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2 July 2021

Mr. Nathan Eastwood
Office of Legal Affairs
International Seabed Authority
Email: ola@isa.org.jm

Dear Mr. Eastwood,

The Pew Charitable Trusts, in its capacity as an observer to the International Seabed Authority (the Authority), respectfully submits these comments in response to the stakeholder consultation initiated by the Authority pursuant to ISBA/25/C/19/Add.1 on the process of development of draft standards and guidelines. We thank the members of the Legal and Technical Commission for their work in developing these draft documents and welcome the opportunity for consultation.

These comments were prepared in consultation with members of Pew's Code Project, an initiative launched in 2017 to bring together scientists, regulatory practitioners, and legal scholars, to review and comment on aspects of the evolving governance regime for mining in the Area.

As we noted in earlier correspondence, the Draft regulations on exploitation of mineral resources in the Area (ISBA/25/C/WP.1) envision that standards and guidelines will address a host of critical issues. Fair and inclusive stakeholder consultation should be a prerequisite for drafting all of these documents and we commend the Authority on its efforts to solicit comments thus far. We hope the present submission is a constructive contribution to this discussion.

But we also must raise some concerns. First, it is increasingly clear that at this stage consideration of standards and guidelines is premature. During the prior round of consultations carried out in November 2020, several respondents noted that the Authority is still deliberating the draft regulations on exploitation which will control these standards and guidelines, preventing any meaningful consideration as to how these subsidiary documents will operate within the broader regulatory framework. We further note that the Council has formed a series of informal working groups to discuss the draft regulations, including a working group on protection and preservation of the marine environment that will have outputs likely to bear directly on this consultation. Due to COVID-related cancellations, this group and others have yet to hold their first meetings.

Council members have repeatedly emphasized a preference for quality over haste in the development of the mining code. If the importance and complexity of the exploitation regime, including standards and guidelines, requires more time and deliberation than may have been initially envisioned, then additional time should be provided. Further, if additional capacity and expertise in drafting standards and guidelines could be useful, then we would encourage the Secretariat to work with the Commission and other stakeholders to provide a transparent mechanism for such offering such support. In any event, it seems more prudent to defer consideration of standards and guidelines until the draft regulations are further stabilized. The exploitation regime can then be considered in its totality.

It also remains unclear what will be done with these comments. A chart available on the Authority's webpage indicates that, following a stakeholder consultation, draft standards and guidelines will be under consideration for approval by the Commission and then will be considered by the Council. But it does not explain how the Commission will respond to comments submitted or integrate those comments into revised drafts. Nor does it provide opportunity for further discussion and comment on those submissions. Given the importance of these issues and the extensive commentary that will likely be generated from this review

process, we express our strong hope and encouragement that several rounds of consultations will be conducted for each set of standards and guidelines to ensure that all inputs are captured.

I thank you again for the opportunity to submit these comments. Please do not hesitate to reach out if further discussion with us or with members of the Code Project would be useful.

Yours Sincerely,

Andrew Friedman
Project Lead, Seabed Mining
The Pew Charitable Trusts
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TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft Guidelines for the establishment of baseline environmental data
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General Comments

Standard and Guideline Development

We reiterate that the process of drafting standards and guidelines (S&Gs) while the exploitation regulations remain under consideration is a premature and can lead to the Commission proposing S&Gs based on outdated assumption about the draft regulations. This comment applies to all draft Standards and Guidelines in this package.

For example, the S&G for EIAs notes that stakeholder consultation is not required by the current draft regulations and, therefore, stakeholder consultation is not addressed in the draft EIA Standard. This is deeply problematic. Like the Commission, we also believe that robust stakeholder engagement represents best practice and should be included as a mandatory component in the EIA standard. Its absence in the current draft regulations should not be a deciding factor.

Another overarching concern is that before the Standards and Guidelines can be negotiated and adopted, the member States of the ISA must agree to a fundamental approach to the protection of the environment. That fundamental approach should be incorporated in the draft Regulations. It would then also guide the development of any standards and guidelines. This should include that biodiversity loss should not be permitted, the Standards and Guidelines, as well as the regulations, must align with the Sustainable Development Goals (SDGs), including, in particular, SDG 14 and its Target 14.2; and States should ensure that the ISA standards, guidelines and regulations should not permit deep-sea mining unless significant adverse impacts on marine ecosystems; degradation of the resilience of marine ecosystems; and impacts from which recovery will be difficult or impossible over meaningful timeframes can all be prevented. (see also general comment below regarding “Need for Setting Environmental Objectives, Indicators and Threshold”).

We also note that the S&Gs were developed by working groups of LTC members, independent experts, and contractor representatives. Contractors were able to contribute to legal documents to which they would be subject (without attribution), while ISA member States were not involved. This lack of transparency risks undermining procedural integrity.

Consideration of Stakeholder Comments

It remains unclear what will be done with these comments. A chart available on the Authority's webpage indicates that, following a stakeholder consultation, draft Standards and Guidelines will be under consideration for approval by the Commission and then will be considered by the Council. But it does not explain how the Commission will respond to comments submitted or integrate those comments into revised drafts, nor does it provide opportunity for further discussion and comment on those submissions. Given the importance of these issues and the extensive commentary that will likely be generated from this review process, we express our strong hope and encouragement that several rounds of consultations will be conducted for each set of standards and guidelines to ensure that all inputs are captured.

Need for Setting Environmental Objectives, Indicators and Thresholds to inform baseline

While we appreciate the level of detail in this Guideline, we are concerned about its approach. The purpose of this document should be to set useful monitoring parameters and to distinguish anthropogenic from natural changes. We are concerned that without clear and defined environmental objectives, indicators, and thresholds, contractors may amass a large amount of data that may be hard to meaningfully interpret. Draft Regulation 45 prescribes that an environmental standard will be issued on "environmental quality objectives including on biodiversity, plume density and extent of sedimentation rates." Whether via the regulations or such a standard, such objectives should be drafted first, with this document amended to meet those requirements.

Need for Baseline Standard

The baseline is the crucial foundational element for the EIA process. A lack of comprehensive baseline information will make it difficult, if not impossible, to assess what the impacts of mining are likely to be, or fully monitor the impacts of mining once it begins. If there is insufficient knowledge of the species and ecosystems and their characteristics (e.g. rarity, endemism) and dynamics (e.g. connectivity) potentially impacted by mining in the first place, it would be impossible to monitor the full range of mining impacts, including, for example, whether mining permitted by the ISA would result in driving species extinct. Discretion in this regard will mean a wide variance in EIA quality and likely substandard EIA. Consequently, most elements of this document should be made mandatory and this document should be reframed as a standard rather than a guideline.

Application to mineral types

The guideline notes that: "Some elements may not apply to all mineral types". This is unclear. The application of the guidelines to specific mineral types should be clearly stated and, if necessary, there should be a separate Guideline for each type of mining.

Strategic Sampling

We believe there is a need to improve the overall sampling strategy section. In some ways this is the most important section/component, as it determines the success of all following measurements. At present the requirements are lacking coherence.

As such, it would be valuable to address a few key questions:

- How do we design and constrain pelagic sampling, given the need to address water movement in 4 dimensions? Should we consider stratified random sampling like in the benthic environment? What degree of depth resolution is required? What features should be assessed? Are model-based approaches needed to define sampling parameters?
- How do we integrate benthic and pelagic sampling to develop an integrated understanding of the baseline area? These two systems are coupled, especially close to the seabed, but they are given very different treatment here.

Answering these questions will require clear environmental objectives, indicators, and thresholds are defined (see comment above).

Time and Costs

The document should note at its outset that the procedures referenced therein are labor intensive and require the commitment of dedicated, experienced, and adequately resourced teams. Biological sampling for monitoring mining activities is not a simple job for one or two people.

The Guideline could usefully include an indication of the estimated time, costs and workforce required for sampling. processing and analysis. Contractors may be unaware of the commitment needed in ship time to develop environmental data suitable for monitoring mining impacts. The document's necessary emphasis and detail regarding measuring temporal variability may also come as a surprise.

It may be helpful to summarize this in a table for each section.

Data Collection and Depth of Discharge Plume

It will be difficult to determine adequate sampling depth frequencies in the water column without a better understanding of the depth of the discharge plume. Until depth of the discharge plume is clearly defined, contractors will be forced to undertake costly sampling at all potential release depths, as stated in paragraph 120 - "If the depth of the discharge plume is still to be determined at the time of the baseline studies, all potential release depths should be characterized". Lack of depth requirements for the discharge plume will also pose a great deal of uncertainty concerning the spatial (vertical and horizontal) extent of deep-seabed mining impacts to the marine environment. We recommend the ISA, through public consultation, come to a decision on this matter and then revisit the baseline and monitoring sampling depth frequency requirements.

Specific Comments		
Page	**Line**	**Comment**
1	para. 2	Recommend using Page 4, Paragraph 5 wording as it is clearer and includes exploration and exploitation activities. Additionally, we recommend noting baseline data's importance for assessing test mining before exploitation commences.
4	64	At the end of para. 1 add "Baseline studies should be comprehensive to show due diligence and care for the environment. While only a subset of the information may be suitable and necessary to monitor mining activities and the recovery of ecosystems, a full set of data is

		required in order to make a convincing case in an EIA as to the scope of monitoring required once exploitation activities commence.”
4	65	The guideline notes that: “Some elements may not apply to all mineral types”. This is unclear. The application of the guidelines to specific mineral types should be clearly stated and, if necessary, there should be a separate Guideline for each type of mining.
4	74	Rather than reading the guidelines “in conjunction” with the Regulations, this document should make clear that the guidelines are subordinate to the Regulations and, in case of any inconsistency, the Regulations should control.
4	93	Recommend replacing “Area” with “Marine Environment” or “impact zone.” Much of the environmental impacts of DSM will be in the water column and the ISA is required to protect all areas of the marine environment from harmful effects of DSM. (UNCLOS, articles 145, 192). Limiting baselines to the seabed and subsoil would not be in accordance with UNCLOS.
5	108	Replace: “identify” with “determine”
5	112	What is the temporary scale for evaluation of natural variability? This should be specified as it will have significant implications on the amount of data required and its corresponding time and cost for collection.
5	120-124	This statement misses a key component of baseline assessment. The purpose of baseline data acquisition (according to ISBA/25/LTC/6/Rev.1) is to establish “baseline conditions... that characterize the environments likely to be impacted by exploration and possible test-mining or testing of mining components activities." As such, the baseline assessment needs to be broader than the IRZ and PRZ and should instead cover adjacent environments that could be impacted by mining within the contract area. Additionally, IRZ and PRZ networks should be revised in light of baseline data and finalized only once the baseline has been established.
5	123-124	Regarding “sufficient numbers to address effects connected to both direct and indirect impacts with the necessary statistic rigor.” This is very general statement: what is "sufficient", what is "necessary"?
5	127-129	Why is the reference to “standard references for global ocean biogeography” needed? The Guidelines focus on two large areas - the CCFZ and the Central Indian Ocean, so there is no need for global biogeography. For the CCFZ, Wedding 2013 would be a more appropriate reference.
5	129	Replace: “should be mapped” with “should be mapped throughout the water column”
5-6	139-143	This paragraph doesn't provide any guidance, it is just a statement (except the last sentence, which is specific to one case).
6	152	Add “, slopes, crests, and” after “hills” It is not just large-scale physiographic units that may be important.

6	156-157	Replace: “based on a ship-based bathymetry and seafloor acoustic” with “based on 1) ship-based swath bathymetry at the coarse scale and 2) seafloor acoustics”
7	179-184	The resolution of depth ranges for water column sampling listed here are adequate, but should be expanded if the dewatering plume is not covered by these depth ranges (see para. 120 and corresponding comment). Recommend adding: “If the depth of the discharge plume is still to be determined at the time of the baseline studies, all potential release depths should be characterized.”
7	185-187	Scaling required in sediment sampling may not need to be as fine, as it would be better to put more effort in greater spatial sampling intensity than deep into the sediment.
7	185-194	Is this for all size-classes? Note that the instructions for Macrofauna (Par. 255) are different.
8	207	Providing examples could clarify what pseudo-sample/replication might look like, so contractors can avoid it.
8	243	Delete “l” in “macrofaunal”
9	250	At end of this paragraph recommend adding – “Collaboration and exchange of data will also allow contractors to validate whether their data meet international standards and if improvements could be made to their sampling methods, sample handling procedures and analyses.”
9	266	Replace “oligotrophic” with “biogeographic” - oligotrophic only refers to nutrient poor areas
9	268-269	Regarding “comparison of observations to model results”: Recommend further elaboration, including description of the type of models intended for comparison or a cross-reference to a relevant description. Additionally, it would be helpful to reference EIA Standard (E)(13), which requires the Contractor to “refer to the evidence base for such information and how it has been used to assess the impacts” when models are used in the EIA/EIS.
9	274	Recommend specifying which “other laboratories” are intended.
9	275-280	Para. 32 - This should be framed more simply and in manner more applicable to contractors. May be helpful to provide an example workflow.
10	293	Similar to para. 35, calibration information should be made available alongside the data.
10	293-294	Insert “the time of” after “possible to”
10	296	Regarding “ these Guidelines concerns the minimum requirements” Since Guidelines are non-binding, there should also be a Standard describing the requirements for sampling and analysis.
10	297-298	Replace “in here will increase the quality and” with “in this document and the additional documents cited will increase the quality of baseline studies and”

10	300	"[A]ppropriate long-term preservation standards" should be defined or identified.
10	318	"[E]stablished metadata standards" should be defined or identified.
10	323	Regarding "should also be provided": To whom? Data centers and data managers, the ISA, in EIA?
11	327-332	Para. 48 must be aimed more directly toward contractors. A Guideline solely on Data Management procedures will likely be required.
11	346	Replace "The sea-water parameters that discrete water" with 'These are sea-water parameters that define discrete water"
11	351	Insert "marine organism before "populations"
11	358-360	This should be expanded to encompass the main values measured in the light field pertinent to midwater fauna that use bioluminescence to feed, hide and reproduce. There is serious concern that sediment particles from the dewatering plume will affect fauna from using bioluminescence, which will reduce mating and/or feeding success.
12	366	Replace "from collocated devices" to "on the same sampling device and at the same time"
12	392	Regarding "Physiographic unit": What defines a 'physiographic unit' and 'physiographic zone' (line 412) will require further explanation
12	406	Replace "up to 600/800 – 1000/1600m (depending on the model)" with "at depths down to 1600m depending on the specification of the ADCP instrument used"
13	441	Insert "while the ship is maintaining its course and speed" after "line back"
14	470	More detail will be required on the modelling inputs, sediment assumptions, current, upwelling, etc. to identify the distribution, travel and composition of the discharge as well as operational plumes.
18	625	Regarding "Any models should be validated and accepted by the ocean modelling community": Recommend adding a reference to model validation requirements in EIA Standard (E)(13) and other applicable documents.
19	669	Regarding "Data and metadata should be provided to the ISA as outlined in section III.E": The cross-referenced section includes metadata standards and data preservation standards (see earlier comments) without a clear explanation as to what those standards entail. More instruction will be required to ensure that data and metadata provided to the ISA will be presented in the correct format.
20	708	Add at the end "Oxygen (or the lack of it) also influences the distributions of pelagic organisms, especially in the upper 1,500m of the water column and may be important in relation to discharge plumes."
22	815	Assessment of the water column at all depths the discharge sediment

		may travel, not just the release points will be essential.
22	823	Replace “from collocated devices” to “on the same sampling device and at the same time”
35	1376	At the end add “(e.g. Chirp system)”
38	1503	Regarding “Living in or near the seafloor” If it is "near", it is not benthic, it is "benthopelagic".
38	1505	Regarding ‘are mostly sedentary or with limited ability to move”: Many benthic species are mobile, some even swim (holothurians). It should be rephrased.
39	1512-1514	Regarding Ecosystem Functioning This bullet is overly vague; it is also unclear why it is limited to "small-scale disturbance"?
39	1531-1533	While it is true there is a need for “comparisons with distant sites”, this suggestion is overly general. Information will be needed regarding the distribution of species, pathways of distribution, and population network, among other things, to develop a distant-water sampling program.
39	1537	The pelagic sampling section should include some text about the variety of pelagic organisms that will need to be studied including microorganisms, gelatinous zooplankton taxa, seabed organisms that swim up into the water column, larvae of benthic and pelagic organisms, fish, crustaceans and others,
39	1538	Regarding “pelagic realm”: Changes in the pelagic realm will also be influenced by oxygen levels and Oxygen Minimum Zones, especially at depths shallower than 1,500m. This is covered in part, but not comprehensively in section D below. Greater appreciation of gelatinous zooplankton is required, alongside microorganisms and larvae. Marine mammal surveys are required to identify species (not just sensitive or protected species) and susceptibility to noise including to different frequencies and at what depths they may be encountered. Fish surveys, fish migration (potentially through the return plume) and susceptibility to the plume contents such as heavy metals, the plume itself (suffocation; difficulty finding prey); susceptibility to noise all should be incorporated.
39	1547	Replace “1,000m to 10 m above the seafloor” with “and then every 1000m to 10m above the seafloor.” More detailed sampling will be required at depths where discharge plumes may be released - see para. 120
40	1552	insert “ROVs and” before “AUVs”
40	1559-1565	Even with the softest of touch downs, boxcores can cause disturbance.

		Additionally, in 5000m of water even a small deviation in wire angle (owing to surface water and deeper currents interacting with the wire) could cause the corer to land anywhere within 100s-1000s meter radius of the ship. The relation of the box corer to seafloor heterogeneity will not be known without an improvement in sampling technology, such as TV or sonar/bathymetry guided corers. It may be better to emphasize larger volume sediment samplers using ROVs.
40	1564 & 1567	Replace “regarding” with “regarded” Insert “the sample’ after “sieve”
40	1570-1571	Insert “and rarefaction curves” after “(Jumars, 1981)” The asymptote of the rarefaction curves will help to determine whether the area is under-sampled and provide an estimate of the number of samples necessary to capture the total number of species (species richness) in the area.
40	1574-1575	Insert “and development of rarefaction curves” after “power analysis”
41	1604	Regarding “Zooplankton”: Zooplankton analysis should also include specific data on benthopelagic zooplankton and micronekton living within 100m of the seafloor
41	1645	Replace “communities” with “organisms”
41	1647	The below bullets are not "benthic community" groups, these are community components.
41	1652	Regarding “large meiofauna”: Large "meiofauna" cannot be regarded as "macrofauna." To avoid terminological confusion, it is "meio-" or "macro-". This is why taxa should be avoided. Some nematotes correspond to "macrofauna" but most of them to "meiofauna".
41	1653	Regarding “Hessler and Jumars (1974) - This reference and the corresponding theory is not appropriate here.
41	1656-1658	This sentence (starting with “populations”) is confusing. All instructions should be as simple, as possible.
41	1658-1660	The last sentence of the “macrofauna” bullet is scientific discussion. and not useful to contractors. Scientific discussion, rather than instructions, also appears in other bullets in this section. Recommend deleting those statements
41	1673-1675	Why is “Demersal fishes and Scavengers” not under Megafauna? It is confusing to have a category related to mobility and trophic group appear among size-classes.
41	1720	Recommend deleting “using specialist annotation software”
41	1724	Regarding Image Analysis - It may be necessary to advise that the same images are analyzed by at least 3 different operators in the laboratory owing to variations in human perception during the analysis of seabed images.

