merganser, mallard, great-crested grebe, and those that have experienced long-term declines e.g. dunlin, oystercatcher, bartailed godwit, pochard, goldeneye, Arctic skua, lesser black-backed gull, black-legged kittiwake, roseate tern, herring gull, European shag, sandwich tern, northern fulmar, and great black-backed gull.
- Furthermore, it is not clear which species will be used to measure progress against the target, nor why only black legged kittiwake have been singled out for targets relating to population condition and productivity of key species. The MSFD should act as a stimulus to further knowledge on already known relationships between species populations and the wider environment.
- It is disappointing that indicators for seabirds at sea and non-breeding waterbirds will only be added in 2018, particularly when GES is due to be achieved by 2020. The intervening period should be used to develop indicators and targets for these as soon as possible, so that they can if possible be added in advance of 2018.

Table 15 – Proposed characteristics, targets and indicators for fish

- We are not entirely clear how this section relates to Descriptor 3 and whether this section covers all fish or just fish that are not commercially important.
- Generally this section appears vague and quite hard to interpret.
- The targets relating to the size of fish needs to be explained. These figures will only relate to certain fish species and, for example, would not be appropriate when considering smaller species of fish such as gobies. Likewise common skate and other elasmobranchs can grow in considerable excess of 50cm. Do these figures just relate to gadoids?
- The Initial Assessment Cover Paper recognises that populations of several fish species are already severely depleted (paragraph 192), yet the proposed targets for fish species distribution and population size are not “smart”. There is no indication of which species of fish will be included, yet the targets will be set for individual species. What will be considered to be a “statistically significant” proportion of the species monitored? How will climate change impacts be taken into consideration –

particularly as warming seas are already resulting in changes in the geographic distribution of some fish species.

- The proposed ecosystem structure target does not specify which fish species it will be applied to, yet it is specific in terms of the lengths of fish to be reached to achieve GES i.e. 40cm in the Greater North Sea and 50cm for fish in the Celtic Seas. These lengths have to be species specific and presumably relate to commercial fish species. Also, it is not clear why more than 30% of fish in the Greater North Sea or 40% of fish in the Celtic Seas, that is less than half the population, exceeding a specified length can be considered to be GES?
- It is not clear how the fourth proposed target for fish (Proportion of selected species at the top of food webs) differs from the third target for ecosystem structure. The third target is simply a little sharper in that it specifies a proportion of the fish which have to exceed a specific length in two specified regions.
- The sharp declines in shark, ray, skate, eel and salmon populations, referred to in Charting Progress 2, the feeder report and in the Initial Assessment, should be addressed through a GES target. We also recommend following the Belgian targets for fish species, which include that 1) the total number of fish species is increasing and 2) that there is a positive trend in the population of spotted rays.¹
- We would like to see some Targets that would make a real difference to fish biodiversity and food webs such as real time closures, protection of spawning and nursery grounds at key locations and key times in order to protect stocks. Use of square mesh panels, on board cameras and other selective gears to ensure limited by-catch of species.

GES targets – Habitats

- We welcome the consultation's recognition of the importance of plankton, the identification of the need for targets which have not been defined elsewhere to be developed for this "habitat" and proposal to extend surface plankton monitoring to new areas. However we do not think that the statement "plankton as a whole are considered healthy and subject to few direct anthropogenic pressures" is inappropriate given the decline in zooplankton of more than 70% since the 1960s and the scale of the threat of anthropogenic climate change. The proposed targets are described as being designed to identify changes in the plankton by human intervention. While we support this, we also believe this section should acknowledge the importance of fronts for plankton and associated species. Persistent or occasional hydrographic features, such as fronts, are widely recognised as supporting enhanced biological activity. Marine Scotland have recognised the wider functional role of fronts for the health and biodiversity of Scotland's seas.
- In regard to paragraph 396, we accept the lack of knowledge and understanding about broad scale habitats such as sediments. However, we do not agree that specific targets cannot be set. We would refer you to Natural England and JNCC's Ecological Network Guidance (ENG) which sets targets for habitats of conservation importance (FOCI) and broad-scale habitats to be protected within MCZs in England and Welsh offshore waters.
- In paragraph 400 it is suggested that national legislation is likely to play a key role in achieving GES for sediment as the Habitats Directive does not cover this habitat. If

the key target is to protect a proportion of our sediment in UK waters from damaging operations, then we would suggest that some form of spatial protection is required as described in the ENG. However, we are unsure if any of the recommended MCZs for this broad habitat type in English waters will ever be designated because of the new levels of evidence required. In addition, it is not clear yet if, and to what extent, the approaches being taken in Scotland, Wales and possibly Northern Ireland would provide sites that cover broad sediments. We therefore question how any targets for sediments are going to be achieved with apparently differing approaches to implementing current legislation.

- Finally, this section covers both sediment and rocky habitats. Clarification is needed that GES applies to the geological or biodiversity features associated with these habitats.
- The significant lack of evidence and understanding on both the current and the desired state and ecologically meaningful GES target thresholds for sediment and pelagic habitats (paragraph 394) is a serious concern, particularly in light of the significant losses and damage to sediment habitats. The suggestion that further work be carried out between now and the next cycle of the Directive in 2018 (i.e. 6 years) with the aim of setting robust, quantitative targets for sediment habitats is too long if GES is to be achieved by 2020 (i.e. 8 years). It is imperative that major efforts are made to fill this gap as rapidly as possible.
- We are concerned that the intention is to simply adopt the measures taken under the Habitats Directive as sufficient to achieve the proposed GES targets for rock and biogenic reef habitats. As stated above, while the Habitats Directive will have an important role in achieving GES, it will not be possible to reach GES based on the Habitats Directive alone. Not all rock and biogenic reef habitats are protected through the designation of marine SACs under the Habitats Directive and further measures will be necessary to ensure these habitats are not adversely impacted. In addition, there are a number of examples of damage to important habitats arising, despite the habitat being designated as a marine SAC under the Habitats Directive.
- With respect to the proposed targets for rock and reef habitats, it will be important to ensure that any increases in habitat distribution and habitat extent are due to naturally occurring processes and not solely due to creation of artificial habitat. It will be important to ensure that these targets are not used as a justification for the creation of artificial substrates to encourage development of rocky or reef habitats.
- The most important target for rock and reef habitats is likely to be the target focusing on habitat condition. Charting Progress 2 and the Feeder Report recognise that subtidal rock areas are generally less impacted than other habitats, but some areas have been permanently damaged or removed and that extensive areas of biogenic reefs may have been damaged or destroyed and even lost permanently. We are concerned that a target which focuses purely on ensuring that any area of the habitat below GES is very limited (5% of the baseline value) and where the baseline is based on the area protected by the Habitats Directive is too limited to achieve GES.
- Charting Progress 2's assessment of broad-scale habitats concludes that human pressures have adversely affected moderate to large areas of intertidal sediments, particularly mudflats and saltmarshes in most regions of the UK, while large areas of both shallow subtidal and shelf subtidal sediments, as well as large areas of some deep-sea habitats, have been impacted by mobile fishing gear. With this in mind, we

believe that it is important that sediment habitat targets are ambitious. The emphasis of the targets should be on restoring the distribution, extent and condition of sediment habitats. Linking the baseline value to the favourable reference range for Habitats Directive habitats is also a concern, since these habitats will be far more extensive than the area protected by the Habitats Directive. Option 2 is far preferable, albeit more challenging than Option 1, although it still accepts that GES can be achieved provided no more than 15% is lost or below GES.

