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**Marine Strategy Framework Directive Implementation Team
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1st April 2014

Dear Sir / Madam

Consultation on Marine Strategy Framework Directive (MSFD): Proposals for UK Marine Monitoring Programmes

Natural Resources Wales welcomes the opportunity to respond to the DEFRA and Devolved Administrations' consultation on the '*Marine Strategy Framework Directive UK Marine Monitoring Programmes*'. Implementation of this Directive is an important opportunity to ensure the sustainable management of the marine environment so that the people of Wales can continue to benefit from the goods and services it provides.

Natural Resources Wales is committed to working with Welsh Government, DEFRA and other organisations and administrations to put in place a fit for purpose monitoring programme to measure progress towards Good Environmental Status (GES). We support the coordinated approach of implementing the MSFD across UK Administrations and ongoing cooperation with other Member States in the relevant Marine Region to ensure coherent and coordinated marine strategies. In Wales, the current development of marine planning is an important opportunity to embed MSFD objectives into the delivery of other marine policy areas, and enable planning to take an Ecosystem based Approach.

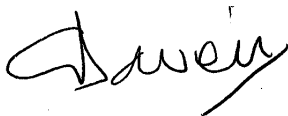
We commend DEFRA, Welsh Government and other devolved administrations for their work so far in developing monitoring proposals for such a large geographic area and across a diverse range of environmental descriptors. Nevertheless, as identified within the consultation, there remains significant work to be done to develop and refine indicators, targets and monitoring programmes that are fit for purpose for delivering MSFD requirements. We will continue to work with, and advise the relevant authorities and contribute towards the ongoing development of this work. We will also welcome future consultation as we move towards a more complete monitoring programme.

Natural Resources Wales recognises that in developing the proposed monitoring programmes, DEFRA and the Devolved Administrations have relied heavily on existing monitoring programmes established to meet existing obligations. We support making the best possible use of existing monitoring programmes and agree that in many cases, they are adequate to meet the minimum requirements of the Directive with little or no variation to their design. However, there are circumstances where we consider that proposed, pre existing monitoring programmes such as those undertaken for the Water Framework Directive (WFD) and Habitats Directive (HD), may be insufficient for effectively assessing progress towards meeting the targets established in accordance with Article 10 of the Directive. Whilst these substantial programmes will play an important role within MSFD monitoring, they were designed to support different legislation and we advise that in the absence of any modification and/or temporal and spatial increases in effort they are not, in themselves, always sufficient for MSFD purposes.

Natural Resources Wales will have a key advisory and delivery role in the development and implementation of the Marine Strategy Framework Directive monitoring programmes in Wales. Whilst we have already improved integration of our own marine monitoring work, and will continue to work to deliver increased efficiencies here, expanded or new monitoring proposed within ongoing Research and Development Programmes would require additional resource. We encourage DEFRA and Welsh Government to consider the resourcing implications of any additional required monitoring in Welsh waters to deliver the requirements of the Directive.

We hope these comments are helpful. Should you wish to discuss them further, please contact Henry Aron (MSFD Advisor) on 01248 387361 or by email at henry.aron@naturalresourceswales.gov.uk

Yours sincerely

A handwritten signature in black ink, appearing to read 'Ceri Davies', with a stylized flourish at the end.

Ceri Davies
Executive Director of Knowledge Strategy and Planning

1. Introduction

Natural Resources Wales brings together the functions of the Countryside Council for Wales, Environment Agency Wales and the Forestry Commission Wales, as well as some of the functions of Welsh Government. Our purpose is to ensure that the natural resources of Wales are sustainably maintained, used and enhanced, now and in the future.

Natural Resources Wales welcomes the opportunity to respond to the DEFRA and Devolved Administrations' consultation on the '*Marine Strategy Framework Directive UK Marine Monitoring Programmes*'. Implementation of this Directive is an important opportunity to ensure the sustainable management of the marine environment so that the people of Wales can continue to benefit for the goods and services it provides. We commend DEFRA and the devolved administrations for their work so far in developing monitoring proposals for such a large geographic area and across a diverse range of environmental descriptors.

Having brought together the functions of Environment Agency Wales, the Countryside Council for Wales and functions of Welsh Government, Natural Resources Wales will play a key role in implementing the MSFD Monitoring Programme in Welsh territorial waters. For instance, we are the marine licensing authority and undertake the monitoring requirements under the Habitats and Birds Directive and Water Framework Directive.

Natural Resources Wales' response is comprised of two sections:

1. Key issues
2. Responses to the four consultation questions and where necessary, general comments for each of the 11 Descriptors

2. Key Issues

2.1 Coordinated Approach

Natural Resources Wales is committed to working with Welsh Government, DEFRA and other organisations and administrations to put in place a fit for purpose monitoring programme to measure progress towards Good Environmental Status (GES). We support the coordinated approach of implementing the MSFD across UK Administrations and ongoing cooperation with other Member States in the relevant Marine Region to ensure coherent and coordinated marine strategies. In Wales, the current development of marine planning is an important opportunity to embed MSFD objectives into the delivery of other marine policy areas, and enable planning to take an Ecosystem based Approach.

2.2 The use of existing monitoring programmes and meeting the requirements of the Directive

Natural Resources Wales recognises that in developing the proposed monitoring programmes, DEFRA and Welsh Government have relied heavily on existing monitoring programmes established to meet existing obligations. We also understand from the consultation document, that the proposed MSFD monitoring programmes are the minimum required to meet the UK's monitoring obligations and in most cases, propose 'business as usual'. Natural Resources Wales supports making the best possible use of existing monitoring programmes and agrees that in many cases, they are adequate to meet the minimum requirements of the Directive with little or no variation to their design. However, as highlighted within our response to the four consultation questions for each Descriptor, there are circumstances where we consider that the proposed, pre existing monitoring programmes may be insufficient for effectively assessing progress towards meeting the targets established in accordance with Article 10 of the Directive.