44	1727	Regarding the last sentence of para. 248: It would be helpful to explain why this is important. For example, it is related to a very narrow problem of individual size classes distribution. How will it help monitoring?
44	1754	Replace “wet” with “cold”
45	1759	Regarding “formaldehyde as a fixative should be carefully considered”: This is ambiguous; recommend re-wording
45	1761	May need to explain “residues”
46	1834	Insert “ and Indian Ocean” after “CCFZ”
50	1972	It will be necessary to study the benthic community’s different taxa and different class sizes as they are likely to have different reproductive biology and therefore different connectivity characteristics. Additionally, given the rarity of the species (abundance of any species <5% of total abundance) it may be problematic to use any species as a proxy, as rare species may be functionally important as an aggregate.
52	2058	Regarding “trawling and efforts”: Trawling in areas with nodules would result in the fauna being macerated in the cod end, and the length of trawl would have to be short, so few specimens would be collected. Best to delete 'or via trawling'
52	2061-2062	Regarding “benthic chamber measurements made at ache site”: This may need qualifying as core tubes from the same multicorer drop for meiofauna are not considered replicates, but different chambers on the same lander deployment might be deemed 'replicates'
53	2142-2147	Regarding para. 314: Do we know enough about natural variability of these parameters? Are these elaborate parameters the most helpful for needs of environmental protection?
55	2196	Replace “or cnidarians” with “and cnidarians (or similar gelatinous zooplankton)” It will be important to study both crustacean zooplankton and gelatinous zooplankton taxa
55	2203	This section may require further thought about the inclusion of best practice in satellite tracking tags of whales, sharks, turtles and surface nekton which might pass through a mine site.
55	2216	Note: Seabird survey methods may have to be modified for mid ocean oligotrophic areas.
Additional rows can be added to this table by selecting “Table” followed by “insert” and “rows below”		

TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft Standard and Guideline for environmental impact assessments
Contact information	
Surname:	Friedman
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Organization (if applicable)**:**	Pew Charitable Trusts
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General Comments

Stakeholder Consultation and Scoping

The draft Regulations lack requirements relating to public review and stakeholder comments in the EIA process. Despite numerous member States and Observers requesting this requirement, it has not been included in the EIA Standard (a binding document). As stated in our cover letter and first general comment regarding the baseline guideline, we do not believe a lack of public review requirements in the current Draft Regulations should be determinative as to the EIA standard. There should be an open hearings process, where submissions can be made, the EIS tested, the EMMP developed; scientific evidence can be challenged, independent scientists called and the Applicant's scientists examined. But in the absence of such a process in the Regulations, there is none in the Standard or Guideline.

Consultation mechanisms are important because they lead to better decisions and higher public confidence. The ISA should therefore take a lead not only in conducting its own consultations. . There must be an open hearings process, where submissions can be made, the EIS tested, the EMMP developed; scientific evidence can be challenged, independent scientists called and the Applicant's scientists examined. But in the absence of such a process in the Regulations, there is none in the Standard or Guideline.

Moreover, the ISA should also require best practice from its contractors. While we appreciate that stages of the Scoping process have been provided in greater detail in the Environmental Impact Assessment Guideline, there should be more guidance regarding what constitutes a sufficient consultation at all stages of an EIA. We recommend, for example, that Contractors be required to submit a draft scoping report to the Authority to be published for a 60-day comment period. Based on the resulting comments, the Commission could provide recommendations to the Contractor, offering an opportunity for necessary revisions prior to submitting a Plan of Work and instilling greater confidence that their submission will be considered complete by the Commission.

Including more comprehensive stakeholder review will also help to establish the development of the EIA/EIS/EMMP as an iterative process that evolves through stakeholder consultation.

We have suggested edits to the EIS guideline and EIA Standard and Guideline (S&G) to address these issues.

LTC Capacity and Capability to Review Scoping/EIS/EMMP Documents

If the LTC is intended to keep its current makeup of 30 individuals serving as part-time volunteers, then we further recommend that the standard or Regulations require an independent expert review of each Scoping Report, EIS, and EMMP. Independent reviewers are frequently employed as best practice where government agencies lack capacity or expertise to adequately assess the EIA, with the assumption that the independent review's findings and documents are published in a timely and transparent manner for review by the regulatory authority and stakeholders. If it is expected that the LTC will increase their capacity to assess these documents, it may still be advisable that external experts assist with the reviews until the LTC has adequate "in-house" experience to conduct it themselves. This issue of LTC capacity and capability has been brought up numerous times by member States and until it is addressed, it seems inappropriate that the LTC would be solely responsible for reviewing these documents

Review and Decision-Making

The S&G, similar to the exploitation Draft Regulations, fail to set out adequate review and decision-making processes for the Scoping Report, EIS, and EMMP. Clear procedures and responsibilities for review and decision-making are fundamental to ensuring effective protection of the marine environment. See suggested changes in the specific comments below.

Access to Essential Documents for Reviewing an EIS

This document regularly refers to information that appears in the Plan of Work. Our understanding is that the EIS is likely to be a public document, while the Plan of Work may be confidential. If the EIS relies on the Plan of Work, it may make the EIS very difficult to review by stakeholders without enough information about the project. The project/mining plan of the EIS should contain sufficient detail (even if it repeats elements of the Plan of Work) for independent assessment to be made without seeing confidential elements of the Plan of Work. This is a typical approach in other industries.

Additionally, there should be a requirement for all baseline data to be submitted to the Authority prior to the submission of the EIS, possibly during the EIA scoping process. The EIS will only be as good as the data it is based on, which should be uploaded to DeepData and should include coding used to analyze the data and independent reviews associated with any predictive models used.

Impact vs. Effect

Where definitions are available in EIA guidance, impacts are typically defined as the changes resulting from an action, and effects are defined as the consequences of impacts. This is also consistent with the approach of the current version of the Draft Regulations. We recommend corresponding amendments.

Analysis of Alternative Operations Considered

Identification and assessment of alternatives should be a fundamental requirement of any EIA,

to enable the regulator to determine whether the least harmful approach for the environment and human health (see reference below) has been identified. This is a standard practice in many international EIA systems. An important part of the EIA will be assessing the Environmental Effects of these alternative operations. Justifications for not choosing these alternative approaches and differences from proposed mining operations should be clearly described in the EIS to allow stakeholders and members of the Authority to be able discern the financial and environmental cost/benefits of each approach. We have proposed corresponding edits to the EIS and EIA S&G.

Impact Area

The current draft regulation no longer includes the term "impact area", but retains the terms "mining area" and "contract area". From scientific literature, it is still unclear whether the impact area will stay within the bounds of the contract area, due to the dispersal of sediment through collector and dewatering plumes and distance traveled by light and noise. It would be helpful for the EIS to address the predicted impact area (defined horizontally and vertically) and incorporate discharge information into site- and region-specific circulation models to calculate the predicted impact area. It is possible that the impact area would be within boundaries of the contract area, or the regulations would require impacts be localized to the contact area, but until that is determined it is critical that the regulations (or Standard, if more appropriate) require Contractors to collect baseline information, provide an environmental risk and impact assessment, and develop an environmental monitoring and management plan for the impact area, regardless of whether that is inside or outside the "contract area". We suggest adding the term 'Impact Area' to the terminology section below, as previously included in the 2017 version of the draft Exploitation Regulation, and have made amendments to the text accordingly.

Addressing Uncertainty

Uncertainty in predictions has the potential to radically change the conclusions of the EIS (for example in comparisons between options, risk assessment, etc.). Identifying, and taking steps to resolve uncertainties should be an essential feature of an EIA for deep-sea mining in the Area. At present the S&G makes little mention of this element. We therefore propose a standalone section in the EIS guideline (2.1.6bis) focused on this important aspect.

Additionally, the EIA/EIS should include a clear and explicit discussion of uncertainty in each relevant section, with an attempt made to quantify the magnitude of uncertainty. This should split the uncertainty by source, for example measurement error, environmental variation (in space and time), model variation, environmental change (e.g. climate change), uncertainty in the extent and sources of impacts etc. etc. A clear assessment of the consequences of the uncertainty on the predictions, potential outcomes and decision making should be made for each relevant section. The approach used in the IPCC reports provides a good example of how this could be done.

Mitigation hierarchy

The Guideline suggests both restoration and biodiversity offsets as relevant to the seabed mining context, despite scientific literature demonstrating that deep ocean restoration capacity is speculative and most likely unrealistic for nodules and crusts and that offsets may also be

inappropriate. We recommend that focus instead be on the first two steps of the mitigation hierarchy: avoid and minimize. See details in the specific comments table below.

Best practice

As a general comment, we propose using terms like "good international industry practice" or "good international practice" instead of "good industry practice", "best environmental practice" etc. The word 'international' needs to be inserted to signal the need to attain consistent and uniform high standards.

Specific Comments		
Page	**Line**	**Comment**
Draft Standard for Environmental Impact Assessment Process		
1	20-21	Replace para. 1 with (changes in red) "This Standard is issued by the Council of the ISA pursuant to [Regulation 94] of the Exploitation Regulations, and is legally binding on Contractors. This Standard sets out the requirements for the Environmental Impact Assessment (EIA) under Regulation 47 of the Exploitation Regulations. This Standard is supported by 'Guidelines for ISA Environmental Impact Assessment' which can be found […]."
1	27	Add "required" after "structure and content" Also point of clarification regarding "all EIAs prepared" - Does the standard apply to EIAs prepared under exploration regulations? If not the wording should be changed
1	29	Regarding "The Standard shall be read in conjunction with the Exploitation Regulations" - There should be a statement about which document has precedence in the event of a conflict and a reference to the relevant regulation.
1	30	Add two bullets: " ● Standard and guideline setting environmental objectives, indicators and thresholds for the ISA; ● Standard and guideline in relation to stakeholder consultation;"
1	38	Replace "read" with "applied" The REMP is another planning document with an as-yet-undefined relationship to the EIA, although the EIA is expected to comply with the relevant REMP if it contains specific prescriptions. If the intent is that the proponent is to account/have regard to the contents of the REMP in preparing EIA – then this should be in content or scoping section and the language here should be stronger than "read"
1	40-49	Delete "Principles and" Replace 4 points with (changes in red):

		1) protect and preserve the marine environment; 2) anticipate and avoid or minimize all harmful environmental effects of exploitation activities; 3) prevent serious harm to the marine environment arising out of exploitation activities; 4) ensure that activities in the Area are carried out with reasonable regard for other activities in the marine environment 5) ensure that there is consistency of EIAs and EISs among different applicants and Contractors; 6) ensure that environmental considerations are explicitly addressed and incorporated into the ISA decision-making process. In addition to these additions, there are other relevant principles and objectives, including those contained in the Regs (DR2, DR47), which should be cross-referenced . Also, will there be objectives and principles identified by the ISA in a standalone Standard or Council decision? If so, it might be good to mark this for a later review when the document is prepared or delete this section altogether, as unnecessary (especially because the listed objectives are already duties from UNCLOS and from the Regs).
2	Flow Chart	Suggest to delete the flow-chart from the Standard. An ISA Standard is supposed to be set legally binding requirements, but it is unclear what this flowchart does legally. (Is the intent that the proponent adheres to each step? Does it require consultation where indicated or is this just an illustration?) Would also be better not to use a generic flow-chart, but to show the steps specifically required in the ISA EIA process, and to make clear that these steps are mandatory e.g. For example, “An environmental impact assessment undertaken by an applicant or contractor must include the following iterative elements: a) A scoping process, b) A scoping report, c) An impact analysis, d) An analysis identifying mitigation measures

		e) An uncertainty assessment [and add an explanation to the Standard that this will assess data quality/integrity, gaps or deficiencies in knowledge, and any other uncertainties regarding anticipated impacts and identified mitigation measures, and will provide analysis of methods to address those gaps, deficiencies or uncertainties]; f) A consultation process; g) An environmental impact statement; h) A review and recommendation to the Council by the Commission; i) A decision (to approve, or reject) by the Council."
3	86-94	The Screening section provides no prescriptive direction. This section could usefully convey that all plans of work for exploitation are subject to EIAs. It could also address changes to existing plans of work. All changes should be subject to an initial EIA – the requirements of which should be specified. If the initial EIA shows that the change to the plan of work has the potential to give rise to new adverse effects – then it ought to be subject to a full EIA. Below is language to address the comments above: Replace para. 7 with "All applications for a Plan of Work for Exploitation must include an EIS based on a prior EIA. A subsequent EIA and EIS is also required when: • a Material Change to an existing Plan of Work is proposed, or • an activity described in the Plan of Work will exceed the impact thresholds set out in the Commission's Recommendations for the Guidance of Contractors [ISBA/25/LTC/6/Rev.1], and has not already been adequately covered by an EIS. A subsequent EIA and EIS may also be required from a Contractor when: • the Commission requests an applicant to change its proposed Plan of Work during the application stage under Regulation 14, or • any other time that a Contractor has cause to consider that the contractor's activities may be causing effects that were unanticipated by a prior EIA/EIS for those activities.

		In the event that a subsequent EIA and EIS may be required in accordance with the above circumstances, the applicant or Contractor must contact the Commission without delay [or within a specified period] with details of the proposed changes or unanticipated effects, and request notification of whether an EIA and EIS are required. In responding to a request in connection with a proposed change, the Commission must consider whether the changes give rise to the likelihood of new adverse environmental effects not included in any previous EIA."
3	95-125	The section about the Scoping report should be restructured to expressly require an applicant or Contractor to produce a Scoping Report, outline the review process (with public consultation), and then set out what that Report must entail, including: 1) Consideration of alternative options in the EIA, as well as a "no action" option; and 2) Identifying uncertainties. Therefore, we propose additional language in para. 8 and 9 to meet these standard EIA/scoping practices (additions in red): "8. The applicant or Contractor must prepare a scoping report in order to: • identify the issues and impacts that are likely to require consideration in EIA and, to the extent practicable, rank them according to the environmental risks posed; • define the focus of the EIA studies; and • identify key issues that shall be studied in more detail. 9. The applicant or Contractor must: • undertake scoping at the outset of the EIA process; • submit a Scoping Report to the Authority, in accordance with the requirements of section (V)(Cbis) of this Standard. • conduct stakeholder mapping, and identify a list of stakeholders, in accordance with the requirements of section 7 of this Standard. • include, as part of their scoping activities, an Environmental Risk Assessment (ERA) aimed to ensure that all relevant activities and associated impacts are identified, and their importance for consideration in the EIA is assessed so that the impact assessment methods and the development of mitigation measures are in proportion to the most important risks associated with the project;

		Cbis. **Content of Scoping Report and Process for Submission and Review** 9bis. The Scoping Report must: • demonstrate that scoping takes account of of the environmental setting for the project, including both the Contract area and regional setting, existing environmental baseline studies, and the specific elements of the project proposal (e.g. where mining will occur within a Contract area, the mining technology); • establish the technical, spatial and temporal boundaries for the EIA; • communicate any relevant assumptions and identify and quantify any uncertainties, explain how they are being addressed, and assess their implications to the ERA findings; • report on the methodology and results of the ERA, including identification of high priority risks requiring particular focus in the subsequent impact assessment phase of the EIA; • include a report of consultations undertaken during scoping; • include consideration of alternative means of carrying out the project that are economically and technologically feasible and evaluate the environmental effects of those alternatives. This should include potential alternatives to elements of the planned project (e.g. the type of mining technologies to be used), as well as aspects that will be considered and decided through the EIA (e.g. details of environmental mitigation measures and mining operation plans); • identify the activities and studies planned, and any additional baseline data required, for the EIA, including a description of preparers and contributors to the scoping report and EIA and their qualifications; • explain how the activities and studies planned for the EIA will be sufficient to determine likely environmental impacts; • identify any divergence from relevant ISA Guidelines; and • be submitted in accordance with 5.2.2, along with draft Terms of Reference for the EIA. 9ter. The Scoping Report must be submitted by the applicant or Contractor to the Secretary-General of the Authority. The Secretary-General must make the Scoping Report available on its website for a period of at least 60 days, and invite members of the Authority and other stakeholders to submit to the Authority comments on the Report in writing. The Secretary-General must, within seven days following the close of the comment period, provide the comments submitted to the Commission, and to

		the applicant or Contractor. The applicant or Contractor may provide responses to those comments to the Commission, and must confirm to the Secretary-General whether or not it intends to provide responses within 14 days of receipt of the comments. The Commission must review, in accordance with this Standard and relevant Guidelines, the Scoping Report and the accompanying Terms of Reference for the EIA, any comments submitted during the consultation, and any responses to those comments received from the applicant or Contractor. On its basis of this review and taking into account the comments submitted during the consultation, the Commission must make recommendations to the applicant or Contractor for consideration before the applicant or Contractor proceeds with the EIA. These recommendations must be accompanied by a detailed rationale that responds to comments recieved. The recommendations may include: • revising the ERA or other aspects of the Scoping Report based on different methodology or inputs; • amending the proposed Terms of Reference for the EIA; • re-submission of a revised Scoping Report for further stakeholder consultation and LTC review, in the case where uptake of any of the LTC's recommendations are likely to lead to a Material Change in the Scoping Report. The Contractor must take into account the Commission's recommendations before proceeding with the EIA. The applicant or Contractor must also notify the Commission if the Terms of Reference for the EIA is revised by the applicant or Contractor as a result of the Commission's recommendations (but the Scoping Report is not re-submitted to the Commission)." Of note, many of the provisions we suggest would be more efficiently included in the draft regulations.
3	127	Replace "assessment of impacts is the core of the EIA process. This component brings together" with "impact assessment shall bring together"
4	131	Regarding "enhanced EIA": It is not clear that this is a separate ERA from that presented at scoping. The scoping ERA tends to be higher level and less detailed than the ERA in the EIS (which can use more detailed information on the description of the project.

4	132	Regarding "significance": UNCLOS Article 162(x) refers to "serious" harm. There may be disagreement over whether significant harm is a lower threshold or how these two thresholds interact. This should be resolved in the draft regulations.
4	133	Replace "the development of mitigation" with "inform avoidance and minimization measures to limit unavoidable impacts" The proposed language recognizes the potential incompatibility of offsets with deep-sea environments and clearly sets the first two stages of the mitigation hierarchy (avoidance and minimization) as the necessary focus for impact management (see further comments below on the mitigation hierarchy and general comments). This section may also benefit from referencing the precautionary principle and how this has been applied in assessment of avoidance and minimization.
4	138	Replace "severity" with "effect" See general comments regarding impact and effect above.
4	141	Replace "routine and non-routine" with "Planned and non-planned impacts"
4	143	Add another bullet "Alternative activities" See general comment - "Analysis of Alternative Operations Considered"
4	149	This sentence is unclear. Recommend replacing "evidence base for such information and how it has been used to assess the impacts" with "underlying data used in the Contractor's parameterization"
4	150-153	Replace para 14 as follows (edits in red): "The applicant or Contractor must identify the impacts (including cumulative effects alongside other existing projects or marine users where feasible) of the project at a regional scale. The applicant or Contractor must, in its assessment of impacts, adduce enough information to demonstrate the significance of each impact in such a way to allow mitigation of harmful effects, at the regional level, to be considered."
4	155	Propose adding "and Management" to "Mitigation", given that the Environmental Management and Monitoring Plan is the document which lists management strategies.
4	161	Replace "establish the most" with "identify" to ensure that the most environmentally sound approaches are considered alongside the most

		technologically and economically feasible and to require the proponent to justify why they have not chosen the least harmful alternative.
4	164-169	The Reporting section should have more information and reference the appropriate regulations/standards for preparing and submitting the EIS. As stated in the EIS guideline, we believe the EIS template in Annex IV and elaborated in the guideline should be mandatory. Below is proposed text to improve the content of this section following para. 17. Ideally this paragraph would reference the relevant regulation and standard for reporting. Until then, necessary components would include the following: "The applicant or Contractor must prepare the EIS, and submit it to the Authority, in accordance with the relevant Regulations/Standards [including specific references]. The Contractor /applicant must also consult the relevant Guidelines. The EIS must also include: • a description of any consultations undertaken as part of the environmental impact assessment, and a description of how comments received have been taken into account, or why they have not been taken into account; • a description of any national processes followed and permits received from the sponsoring State in relation to the environmental impact assessment; • a description and justification for any deviation from the Terms of Reference submitted to the Commission with the Scoping Report, and any recommendations from the Commission pertaining to the EIA/EIS; and, • a summary of the management and monitoring commitments, which will be reflected in the Exploitation Contract and the EMMP."
5	170-172	Regarding the Review section: The issue for the Standard is whether the draft regulations require elaboration. Until the regs are finalized it is difficult to discern what the appropriate amount of content should be in this section (there is a similar problem for the reporting and decision-making section).