Table 16 – Proposed characteristics, targets and indicators for pelagic habitats

- As with all the other tables, this is extremely broad, with no quantitative targets. We are concerned that, even with all the research and feeder reports for Charting Progress 2, there are no quantifiable targets (and no clear baseline from which we are working from). This document – and particularly this table - is hard to test against unless there are some indicators that we can monitor against and determine trends e.g. Calanus copepod research that came out of SAHFOS at the MBA ten years ago described a significant northerly shift of British Calanus species (probably climate change related), that has implications for successful recruitment and feeding of juvenile cod and sandeels (Beaugrand et al 2002).
- We would like this table to include targets for fronts.
- We would suggest that pelagic fish and other species are included in this section including basking sharks, sunfish and turtles.

Table 17 – Proposed targets and indicators for rock and biogenic reefs habitats

- We support the distribution and range targets that reefs should be stable or increasing. We think the latter will be necessary to achieve GES. However, we are concerned that this table suggests that the baseline set for these targets is that reefs and biogenic reefs should not be smaller than favourable reference range set by the Habitats Directive. We are concerned that this proposes doing no more to protect reefs that are designated under the Habitats Directive. Even those areas designated are not fully protected, but damaging fishing and other activities are still consented in most if not all sites. While JNCC's reports against favourable reference range (which occur every 6 years) are meant to consider all reefs not just those designated, in the last reporting round in 2006 they concluded the range was unknown.

Table 18 – Proposed targets and indicators for sediment habitats

- The consultation is very weak on targets for sediment habitats. The first options suggest that a lack of understanding means that quantitative targets cannot be set. We believe this is not an acceptable approach. We therefore prefer and call for Option 2 for Habitat Distribution, Extent and Condition. For Habitat Condition we believe you should have Option 1 as well as Option 2, as we believe a pressure target is also essential for sediment to ensure activities causing the damage are managed.
- For example, of quantitative targets for sediment, the Ecological Network Guidance⁸ for the England and Welsh offshore MCZ process provided a positive approach to protecting broad habitat types. In it, it says that at least 2 separate examples of each

⁸ http://www.naturalengland.org.uk/Images/100608_ENG_v10_tcm6-17607.pdf

of 23 broad-scale habitats, and 3-5 examples of each of 22 habitats of conservation importance and 29 low or limited mobility species of conservation importance should be protected, within each Marine Conservation Zone project area where their distribution allows. We await clarification on how MPA network coherence will be determined in Scotland and Northern Ireland in the absence of such a target-based approach.

Non-indigenous species (Descriptor 2)

Table 19 – Proposed GES characteristics, targets and indicators for non-indigenous species

- The proposed targets and indicators look realistic and reasonable considering non natives, once established can be uncontrollable except on a very localized scale, some remain in developed ports, harbours and marinas and may not spread out to sea others can spread uncontrollably.
- A ranking of the impact of the different non-native species (on existing native species) is needed – including any new species that may arrive and pose a threat. A better understanding of dispersal mechanisms is also needed to enable an assessment of how serious an occurrence is in terms of potential for spread. Also perhaps an appropriate guide to what is what is needed (revise and update/replace the Clare Eno volume).

Commercially exploited fish and shellfish (Descriptor 3)

Summary

- The characteristics, targets and indicators for Descriptor 3 presented by the UK government show a distinct lack of ambition and fail to adequately reflect the proposed targets for the reform of the Common Fisheries Policy (CFP) or the UK's commitments to international agreements. £2.7 billion or the equivalent of approximately 100,000 jobs⁹, are thought to be lost at sea as a result of poor management of our ocean resources and the environment that sustains them. This is not simply environmentally irresponsible but has dramatic social and economic impacts as well. Seeking to achieve B_{msy} by 2015 is the only way to ensure that our fisheries will recover sufficiently to ensure that we meet UK, EU and international commitments to restore our marine environment and to ensure the long-term sustainable future of our fishing industry.
- In addition, we are concerned that a lack of data will result in inappropriate indicator species being used as proxies for the state of the fisheries in the EU; this is an unacceptable assumption and focus should remain on gaining the knowledge to make informed assessments for all stocks. A lack of ambition is simply not good enough - by presenting ineffectual proxies and targets such as F_{pa} the UK shows less ambition than the majority of other Member States and this undermines the reform of the Common Fisheries Policy, which is assumed and relied upon by this consultation to contribute to delivering the aims of the MSFD in the first place.

⁹ Jobs Lost At Sea – nef (new economics foundation) report 10th February 2012

Response to Descriptor 3

- Before responding to Descriptor 3 directly it is important to respond to point **388** within “Implications of the proposed targets – Species” from Descriptors 1, 4 and 6. This point states that: *Fisheries impacts remain a potential pressure, both through by-catch (of birds, fish and mammals) and through competition for prey species. The targets proposed under Descriptor 3 for achieving Maximum Sustainable Yield (MSY) in commercial fish stocks will support the achievement of these targets. However, they could imply **additional costs** of moving toward MSY **more quickly than necessary simply to protect fish species.***

The preoccupation with potential costs to the industry is not balanced with any costing of the conservation and environmental benefits. The faster stocks are moved towards MSY the faster the fishing industry can move towards increased catches which are reliable and sustainable in the long-term. This is contradictory to the ambition set out in the CFP reform and undermines subsequent targets for reaching GES for commercial fisheries.