In particular, there is an expectation that existing Water Framework Directive (WFD) and Habitat Directive (HD) monitoring can deliver the requirements of the Directive. Whilst clearly these substantial programmes will play an important role within MSFD monitoring, they were designed to support different legislation and we advise that in the absence of any modification and/or temporal and spatial increases in effort they are not, in themselves, always sufficient for MSFD purposes. For instance, the Welsh WFD monitoring programmes drawn upon to meet the requirements of the Directive are confined to transitional and coastal waters and have limited spatial replication in Wales. Furthermore, HD monitoring is currently almost entirely limited to the marine SACs and is therefore not representative of the condition of wider Welsh waters.

Natural Resources Wales recognises the resource implications of further marine monitoring work and is keen to work closely with Government to identify the critical spatial and temporal gaps in existing monitoring and to determine how best to fill them. Any analysis should inform the delivery of wider marine policy and we would like to see this work aligned with the development of marine planning in Wales, which we anticipate will be a critical mechanism for delivering the objectives of the MSFD. The tasks to identify any spatial and temporal gaps are not currently clearly identified within the existing monitoring proposals.

2.3 Ongoing work to develop Indicators, Targets and Monitoring Programmes

The consultation document identifies that for many Descriptors, work is ongoing to develop and refine indicators, targets and monitoring programmes that are fit for purpose for delivering MSFD requirements. We will continue to work with, and advise the relevant authorities and contribute towards the ongoing development of this work. For instance, we will continue our contribution to UKMAAS, its evidence groups and the Joint Nature Conservation Committee (JNCC) led Marine

Biodiversity Monitoring R&D programme aimed at developing indicators, targets and monitoring proposals that will address marine biodiversity monitoring commitments. We will also welcome future consultation as we move towards a more complete monitoring programme.

2.4 Level of detail

Natural Resources Wales recommends that the proposals would benefit from further detail concerning the implementation of monitoring programmes and how they will deliver MSFD requirements. The limited summary information within the consultation makes it challenging to assess the sufficiency of monitoring programmes in meeting the needs of the Descriptor and guiding progress towards GES.

2.5 Resource implications

Natural Resources Wales will have a key advisory and delivery role in the development and implementation of the Marine Strategy Framework Directive (MSFD) monitoring programmes in Wales. We recognise that for most Descriptors, the proposals rely heavily on utilising existing monitoring programmes. However, for several Descriptors (e.g. benthic habitats, pelagic habitats and marine litter), further work to develop new indicators, targets and suitable monitoring programmes is ongoing. Whilst Natural Resources Wales has already improved integration of its own marine monitoring work, and will continue to work to deliver increased efficiencies here. Expanded or new monitoring proposed within ongoing Research and Development Programmes would require additional resource. We encourage DEFRA and Welsh Government to consider and acknowledge the resourcing implications of any additional required monitoring in Welsh waters to deliver the requirements of the Directive.

3. Response to the Consultation Questions

For each Descriptor, each of the four consultation questions has been answered where possible. General comments have also been provided if appropriate and necessary.

3.1 Descriptor 1 and 4 – Fish

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

We consider the proposed monitoring programme for this Descriptor to be insufficient to meet the requirements of the Directive. The ongoing work into developing indicators and monitoring programmes for coastal fish species, deep water fish species and cephalopods is necessary to meet the needs of the Directive. We also recommend the extension of deep water surveys into the southern Irish Sea region and the approaches to St George's Channel thereby ensuring adequate representative coverage within the regional sea area (please see the response to Question 3 below).

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programmes for this Descriptor to be insufficient towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

To ensure that monitoring programmes for this Descriptor are sufficient to meet the requirements of the Directive, it is essential that indicators and associated monitoring programmes are developed for coastal fish species, deep water fish species and cephalopods.

Offshore fish surveys such as The International Bottom Trawl Survey are mainly located in the northern Irish Sea. To ensure adequate representative coverage, we recommend the extension of offshore surveys such into the southern Irish Sea and the approaches to St George's Channel.

Further to the proposed monitoring programmes, we also encourage the development of monitoring tools for coastal fish species. The monitoring tools used within the Water Framework Directive (WFD) estuarine fish monitoring programme could help inform the development of monitoring programmes for coastal fish species.

The consultation does not propose a monitoring programme for diadromous fish species despite highlighting concerns regarding stock health. Consideration could be given to utilising existing freshwater monitoring programmes to highlight the status and health of diadromous fish stocks. For example, Natural Resources Wales currently undertakes freshwater monitoring of salmon, sea trout and eel stocks. In the case of salmon and sea trout, Natural Resources Wales conducts intensive monitoring of biological data from returning adult fish that provide insight into the influence of marine environmental change. Diadromous fish monitoring within freshwater catchments is also used to inform Habitats Directive monitoring in Welsh European Marine Sites that have diadromous fish species as features.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Please see the response to Question 3 above.

3.2 Descriptors 1 and 4 – Marine mammals

General Comments:

(a) The second "*Criteria 1.2 Population size*" (page 32) should read 'cetaceans' instead of 'seals' and is missing the species group. For instance, it should read "*Criteria 1.2 Population size - Seals*".