		For now we have suggested some examples of provisions below that are not covered in the current Regs but which seem essential. Proposed language to be added after para. 18: "The Commission must undertake a comprehensive review of the EIS in accordance with Regulations 12 and 13. This review should determine: Firstly, whether the EIS was prepared in accordance with Regulation 47 and this Standard. In this regard, the Commission must check for completeness, accuracy, and statistical reliability, in accordance with the requirements of this Standard, and the Standard on Baseline Data [assuming that one is developed] Secondly, whether the impacts can be minimized to an acceptable degree. In this regard, the Commission must confirm that the criteria of Regulation 13(4) are met. This must include a determination by the Commission that: • the anticipated environmental impacts fall beneath relevant thresholds, [as reflected in the Standards on environmental objectives/relevant performance and environmental thresholds/additional criteria reflected in the relevant REMPs; and • the proposed mitigation measures and monitoring framework appear to be in accordance with [the Standard on EMMP], The Commission may draw upon external independent expertise in conducting this review and may invite the Contractor or any other stakeholder to provide the Commission with more information in writing.[See general comment above - "LTC Capacity and Capability to Review Scoping/EIS/EMMP Documents] Where the Commission determines that the proposed Plan of Work does not meet any of the relevant criteria detailed in this section, the Commission must either make recommendations to the applicant or Contractor for amendments to the EIS or must not recommend approval of the proposed Plan of Work. If the Commission makes recommendations for amendments to the EIS, it must defer making a recommendation on the Plan of Work until a revised EIS has been submitted pursuant to this Standard and the relevant Regulations"

		Other points, which we've not included in the suggested text below, but could also be addressed in the Standard, could include: • A process of peer review for the EIS • An iterative process in which the EIS evolves in line with consultations and a later EMMP, rather than be submitted together with the EIS, instead reflects those evolutions Additional issues require further consideration in the Regulations, but are unlikely to be addressed via the Standard: • DR 89 raises the possibility that elements of EIS could be deemed confidential. DR 89(3)(e) addresses environmental information, but restricts its exemption to information 'necessary for the formulation by the ISA of rules, regulations and procedures', not information required for other environmental decision-making. Typically, confidentiality exceptions are very narrow for EIAs. This provision should instead create an exemption for information 'necessary for the formulation of…. ISA decisions' • The 60-day time period for public consultation on an EIS is too short for proper review of such complex documents. This should be extended to at least 90 days.
5	173-175	Above comments on para. 18 (lines 171-172) apply also to this section on decision-making. Recommended text additions after para. 19: "The Commission's report under Regulation 11(5) and recommendation to the Council must include: • an initial determination as to whether the EIS was prepared in accordance with the requirements of Regulation 47 and this Standard. • the Commission's determination under regulation 13(4), including: ○ a detailed rationale, including its findings with regard to the proposed activities' compliance with relevant thresholds; ○ an indication of any uncertainties associated with the EIS; ○ whether the proposed work would cause "any effect...which represents:...loss of scientific or economic

		values which is unreasonable in relation to the benefit derived from the activity in question" as suggested by the ISA Preparatory Commission (LOS/PCN/SCN.3?WP.6/Add.5 (8 February 1990), article 2(2)); ○ whether the applicant has demonstrated the required monitoring capabilities to determine the actual environmental effects during activities in the Area, including the capacity to monitor key environmental parameters and ecosystem components, accordance with the relevant REMP [and Standard for EMMP] • A summary of comments arising from the Stakeholder public consultation conducted by the Authority under Regulation 11. • The Commission's recommendation with regards to the proposed exploitation activities in the Plan of Work which are the subject of the EIS. • Sufficient information to give the Council the requisite information and understanding to make a fully informed and prudent decision about the proposed activity. Where the Commission's recommendation is to approve the activities that are the subject of the EIS, the Commission will also recommend to the Council relevant terms and conditions for implementation of the project to be included in the contract / Plan of Work. Such terms will reflect, at a minimum, the management and monitoring commitments summarized in the EIS. Having taken into account the Commission's report and recommendation, the Council must deide whether to approve or reject the EIS (and other Environmental Plans) and must provide a written record and the rationale for that decision."
5	176-182	Comments regarding the "Monitoring and EIA Audit Steps" 1. This section needs some direction to link the thresholds of impact used to determine significance in the EIA process and EIS conclusions – whether it's the amount of sedimentation; plume dispersal; bio-diversity impacts – to the actions under the EMMP. The way this is written suggests the response to non-compliance is "to improve the processes" – but it is unclear

		whether this is a general recommendation or something specific to the project. While compliance orders are another subject – the standard should not undermine that process. 2. Monitoring impacts in non-contract areas and areas of particular environmental interest will be required and cannot be the sole responsibility of the contractor. An independent monitoring programme will be needed. This could be funded by contractors collectively and organized by the ISA using its powers under UNCLOS, art 165(2)(h). The specifics of this independent programme may come in a separate standard or in the draft regulations, but it should be mentioned here as the contractors' participation will be required.
5	177-180	Replace para. 20 with "A contractor must undertake monitoring as outlined in the EMMP submitted as part of the Plan of Work and in support of the EIS. Monitoring results must inform adaptive management processes, and the robust and transparent reporting of environmental performance to the ISA."
5	182	Recommend a new section on Stakeholder Consultation and merging some content from Section XI of the EIA guideline - see general comments on "Stakeholder Consultations" "VII. 7 Stakeholder Consultation Stakeholder consultation and participation is an essential part of EIA to ensure the EIA is comprehensive, complete and takes into account various stakeholder perspectives as well as scientific evidence. 'Stakeholder' is a defined term in the Regulations, and means a natural or juristic person or an association of persons with an interest of any kind in, or who may be affected by, the proposed or existing Exploitation activities under a Plan of Work in the Area, or who has relevant information or expertise. The applicant or Contractor must conduct a stakeholder mapping exercise during the Scoping phase, which must be reported in the Scoping Report. This exercise must identify all stakeholders who may have any interest, or relevant expertise, in the activities. The stakeholder mapping exercise must include (but is not limited to):

		• The organs of Authority, including the Secretariat, the Legal and Technical Commission and the Council; • Member states of the Authority, and Observers to the Authority; • Relevant government agencies and civil society groups or communities of the Sponsoring State; • Any persons or entities that hold, operate, or regulate other activities within the region in which the proposed mining activities are located; • Coastal States adjacent to the region in which the proposed exploitation activities are located; • Non-governmental organizations with an interest in environmental or social/cultural factors relevant to the proposed activities; • Intergovernmental organizations which will provide oversight for any aspect of the proposed activities; and, • Traditional Custodians. Stakeholder consultation needs to be conducted in a meaningful manner. The applicant or Contractor must: • Poactively consult with stakeholders throughout the phases of the EIA, including at: ○ the scoping stage; ○ the conclusion of the environmental baseline studies; ○ the development of management and mitigation measures; and ○ the development of environmental conditions. • Make the draft scoping report and draft EIS open for stakeholder consultation for a reasonable period, and take any comments received into account, before finalizing and submission; • Make stakeholder comments received during consultation processes publicly available, including on the applicant or Contractor's website; • Provide appropriate access to up-to-date and comprehensive information to all stakeholders about the mining plans and environmental data and impacts; • Provide reasonable opportunity for those consulted to raise enquiries and to make known their views; • Record any non-written comments or views in written form and take into account where appropriate those views in the EIS;

		• Record in the EIS the nature, extent, participants, and outcomes of stakeholder engagement conducted at different stages of the EIA process, such as:
		  ○ Stakeholder groups consulted (with their agreement, although names and contact details of individuals consulted might not be included;
		  ○ Type of engagement undertaken (e.g., provision of written materials and facilitation of written feedback, webinars, face to face meetings, telephone discussions);
		  ○ Description of the manner in which the engagement has been tailored to the stakeholders' needs, (e.g. presentation of information in multiples languages, or in a manner which is effective for stakeholders with disabilities, reading impairments or cultural barriers that may prevent effective transfer of information);
		  ○ Date and time engagement was conducted; and
		  ○ Issues raised (at each engagement stage).
		• Provide a summary of stakeholder comments received, and
		• Provide a description as to how the applicant or Contractor has addressed those comments, or how it justifies choices it has taken in light of those comments."
		
		Additional comments on stakeholder consultation:
		
		It is our understanding that the most instructive guidance documents provide specific (time bound) points for stakeholder engagement throughout the permitting process, and are either facilitated by the regulatory body, or provide strict requirements in relation to the logistics for stakeholder engagement. Without suggesting specified time ranges, we do believe they should be provided, possibly as a range based on the length and complexity of the document. Additionally, providing more specific guidance to the contractor about what stakeholder consultation activities might look like at each phase of the EIA would help to ensure that the contractors are clear about requirements and there is consistency across contractors for stakeholder consultation. The link below offers a point of reference that might be drawn from an existing community engagement framework -https://www.industry.gov.au/sites/default/files/2019-04/lpsdp-community-engagement-and-development-handbook-english.pdf

Draft Guidelines for Environmental Impact Assessment Process		
6	250	Add another bullet “Standard for Environmental Impact Assessment”
6	258	Replace “should” with “must” While noting that the guidelines are not prescriptive, there are regulatory requirements to consider the REMP.
7	265	Add “and justify” after “evaluate”
7	266	Add “and to present any such evaluation as part of the contextual information presented in the EIS” after “process”
7	266-269	Delete last sentence - The guidelines as currently drafted do not necessarily present “options available”.
7	Workflow	As provided in the EIA Standards comments, it would be more helpful to give a more detailed workflow of each of the steps and the estimated amount of time to complete those steps. The link below offers an examples from the Canadian Environmental Assessment Agency for reference: https://www.gov.mb.ca/mit/wms/lmblsmoutlets/images/ceea_processes.jpg
7	283	However implies an “either/or” situation. We propose replacing “However” with “In addition,”
8	287-290	As stated in the general comments and in the EIA Standard in-line text suggestion - It is of critical importance that the ISA (through either the LTC or the Secretariat) make formal comment on the scope of an EIA. Alternatively a contractor may spend millions of dollars on a process with an unapproved scope. Suggest adding to the end of the final sentence: “, and submitted to the [LTC/Secretariat] for review” or referencing the EIA standard with additional text proposed
8	292-293	Replace “during the scoping” with “in the Scoping Report, in accordance with the relevant regulation [or EIA Standard?]”
8	300	Add “accessible” after “robust” - see general comment on “Access to Essential Documents for Reviewing an EIS”
8	321	Suggest adding after EMMP “, the management and monitoring commitments made in the EIS,”
8	323-332	See comments from EIA Standard Screening section. Overall, this section needs more information to describe the screening process should there be changes to the existing plan of work, in particular how decisions are made.

		Many other jurisdictions such as the EPAs of Papua New Guinea, Australia, and Environmental Agencies of Canada, Namibia, Madagascar, and South Africa implement legislation prescribing different levels of assessment based on the activity, which makes it easier for the contractor, decision maker, and stakeholder to understand what activities (or material change) will require a full EIA process. We recommend drawing from these, or other jurisdictions, to define a more robust framework for screening and set clear expectations for the level of scrutiny that will be applied by the regulator to the assessment of mining activities. The link below offers an example for reference: https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EIA%20Procedures%20Manual.pdf On the other hand, pointing contractors to an external report for guidance (European Commission) is not helpful, as it makes it difficult to discern what is required or recommended. Instead it would be better to pull those useful processes and methodologies from this or other reports into this section. Or at the very least be more specific about what elements may be gleaned from the report.
9	343-347	In the EIA Standard we proposed additional content that should be included in the scoping report. These are also suggested here for consistency. "This stage involves identification and collation of the information that the applicant or Contractor must provide to prepare a Scoping Report. This includes project information and definition, identification of studies and description of methodologies that will inform risk assessment and understanding of the extent and nature of impacts associated with the potential mining operation and consideration of alternative means of carrying out the project, and identification and description of any divergence from the relevant regulations, REMP, and Standards, taking into account relevant Guidelines."
9-10	358-378	This section ("Project Information and Definition") would benefit from a greater level of detail on requirements for outlining/describing the proposed and alternative activities considered
10	384-389	Recommend replacing the first two bullets with the bullets below (changes in red): " • a review of the current environment (including social and economic) baseline values and systems based on data collected by the applicant or Contractor to date and other relevant data

		collected by third parties, and highlighting those aspects most vulnerable to the impacts of the project. This review, in accordance with the EIA Standard, must demonstrate a reasonable understanding of the environmental setting and describe the data collection methodologies; • a review of the intended project's activities and other alternative activities considered to carry out the project, including identifying those likely to have Environmental Effect;"
10	397-398	As stated in the EIA Standard above, the Standard (not the Guideline) should require the contractor/applicant to assemble a team for scoping and EIA consisting of internationally recognized EIA practitioners and scientists with relevant disciplinary background (deep ocean ecology etc).
10	403-404	This bullet does not refer to risk. The text of this section should reflect the risk associated with impacts being in excess of those predicted.
10	405	Replace "may" with "will" - Uncertainty will always exist in the EIA process, but especially for the deep-sea. Also, suggest replacing "over" with "in relation too"
10	408	Recommend replacing "determine the probability factor in establishing environmental risk" and "will assist with determining the probability of each risk materializing. The consequences of uncertainty should be included in the assessment"
11	411	As noted above, reference to external reports or, in this case, an incident or document related to a specific oil company makes it difficult to discern what is required or recommended. Instead it would be better to pull those useful processes and methodologies from this or other reports into this section. That said, other examples approaches for assessing potential harm include: Department of Industry, Innovation and Science, Australia (DIISA) (2016c). Risk Management: Leading Practice Sustainable Development Program for the Mining Industry. September 2016. https://www.industry.gov.au/resource/Documents/LPSDP/LPSDP-RiskHandbook.pdf Environment Canada (2009). Environmental Code of Practice for Metal Mines. https://www.ec.gc.ca/lcpe-cepa/documents/codes/mm/mm-eng.pdf

		Federal Government of Germany (2010). German National Report for the Commission of Sustainable Development 18 on the Issues "Chemicals, Mining, The Ten Year Framework of Programmes on Sustainable Consumption and Production Patterns, Transport and Waste Management". Prepared for the United Nations Commission of Sustainable Development, http://www.un.org/esa/dsd/dsd_aofw_ni/ni_pdfs/NationalReports/germany/full_report.pdf
11	427	Suggest inserting "either fail to acknowledge a particular material risk, or" before "spend"
12	455	Add "alternative operations considered" after "project activities" - see general comment regarding "Analysis of Alternative Operations Considered"
12	474-475	Delete para. 27 - This whole section relates to scoping, so this sentence is unnecessary
13	Table 1 (a-c)	Regarding "Such matrices are very common in a range of risk assessments": These risk matrix approaches tend to be applied in industries where a well-developed evidence base already exists for both 'severity' and 'probability.' Seabed mining is only beginning to develop its evidence base. Contractors should therefore: • Identify project activities that will have impacts on the environment; • Identify what those impacts will be, and estimate their magnitude; • Include mitigation measures as appropriate (i.e. they are relatively proven, and the project will be incorporating them); • Identify the important receptors that will be affected and how they are likely to respond to specific impacts (their sensitivity); and, • Analyze the level of certainty (or confidence) over impact magnitude, receptor importance and sensitivity. Based on the above, identify and rank the most important issues for the EIA such that large magnitude impacts on highly important and highly sensitive receptors require the most attention in the EIA and so on. Where there is higher uncertainty over the initial estimate of impact magnitude or receptor importance or sensitivity, then an issue is

		accordingly ranked of higher importance for attention in the EIA in accordance with the precautionary principle. Additionally, given that these matrices include not only scientific considerations but value-judgments and political decisions about how much harm to the common heritage is deemed "acceptable", clearer guidance should describe how to assess consequences of risk.
16	513-522 (Table 2 para. 31, figure 3)	This level of detail is not warranted –it would be more relevant to note that the Contractor must provide a summary of the level of confidence and/or uncertainty associated with the data, and the assumptions drawn from the data, as well as a pathway forward (in the form of scoped studies) to increase confidence and decrease uncertainty.
17	526-527	Replace "has subsequently been resolved" with "will be resolved by the studies identified in the Scoping Report and presented in the EIS"
17-18	529-550	Recommend deleting para. 33-35. The details of this section have been addressed above.
18	557-560	Propose deleting para. 37 as this content is covered in the summary section below
18	577	Add Another bullet: "Scope the EIA studies in a manner which specifically addresses the scale and magnitude of predicted impacts, and likelihood and consequence of risks, and to reduce uncertainty in relation to these issues; and"
18	578	Replace bullet with: "Identify missing information that would enable more effective decision making and its impact on confidence of the above factors"
18	580-588	Recommend deleting para. 41&42 as the content is covered already in this section
18	589-591	Recommend moving para. 43 to after 39 (before the "4. summary" section)
19	592-621 and Part XI	Recommend changing title to "Stakeholder Consultation" and replacing lines 593-621 and part XI with a reference to the scoping and Stakeholder Consultation section (V)(C-Cbis) &(VII) proposed in the EIA Standard above (page 3 line 95-125 and page 5 line 182 comments)
19	623	Recommend adding ", in addition to the requirements provided in the EIA standard," after "may"
20	648-658 & 669-670	Recommend deleting these bullets as they should be a requirement of the Scoping Report, as reflected in suggestions for the EIA Standard
21	695-701	For this section it may be more relevant to insert some guidance on the

		way baseline data should be presented in technical reports and non-technical summaries (as suggested for the EIS Standard). Relevant themes would include: • Baseline review and gaps analysis during scoping; • Aligning baseline data acquisition efforts with the importance of EIA issues identified by the ERA and scoping; • Characterizing the baseline both in terms of ecosystem functioning and likely responsiveness to different pressures (i.e. sensitivity) which in turn feeds into the assessment of impacts; and, • Addressing other baseline considerations such as the context of the wider region, geographic variations within the Contract Area, seasonal and interannual variations, projected future trends over the project lifetime.
21	716	Regarding "Impact Hypotheses" This seems a good approach except that it implies a project could be approved even though important aspects of the impact assessment are being pushed into the EMMP to be validated during operation. Logically the scoping exercise would set up the impact hypotheses and the impact assessment would further develop and test them to the point of maximum practicable certainty. Testing would then continue during the EMMP implementation, but with a focus on areas of residual uncertainty from the impact assessment process.
22	746-747	Replace "These can require a lot of data and expertise in mathematical modelling without which hidden errors can arise" with "(See section 3 below)"
22	760-762	The draft EIA standard requires that a model have supporting material to verify that the model is robust. That requirement was unclear in this paragraph. Recommend replacing this text with (changes in red): "Where an applicant or Contractors uses predictive models for the purpose of informing an EIA, the applicant or Contractor must refer to the evidence base to enable a robust assessment of the model outputs, in accordance with the EIA standard. These should include:"
23	773-774	Regarding "strongly encouraged to have predictive models reviewed by independent scientific experts" - As stated previously, this should be made a requirement, as should a peer review process for the entire EIS independent of the LTC.
24	816	Recommend moving "Will socio-economic conditions, health or amenity be impaired" to Legal issues section above as this is not a "stakeholder view"
25-26	864-866 (para. 65	Recommend removing this content. It is not a particularly strong example, and the paragraph above regarding the implementation of

