

Developing a Regulatory Framework for Mineral Exploitation in the Area.
Report to Members of the Authority and all stakeholders.

JNCC Response.

JNCC Functions:

The Joint Nature Conservation Committee (JNCC) is the statutory adviser to the UK Government and devolved administrations on UK and international nature conservation. Its work contributes to maintaining and enriching biological diversity, conserving geological features and sustaining natural systems.

JNCC delivers the UK and international responsibilities of the Council for Nature Conservation and the Countryside (CNCC), Natural Resources Wales, Natural England, and Scottish Natural Heritage (SNH). The functions that arise from these responsibilities are principally to:

- advise Government on the development and implementation of policies for, or affecting, nature conservation in the UK and internationally;
- provide advice and disseminate knowledge on nature conservation issues affecting the UK and internationally;
- establish common standards throughout the UK for nature conservation, including monitoring, research, and the analysis of results;
- commission or support research which it deems relevant to these functions.

The Committee comprises 14 members: a Chairman and five independent members appointed by the Secretary of State; the Chairman of CNCC; the Chairmen or deputy Chairmen of Natural Resources Wales, Natural England and SNH; and one other member from each of these bodies.

JNCC, originally established under the Environmental Protection Act 1990, was reconstituted by the Natural Environment and Rural Communities Act 2006. Support is provided to the JNCC by a company limited by guarantee (JNCC Support Co) that the Committee established in 2005.

JNCC's response to this consultation is provided in our capacity as scientific advisors on marine environmental and nature conservation matters, and draws heavily on our experience working within the regulatory processes for the UK offshore oil and gas industry, UK renewables industry and UK marine aggregate industry, and our understanding of monitoring in the deep-sea. We have only provided comments on sections that fall within our areas of expertise.

Overarching comments:

1. Deep sea environments:

JNCC believes it important that the benthic environment is fully described within any Environmental Impact Statement. However, as features of conservation importance have not been identified or mapped across the Area, alternative ways of providing this analysis need to be found.

JNCC would like to draw the ISA's attention to a new UK classification of deep-sea biotopes¹ and correlations of those biotopes with listed habitats under the Habitats Directive², OSPAR Convention³, the Marine and Coastal Access Act (2009)⁴, and the NERC Act (2006)⁵. JNCC analysis shows that 26% of these deep-sea biotopes correlate to Annex I habitats protected under the EC Habitats Directive, and 33% of these deep-sea biotopes correlate with Threatened and Declining Habitats under the OSPAR Convention. We acknowledge that these legal instruments cover just UK waters / North-East Atlantic waters, but we believe that they suggest that nature conservation features (which in national waters would qualify for protection) are likely to occur in the Area. JNCC therefore suggests that assessment of operations against nature conservation features should be included within the licensing process.

2. Deep Sea Metrics:

JNCC notes that for many deep-sea habitats there is limited information on the spatial and temporal patterns and dynamics of the associated assemblages, and the abiotic drivers and biotic interactions that drive these patterns. Information on the rates of ecological processes and how changes in process direction and rates could affect particular ecological functions is also very limited. Considering the existing data limitations and knowledge gaps, JNCC suggests that further thought and consultation with stakeholders occurs over the potential use of indicators in the deep sea, and the data collection standards and requirements for such indicators or metrics.

¹ <http://jncc.defra.gov.uk/page-6997>

² Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora. <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:01992L0043-20070101&from=EN>
Accessed 28.05.2015.

³ OSPAR. Convention for the protection of the marine environment of the north-east atlantic.. http://www.ospar.org/html_documents/ospar/html/ospar_convention_e_updated_text_2007.pdf
Accessed 28.05.2015

⁴ Marine and Coastal Access Act (2009). Accessed 28.05.2015.
http://www.legislation.gov.uk/ukpga/2009/23/pdfs/ukpga_20090023_en.pdf

⁵ Natural Environmental and Rural Communities Act (2006).
<http://www.legislation.gov.uk/ukpga/2006/16/contents> Accessed 27.05.2015.