(b) An effective monitoring programme for marine mammals should enable the detection of changes to indicators such as the distribution, abundance and population dynamics of species. Critical to the success of monitoring programmes is the longevity and frequency of monitoring which has not been explicitly laid out within this consultation. Without this information, it is difficult to assess whether the proposed monitoring programme is sufficient to meet the needs of the Directive. However, we recognise that a review of monitoring options for marine mammals is currently underway and Natural Resources Wales will continue to support and contribute towards this work.

(c) It is proposed that the existing cetacean monitoring undertaken in Wales under the requirements of the Habitats Directive will underpin the monitoring requirements of MSFD. The current HD monitoring programme for seals and bottlenose dolphins is currently under resourced and we recommend that consideration be given to developing a more systematic, rigorous surveillance and monitoring programme with appropriately frequent monitoring and committed

funding. Natural Resources Wales recommends the implementation of monitoring 'Option 3' within the JNCC UK Marine Mammal Monitoring Review.

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programmes for marine mammals are not sufficient to meet the requirements of the Directive in Welsh waters (e.g. as a sub/region or distinct spatial group of species). There is currently no population level monitoring of seals in Wales or the Irish Sea and very limited monitoring of cetaceans. Furthermore, without more detailed information regarding the longevity and frequency of proposed monitoring, it is difficult to assess whether the proposed programme is sufficient to meet the needs of the MSFD. However, we recognise that a review of monitoring options for marine mammals is currently underway and Natural Resources Wales will continue to support and contribute towards this work.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programmes for this Descriptor to be insufficient towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

Natural Resources Wales recommends the implementation of monitoring 'Option 3' within the JNCC produced paper: 'Advice on monitoring Options for UK Cetaceans'. Option 3 involves within the paper the full suite of systematic monitoring in the UK. We advise that the MSFD proposals would benefit from referencing JNCC paper and utilising it within the further development of proposals. We also advise that more frequent monitoring of bottlenose dolphins will be required to meet HD monitoring, management and reporting requirements.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Natural Resources Wales recommends the implementation of monitoring 'Option 3' within the JNCC led paper: 'Advice on monitoring Options for UK Cetaceans'. An effective programme should ensure that the frequency of monitoring is

adequate to detect a reasonable level of change over a period of time that is meaningful in a management context and that sustained funding allows suitable longevity of programmes. Furthermore, we agree that additional work is required to enable the definition of baselines and trends for all marine mammal species. We also recommend the continuation of the Strandings scheme (CSIP) in Wales and a UK commitment to funding national schemes such as SCANS III and Tursiops SEAS. These overarching projects underpin our basic knowledge and provide solid data for baselines and monitoring. The CSIP and SCANS schemes are essential for all cetaceans – and provide minimum required under Option 1 within the ‘Advice on monitoring Options for UK Cetaceans’ paper.

3.3 Descriptor 1 and 4 – Birds

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programme is sufficient to meet the requirements of the Directive.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programme for this Descriptor is sufficient to guide progress towards the achievement of GES.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

We have no recommendations for additional monitoring programmes needed in order to achieve GES and the related targets. All Welsh seabird monitoring is incorporated into the following major UK monitoring programmes: WeBS (The Wetland Bird Survey), SMP (Seabird Monitoring Programme) and the 10 year seabird census. Upon its development, consideration should be given into incorporating the UK Seabird census (to be initiated in 2015) into the MSFD monitoring programme for Birds.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Please refer to our response to Question 3.

3.4 Descriptors 1, 4 and 6 – Pelagic habitats

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programmes for this Descriptor are sufficient to meet requirements of the Directive. We understand that 15 sampling points will be selected to ensure that monitoring encompasses all of the different water types found in UK coastal and shelf waters. We would welcome more detail on the proposed location of the 15 sampling sites and whether any are proposed within Welsh waters.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programmes for this Descriptor are sufficient to guide progress towards achievement of GES and the related targets. However, we encourage more detail about the proposed location of the 15 sampling points and whether sites are proposed for Welsh waters.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

We understand that where appropriate, the programme will make use of existing monitoring programmes run by AFBI, Cefas, Environment Agency, Marine Scotland, and Department for the Environment, Northern Ireland, Plymouth Marine Laboratory and the Scottish Environmental Protection Agency.

We also agree that a number of gaps exist in terms of data availability, monitoring and analysis both at a national and sub/regional level and support ongoing work to develop options for addressing these gaps. We will also support the ongoing DEFRA sponsored Lifeform R&D project that when completed, will identify options for improving the existing monitoring programme to deliver a full pelagic habitat monitoring programme for 2016. However, if further monitoring requirements are placed upon NRW, the resource and cost implications will need to be carefully considered.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Please refer to the response to Question 3 above.

3.5 Descriptors 1 and 6 – Benthic habitats

General Comments

(a) Within the consultation, it is proposed that by 2014, habitat monitoring will be supported by a strategy developed by the Joint Nature Conservation Committee (JNCC) led Marine Biodiversity Monitoring R&D Programme. We are concerned that the business plan for the R&D programme does not reflect the level of delivery that the consultation document indicates. In addition, the R&D programme is currently behind schedule and several aspects of the work that would have contributed usefully to the current consultation have not been completed. Considering the reliance placed upon this programme and its importance in developing monitoring programmes for this descriptor, we would welcome greater certainty with regards to timescales for delivery of programme outputs.

