RE: ATLAS Submission regarding the Draft Regulations for Exploitation

30th September 2018

Dear Secretary-General,

In response to the call by the International Seabed Authority for comments on the revised draft regulations on exploitation of mineral resources in the Area (ISBA/PR/2018/040), we would like to offer the enclosed commentary.

This commentary is submitted on behalf of the EU ATLAS Horizon 2020 Project (No. 678760) coordinated by the University of Edinburgh (UK). The ATLAS consortium consists of 24 beneficiaries including 12 universities, 5 small and medium-sized enterprises (SMEs), 3 government agencies and 4 national research centres. Beneficiaries are drawn from Denmark, Belgium, France, Germany, Ireland, Netherlands, Norway, Portugal (including Azores), Spain, the UK and USA. The Canadian Government's Department of Fisheries and Oceans acts as a third party providing in-kind contributions across the project. ATLAS has also created a network of 15 Associate Partners across sectors from research, industry and policy making in Europe and North America.

The focus for ATLAS is the North Atlantic sea basin, where between 2016 and 2020 the consortium is conducting a transatlantic assessment and deep-water ecosystem-based spatial management plan for Europe. ATLAS is focussed on deep-seabed ecosystems, where environmental baselines are generally poor, but existing Blue Economy and new Blue Growth sectors are set to expand. This submission has been coordinated by Seascape Consultants Ltd, lead for the ATLAS Marine Policy Work Package.

Our commentary includes expert advice from ATLAS Project Partners drawn from major European marine research institutes and universities. The ATLAS Project builds on the knowledge and experience acquired by many of the current consortium who participated in a long line of large European integrated projects dedicated to improving the science basis for sustainable management of deep-sea resources; the EU FP5 Atlantic Coral Ecosystem Study (ACES)[1] 2001 – 2004, the EU FP6 Hotspot Ecosystem Research on the Margin of European Seas (HERMES)[2] 2004 – 2009, the EU FP7 Hotspot Ecosystem Research and Man's Impact On European Seas (HERMIONE)[3] 2009 – 2013, the EU FP7 Towards ecosystem based management and monitoring of the deep Mediterranean, North-East Atlantic and Beyond (CoralFISH)[4] 2008 – 2013, and the EU FP7 Managing Impacts of Deep Sea Resource Exploitation (MIDAS) from 2013 – 2016[5]. Specific sections are not accredited to individual experts, instead all contributions have been combined into a single ATLAS Project response. A list of the contributors is included within the response.

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[1] Freiwald A *et al.* (2000) The Atlantic Coral Ecosystem Study (ACES): a margin-wide assessment of corals and their environmental sensitivities in Europe's deep waters. EurOcean 2000 Project Synopses. *Marine Processes, Ecosystems and Interactions.* 1: 312 – 317.

[2] Grehan AJ *et al.* (2009) HERMES: Promoting ecosystem-based management and the sustainable use and governance of deep-water resources. *Oceanography* 22: 1, 154 – 165.

[3] Weaver PPE *et al.* (2009) The future of integrated deep-sea research in Europe the HERMIONE project. *Oceanography* 22: 1, 179 – 191.

[4] Grehan AJ *et al.* (2017) Towards ecosystem based management and monitoring of the deep Mediterranean, North-East Atlantic and Beyond. *Deep-Sea Research Part II* 145: 1 – 7.

[5] Managing Impacts of Deep Sea Resource Exploitation: Research Highlights http://www.eu-midas.net/sites/default/files/downloads/MIDAS_research_highlights_low_res.pdf

For more information on the ATLAS Project, please see the website https://www.eu-atlas.org, or contact the lead of the Marine Policy Work Package, Prof. David Johnson david.johnson@seascapeconsultants.co.uk. Further information on ATLAS can also be found in Appendix 1, page 28 of this Submission.

If you require any further details about the enclosed commentary, please do not hesitate to contact me.

Yours faithfully,

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Executive summary

Overview

This submission by the ATLAS Consortium is based around two questions: 1) Should the starting point for confidentiality of information be a presumption of public availability, with the development of a list of confidential data and information? 2) Do the new Draft Regulations for Exploitation adequately address the effective protection of the marine environment (bearing in mind the need to develop an appropriate mix of standards and guidelines)? To begin to address these questions, we provide expert commentary on the relevant Draft Regulations and Annexes. We also offer perspectives on these sections based on experience from within the EU ATLAS Project, including lessons learned from our 12 Case Studies.

We welcome the additional details regarding environmental matters that this version of the Draft Regulations & Annexes offers and are highly supportive of many of the provisions these contain. We consider that some provisions would benefit from additional information and clarification, and we are happy to support the development of the Regulations by sharing the experience gained through the ATLAS Project.

Standards, Guidelines & Definitions

We note that the Authority has yet to establish Standards and Guidelines, and that the legal status of these has yet to be determined. Many of the Definitions refer to the Standards and Guidelines, and many of the Draft Regulations are either reliant on the Definitions or the Standards and Guidelines. It proved challenging to provide comments on the Draft Regulations and Annexes without knowing what would be included within the Standards and Guidelines and what their legal status would be. However, we are pleased to see that there is a plan for a workshop on the development of Standards and Guidelines in the first quarter of 2019, as we consider these will be an essential component to the Regulatory Framework for Exploitation.

We are pleased to note the provision for the Legal and Technical Commission to take into account the view of recognised experts, and we suggest that consulting these experts could help in the formulation of the Standards, Guidelines & Definitions. We suggest clarification is needed on how these experts are identified, and how experts who would wish to contribute can offer their expertise. We also welcome the provision that Guidelines will be kept under review in light of new knowledge and information and we suggest clarification is needed as to how this mechanism would work and how experts could assist in this review.

Confidentiality

We are particularly supportive of the move towards an assumption of public availability as a starting point for confidentiality, although we suggest there are points where this could be clarified. For example, we are not clear how the information considered confidential under the Exploration Regulations will be dealt with during the Exploitation phase, especially given the move towards an assumption of public availability. We are also unsure of how any potential differences in views (between States or between Stakeholders) of what should be considered confidential will be addressed. We suggest that consideration be given to providing a public comment period on the provisional list of what is considered confidential to enable any differences to be expressed and addressed. We are also unclear on how the provision for equipment design data to be considered confidential aligns with the requirement for transfer of technology within UNCLOS and the Agreement.

We support the ability for data and information to be considered confidential for short periods to aid in scientific publication, but we suggest that this period be kept as brief as possible so as not to hinder the sharing of data and information important for the protection and preservation of the marine environment. Some of the provisions for confidentiality appear to span what we consider as overly-long time periods and we suggest consideration is given to reducing the length of these periods.

We also suggest that consideration is given to establishing periods for the regular review of confidential information to enable information no longer considered confidential to be made publicly available. We welcome the development of a log and inventory system for all written information received by the Authority and suggest that consideration is given to making this log publicly available. We suggest that having a log or metadata catalogue that lists all of the data available, how and where it was collected, and who to contact to request permission to access it, would be a very helpful tool in the sharing of data collected on the Area. We note that there are many publicly available data repositories, along with the new International Seabed Authority Database, and we suggest provisions could be included within the Draft Regulations that detail where and how data and information will be made publicly accessible. We also welcome the provisions for the Seabed Mining Register and fully support the commitment to make the Register publicly available.

General Environmental Regulations

We welcome the framing of the environmental provisions within the context of UNCLOS 145 and Precautionary Approach. We also support the use of Best Available Techniques (BAT), Best Environmental Practice (BEP), Best Available Scientific Evidence (BASE) and Good Industry Practice (GIP) but understanding how these principles will be applied depends on how they are defined by the Authority. We agree that the Contractor shall take necessary measures to prevent, reduce and control pollution and other hazards to the Marine Environment, but we note that this provision will only be as strong as the Environmental Management and Monitoring Plan (EMMP) and yet to be developed Standards & Guidelines.

To our knowledge, there are no provisions within UNCLOS, the Agreement, or the Exploration Regulations that place the "preservation of property from serious damage" above the protection and preservation of the marine environment, although it would be expected that the need to preserve human life would take precedence over all other actions. We suggest that the text of the Draft Regulations could be altered to more closely reflect the phrasing of UNCLOS Article 113, which allows for damage to submarine cables in the case where the object is to preserve human life.

We welcome the establishment of the Environmental Liability Trust Fund and consider the proposed sources of the Fund to be reasonable. We suggest that consideration could be given to providing indicative amounts for fees or percentages within the Draft Regulations text. We also suggest that the liability trust fund should primarily address the liability gap identified in the ITLOS Advisory Opinion. We strongly agree that research, education and training are all essential activities that should be supported by the Authority, but it may not be appropriate to do so using the Liability Trust Fund.

Environmental Plan Documents

We note that the Environmental Impact Statement (EIS), Environmental Management and Monitoring Plan (EMMP) and Closure Plan are all submitted together within the Plan of Work as part of the application for an exploitation contract. Considering this, we feel that the linkages between these documents could be strengthened within the text of the Draft Regulations and Annexes. We also note that the terms Environmental Impact Statement, Environmental Impact Assessment, Environmental Risk Assessment and impact assessment are used at different points in the Draft Regulations and Annexes, and that the distinctions between them not always clear within the text. We suggest that the definitions of these terms and the linkages between them are clarified.

We support the provision for the EMMP to be verified by the report if an independent competent person, but we suggest clarification is needed on whether there will be a requirement for independent verification of all Environmental Plan documents submitted as part of a Plan of Work and how competent persons are identified. We greatly welcome that the Environmental Plan documents will be made publicly available, and that there will be a public commenting period on these.

As all of the data and studies that the Environmental Plan documents were based on will be appended to these documents, we welcome that all of these data and studies will also be made publicly available by implication.

The ability to perform an Environmental Impact Assessment and to monitor any mining impacts on the marine environment will depend upon having robust environmental baseline data. Making existing data more accessible through an assumption of public availability will help to increase the data available for establishing environmental baselines. However, it will not address the general paucity of data from the deep sea. The collection of data by Contractors will be key for establishing robust environmental baselines. We suggest that the linkages between environmental baseline data collection and EIA and post-impact monitoring are strengthened within the Draft Regulations and Annexes. We note that it is essential to collect data over appropriate temporal and spatial scales to understand environmental variability and to be able to differentiate mining impacts from natural variation. With longer-term environmental variation such as climatic forcing and climate change, there is a need for time series data to be collected over multiple years, even decades, prior to mining activity. With some impacts from mining anticipated to last decades or even centuries, we strongly suggest establishing Guidelines and Standards that require monitoring to be conducted for appropriate periods post mine closure. We also acknowledge that as different mineral resources occur in different regions and environments, the spatial and temporal requirements for monitoring may differ between sites and mining operations. To ensure a consistent standard of monitoring across Contractors, we suggest that the development of Guidelines and Standards includes thresholds for recovery that are applicable to the different mineral resources and locations.