3. Plan and project level assessment:

It is imperative that a robust, well supported Strategic Environmental Management plan (Strategic Environmental Assessment) is formulated before due consideration is given to individual licences and specific areas of development (please refer to JNCC 2014⁶). This should allow high level environmental mitigation to be incorporated at an early stage within the consenting process. JNCC notes that at present the Strategic Environmental Management Plan is included in Part IV – ‘Protection and preservation of the marine environment’ of the consultation material. JNCC recommends that the Strategic Environmental Assessments are drafted by the International Seabed Authority, in consultation with stakeholders, rather than by individual applicants, so that the formulation of these plans occurs outside of the consenting process for individual exploitation licences.

In addition to these high level Strategic Environmental Assessments, JNCC would also expect an Environmental Impact Assessment to be conducted for each application, by the applicant. Those seeking a licence would then demonstrate within their licence-specific Environmental Impact Statement how their application adheres to the Strategic Environmental Assessment and any recommendations or required mitigation measures suggested.

JNCC recommends that this two step process, which reflects the European SEA⁷ and EIA Directives⁸ is followed to allow for both strategic, broadscale planning (through the Strategic Environmental Management Plans) and licence specific consideration of the environment and predicted impacts (through the Environmental Impact Assessment process) to be given adequate consideration.

4. Serious Harm to the Marine Environment:

JNCC notes that the definition of ‘serious harm to the marine environment’ means any effect from activities in the Area which represent a significant adverse change⁹. JNCC recommends that this definition is subject to further discussion with stakeholders and that a

⁶ JNCC (2014). Developing a Regulatory Framework for Mineral Exploitation in the Area. Stakeholder Engagement Survey. JNCC response.

⁷ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. Accessed 28.05.2015. <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32001L0042&from=EN>

⁸ Directive 2014/52/EU of the European Parliament and of the Council. (amending Directive 2011/92/EU on the assessment on the assessment of effects of certain public and private projects on the environment. Accessed 28.05.2015. <http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32014L0052&from=EN>

⁹ International Seabed Authority (2013). Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters ISBA/19/C/17.

common understanding as to what is understood to constitute 'serious harm to the marine environment' over the whole range of receptors is established before exploitation licences are issued.

JNCC also wishes to highlight the importance of collecting robust baseline data, potentially spanning long periods of time, as these data are necessary to fully understand significance and identify cases of serious harm to the marine environment. We therefore recommend that further work is done on understanding what would be considered 'serious harm'.

5. Sustainable Development:

JNCC understands that activities occurring within the Area need to be conducted in such a way that benefits mankind as a whole¹⁰ and that commercial mineral exploitation within the area will be targeting non renewable resources (i.e. Polymetallic Nodules, Polymetallic Sulphides and Ferromanganese Crusts). Considering the need for sustainable development¹¹, JNCC suggests that an industry wide (or a regional level if more suitable) sustainability study is conducted which addresses the following sorts of questions:

- Can mineral exploitation be demonstrated to benefits future generations?
- How could regulation prevent overexploitation within a relatively short timeframe (i.e. one human generation)?
- Are there measures that can be put in place which will improve the resources re-usability and recyclability, reducing the need for additional exploitation in future?

6. Consideration of Alternatives:

JNCC acknowledges that there is still considerable debate as to whether deep sea mining could be a sustainable industry, and one which should be considered as a way of meeting mankind's mineral requirements¹². JNCC recommends that either a comprehensive, ideally independently conducted 'Alternatives Study' is included as a separate part of the licensing process or that high level alternative solutions are fully considered within a Strategic Environmental Management Assessment and licence specific environmental impact assessments.

¹⁰ United Nations Convention on the Law of the Sea.

¹¹ Brundtland (1987). Report of the World Commission on Environment and Development: Our Common Future. <http://www.un-documents.net/our-common-future.pdf> Accessed 27.05.2015.

¹² Deep Sea Promises and Challenges Webinar Series. 14.05.2015. Hosted by MESP.