	and Table 4)	quantitative or qualitative site-specific criteria is perhaps more appropriate.
27-28	914-920 (Table 6 and para. 70)	Suggest this be removed – it does not add significant value, and in some ways confuses the situation as two different categories are used in a single box. Suggest keeping the text on major, moderate and minor significance in the following paragraphs and removing this section.
28	945	Regarding "Uncertainty" - This should be a mandatory section of the EIS. In the EIS guideline (EIS template) we have proposed language for the addition of an Uncertainty assessment section - see also general comment - "Addressing Uncertainty"
29	962-967	Recommend replacing para. 76 with a statement made in relation to the requirement of Contractors to refer to uncertainty identified in the Scoping Report, and to describe in the EIS how and to what extent the EIA process has reduced that uncertainty, and how that uncertainty will continue to be reduced through the implementation of the EMMP.
29	968-978	Suggest this be removed – the text regarding uncertainty above is sufficiently guiding, and the concept of assigning a statistical value to a qualitative understanding of uncertainty is impractical
29	1000	Recommend replacing "evaluating" with "applying" Also, regarding "EIA thresholds" – This sentence should also point to the "Guidelines (generic) for a risk-based approach to the development and assessment of environmental thresholds and indicators", which are currently slated to be finished as part of Phase 2 (before any applications for PoW are submitted)
30	1015-1016	Suggest removing "where appropriate" – all management and monitoring strategies should be included in the EMMP.
30	1018-1032	Regarding "Evaluating Alternatives" This should be a mandatory component of the EIA/EIS. In comments regarding the EIS guideline (EIS template) we propose language for the addition of a subsection to list and describe alternative activities considered which would then be discussed in the impact assessment section of the EIA along with the proposed operations. Recommend replacing "should" with "must" in line 1019 and referencing proposed edits to EIS guideline and EIA standard
30	Line 1042-1044	Recommend further deprioritizing the application of offsets, as offsets are likely inappropriate in the seabed mining context. The CBD has published (23rd April) an updated document on the scientific and technical information to support the review of the proposed goals and targets in the updated zero draft of the post-2020

		global biodiversity framework (CBD/SBSTTA/24/3/ADD2/REV1). It refers extensively to 'no net loss' and 'net gain' concepts and highlights the risks of using those concepts without setting measurable biodiversity targets and applying adequate safeguards (paragraph 21). This document clearly states: "safeguards would be needed to, among other things, ensure that any loss is replaced by the same or similar ecosystems and that critical ecosystems and functions are not lost." It also is explicit in its recognition of the need for special consideration for ecosystems "currently impossible to restore, such as some marine ecosystems." See also general comments regarding the mitigation hierarchy
31	1045	Suggest instead referencing IFC Performance Standards (IFC 2012) https://www.ifc.org/wps/wcm/connect/c02c2e86-e6cd-4b55-95a2-b3395d204279/IFC_Performance_Standards.pdf?MOD=AJPERES&CVID=kTjHBzk to demonstrate the global acceptance of the concept.
31	1060 - 1061	Again, suggest referencing IFC Performance Standards as a more global reference
31	1066	Restoration techniques for the deep seabed are not yet available for nodules or crusts and overall seem to be unlikely "on timescales relevant to management and possibly for many human generations" (See Niner et al, 'Deep-Sea Mining With No Net Loss of Biodiversity—An Impossible Aim' (2018) 5 Frontiers in Marine Science 53 http://journal.frontiersin.org/article/10.3389/fmars.2018.00053/full. We therefore suggest that the first two steps of the mitigation hierarchy (avoidance and minimization) receive all, if not most, of the focus for mitigation strategies.
32	1076	Suggest referring to the UNEP guidance on offsets at https://www.unepfi.org/fileadmin/documents/biodiversity_offsets.pdf
32	1084-1088	There seems to be a misunderstanding of offsets in the context of deep-seabed mining. PRZs or APEIs cannot serve as offsets as these are not under threat and do not provide new and additional biodiversity benefits and thus do not actually offset residual losses of biodiversity that might be incurred by a mining project.' (See Niner et al, 'Deep-Sea Mining With No Net Loss of Biodiversity—An Impossible Aim' (2018) 5 Frontiers in Marine Science 53 http://journal.frontiersin.org/article/10.3389/fmars.2018.00053/full) An example for an averted loss offset would be the removal of another marine activity affecting biodiversity in the area, such as bottom

		trawling.
32	1090-1098	The environmental criteria for offset sites fail to list equivalence and additionality as key criteria. In any event, the list should be deleted and replaced with a statement saying that offsets are inappropriate given current knowledge of the deep ocean. This may change in the future.
32	1105	Recommend adding “and monitoring” after “treatment”
32	1112-1113	Regarding the EIS Template - Annex IV provides a "recommended format". The Annex IV template should be a requirement, and comments to the EIS guidelines address this issue. Also recommend here replacing “expected” with “standardized.”
33	1120	Regarding “Standard and Guideline on the EIS” – there should indeed be a Standard, but the phased S&G flow chart on the ISA website does not indicate that there will be.
33	1136	The structure used here is difficult to comprehend. Suggest adding the word “considerations” after “Process-Specific”
33	1145-1149	Recommend rewording this section so it easier to comprehend Suggest changing the heading to “Scientific Considerations” and the bullet points should be amended to read: “Best available scientific evidence has been used to inform the EIA; Practical, actionable outputs have been presented; The assessment, and findings therein were subject, where practicable, to independent review, verification and validation.”
33-34	1151-1157	Suggest adding “by” after “development”: and then amending following bullet points to read: Including… Aligning… Demonstrating…
34	1159	Suggest changing to “best” given there is little to determine at this stage what is “right”
34	1179-1182	Regarding “External Review” - comments and proposed language to the EIA Standard's review section suggest what this review should look like, referencing the appropriate regulations (12&13). Recommend referencing that section and, if needed, expanding it further here.
34	1183-1185	Regarding “Decision-Making” - comments and proposed language to the EIA Standard's decision-making section suggest what this should look like, referencing the appropriate regulations. Recommend referencing that section and, if needed, expanding on it further here.
34-35	1186-1191	Regarding “Monitoring” - This paragraph refers more to the EIS. Suggest it be removed/amended to simply state: “The EIA must consider, and present as part of the EIS and EMMP,

		appropriate monitoring technology, methodology and regimes, in order to both confirm the nature and extent of the impacts occurring (including validation of any impact models), and the ongoing performance of the operation in relation to management commitments
35	1192-1998	Regarding "EIA Audit" - This section is not relevant to the EIA process, or the drafting of an EIS. If the concept is to remain, suggest that instead section VI(A) above regarding statement of management and monitoring commitments incorporate a provision that "Contractors should, as part of the EMMP, outline a process by which management and monitoring commitments will be audited and reported to the ISA on an annual basis."
35	1199-1228	Delete Stakeholder Involvement Section - Have merged this with the new Stakeholder Consultation section we proposed above (see page 19 and line 592-621 comments above)
Additional rows can be added to this table by selecting "Table" followed by "insert" and "rows below"		

TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft Guidelines for the preparation of an environmental impact statement
Contact information	
Surname:	Friedman
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General Comments

Draft Regulations EIS Template vs EIS Guideline

The Guideline helps to identify additional resources that can be used by a Contractor to develop their Environmental Impact Statement (EIS) and directs them to the Regulations, Standards, REMP, and other Guidelines that need to be considered in order to ensure the EIS contains the necessary information.

However, it is confusing that much of this information is covered in Annex IV of the Draft Regulations. Because of the striking similarity in content between the two documents, it is difficult to understand what is required in the template and what is recommended in the Guideline.

It would be helpful to first finalize the EIS template in the Annex before any recommendations or supporting or supplementary materials are developed. Additionally, Annex IV of the draft Regulations specifies that the template is a recommendation. By making this template binding, there will be a clearer understanding amongst the Authority, Contractors, and Stakeholders of what must be included in the EIS. Additionally, by making the EIS structure consistent across Contractors it will make it easier for the Authority and Stakeholders to review the EIS during consultation periods.

There may be some concern about making the template format a requirement in the regulation, as it would be difficult to amend after the regulations are adopted. To alleviate this concern, the template should be moved to a Standard, which would also be binding and presumably easier to amend.

It would also be helpful to make a clear distinction that the EIA is a process, and the EIS is the resultant documentation. Contractors are not going to annex an EIA and an EIS to their plan of work - only the EIS (and scoping report as an appendix to the EIS), which is the physical manifestation of the EIA process.

Binding Language used in Guideline

The occasional use of obligatory language in the Guidelines is confusing, as the Guidelines are intended to be a non-binding document. Indeed, most of the information in this document should be a requirement and included in a Standard.

Stakeholder Consultation and Scoping

The draft Regulations lack requirements relating to public review and stakeholder comments, in the EIA process. We propose that the scoping report be open for stakeholder consultation through the Authority's website, recalling that States, through the Agenda 2030 for Sustainable Development, have committed to "ensure responsive, inclusive, participatory and representative decision-making" at all levels and that the right to information and participation, declarations addressing environmental decision-making in particular, are internationally protected rights.

Consultation mechanisms are important because they lead to better decisions and higher public confidence. The ISA should therefore take a lead not only in conducting its own consultations, but also in requiring best practice from its contractors. Such detail (and more) could be included in a Standard, rather than the Regulations. Stages of the Scoping process have been provided in greater detail in the Environmental Impact Assessment Guideline, however there should be more guidance for Step 3 (Scoping Consultation) regarding what constitutes a sufficient consultation. We recommend that Contractors be required to submit a draft scoping report to the Authority to be published for a 60-day comment period. Following the comment period the Commission could look at the report and comments and provide recommendations to the Contractor, which will provide an opportunity to make any necessary revisions prior to submitting their Plan of Work.

The inclusion of greater stakeholder review will also help to establish the development of the EIA/EIS/EMMP as an iterative process that evolves through stakeholder consultation.

Corresponding suggestions for the EIS guideline and EIA Standard and Guideline (S&G) address these issues.

Access to Essential Documents for Reviewing an EIS

This document regularly refers to information that appears in the Plan of Work. Our understanding is that the EIS is likely to be a public document, while the Plan of Work may be confidential. If the EIS relies on the Plan of Work, it may make the EIS very difficult to review by stakeholders without enough information about the project. The project/mining plan of the EIS should contain sufficient detail (even if it repeats elements of the Plan of Work) for independent assessment to be made without seeing confidential elements of the Plan of Work. This is a typical approach in other industries.

Additionally, there should be a requirement for all baseline data to be submitted to the Authority prior to the submission of the EIS, possibly during the EIA scoping process. The EIS will only be as good as the data it is based on, which should be uploaded to DeepData and should include coding used to analyze the data and independent reviews associated with any predictive models used.

Impact vs. Effect

Where definitions are available in EIA guidance, impacts are typically defined as the changes resulting from an action, and effects are defined as the consequences of impacts. This is also consistent with the approach of the current version of the Draft Regulations. We recommend corresponding amendments.

Analysis of Alternative Operations Considered

An EIA should include a robust alternatives analysis that "present[s] the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." Identification and assessment of alternatives should be a fundamental requirement of any EIA, to enable the regulator to determine whether the least harmful approach for the environment and human health (see reference below) has been identified. This is a standard practice in many international EIA systems (see textbook reference below). An important part of the EIA will be assessing the Environmental Effects of these alternative operations. Justifications for not choosing these alternative approaches and differences from proposed mining operations should be clearly described in the EIS to allow stakeholders and members of the Authority to be able discern the financial and environmental cost/benefits of each approach. We have proposed edits to the EIS and EIA S&G to make it clear that a robust alternative analysis is an essential requirement of a EIA/EIS.

Impact Area

The current draft regulation no longer includes the term "impact area", but retains the terms "mining area" and "contract area". From scientific literature, it is still unclear whether the impact area will stay within the bounds of the contract area, due to the dispersal of sediment through collector and dewatering plumes and distance traveled by light and noise. It would be helpful for the EIS to address the predicted impact area (defined horizontally and vertically) and incorporate discharge information into site- and region-specific circulation models to calculate the predicted impact area. It is possible that the impact area would be within boundaries of the contract area, or the regulations would require impacts be localized to the contact area, but until that is determined it is critical that the regulations (or Standard, if more appropriate) require Contractors to collect baseline information, provide an environmental risk and impact assessment, and develop an environmental monitoring and management plan for the impact area, regardless of whether that is inside or outside the "contract area". We suggest adding the term 'Impact Area' to the terminology section below, as previously included in the 2017 version of the draft Exploitation Regulation, and have made amendments to the text accordingly.

Addressing Uncertainty

Uncertainty in predictions has the potential to radically change the conclusions of the EIS (for example in comparisons between options, risk assessment, etc.). Identifying, and taking steps to resolve uncertainties should be an essential feature of an EIA for deep-sea mining in the Area. At present the S&G makes little mention of this element. We therefore propose a standalone section in the EIS guideline (2.1.6bis) focused on this important aspect.

Additionally, the EIA/EIS should include a clear and explicit discussion of uncertainty in each relevant section, with an attempt made to quantify the magnitude of uncertainty. This should split the uncertainty by source, for example measurement error, environmental variation (in space and time), model variation, environmental change (e.g. climate change), uncertainty in

the extent and sources of impacts etc. etc. A clear assessment of the consequences of the uncertainty on the predictions, potential outcomes and decision making should be made for each relevant section. The approach used in the IPCC reports provides a good example of how this could be done.		
Best practice As a general comment, we propose using terms like "good international industry practice" or "good international practice" instead of "good industry practice", "best environmental practice" etc. The word 'international' needs to be inserted to signal the need to attain consistent and uniform high standards.		
Specific Comments		
Page	**Line**	**Comment**
1	28	Replace: "prior environmental risk assessment and" with "Scoping Report" Scoping' is an essential precursor to an EIA, in which the adequacy of a planned EIA and baseline datasets can be assessed before an expensive EIA is undertaken. It enables early intervention to correct sub-standard EIA processes, targets the EIA processes towards the priority issues, and helps Contractors avoid expending resources on unnecessary or misguided research. Moreover, it provides comfort that a future EIS will not be rejected by the ISA for procedural flaws. While scoping has been included in the EIA S&Gs, it should be restated in the EIS Guidelines. Submission of the report and review by Stakeholders and the Commission should also be made a requirement. Additionally, we would like to note that in other industries, two environmental risk assessments (ERA) are carried out: 1) at the scoping phase to highlight the general risks of a project of this type to the environment and to identify specific focus areas for the rest of the EIA, 2) in the main EIA to assess the risk of the specific project options and re-assess in the light of planned mitigation strategies (or options). There seems to be confusion about these two ERAs in both the EIS Guideline and EIA S&G. We believe it would be helpful to make that point clearer, so contractors can expect to carry out two ERAs as a part of the entire EIA process.
1	32	Add: ", findings" after "the objectives," REMP should identify focus areas and regional risks, as well as objectives and measures.
1	35	Add: "Standards," after "with the applicable"
1	58	Add additional bullets: "Environmental Quality Objectives; and Types and degrees of Environmental Effects deemed acceptable for purposes of DR 13(4)(e)."

		Environmental Quality Objectives would be essential for gauging impacts and effects of mining operations. Additionally, DR13(4)(e) covers the point at which the LTC decides whether to recommend the approval of a Plan of Work for Exploitation from an environmental point of view. The LTC must ask whether the environmental impacts likely to result from the mining (as forecasted in the EIS) are judged to be acceptable. The Regulations (or Standards) should provide guidance as to the relevant factors, data, thresholds, and values to guide the LTC in making this determination.
2	67.	Replace paragraph 6 with (changes in red): "The applicable Regional Environmental Management Plan (REMP) should also be read in conjunction by the applicant or Contractor in the EIA process and any region-specific methods for collecting baseline data, environmental objectives, indicators, and thresholds and management approaches" The REMP should directly influence the EIA/EIS/EMMP. Additionally, the REMP goes beyond management and mitigation methodologies, defining the region specific environmental objective indicators and thresholds as well.
2	74	Add: "6bis. Environmental Effect means any consequences in the Marine Environment for and for natural anthropogenic receptors arising from environmental impacts caused by the conduct of Exploitation activities, whether positive, negative, direct, indirect, temporary or permanent, or cumulative (whether arising over time or in combination with other mining impacts, or impacts caused by other sources). 6ter. Environmental Impact means changes (physical and or chemical) to the environment resulting from the conduct of Exploitation activities." Edits to the term Environmental Effect listed in draft regulations Schedule section and the addition of the term Environmental Impact, while adding both here, would eliminate any confusion about these terms. See general comment on "impact vs effect".
2	82	Add: "identifying the severity of" before "residual"
2	87	Add to list of terminology: "9bis. Impact Area means that area of the Marine Environment where Environmental Effects occur or are likely to occur as a result of Exploitation activities in a Mining Area" See general comments regarding "impact area"
2	93-105	As noted in the general comments, this template is nearly identical to the EIS template in Annex IV of the draft regulations. In the draft regulation and in the Guideline it says the template is a suggestion/recommended format, but should be made a requirement. If

		there is concern about not being able to amend the template in the future, then the template could be moved to an EIS standard, which would be binding. Numerous regulatory agencies provide templates for submissions **that must be followed or used** for a submission to be accepted by the regulatory authority. This allows the regulator to initially determine whether submissions are relevant, as those that have not been completed according to the template are usually not accepted. In cases where a template is prescribed, most regulatory agencies provide proponents with access to guidance from regulatory staff to fill out a template submission appropriately. As such, the purpose of this guideline should be to provide guidance on how to fill out the template, rather than just re-stating it. See also general comment above - "Draft Regulations EIS Template vs EIS Guideline"
2	103	Delete: "and project" and replace with "and region" Thresholds should be region- and resource-specific but not project-specific. This is still a point of discussion at the ISA, so this should be agreed upon and reflected in the draft regulations before being explained in the Guidelines.
3	Table	Add additional sections: Methodology for description of the Marine Environment and Assessment of Environmental Impacts and Effects -2.1.4bis Assessment of Uncertainty - 2.1.6bis -- see general comment "Addressing Uncertainty" Replace "Assessment of impact" with "Assessment of Environmental Impacts and effects" for 2.1.6 section titles
3	118	Add: ", including expected recovery rates of the system to its original state" at the end
3	120	Add: "and a description of any residual impacts that may occur despite mitigation"
4	140	Add another bullet:" any residual impact that may occur despite mitigation."
4	147	Regarding "contained in the Plan of work relevant to the context and findings of the EIA" – To ensure transparency, a public document like an EIS should not cross-reference confidential information which may be included in then Plan of Work - See also general comments - "Access to Essential Documents for Reviewing an EIS"