We also welcome the reference to Regional Environmental Management Plans (REMPs) within the EIS, EMMP and Closure Plan documents, and we suggest that REMPs need to be in place prior to exploitation contracts being awarded.

Environmental Impact Statement

We welcome the detail included in the template for the Environmental Impact Statement, although there are areas where we suggest clarification is required. We are concerned that there is currently no guidance on the acceptable methods and standards for conducting the Environmental Impact Assessment (EIA) that will inform the Environmental Impact Statement (EIS). We agree with the focus on significant effects but remain concerned as to how the applicant decides if an impact will not be significant. As the content of the EIS will focus on the high-risk activities, the definition of what are considered low- and high-risk activities is key, and we strongly support the provision of guidance on the methods and standards for EIA.

The structure of the EIS template is similar to that used in many other EIS documents and covers the standard scope. We note that the EIS template is not prescriptive, however we are concerned that if the template serves merely as a “guide” it may not be strictly followed by Contractors, resulting in differences in standard of EIS generation between Contractors. Providing a detailed EIS template for Contractors to follow will make it easier to compare the EIS of different operations and to evaluate if a particular EIS is lacking any of the required EIS sections. We also note that this EIS template is intended for exploitation activities, consideration could be given to using this template as the basis for EIS documents produced under the Exploration Regulations, for example, for test mining.

Within the site description chapters, we consider dividing the site description by depth regime (surface, midwater and benthic) will aid the comparison of impacts from different mining operations and aid the understanding of which mining activities will impact different parts of the marine environment. Consideration may need to be given on how to address biological components that occur across multiple parts of the marine environment. To aid the description of the site, we suggest the inclusion of changes over time at the regional level, for example the El Niño/Southern Oscillation (ENSO) and mesoscale eddy formation. We also suggest that clarification is provided on the ocean circulation models that will be required as part of the site description.

We welcome the inclusion of concepts related to the ecosystem approach, such as trophic relationships and ecosystem function, and we suggest that functional diversity is also included. We strongly support the inclusion of microbial communities within the size range of organisms to be detailed in the biological environment description, as microbes will be an important component for the recovery of ecosystems following mining disturbance. We are also pleased to see a specific section for Area-Based Management Tools (ABMT) within the site description. We note that sea turtles do not feature within the site description and we suggest that they are included. We feel that further consideration should be given on how to address ecosystem/community descriptions. We feel it would be helpful to include definitions of the different components (for example, nekton, mesopelagic, bathypelagic, demersal), so that their meaning is clear, and components of the marine environment are not inadvertently omitted. We suggest that consideration is given to maintaining a comprehensive list of biological environment components that is consistent between the environmental description and impact description chapters.

We support the structure of the impacts chapter; breaking down each section into a description of the impact, measures that will be taken, and residual impacts makes this chapter more concise and easier to read. We fully support the requirement for these sections to detail the longevity of residual impacts, whether the biological environment is expected to recover, and in what time frame. We suggest that there could be more guidance on the types of impact categories; if these were made standard across EIS documents, it would be easier to compare between the EIS of different Contractors. We welcome the inclusion of a section dedicated to cumulative impacts, and we strongly suggest that these should include impacts that are expected to extend beyond the lifetime of the mining operation. We suggest clarification is required on whether cumulative impacts from all marine users within the region will be considered, or just other mining operations within the region. We strongly support having a section that specifically addresses the risks and impacts of accidental events and natural hazards, and we suggest consideration is given to including events involving non-hazardous materials in this section. We note that having a chapter within the EIS on Consultation implies that Contractors are obliged to conduct consultation and we suggest clarification is needed on the degree and nature of consultation that Contractors will be expected to conduct as part of their Plan of Work.

Environmental Management and Monitoring Plan

We note that the template for the EMMP is less-detailed than that for the EIS and we suggest that parts of the EMMP template may benefit from clarification and further detail. We consider monitoring to be a very important aspect, particularly as the longer-term impacts of exploitation are not known. We suggest that careful consideration is given to the frequency of monitoring and data collection, to adequately capture the fluctuations in environmental response that could occur due to natural rhythms. The effectiveness of the monitoring programme will depend on the provision of robust environmental baseline data to compare post-impact data against. We welcome the provision for further research and studies, especially given the absence of data and information on the recovery of ecosystems post-mining. We suggest clarification is needed as to whether the Contractor is obliged to undertake further research and studies, and if so, the spatial and temporal scope that would be required. We note that establishing trigger and threshold points will be challenging given the paucity of information on the environmental impacts of commercial-scale seabed mining, but that these could be informed by environmental monitoring conducted during test mining. The importance of information collected during test mining could be emphasised within the EMMP. We suggest that if restoration is to be considered as part of the EMMP for exploitation, trial restoration could be piloted during the test mining phase to determine methods that have restoration value. We suggest clarification is needed on the requirement for Contractors to conduct restoration, considering that some habitats will not fully recover to their pre-mining state without restoration activities. Although restoration has been little tested within the deep sea, we suggest that this should not prevent restoration actions from being pursued (consistent with the Precautionary Principle).

We suggest clarification is needed as to whether the environmental objectives and standards featured within the EMMP are defined by the Contractor or by the Authority. Whilst we welcome the use of adaptive management, we consider that there needs to be a good understanding of what is allowable under adaptive management. We strongly support the concept that it may be necessary to have multiple Preservation Reference Zones and Impact Reference Zones to adequately monitor mining impacts and we suggest clarification is needed on the other spatial management planning tools envisioned within the Draft Regulations. We welcome the provision for continued consultation with other users, especially as there may be the potential for cumulative effects due to the impacts from multiple users. We note that having a coherent, continuing consultation process is also important to identify impacts from other users that may otherwise have been attributed to mining activities.

Closure Plans

The requirements for the Closure Plan are more detailed than in previous drafts and we welcome the additional information, however there are sections that require clarification. We are concerned that there is no guidance on the spatial or temporal resolution of sampling or the methods to be used for the monitoring undertaken during and after closure, and we suggest consideration is given to detailing these within the Guidelines and Standards. We also suggest clarification is needed on how long a Closure Plan may be in place for, post closure, and whether the closure objectives are to be developed by the Authority or the Contractor. We note that to determine recovery, monitoring may need to continue for decades to centuries and we suggest establishing Guidelines and Standards to provide the criteria for the length of monitoring required, including thresholds for recovery. We suggest consideration is given to providing regular interim reports to confirm the Closure Plan is performing as intended, particularly in cases where monitoring extends for multiple years or decades.

ATLAS Submission regarding the Draft Regulations for Exploitation

Background to the EU ATLAS Project

ATLAS is a major €9.2M research project under the EU Blue Growth call, 'Unlocking the potential of Seas and Oceans', H2020-BG-2015-2 topic 'Improving the preservation and sustainable exploitation of Atlantic marine ecosystems'. ATLAS seeks to integrate our latest understanding of the environmental condition of the North Atlantic Ocean with management responses. The science from four science work packages is integrated in policy-orientated work packages that includes the social sciences and provides support for the development of spatially-managed area plans for Blue Economy and Blue Growth activities across 12 case studies in the North Atlantic, including those that include deep-sea mining as a prospective utilisation of marine resources (See Appendix 1, page 28 for work package details).

Background to the ATLAS Submission

The EU ATLAS Project welcomes the opportunity to submit comments to the International Seabed Authority on the revised draft Regulations on Exploitation of Mineral Resources in the Area. Our commentary aims to address two of the questions posed by the Legal and Technical Commission to the Council (ISBA/24/C/20) regarding the current draft regulations:

- Should the starting point of confidentiality of information be a presumption of public availability, with the development of a list of confidential data and information?
- Do the new Draft Regulations for Exploitation adequately address the effective protection of the marine environment (bearing in mind the need to develop an appropriate mix of standards and guidelines)?

To address these questions, we provide expert commentary on the relevant Draft Regulations and Annexes. We also offer perspectives on these sections based on experience from within the EU ATLAS Project, including lessons learned from our 12 Case Studies.

The individuals within ATLAS who provided comments as part of this response include:

- Dr Rachel Boschen-Rose, Seascape Consultants – United Kingdom
- Prof. David Johnson (ATLAS Marine Policy Work Package Lead) Seascape Consultants
- Dr Sophie Arnaud-Haond (ATLAS Connected Resources Work Package Lead) French Research Institute for Exploitation of the Sea (Ifremer) – France
- Dr Dick van Oeven, Royal Netherlands Institute for Sea Research (NIOZ) - Netherlands
- Dr Anthony Grehan (ATLAS Maritime Spatial Planning Work Package Lead) National University of Ireland Galway – Ireland
- Prof. Murray Roberts (ATLAS Project Lead) University of Edinburgh – United Kingdom
- Prof. Alex Rogers, University of Oxford – United Kingdom

ATLAS Submission regarding the Draft Regulations for Exploitation

1. Should the starting point for confidentiality of information be a presumption of public availability, with the development of a list of confidential data and information?

Effective environmental management and the effective growth of scientific understanding of the ocean requires access to data and information. Access to comprehensive environmental data and information is essential to ensure informed decision making during marine spatial planning where balancing areas for commercial activity with areas for conservation may prove challenging. Developing a robust scientific knowledge base for the North Atlantic deep sea is a cornerstone of the ATLAS Project. The importance of making data fully available to stakeholders is reflected in ATLAS with a dedicated Work Package: Open Science Resources for Stakeholders, for that purpose[6]. Data collected through ATLAS is made publicly available through Open Science Resources, such as the European Nucleotides Archive (ENA), Data Publisher for Earth and Environmental Science (PANGAEA), H2020's research monitoring infrastructure (OpenAIRE) and the European Marine Observation and Data Network (EMODnet). From working with industry partners, ATLAS has gained considerable experience handling commercially collected data, and developed processes to ensure outputs are subjected to scientific peer review and published in open access repositories[7,8]. One of the lessons learnt during this process was how the sharing of industry-collected environmental data can lead to the reduced cost for future Environmental Impact Assessments, by making a pool of regional data available to future industry applicants[7].