<http://www.indeep-project.org/deep-ocean-stewardship-initiative>

7. Consideration of the Precautionary Principle:

Application of the precautionary approach is critical in ensuring that adequate environmental protection is achieved if mineral exploitation is to occur.

JNCC notes that in the exploration licences it states that: “*Prospectors and the Authority shall apply a precautionary approach, as reflected in principle 15 of the Rio Declaration on Environment and Development*¹³. *Prospecting shall not be undertaken if substantial evidence indicates the risk of serious harm to the marine environment*”¹⁴. However, principle 15 also states “*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*”¹⁵. This appears contradictory to the notion of substantial evidence of potential environmental harm being needed before prospecting is restricted (Please refer to earlier comments regarding ‘Serious harm to the marine environment’).

JNCC wishes to highlight to the International Seabed Authority that the EU Habitats Directive, and the UK Marine and Coastal Access Act both aim to protect listed features of conservation importance in the UK EEZ from adverse environmental impacts by licensed activities. Whilst JNCC acknowledges that these assessment processes only apply to features protected within marine protected areas, the assessment processes require industry to demonstrate that there *will not be an adverse effect* on the feature of interest before a licence can be granted (or compensation measures are required). JNCC supports the inclusion of the precautionary approach within legislation and recommends that the ISA consider both the application of the precautionary principle in deep sea mining, and how to incorporate it into the exploitation licence conditions.

JNCC acknowledges that discussions regarding the application of the precautionary approach have already occurred¹⁶ but we recommend the following steps are taken to reach a common understanding:

- Further debate with stakeholders as to an appropriate way of interpreting Principle 15 of the Rio Declaration, and discussion of how it should be used within this industry.
- A requirement for mineral exploitation applications to demonstrate how their proposed activities (and any agreed environmental mitigation measures) adhere to the agreed interpretation and application of the precautionary approach.

¹³ Rio Declaration on Environment and Development (1992). The United Nations Conference on Environment and Development.

<http://www.unep.org/Documents.Multilingual/Default.asp?documentid=78&articleid=1163> Accessed 27.05.2015.

¹⁴ International Seabed Authority (2013). Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters ISBA/19/C/17.

¹⁵ Rio Declaration on Environment and Development (1992). The United Nations Conference on Environment and Development

¹⁶ Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

8. Explanation of Licence Conditions:

JNCC recommends that, for each licence condition, a brief justification is provided explaining the purpose of the given condition. This allows non specialist readers to understand the purpose behind the licence conditions given and, if considered necessary, the effectiveness of each condition to be assessed. For example in the UK the Marine Management Organisation's Standard Licence conditions for marine aggregate extraction¹⁷, justification for each condition is provided in the following format:

"No dredging is permitted until charts detailing the location of any known sensitive nature conservation features are provided to the MMO and The Crown Estate, and acknowledged by the MMO in writing".

Reason: To protect nature conservation features.

Specific comments on the elements of the report. (Split up by parts in the table).

Part I Introduction:

JNCC recommends that all key terms are defined in the Terms and Scope.

JNCC notes that the definitions included in the Exploitation licences will be those presented in the Exploration Regulations, save amendments. JNCC notes that in the existing exploration licence conditions for Polymetallic Nodules¹⁸ the definition of 'Exploration' includes the use and testing of recovery systems and equipment. JNCC would welcome clarity as to whether this includes any test mining – and the end destination of any material collected as part of these test procedures.

Part II: Applications for approval of plans of work for exploitation in the form of contracts:

1. Form of applications:

JNCC suggests that each "plan of work for exploitation" covers one exploitation area. This ensures that each individual licence area is fully considered under a licence-specific EIA and those licence-specific environmental conditions and potentially sensitive receptors are fully

¹⁷ Marine Management Organisation (2014). Standard and Model Conditions for Marine Licence – New Applications.

¹⁸ International Seabed Authority (2013). Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters ISBA/19/C/17.

considered. However, the licensing regime could be written in such a way, that if the operator is able to demonstrate that two individual licence areas are sufficiently similar (in terms of scale of operations, environmental conditions, sensitive receptors, etc) then the International Seabed Authority could reserve the right to allow two licence areas to proceed under one application. JNCC recommends that this issue is discussed further amongst stakeholders, to ensure that the process adopted is transparent and supports a robust Environmental Impact Assessment process.