We advise that the benthic habitat monitoring currently undertaken by Natural Resources Wales is insufficient to meet the needs Directive. However, we understand that the Marine Biodiversity Programme will develop monitoring recommendations to ensure that the requirements of MSFD are met, and that existing WFD monitoring programmes and monitoring of SACs under the Habitats Directive will be incorporated in the most efficient way. We recommend that Habitats Directive monitoring programme be utilised as much as possible within MSFD monitoring proposals, particularly given Wales' well established Habitats Directive monitoring programme and that Habitat Directive Favourable Reference Values appear to be key indicators for several benthic habitat targets.

(b) Subject to further development of benthic habitat indicators, there are likely to be significant resource and cost implications for Natural Resources Wales of scaled up HD and WFD monitoring. We recommend that these implications are carefully considered during the development of further proposals.

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programmes for this Descriptor are presently insufficient to meet the requirements of the Directive. However, as identified within the consultation, there is a considerable body of ongoing work to further develop targets, indicators and monitoring programmes for benthic habitats.

We consider that there is too great an expectation that existing WFD and Habitat Directive monitoring can deliver the requirements of the Directive in absence of any significant temporal and spatial increases in effort. For instance, the Welsh

WFD monitoring programs drawn upon to meet the requirements of the Directive are largely confined to within 1 nautical mile offshore and within the bay enclosing lines. It is proposed that 'Habitat Condition' will be assessed using data from WFD macro-algae tools, intertidal seagrass tool, Infaunal Quality Index and saltmarsh tool, and data from MarClim. However, the majority of WFD intertidal monitoring tools are confined to the shoreline and transitional water bodies and have limited spatial replication in Wales. Furthermore, HD monitoring is almost entirely limited to the marine SACs thereby restricting spatial spread and as a result, would not be representative of the condition of the wider seas. In order to cover the geographic and topographical scope of the MSFD, we recommend that monitoring programs will need to be expanded considerably over the long term development on monitoring programmes.

The monitoring programme proposals also state that for certain benthic habitat indicators, additional evidence is required to develop suitable, cost effective monitoring programmes. Some are in development and are planned to be operational by 2014. However, we recommend that elements of the planned programme will also fall short of meeting the requirements of the Directive. For instance:

1. Distributional range and pattern: This proposal only covers salt marsh habitats of which there are very few outside of transitional waters in Wales.
2. The extent of listed sediment habitats and both listed and predominant rocky and biogenic reef habitats – The existing ability to monitor habitat extent under existing WFD and Habitats Directive monitoring programmes is exceptionally limited. We recommend that existing monitoring programmes are unlikely to provide sufficient data to assess the extent of any of the identified habitats within Welsh waters
3. Habitat Condition: It is proposed that habitat condition will be assessed using data from WFD macro-algae tools, the intertidal seagrass tool, Infaunal Quality Index and saltmarsh tool, and data from MarClim. However, the majority of WFD intertidal monitoring tools are confined to transitional water bodies and have limited spatial replication in Wales. We recommend that consideration be given to including HD monitoring to assess habitat condition.
4. Physical damage and habitat condition within the scale of regional seas: the proposed HD SAC monitoring to be used is both limited in scope and geographical scale. HD monitoring is almost entirely limited to the marine SACs thereby restricting spatial spread and as a result, would not be representative of the condition of the wider seas.

HD monitoring in Wales will make an important and significant contribution to achieving the MSFD monitoring requirements. However, references to how HD monitoring will contribute towards the MSFD benthic habitats proposals are unclear. We welcome more clarity about the possible further development of HD habitat monitoring and how ongoing HD monitoring will contribute to MSFD Indicators.

HD monitoring should also be utilised to contribute towards assessment of 'Habitat condition' as it is typically condition focussed and could make an important contribution, improving temporal and spatial coverage as well as the range of parameters contributing to the condition targets. However as mentioned previously, this should recognise the limited spatial scale of the current HD monitoring programme.

Natural Resources Wales welcomes the differentiation between types of monitoring as proposed within the JNCC monitoring strategy.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy?

The proposed monitoring programmes for this Descriptor are not sufficient to guide progress towards achievement of GES and the related targets. The requirement to develop further indicators for benthic habitats is identified within the consultation. This will require new monitoring programmes for which the implementation costs and resource implications will need to be considered. Beyond the development of new indicators and associated monitoring programmes, the temporal and spatial coverage of existing WFD and HD monitoring will require significant improvement in order to assess achievement of GES.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

In Wales, the WFD monitoring programs drawn upon to meet the requirements of the Directive for benthic habitats are largely confined to transitional and coastal waters and HD monitoring is almost entirely limited to the marine SACs. The temporal and spatial coverage of existing WFD and HD monitoring requires significant improvement in order to guide achievement of GES.

References to how HD monitoring will contribute towards the MSFD benthic habitats proposals are currently unclear. We welcome more clarity about the possible further development of HD habitat monitoring and how ongoing HD monitoring will contribute to WFD indicators. HD monitoring should also be utilised to assess 'Habitat Condition' as it is typically condition focussed and could make an important contribution, improving temporal and spatial coverage as well as the range of parameters contributing to the condition targets.

We will continue to contribute towards the ongoing development of benthic habitat indicators and associated monitoring programmes. Given the large amount of work continuing in relation to target and indicator development for benthic habitats, we would welcome further consultation on monitoring programmes that measure against those targets.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Pressure monitoring or surveillance: Further work is required to make better use of pressure monitoring and surveillance. This would provide the evidence to help determine whether observed environmental changes to benthic habitats are anthropogenically influenced. Pressure monitoring can also act as a proxy for certain environmental change where there is a well-developed understanding of cause and effect.