Data and information in the North Atlantic are also made widely available through other initiatives, such as the ICES portal for information on the location of Vulnerable Marine Ecosystems (VMEs). The ICES/NAFO Working Group on Deep-water Ecology (WGDEC) and the ICES Data Centre have developed a data portal that publicises all the data on VMEs (and species considered to be indicators of VMEs) across the North Atlantic[9]. These data are freely available to all stakeholders via the online portal, helping to inform environmental management and marine spatial planning.

There are a suite of databases and data gateways that provide access to both regional and global marine datasets. These initiatives have been supported through a range of mechanisms, including private initiatives and the international governmental and scientific communities. Examples include the Ocean Biogeographic Information System (OBIS)[10], Global Ocean Observing System (GOOS)[11], the United Nations Environment Program World Conservation Monitoring Centre (UNEP-WCMC)[12], Ocean Tool for Public Understanding and Science (OCTOPUS)[13].

We consider making environmental data and information from Contractors publicly available, for example through the new Authority Database, will be essential for the development of Regional Environmental Management Plans (REMPs) by the Authority. A presumption of public availability as the starting point for confidentiality is in line with the decision adopted by the Assembly of the Authority for transparency in the response to the Article 154 Review (H3, ISBA/23/A/13) and would be

[6] https://www.eu-atlas.org/about-atlas/atlas-work-package-descriptions/wp8-open-science-resources-for-stakeholders

[7] Murray F et al. (2018) Data challenges and opportunities for environmental management of North Sea oil and gas decommissioning in an era of blue growth. Marine Policy 97: 130-138

[8] Taranto GH & Morato T (2017) ISA environmental reporting templates and data repository: insights from the ATLAS Project. Kingston, Jamaica, 1 – 16 June 2017. 19 pages.

[9] http://www.ices.dk/marine-data/data-portals/Pages/vulnerable-marine-ecosystems.aspx

[10] http://iobis.org/

[11] http://www.goosocean.org/

[12] https://www.unep-wcmc.org/resources-and-data

[13] https://octopus.zoo.ox.ac.uk/beta

considered best practice for the sharing and usage of environmental information. We strongly support the suggestion of the Legal and Technical Commission that the starting point for confidentiality of information should be a presumption of public availability, with the development of a list of confidential data and information. Sharing environmental data for the Area, including those collected by Contractors, would be helped by the provision of a publicly available metadata catalogue. This catalogue could feature the metadata for all data submitted to the Authority; where the data are confidential, metadata information on who holds the data would enable people to apply for permission to access these data.

To aid in the development of list of types of confidential data, and other aspects of data confidentiality, we offer detailed commentary on Draft Regulations 87, 88, 89 & 90 within the Draft Regulations for Exploitation of Mineral Resources in the Area.

Draft regulation 87: Confidentiality of information.

In line with the presumption of public availability, we would support that reports containing both publicly available and confidential information are still made publicly available, with confidential information redacted as necessary. We acknowledge that the definition of what is considered confidential information will require careful consideration.

87: 2a. Much of the data and information collected during exploration contracts is not currently publicly available, although this could change with the advent of the Authority Database. However, if the presumption under the Exploration Regulations was that data/information are confidential unless indicated otherwise, we are concerned that there could be a legacy of reduced public availability carried through to the exploitation phase. We note that under Regulation 36: 4 in the Regulations for Exploration of Polymetallic Nodules, "[if] the contractor enters into a contract for exploitation in respect to any part of the exploration area, confidential data and information relating to that part of the area shall remain confidential in accordance with the contract for exploitation" (ISBA/19/C/17). To ensure a level playing field for existing and new contractors, both at the exploration and exploitation phases, a review of existing data and information previously considered confidential may be required under this new assumption of publicly availability. Any cases where existing data and information may no longer be considered confidential under this assumption may need to be discussed with the Contractors concerned. We also note that the data that are considered confidential at the exploration phase may no longer be considered so during exploitation, as information pertinent to the description of the mineral resource will be included within the Environmental Impact Statement.

87: 2b. Does the Authority have an institutional data policy? If so, the handling of personal information with respect to the Regulations for Exploitation should be consistent with this policy. We suggest that consideration should also be given to the laws of Sponsoring States that may differ on how personal information should be handled, for example the EU General Data Protection Regulation (GDPR) 2016/679. This issue links to 87: 2e.

87: 2c. How will the categories of data and information considered confidential be decided by the Council? Will there be an opportunity for stakeholders to review a draft list of these categories? We note that some categories may have the potential to be confidential whilst at the same time being essential to understanding the impact of mining activities on the marine environment. Discussing these categories with stakeholders may identify ways for aspects of these categories to be made publicly available, whilst others are kept confidential. One such category could be the mineral resource potential: the distribution of nodules within a contract area helps indicate the economic potential of the contract area and could be considered confidential. At the same time, polymetallic nodules provide an important habitat for certain fauna, so that knowing the distribution and size range of nodules is key to understanding the impact that nodule removal (i.e. habitat loss) could have on those species. To understand the economic potential of the contract area, the distribution of nodules needs to be combined with information on mineral grade. Nodule fauna distribution is not known to relate to mineral grade; retaining this information as confidential should not impair the ability to protect the

marine environment. Knowledge of the nodule distribution without mineral grade information is insufficient to determine the resource of the area. Keeping mineral grade information confidential, but making nodule distribution information publicly available, improves our understanding of the impact mining activities could have on the marine environment but should not disadvantage Contractors by revealing the economic potential of the contract area. We suggest that understanding the views of stakeholders on confidential information could help the Council establish categories that best satisfy the dual needs of avoiding economic prejudice to Contractors and having access to the information necessary to support the protection & preservation of the marine environment.

87: 2d. We note that the categories of confidential information designated by the Council should be able to support the Secretary-General in his considerations of the Contractor's designation of confidential information.

87: 2e. We wonder what would happen if information categorised under 87: 2e also falls under paragraph 87 3d – f. In such cases, would there be the opportunity for discussion between the Authority and Sponsoring State regarding its confidentiality? We suggest that consideration could also be given to potential differences between States on what information is considered confidential, and how best to accommodate this whilst maintaining a level playing field for all States.

87: 3a-e. We consider these types of non-confidential information to all be reasonable. We note that the text of Draft Regulation 87: 3a - c matches verbatim the text of Regulation 36 in the Exploration Regulations for Polymetallic Nodules (ISBA/19/C/17) and we support the consistency of wording between the Exploration and Draft Exploitation Regulations. However, we would like to draw attention to "equipment design data" within 87: 3e, which here is considered confidential. We suggest further clarification as to how this provision aligns with the requirement for transfer of technology (UNCLOS, Article 144 & Implementation Agreement, Annex, Section 5, UNCLOS Articles 273 & 274)? Consideration could be given here for additional text emphasising that designating equipment design information confidential does not preclude Contractors from participating in the transfer of technology to the Enterprise and Developing States on fair and reasonable commercial terms (as per UNCLOS & the Agreement).

87: 3f. Whilst we agree that data and information relating to the protection and preservation of the marine environment should not be considered confidential, the text of 87: 3f may need further consideration. We would suggest that if data and information are to be considered confidential for a set period to enable the scientists who gathered to data to publish their findings, there could be a standard period for this, which is stated within the Draft Regulations. For Exploration Expeditions whose aim is to produce publicly available data, physical data and sample location data are available immediately, but species data require post-cruise work to verify. Other Exploration Expeditions may allow a 1-year period for researchers to organise their data and start to work up their findings prior to making the data publicly available (e.g. Schmidt Ocean Institute). Academic institutions may grant a longer period of 3 – 4 years of confidentiality to allow graduate students sufficient time to publish findings from their Theses. Within the Exploration Regulations for Polymetallic Nodules (Regulation 7, ISBA/19/C/17) the Contractor may request that data is not disclosed for up to 3 years, the inclusion of a similar provision in the Exploitation Regulations for the purposes of academic publication could be an option. However, we would suggest that the assumption should still be that this information is publicly available, unless permission to make it confidential for a short period is granted by the Secretary-General. If the data or information are considered confidential for a set period, we would suggest that consideration could be given to providing a publicly available register that indicates it exists, with a short metadata summary, and details of who to contact to obtain permission to access and use the data or information. Even during its short confidential period, this data or information could be made available to the Legal and Technical Commission and other appropriate Authority bodies to inform decisions on the protection and preservation of the environment.

87: 3 We note that information will no longer be considered confidential 10 years after it has been passed to the Secretary-General. We are currently unsure if this period may be extended, if confidential information is carried over to the exploitation contract as a legacy from the exploration contract. For the interests of the science community, 10 years seems an overly-long period, considering how rapidly the development of mining technology has progressed to date, and that the seabed within the contract area for exploitation will be returned to the Area (potentially available for future mining operations) after the end of the exploitation contract. We note that the Exploration Regulations for Polymetallic Nodules (ISBA/19/C/17) have a similar 10-year or end of contract provision but wonder whether a shorter period (e.g. 3 – 5 years) would be more in keeping with a policy of accessibility and transparency. If confidentiality is granted to data or information over long time periods (e.g. 10 years), consideration could be given to having a regular (e.g. every 3 – 5 years) review process of this information, to determine whether it still requires confidential status.

Draft regulation 88: Procedures to ensure confidentiality.

It would be helpful to reference the Authority institutional data policy within this Draft Regulation. This Draft Regulation provides details on how confidential information will be protected, but we are concerned that there is no mention within Part IX: Information-gathering and handling of how non-confidential information will be made publicly available. Consideration could be given to an additional Draft Regulation that provides information on how this will be achieved, for example through the Authority Database or other established Open Access repositories.

88: 1b. We welcome the development of a classification, log and inventory system of all written information received by the Authority but note it is not clear whether this log will be made publicly available. For 87: 4 to apply, people need to know that the confidential information exists, before they can request access to it. We would suggest that a public register and/or database that lists all data and information submitted to the Authority, regardless of its confidentiality, would be in keeping with a policy of accessibility and transparency. Permission could then be sought for access to confidential information listed in this register/database.

Draft regulation 89: Information to be submitted upon expiration on an exploitation contract.

We consider that it would be helpful if more detail could be provided as to the information to be submitted under this Draft Regulation. It is difficult to assess the suitability of these provisions without knowing what will be included within the Guidelines, although we are pleased to note the plan for a workshop on the development of Standards and Guidelines in the first quarter of 2019 (ISBA/24/C/20).

Draft regulation 90: Seabed Mining Register.