Background information

- **424.** *The MSFD requires commercially exploited fish and shellfish to be within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.* This is an excellent starting point for encouraging the recovery and maintenance of stocks to levels which are the most biologically productive, representing a full complement of age classes and including reference to the long-term yield of a stock. However, the idea that this age structure will be maintained by allowing species to *reproduce at least once before being caught* is incorrect for a large number of species including many shellfish. This oversimplification does not take into account the large amount of mortality that may occur in early life stages of many fish and shellfish species and does not take account of the fact that for most species older individuals are actually capable of producing eggs and young in larger numbers and better quality.
- **425.** Introducing the idea that the UK has a *limited scope* in its ability to improve fisheries management within its own waters is a very defeatist viewpoint which should be discouraged. There is a lot of work that can be done in territorial waters, particularly given the current CFP package which gives Member States the rights to set up measures which will apply to all fishing activities within their 12nm limit; this will be of particular importance to shellfish fisheries.
- The UK must remain ambitious and ensure that the reform of the Common Fisheries Policy delivers healthy, safe, and biologically diverse seas. The MSFD should reflect the fact that it is a wider target than just MSY and can be used as a powerful tool outside the CFP. The CFP **must** ensure GES and to do so the MSFD **must** have targets referenced within the CFP reform

Summary of current status from initial assessment

- **426.** More than 60% of indicator stocks *continue to be harvested at rates that are unsustainable and/or have reduced reproductive capacity.* However, the overall tone of the summary remains surprisingly positive. It is essential that the indicator stocks are identified and available for scrutiny as indicator stocks often do not accurately represent the majority of stocks. There is also a tendency to use the most studied

stocks which coincidentally are often those already in management plans. Assessments for all stocks must therefore be encouraged; there may be scope for funding these additional studies through science/stakeholder partnership agreements and through the EMFF. Additionally, the summary does not give reference to what levels stocks are to be recovered; this is essential as target levels may not be a true representation of the stocks' capacity – additional assessments are essential to fill knowledge gaps for appropriate management.

Proposed GES characteristics and associated targets and indicators

- Before assessing the proposed characteristics and targets set for Descriptor 3 it is essential to highlight that to achieve an ecosystem based approach which aims to manage the marine environment in a more holistic way it is essential to include by-catch within Descriptor 3, closely interlinked with Descriptors 4 and 6. Maria Damanaki has previously stated that *“our new policy must achieve and maintain Good Environmental Status of the marine environment. For our policy this means ensuring that fishing is carried out in such a way that fish stocks, but also mammals and seabirds can reproduce and grow. So fish must be fished at sustainable levels, causing as little by-catch of juveniles and other marine animals as possible. Fishing must not interfere with the objectives of preserving biodiversity, including our Natura 2000 obligations. We need also the reduction, even the elimination of discards, because we cannot afford it.”* This position clearly indicates that commercial fish stocks are interlinked with by-catch and wider damage to the ecosystem and should not be treated as independent of the rest of the ecosystem.

Proposed characteristics of GES for Descriptor 3 – Commercial Fish

- The use of F_{msy} as a target instead of B_{msy} shows a lack of ambition by the UK government. Unless the stock is already at B_{msy} , rebuilding a stock to B_{msy} while fishing at F_{msy} will take an unacceptable amount of time, if it is achieved at all. As a minimum stocks **must** aim to reach B_{msy} for all stocks to ensure the long-term sustainability of EU fisheries. Where MSY targets are not known, assessments to calculate MSY should be conducted and in the interim management should err on the side of precaution.
- SSB must be at a level capable of delivering maximum sustainable yield (SSB_{msy}); targeting only SSB_{pa} represents a level too low to be indicative of a healthy stock. Having all stocks at levels **above** SSB_{msy} should be the target of fisheries managers as this brings the targets into line with international agreements (Johannesburg and UNFSA).
- *An appropriate age structure* must be defined for each species and is vitally important as it represents not only the quantity of the spawning stock but its quality also. Where the data or knowledge required to determine what an appropriate age structure for a given stock is absent, then *research to alleviate such gaps should be a priority* to facilitate the development of appropriate targets ahead of the 2018 revision.

Proposed targets for Descriptor 3 – Fishing Mortality

- This does not match up with the ambition shown in the CFP reform proposal or the Johannesburg agreement. The interpretation of “safe biological limits” may not be sufficiently precautionary to reach B_{msy} and clearly goes against the Directive’s

definition of GES, which specifies that ecosystem components must be at a level which ensures their resilience and prevents the decline of biodiversity.¹⁰

- The short term target of exploiting all stocks at F_{pa} or lower by 2015 is not just hugely unambitious but inconsistent with the CFP and international obligations. To fish at F_{pa} represents fishing right up to the point at which stocks are identified as harvested unsustainably, and will never lead to a stock capacity capable of maximising both environmental and economic ecosystem services.
- Indeed, it is even unlikely that fishing at F_{msy} will guarantee an increase in biomass which will result in a stock being managed at B_{msy} (unless it was at B_{msy} to begin with). In order to reach healthy stocks and consequently GES, stocks **must** therefore target B_{msy} with F_{msy} being introduced only as the lowest limit (and never a fisheries *target*) when sufficient information to define B_{msy} is unavailable. Without ambitious targets from the MSFD relating to fishing mortality, and the interlinked CFP, which aim to ensure the recovery, sustainability and ultimately GES for all European stocks, the Commission predicts that *91% of stocks will be endangered with collapse by 2020*.¹¹

Proposed targets for Descriptor 3 – Reproductive Capacity of Stock

- This again represents an extremely low level of ambition from the UK. SSB_{pa} should not be used as a target for the reproductive capacity of the stock and should instead be replaced by a specific reference to SSB_{msy} . Economically a larger stocks size resulting from fishing at a level where spawning stock biomass is at SSB_{msy} contributes to lower fishing costs

Approach to setting GES targets for commercial fish

- **428.** *Achieving a fishing mortality rate of MSY for all stocks is considered to be equivalent to safe biological limits.* This implies that the short term aim should be mortality below F_{msy} and the medium to long term target of biomass above B_{msy} . F_{msy} should remain the UK's least ambitious aim and should only be included as a lower limit, not a target and certainly **not** a high level objective.
- **429.** We are collectively appalled at the wilful decision by Defra under the MSFD to ignore the various commitments made relating to MSY, which the UK government has signed up to. The Commission has previously said that where Good Environmental Status requires F to be equal to or lower than F_{msy} , "this means that in mixed fisheries and where ecosystem interactions are important, long term management plans may result in exploiting some stocks more **lightly** than at F_{msy} levels in order not to prejudice the exploitation at F_{msy} of other species"¹². The UK's interpretation of this seems to be contradictory, suggesting that some stocks may have to sacrifice their F_{msy} levels for the exploitation of others. Furthermore, basing these targets on only a *selection of stocks* introduces the problem that the stocks chosen may not accurately represent all stocks or the ecosystem as a whole. As an

¹⁰ "The structure, functions and processes of the constituent marine ecosystems, together with the associated physiographic, geographic, geological and climatic factors, allow those ecosystems to function fully and to maintain their resilience to human-induced environmental change. Marine species and habitats are protected, human-induced decline of biodiversity is prevented and diverse biological components function in balance". (MSFD Art. 3.5 (a)).

¹¹ Commissioner Damanaki speech at the Conference "No fish left on the plate – why a radical reform of the Common Fisheries Policy is needed" organised by Fish for the Future Group, Brussels, 22 June 2011.