4	158	After EIA, Add: “and previously included in the scoping report”. Highlights of the scoping report process and conclusions should be presented in the background
4	161	Regarding “highlights from the previous activities”: Previous activities noted in the EIS should be made publicly available for review alongside the EIS review. This includes detailed reports (e.g., on specific aspects of the environment). The data from reports should be incorporated into ISA Deep Data as an obligation.
4	167	Add: “to mankind” after “benefits”. This is in the draft regulations EIS template, but has been omitted in the guidelines.
5	181-183	Add “test mining” - Test mining, in addition to component testing, should be included
5	193	Regarding “major shareholders” - Several contractors have a complex network of linked companies holding different licenses, some or all of which may be relevant to the proposed Plan of Work and likely environmental impacts. Listing only major shareholders would not be sufficient to reveal these linkages.
5	211-219	The scoping report is not referenced at all in this section, although some components of the scoping report are (e.g. environmental risk assessment). Scoping should be referenced as it is a mandatory part of the EIA and EIS. Additionally, the scoping report should be attached in an appendix to the EIS.
6	257	Propose adding “- Convention on Biological Diversity - 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter” to the list
6	258	Add new paragraph “28bis. The Contractor shall also describe any national processes followed and permits received from the sponsoring State in relation to the environmental impact assessment”
6	259	This section is less descriptive than the EIS template in Annex IV of the draft regulations. It is unclear to us why this is. Additional detail is suggested below through line 328
6	270	Add at the end “including the locations of impact reference zones and preservation reference zones, Areas of Particular Environmental Interest or other sites designated for particular status under the rules, regulations, procedures, Standards, or regional environmental management plans of the Authority, or of other competent authorities, as well as information on any other known conservation or spatial measures and other uses of the marine environment (e.g. submarine cables and pipelines, long-standing scientific research sites and established fishing areas) in the vicinity of the project area. The map shall also identify the nearest

		coastal States, and any adjacent ISA contract sites and activities.
6	271	Add another bullet: "the supporting activities and infrastructure required (e.g., transportation corridors, ports of disembarkation for vessels, and unloading of ore) that are outside the direct mining site"
6	271	Add "type (e.g. seafloor massive sulphides, polymetallic nodules, ferromanganese crusts)," before "size"
6	272	Add "(horizontal and vertical) after "spatial" & Add "(seasonal and annual)" after temporal
6	274-275	Replace bullet with (changes in red)- "Volumes, physical and chemical properties of material to be recovered, processed, and deposited and/or discharged into the water column or back to the seabed and a target depth range if any material will be discharged into the water column"
7	276	Replace: "Depth" with "an account of the area to be mined within the Contract Area, including the depth"
7	278	Replace bullet with (changes in red) "The likely extent of any secondary impacts such as sediment resettlement on the seabed or sediment dispersal in the water column from the collector and dewatering plume, noise, and light"
7	282	Add at the end ", including relevant diagrams and drawings, that address: the Mining Workplan, timelines and the general mining sequence, the technologies to be employed to recover the resource from the seabed, the depth of penetration into the seabed, and other details of the mining activities. Describe the energy requirements of the requisite machinery."
7	287	Replace "construction and operations standards" with "Construction operation standards, and energy requirements"
7	316	Add at the end ""The Contractor may also wish to refer to their required Mining Workplan."
8	327-328	add new paragraph "33bis. Descriptions of alternative mining operations shall include the selection of the mine site, mine production scenarios, equipment design and engineering decisions, transport, materials handling, and shipboard processing and any alternatives considered for the mitigation of impacts." And in paragraph 34 delete "brief" before "description See general comments regarding "Analysis of Alternative Operations Considered"
8	333	There is currently little to no requirements or guidance on the

		methodology that the Contractors should include in their EIA/EIS. Below is a methodology section that should be a requirement of a "complete" EIS. **4bis. Methodology for Description of the Marine Environment and Assessment of Impacts and Environmental Effects** *Studies Completed:* Describe any prior research/Exploration that could provide relevant information for this Environmental Impact Statement and future activities. These should be detailed in the appendices. *Methodology for Collecting Baseline Data*: For the physiochemical, biological, and socioeconomic environment description in section 2.1.5 of this Guideline, describe the methodology for collecting baseline data, including: • spatial and temporal extent of sampling; • spatial and temporal frequency of sampling; • gear used for sampling and any modifications or calibrations conducted to the gear; • results of power analysis; • limitations of sampling and how this may impact certainty of impact assessments; and • Any cooperation with other research programmes in the Area, such as with the ISA, States, other contractors, or non-governmental organizations. In this description, highlight any deviations from baseline data collection requirements provided in relevant Standards and Guidelines, and the regional environmental management plan. Raw baseline data and computer code used to analyze and provide a description of the Marine Environment shall be included in the appendices of the Environmental Impact Statement or, if the data and/or code has been previously submitted to the Authority, the applicant may provide a link to the Authority's database where the data and/or code is stored. *Methodology for Summarizing Baseline Data*: Provide a description of the methodology used to summarize baseline data collected. This shall include: • a description and justification of transformations performed to the data and analyses used to summarize the data; • a list of programme(s) used to analyze results; and, • Any limitations associated with the results of the analysis.

		Methodology for Assessments of potential environmental impacts and Environmental Effects to the Marine Environment For each assessment of potential environmental impacts and Environmental Effects in section 6 of this Guideline, describe the methodology used to assess impacts and Environmental Effects from proposed operations and alternative operations considered in section 2.1.4 (#33 and 33bis). Data, predictive models, and computer code used to analyze and provide a description of the Marine Environment shall be included in the annexures to the Environmental Impact Statement or, if the data, model, and/or code has been previously submitted to the Authority, the applicant may provide a link to the Authority's database where the data and/or code is stored. Each description of methodology used to assess impacts shall include: • a description and justification of analyses and models used to summarize the data; and • Any limitations associated with the analysis or results. Where predictive models have been used these shall be reviewed by competent independent experts and the relevant review reports shall be provided as annexures to the Environmental Impact Statement.
8	348	Add "and Impact Area" after "Contract Area" See general comments regarding "Impact Area"
8	348-350	Replace "These descriptions should be based on the both primary data from baselines studies complete in the proposed Contract Area" with "These descriptions should be based on both primary data from baseline studies completed in accordance with Regulation 45 and 47, relevant Standards, and regional environmental management plans, taking account of Guidelines in the proposed Contract Area and Impact Area" Added reference to Regulations, S&G and REMP to clarify that baseline studies will be based on the requirements listed in those binding documents. Additionally, recommend adding "impact area", as it is still unclear, and unexpected, that impacts will stay within the bounds of the contract area. - See general comments regarding "Impact Area"
8	355	Add "and Impact Area" after "Contract Area" See general comments regarding "Impact Area"
9	370	With the addition of the methodology section proposed above, we recommend deleting "Studies completed (including environmental reference baseline data collected in accordance with the exploration contract and contained in the DeepData database)"
9	385-403	Numerous physicochemical components have been left out of this

		section. Below is a modified list with additional bullets (edits is red) • Meteorology and air quality (overview of climatology and description of air quality, including chemical characteristics); • Geological setting (general geological landscape and topography, petrographic and geomorphological setting, and nature and extent of the resource); • Seabed substrate characteristics (specific gravity, bulk density, grain size, dissolved and particulate organic and inorganic carbon, concentration of toxic elements, nutrients, carbonate, physical and chemical composition of pore-water, redox regimes, and spatial (horizontal and vertical) and temporal (seasonal and interannual) variability in these characteristics). Substrate characteristics shall be described to a depth below the seafloor as prescribed in the relevant Standard or regional environmental management plan; • Physical oceanographic regional and site-specific setting (general oceanographic aspects including stratification and sediment rates, turbidity, current direction and velocity, oceanographic fronts, eddies, turbulence, boundary-layer processes, particle flux, natural particle concentrations and compositions throughout the water column, waves, and spatial (horizontal and vertical) and temporal (seasonal and interannual) variability of these properties as well as notable characteristics such as hydrothermal vents, seamounts, and canyons). Climate Change projections should also be included; • Chemical oceanographic setting (water mass characteristics throughout the water column at various depths, such as nutrients, particle loads, temperature, oxygen, salinity, density, particulate and dissolved organic matter, pH, specific gravity, bulk density, grain size, dissolved and particulate organic and inorganic carbon, concentration of toxic elements, nutrients, carbonate, physical and chemical composition of pore-water, redox regimes, and spatial (horizontal and vertical) and temporal (seasonal and interannual) variability in these characteristics. Substrate composition shall be described to a depth below the seafloor as prescribed in the relevant Standard or regional environmental management plan); • Natural hazards (potential hazards for the region, including seismic activity, volcanic activity, and cyclones, hurricanes, or tsunamis and likely changes in frequency of these events due to climate change); • Noise and light, including light intensity, backscatter, and attenuation (ambient levels, and influence of existing maritime, exploration, and exploitation activity in and around the proposed Contract Area, noting spatial (horizontal and vertical) and temporal (seasonal and interannual) variability in these characteristics);

		• Noise must include ambient sound levels at relevant locations, specific frequencies to be emitted at relevant locations, sound levels at those locations, and effects on marine mammals and fish which may be present at those locations; and • Greenhouse gas emissions and climate change (gas and chemical emissions from natural and anthropogenic activities in the region and affecting the sea floor and water column chemistry). Effects of mining on ocean climate mitigation functions and services should be described (including any anticipated alteration of CO2 uptake and sequestration, or nutrient cycling."
9	408-410	Replace "The Contractor should…,where appropriate)" with "in the Impact Area. The Contractor must structure this section by depth regime from the sea surface to the benthic subsurface layers, in accordance with the relevant Standard and regional environmental management plans" The depth range used for biological baseline descriptions may vary from region-to-region and should be based on the baseline data collection Standard and relevant REMP.
9	412	Add "and Impact Area" after "Contract Area" See general comments regarding "Impact Area"
9-10	416-419	Replace para. 42 with "The discussion will address the diversity, abundance, biomass, life history stages and parameters, behavioral information, such as feeding rates of suspension feeders, recruitment, connectivity, trophic relationships, resilience, ecosystem function and services, and spatial and temporal variability of the communities present at each depth regime described in 43bis of section 2.1.5. Any community-level analyses, previous work with ecosystem models and ecosystem indications described in section 2.1.4bis should also be included in this discussion." Above we have provided additional biologic environmental components that should be addressed and provided references to current and recommended sections listed in the EIS guideline to assist the contractor.
10	421-433	Replace paragraph 43 with "43. The Contractor should provide as comprehensive a list of known species in the Impact Area" "43bis. Descriptions of Biological communities and ecosystem functions

		must be structured by depth regimes, described in accordance with relevant Standards, and encompassing, as relevant: • surface seawater, • epipelagic zone (< 200 metres) • mesopelagic zone (200-1000 metres), • bathypelagic zone (1000 - 4000 metres), • abyssopelagic zone (4000 - 6000 metres), • hadalpelagic zone (> 6000 meters), • Benthic Boundary Layer (100m zone above the seabed/benthic zone), and • benthic zone." Limiting the description of fauna to three depth ranges may be insufficient to capture the vertical spatial variability in the water column. The REMP should outline the depth regimes to be described. For now, this lists the most plausible depth regimes that a REMP would prescribe. Additionally, specific marine mammal surveys and fish surveys must be completed at all relevant depths and locations and at different times of the year. This also informs assessments of noise impacts and the susceptibility of the marine mammals and fish to noise and disturbance.
10	442	Comment: Fish base is not a global biodiversity database, propose deleting this
10	444	Replace "that include the size of the faunal and the life-history stages of fauna" with ". This should include the size distributions of the fauna and their life history stage"
10	455	Replace "food chain" with "food web"
10	451-476	Regarding "knowledge of trophic levels": This should specify the aspects and numbers of trophic levels intended "Specialized predators" should be expanded to address other feeding modes
11	487- 491	To simplify this paragraph, replace "and around the proposed...for preparing an EIS" with "the impact area that might be affected by the proposed project"
11	508	Add ", cultural, paleontological" after "archeological"
12	517	Replace "Assessment of Impacts' to "Assessment of Environmental Impacts and Effects" See general comment "Impact vs. Effect"
12	520-521	Replace "the Contractor should provide…, and socioeconomic environment" with "The contractor should provide an assessment of potential environmental impacts and effects of the proposed operation

		and alternative operations considered in section 2.1.4. to the physiochemical, biological, and socioeconomic environments in the Impact Area." See general comment "Impact vs. Effect" and "Analysis of Alternative Operations Considered"
12	528	Add "and alternative operations considered" after "proposed project"
12	529	Add "pre-commissioning, operational, and decommissioning stages" after "proposed mining activities"
12	534-536	Replace three bullets with (changes in red): • "The source, nature and spatial (horizontal and vertical) and temporal (seasonal and annual) extent of any actual or potential environmental impact and effect and a comparison of these impacts and effects to the relevant environmental objectives, indicators, and threshold values identified in the relevant Standards and Regional Environmental Management Plan; • Measures that will be taken to avoid, remedy or mitigate and manage such impacts within acceptable levels from the proposed operation. This will include a comparative analysis of how measures taken may differ across alternative operations considered; • Any unavoidable (residual) impacts that may remain, including their expected longevity; and • The extent to which any potential impacts and Environmental Effects may occur in areas under a State's national jurisdiction." These bullets need to be more descriptive and list potential impacts to areas under a State's national jurisdiction.
12	539	Replace ", the length of time of impact from them," with "in the Area and within a State's national jurisdiction, the length of time of impact from them, if any impact or effect exceed environmental objectives, indicators, or thresholds in the relevant Standards and regional environmental management plan
12	550-558	Replace bullets with (changes in red): "Description of impacts categories and resulting effects from proposed operation and alternative operations considered in section 2.1.4: • The nature and extent of any actual or potential impact and effect, including indirect and cumulative impacts and effects, and interactions across impacts and effects; • Measures that will be taken to avoid, remedy, or mitigate such impacts and effects (and that will be addressed in the EMMP); • Unavoidable (residual) impacts that will remain; and • any impacts and effects to State national jurisdiction."

		Edits for consistency with previous edits made (2 cells up)
13	573-576	Move "seabed substrate characteristics" under "Geological setting" - These should be in the same section or be right after each other
13	600-605	Replace these lines with "environment identified in the relevant depth regimes described in section 2.1.5 and discussion of ecosystem and community level dynamics also described in section 2.1.5"
13	607-608	Add "and effects" after "potential impacts" & add "and alternative operations considered" after "proposed project"
14	614-615	Add "(horizontal and vertical) after "spatial" & Add "(seasonal and annual)" after temporal
14	621-651	This should reference the baseline standards and guidelines and relevant REMP instead of a list that may contradict those documents or create confusion regarding the depth regimes to be included in the final ERA. It should also require an analysis of the toxicity of released metals either on the seafloor from the mining activity or in the water column from the sediments released, which will in turn require knowledge of the toxicity of the contents of the emitted plumes
15	667	Add "cultural heritage" before the "other' bullet
15	674	After "socioeconomic impacts" add "from the proposed project and the alternative operations considered"
15	679	Add "**6bis. Assessment of Uncertainty** 67bis.*Uncertainty Assessment*: Provide a detailed description and evaluation of any uncertainties in the assessments described in section 2.1.6. This uncertainty assessment shall: • identify any relevant areas of uncertainty and gaps in knowledge and the implications these have to the environmental impact assessment process and its findings; and, • describe the measures taken in the environmental impact assessment to reduce uncertainty in its findings to as low as reasonably practicable. 67ter. *Resolving Significant Uncertainty:* Where significant uncertainty exists despite the efforts described in 9bis.1(b), provide a detailed description of environmental monitoring and management measures for managing and reducing uncertainty during the proposed operations, to be incorporated into the Environmental Monitoring and Management Plan and describe how these will enable the applicant to ensure compliance with relevant Rules of the Authority"

		See general comment - “Addressing Uncertainty”
15	694	After” could have,” add “in the Area or in a State’s national jurisdiction”
15	701-703	Replace “The EIS . . . need include only a brief discussion highlighting key issues that will be addressed in the EMMP, including” with “This section is an opportunity to highlight some of the key issues from the Statement that will be addressed in the full Environmental Management and Monitoring Plan and provide stakeholders an opportunity to provide comments during the environmental impact assessment consultation, which should be done prior to submitting the application for Plan of Work. This section should include a discussion of”
16	707	Add “indicators, and thresholds” after “Environmental Objectives” In the other S&Gs and draft regulations t inconsistent terminology and phrasing persists. For example: Environmental Objective or Environmental objective and indicator or Environmental Objective and threshold seem to be used interchangeably, but should instead be consistent and should include the terms proposed above.
16	728	Add “journey and” after “the intended”
16	743	Consultation is not compulsory (see the discussion in the EIA Standard and Guideline and in the introduction to these comments). Consultation should be compulsory and conducted throughout the EIA process and should also not only include public reviews of the EIS and but also revision of the EIS following consultations.
16	750	Replace “and extent” with “participants and outcomes”
17	762	Comment: The EIS template could include a description of any EIA process performed under the laws of the sponsoring state.
17	763	Add: “77bis. The Contractor shall provide a description of how comments received under stakeholder consultation have been or will be taken into account, or why they have not been taken into account, and the reasons for that decision.”
17	793	Add: “81bis. The EIS shall also describe any potential conflicts of interest, and the mechanisms used to manage any such conflicts.”
17	800-801	Comment regarding references “This enables a user of the EIS to independently review the supporting documentation.” This is often not true. References are impossible to obtain or confidential. This is a particular problem when the references are essential to support the findings of the EIA and is common (e.g. for consultancy reports on baseline or monitoring data).

		Ideally the EIA should be supported by peer-reviewed open access publications and data held within the ISA database DeepData. Otherwise all underlying reports should be made available, potentially through the ISA library or an online portal. See general comment above “Access to Essential Documents for Reviewing an EIS” for more info
18	805	After “exploration contracts” add “copies of stakeholder comments received, and review reports from independent experts for predictive models used” See general comment above “Access to Essential Documents for Reviewing an EIS” for more info
Additional rows can be added to this table by selecting “Table” followed by “insert” and “rows below”		

TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft Guidelines for the preparation of environmental management and monitoring plans
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General Comments

Standard

The Guideline is stated as being non-prescriptive; however, the Draft Regulations place strict requirements for an Environmental Management and Monitoring Plan (EMMP) on Contractors. The Guideline and contractors would benefit from an EMMP Standard that sets out mandatory elements and bridges the gap between the Guideline and the regulatory requirements. The mandatory elements should be drawn from what is established as good/best international industry practice.

Public or Stakeholder Consultation

The Guideline makes no mention of public or stakeholder consultation in preparing the EMMP even though eventually the EMMP, as part of the application for a Plan of Work, will become a public document. The Draft Guideline does refer (Paragraph 6, lines 66 to 67) to following Good International Industry Practice, which would include such consultation. The need for and benefits of stakeholder consultation in preparing the EMMP should be specifically emphasized (e.g. in Section III Preparing an EMMP for Submission with a Plan of Work). Similar comments have been made to the EIS Guideline and EIA S&Gs.

Continuous Improvement

Continuous improvement is a fundamental concept and key objective of environmental management, but this concept only gets a passing mention (Paragraph 50, line 441). It is partially implicit in some elements of the draft Guideline but should be explained where it is first mentioned, with more detail given as to how it will be implemented, e.g. through a Plan-Do-Check-Act process (as advocated by ISO, OGP-IPIECA and others).

Performance Assessment

As noted in the specific comments (Paragraphs 45, 46 and 58) 'performance assessment' is envisaged in different ways. The Guideline should clearly distinguish between these as follows –

- The EMMP is a legal document that sets out what a Contractor is required to do to comply with the terms of its contract. The formal periodic performance review reported under Regulation 52 to the ISA addresses this compliance.
- Implementation of Good International Industry Practice of the various individual measures contained in an EMMP involving 'performance assessment' of each measure on an on-going basis as part of continuous improvement.

Best Available Techniques, equipment design, environmental performance standards and EMMP

In comparable sectors a project design will aim to achieve a pre-defined set of codes and standards that have been set by regulators and industry standards bodies (noise control, emissions etc.). The operational EMMP (or similar) for such activities therefore focuses on demonstrating that a facility is operating in accordance with its design codes and standards and meeting regulatory requirements.

A contractor's mining vessels and equipment will arrive on site at the beginning of the project with the majority of environmental mitigation and management measures hard-wired into their design. In the absence of design codes and standards these environmental mitigation and management measures could vary materially between contractors. This also means that the EMMP cannot influence front-end engineering and design of operational facilities. For example, attempting to apply Best Available Technology requirements at or after EMMP approval could mean replacing very expensive equipment or suspending operations for some time to improve the equipment.