We welcome the provisions for the Seabed Mining Register and agree with the information that should be included. We particularly welcome the commitment to make the Register publicly available on the Authority's website.

2. Do the new Draft Regulations for Exploitation adequately address the effective protection of the marine environment (bearing in mind the need to develop an appropriate mix of standards and guidelines)?

The Authority has a challenging dual mandate to organize and control activities in the Area (Agreement, Annex, Section 1, paragraph 1), whilst ensuring effective protection for the marine environment (UNCLOS Article 145). Achieving the correct balance of rights and obligations within the Regulations for Exploitation is a daunting task. We welcome that within the current Draft Regulations there is greater detail on the provisions to provide effective protection of the marine environment.

Providing effective protection of the marine environment is heavily reliant on the availability of environmental data and information, particularly relating to environmental baselines. Adopting an approach to confidentiality that is based on a presumption of public availability is an important step in making existing information available. However, it does not address the current paucity of existing data on the marine environment, particularly within the deep sea. The ATLAS Project is collecting data and information that will contribute to environmental baselines within the North Atlantic, including information on ocean circulation, ecosystem function, biodiversity and biogeography and genetic connectivity (See Appendix 1, page 28). The range of data types and the spatial and temporal scales over which they are collected are essential to establishing robust environmental baselines. With decadal cycles in climate forcing (e.g. the El Niño/Southern Oscillation, ENSO), and the progression of climate change, understanding environmental changes in the context of a time series is increasingly important, to be able to predict and understand observed changes in the marine environment post-mining activities. For example, ATLAS work on ocean dynamics has detected a slowing of the Atlantic Meridional Overturning Circulation (AMOC)[14,15], which will impact marine ecosystems and may influence fauna's resilience to the impacts of future deep-sea mining along the Mid-Atlantic Ridge. It is not yet known whether changing ocean circulation could impact the dispersal of plumes from deep-sea mining.

Disseminating this information and making it available in an appropriate format to the relevant stakeholders is also a key part of establishing protection measures for the marine environment. Within ATLAS, there are dedicated work packages to disseminate information & undertake capacity building, ensure information is open access, provide recommendations for policy and suggestions for marine spatial planning (See Appendix 1, page 28). Transforming the data and information provided to the Authority within Contractor reports into products that can help inform initiatives such as the Authority's Regional Environmental Management Plans poses a challenge that the broader scientific community could contribute their experience to help overcome.

To help further develop the provisions for protecting the marine environment within the Regulations for Exploitation, we offer detailed commentary on multiple parts of the Draft Regulations that relate to environmental matters. These include sections relating to General Environmental Matters (Draft Regulations 7, 11, 46, 47, 48, 52, 53, 92 & 93), Environmental Impact Statements (Draft Regulation 46 bis & Annex IV), Environmental Management and Monitoring Plans (Draft Regulations 49, 50 & 51, Annex VII) and Closure Plans (Draft Regulations 57, 58 & 59, Annex VIII).

General Environmental Matters

Draft Regulation 7: Form of applications and information to accompany a Plan of Work.

7: 3. We note that under this provision, the Environmental Impact Statement (EIS), Environmental Management and Monitoring Plan (EMMP) and Closure Plan are all submitted together as part of a Plan of Work. Considering this, we feel that the linkages between these documents could be strengthened within the text of the Draft Regulations, for example by cross-referencing the relevant sections of each.

Draft regulation 11: Publication and review of the Environmental Plans.

11: 1. We strongly agree that the EIS, EMMP & Closure Plan shall be made publicly available and that stakeholders shall have a period of 60 days to provide comment on these. As all of the data and studies that the Environmental Plan documents were based on will be appended to these documents,

[14] Thornalley *et al*. (2018) Anomalously weak Labrador Sea convection and Atlantic overturning during the past 150 years. *Nature* 556, 227-230.

[15] Caesar *et al.* (2018) Observed fingerprint of a weakening Atlantic Ocean overturning circulation. *Nature* 556, 191-196.

we welcome that all of these data and studies will also be made publicly available by implication of this provision.

11: 2. We strongly agree with the provision that the Legal and Technical Commission shall not consider an application for approval of a Plan of Work until the Environmental Plans have been published and reviewed.

Draft regulation 46: General obligations.

We welcome the framing of this Draft Regulation within the context of UNCLOS 145 and we strongly agree with the application of Precautionary Approach, as reflected in Principle 15 of the Rio Declaration on Environment and Development.

46: b. We support the application of Best Available Techniques (BAT) and Best Environmental Practice (BEP) but understanding how these principles will be applied depends on their definition by the Authority. We appreciate that these definitions are yet to be finalised, and that the definitions refer to as yet unwritten Guidelines. Without agreed definitions, it is difficult to comment on how readily these principles can be applied within the Regulations. We note that BAT and BEP are not terms that are used or defined within UNCLOS or the Agreement but recognise that these concepts have been successfully operationalised in other regulatory frameworks, for example the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention)[16].

46: c. We support the integration of Best Available Scientific Evidence (BASE) in environmental decision making but understanding how this principle will be applied depends on its definition by the Authority. We note that 'best scientific evidence' is a term used in the Agreement for the implementation of the provisions of the United Nations convention on the Law of the Sea of 10 December 1982 relating to the conservation and management of straddling fish stocks and highly migratory fish stocks, but that it is not defined within the text of this agreement.

46: c. We support the application of Good Industry Practice (GIP) but understanding how this principle will be applied depends on an accepted definition. We note that GIP is not a term which is used or defined within UNCLOS or the Agreement.

46: d. We strongly agree with the provision to promote accountability and transparency and timely access to relevant environmental information.

46: e. Whilst we support measures that contribute to the protection and preservation of the marine environment, we question whether the highest standards of environmental performance should not be already required under the application of Best Available Techniques, Best Environmental Practice and Good Industry Practice? The need for incentives under this provision may suggest that achieving the highest standards of environmental performance is optional and requires encouragement. In that light, would it be appropriate to introduce penalties for those that do not meet these standards, as well as providing incentives for those that do?

Draft Regulation 47: Pollution control.

We agree with the provision that a Contractor shall take necessary measures to prevent, reduce and control pollution and other hazards to the Marine Environment, but we note that this provision will only be as strong as the EMMP and said Standards & Guidelines. As the Standards and Guidelines are not yet written, we cannot comment on the sufficiency of this provision.

Draft Regulation 48: Restriction on Mining Discharges.

As with Draft Regulation 47, we agree with 48: 1, but note that the strength of this provision will depend on the Guidelines and the EMMP.

48: 2. We suggest that the wording of this provision may need to be reconsidered. To our knowledge, there is nothing to this effect within UNCLOS, The Agreement, or the Exploration

[16] https://www.ospar.org/about/principles/bat-bep

Regulations. It would be expected that the need to preserve human life would take precedence over all other actions, including the protection and preservation of the marine environment. We consider it equally reasonable to expect that where possible, actions to preserve human life should minimize the risk of serious harm to marine environment. However, to our knowledge, there are no provisions within UNCLOS, the Agreement, or the Exploration Regulations that place the "preservation of property from serious damage" above the protection and preservation of the marine environment. We suggest that consideration is given to altering the text of 48: 2 to more closely reflect the phrasing of UNCLOS Article 113, which allows for damage to submarine cables in the case where the object is to preserve human life. For example, "The obligation in Paragraph 1 may not apply in the case where actions contravening Draft Regulation 48: 1 are necessary for the legitimate object of saving lives. In this case, any action taken should be so conducted as to minimize the likelihood of Serious Harm to the Marine Environment."

Draft Regulation 52: Establishment of an environmental liability trust fund.

We strongly support the establishment of the Environmental Liability Trust Fund.

Draft Regulation 53: Purpose of the Fund.

Whilst the proposed purposes of the fund are all excellent, we are concerned that the liability trust fund proposed should primarily address the liability gap identified in the ITLOS Advisory Opinion (2011). We strongly agree that research, education and training are all essential activities that should be supported by the Authority, but it may not be appropriate to do so using the Liability Trust Fund. We would support that this draft regulation is revisited considering the ITLOS Advisory Opinion (2011).

Draft Regulation 54: Funding.

We agree that all the proposed sources of funds appear reasonable. We consider that it may be helpful if indicative amounts for fees or indicative percentages were included within the Draft Regulations text. We note that amounts or percentages for the Environmental Liability Trust Fund are not currently included within Annexes II & III.

Draft Regulation 92: Adoption of Standards.

We note that the Legal and Technical Commission, in making their recommendations, shall take into account the views of recognised experts and relevant existing internationally accepted standards. These standards will include those relating to 1c) the protection of the Marine Environment. Whilst we agree with this provision, it leaves open several questions, for example, how will these experts be identified? How can individuals and organisations who would like to contribute their expertise get involved? Scientists within the ATLAS Consortium have a wide-range of expertise relating to the marine environment, and some of the ATLAS studies are investigating issues relevant to deep-sea mining, including detailed analyses of deep-sea ecosystem function[17] and assessments of ecosystem connectivity[18] (See Appendix 1, page 28 for details). How can ATLAS Partners best contribute their expertise towards the development of Authority Standards? We urge clarification on how experts will be identified, and suggest consideration be given to existing processes, for example the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)[19] or the lists of experts maintained by the Divisions for Ocean Affairs and Law of the Sea (DOALOS)[20].

[17] Soetaert K *et al*. (2016) Ecosystem engineering creates a direct nutritional link between 600-m deep cold-water coral mounds and surface productivity. Nature Scientific Reports. 6, 35057.

[18] Fox A *et al.* (2016) Sensitivity of a marine protected area network to shifts in atmospheric state and ocean circulation. Royal Society Open Science 3: 160494

[19] http://www.gesamp.org/

[20] http://www.un.org/depts/los/settlement_of_disputes/experts_special_arb.htm

Draft Regulation 93: Issuance of guidance documents.

We welcome the new provision of 93.3, that Guidelines will be kept under review in the light of new knowledge or information. We suggest the need for clarification as to how this mechanism will work. Will there be regular review periods (e.g. every 5 years) or will there be a way for experts to provide information to the Authority, that could be the trigger for a review of that specific Guideline? Are Standards also reviewed, or are only Guidelines kept under review?

Environmental Impact Statement (EIS)

Draft Regulation 46 bis: Environmental Impact Statement.