2. Financial and Technical capabilities:

Deep Sea Mining has the potential to have long lasting impacts, or for impacts caused by extraction to only materialise after mining has ceased. For example, the impact of removal of Polymetallic Sulphides on wider ecosystem services, habitat connectivity and species distribution¹⁹ may not become apparent for some time. In JNCC's view, this raises important questions that should be addressed before mining is consented, such as who would be responsible for paying for unexpected environmental damage caused by the licensed mining, and how would the claims process work?

3. Data and information to be submitted for approval of the plan of work for exploitation:

JNCC suggests that alternatives which have been considered and rejected from analysis should to be considered within an Environmental Impact Statement²⁰, and that an EIS is listed as suggested content for an exploitation application. However as per our earlier comments ("Overarching comments (No 6)") JNCC recommends that alternative solutions to deep sea mining are explored further outside of individual licence applications.

Scientifically robust environmental monitoring at an individual licence scale, and at a broader scale, are essential for detecting any developing environmental impacts which could cause serious environmental harm, and for gaining a greater understanding of the environment in which mineral exploitation will be occurring. It is not clear how licence specific and broader monitoring requirements have been encapsulated within the suggested content. JNCC recommends that monitoring requirements are either explicitly listed as an independent report within the suggested content, or that it is clearly stated that all monitoring requirements will be included as part of the Environmental Management plan. JNCC notes that monitoring is included in the "Content of the Environmental Impact Statement"²¹.

¹⁹ Van Dover (2010). Mining seafloor massive sulphides and biodiversity: What is at risk? ICES J.Mar. Sci. <http://icesjms.oxfordjournals.org/content/early/2010/06/29/icesjms.fsq086.full.pdfhtml> Accessed 28.05.2015.

²⁰ Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

²¹ Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

4. Feasibility Study

JNCC recommends that the costs, commercial viability and technical ability to undertake any decommissioning that may be required at the end of the licence are given due consideration within the feasibility study. In addition JNCC recommends that the ability to undertake any realistic potential environmental restoration are also given due consideration.

5. Environmental Impact Statement:

JNCC notes that an EIS template has been drafted but this requires finalisation²² and that it is expected to be reviewed. JNCC recommends that the following broad areas are included within the required background information and impact assessments (please note this is not a comprehensive list).

- An assessment of alternatives
- Underwater light
- Chemical analysis of existing sediments, and an assessment of any expected changes
- Ecosystem services provided by the existing environment and an assessment of any expected impacts
- Benthic habitats and communities
- Known features of conservation interest occurring within the proposed licence area and broader region
- Assessment of different categories of effect
- Risks associated with any unintended spills.
- Cumulative effects

6. An Assessment of alternatives:

In addition to the strategic assessment of alternatives JNCC has described in “Overarching comments (No 5)” JNCC recommends that an assessment of alternatives is included within each Environmental Impact Statement and that the assessment of alternatives included in the Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10²³ is expanded. Whilst this assessment should briefly consider high level alternatives (those discussed at SEA level) the assessment of alternatives should focus on licence-specific alternative solutions. For example why was one area of the licence area put forward for use first over another? What are the different technological solutions available to reduce environmental damage and why was the proposed method chosen?

²² Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

²³ Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

7. Underwater light:

Mineral exploitation will introduce anthropogenic sources of light into the licensed areas, potentially for long periods of time (the duration of the licence). Considering mineral exploitation is expected to occur where the main source of natural light is bioluminescence, the introduction of light should be considered within any Environmental Impact Assessment.

8. Chemical Analysis:

JNCC understands that deep sea mining is likely to require the use of seafloor production tools and slurry lift pumps. The use of mechanical vehicles on the seafloor and the removal process could result in changes in seabed chemistry, either through the mobilisation of existing chemicals, or through the introduction of new chemicals into the environment. JNCC therefore recommends that the existing chemical environment is described within the environmental statement, and any changes (including any impacts that changes in sediment chemistry could have on other receptors) is assessed within the Environmental Impact Statement.