The main environmental impacts of seabed mining (the ecological effects from loss of and disturbance of habitat from direct extraction and the plume/sedimentation) will therefore be most influenced by equipment design, with implementation of the EMMP only monitoring rather than managing and monitoring the effects. Therefore, successful management of adverse effects on the seabed environment will need to be addressed by coupling the setting of environmental design standards for seabed mining equipment, together with the implementation of the EMMP to demonstrate that the equipment is performing as planned. The EMMP can also then have a strong focus on monitoring and managing the residual uncertainties from the EIA process and the associated adaptive management.

For this reason, the EMMP Guideline should be written in conjunction with:

- setting environmental thresholds, Standards and Guidelines; and
- developing ISA Guidelines on mining technology design, and/or indicative examples or definitions of BAT for the purposes of equipment design.

These are required (as soon as possible) to inform Contractors' machinery design.

Adaptive Management

The Guideline supports adaptive management without setting clear limits and rules around when adaptive management is appropriate and when it would lead to a watering down of environmental protection.

Science-based adaptive management is a key mechanism for the EMMP. This involves working to reduce uncertainties that remain from the EIA process over time and responding flexibly to new learning by changing management responses i.e. continual monitoring and re-adjustment.

Note that adaptive management is not a mechanism that should be used as a justification to approve otherwise environmentally risky activities. A precautionary approach should be taken to the issue of Exploitation contracts, and Contractors should be able to evidence sufficiently to the ISA's satisfaction that environmental standards can be met. Then adaptive management can be employed by the ISA and Contractors as an enhancement to precaution. It can be expected that there will be significant scientific and technical advances over the 30-year (plus extensions) term envisaged for Exploitation contracts. The ISA regime should be designed to respond to that.

Regulations and contracts should not be continually revised, for reasons of practicality, as well as legality, and commercial fairness. But a Contractor can be required via the EMMP to strive for continual self-assessment and adjustment, in pursuit of ever-minimizing the adverse environmental footprint of the project. Taking steps (when the Contract is granted) that contemplate ongoing changes to management practices (as part of an EMMP) serves to avoid the need for revisions to the Plan of Work /the Contract, which would require the Contractor and the ISA to consent.

The table below makes specific suggestions for improvements, although meaningful changes will need to be made to a binding document.

Specific Comments		
Page	**Line**	**Comment**
1	30	Regarding Para. 1 No mention is made of an EMMP Standard - see general comment "Standard"
1	44	Regarding Para. 3 The Guideline "is not intended to be prescriptive" and so in the absence of a Standard, Contractors are not given a clear benchmark to aim for in terms of producing their EMMPs. This risks the production by different Contractors of EMMPs that vary widely in terms of detail and quality. In the absence of a Standard, a sentence should be added similar to: While the Guideline below is not intended to be prescriptive, Contractors must justify any deviation from this Guideline and good industry practice in the production of an EMMP.
1	53	Regarding Para. 4 Environmental objectives' are referenced a few times in the draft Regulations [DR 2(e)(i), DR46(2)(a), DR48(1), and Annex VII paragraph 2(a)]. The meaning of that term is not elaborated, but from the nature of those references, it appears they refer to and envisage every Contractor developing its own environmental objectives for each Plan of Work. Elaboration of when and how these objectives are set would be helpful.
1	51	Regarding "Scope and Purpose"

		The EMMP also serves as a reference document to support ongoing work. It should: • document environmental concerns and appropriate protection measures; • provide concise and clear instructions to project personnel and contractors regarding procedures for protecting the environment and minimizing environmental impact; • provide a reference document for personnel when planning and/or conducting specific activities; • provide contingency plans for accidental events; and • provide a reference to applicable legislative requirements.
1	59	Regarding "cumulative effect" Cumulative effects should be defined to include not only cumulative effects from other mining impacts but also other human impacts on the ocean, e.g fishing, cables, climate change.
1	62	Add: "for monitoring the environmental effects of mining," after "procedures"
2	120	Replace "EIA, EIS, and EMMP" with "EIA, EIS, EMMP and relevant REMP and Standards"
2	121	Regarding "living document" The EMMP is correctly described as a living document. It would be helpful to go a step further and recommend that its life begins early in the EIA (and project planning and design) process as opposed to being derived from the EIA at a late stage.
3	125-134	Replace para 14 with (changes in red): "An EMMP should: • Be balanced and objective allowing independent verification; • State any limitations that apply to the use of the information; • Provide sufficient detail to allow effective implementation. • Identify scientific uncertainties and include adaptive management strategies for managing uncertainty, where appropriate; • Contain committed measures to address the significant environmental effects that are auditable and measurable outcomes and clear time frames; • Clearly explain technical terms and acronyms used; • Clearly define responsibilities and roles; and • Be reviewed and updated in accordance with Regulation 52."
3	154	Replace: "Approval" with "application"
3	155	Replace: "in the form of a contract with" with "to"
3	160	Para. 18 refers to an EMMP checklist in Appendix C . While checklists are useful, they risk loss of emphasis on what matters most. Many of the matters on the checklist will have been addressed fully in the EIA/EIS. The most important parts of the EMMP are the mitigation measures that

		have been assessed in the EIA, the methods whereby they will be implemented, where, who by, when, how often, how their effectiveness will be monitored, and the actions to be taken if monitoring shows an outcome different from that predicted in the EIS. This is not sufficiently emphasized. The checklist also has flaws and needs to be fully reviewed for appropriateness. For example, it asks the question: Does the EMMP contain a stand-alone Emergency Response Plan? Yet under the Draft Regulations Annex V the Emergency Response and Contingency Plan is a separate document from the EMMP and required as part of the Plan of Work submission.
3	176	There will be people and organizations who think an EMS and EMMP are the same thing. An EMMP is project or site-specific and an EMS is organization-specific. This should be clearly explained along with how the EMS and EMMP are related.
4	190	The role of the development of operational procedures and working methods as part of equipment design and mine planning respectively needs to be mentioned as these will strongly influence the operational environmental management. The EMMP measures will not simply derive from the EIA/EIS but also the project decision-making, equipment design and mine planning processes (see general comments - ”Best Available Techniques”)
4	198	The ‘Monitoring and Management Program’ should contain an additional section ensuring that the measures set out in the EMMP should, where required, be aligned with equipment design, working methods and operational procedures. See for example the section on ‘Asset Design and Integrity’ of the ‘Operating Management System Framework, published by OGP-IPIECA (2014)
4	213	The section on Adaptive Management is an important one and could be improved by spelling out why it will be such an important consideration in the EMMPs for deep-sea mining and the aspects of mining to which it might apply. Suggested adding the following paragraph to introduce the section: “25bis. The measures in the EMMPs will be based on EIA findings (along with design factors etc.). Where there is uncertainty in the EIA process, this will be addressed by adopting precautionary approaches which will be carried into control measures in the EMMP. This allows the activity to proceed under caution (e.g. the mitigation measure may be more than is eventually required once uncertainty is resolved) as opposed to disallowing it from proceeding at all. Monitoring to determine what actually happens in these areas of uncertainty may require controls to be tightened, added to, left the same, relaxed or removed entirely.”
4	218	Add new bullet:

		"can only be applied where the contractor and the ISA have been able to set clear and measurable environmental goals, objectives, targets, indicators, and thresholds and designed a monitoring programme that can demonstrate, with statistical confidence, that the strategic objectives, targets, indicators, and thresholds are achieved"
5	275	Regarding "The parameters identified to be monitored and/or sampled during an EIA/EIS": It should be noted that the EMMP sets out the monitoring strategy for the entire project, which could extend for decades beyond the EIA/EIS. The parameter list should take this into consideration
5	277-279	Replace bullet with (changes in red): ● "Some monitoring will be of equipment performance (e.g. 'end of pipe') and may be on a continuous basis or highly frequent, whereas other monitoring (ambient environment) will require scientific survey campaigns to be mobilized at a suitable frequency to sample at specific stations and subsequently analyse, interpret, and report findings. ● Proposed environmental monitoring/sampling methodology, including standards, protocols, methodologies, and procedures for collecting, analyzing, interpreting and communicating data, and the details of the proposed monitoring stations across the project area."
5	280	Regarding "Performance Standards": Clarify what is meant by the term through discussion of environmental thresholds, action trigger points, etc. This would help clarify monitoring objectives. It is unclear if performance standards as mentioned here is more about quality control/assurance.
7	298	Regarding "non-significant": It is confusing what non-significant means in this context. Clarify how significance will be assessed. Significance also has a specific statistical meaning, and this can only be assessed by the monitoring programme, and likely not in the EIS.
7	302	Regarding "significance" Need a definition (or reference to another document) for what is a significant environmental effect vs a non-significant environmental effect. The previous parts of the document talk about assessing the significance of the effect, but this implies that effects will be grouped into "significant" and "non-significant" - this requires a robust decision-making framework that needs to be specified (or clearly outlined as a requirement for the EMMP).
7	317	Regarding "Compliance Monitoring":

		To provide a level playing field, all compliance monitoring should be conducted periodically with the same timing for all projects in the contract area (and ideally region) to ensure that the prescribed mitigation measures are effective in reducing the residual impacts to acceptable levels.
7	327	Regarding "Long-term Monitoring': The details of long-term monitoring (para. 38) may be developed in accordance with the Closure Plan, but their time-scale beyond the closure of the mine must be determined by the presence of statistically significant differences between IRZ and PRZ due to environmental impacts of mining activities (e.g. to allow for final estimation of reparations by the contractor).
8	347	Paragraph 41 should require the collection and storage of samples (as required during exploration monitoring, for example) for future and external studies.
8	361	Add ", including raw data, metadata and physical specimens" after "procedures"
8	366-367	It would be useful to explain the purpose intended behind the use of real-time electrical compliance monitoring technology.
9	386	Monitoring Stations should also monitor plume effects and other mining impacts on the marine environment. Suggest adding that to this list.
9	398	Regarding "Planning Performance Assessments': It is implied here that the performance assessment covers the entirety of the EMMP, which in turn addresses the entirety of a mining operation and its impacts. Regulation 52 provides for circulation of the performance assessment 30 days in advance of the next meeting of the LTC. This implies a timeframe of at least 30 days plus an indeterminate period before an EMMP performance assessment is reviewed and actioned. See also para. 58.
9	413-414	Appendix A Environmental Monitoring and Management Plan (EMMP) [Example Table of Contents/Form of Performance Assessment] was not available to review.
10	455-459	Where can the trigger values for corrective action mentioned in paras 52 and 53 be found? Recommend referencing the relevant Standard and REMP here.
11	496	In advising the "frequency of the performance assessment" the need for the assessment is linked to individual risks, impacts and control measures in contrast to paras 45 and 46 which link the performance assessment to the entirety of the EMMP. Overall, there is some confusion that possibly stems from using the term 'Performance Assessment' to address both the performance of an individual control

		measure and the overall implementation of the EMMP. It would be helpful to make clear distinctions See general comments - "Best Available Techniques, equipment design, environmental performance standards and EMMP"
11	506	Will non-scheduled performance assessments (para. 59) provide comprehensive information if based entirely on information provided by the contractor?
12	518	Para. 60 contradicts para. 76. Performance assessments can be done by an applicant using a competent person or persons as an ongoing exercise to gain internal assurance that the EMMP is performing within parameters and being properly implemented. For reporting to the ISA and to the public, the assessment (or compliance review) should, in accordance with good industry practice, be made by a qualified independent party.
12	524	The prescription to the area-based management tools that are key to environmental impact assessment and to contractor performance assessment (para. 61) appears to be rather wanting and falling short of all cardinal information, e.g. how is the contractor supposed to fit IRZ and PRZ into the highly fragmented claim areas for massive sulphides (PMS) and cobalt crusts (CRC).
12	532	Recommend this section on mining discharges (paras 63-71) should clearly prohibit the dumping of chemical additives (e.g. flocculation agents etc.).
12	543	The "Mining Discharge Guideline" is still outstanding
13	581	What is "Guideline 5"?
15	635	The use of the term independent competent person implies an individual. It is more normal (e.g. in the oil and gas industry) that this would be done by a suitably qualified organization. Given the complexities of deep-sea mining it is likely that several suitable qualified individuals or competent persons would be required. Also note contradiction with paragraph 60.
16	677-678	Requiring Contractors to 'also discuss with the authority' is rather weak. Reporting on longer term effects should be mandatory and the intervals specified.
34	Table	Row "Environmental Management System" Column "Do the Components of the EMMP Meet These Requirements" Recommend adding: "Is there a clear route for reporting to senior management to ensure regular evaluation of the monitoring and management?"

37	Table	Row “Monitoring Methodology”; Column “Do the Components of the EMMP Meet These Requirements” Recommend adding - Is there an appropriate mechanism to store monitoring data and metadata in a way that allows for independent evaluation of changes over time?
38	Table	First cell in Column “Do the Components of the EMMP Meet These Requirements” Recommend Adding - Does the sampling arrangement allow for the detection of expected effects using the best available knowledge of impacts and the environment of the project? Does the sampling arrangement allow the differentiation between impacts caused by the mining project from those caused by other changes, such as climate change?
38	Table	Last Cell in Column “Do the Components of the EMMP Meet These Requirements” Add “, thresholds” after “values”
41	Table	Row “Consultation and Research”; Column “Do the Components of the EMMP Meet These Requirements” Does the EMMP provide an approach for identifying important information gaps and targeting research to fill these?
43	Table	Add new row to “reporting” In Column “does the EMMP contain”: Recommend adding “EMMP documentation for operational use” In Column “Do the Components of the EMMP Meet These Requirements” Recommend adding: “Is the EMMP accessible and presented in a format that allows contractor personnel and contractors to understand the purpose and procedures, particularly in the case of actions to be taken if thresholds are exceeded?”
Additional rows can be added to this table by selecting “Table” followed by “insert” and “rows below”		

TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft Guidelines on tools and techniques for hazard identification and risk assessments
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General Comments

Purpose of the Guideline

A hazard is usually defined as: any source of potential damage, harm or adverse health effects on something or someone; or something that is dangerous and likely to cause damage that occurs as a result of an accidental, unplanned and/or unwanted event.

The Guidelines for hazard identification and risk assessment seem to conflate the framework needed for risks expected from routine exploitation activities and hazards from accidents/incidents, with the result that the stated purpose of the Guideline being inconsistent with UNCLOS and the draft regulations: '*Hazard identification and risk assessment activities should reduce the risk of* ***Incidents and impacts*** *of exploitation on the marine environment* ***as much as reasonably practicable.'***

While this aim may be appropriate for reducing the risk of accidents/incidents (see draft regulation 32), it is unsuitable for reducing the routine impacts of mining, including pollution. UNCLOS unambiguously requires '*necessary measures'* for the '*effective protection for the marine environment*' (Art. 145), without limiting such measures to those that are '*reasonably practicable*.' Put differently, UNCLOS does not allow harm to the environment beyond a certain cost-threshold.

For the purposes of this guidance it would be helpful to adopt a tighter definition so that it is focused on potential accidental (or unplanned or unwanted) events associated with mining (e.g. spills, collisions, loss of equipment, dropped objects, equipment failure and leaks). As some of the wording in the Guideline currently stands, the removal of nodules from the seabed could be described as a hazard whereas it is a planned activity of seabed mining (see also comments on paragraph 20 below).

Relationships between Guidelines

There are now several guidelines that have been developed and there is quite a lot of overlap and crossover between them. Some clarity would be beneficial in relation to the extent to which this guideline complements and interacts with the EIA standard and guideline, EMMP guideline, guideline on health and safety plans, etc. which prescribe certain requirements in

relation to risk assessment. For example, the EIA at scoping must be informed by an ERA and the EIS must contain the results of a prior ERA. Assessing the impacts of mining resulting from planned activities is at the core of the EIA and so treating the planned activities as hazards and subjecting them to a different assessment approach would confuse stakeholders and duplicate efforts. Additionally, risk assessment professionals (e.g. safety or process engineers) will not have the competence to predict and assess environmental consequences and environmental professionals (e.g. marine scientists and EIA practitioners) will not have the competence to predict such matters as equipment failure likelihood and modes of release of materials into the environment. This implies that there needs to be a cut-off and linkage between the Hazard Identification and Risk Assessment and other assessments and plans:

- Hazard and risk assessment-identified failure modes, like accidents, their likelihood of occurring and the characteristic of the event (environmental and/or health and safety - the material released, volumes, flow rates, location; health and safety);
- EIA uses this information to assess environmental consequences of unwanted events;
- EMMP uses this information to inform monitoring and management plans;
- Health and Safety Plan uses this information to assess health and safety consequences of unwanted events; and
- [uses for other applicable assessments and plans].

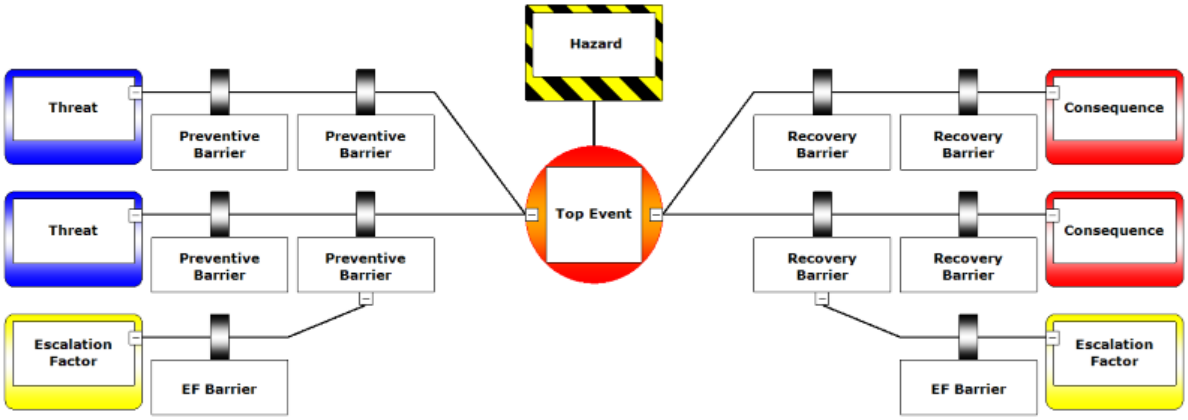
Higher likelihood events/more severe consequences then become the focus of equipment design, project planning and operational procedures to reduce the risk to as low as reasonably practicable (ALARP). Although in the circumstance, the reference to the ALARP principle is misplaced, to the extent that it addresses risks to the marine environment, since the objective is effective protection of the marine environment, under Article 145 of UNCLOS. Article145 is not qualified by 'as long as the damage is as low as reasonably practicable'.

Need for Safety Management System and Environmental Management System

The Guideline mentions how the risk assessment would provide input to other requirements such as a Health and Safety Plan (HSP) and EIA. However, a HSP and EIA (and the risk assessment contained in each) are specific to the project at hand. A HSP and EIA can only be implemented within the framework of a business, company or corporate Safety Management System and Environmental Management System, respectively. The Guideline should provide that the Contractor is required to have a suitable Safety Management System (e.g. in accordance with ISO 45001:2018) and Environmental Management System (Draft Regulation 46).

Hazard Identification, Risk Assessment, Controls and Equipment Design

Hazard identification and risk assessment will run alongside design techniques like the bow-tie approach illustrated below to factor in controls and barriers and better understand the risks, avoiding, minimizing and reducing then to ALARP as they go along. The Guideline is insufficiently clear on the expectations of the equipment design process and how those relate to "Good industry Practice" and "Best Available Techniques".



source: [The bowtie method - CGE Barrier Based Risk Management Knowledge base (cgerisk.com)]

Enforcement

With the current draft regulations it is unclear how risk management systems will be enforced, as they are only referenced briefly in the review of Plan of Work and Annual Report draft regulations (DR 13 &38). Below is a list of items that the ISA/Sponsoring States may need to enforce and should be addressed in the regulations, or another Standard:

- The extent to which risk assessments are undertaken and reported;
- The quality of the assessment tools used, and any assumptions made in relation to treating risks;
- The expertise of people involved in the risk assessment process;
- The extent to which treatments of risks translate to management practices that are implemented on the ground; and,
- The extent to which contractors report on risks, risk management and incidents.