46 bis: We welcome the additional text on the requirement for, and preparation of, an Environmental Impact Statement (EIS). We note that the EIS will be based on a prior Environmental Impact Assessment (EIA), which includes an Environmental Risk Assessment (ERA) and an impact analysis. However, we also note that the Draft Regulations and related Annexes do not provide any guidance on the methods and standards that are considered acceptable for EIA, ERA or impact analysis. If Contractors utilise standardised methods for EIA, it would be easier to compare impacts across Contractors. We strongly suggest that guidance is provided on the methods for EIA, ERA and impact analysis, as these activities will underpin the process of identifying, predicting, evaluating and mitigating the effects of the proposed mining operation.

46 bis: 3c. We welcome the reference to regional environmental management plans but are concerned by the wording 'if any'. We suggest that REMPs need to be in place prior to exploitation contracts being awarded.

46 bis: 3d. We support the need to incorporate Good Industry Practice, Best Available Scientific Evidence and Best Available Techniques during the preparation of the EIS.

Annex IV: Environmental Impact Statement

1a. We agree that the EIS should be prepared in plain language, with an official English-language version, to aid wider dissemination across stakeholders.

1b. We agree with the focus on significant effects but remain concerned as to how the applicant decides the impact will not be significant. The Draft Regulations and Annexes do not indicate which method(s) are acceptable for preforming the EIA, ERA & impact assessment that would identify significant impacts. Where an impact is not considered significant, we agree that the applicant should have to justify why an impact is not considered significant.

2. We note that the EIS template is not prescriptive, however we are concerned that if the template serves merely as a "guide" it may not be strictly followed by Contractors, resulting in differences in standard of EIS generation between Contractors. We note that methodologies and thresholds "may" be developed as Standards and Guidelines to support the Draft Regulations. We suggest consideration is given to stronger wording here, such as "shall". Guidance on methodology for EIA, ERA & impact assessment, and the thresholds for significant impacts arising from mining the different mineral resources, is essential to the formulation of robust assessments by contractors.

We note that there is a requirement for the Environmental Management and Monitoring Plan (EMMP) to be "verified by the report of independent competent persons" but that there is no similar requirement for the verification of the EIS or Closure Plan. We suggest the need for clarification as to whether there will be a requirement for independent verification of all Environmental Plan documents submitted as part of a Plan of Work.

We feel the template for EIS is generally detailed and provides a good indication of what information is required within each section. Descriptions in Chapters 4 (Physicochemical Environment) and 5 (Biological Environment) of the EIS are particularly comprehensive.

We note that this EIS template is intended for exploitation activities, but we would also suggest that consideration is given to using this template as the basis for EIS documents produced under the Exploration Regulations, for example, for test mining, noting that EIS documents have already been produced for the test mining of polymetallic nodules within the Clarion Clipperton Zone (CCZ) by some Contractors (i.e. BGR and GSR).

We note that the terms Environmental Impact Assessment (EIA), Environmental Risk Assessment (ERA), impact assessment and Environmental Impact Statement (EIS) are all used within the template, but that the differences between them are unclear within the template; we suggest that these terms are defined within the EIS template and that the differences between them are emphasised.

EIS Template: the structure is similar to that used in many other EIS documents and covers the standard scope of such documents. We consider the suggestions for content under each of the headings a useful guide for Contractors, although some sections may require additional details or clarification. Providing a detailed EIS template for Contractors to follow will make it easier to compare the EIS of different operations and to evaluate if a particular EIS is lacking any of the required EIS sections.

We welcome the inclusion of Key messages at the start of each chapter and Summaries at the end. The EIS documents produced for exploitation activities will probably be large (several hundreds of pages long) and the provision of overviews of the different chapters will make it easier for the messages to be disseminated.

1.5.1: We support the need for a prior EIA that will inform the EIS but are concerned that, as yet, no guidance is given as to the suitable methods for EIA. The methodology used for EIA will determine whether activities are determined low- or high-risk: only those identified as high-risk by the EIA are the focus of the EIS, as such the definition of low-risk activities and high-risk activities is key. We strongly support the provision of guidance on EIA methodology.

3.6: This section asks for a description of the steps that will occur under the Closure Plan but the level of detail that is required is not clear. We note that the Closure Plan is a separate document submitted at the same time as the EIS. We suggest the need for clarification as to whether this section should be a brief summary that refers to specific sections of the Closure Plan for more details, or whether full details of the Closure Plan need to be included here.

3.8: 3.8 e & f mention the monitoring schedule and closure schedule respectively. We suggest the need for clarification as to whether these sections should explicitly reference the separate EMMP and Closure Plan documents?

4. Description of the existing physicochemical environment.

Within this chapter, we feel it is not always clear whether the sections relate to the regional setting or the site context, with some sections appearing to be one or the other and some a mix of the two. We suggest it would be helpful to clarify this within the text.

4.2: We suggest the inclusion of changes over time at the regional level, for example the El Niño/Southern Oscillation (ENSO) and mesoscale eddy formation.

4.3: We strongly support the submission of the environmental reference baseline data along with the EIS, and as the EIS will be made publicly available, the implication that the underlying data for the EIS will be made public alongside the EIS. Consideration could be given to providing the full text of the studies completed within the EIS appendices, having these readily accessible will make it easier for readers to understand and interpret the EIS.

4.6: We note the inclusion of seasonal variability in this section, but we suggest the need for the inclusion of variability over longer timescales, for example the influence of ENSO and climate change on the physical oceanographic setting.

5. Description of the existing biological environment.

Dividing the site description by depth regime (surface, midwater and benthic) will be helpful when comparing impacts from different mining operations and understanding which mining activities will impact different parts of the marine environment. We note that some biological components will occur

across multiple parts of the marine environment (e.g. larvae dispersing from the seabed through the water column), so there may be some repetition within the EIS if these are detailed separately in each section.

We feel it would be helpful to include within the EIS template the definitions of the different components within this section (e.g. nekton, mesopelagic, bathypelagic, demersal), so that their meaning is clear and components of the marine environment are not inadvertently omitted due to confusion with definitions.

5.4: We welcome the detailed information on what to include within the biological environment description. We note that some fauna will occur across multiple depth ranges, and we suggest consideration could be given on how to address this within the template text.

We welcome the inclusion of concepts related to the ecosystem approach, such as trophic relationships and ecosystem function. We suggest that functional diversity is also listed here, as functional diversity will be an important consideration for determining the recovery of communities post-mining. ATLAS work demonstrates[21] that functional diversity is a sensitive parameter for detecting environmental disturbance and an important aspect of the effect of disturbance on biodiversity and ecosystem service provision. We strongly support the inclusion of microbial communities within the size range of organisms to be detailed in the biological environment description, as microbes are closely linked to biochemical cycles governing the global functions of ecosystems and will be an important component for the recovery of ecosystems following mining disturbance.

Whilst a comprehensive range of aspects and components are listed in 5.4 for inclusion within the description of the biological environment under the surface, midwater, benthic & ecosystem/community-level description, many of these do not appear within the specific description for those subheadings. For example, microbial communities, demersal scavengers and all the community-level descriptors (i.e. diversity, abundance, biomass, community-level analyses, connectivity, trophic relationships, resilience, ecosystem function and temporal variability) appear to be missing from the descriptions for these four sections. Consideration could be given to modifying the text under these sections to emphasise that all the elements listed under 5.4 need to be included within sections 5.4.1, 5.4.2, 5.4.3 & 5.4.4.

5.4.1: The definition of the surface, to a depth of 200 m, is reasonable and in line with the general understanding of the ATLAS Project. Light penetration and the euphotic zone are generally considered to be above 200 m (although this can extend deeper in some regions) and many of the impacts from surface activities (e.g. light from vessels, normal discharge of kitchen scraps and treated effluent) should be contained well within this upper layer. We note that sea turtles are not included in the list of surface animals and we suggest that they be added to the description.

5.4.2: The definition of midwater, 200m depth to 50m above seafloor, encompasses a broad range of pelagic habitats, many of which very little is known about. However, further dividing this habitat could result in multiple arbitrary environment categories, as many species migrate between depths and little is known about the depth ranges of many pelagic species. Marine reptiles are also missing from this category, although most hard-shelled sea turtle species do not dive below 250m, leatherback turtles can dive to 1000m and may occur along the Mid-Atlantic Ridge where exploration contracts have been granted for Seafloor Massive Sulphide deposits. We suggest sea turtles should be included in the fauna of the midwater environment. Nekton, meaning aquatic animals that are able to swim, would include mesopelagic and bathypelagic fishes, along with swimming invertebrates, such as squid and octopus. If the intention is to list the types of nekton that should be included in the description, we consider that the list should be comprehensive, and fishes could be included within nekton.

[21] Ashford OS *et al.* (2018) Phylogenetic and functional evidence suggests that deep-ocean ecosystems are highly sensitive to environmental change and direct human disturbance. *Proceedings of the Royal Society B Biological Sciences,* 285: 20180923.

If the intention is to provide examples of the types of animals that should be included (but that this list is not exhaustive) then we suggest that this is clarified within the text.

5.4.3: The definition of benthic, the seafloor and up to 50m above the seafloor, is reasonable, given that some animals will live in the lower portion of the water column and on the seafloor. The text of 5.4.3 could be reconsidered to include 'benthopelagic' as a category of animals that spend time on the seafloor but also within the lower water column.

5.4.4: Capturing the dynamic marine environment with the overlap between surface, midwater and benthic environments is challenging and we welcome a section of the EIS that aims to do this. However, we suggest a need for clarification of the text of 5.4.4 as to whether this section will address integration across these environments, or whether it will address ecosystem and community aspects that include multiple components within each individual environment. For example, summary of the surface ecosystem may include the trophic dynamics between phytoplankton, zooplankton, nekton, seabirds and marine mammals. We wonder whether it may be easier to incorporate have separate ecosystem/community descriptions within each of the marine environments (surface, midwater and benthic), and to dedicate 5.4.4 to aspects/processes that integrate across all three environments.

6. Description of the existing socioeconomic environment

The list of existing marine users is sufficiently comprehensive and covers the main groups that fall under the Blue Economy.

6.2.5: We are pleased to see a specific section for Area-Based Management Tools (ABMT) within the EIS and wonder if this subsection would benefit from including a non-exhaustive list of some of the ABMTs that are likely to be encountered, for example, Particularly Sensitive Sea Areas (PSSAs), Vulnerable Marine Ecosystems (VMEs) and Marine Protected Areas (MPAs).