9. Ecosystem Services:

The deep sea, including sea mounts and hydrothermal vents, provide ecosystem services, which are only just beginning to be understood. Ecosystem services such as nutrient cycling, carbon dioxide storage, it could be argued currently benefit of all mankind and have far reaching benefits. Considering activities within the Area should be carried out for the benefit of mankind as a whole²⁴, any loss or potential damaging change caused by mineral exploitation needs to be considered in the context of the existing benefits the existing environment bestows on mankind through the services it provides. Including ecosystem services within the environmental impact assessment process should assist the decision making process by ensuring that sufficient weight is given to the current human benefits gained by the existence of these habitats, and that the benefits to mankind gained by any mineral exploitation are likely to outweigh any loss or damage to the existing ecosystem services provided.

10. Features of Conservation Interest

Specific consideration should be given to known features of conservation interest and these should be fully described within the background information of any Environmental Impact Statement. Therefore JNCC recommends that features of nature conservation interest are

²⁴ United Nations Convention on the Law of the Sea (UNCLOS). Article 140. Benefit of Mankind.
http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

included as ‘suggested content’ within any future iteration of the EIS template²⁵. All expected impacts associated with mineral exploitation on features of conservation interest should be assessed, with consideration given to the features’ sensitivity to an expected impact and their recoverability. In addition, it would be beneficial if this assessment considered whether the habitats expected to be impacted from mineral exploitation are protected under other legislative drivers in Marine Protected Areas. (Please refer to ‘Overarching Comments (No 1)’).

11. Effect Categories:

JNCC recommends that for all identified receptors, direct and indirect effects, secondary effects, cumulative effects, short-term, medium-term and long-term effects, permanent and temporary effects and positive and negative effects are assessed within the impact statements²⁶. JNCC recommends that all categories listed in Schedule 3, “Information to be included in an environmental statement” from the Marine Works (Environmental Impact Assessment) Regulations 2007²⁷ is included as ‘suggested content’ in any future iteration of the EIS template²⁸.

In addition, JNCC suggests that clarification is provided within any future iteration of the EIS template as to whether changes in bathymetry should be considered in relation to the category “Geological Setting” or the category “Physical Oceanographic setting”.

12. Cumulative Impacts:

JNCC recommends that cumulative impacts are given due consideration in the Strategic Environmental Assessments and in the licence specific Environmental Statements.

²⁵ Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

²⁶ The Marine Works (Environmental Impact Assessment) Regulations 2007. Schedule 3: Information to be included in an Environmental Statement. Accessed. 26.05.2015.
<http://www.legislation.gov.uk/uksi/2007/1518/schedule/3/made>

²⁷ The Marine Works (Environmental Impact Assessment) Regulations 2007. Schedule 3: Information to be included in an Environmental Statement. Accessed. 26.05.2015.
<http://www.legislation.gov.uk/uksi/2007/1518/schedule/3/made>

²⁸ Environmental Management Needs for Exploration and Exploitation of Deep Sea Minerals, ISA Technical Study NO. 10 (2012).at 17.

13. Concept of an Environmental Impact Area:

JNCC notes that it is suggested that the concept of an “Environmental Impact Area” may need to be developed further²⁹. JNCC agrees with this approach and would like to make the International Seabed Authority aware of existing guidance regarding defining impact hypotheses for the UK Marine Aggregate Industry³⁰. Ware & Kenny 2011 outline how primary and secondary impact zones and reference conditions can, and have been applied in managing marine aggregate extraction and how they are used to inform environmental monitoring.