Environmental data: Data on hydrographical conditions (e.g. temperature, salinity, chlorophyll, turbidity, sea state, meteorology) is required in order to provide an environmental context to biological changes and help determine causality of observed changes (where indicators are not already directly indicative of anthropogenic influence). Surveillance programmes that provide access to remotely sensed parameters or provide data from a network of fixed sensing facilities would be of significant value.

3.6 Descriptor 2 – Non-indigenous species

General comments:

(a) The MSFD monitoring programme for non-indigenous species will need to be integrated and aligned with any monitoring and reporting duties placed on the UK as part of the forthcoming EU Regulation on the control of alien invasive species.

(b) There is currently uncertainty over which organisation(s) in Wales and the UK will lead on the management of non-indigenous species. Until this is resolved it will not be possible to develop a full monitoring programme. In addition, the Environment and Sustainability Committee of the National Assembly for Wales held an inquiry into the Impact of Invasive Alien Species in Wales in May 2013. The outcomes from the Inquiry were published in January 2014 and recommended that Natural Resources Wales should lead on coordinating data management and management measures for invasive species across Wales. If Natural Resources Wales are granted the legal responsibility for non-indigenous species in Wales as a result of the recommendations, this would require significant additional funding and staff to supplement the absence of Natural Resources Wales staff dedicated to non-indigenous species work.

(c) Natural Resources Wales advises that to enable the achievement of GES for criterion 2.2, particularly in relation to management measures, that the Welsh

Government should consider Invasive Non Native Species (INNS) legislation and guidance along similar lines to the recent changes in Scotland.

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The existing monitoring programmes for non-indigenous species in Wales (and the UK) are not sufficient to meet the requirements of the Directive. In light of this, Natural Resources Wales is currently working with a number of partners across UK and Ireland including DEFRA and CEFAS through the marine Pathways Project to develop an understanding of where any monitoring programme would be best placed and how it would be delivered.

Until this work has reported it is difficult to say whether programmes proposed in the consultation are sufficient. Any monitoring programme developed will need to be cost effective and fit for purpose.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

As stated in our response to question 1, until the current work has reported it is not possible to say whether a future monitoring programme would be sufficient to guide progress towards the achievement of GES.

However we would expect that any monitoring programme would only be partially sufficient in reporting via Indicator 2.1.1 (Trends in abundance, temporal occurrence and spatial distribution in the wild of non-indigenous species, particularly invasive non-indigenous species, notably in risk areas, in relation to the main vectors and pathways of spread of such species), for Criterion 2.1 (Abundance and state characterisation of non-indigenous species, in particular invasive species) and that management measures would need to be developed along side this to achieve the Target for this Criterion (Reduction in the risk of introduction and spread of non native species through improved management of high risk pathways and vectors).

More challenging will be the sufficiency of any monitoring programme in reporting on Criterion 2.2 (Environmental impact of invasive non-indigenous species). The target for this criterion relates to the development of action plans for key high risk species with the indicator being the measure of impact on species habitats and ecosystems of those species. To measure this, an understanding of quality will need to be developed for those impacted species, habitats and ecosystems and we would hope that monitoring programme for Descriptor 1 (biological diversity) will assist with this. The scale of this task should not be underestimated as there is

currently limited understanding of how to monitor the impacts of non indigenous species at the species, habitat and ecosystem scale.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

As stated above, in order to achieve GES under Criterion 2.2, any monitoring programme will need to be closely linked to Descriptor 1. There will need to be coordination between Descriptor leads.

It is our opinion that monitoring under the Ballast Water Convention (once ratified) will also need to be incorporated in order to meet both targets. This monitoring programme should be set up as soon as possible.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Whilst we do not have any further suggestions for additional or more effective monitoring, we strongly believe that any monitoring that is put in place will need to be part of a wider transnational strategy. The Marine Pathways Project is currently working across the UK and Ireland to develop monitoring and management options for MSFD Descriptor 2 but programmes being developed in other countries adjacent to the UK will also need to be integrated into such a strategy.

3.7 Descriptor 3 – Commercially exploited fish and shellfish

General Comments:

Natural Resources Wales does not undertake data gathering for commercially exploited marine fish and shellfish species. This is primarily the responsibility of the Welsh Government.

It is understood that no new monitoring programmes will be required for commercial stocks managed under the Common Fisheries Policy (CFP). In combination with the monitoring of impacts from fishing gear on benthic habitats in Descriptors 1, and 6 Natural Resources Wales support the target of maintaining the exploitation rate of each commercial stock at or below Fisheries Mortality Rate - Maximum Sustainable Yield (FMSY), or within the range of plausible fishing mortalities consistent with FMSY. We consider the proposed monitoring programme, consisting of sampling data from e-search surveys, on-board commercial sampling of commercial catches and shore-based sampling of landings, to be adequate to meet the needs of the Directive for CFP managed stocks.

The Welsh commercial fishing fleet is largely comprised of small inshore vessels that predominantly target non-CFP managed shellfish stocks such as lobster, crab and scallops. These are three of the non CFP managed stocks for which the UK will report their achievement of MSY.

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programme for CFP managed stocks is sufficient to meet the requirements of the Directive. However, without further detail on the proposed monitoring programme for non-CFP managed stocks, it is not possible to assess their sufficiency.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programme for CFP managed stocks is sufficient to guide progress towards GES. However, without further detail on the proposed monitoring programme for non quota commercially targeted species such as shellfish, it is not possible to assess their sufficiency.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

The proposals indicate that the Welsh Government is compiling an additional monitoring plan for all shellfish, above the requirements of the Data Collection Framework. Natural Resources Wales will continue to advise and support Welsh Government in the further development of monitoring programmes and if possible, would welcome further detail about the additional monitoring plan and the associated timescales for delivery. It is critical that any additional monitoring is fit for purpose to meet the requirements of the Directive and monitor progress towards achieving GES.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

It is worth investigating if any additional monitoring programmes for non CFP shellfish stocks could be funded by Welsh Government through the new European Maritime and Fisheries Fund. Natural Resources Wales and the Welsh Universities could work with Welsh Government to support the strategic

identification of evidence gaps and any subsequent monitoring programmes for measuring GES for shellfish species.