¹² Communication "Implementing sustainability in EU fisheries through maximum sustainable yield" (COM(2006) 360 final)

absolute minimum each stock should at least have a plan to improve data and management in an attempt to move towards a fully managed ecosystem approach which must include reference to Descriptors 4 and 6, taking into account both commercial species and by-catch.

- **430.** The ICES report ¹³ here puts forward three options for meeting GES under Descriptor 3, relating to Criteria 3.1 and 3.2, as follows:
 - GES Interpretation 1: strict interpretation of the Commission Decision where MSY reference levels are treated as a limit and thus all stocks must meet the MSY requirement
 - GES Interpretation 2: the MSY reference levels are considered as a target and thus half the stocks must achieve the MSY requirement, and all stocks must achieve precautionary reference levels
 - GES Interpretation 3: the MSY reference levels are considered as a target and stocks need to achieve this requirement on average. This average is calculated accounting for the 'distance' individual stocks are above or below

At the European Commission's thematic workshop on D3 in Paris on the 24-25 April, DG MARE expressed its clear interpretation that under Criterion 3.1, GES is equivalent to fishing mortality (F) at F_{msy} for all stocks by 2015, in line with current CFP reform proposals and international commitments. It was also agreed at the workshop that Option 1 of the above options is the only one that meets the requirements of the MSFD and the CFP, and that Option 2 (despite allowing more flexibility) is not satisfactory.

Given the above options, the UK position as expressed in its targets falls a long way short of Option 1, given that there are no targets for MSY by 2015 and no commitments to restore stock biomass beyond MSY levels by 2020, and fails currently even to meet Option 2. This is also true given the UK is currently only applying its targets to a representative selection of stocks which have defined reference levels.

Implications of the proposed targets

- **432.** *The UK's approach to CFP reform is consistent with the approach to targets proposed for this Descriptor.* So far the UK's approach to CFP reform has not been at all consistent with the targets proposed for this descriptor. The UK has repeatedly expressed its support for the Commission's proposals on MSY as the target for fisheries management. The targets and references in this proposal, particularly the reference to the low ambition F_{pa} and SSB_{pa} targets, must be improved if we are to ensure the future sustainability and fast recovery of our seas.
- **433.** With reference to shellfish there is little information on stock assessments or management plans, only to potential technical measures. Without the data to back these measures up how will the UK evaluate the state of these stocks and decide whether they conform to GES?
- **435.** The idea that *no new monitoring programmes will be required* is undermined by the sheer lack of data available for many species and stocks and will jeopardise

¹³ <http://www.ices.dk/reports/ACOM/2012/WKMSFD-D3/MSFD%20D3%20Report.pdf>

ecosystem based management. These monitoring programmes also lack information on by-catch species and there is no reference to non-commercially exploited fish which lack sufficient data for management or monitoring.

Gaps and development needs

- **436.** *It is considered that achieving “safe biological limits” will invariably result in a “healthy” age and size distribution;* this is a very sweeping statement which does not take into account the power that a single year of good recruitment can have on the state of a stock. Targets are required for Criterion 3.3, and simply because there is no agreement on whether it can be accurately defined should not result in its disregard. The UK should be following the precautionary principle and at least monitoring age classes being caught and ensuring that there is diversity amongst catches that indicates a healthy population structure at the species and stock levels.
- **437.** We agree that increasing research and knowledge should be an important target and should be encouraged in all fisheries. The fact that there is so little data should encourage more work to be concentrated in this area to increase our knowledge and help advise management and conservation objectives.

Eutrophication (Descriptor 5)

Overall comments

- Although the quality of point source discharges from industry has considerably improved in recent years, due to successful implementation of the Urban Wastewater Treatment Directive and the various regulatory regimes that are now in place (for example the Environment Agency’s environmental permitting regime and the Controlled Activities Regulations in Scotland) considerable progress is still needed to tackle the problem of diffuse pollution from both urban and rural sources.
- We are strongly of the belief that the adoption of a holistic diffuse pollution policy (i.e. one that recognised both terrestrial and marine environments) would result in a significant reduction of diffuse pollution. We urge that the UK agencies responsible for implementing the Water Framework Directive do more to ensure sufficient recognition of the marine environment and the Marine Strategy Framework Directive as they take forward WFD implementation.

Comments on Specific Paragraphs/Sections

Background information

- **439.** It is important to note that point sources and diffuse sources of nutrient pollution may enter the coastal and marine environments directly, but are more usually delivered via fluvial and surface run-off inputs i.e. the sources of the pollution can be many miles away from the body of water where eutrophication is occurring.

Summary of current status from initial assessment

- **441.** “... *there are relatively few eutrophication problem areas in UK waters at present...*”. Although this may be true on a spatial scale, these are still very problematic on a local scale. We are aware that the quality of many bathing and shellfish waters are adversely affected by diffuse pollution from both urban and

pollution sources; broadly speaking, where pathogens are contained within this form of pollution, nutrients will be found as well (since they both derive from the same source, faecal matter). Therefore, the diffuse pollution policy that is being developing to target urban and agricultural sources of pathogens should be expanded to included nutrients as well.

- **Table 21:** In the first part of this Table, in the second column, in the first two bullet points, where it says “... *accelerated growth of algae* ...” we believe “*and higher forms of plant life*” should be inserted after “*algae*”, as per the background information given in **438**. In the second part of Table 21 the second and third columns are titled “*non problem areas 2007/2010*” and “*problem areas 2007/2010*” – has a definitive map of these been produced? If so, can this be made publicly available?

Proposed GES characteristics and associated targets and indicators

- We would support the UK government adopting targets that the German authorities have adopted.
- Nutrient inputs from rivers need to be further reduced. The programmes of measures within the WFD management plans have specified the reduction targets (cf. Chapter 2.1.3). Indicators to be monitored include nutrient concentrations at the marine transition point for rivers flowing into the North Sea.
- Nutrients from remote sources such as other marine areas need to be reduced. Efforts to achieve this must be made as part of regional cooperation arrangements. Indicators are the import of nitrogen and phosphorus and the spatial distribution of nitrogen and phosphorus in the seawater.

Implications of the proposed targets

- **446.** We agree with this assertion in principle. However, we have little confidence that the WFD has been implemented in any way to significantly address MSFD issues, so in reality we feel there will be additional cost implications.
- **447.** See previous comment.

Concentrations of contaminants (Descriptor 8)

- This descriptor suggests that the level of contaminants will be kept within acceptable limits. This seems to be quite a vague target. However, elsewhere in section 3.7 of the consultation document there is a suggestion that levels have been agreed already within domestic and regional seas conventions. In addition, we are concerned that the UK Government has shown a tendency to sign conventions such as OSPAR but subsequently fail to implement them as they are not legally binding. We would like specific references to these conventions and also an indication that the UK Government actually intends to implement these targets within UK waters.
- Paragraph 467 suggests that environmental concentrations of monitored hazardous substances in the sea have generally fallen. However we are as the paragraph suggests still seeing the effects of historical discharges in our coastal environments. More alarmingly higher levels of persistent hazardous substances are being found in

cetaceans in European waters. Charting Progress 2 suggests that cetaceans in the Eastern Channel are considered to be in a poor condition, and only in a moderate condition in three regions - the Western Channel and Celtic Sea, the Irish Sea and the Minches, and Western Scotland.