6.2.6: We wonder if consideration could be given to providing Submarine Cables with their own sub-section, given the freedom to lay cables and pipelines under UNCLOS and the need for due regard[22]. Submarine cables traverse areas of interest for deep-sea mining, including areas of Seafloor Massive Sulphide deposits along the Mid-Atlantic Ridge, and it will be important to know cable locations so that damage to cables and mining equipment can be avoided. Consideration could also be given to a separate sub-section for other mineral exploration and exploitation projects, as neighbouring contract areas could be impacted by the activities of the Contractor submitting the EIS and cumulative effects could arise where mining occurs in close proximity to another mined area[23].

6.3: We wonder if this definition could be expanded from sites to include passages? For example, specific sites of archaeological or historical interest may not be known, but if the contract area lies within a region that is traversed by a known historical shipping route and there is a chance that remains of slave ships or war graves could occur, then this could be acknowledged.

7. Assessment of impacts on the physicochemical environment and proposed Mitigation

We support the current structure of the impacts chapter; breaking down each section into a description of the impact, measures that will be taken, and residual impacts makes this chapter more concise and easier to read. We fully support the requirement for these sections to detail the expected longevity of unavoidable effects.

7.2: We suggest that it could be helpful to provide more guidance here on the types of impact categories. If these were made standard across EIS documents, it would be easier to compare between the EIS of different Contractors.

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[22] Burnett D *et al.* (2015) Submarine cables and deep seabed mining. *ISA Technical Study: No. 14*, International Seabed Authority, 53 pages.

[23] Johnson DE (2017) Submarine cable considerations for Area-Based Planning in ABNJ with reference to two ongoing International Seabed Authority processes. *In: Legal Status of Marine Cables, Pipelines and ABNJ*, Karen H, Aksoy S & Var Turk K (eds). Ankara University, Research Center of the Sea and Maritime Law, Publication No. 1.

7.2b: We suggest the need for clarification on the use of terminology within this provision regarding Environmental Risk Assessment versus Environmental Impact Assessment.

7.2c: We consider this to be a very important section, as what is included within the EIS depends on whether activities are identified as low-risk or high risk. Knowing how these identifications were made is crucial.

7.5: The text seems to imply that mining could impact the current speed or direction. We suggest the need for clarification as to whether this is the case, or if this subsection is intended to detail how the current speed or direction could influence mining impacts? We consider that sedimentation rate may also need clarification, for example, does sedimentation rate include plume fallout from mining activity, or is it just the natural fall of organic and inorganic matter from surface waters through the water column?

We are also unsure of what is meant by 'a regional oceanographic model will be relevant to this section' – are Contractors expected to develop their own model or to refer to an existing model? We suggest that additional physical oceanographic features are considered here, such as tidal effects on currents, as these may influence the behaviour of mining plumes. In particular, the complex physical oceanography of seamounts may have implications for the spread of plumes associated with mining seamount-hosted cobalt-rich ferromanganese crusts and Seafloor Massive Sulphide deposits[24].

7.6 through to 7.14: We are unsure as to whether these sections are structured in the same way as the previous sections (impact, measures that will be taken, residual impacts)? We suggest this is clarified within the text.

7.6: We consider the provisions listed here to be suitably comprehensive. However, clarification is required for the 'regional oceanographic model'. We are concerned that as plume impacts are expected to be modelled in near and far field simulations, a regional model may be too coarse to resolve near field plume spread. Although the description is not comprehensive, metal compounds are omitted; we suggest consideration be given to listing them alongside nutrient levels in the description. Trace metals, such as iron, can influence primary production; in areas which are naturally limited in trace metals, the release of compounds through mining plumes could alter primary production.

7.8: The phrasing of this subsection appears to imply that mining activities may impact natural hazards. We suggest the need for clarification as to whether this is what was intended, or if this subsection should detail how mining activities may be impacted by natural hazards.

7.10: We suggest the need for clarification as to whether the assessment of gas and chemical omissions is restricted to mining activities, and for the clarification of what would be defined as 'natural' activities. We are also unclear as to whether the potential ocean acidification impacts from mining activities need to be detailed within the impacts to water column chemistry. We also suggest that Guidelines may be needed as to the circumstances making a greenhouse gas emissions assessment 'appropriate'.

7.13: We welcome the inclusion of a section dedicated to cumulative impacts, as impacts rarely occur in isolation within the marine environment. We also welcome the division of this section into proposed operation impacts and regional operation impacts. However, we consider that some clarification of the text is required. Currently, cumulative effects are only considered over the lifetime of the mining operation. Many impacts on the physicochemical environment are expected to continue beyond the end of the mining project and will need to be monitored post-mine closure (as per the EMMP and Closure Plan). We strongly suggest that consideration of cumulative impacts here should include impacts that are expected to extend beyond the lifetime of the mining operation. It is also unclear whether the regional operation impacts will factor in cumulative impacts from all marine users within the region (e.g. spatial and temporal overlap with fisheries, submarine cable laying, etc.) or just to other mining operations within the region.

[24] Rogers AD (2018) Threats to seamount ecosystems and their management. In: *World seas: an environmental evaluation*, Vol III: Ecological issues and environmental impacts. Sheppard C (ed).

8. Assessment of impacts on the biological environment and proposed Mitigation

We welcome the need to make clear the longevity of residual impacts, and whether or not the biological environment is expected to recover and in what time frame. We note that this chapter should refer to the "biological environment components identified within Section 5", but that many of these components are not included within Section 8. We suggest that consideration could be given to maintaining a comprehensive list of biological environment components that is consistent between Section 5 & Section 8.

9. Assessment of impacts on the socioeconomic environment and proposed mitigation.

We note that cumulative impacts for this chapter are included within each of the sections, instead of combined into a single cumulative section at the end as was done for physicochemical and biological impacts sections. In this context, we suggest clarification is needed on where cumulative impacts between sectors/marine users will be detailed, as there is not currently a dedicated cumulative impacts section at the end of Chapter 9.

9.4: We consider it would be helpful if there was more detail on what to include under the Socioeconomic and sociocultural issues section. For example, how does this section differ from the previous sections relating to marine users?

10. Accidental events and natural hazards

We strongly support having a section that specifically addresses the risks and impacts of accidental events and natural hazards. We note there is no specific mention of cumulative impacts and wonder whether this is needed. For example, any of these impacts would probably occur in an area that is already impacted by mining and an accidental event could take the environment subject to the leakage or spillage past its recovery tipping point.

10.3: We note that there is currently no mention of spillage/leakage of non-hazardous materials, for example, loss of nodule payload from the ship or breakage in riser pipes leading to nodule slurry/fines leaking into the water column. We suggest consideration is given to including events involving non-hazardous materials in this section.

11. Environmental management, monitoring and reporting

We note that the EMMP is also a separate document, that will be submitted at the same time as the EIS as part of the Plan of Work (Draft Annex X, Section 3). We also note that this chapter should 'provide sufficient information to enable the Authority to anticipate possible environmental management, monitoring and reporting requirements for environmental approval'. We suggest clarification is needed on the level of information to be provided within Chapter 11 and the linkages with the EMMP. Consideration could be given for the EMMP and EIS to cross-reference the relevant sections within each document, so that the reader of the summary information in the EIS can be directed to the more detailed corresponding section in the EMMP.

11.2: We suggest that consideration is given to the current lack of the requirement for a full environmental management system to be established by the time the EIS is submitted.

11.3: As the EMMP should be submitted at the same time as the EIS as part of the Plan of Work, should 'what the [EMM] Plan would entail' instead read, 'what the [EMM] Plan *will* entail'?

11.3.3: We are concerned with the phrase 'if applicable' in relation to continued monitoring and rehabilitation measures. As recovery of the benthic communities at the three different mineral resources is expected to take decades to centuries, consideration should be given to a requirement for continued monitoring and rehabilitation measures.

11.4.1 & 11.4.2: We consider that the requirements for reporting of monitoring and incidents should be detailed within the Draft Regulations or accompanying Standards/Guidelines. We also consider that it would be helpful if sections 11.4.1 & 11.4.2 referred to the relevant portions of these documents.

12. Product Stewardship

We welcome the inclusion of environmental impacts within this section.

13. Consultation

We note that there do not appear to be any regulations that specify the degree or nature of consultation that Contractors are required to conduct as part of their Plan of Work, although having a section within the EIS template implies consultation is required. We strongly suggest that the Draft Regulations or the Guidelines/Standards provide detailed requirements for Contractor consultation on environmental matters. The relevant portions of these texts could then be referred to within the EIS template.

13.1: Practice elsewhere includes an obligation for consultation on environmental matters, we suggest that this obligation is included within the Draft Regulations/Guidelines/Standards and referenced here.

13.2: We note the existence of industry standards for identification of stakeholders and suggest that some best-practice examples could be listed here to guide Contractors.

13.3: We note that the text of this section refers to "stakeholders", but the title is "public". It may be appropriate to consider clarifying within the text that "stakeholders"' is inclusive of "public".

13.4: We note that it is standard practice for consultation to occur prior to and throughout the duration of a project. We suggest that the Draft Regulations/Standards/Guidelines could provide details on how consultation should be conducted and what the Contractor obligations are.

14. Glossary and abbreviations

We welcome the inclusion of this chapter and request that it is comprehensive, so that readers from diverse backgrounds (including the public) are able to interpret the EIS.

17. Appendices

We are pleased to note that all technical reports pertaining to the EIA and EIS are to be included in the Appendices. We consider that it would be helpful if these reports are included in their original, full-text form. We also note that earlier in the EIS template, it was indicated that all of the environmental data collected will be included in the appendices, but this is not indicated under Section 17.

Environmental Management and Monitoring Plan (EMMP)

Draft Regulation 46 ter: Environmental Management and Monitoring Plan

46 ter: 3. We suggest clarification is needed as to whether the EMMP will cover all aspects prescribed by the Authority in annex VII and not just the main aspects.

46 ter: 3a. We note that EMMP should be based on EIA and EIS, but we are not sure of the relationship between these documents, as there is a section within the EIS that relates to the EMMP. We suggest the relationships between the Environmental Plan documents is clarified within the Draft Regulations and Annexes.

46 ter: 3b. We welcome the reference to regional environmental management plans but are concerned by the wording 'if any'. We suggest that REMPs should be in place prior to exploitation contracts being awarded.

46 ter: 3c. We support the need to incorporate Good Industry Practice, Best Available Scientific Evidence and Best Available Techniques, although these may need further definition. We support the need for consistency between the Closure Plan, Emergency Response Plan and Contingency Plan.

Draft regulation 49: Compliance with the Environmental Management and Monitoring Plans and performance assessments.