14. Environmental Management Plan:

JNCC notes that the Guidelines for the design and monitoring of Preservation Reference Zones and Impact Reference zones needs to be developed. JNCC would welcome further consultation regarding their development and recommend that the following aspects are given consideration in their development:

- Identification of different impact zones.
- The number of samples that need to be collected to detect statistical significance and therefore the ability of any monitoring regime to detect change.
- The frequency of monitoring required for each receptor to identify any developing impacts and to detect change.
- The most appropriate sampling methods for each receptor.
- The identification of robust, testable hypotheses which are capable of being addressed with the proposed monitoring timescales and frequency.
- Based on existing information, the expected time frames over which change is expected to occur (e.g. are any significant changes expected to materialise over the short term, or will they only become apparent after the licence period has been relinquished?)
- How an effective EMP can be developed if it is not feasible to adopt a robust monitoring regime due to technological, scientific or financial constraints.

15. Closure Plan:

JNCC notes that a template for a Closure Plan needs to be developed. JNCC recommends that the following is given consideration:

²⁹ International Seabed Authority (2015). Developing a Regulatory Framework for Mineral Exploitation in the Area. Section II, Applications for approval of plans of work for exploitation in the form of contracts. Environmental Impact Statement.

³⁰ Ware, S.J & Kenny, A.J. (2011). Guidelines for the Conduct of Benthic Studies at Marine Aggregate Extraction Sites. (2nd Edition). Marine Aggregate Levy Sustainability Fund (MALSF). ISBN: 9780907545705. First Published March 2011.

- The applicant should be able to demonstrate that, using existing technology, it is capable (financially and technically) of fully decommissioning any infrastructure required for mineral exploitation. JNCC also recommends that a closure plan is submitted and agreed before mineral exploitation can be licensed. JNCC acknowledges that the Closure plan will develop over time.
- Key principles governing decommissioning should be established and included in relevant licence conditions. (For example will it be assumed that all infrastructure will be removed at the time of decommissioning and will independent 'clear seabed' surveys be conducted to demonstrate that this is the case? Will the applicant be expected to carry out a full environmental impact assessment at the time of decommissioning or will decommissioning be considered as part of the initial licensing process? Will the applicant be expected to decommission infrastructure that is no longer in use (and doesn't have an identified future use) at the time – or will all decommissioning be postponed until the cessation of mineral exploitation?)

JNCC wishes to highlight that significant environmental impacts associated with mineral exploitation may not become apparent until after exploitation has ceased. Any consideration of post closure monitoring should consider the recoverability of the area impacted, the life cycles of the key receptors and the timescales over which any pre identified impact could occur.

16. Size and location of exploitation area(s) covered by the plan of work:

JNCC notes that further discussion is required regarding the size and location of potentially exploited areas. JNCC recommends that the decision making process is supported by relevant scientific evidence. As such JNCC recommends that any test mining conducted is supported by a study investigating the environmental impacts associated with 'high intensity' and 'low intensity' mineral extraction so that the most environmentally preferable extraction levels can be set.

17. Public Review of the Environmental Impact Statement and Environmental management plan:

JNCC acknowledges the challenges faced with designing a consultation process which is transparent and allows all stakeholders to contribute.

Part III Contracts for exploitation:

1. Duration of contracts / renewal:

JNCC notes that a substantive review (approximately every 5 years) has been suggested. As per our previous response³¹ JNCC recommends that this type of assessment process is included in any exploitation licensing regime. The substantive review process allows for licence condition variations to occur and for monitoring, which has occurred since the development of the Environmental Impact Statement to be given due consideration and influence management (e.g. indicate if mineral exploitation can continue to occur or if unacceptable environmental impacts are developing that require additional mitigation or cessation of mining).

Part IV Protection and preservation of the marine environment

1. Protection and preservation of the marine environment:

JNCC acknowledges that a lot of work is required to finalise licence conditions, and we welcome further consultation from the ISA regarding their development, application of principles and the development of management measures.

2. Environmental Management:

JNCC notes that any material revisions to an EMP should require the prior approval of the Authority. JNCC suggests that stakeholders provide comment to the Authority regarding any material revisions proposed by the operator.

3. Emergency Orders:

JNCC notes that the Secretariat is due to review contemporary best practice in relation to marine disaster management. In addition to the comments provided by JNCC in our previous response³², JNCC recommends that the following are considered by the Secretariat.