Table 23 – Proposed characteristics, targets and indicators for contaminants

- As in other sections, we are concerned that the proposed characteristics for this descriptor have been set without significant ambition to truly achieve GES. We would prefer wording that suggests the concentrations of contaminants in water, sediment and/or biota are set below environmental target levels identified on the basis of ecotoxicological data, rather than just stating that they are not increasing. The current wording doesn't refer to recovery with the marine environment and suggests that GES is about maintaining the status quo which is not our understanding of the principles behind the MSFD.
- We would like to see a more ambitious target for reducing concentrations of contaminants in water, sediment and/or biota, and a target to decrease the occurrence and severity of pollution.
- One issue this descriptor seems to avoid is the issue of the synergistic effect of contaminants, where the effects of a mixture of contaminants, even though each contaminant is at a concentration lower than the regulatory levels, can be more damaging than the effect of a single contaminant exceeding maximum regulatory levels. In addition, the frequency of the occurrence of extremely high concentration values and of course the average concentration value, are very important too.

Marine Litter (Descriptor 10)

General comments

- In general we are extremely disappointed with the lack of ambition shown by Defra and the devolved administrations. We feel that this lack of ambition will be reflected in a lack of appropriate measures being implemented, creating a self fulfilling prophecy of very little, if any, progress being made.
- The MSFD states in para 27:
'.....Those measures should be devised on the basis of the precautionary principle and the principles that preventive action should be taken, that environmental damage should, as a priority, be rectified at source and that the polluter should pay.'

A precautionary approach would involve taking appropriate preventative measures when there is reason to believe that substances introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relationship between inputs/activities and effects. There is plenty of evidence that shows how marine litter and especially plastic pollution can cause harm to marine life and although further research is still required on topics such as microplastics, a long term precautionary goal would require a target of concentrations in the environment of close to zero. We feel that the precautionary principle has not been taken into consideration when devising the targets and indicators.

- The ultimate goal for marine litter must be to have, as far as is feasible, litter free seas. By 2020 - the first assessment deadline of the MSFD – we agree that it is unrealistic to expect that a litter-free marine environment can be achieved. However,

because the goal towards achieving GES is continuous, in that it involves consecutive six-year cycles of monitoring and target setting, the first deadline of 2020 should be approached as a stepping stone towards achieving GES, with a long term generational goal laid out.

- **Generational Goal** - As a long term generational goal, we suggest aiming for an end to the problem of marine litter within a generation i.e. 2035. This should mean achieving zero inputs in European waters of all marine litter items and for levels of litter in the marine environment to be close to zero by 2035. It is likely that accidental/illegal inputs will continue, and it is unavoidable that some residual pollution will remain in the marine environment, even with marine litter removal schemes. However, the aim here should be ambitious and focus on the ultimate desired result; litter free seas.
- **2020 Goal - 50% reduction** from an agreed baseline in marine litter as a stepping stone towards Good Environmental Status. A reduction target of 50% by 2020 is distinctly possible with the concerted action that should result from the implementation of the MSFD. Not only are all EU countries legally committed to the Directive but marine litter has and will continue to benefit from growing industry and public interest in taking on initiatives to help mitigate the problem.

The waste policy review also states that *“Preventing waste wherever it occurs should be the shared priority of Government, business and civil society”*⁽¹⁾

Any policy on waste/litter **wherever it occurs** should be aligned with the national waste policy. The ambitions of the waste policy are clearly not reflected here and the principle of a zero waste economy must include the marine realm as well as the terrestrial.

Comments on specific paragraphs/sections

Background information

- **486.** Line 4 - ‘**population level effects**’ this is not necessary. The MSFD does not imply that everything must be to a population level nor does D10 mention this.
- **487.** The word ‘**persistent**’ is unnecessary in this description. The latest definition from the Honolulu Strategy states:
‘marine litter, is defined to include any anthropogenic, manufactured, or processed solid material (regardless of size) discarded, disposed of, or abandoned that ends up in the marine environment. It includes, but is not limited to, plastics, metals, glass, concrete and other construction materials, paper and cardboard, polystyrene, rubber, rope, textiles, timber and hazardous materials, such as munitions, asbestos and medical waste. In some instances, marine debris may also be a vessel for dangerous pollutants that are eventually released into the marine environment. Marine debris may result from activities on land or at sea.’

Proposed GES characteristics and associated targets and indicators

- **GES descriptor** – Overall this captures the essence of the high level descriptor. However the word ‘significant’ can mean a variety of things, from a strictly statistical definition, in which case the methodology to be used should be given, to a very general intention. Also no reference is made to the social and economic harm that can be caused by marine litter.

Characteristics of GES Descriptor 10

- **Option 2** (beach litter) – *Overall reduction in the number of visible litter items within Specific categories/types on coastlines from 2010 levels by 2020.* It is unclear as to what is meant by an overall reduction – in theory this could be a reduction of one. At a recent meeting with Defra (23.04.12) it was indicated that a ‘significant’ decrease was meant. However again it is unclear whether this means statistically significant or not.
- **Option 1** (seafloor litter and fulmars stomach). Logically a decrease in beach litter will also affect other compartments of the marine environment therefore there is no real reason why the decreasing trend options of Option 2 should be considered at the very least.

Approach to setting GES targets setting for marine litter

- **489.** It seems strange that for beach litter in particular Defra have not taken on board the recommendation of:
 - The Task Group 10 report on Marine Litter which states that:
”the group recommends that the overriding objective would be a measurable and significant decrease (e.g. 10%/year) in comparison with the initial baseline in the total amount of marine litter by 2020”⁽²⁾
See appendix 2 (a) for a list of the TG 10 members
 - The recent report from the Technical Subgroup on Marine Litter which states:
“The approach applied could be comparable with the targets for eutrophication and/or contaminants set in the past by the International North Sea conferences and adopted by OSPAR and HELCOM. Analogous to the reductions of nutrient input (political 50 %-goal) and contaminants from riverine inflow (also in the order of 50 % and for four particularly problematic substances 70 %) within 10 years (1985-1995) a first trend-setting (political) target value should now be defined for the reduction of the input of marine litter.”⁽³⁾
See Appendix 2 (b) for a list of the TSG members.
- **491.** Option 2 - ...*where litter levels are shown to be rising or unacceptable...* – this wording is not reflected in the actual wording in the table – so best to remove this so as not to cause confusion.