We agree with these provisions but suggest consideration could be given to the wording of 49: c. Without fully defining Good Industry Practice, it is challenging to determine how this will be applied. We note that the EMMP is a document submitted to the Authority and "verified by the report of independent competent persons". We suggest clarification is needed as to how the EMMP will be updated to maintain currency and adequacy, whether changes to the EMMP need to be verified, and if so, what degree of change requires verification.

Draft regulation 50: Performance assessments of the Environmental Management and Monitoring Plan.

50: 1. We note that the EMMP will be verified by the report of independent competent persons, and wonder if the performance assessments of the EMMP will also be conducted by independent competent persons?

50: 2. We are concerned at the variation within this regulation for the timing of the performance assessment and suggest it may introduce the potential for inconsistent treatment between Contractors. We suggest that consideration could be given to making the performance assessment of the EMMP annual to bring it in line with the requirement for annual Contractor reports under the Exploration Regulations. This could streamline the reporting process and may allow for more frequent alterations to the EMMP if the environment requires them.

50: 3. We strongly support the process of independent review for Environmental Plan documents.

50: 4. We wonder if review of these reports could be streamlined if they were included in the Contractor's annual report. We strongly support that the report and the findings & recommendations from the Legal and Technical Commission review should be made publicly available.

50: 5. We welcome these provisions in the case where Contractors are permitted to conduct their own performance review of the EMMP. We suggest consideration could be given as to whether an independent competent person could be contracted to conduct the initial report in all cases and not just where the report submitted by a Contractor is found to be inadequate as in 50: 5c.

50: 8. We suggest consideration be given as to whether conducting all EMMP performance assessments by independent persons could assist the Legal and Technical Commission in their decisions. We wonder whether the work of the Legal and Technical Commission could be assisted by providing a standard template for the EMMP performance assessment.

Draft regulation 51: Emergency Response and Contingency Plan

51: 2. We strongly support the provision for exchange of knowledge, information and experience relating to Incidents.

Annex VII: Environmental Management and Monitoring Plan

The template for the EMMP is less-detailed than that for the EIS; we suggest that parts of the EMMP template may benefit from clarification and further detail. We strongly suggest that the linkages between the EMMP, EIS (and Closure Plan) would benefit from clarification within the text of the Draft Regulations and Annexes.

We welcome the EMMP being prepared in plain language and in an official language of the Authority.

We strongly support that the EMMP will be verified by the report of independent competent persons. We suggest clarification is needed as to who these competent persons are, and how they are chosen. We suggest consideration is given to selecting these competent persons through existing processes, for example the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)[25] or the lists of experts maintained by the Divisions for Ocean Affairs and Law of the Sea (DOALOS)[26].

We welcome that the EMMP will be made publicly available as one of the Environmental Plan documents, but we suggest clarification is needed as to whether there will be an opportunity for stakeholder consultation on the EMMP.

2 a: We welcome the provision of a non-technical summary, but we suggest that more detail could be provided as to what the section should include (see EIS template for an example).

[25] http://www.gesamp.org/

[26] http://www.un.org/depts/los/settlement_of_disputes/experts_special_arb.htm

2 c: We suggest clarification is needed as to whether the environmental objectives and standards are defined by the Contractor or by the Authority.

2 e: We suggest clarification is needed on the form of the assessment of the potential Environmental Effects of the proposed activities.

2 f: We suggest clarification is needed on the form of the assessment of significance of the potential Environmental Effects of the proposed activities. We note that the phrasing "consistent with" the environmental impact assessment and the EIS suggests there is a link, but we wonder if this assessment will draw directly from the results of the EIA, as reported within the EIS.

2 g: We suggest consideration is given to requiring that this section is prepared with reference to the Standards and Guidelines. We note that the Standards and Guidelines are not mentioned in this provision or within Annex VII generally; we consider it would be helpful to state the requirements for monitoring programmes and recommended methodologies for these. Whilst we welcome the use of adaptive management here, we consider that there needs to be a good understanding of what is allowable under adaptive management.

2 h: We consider monitoring to be a very important aspect, particularly as the longer-term impacts of exploitation are not known. For example, slow-growing deep-sea corals damaged by deep-sea mining may take decades to centuries to recover, whilst faunal communities within nodule sediments have not recovered multiple decades after experimental disturbance. Recovery of nodule-endemic fauna will not occur on human timescales unless suitable artificial substrata is provided, as nodules will take millennia to reform on the seabed. With exploitation licences expected to be granted for periods of up to 30 years, and mining activities occurring across large areas, there is considerable potential for long term impacts at large spatial scales. Whilst crust and sulphide mining are expected to have a more localised impact, as they will occur on smaller more patchily distributed deposits, recovery may still take decades to centuries for certain species. The different spatial and temporal scales of mining for the different mineral resources would be expected to result in a range of impact spatial and temporal scales, each of which will require a tailored monitoring programme. We note that the Draft Regulations do not include resource-specific recommendations for monitoring, we suggest that indicative time-scales for monitoring could be provided for each resource. Consideration could be given to including these within the Standards and Guidelines, so that they may be more readily amended in light of new information. We suggest that careful consideration is given to the frequency of monitoring and data collection, to adequately capture the fluctuations in environmental response that could occur due to natural rhythms; for example, seasonal influences can still be felt at abyssal depths. The effectiveness of the monitoring programme will depend on the provision of robust environmental baseline data to compare post-impact data against. We strongly suggest that the link between monitoring programmes and environmental baseline data collection needs to be emphasised within the Draft Regulations.

2 i: We note the use of plural for Preservation Reference Zones (PRZs), Impact Reference Zones (IRZs) and other spatial management planning tools. We strongly support the concept that it may be necessary to have multiple PRZs and IRZs to adequately monitor mining impacts. For example, modelling studies of mining plumes indicate changes in vertical and horizontal extent according to fluctuations in current regimes, with the associated variation in the depth of particle settlement in the benthic environment. We note that only IRZs and PRZs are mentioned within the Exploration Regulations and we suggest clarification is needed on the other spatial management planning tools envisioned under 2 i.

2 j: We suggest clarification is needed as to whether the description of relevant environmental performance standards and indicators will refer to the Standards and Guidelines developed by the Authority. We note that establishing these trigger and threshold points will be challenging given the paucity of information on the environmental impacts of commercial-scale seabed mining. We also note that establishing these trigger and threshold points may require environmental monitoring information from test mining but that there do not appear to be any requirements for test mining to occur prior to

commercial exploitation. We suggest that the importance of information collected during test mining could be emphasised within the EMMP.

2 n: We welcome the requirement for personnel to be trained in EMMP activities.

2 o: We suggest clarification is needed as to whether the requirements for waste assessment and audit will be detailed in the Guidelines and Standards of the Authority. We suggest that consideration is given as to whether audits could be conducted by independent competent persons, or by an Inspectorate established by the Authority.

2 p: We welcome the provision for continued consultation with other users, especially as there may be the potential for cumulative effects due to the impacts from multiple users. We note that having a coherent, continuing consultation process is also important to identify impacts from other users that may otherwise have been attributed to mining activities. We suggest that it may be helpful to reference the relevant section of the EIS providing detailed information on the other marine users and the sorts of cumulative impact that may occur and be considered as part of the EMMP.

2 q: We suggest clarification is needed as to whether restoration is required by the Authority and if it is, which methods are acceptable. We note that restoration in the deep sea has been little tested[27], and that restoration following commercial mining has not been trialled to date. We suggest that if restoration is to be considered as part of the EMMP for exploitation, trial restoration could be piloted during the test mining phase to determine the methods that have potential restoration value. We suggest clarification is needed on the requirement for Contractors to conduct restoration, considering that some habitats will not fully recover to their pre-mining state without restoration activities (for example, the loss of inactive seafloor massive sulphide habitat, and the loss of nodule habitat for nodule-endemic fauna). The potential of different technologies and approaches for marine restoration, the potential benefits of restoration, and the policy and governance frameworks required to optimize the effectiveness of restoration are being assessed under the EU-funded Marine Ecosystem Restoration in Changing European Seas (MERCES)[28] project.

2 r: We strongly welcome the provision for further research and studies, especially given the absence of data and information on the recovery of ecosystems post-mining. We suggest clarification is needed as to whether the Contractor is obliged to undertake further research and studies, and if so, the spatial and temporal scope that would be required.

2 s: We suggest that this section, if it relates to provisions within the Authority Regulations, Guidelines and Standards, could be re-phrased to reflect this linkage, and potentially elaborated to indicate the requirement for items such as detailed timelines/Gannt charts.

Closure Plan

Draft regulation 57: Closure Plan.

57: 1. We welcome the additional text regarding the inclusion of post-closure management and monitoring of residual and natural Environmental Effects. We suggest clarification is needed of how long a Closure Plan may be in place for, post closure. We suggest consideration is given to requiring Contractors to prepare their Closure Plan with reference to the Standards and Guidelines.

57. 2b: We suggest clarification is needed as to whether the "management and monitoring plan" refers to the Environmental Management and Monitoring Plan. We suggest the linkages between the EMMP and Closure Plan should be emphasised within the Draft Regulations.

57. 2c: We note that the risks relating to Environmental Effects are "quantified, assessed and managed" during the EIA process and detailed within the EIS. We suggest the linkages between the EIS and Closure Plan should be emphasised within the Draft Regulations.

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[27] Van Dover CL *et al.* (2014) Ecological restoration in the deep sea: Desiderata. *Marine Policy*, 44: 98-106.

[28] http://www.merces-project.eu/

57. 2e: We note that the residual negative Environmental Effects are identified during the EIA process and detailed within the EIS. We suggest the linkages between the EIS and Closure Plan should be emphasised within the Draft Regulations.

57. 2e & f: We note that the EMMP outline (Annex VII, 2 q) mentions "practicable restoration" and not "mitigation" or "remediation"'. We note that these concepts form part of the mitigation hierarchy to avoid, minimise, remediate and offset[29]. We wonder if consideration could be given to using similar terminology to that within the mitigation hierarchy and to provide detailed definitions of these terms, to avoid confusion as to the Contractor's obligations. Although restoration has been little tested within the deep sea, we suggest that this should not prevent restoration actions from being pursued (consistent with the Precautionary Principle).

57. 3: We wonder whether the Closure Plan should cover all aspects prescribed by the Authority in Annex VIII, instead of the "main aspects".