Best practice

As a general comment, we propose using terms like "good international industry practice" or "good international practice" instead of "good industry practice", "best environmental

practice" etc. The word 'international' needs to be inserted to signal the need to attain consistent and uniform high standards.

Transparency

The expectation of a "level playing field" in relation to both enforcement and quality control relies on transparency. The transparent sharing of risk assessment and management information will need to be required and enforced. This has yet to be addressed in the Draft Regulations or any other Standards.

Specific Comments		
Page	**Line**	**Comment**
1	36-43	Para. 2 states that: 'rigorous risk management strategy is necessary at every phase of the project', but subsequently no mention is made of the design of equipment and operating systems for mining. This is a critical stage in managing safety and the stage when the most important and effective risk assessment techniques (HAZID, HAZOP etc) would be applied in similar industries.
1	61-62	Regarding "as much as reasonably practicable" - see general comment "Purpose of the Guideline"
1	69-70	The hazard and risk assessment process as described by the guideline would provide 'input' to the EIA but not a 'basis' for the EIA. Suggest rewording accordingly. See general comment - "Relationship between Guidelines"
1	71	Regarding "Provide for the protection of human life and safety": An oil and gas company, for example, would put providing 'for the protection of human life and safety' first and foremost. The Guideline should consider the same approach throughout.
2	76-77	According to the Guideline, section 1 is supposed to show how this Guideline "links to the regulations and other guidelines." However, the section refers to regulations Standards and Guidelines (S&G) broadly, rather than pointing out specific provisions in these documents (and Regional Environmental Management Plans) that the contractor must meet. This section should instead provide specific details for how this Guideline interacts with regulations, REMPs, and other S&Gs or reference Table 1 in section 3, which does provide more specific references to regulations in some rows and could be developed further.
2	99	Replace: "should also be considered" with "must also be read in conjunction" The REMP may contain obligatory statements in it "regarding regional hazards and risk elements", so the language here should be stronger.

2	102-106	It would be more helpful to pull the content from these resources rather than point the contractor to rely on additional documents without clear guidance as to what elements are relevant.
3	115	Suggest deletion of 'policies'. Regulatory instruments are usually designed to implement predetermined policy, rather than be used as a vehicle to elaborate or embody their own policies. Numerous member States and other Stakeholders have suggested that the long list of policies and principles in draft regulation (DR) 2 be deleted. A better approach would be a simplified, and more comprehensively operational provision - wherein the suite of ISA policy documents are simply cross-referenced in DR2, with a requirement that the Regulations are implemented in conformity with them. These policy documents should be developed as a matter of priority (before the Regulations), and can contain many of the important points that are currently listed in DR 2.
3	138	The Guideline conflates routine risks from mining with those from accidents. Line 138 claims that risk assessment attempts to answer the question: 'What can go wrong?'. This applies to accidents/incidents but is not suitable for impacts of routing mining where the environmental risks arise not just when something goes wrong but indeed primarily arise from routine and "successful" mining operations. See also general comment - "Purpose of the Guideline"
4	166-181	A list of stakeholders is provided which is largely the same as for the EIA and would be consulted on environmental matters anyway. Since the focus of hazard and risk assessment should be on equipment failure, accidents and other unwanted events which may lead to consequences for people and the environment, possibly the most important stakeholder groups are those involved in designing and operating the equipment. Involving these personnel in undertaking the risk assessment and developing risk management and Health Safety and Environmental (HSE) plans will be critical for HSE risk management. Methods could include dedicated workshops, highlighting where safety systems or procedures do not have the benefits claimed, commenting on the accuracy of technical reports, and participating in training.
5	183	Regarding Section 3: "Risk Assessment Process": It is unclear how this guideline, and this section in particular, helps to inform the health and safety plan and environmental risk assessment included in the scoping report and the final EIA (in the submitted EIS). This section needs to clearly define how it relates/interacts with components of the Plan of Work that require a risk assessment. As stated in general comment above "Relationship between Guidelines" It actually might be helpful to break this guideline up into a few sections, with the first describing Hazard and risk assessment-identified failure modes, accidents etc., their likelihood of occurring and the characteristic of the event (environmental and/or health and safety - the material released, volumes, flow rates, location; health and safety) and the subsequent sections describing how section 1 interacts with various components of

		the Plan of Work (e.g. Scoping Report's environmental risk assessment, EIA's final environmental risk assessment, EMMP, Health and Safety Plan, etc.). We believe reframing and restructuring this document so that it is focused on unplanned events and clarifies how it interacts with the regulations, other S&Gs, and REMP will considerably improve its implementation. see general comments - "Purpose of the Guideline" and "Relationship with other Guidelines"
5	185	What is "section 2.1"? Is this instead a reference to 2.A? Cross-references throughout the document should be checked and confirmed.
5	191-195	Para. 16 and table: The largest risks of unwanted events will stem from equipment failure or equipment not operating (or not being operated) as intended. The equipment design stage and testing of prototypes building up to the development of commercial scale equipment and preparing operational procedures are the times to address hazards and risks (and barriers and controls); this is not made sufficiently clear and should be emphasized above all else.
5	Table	Row 3 Column 3 - Regarding "EIA (guideline 2)" This should also reference the EIA Standard. Also, it would be helpful to specify which regulations, Standards, and Guidelines are relevant, rather than the document as a whole. This applies to other rows of the table.
6	218	Defining the risk criteria should not be left to the Contractor. This should be provided by the ISA through an Environmental objective, trigger and threshold Standard and relevant REMP and referenced here.
7	227	"One particular aspect of deep seabed Exploitation that complicates the assessment of environmental impacts is that there is a lack of scientific certainty associated with deep sea species and ecosystems". While there are precedents for the safety of surface vessels, this ignores the difficulties of working at such depths, which cannot be further specified since the technologies are not known. The reference to the ALARP principle is misplaced, to the extent that it addresses risks to the marine environment, since the objective is effective protection of the marine environment, under Article 145 of UNCLOS. Article 145 is not qualified by 'as long as the damage is as low as reasonably practicable'.
7	236	Regarding "ALARP": See earlier comments. This should reference para. 79.
7	253-265	Lines 135, 136 and 138 state: Risk assessment attempts to answer the following fundamental questions: "What can go wrong?" The items in lines 253 to 265 should focus exclusively on things that 'could go wrong' and give examples accordingly. Noise, changes in water composition, and sediment plume effects are all among things that will happen as unavoidable and expected side effects of exploitation, not

		as the result of something (equipment failure, human error, outside agency) going wrong. As such, many of the items in this list are confusing and should be amended
8	280-289	Para. 23 implies that less rigorous risk assessment techniques could be used for surface versus seabed operations . This is flawed for two reasons: • Risk to human health and life will be restricted to the surface operations and needs to be addressed rigorously. • While equipment will operate at depth and at the seabed, it will be intrinsically connected to surface systems and controls. The whole operation from surface to seabed needs to be assessed with the same level of rigor. Suggest that this paragraph is reworded accordingly.
10	342-344	This para. should reference the regulations/standards that require the review of competent persons and/or submission of documentation to verify qualifications. This includes the EMMP (see Annex VII). We have also proposed in our other comments that these reviews be a part of scoping report and EIS, so those should be included here if they are accepted.
12	419	It would be useful to point out that the EIA's role should include assessing environmental consequences based on information provided from the risk assessment, as the competency for doing this would sit in an EIA team and not with process safety professionals.
14	478-482	It would be helpful for contractors to have an example of taking a precautionary approach for the ERA. Suggest expanding on this point in the EIA S&G, as it will be fundamental to the contractors producing satisfactory ERAs, and cross-referencing para. 78.
14	485	Replace: "purist" with "purest"
14	490-491	Regarding "(refer to guideline 2: EIA/EIS)": These documents do not list thresholds. This should reference an Environmental Objective, triggers, a Standard on thresholds and/or the relevant REMP. However, these have yet to be created, or in the case of the CCZ REMP have yet to include this information.
15	544	Regarding "Cumulative Risk": This part of the guideline is confusing as it is effectively describing the sort of cumulative effects assessment that would be addressed in the EIA. In the context of hazard and risk assessment, cumulative risk is something quite different. If an item of a plan, procedure, or person does not function as effectively as intended, then this represents a deviation from the norm (which could lead to an accidental or unwanted event) and needs to be managed through suitable control measures. However, the management of each deviation individually may not necessarily ensure that the cumulative risk of several deviations acting together is properly managed. Cumulative risk assessment is an approach that covers the risks and management of multiple deviations, including from their interaction.

		Moreover, cumulative risks are inadequately defined in the draft Regulations (Schedule 1): they should not be restricted to mining impacts. Cumulative impacts must include other activities such as fishing or cables, climate change, ocean acidification, de-oxygenation and other stressors. The definition of "Environmental Effect" includes such a restriction on cumulative impacts to "cumulative effect arising over time or in combination with other mining impacts." This implies cumulative impacts only include mining impacts.
16	562	Regarding "Risk Treatment": Risk treatment is presented as coming after evaluation of risk whereas many 'treatment measures' will be inherent in equipment design, operational procedures, etc. This is where a 'bow-tie approach' or similar is beneficial and should be discussed. See general comment - "Hazard Identification, Risk Assessment, Controls and Equipment Design"
17	Figure 6	The part of this text concerning environmental controls overlaps with the remit of the EIA and would best be removed. See general comment - 'Purpose of the Guideline"
17	606-608	Risk controls are not only reflected in health and safety and environmental plans but should also be incorporated into equipment design and operating parameters, operational procedures and working methods so that they are applied, monitored and reviewed on an on-going basis.
18	627-634	The triggers for review are not suited to hazard and risk management. The first trigger for review should be a 'near miss' and not an actual incident. Other triggers should include changes to operating procedures, introduction of new equipment, changes in Sponsoring State health and safety legislation. Additionally, the regulations, or some other binding document, should require that all Contractors be made aware of a notifiable event reported by another Contractor and then be required to review their own relevant plan (risk management, health and safety etc.).
18	642-643	This should be part of the Environmental Management System and as such this should reference the supporting regulation and Standards and guidelines, which have yet to be developed.
19	695	Relevant stakeholders should be further specified in Regulation 3 beyond "Undertaking educational awareness programmes for Stakeholders" in 3(f)(4).
19	714-715	In a comment above (page 5, line 183) we proposed that it may be helpful to break this guideline up into a few sections, with the first

		describing hazard and risk assessment-identified failure modes, accidents etc., their likelihood of occurring and the characteristic of the event (environmental and/or health and safety - the material released, volumes, flow rates, location; health and safety) and the subsequent sections describing how section 1 interacts with various components of the Plan of Work (e.g. Scoping Report's environmental risk assessment, EIA's final environmental risk assessment, EMMP, Health and Safety Plan, etc.). We further propose that this new section 1 could follow the outline provided in para. 72. Under each of the headings it could describe what content is required and recommended for each section. The subsequent sections could then describe how the proposed hazards risk management template interacts with other components of Plan of Work.
20	767	"Design the risk management program to reduce the risk of Incidents as much as reasonably practicable, to the point where the cost of further risk reduction would be grossly disproportionate to the benefits of such reduction, taking into account the relevant guidelines". As noted before, this is not consistent with the Convention, which does not provide for cost thresholds to conducting damaging activities.
Additional rows can be added to this table by selecting "Table" followed by "insert" and "rows below"		

TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft standard and guidelines for the safe management and operation of mining vessels and installations
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General Comments

Defining 'Mining Vessels and Installations'

It would be helpful to clarify in the Standard (and in the Regulations) that 'mining vessels and Installations' includes all equipment used by a Contractor in the Area for the purposes of delivering the contract including machinery operating on the seafloor and in the water column e.g. autonomous or remotely-operated vehicles cutting or collecting seafloor material, riser pipes or other transport systems bringing that material to the ship, other sub-sea equipment that may be mobile or tethered and which is used to monitor the mining activity etc.

New Regulatory Challenges for Seabed mining

The ISA's recent Technical Study 25 (accessible here, https://www.isa.org.jm/index.php/node/20152) noted: "*There will also be a range of other technologies, not easily captured by the definition of 'ship' if at all, such as seabed excavators, collectors and pipelines. They are not addressed by IMO regulations and might raise new regulatory challenges for ISA.*" It is unclear whether this point may was considered in the preparation of this Standard and Guideline. It would be helpful to understand how the ISA intends to address the potential regulatory gap around these types of machines, before attempting to finalize this Standard and Guideline.

Process for Developing Standards and Guidelines

As stated in our cover letter and in other S&G general comment sections, it is difficult to comment on any of the Standards/Guidelines before the Draft Regulations (DR) are finalized. We note that the LTC had previously highlighted its intention to elaborate DR30 further, upon receipt of a report from the Secretariat [ISBA/25/C/18, July 2019]. It would be useful to have a status update regarding this elaboration and for these subsidiary instruments to be developed after production of the text of the Regulations.

Safety Management System

Indeed, the draft Regulations themselves are currently deficient in covering the requirement for each contractor to implement an adequate safety management system. DR30 as drafted requires a safety management system, but does not provide details as to the required content of that system,

or a role for the ISA in reviewing its adequacy. We recommend the following amendments to the draft Regulations, to remedy those gaps, and to bring the regulatory requirements regarding human health and safety into alignment with similar requirements applied towards, for example, environmental health in the Regulations:

- DR13(3) [Assessment of Applicants] - add a new sub-paragraph (f) so that, in considering the technical capability of an applicant, the LTC shall determine whether the applicant has provided sufficient information to demonstrate it has a safety management system that meets the requirements of the regulations [and specifically DR30 bis].

- Add a new 'Regulation 30 bis. Human health and safety management system' (see below), which should mirror DR46's requirements for an Environmental Management System. Suggested wording, below.

"DR 30 bis Human health and safety management system:

When conducting its operations, a Contractor shall develop, implement and maintain a safety management system, in accordance with Standards and taking account of the relevant Guidelines.

A Contractor's safety management system shall:

1. Be capable of delivering site-specific safety objectives and meeting performance requirements specified in the Health and Safety Plan and Maritime Security Plan;
2. Cover occupational health and safety and process safety, including with regards the selection or design of assets, facilities, equipment and materials;
3. Permit effective reporting to the Authority in connection with safety performance;
4. Be independently verified annually by an internationally recognized provider of verification services acceptable to the Authority;
5. Promote inclusivity and gender equality; and
6. Be in accordance with Good Industry Practice and internationally recognised standards.

A proposed change to a Contractor's safety management system shall be treated the same as a modification of a Plan of Work, pursuant to regulation 57 mutatis mutandi.

Compliance with this Regulation is a fundamental term of the contract, for the purposes of Regulation 103."

See related general comment in Hazard Identification and Risk Assessment Guideline "Need for Safety Management System and Environmental Management System"

Relationship to 'Annex VI: Health and Safety Plan and Maritime Security Plan'

The draft Regulations also await content in 'ANNEX VI: Health and Safety Plan and Maritime Security Plan' - this part of the Regulations is currently blank '*To be populated following discussion with the International Maritime Organization secretariat, members of the Authority and Stakeholders*'. It would be helpful to understand: Who is conducting this discussion, and when will a draft Annex VI be produced, for comments? It is challenging, until this part of the Regulations is completed, to attempt to develop the Standards and Guidelines that will necessarily relate to and implement that content of the Regulations.

Relationship Between the various Standards and Guidelines

The Standard and Guideline lack detail and are imprecisely drafted. It places the Safety Management System entirely into the hands of the Contractor and offers no additional regulatory control. There seem to be significant differences between the substance and style of this Standard and Guideline, and that of others. It may be helpful for the LTC to consider comments upon and revisions of this Standard and Guideline together with those upon the EMS Standard and Guideline and aim for alignment and complementarity between the two.

More Detailed References to Other International Standards

It does make sense for the ISA to rely upon existing (or future) international standards for the protection of human life adopted by other international organizations (IMO and ILO), rather than ISA developing its own. And this may explain to some extent the brevity and lack of substance in this draft Standard and Guideline. However it would be helpful for this context to be properly explained in the documents, and for the ISA expressly to (a) sign-post where it expects other regimes/documents/regulators to take a primary role, and (b) identify remaining regulatory gaps and seek to fill those. As currently drafted, the Standard and Guideline do not fulfil that function.

Workplace Conduct and Safety

It would be welcomed if the Standard and Guideline were to address gender-related safety at-sea issues, and freedom from harassment in the workplace. We would welcome the express signal that the ISA places importance on such matters and always requires appropriate conduct from Contractors and their staff.

Additionally, on behalf of the Contractors, the ISA should also explore with commercial providers the means of providing full and reliable internet connectivity for ships and installations operating in the Area. Connectivity should be considered a priority in terms of safety and crew welfare - as well as environmental monitoring reporting in real time.

Specific Comments

Page	Line	Comment
2	4	Consider not capitalizing “Mining Vessels” which implies that it is a defined term (it has not been defined either in the Regulations, or in this Standard)
2	7	Regarding “mining vessels and installations” – Installations' is a defined term in the Regulations, which "includes, insofar as they are used for carrying out activities in the Area, structures and platforms, whether stationary or mobile". The Standard therefore introduces an inconsistent definition, which may give rise to ambiguity or dispute about what specifically is covered. E.g.1 the Standard definition includes vehicles used in the 'support and conduct' of activities, whereas the Regulations' definition includes only those directly carrying out the activities. E.g. 2 the Standard definition includes vehicles used (only) for mining, whereas the Regulations' definition also includes vehicles used for other 'activities in the Area' (i.e. exploration, which may be conducted under an exploitation contract).
2	10	Suggest deleting paragraph 2. Para 2 appears to repeat some of the content of DR30, though in slightly different terms. This seems unnecessary and

		confusing. A direct quotation from and cross-reference to DR30 could be used in its place if it is considered helpful context for the Standard.
2	10	"Add 2bis: For the purposes of this Standard and the Regulations, international maritime safety and navigational rules shall apply to all ships on all voyages engaged in activities in the Area." Rationale: It is noted in the ISA's recent Technical Study 25 that there may be a loop-hole whereby ships that depart and return to the same port are classed as conducting domestic voyages, and thus evade coverage by international convention rules. Hence, we have included some placeholder language here as a proposed 2 bis. to cover this point. However, we consider it would be better for the point actually to be covered in the Regulations themselves, not in this subsidiary instrument.
2	14	Regarding para 3, as noted in general comments, above, we suggest the following should be the stated requirements of the safety management system: • Be capable of delivering site-specific safety objectives and meeting performance requirements specified in the Health and Safety Plan and Maritime Security Plan; • Cover occupational health and safety and process safety, including with regards the selection or design of assets, facilities, equipment and materials; • Permit effective reporting to the Authority in connection with safety performance; • Be independently verified annually by an internationally recognized provider of verification services acceptable to the Authority; • Promote inclusivity and gender equality; and • Be in accordance with Good Industry Practice and internationally recognized standards."
2	19	3 (b) Some more information about how this aligns with, and does not overlap with, the Emergency Response and Contingency Plan would be helpful. It is difficult to comment on this, while Annex VI [content of the Health and Safety Plan and Maritime Security Plan] remains uncompleted in the draft Regulations.
		3 (c) Would be helpful to clarify if the intention here to make compliance with these ISO Standards compulsory? If not, then 'or equivalent' wording may help clarify.
4	48	Regarding para 1: Including this definition here, in the Guidelines, does not apply the same definition to the Standard. Also, as noted above, 'Installations' already has a defined meaning in the Regulations, which differs from the definition here. This needs to be rectified. The drafting here also would benefit from polishing (e.g.1 'By vessels is meant... By installations are meant...'; e.g. 2

		use of 'mining' which is not a defined term for the purpose of the Regs, and may be understood by different readers to include different activities.)
1	57	"These Guidelines apply to Mining Vessels and Installations intended to be deployed for activities ~~exploitation~~ in the Area under an ISA exploitation contract."
1	64	"The purpose of these Guidelines is to describe how a Contractor can achieve safe management and operation of Mining Vessels and Installations engaged in the Area by minimizing risk and prioritizing protection of"
1	70	Para 4 notes the role of national laws. These documents could be more helpful if they expanded on identifying what national rules / responsibilities lie with the sponsoring State, and which lie with the vessel flag State
1	85	Do not capitalize "Sub contractors" since it is not a defined term
1	89	~~"Prior to deployment of a mining Facility into service,~~ the Contractor should, in its application to the International Seabed Authority for approval of a plan of work, document operational intent and profile of its Mining Vessels and Installations following the topics set out in Figure 1 and providing relevant evidence ~~documentation~~ as necessary." As a general comment, para 7 should note where in its application this should be documented. Clarification on whether it should be included in the Emergency Plan, part of the Mining Workplan, EIS or the EMMP, the Health and Safety Plan and Maritime Security Plan or some other standalone document would be helpful. It would also be beneficial if this requirement could cross-refer to the relevant Regulation(s) setting out the requirements for the application for a Plan of Work. Additionally, it is also worth noting that the content of this paragraph reads like a requirement. In which case it should be drafted as a 'shall' and should be moved into the Standard.
2	93	This figure's reference to 'management system' is confusing. Does it mean the 'safety management system' or the 'environmental management system' or both or something else? Similarly, clarify what the 'safety management and operation plan' is? This has not been mentioned at any point in the Regs, or in the Standard... Does it mean the safety management system? Or the 'Health and Safety Plan and Maritime Security Plan'?
2	96	Please provide source for the table and adapt to the ISA regime. Similar to above comment, it is confusing to know how these provisions would overlap with the Emergency Response and Contingency Plan, and parts of the regulations that deal with Incidents and Notifiable Events and responses to those.
3	111	We note that these referenced guidelines are very Euro centric. Also, some of the guidelines have been withdrawn and are dated to almost 25 years back. Please provide rationale for inclusion.