.... *terrestrial litter policy* - it might be better to refer here to the ‘waste policy’ which covers all aspects of waste. There is not really a separate terrestrial litter policy.
- **493.** *Option 2 is considered impractical to implement...*” This shows a staggering lack of ambition. Monitoring systems for monitoring marine litter from ships are already in place and could easily be extended. Litter on beaches, the sea floor and water column does not arrive from separate sources and understanding of sources is relatively well understood as are measures to reduce them.
- **494.** *Option 2 is considered impractical to implement...*” again shows a lack of ambition and commitment. At the recent OSPAR Meeting of the Environmental

Impact of Human Activities Committee (EIHA) The Hague (Netherlands): 16 - 20 April 2012. The Netherlands submitted a paper looking at using fulmars as indicators and concluded that this was possible.

Implications of the proposed targets

- **498.** “... will also rely on measures implemented by other member states” In a sense this is true, however, this does not preclude the possibility of unilateral action as much of UK marine litter is generated in the UK.
- **499.** “... Love Where You Live campaign could be tailored to include a specific focus on beach litter in coastal areas ...” - Unfortunately the Keep Britain Tidy group which runs the Love Where You Live campaign is having its funding cut by 90% over the next 4 years and the LWYL team has recently been made redundant. “... There may also be a need to establish specific marine orientated measures such as those focusing on working with the fishing industry ...” Specific measure aimed at fisheries litter will definitely be needed as this type of litter is the most hazardous to marine wildlife.

“... It is not currently possible to assess exactly what measures will be sufficient to meet the targets...” - It is possible to some extent to assess the main sources of litter and to suggest appropriate measures. MCS have records of litter on UK shores back to 1993. Appendix 2 (c) gives an overview of how a 50% decrease could be achieved by measures that are neither new nor particularly costly.

Gaps and development needs

- **505.** There is already a large body of work on the types, sources and amounts of litter in the marine environment.
- **506.** See appendix 2 (c) for a list of possible measures. An integrated approach is one of the keystones of the MSFD and does not really need to be restated.

References

1. Government Review of Waste Policy in England 2011
2. Galgani, F., Fleet, D., Van Franeker, J., Katsavenakis, S., Maes, T., Mouat, J., Oosterbaan, L., Poitou, I., Hanke, G., Thompson, R., Amato, E., Birkun, A. and Janssen, C. 2010. Marine Strategy Framework Directive Task Group 10 Report Marine litter , JRC Scientific and technical report, ICES/JRC/IFREMER Joint Report (no 31210 – 2009/2010) , Editor: N. Zampoukas.
3. MSFD GES Technical Subgroup on Marine Litter (2011). Marine Litter Technical Recommendations for the Implementation of MSFD Requirements. EUR 25009 EN - 2011

Introduction of energy including underwater noise (Descriptor 11)

General comments

- The UK approach appears to be without vision. It recognises the two suggested indicators but ignores any additional indicator suggested by the Technical Sub Group

(TSG) Noise¹⁴ like “Combined mapping of sound levels and sensitivity of marine life”. It describes an impact indicator and can be acknowledged as an ecosystem-based approach. Due to the lack of information and science-based recommendations, the UK should at least agree to limit sound input to current levels until further data can be collected to support an adaptive approach.

- In relation to the two existing indicators the UK should agree on:
 - **Impulsive noise:** The so-called "bang days" or “pulse-blockdays” (described by the Technical Sub-Group on Noise) do not exceed the level of 2012 in 2020.
 - **Ambient Noise:** The trend in the ambient noise level does not exceed the level of 2012 in 2020.
- The UK should support the development of effective, proven mitigation measures for the most important sources of noise such as seismic surveys; shipping; offshore installation with pile driving.

Recommendations can be found at the following sources:

- **Seismic surveys:** Report of the Workshop on Alternative Technologies to Seismic Airgun Surveys for Oil and Gas Exploration and their Potential for Reducing Impacts on Marine Mammals.
<http://www.oceanosfoundation.org/assets/Uploads/Airgun.pdf>
- **Shipping:** MEPC 61-19-Noise CG Report: Report of the Correspondence Group on Noise From Commercial Shipping and Its Adverse Impacts on Marine Life
<http://www.imarest.org/Technical/TechnicalActivities/Representation/InternationalMaritimeOrganizationIMO.aspx>
- **Offshore installation with pile driving:** Sound Solutions – offshore wind installation techniques without underwater noise.
<http://www.noordzee.nl/bibliotheek/windparkenopzee/soundsolutions/>

Specific Comments

- **508.** There is increasing evidence of stress impacts as a result of noise (Wright et al., 2009 and references therein). Recent publications on the potential impacts of intense noise sources on baleen species require serious consideration, especially as no data currently exists on impacts of pile driving. A JNCC published study reported that “studies have indicated some level of stress, with alterations in surfacing, respiration and dive cycles being observed in mysticetes in response to the use of seismic airguns, sometimes at considerable distances from the source. Although effects of active airguns on the physiology of the mysticetes found around the UK are largely unknown, in one study, shorter blow intervals indicated an increase in the respiration rate of fin whales within 1km of the airguns during periods of shooting”. More recently, for two days after the 9/11 attacks in the US, shipping traffic ground to a halt in the Bay of Fundy, Canada, and underwater noise fell by six decibels. During that

¹⁴ Van der Graaf AJ, Cools J, Ainslie MA, André M, Brensing K, Dalen J, Dekeling RPA, Robinson S, Tasker M, Thomsen F, Werner S (2012). European Marine Strategy Framework Directive - Good Environmental Status (MSFD GES): Report of Technical Subgroup on Underwater noise and other forms of energy.

time, stress-hormone levels in endangered north Atlantic right whales there were lower than in readings taken during September in the following four years. The implications of similar impacts as a result of continuous pile driving in primary foraging habitat cannot be known but should be considered. We request that stress impacts be fully considered and included.

- **509.** *“The potential physical effects of such sounds on marine life i.e. hearing loss, death etc could only occur close to these sources and are recognised and managed in the existing licensing regime; for example, through the use of marine mammal observers, temporal restrictions on when activities can take place, and “soft starts180”.*

This conclusion is scientifically outdated. Physical injury due to accumulative effects may occur at considerable distances.

Existing management and mitigation measures are wholly inadequate. For example, Marine Mammal Observers are only a mitigation device if shut-down occurs when animals approach the source whilst operations are underway. Further, we understand that there are currently no conditions attached to licenses for mitigation of marine renewable energy in UK waters, despite considerable concerns about the potential impacts of pile driving on a number of cetacean species found in the vicinity of the development sites. Until impacts are more fully understood, industry should be required to conduct long-term baseline and impact studies. In many cases, two years baseline surveys, will not enable a full consideration of annual variations in abundance. Therefore, we strongly believe two years’ data collection must be considered as a minimum baseline requirement. This data must help the implementation of the plans through an adaptive management process.