57. 5: We agree that the Closure Plan should be updated each time there is a Material Change in a Plan of Work, along with the provision for a 5-year review. We suggest consideration could be given as to whether changes to an EMMP (following a performance assessment) will also trigger a review of the Closure Plan. We suggest clarification is needed as to whether the updated Closure Plan will be subject to stakeholder review, as in the case for the Closure Plan submitted as part of the Plan of Work.

Draft Regulation 58: Closure Plan: cessation or suspension of production.

58. 1, 2 & *3:* We suggest clarification is needed as to whether the Final Closure Plan will be open to stakeholder review.

58. 3: We strongly agree that the Legal and Technical Commission should have the opportunity to either accept, make mandatory suggestions for amendments, or have the option to reject a final closure plan if these amendments are not made.

58. 4: We suggest clarification is needed as to whether following review, the Environmental Performance Guarantee (EPG) surplus will be returned to the Contractor, and if the Contractor would be liable for additional funds in cases where environmental damage is considered unacceptable. If the Contractor is liable to impacts that continue post-closure, considering that it may take time for the extent of these impacts to be felt, we wonder if the review of the EPG could be deferred until any longer-term impacts have been assessed.

Draft Regulation 59: Post-closure monitoring.

59. 1: We agree that the results of monitoring should be reported to the Secretary-General.

59. 2: We note that to determine recovery, monitoring may need to continue for decades to centuries or even millennia, depending on the mineral type that has been exploited. We suggest establishing Guidelines and Standards to provide the criteria for the length of monitoring required, including thresholds for recovery. The time needed for recovery may vary between resource types and locations, and subsequently monitoring requirements may vary in temporal and spatial extent. To accommodate these variations whilst providing clear guidance to Contractors, we suggest establishing appropriate thresholds for recovery that are applicable to the different resource types and locations.

3. We suggest clarification is needed as to when the final performance assessment report will be submitted. We suggest consideration is given to requiring regular interim reports to confirm the Closure Plan is performing as intended, particularly in cases where monitoring extends for multiple years/decades. We agree that the final performance report should be reviewed by the Legal and Technical Commission and we suggest clarification is needed as to whether there will be the opportunity for seeking stakeholder comments. We also suggest clarification is needed as to whether

[29] Niner HJ *et al.* (2018) Deep-sea mining with no net loss of biodiversity – an impossible aim. *Frontiers in Marine Science,* 5: 53.

the final performance assessment report and the recommendations of the Legal and Technical Commission will be publicly available.

Annex VIII: Closure Plan

The requirements for the Closure Plan are much more detailed than in previous drafts and we welcome the additional information. We note that without the Guidelines to refer to or knowing what the legal status of the Guidelines will be, assessing the provisions within Annex VIII is challenging.

We note the requirement for the EMMP to be prepared in plain language and in an official language of the Authority, together with an official English-language version. We suggest clarification is needed as to whether these provisions will also apply to the Closure Plan.

We note that the EEMP will be verified by the report of independent competent persons, we suggest clarification is needed as to whether this provision will also apply to the Closure Plan.

We welcome the provision for the Closure Plan to be prepared and implemented in accordance with any existing Regional Environmental Management Plan (REMP). We are concerned by the wording 'if any', as this implies that Contractors could be in the position where their exploitation contracts are awarded without the overarching guidance of a REMP – namely that exploitation could take place without there being a regional approach to environmental management. We strongly suggest that exploitation should not be permitted in areas where REMPs have yet to be established.

1 a: We suggest clarification is needed on whether the closure objectives are to be developed by the Authority within Guidelines and Standards, or whether these are to be developed by the Contractor.

1 b: We suggest consideration is given to providing standard lengths for Closure Plans, or a set of Standards and Guidelines that could be employed to determine the site-specific Closure Plan length.

1 f: We suggest clarification is needed on what is meant by "data and information relating to baseline conditions for monitoring measures" and we suggest that this section may require more detailed provisions.

1 g: We seek clarification on the method required for Environmental Impact Assessment is required, and how residual Environmental Effects are determined.

1 h: We are concerned that there is no guidance on the spatial or temporal resolution of sampling or the methods to be used for the monitoring undertaken during and after closure, and we suggest consideration is given to detailing these within the Guidelines and Standards.

1 i: We note that details of the management measures to mitigate the residual environmental effects are reported within the EIS, and we suggest this section could reference the EIS.

1 j: We welcome the inclusion of restoration objectives and activities. We are concerned that "where applicable" implies there may not be an obligation to make efforts to restore the mined area and we suggest that the requirements for restoration are clarified within the Draft Regulations and Annexes.

1 k: We strongly support the inclusion of information on reporting and management of data and information post-closure.

1 l: We support the inclusion of the details of the persons or entity that will carry out the monitoring and management measures under the Closure Plan.

1 o: We support the inclusion of details of consultations with stakeholders in respect of the plan, but we suggest clarification is needed on what the obligations are for Contractors to conduct consultation on their Closure Plan.

2: We are unsure of whether there should be different levels of detail between Closure Plans. We wonder if the scope of content should be the same to support consistency between Closure Plans. We suggest that consideration could be given to providing a detailed template for Closure Plan reports, similar to the template provided for EIS.

Appendix 1: The ATLAS Project

Overview

ATLAS will provide the first coherent, integrated basin-scale assessment of Atlantic deep-water ecosystems and their Blue Growth potential. To achieve this ambition, ATLAS is employing innovative methods and integrating data in new ways. By unifying ATLAS research from physical oceanography through ecosystem function, biodiversity, and connectivity, the ATLAS consortium sets out a uniquely data-led science plan as the foundation for its socioeconomic, spatial planning, and policy integration activities. Multi-way dialogue with stakeholders will transfer ATLAS outputs into policy-making to create a new platform informing both Blue Growth and research agendas. ATLAS will disseminate knowledge and data through systemic EU and global data infrastructure, and complement this with pan-EU and international public dissemination and outreach.

Work Packages

1. Ocean dynamics driving ecosystem response. Conducting key research to understand ocean circulation in the Atlantic, in particular climate change impacts on the Atlantic Meridional Overturning Circulation and implications these may have for ecosystem functioning, biodiversity and genetic connectivity.
2. Functional ecosystems. Developing predictive models to map Atlantic ecosystems, their species, and how they function at spatial scales relevant to environmental management. These models will enable predictions for how Atlantic ecosystems may respond to future environmental changes.
3. Biodiversity and biogeography. Conducting key research on the biodiversity and biogeographic patterns of sensitive ecosystems and species, and forecasting changes under future scenarios of water mass structure and ocean currents.
4. Connected resources. Providing new models to identify critical source areas of marine genetic resources, and exploring how these resources are connected on regional and basin-scale levels to understand their vulnerability to climate change and human activities.
5. Valuing ecosystem services and Blue Growth potential. Assessing the many ecosystems services the Atlantic area provides to society (supporting, provisioning, regulating, and cultural) will allow ATLAS to establish firm foundations upon which Blue Growth and conservation scenarios can be evaluated and balanced.
6. Maritime spatial planning. Developing an adaptive Atlantic Marine Strategic Planning approach within ATLAS, based on the Monitoring and Evaluation of Spatially Managed Areas framework, will enable stakeholders to explore and respond to various scenarios of ocean dynamics and cross-sectoral Blue Growth.
7. Policy integration to inform key agreements. Translating ATLAS' scientific findings to policy and practice will inform national and international agreements regarding Blue Growth and systematic conservation planning.
8. Open science resources for stakeholders. Integrating different data formats spanning national to small local systems into a coherent portal, the European Marine Observation and Data Network (EMODnet) makes environmental data and products from the ocean surface, water column and seafloor available to stakeholders.
9. Dissemination, knowledge transfer and outreach. Effective external communication, dissemination and knowledge transfer of ATLAS outputs will contribute to the Atlantic Action Plan initiatives on Ocean Literacy and support development of the European Research Area and the Atlantic Ocean Research Alliance.
10. Co-ordination and management. Co-ordinating ATLAS involves supporting all ATLAS activities, convening meetings of the Steering Committee and Advisory Board, and ensuring ATLAS liaises with relevant transatlantic initiatives during the course of the project.

Case Studies

1. LoVe Observatory (Norway). A cabled ocean observatory outside Lofoten-Vesterålen on the seabed in northern Norway, an area known as the gateway to the Barents Sea.
2. Faroe Shetland Channel (UK). The Channel lies between the Faroe Islands and Shetland Islands, north of northern Scotland.
3. Rockall Bank (northern Northeast Atlantic). Rockall Bank is a shallow bank forming one of the western boundaries of the Rockall Trough, and lies northwest of Ireland and west of Scotland.
4. Mingulay Reef (UK). Mingulay Reef is located 14 km east of the Island of Mingulay in the Sea of Hebrides, western Scotland.
5. Porcupine Seabight (northern Northeast Atlantic). The Porcupine Seabight lies southwest of southern Ireland and just south of the Porcupine Bank.
6. Bay of Biscay (Northeast Atlantic). The Bay of Biscay lies west of France and north of Spain.
7. Gulf of Cadiz/Strait of Gibraltar/Alborán Sea (East Atlantic). The Gulf of Cadiz lies off the southwest coast of Spain, the Strait of Gibraltar occurs between Gibraltar and Morocco, the Alborán sea lies east of Gibraltar between north Morocco and south Spain.
8. Azores (Portugal). The Azores is a volcanic archipelago located along the Mid-Atlantic Ridge, off the west coast of Portugal.
9. Reykjanes Ridge (northern North Atlantic). The Reykjanes Ridge runs southwest from the southwest tip of Iceland.
10. Davis Strait (northern Northwest Atlantic). The Davis Strait joins two oceanic basins, Baffin Bay and the Labrador Sea, and separates western Greenland and Baffin Island. It connects to the Arctic Ocean in the north via the Baffin Bay and to the Atlantic Ocean in the south via the Labrador Sea.
11. Flemish Cap (Northwest Atlantic). The Flemish Cap is an oceanic bank east of Halifax, Canada. The Cap is separated from the Grand Banks by the Flemish Pass.
12. Mid-Atlantic Canyons (USA). The western North Atlantic between Cape Hatteras and Cape Cod is characterised by numerous and diverse submarine canyons that straddle the outer shelf and slope. The focus is on the area between Baltimore Canyon and Cape Hatteras, to include data from the Blake Plateau off the south-eastern USA.

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The ATLAS Project receives funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 678760 (ATLAS). ATLAS is a 4-year project and will continue until April 2020. For more information on the ATLAS Project, please see our website: https://www.eu-atlas.org/