3.8 Descriptor 5 – Human-induced eutrophication

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programmes for this Descriptor are sufficient to meet the requirements of the Directive. We agree that the integration of existing monitoring programmes for assessing the eutrophication status developed under the Water Framework Directive (WFD) and the OSPAR Convention will provide a sound basis for the monitoring requirements of Descriptor 5, and provide a robust assessment of the extent to which eutrophication in UK waters has been minimised.

We agree that individual programmes for England, Wales, Scotland and Northern Ireland should focus on issues of local concern and support the UK-wide coordination of monitoring through the Clean and Safe Seas Evidence Group (CSSEG).

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programmes for this Descriptor are sufficient to guide progress towards the achievement of GES and related targets. We advise that the integration of existing monitoring programmes for assessing the eutrophication status developed under the Water Framework Directive (WFD) and the OSPAR Convention will provide a sound basis for the monitoring requirements of Descriptor 5, and provide a robust assessment of the extent that eutrophication in UK waters has been minimised.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

We have no suggestions for additional monitoring programmes.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

To ensure that the proposed monitoring programmes are as effective as possible, consideration should be given into whether there is adequate geographical spread of monitoring points within Welsh and UK coastal waters.

3.9 Descriptor 7 – Hydrographical conditions

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

In principle, pending the outcome of the work underway and consideration of the points raised below, it would appear that the outlined monitoring programme proposed for Descriptor 7 is likely to be sufficient to meet the requirements of the Directive.

For Descriptor 7 it is understood that no specific monitoring programme will be developed; the outlined approach is to track and record licensing applications of any proposed developments large enough to have the potential to alter hydrographical conditions, either at a broad scale or through acting cumulatively with other developments.

Based on the description of the proposed monitoring programme provided for Descriptor 7, it is understood that a number of tasks are being undertaken to determine whether the proposed monitoring programme is appropriate. One task includes a review of the existing guidance available for developers on '*addressing impacts on hydrological conditions and cumulative impacts as part of the Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) processes*'. In this instance it will be important to ensure that existing guidance documents are sufficiently robust to cover and include the requirement to assess the range of characteristics for GES defined for Descriptor 7, as described in the Marine Strategy Part One. Further clarity should be provided within the guidance to developers to be produced as to what constitutes a large scale development.

Case studies have also been carried out on '*existing or potential future planning applications to support the assertion that the current regulatory regime is sufficiently robust to ensure GES can be achieved*'. The outcome of this work will help to determine whether the existing licensing regime is adequate or whether additional requirements including any additional licensing, monitoring, or assessment burdens for Government, marine licensing authorities or developers will be necessary to reach the targets for Descriptor 7 and achievement of GES. It will be important for Natural Resources Wales Advisory and in particular the Natural Resources Wales Marine Licensing Team to be aware of the outcome of this work to determine whether there is sufficient capacity and resources to manage any additional requirements should they be identified.

We welcome and support the intention to consider potential cumulative effects of development proposals to determine if hydrodynamic conditions are likely to be effected at a broad scale. According to the description provided however, it seems that only cumulative effects of large scale development proposals will be considered in this context. It may also be appropriate however for the monitoring programme to consider potential cumulative impacts of medium/smaller scale development proposals which may collectively contribute to potential broad scale changes to hydrodynamic conditions.

It is noted that “*Data and information from the licensing and consents process will be stored and will be accessible, subject to appropriate licensing arrangements, by UK scientists, policymakers, the European Commission and the European Environment Agency in compliance with EC 2003/4/EC on public access to environmental information.*” It is important at this stage to establish how the monitoring data will be stored and shared between the different regulatory and advisory bodies in order to establish cumulative effects at a regional sea level.

At this stage the detail provided to describe the monitoring proposal is high level in nature, once the outcome of the further work described above is available and the proposals have been considered in more detail it would be beneficial if further information and guidance was available to specifically help define the interpretation of ‘broad scale’ hydrodynamic impacts to be identified to ensure the monitoring proposals are understood and implemented as intended.

In principle, pending the outcome of the work underway and consideration of the points raised above, it would appear that the outlined monitoring programme proposed for Descriptor 7 is likely to be sufficient to meet the requirements of the Directive.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

In principle, pending the outcome of the work underway and consideration of the points raised within Question 1 above, it would appear that the outlined monitoring programme proposed for Descriptor 7 is sufficient to guide progress towards the achievement of GES.

Please see the comments raised in response to question 1 which may also be relevant for consideration in relation to this point.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

We have no suggestions for additional monitoring programmes.

Question 4:**Do you have any suggestions for additional or more effective monitoring programmes?**

With regards to the information concerning prevailing hydrographical conditions, required to develop a baseline, reference is made to several monitoring programmes and projects. However, there is no mention of UK coastal and marine observatories and organisations which collect this data. For example, the Met Office, NOC, CEFAS and AFBI all conduct oceanographic monitoring in UK territorial waters. We recommend that the available baseline information from these organisations is considered in establishing baseline hydrographical conditions.