Acoustic Deterrent Devices (ADDs) or Acoustic Mitigation Devices (AMDs) introduce additional noise pollution to important cetacean habitats. The use of ADDs to minimise injury from pile driving has yet to be tested and so it remains unproven as a mitigation measure. Given the early stage of development of these devices and the lack of proven efficacy ADDs should not be widely advocated.

- **510.** Decisions should be made on the basis of best available information, or alternatively should follow a precautionary approach. The EU working group GES agreed that targets and indicators should “pay regard to the precautionary principle.” As advocated by world leaders at the Earth Summit meeting in Rio in 1992, the precautionary principle should be applied in the following terms:

‘In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.’ (Principle 15)

The precautionary principle should be taken account of in this context, and the impacts that exist be acknowledged, despite the lack of fully scientific certainty over their ‘significance’.

Therefore we request a sentence is added that states “however, there is enough evidence to show impacts...”. It would be more appropriate to provide evidence of no impact, should this exist.

- **511.** There will be a significant increase in construction development at sea for the development of marine renewable energy. The extent of this development should be acknowledged and fully considered. Given the scale of future offshore developments, there is an urgent need to develop engineering solutions to reduce the propagation of pile-driving noise at deep water sites, or develop alternative construction techniques that generate less intensive noise (Thompson *et al.*, 2010).
- **512.** “However, at this time there is no evidence to suggest that current levels of noise in UK waters are having an impact at population level on cetaceans or other noise sensitive marine animals.”

This is misleading because no such data exists that has monitored current population trends or potential impacts of noise-generating activities. Little is known about population size, range and habitat requirements for most cetacean species, and population estimates and trends are largely lacking. It has long been recognised how difficult collection of data sufficient to determine such factors is (Taylor *et al.*, 2007).

Taylor *et al.* (2007) assessed scientists’ ability to detect declines of marine mammal stocks based on recent levels of survey effort, when the actual decline is precipitous. They defined a precipitous decline as a 50% decrease in abundance in 15 year, at which point a stock could be legally classified as “depleted” under the U.S. Marine Mammal Protection Act. They assessed stocks for three categories of cetaceans: large whales ($n = 23$, most of which are listed as endangered), beaked whales ($n = 11$, potentially vulnerable to anthropogenic noise), and small whales/dolphins/porpoises ($n = 69$, bycatch in fisheries and important abundant predators), for two categories of pinnipeds with substantially different survey precision: counted on land ($n = 13$) and surveyed on ice ($n = 5$), and for a category containing polar bear and sea otter stocks ($n = 6$). The percentage of precipitous declines that would *not* be detected as declines was 72% for large whales, 90% for beaked whales, and 78% for dolphins/porpoises, 5% for pinnipeds on land, 100% for pinnipeds on ice, and 55% for polar bears/sea otters (based on a one-tailed t -test, $p = 0.05$), given the frequency and precision of recent monitoring effort in US waters. Thus, a good management decision rule should not require large numbers of precise estimates in order to trigger warranted management actions (Taylor *et al.*, 2007).

We request that the paragraph quoted above is removed and is replaced with a more detailed and accurate account of the current up-to-date evidence of impacts on species that may be affected in UK waters.

With pile driving activity increasing dramatically, impacts to coastal species, such as bottlenose dolphins and harbour porpoise should be more fully considered.

The zone of behavioural disturbance may extend considerably beyond 20 km for harbour porpoises (Tougaard *et al.*, 2009) and up to 40 km for bottlenose dolphins (Bailey *et al.*, 2010) This could potentially impact areas which are known to be used regularly by the protected Moray Firth bottlenose dolphin and harbour seal populations along the east coast. As yet, there is no data on the distance of disturbance of minke whales and other species. *As a result, monitoring of behavioural impacts should be conducted to adequate distances.*

Table 26 – Proposed GES characteristics and associated targets and indicators

- “...do not pose a significant risk to marine life at the population level, or specifically to vulnerable/threatened species and key functional groups”

We do not agree with the inclusion of ‘population level’, where so little is known about what a population constitutes for most species, and when so little information exists about population trends and existing evidence provided above (Taylor et al., 2008) demonstrates that population declines will not be detected in reasonable time frames.

This is particularly important for understanding impacts on vulnerable/threatened species. Consideration of impacts to individuals is also important since our understanding of population boundaries and size is so limited for many species.

- Generally, given the evidence on impacts, and high degree of uncertainty, these targets should relate to a reduction in sound pressures. We believe that it is necessary to do both options 1 and 2 and to adapt if negative impacts are demonstrated (on individuals, not to populations). Further work carried out between now and the next cycle of the Directive in 2018 could be used to adapt the targets if necessary.
- The wording from paragraph 516 should be included in the target table.

Impulsive sounds

- **OPTION 1:** This option does not describe a GES. It describes the methodology how to create a noise registry. Furthermore the numbers do not include impact on behaviour (as suggested in the targets). It is necessary to collect data of energy exceeding source level 140 dB re 1 μPam^2 s or less.

There is a lack of standardised measuring procedures, monitoring programmes and validated area-specific models, it is not currently possible to quantify the noise input. Standardised data sets are required. We therefore welcome the introduction of a noise registry as a mechanism to collate noise data however this does not go far enough to understand and mitigate impacts.

- **OPTION 2:** This option does not describe a GES. It describes how a GES could be described. As a result, we conclude that currently both options fail to fulfill the obligations of the Marine Strategy Framework Directive (MSFD).

Continuous sound

- **OPTION 1:** This option does not describe a GES. It describes the methodology how to measure continuous sound.
- **OPTION 2:** “significant annual increase” is misleading, because it may need decades to come up with results but the GES needs to be reached in eight years.

The phrase “natural variation” is misleading; because it is not clear what it means and how it can be evaluated. Earthquakes and storms are temporary events and it is unlikely that they have an impact on the annual sound budget. The phrase “natural variation” is unnecessary and may slow down the process.