- The role of stakeholders in an emergency (Who will be contacted and be informed that an incident has occurred, will their expertise be required and if so what are the most appropriate consultation routes?) Who will be responsible for providing scientific and technical advice?
- How media interest will be managed.

³¹ JNCC (2014). Developing a Regulatory Framework for Mineral Exploitation in the Area. Stakeholder Engagement Survey. JNCC response

³² JNCC (2014). Developing a Regulatory Framework for Mineral Exploitation in the Area. Stakeholder Engagement Survey. JNCC response

- The suitable use of worst case scenarios to inform preventative management. (e.g. what modelling of potential incidents needs to be undertaken to inform a consent decision?)

JNCC notes that in the Exploration Regulations³³ the contractor only needs to contact the Secretary-General if an incident has caused, is causing or poses a threat of serious harm to the marine environment. JNCC recommends that if the exploration regulations are to be used as a basis for exploitation regulations, then 'serious harm to the marine environment' must be defined and trigger points identified for an incident (e.g. in relation to volume of contaminant spilt). This will allow a common understanding amongst operators, stakeholders and regulators as to when incidents require reporting and the expected level of action to be taken. For example in the United Kingdom oil and gas operators should notify the regulator of any unlicensed chemical spills. The forms are also circulated around key stakeholders and notify them of a developing incident, allowing statutory consultees and the regulator to monitor the situation.

4. Strategic environmental management Plan (SEMP):

Please refer to our comments under 'Overarching comments (No 2).

5. Adaptive management approach:

JNCC agrees that adaptive management requires further discussion with interested parties. JNCC wishes to highlight that for adaptive management to be successful, it needs to be informed by scientific evidence, licence-specific and regional monitoring reports and other relevant information sources. Therefore, if test mining was licensed (as suggested) JNCC recommends that sufficient time passes between the completion of any associated studies/monitoring and the consideration of commercial-scale licence applications, so that any commercial exploitation can be regulated by an informed adaptive management approach.

6. Environmental liability trust fund:

In 2002 - 2011 in the United Kingdom the Aggregates Levy Sustainability Fund (ALSF) used revenue from the aggregates levy (a tax of £2.00 per tonne (2012)) to fund industry specific research initiatives. In our view, this fund, and the scientific outputs and working relationships it produced, was highly beneficial. The fund enabled an enhanced understanding of environmental impacts of marine aggregate extraction and promoted

³³ International Seabed Authority (2013). Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters ISBA/19/C/17. https://www.isa.org.jm/sites/default/files/files/documents/isba-19c-17_0.pdf Accessed 27.05.2015.

environmental best practice. Further information regarding this fund and its outputs can be found on the British Marine Aggregates Industry Website³⁴.

7. Review:

JNCC notes that given the adaptive management approach, the exploitation regulations will benefit from an annual evaluation. JNCC questions if it is the International Seabed Authority's intention to involve stakeholders within this review process. JNCC would welcome further consultation regarding the development of the exploitation licence conditions, and associated expert working groups.

Part 4: Summary of high level issues:

1. JNCC recommends that the following high level issues are added to the list provided and given further consideration:

- The role of Strategic Environmental Impact Assessments / Regional planning
- The consideration of alternative solutions
- Development of key principles (Precautionary approach, Sustainable development, adaptive management, serious harm etc).
- The definition and interpretation of serious harm to the marine environment.
- The role of pre, operational and post exploitation monitoring at a variety of scales and the role of environmental modelling in informing the decision making process.
- Regulation of unexpected emergencies (Emergency Orders)
- The role of stakeholders and a stakeholder consultation plan.
- Consideration of cumulative effects.

2. Publication and confidentiality:

JNCC are content for this submission to be made publically available, and for the JNCC name to be presented, however none of my personal contact details are to be disclosed. Future consultations should be sent to: JNCCAdvicetoDTI@jncc.gov.uk. JNCC would like to be contacted regarding future consultations and the opportunity to be part of a stakeholder group.

³⁴ British Marine Aggregates Producers Association (2015):
http://www.bmapa.org/issues/aggregates_levy.php