It may also be possible to improve the baseline dataset for Wales going forward via the Wales Coastal Monitoring Centre (WCMC). Natural Resources Wales is represented on the project board and project team for the WCMC and sees the Centre as a potential key provider of physical monitoring requirements in Wales. The Centre is currently developing a business case for the next 5 years for approval by Welsh Government. If approved, this could include installation of some wave/tidal buoys and temperature and salinity measurements in strategic locations. The centre could also potentially play a role in terms of analysis and reporting on prevailing conditions for Wales if required. As the WCMC activity beyond this financial year remains subject to approval of a successful business case, it is not relevant to identify it as additional monitoring. However, it would be beneficial to track the progress of this initiative going forward.

3.10 Descriptor 8 – Concentrations of contaminants**General Comments:**

(a) As the competent monitoring authority, Natural Resources Wales agrees that existing programmes for assessing the concentrations of contaminants and their effects in coastal and marine waters developed under the Water Framework Directive (WFD), Environmental Quality Standards Directive (EQSD) and the OSPAR Convention are all regionally coordinated and have already been applied successfully to assess contaminant status. Integration of these programmes, and updating them to reflect changes in the Directives, will provide a sound basis for the monitoring requirements of Descriptor 8, and provide a robust assessment of whether levels are not giving rise to pollution effects, and whether status is improving.

(b) We welcome ongoing work under taken by the CSSEG group to integrate the monitoring of contaminants used to implement the WFD and the Environmental Quality Standards Directive (EQSD) for coastal waters and the monitoring used in the OSPAR Convention Coordinated Environmental Monitoring Programme (CEMP).

(c) Natural Resources Wales supports the proposed programme to monitor biological effects identified by OSPAR as common indicators for MSFD purposes (currently imposex in gastropods) and any OSPAR candidate indicators that are agreed as common indicators in the next 2 years. However, biological effects monitoring requires a high level of expertise and the resources currently available within Natural Resources Wales is unlikely to be adequate to cover any increased monitoring requirements.

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

Natural Resources Wales considers the proposed monitoring programme for this Descriptor to be sufficient to meet requirements of the Directive. We understand that the existing programmes for assessing the concentrations of contaminants and their effects in coastal and marine waters developed under the Water Framework Directive (WFD), Environmental Quality Standards Directive (EQSD) and the OSPAR Convention are all regionally coordinated and have already been applied successfully to assess contaminant status. Integration of these programmes, and updating them to reflect changes in the Directives, will provide a sound basis for the monitoring requirements of Descriptor 8, and provide a robust assessment of whether levels are not giving rise to pollution effects, and whether status is improving.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

Natural Resources Wales considers the proposed monitoring programme for this Descriptor to be sufficient to guide progress towards the achievement of GES, and the related targets.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

Natural Resources Wales supports the proposed programme to monitor biological effects identified by OSPAR as common indicators for MSFD purposes (currently imposex in gastropods) and any OSPAR candidate indicators that are agreed as common indicators in the next 2 years. However, biological effects monitoring requires a high level of expertise and the resources currently available within Natural Resources Wales are unlikely to be adequate to cover any increased monitoring requirements.

We note that the revision of the EQSD in 2015 will require 15 additional substances to be considered, together with a watch list to allow targeted EU-wide monitoring of substances of possible concern. The proposed monitoring programmes will be updated to adapt to these evolving requirements and as a result, the resource implications of additional monitoring upon Natural Resources Wales will need to be considered.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Please see the response to Question 3.

3.11 Descriptor 9 – Contaminants in fish and other seafood

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programmes for this Descriptor are sufficient to meet requirements of the Directive. We agree that previous retail surveys of seafood, enhanced by new investigations into contaminant levels in seafood extracted from known commercial fishing grounds in the North and Celtic Seas, will provide a sound basis for the monitoring requirements of Descriptor 9 – contaminants in fish and other seafood.

We understand that the Food Standards Agency (FSA) is carrying out investigations into contaminant levels in fish and other seafood taken from commercial fishing grounds in the Greater North Sea and Celtic Seas, targeting higher-risk species identified by the previous retail surveys. We would welcome clarity and further detail about how the FSA investigation will be used to develop a surveillance and operational monitoring programme in the future. Further information on how the assessment standards have been set would also be welcome.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programmes for this Descriptor are sufficient to guide progress towards the achievement of GES and the related targets.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

We have no proposed additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor. However, Natural Resources Wales recognises that there is currently a lack of information which has been gathered for seafood for human consumption originating from UK waters and welcomes the intention to introduce the targeted investigation within commercial fishing grounds in the North and Celtic Seas.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

We have no suggestions for additional or more effective monitoring programmes.

3.12 Descriptor 10 – Marine litter

Question 1:

Are the proposed monitoring programmes for this Descriptor sufficient to meet requirements of the Directive, bearing in mind the current limitations in our knowledge base?

The proposed monitoring programmes for this Descriptor are not sufficient to meet requirements of the Directive. The well developed beach litter surveys administered by the MCS are sufficient in monitoring against the target of an overall reduction in the number of visible litter items within specific types of coastlines. However, we recognise that targets were only proposed where there was considered to be sufficient scientific evidence to support them. As a result, targets were not proposed for elements of the Descriptor because there was insufficient understanding of the levels, types, sources, and impacts of these types of litter. We note that this is why the proposed approach for benthic litter and litter in the water column relies on surveillance indicators and we welcome the results of the monitoring to support the surveillance indicators to develop robust targets for 2018.