- **515.** This is a clear over interpretation of the existing data. One cannot argue that there is a high level of uncertainty and conclude that estimated future levels will not pose a significant threat on population level.
- **516.** *“It would enable a better understanding of the potential for cumulative and in-combination effects, and allow for some adjustment in the scheduling of activities if it appeared significant adverse impacts may arise.”*
There is no question that the registry can help to manage human activities. However the registry cannot help to understand potential cumulative and in-combination effects. This is only possible if the information of the registry is combined with knowledge about the impact on biota, which is clearly missing in this approach (537 is not sufficient).
- **517.** As described above this is not an option and it is not fulfilling the demand required by the MSFD.
- **518.** This paragraph describes exactly the situation as it exists. There is scientific proof of uncertainties that should lead to a precautionary approach. Therefore the conclusion of the administration is contrary to European environmental law.
- **521.** Once again, the situation is described in the right way but the conclusion is wrong.
- **530.** Following this argument all European member states could argue the same which would result in a situation where nobody needs to do anything. That's why the MSFD is calling for an international and coordinated approach which would certainly include discussions with the IMO. This is clearly set out in paragraph 1 of the consultation document which states “since some of the activities that impact on the marine environment are managed at a European or international level (e.g. fisheries and shipping) and other impacts can cross national boundaries (e.g. litter, eutrophication, noise), national action to protect the marine environment needs to be supported by a framework to ensure action is taken across Europe.” The MSFD was developed in recognition of this. All these aspects are completely missing and it can be concluded that the suggested approach does not fulfill the requirements of the MSFD.
- **537.** *“Further research is also needed to understand the levels of noise, both ambient and impulsive, which result in harm at a population level and significant behavioural effects.”* This last point seems to be highly underestimated and it needs to be pointed out, that it is impossible to come up with a description of a GES without the knowledge of the impact on biota. Therefore this paragraph needs to be an integrated part of all options. A detailed description of that necessary demand is completely missing. Therefore the UK approach is not fulfilling the obligation of the MSFD.
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- Thompson, D., Bexton, S., Brownlow, A., Woods, D., Patterson, T., Pye, K., Lonergan, M. and Milne, R. 2010. Report on recent seal mortalities in UK waters caused by extensive lacerations. Available online at: <http://www.smru.st-and.ac.uk/documents/366.pdf>. Last accessed on: 09/05/2012.57-175.
- Tougaard, J., Carstensen, J., Teilmann, J., Skov, H. and Rasmussen, P. 2009. Pile driving zone of responsiveness extends beyond 20 km for harbour porpoises (*Phocoena phocoena* (L.)). *J. Acoust. Soc. Am.* 126, 1, 11-14.

Appendix

Appendix 1 – Coalition members submitting this response:

This response is supported by the following members of the **Wildlife and Countryside Link Marine Working Group**:

- Buglife – The Invertebrate Conservation Trust
- Marine Conservation Society
- Royal Society for the Protection of Birds
- Whale and Dolphin Conservation Society
- Wildfowl & Wetlands Trust
- The Wildlife Trusts
- WWF – UK

This response is supported by the following members of the **Scottish Environment Link Marine Task Force**:

- Hebridean Whale and Dolphin Trust
- Marine Conservation Society
- National Trust for Scotland
- RSPB Scotland
- Scottish Ornithologists' Club
- Scottish Wildlife Trust
- WWF Scotland
- Whale and Dolphin Conservation Society

This response is supported by the following members of the **Wales Environment Link Marine Working Group**:

- Wildlife Trusts Wales
- RSPB Cymru
- WWF Cymru
- Marine Conservation Society

This response is supported by the following members of the **Northern Ireland Marine Task Force**:

- Northern Ireland Environment Link
- Ulster Wildlife Trust
- WWF Northern Ireland
- The National Trust
- Royal Society for the Protection of Birds
- Wildfowl & Wetlands Trust
- Friends of the Earth
- Irish Whale and Dolphin Group

Appendix 2

Appendix 2 (a). Members of the Task Group 10 on Marine Litter

Ezio Amato	ISPRA, Italy
Alexei Birkun	Brema Laboratory, Ukraine
David Fleet MLUR	Germany
Jan van Franeker	IMARES, The Netherlands
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Colin Janssen	University of Ghent, Belgium
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Thomas Maes	CEFAS, UK
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Lex Oosterbaan	Ministry of Transport, The Netherlands
Isabelle Poitou	MerTerre, Marseille
And	
Carly Brooks (Observer)	OSPAR/Defra
Georg Hanke (European commission)	JRC
George Kamizoulis (Observer)	MEDPOL
Ib Krag Petersen (Observer)	HELCOM
Richard Thompson (Invited expert)	University of Plymouth, England
Violetta Velikova (Observer)	Black Sea Commission

Appendix 2 (b). Members of the Technical Subgroup on Marine Litter

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Fleet David	Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz
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Hagebro Claus	International Council for the Exploration of the Sea, ICES
Hanke Georg	European Commission Joint Research Centre
Holdsworth Neil	International Council for the Exploration of the Sea, ICES
Kamizoulis George	WHO/EURO-MED POL
Katsanevakis Stelios	Hellenic Centre for Marine Research, HCMR
Kinsey Susan	Marine Conservation Society
Lopez-Lopez Lucia	Spanish Institute of Oceanography, IEO
Maes Thomas	Centre for Environment, Fisheries & Aquaculture Science, CEFAS
Matiddi Marco	Institute for Environmental Protection and Research, ISPRA
Meacle Mary	Department of the Environment, Heritage and Local Government
Morison Sarah	NOAA Marine Debris Division
Mouat John	Local Authorities International Environmental Organisation, KIMO

Appendix 2 (c) Proposed Programme to Reduce Marine Litter By 50% By 2020

High priority items to 2016			
Item(s)	% of beach litter	Includes	Approach
Sewage-related Debris	5.4	Condoms, cotton bud sticks, nappies, tampons & applicators, panty liners	Consumer awareness campaigns
Plastic bottles and aluminium drinks cans	10.7	Bottles and caps, drink cans	Plastic bottle refund scheme
Plastic bags	2.2	Plastic bags	Levies throughout the UK (already exist in Wales and Northern Ireland)
Balloons and sky (aka Chinese) lanterns	0.5	Balloons, balloon string and sky lanterns	Amendment of 1990's Environmental Protection Act to categorise balloons and lanterns as litter, or separate legislation (as per the draft Bill currently before the National Assembly for Wales)
Recreational fishing litter	2.6	Fishing line, fishing weights, hooks, lures, floats and reels	Awareness campaign amongst fishermen plus provision of disposal/recycling facilities
Sub-Total 21.4%			
Lower priority items			
Fast food	4.0	polystyrene fast food containers & cups, paper cups, ice lolly sticks & chip forks	Consumer awareness campaigns, redesign of fast food containers, provision of appropriate facilities
General beach visitors	11.9	wrappers, toys, BBQs (disposable), glass bottles, dog faeces in bags	Public awareness campaigns, provision of appropriate facilities
Commercial fishing litter	8.8	Fish boxes, fishing net & net pieces, lobster /crab pots	Awareness campaigns, amendment of Port Waste Reception Facilities regulations to include fishing vessels, proper provision of facilities for fishermen
Cigarette litter	2.5	Cigarette lighters/tobacco pouches, cigarette packets and stubs	Awareness campaigns, provision of suitable bins for cigarette butts, in pubs and along beach areas

Shipping	3.6	Plastic cleaner bottles, foreign plastic bottles, plastic oil bottles, industrial packaging / crates / strapping bands, aerosol cans, metal food cans, oil drums, pallets	Enforcement of existing legislation, amendment of Port Waste Reception Facilities regulations, proper provision for recycling and disposal in ports and harbours, training of seafarers
Sub-total 30.8%			
TOTAL 52.2%			