We understand that options for a benthic litter monitoring programme are currently being developed by Cefas for English and Welsh waters. The options will be based on existing surveys, offer a statistically robust programme and take into account litter accumulation zones. A decision on how the programme will be taken forward, including decisions on the best place to collate data and information relating to benthic litter, is expected by 2014. If Natural Resources Wales is to have a role in additional monitoring requirements for marine litter, careful consideration should be given to the associated cost and resource implications.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in UK Marine Strategy Part 1?

The proposed monitoring programmes for this Descriptor are not sufficient to guide progress towards the achievement of GES and related targets. Please see the response to Question 1.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

There is a range of possible surveillance or monitoring projects that could be established in order to measure progress towards GES. For instance, consideration could be given to monitoring litter items within seabird nests, monitoring the presence of micro plastics in sediment collected for invertebrate/granulometry analysis and monitoring the presence of litter in marine mammal strandings.

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

Please see the response to Question 3 above.

3.13 Descriptor 11 – Underwater noise

General comments:

(a) Natural Resources Wales recognise that there is currently a paucity of *sufficient* data to provide a quantitative assessment of the current status and trends of underwater noise in UK seas. Natural Resources Wales acknowledges that further research, monitoring and investigation is necessary to fully understand the effects of noise upon mobile species, the significance of inputs of noise into the marine environment, and to be able to provide appropriate options to work towards achieving Good Environmental Status (GES). Natural Resources Wales therefore welcomes the ongoing work to identify suitable options for monitoring programmes for underwater noise.

We recognise that it has not been possible, to date, for the expert community to recommend *specific* targets for either impulsive or ambient sounds which are equivalent to GES, and that instead *operational* targets in the form of a '*noise registry*' are being developed for impulsive noise, and a '*surveillance indicator*' being developed for ambient noise.

We recognise that monitoring of underwater noise is still in its infancy and that there are "...*considerable uncertainties with respect to the current levels and impacts*". We note that the UK-MMPCR recognises the fact that there is a need for continued research and development associated with confirming targets, indicators and monitoring proposals for D11 and that this work is set to continue to 2018. This is particularly applicable to the development of robust baselines to

examine the impacts of anthropogenically induced ambient noise. The Monitoring Programme will therefore be a strategy that evolves over time as full set of indicators will not be operational by July 2014.

(b) Despite the limited information within annex D11, Natural Resources Wales is broadly supportive of the monitoring proposals outlined in the UK-MMPCR and the need to further develop the monitoring requirements for D11. We are also supportive of the need for further collaborative research and development for the characterisation of suitable and meaningful targets, indicators and measures for D11. However, in considering a suitable noise monitoring programme(s), we draw attention to the following comments that Natural Resources Wales have previously raised and that we feel still require careful consideration:

- I. There remains a pressing need for standardisation in a number of key areas, in order for the MSFD noise monitoring programme to *effectively* inform the identification and development of measures to manage the effects of noise in the marine environment. These areas include:
 - Noise metrics and modelling
 - Terminology
 - Monitoring equipment and methods
 - Design of monitoring programmes
 - Defining how the effects of noise on marine wildlife will actually be assessed
 - Defining significance criteria and exposure thresholds
 - Determining how data will be interpreted and evaluated

- II. The decision that in the UK a 'noise register' will be the initial primary measure taken in relation noise raises a number of issues which have previously been raised by Natural Resources Wales:
 - The register will need to be comprehensive and provide a coordinated and consistent approach across the UK;
 - All possible sources of low frequency and impulsive noise should be identified for inclusion on the register;
 - Clarity is needed on whether, and importantly, how the content of the noise register will be used to inform an assessment of the likely impacts on marine wildlife, and whether any 'triggers' or thresholds for (adaptive) management measures might be identified in the future - any monitoring programme needs to consider this at the design stage;
 - Clarity is needed with respect to how the noise registry will be turned into 'action'.

Question 1:

Are the proposed monitoring programmes for this descriptor sufficient to meet the requirements of the Directive, bearing in mind the current limitations in our knowledge base?

Whilst Natural Resources Wales recognise the current gaps and limitations in our knowledge base for underwater noise, we do not have the technical expertise to be able to advise proficiently as to whether or not the proposed monitoring programmes for this descriptor are sufficient to meet the requirements of the Directive. Natural Resources Wales are broadly supportive of the monitoring proposals currently described in the UK-MMPCR, but would draw your attention to the '*General comments*' above.

Question 2:

Are the proposed monitoring programmes for this Descriptor sufficient to guide progress towards the achievement of GES, and the related targets, as set out in the UK Marine Strategy Part 1?

What constitutes GES is uncertain given the current poor levels of knowledge for underwater noise. Natural Resources Wales does not feel that this question can be answered with confidence at this point in time. It is important to reemphasise that Natural Resources Wales does not have the technical expertise to be able to advise proficiently as to whether or not the proposed monitoring programmes for this descriptor are sufficient to guide progress towards the achievement of GES, and the related targets, as set out in the UK Marine Strategy Part 1. Natural Resources Wales is broadly supportive of the monitoring proposals currently described in the UK-MMPCR, and is supportive of the intention to continue collaborative research and development in this area in order to define specific targets, indicators and monitoring proposals for D11. However, we would draw your attention to the '*General comments*' above.

Question 3:

Subject to the answer to Question 2, are any additional monitoring programmes needed in order to achieve GES and the related targets for this Descriptor?

Please see '*General comments*' above

Question 4:

Do you have any suggestions for additional or more effective monitoring programmes?

It is Natural Resources Wales' opinion that the monitoring proposals for D11 require further development and more detail provided before this question can be answered confidently.

For further information on Natural Resources Wales' response, please contact:

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