3	130	Clarify what or who is meant by the term "operator". The ISA has a contractual relationship with the contractor (only), and international rules bind States (only). So. it is unclear what the Guideline is trying to do here: address third parties who are not bound by ISA rules? We recommend that the ISA instruments should focus on contractors and States (and require them to impose equivalent standards on third parties they may use e.g. to operate their machinery or crew their vessels). Para 11 requires more clarity. It is unclear who the 'operator' would be responsible to, what the "various requirements" being referred to are, and what is meant by "drawings".
3	133	Clarify what regulatory regime is being referred to
3	135	This para needs clarification – what is meant by ultimate responsibility
4	139	The meaning of this chart is not very clear. What is meant by the large 'verification' box at the top? Is this about ISA's verification of compliance, or the Contractor's own verification, or a third party verification service?
4	142	Para 15 notes that the maritime system *should* comply with Classification Rules. Does 'should comply with' imply that certification of classification of the vessel is a requirement? Or is it optional? This should be clarified (and if it is a requirement, this point should be moved to the Standard or the Regs).
4	151	"The Contractor should ensure that its safety management system adequately covers the ~~Mining Vessels and Installations engaged in mining operations have an adequate safety management system covering the~~ interface between the maritime / shipping operations ~~for marine~~ and the mining operations."
4	157	This section should provide specifics about how the Contractor can ensure compliance of its operations with health and safety, and maritime safety rules. What monitoring programmes should be implemented? What roles and responsibilities should be assigned within the Contractor? What audits should be carried out? Are third-party audits recommended? A plan-do-check-act / contingency /feedback loop / corrective actions approach, aiming for continual improvement, should be required.
4	161	"Compliance with rules and regulations (also for those aspects covered in section IIIB Technical and operational safety regime) is key to maintaining ~~a minimum level of~~ human safety both at the design stage as well as in operations"
4	162	It is confusing to understand what "design system" is being referred to here - the safety management system or the mining system
4	165	Para 21 notes that there are "gaps when it comes to the operational side of mining systems". In that case, clarify what the gaps are and what the ISA's duties are to provide rules to fill those gaps
4	172	~~"Compliance demonstration should be proportionate to the magnitude of risk.~~" Suggest deleting line 172 because the programme of monitoring and demonstrating of compliance should be designed to ensure compliance with all rules and activities, not just the highest risk ones. The requirements for a Contractor to evidence compliance with ISA rules are a matter for the ISA to

		set. These may require periodic reporting as a matter of course, and that reporting may be increased according to a number of factors. Magnitude of risk may be one, but there may well be others e.g. compliance track record of the contractor, particular sensitivities of the activities (e.g. proximity to another contractor / marine activity).
5	193	The last sentence would be better served earlier in the document – prior to the paragraphs about risk assessment
Additional rows can be added to this table by selecting "Table" followed by "insert" and "rows below"		

TEMPLATE FOR COMMENTS

Document reviewed	
Title of the draft being reviewed:	Draft standard and guidelines for the preparation and implementation of emergency response and contingency plans
Contact information	
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General Comments

Using Existing Industry Experience Appropriately

Terms within the document such as the Emergency Preparedness Assessment and Defined Situations of Hazards and Assessments are taken verbatim from the Norwegian Oil and Gas Industry regulatory documents. While the consideration of existing mechanisms in other industries is supported, copying of text and terms from other documents verbatim creates inconsistencies with other regulatory documents and fails to account for the unique context of the Area. It is recommended that these terms be removed from the document throughout, and that terms relevant to the Exploitation Regulations (such as the Emergency Response and Contingency Plan, the Environmental Management and Monitoring Plan, the Plan of Work, etc.) be used instead.

Structure and Content

The structure and content of the document is highly reflective of the Norwegian oil and gas industry regulatory guidance documents. Again, while context from existing offshore industries is relevant, the structure and content proposed in this document is not necessarily fit for purpose for seabed mining, and does not reflect the content or intent of the draft exploitation regulations. The document would be improved with clear sections (in order) on:

- Purpose and scope
- Objectives
- Scope - Aspects/elements of a Plan of Work to which this Plan applies (i.e. does the plan apply to the support vessel, but not ore transport vessels?)
- Policy and legal framework – including reference Exploitation Regulations, Sponsoring State regulations, and other international treaties/conventions (which have been listed as a comment below), reference to other plans/documents such as the EMMP, Plan of Work, etc., and reference to other Standards and Guidelines such as Risk and Hazard Assessment, Health and Safety Plan, etc.
- Identification of potential incident scenarios
- Management framework, roles and responsibilities, for incident response
- Development of management actions in response to incident scenarios
- Communication and reporting during and after an incident

- Monitoring of the environment following an incident
- Process Improvement - Review of this Plan, and other plans such as the EMMP, following an incident, and/or following internal audits and inspections
- Training and Awareness

Specific Comments		
Page	**Line**	**Comment**
3	43	"This Standard applies to assets ~~intended to be~~ deployed for, or in support of, exploitation of mineral resources in the Area, and sets out mandatory requirements for the preparation and implementation of emergency response and contingency plans."
3	44	"This Standard shall be read in conjunction with the ~~equivalent sections in the~~ Emergency Preparedness and Response Guidelines"
3	52	"While identifying ~~accidental~~ potential incident scenarios, it is important to consider the mitigating actions towards controlling the risk of such incidents. An emergency response and contingency plan is seen as a vital contributor to mitigating such risks."
3	56	"The objective of this Standard is to describe the process for preparing and implementing emergency response and contingency plans for managing accidental events incidents that could potentially occur during mining operations in the Area."
3	62	"7. The Contractor shall carry out a hazard identification process that provides a balanced and ~~most~~ comprehensive ~~possible picture~~ representation of potential ~~of the~~ hazards associated with the mining activities in order to inform the development of an Emergency Response and Contingency Plan. The hazard identification process shall include specific consideration of hazards and scenarios associated to every process, operation and phase covered by a Plan of Work Application, and will include human and environmental factors as well as consideration of processes and tasks. Hazards associated with human error and the natural environment will also be considered. ~~be appropriate as regards providing support for decisions related to the upcoming processes, operations or phases.~~"
3	67	"Risk analyses shall be carried out to identify and assess the potential cause, likelihood and consequence of each hazard occurring, in order to identify appropriate actions and management strategies to both prevent and respond to incidents when they do occur. Where relevant, international standards associated with risk identification and management (such as ISO31000) should be used to guide the Contractor's hazard and risk identification process. ~~what can contribute to, i.e., major accident risk and environmental risk associated with acute pollution, as well as ascertain the effects various processes, operations and modifications will have on major accident and environmental risk.~~"

3	72	"The Contractor shall ensure that the Emergency Response and Contingency Plan is embedded into the ~~prepare an emergency preparedness manual, which shall capture the essence of this Standard with relevant links to the~~ Contractor's Health, Safety, Environment, Quality (HSEQ)/Management systems, and that mechanisms associated with accountability, reporting, external notification and communications, and monitoring are consistent with the HSEQ systems and procedures."
4	82	"The Contractor shall consider, for each scenario identified during the hazard identification process, a suite of possible contingency actions appropriate to the likelihood and consequence of each hazard materializing in the form of an incident. ~~In the contingency planning, the Contractor shall consider and cover the major categories of scenarios that are foreseen to occur.~~ For ease of implementation, contingency scenarios may be grouped into potential incident categories such as collision, grounding, fire and explosion (including uncovering of unexploded ordinances), ~~pollution incidents~~ spills and pollution, equipment failure, health and safety incidents (including medical emergencies), security incidents (including civil unrest) and natural environment incidents (such as storms or seismic events), etc."
4	86	Delete para 12
4	91	Delete para 13
4	95	Delete para 14
5	105	"15. The Contractor shall define the objectives for the emergency preparedness assessment relevant for ~~the project phase for the system(s)~~ all phases of the proposed operation, including construction, commissioning, steady state operations and decommissioning and closure. The objectives shall be suitable for the purpose of the assessment, particularly with respect to providing sufficient and appropriate input to the decision-making at the right time. The defined objectives for the emergency preparedness assessment (and its included elements) shall be documented. The Contractor shall ensure the Objectives of the Plan include at a minimum: • Provision of a framework for preventing and managing the impacts of incidents and emergencies; • Detail of activities to be undertaken during an incident or emergency to minimize the effects of such an event; • Provision of a communications framework for internal and external communication during an incident, including with the ISA, Sponsoring States, Flag States, external groups including the media, close proximity operators (such as other shipping vessels in the area) and employees' next of kin; • Provision of a framework for monitoring the effects and impacts arising from emergencies and incidents, including but not limited to the monitoring of environmental impacts, human health and safety, and status and condition of assets."

	110	Add "15bis: The Plan must conform with the requirements of the Exploitation Regulations in relation to the notification of emergency incidents to the ISA, and the procedural assessment of the circumstances in order that the Contractor may be obliged not to continue or proceed with any activities under the Plan of Work where those activities may contribute to the continuation of an incident or emergency situation, or prevent the timely and effective management of such an incident."
5	113	"16. The Contractor shall define the scope of the emergency preparedness ~~assessment~~ and contingency plan, which shall include, ~~as a minimum, a) defined analysis objects or, in other words~~, the scope of installation(s), plant(s), system(s), activity/activities, operation(s) and/or phase(s) that ~~are~~ will be included in the plan. ~~the subject of analysis and b) a description of activities to be carried out. Guidance on subjects to include in the emergency preparedness assessment is included in the Guidelines.~~ 16bis. The Contractor shall stipulate in the Plan the extent to which the Plan conforms with the requirements of the Exploitation Regulations and any supporting Standards and Guidelines, as well as other international conventions including, but not limited to: • International convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL); • International Convention on the Safety of Life at Sea 1974 (SOLAS); • Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREG) • International Convention on Standards of Training, Certification and Watch Keeping for Seafarers 1978 (STCW)."
5	121	"17. The Contractor shall identify and describe the premises for the emergency preparedness ~~assessment~~ and contingency plan. The premises shall, as minimum: (a) define the purpose of the ~~assessment~~ plan in accordance with the needs of the activity; ~~(b) identify and describe the target groups for the results of the assessment;~~ (c) identify relevant regulations, possible classification society rules and applicable… (f) identify relevant risk assessment ~~premises and~~ assumptions that may influence the ~~EPA~~ development of the plan; and g) identify relevant operational ~~premises~~ activities and phases covered by the plan ~~for the EPA.~~"
5	134	"D. Define roles and responsibilities"
5	136	"18. The ~~Contractor,~~ Plan ~~with other involved parties~~, shall define the roles and responsibilities related to the implementation of the Plan, including the responsibilities associated with ensuring the Plan is implemented by both the Contractor organization(s) and any relevant subcontractors. The Plan

		shall illustrate the extent to which the organizational structure and systems in relation to roles and responsibilities align with those in the HSEQ Management System. ~~planning and execution of the entire process and the elements and the various tasks/activities.~~ ~~the involved parties mean the Contractor, Contractor's organisation, subcontractors if relevant and other external participants that are likely to play a role in the mining operations. This process shall be undertaken in consultation with the sponsoring State(s), the flag State(s), coastal States and other entities having relevant jurisdictional competence or rights and legitimate interests with regard to specific components of the plan.~~ The development of roles and responsibilities will be undertaken with respect to the responsibilities for interacting with, reporting to, and complying with the requirements of, external parties such as Sponsoring States, Flag States, Coastal States and the International Maritime Organization, in relation to emergency response. Add 18bis: The definition of roles and responsibilities in the Plan shall also include the roles and responsibilities associated with communication of information internally and externally, during and after an emergency or incident."
5	144	"E. ~~Competence and participation in EPA~~ Content of the Plan"
	145	"For minor or less severe incidents, the Contractor shall, as part of the Emergency Response and Contingency Plan, develop guidance to assist relevant internal staff to implement contingency strategies applicable to the circumstances. Such guidance may include decision trees, or steps to be undertaken in the event of an incident to secure human health and safety and prevent harm to the environment. The Contractor shall include and document, in relation to environmental risks, an assessment of pollution hazards and the measures to prevent or reduce such hazards, for example, mining discharges and measures to control such discharges."
6	151	"Add: F. Competence and Expertise of Contributors"
6	154	Delete Section F
6	159	Delete Section G
6	176	Delete Section H
6	185	Replace Para 25 with: "The Contractor shall ensure that any contingency measures in relation to incidents that may have harmful effects on the environment are aligned with the guidance and intent of the Environmental Risk Assessment and the Environmental Impact Statement. Any amendment to the Plan of Work and subsequent Environmental Risk Assessment and Environmental Impact Statement should include an amendment to the Emergency Response and Contingency Plan to ensure consistency in relation to response measures and to confirm the project continues to have appropriate emergency response measures in place relative to the environmental risks associated with the Plan of Work."

6	196	Delete para 26
7	199	Delete para 27
7	203	Delete para 28
7	208	Delete para 29
7	214	Delete para 30
7	219	Delete para 31
7	230	Replace para 32: "The Emergency Response and Contingency Plan shall set out the structure and function of the internal groups, both on board and on shore, which will have responsibility for the implementation of the Plan. This may involve such designations as the Incident Response Team, for both vessel and shore-based management aspects associated with emergency response Add para 32bis: The Plan shall set out the manner in which internal groups or teams are comprised, established, and the triggers which may result in the formation or commencement of operation of such a team. The Plan shall establish the function(s) of the teams both in general, and (where appropriate) under specific emergency scenarios. The Plan shall also set out the manner in which the teams will communicate with internal stakeholders, including clear links to roles and responsibilities associated with emergency response. The Contractor shall ensure that the Plan demonstrates that the capacity and function of emergency response teams is reflective of the nature of hazards and risks identified under the Plan."
7	238	Delete para 33
7	247	Delete para 34
8	252	Delete para 35
8	257	Para 36: "~~Together with communication lines, a notification process shall be established to inform or notify the relevant stakeholders in advent of an incident.~~ The Contractor shall ensure the Plan clearly sets out the manner in which communication of incidents and emergencies shall be managed, including reporting to the ISA, Sponsoring States, Flag States, and close proximity operators (such as other shipping vessels in the area). In addition, the Plan may include measures for internal communications, and communication to internal stakeholders such as employees and their next of kin."
8	260	Delete para 37
8	267	"VII. ~~DRILLS~~ Training, Awareness and Competency"
8	269	"Replace para 38: The Plan shall describe the manner in which the Contractor will ensure that all personnel responsible for the execution of the tasks and requirements contained within the Plan are competent on the basis of education, training and experience, and that each has received inductions appropriate to the specific emergency response measures outlined in the Plan. Add 38bis. The Plan will set out the training and induction activities associated with the implementation of the plan, which may include but not be limited to:

		• Formal site inductions; • Training needs analyses; • Implementation of a training matrix developed in relation to the content of the Plan; • Delivery of daily briefings on risks, hazards and incidents; • Procedures for implementation of training drills, and the recording of performance and improvement measures identified as a result of the implementation of drills; • Record keeping of training undertaken in support of the Plan.”
8	276	Delete para 39
8	284	Replace para 40 – “The Plan shall establish a schedule for periodical internal and external audits and inspections in relation to the processes and infrastructure associated with emergency response. The Contractor shall establish a process within the Plan for auditing and inspections in relation to its own operations, as well as those of any subcontractor, as well as operators that may interact with the Contractor’s infrastructure (such as contractors operating ore transfer vessels and personnel transfer vessels or aircraft)”
8	288	Delete para 41
8	295	~~“The second type of audit involves the Contractor who shall audit the subcontractor and its asset(s).~~ The Contractor shall be responsible for documenting such audits and maintenance of a separate register for non-conformities and observations along with the audit report. ~~Such audits shall be conducted at least once a year.”~~
9	300	“Where relevant, the Contractor shall establish under the Plan a process for the independent external auditing of both contractor and subcontractor operations. ~~The third type of audit involves external party audit of the Contractor and the subcontractor. The basis for such an audit shall be the audit reports from both the subcontractor and the Contractor. However, the audit shall be carried out independently and may cover additional scope beyond what has been reported. It shall also be possible to align the audit to coincide with a drill to enable active participation from all parties.~~”
9	308	Replace para 44: “The Plan shall outline a clear process by which outcomes of any incidents or emergencies, as well as the outcomes of inspections, audits and drills shall be used to drive continuous improvement in emergency planning and response. The Plan will also demonstrate the process for capturing the outcomes from any continuous improvement processes in the form of updates to the Plan. Any updated Plans will be submitted to the ISA as part of the Annual Reporting Process. However, in some circumstances it may be necessary to amend the Contractor’s Plan of Work in order to reflect continuous improvement in emergency planning and response. In such circumstances the Contractor will submit an updated Emergency Response and Contingency Plan to the ISA in support of any such amendment.”
9	314	Delete para 45

9	317	Delete para 46
9	332	Delete para 50
9	334	Delete para 51
11	380	"The scope of an ~~Emergency Preparedness Assessment (EPA)~~ Emergency Response and Contingency Plan is to ~~update~~ clearly set out the response strategies, performance requirements, emergency preparedness organization and measures to be implemented in the event of an emergency during all phases and across all aspects of the project ~~cover the design, construction and operational phase. The objective of such an analysis is to provide the necessary basis for the emergency preparedness plan and the exercise and training plans, in accordance with the Standard.~~"
11	388	The objectives for the ~~EPA~~ Plan should be clearly defined ~~for each phase~~. The objectives may be function-based, goal-based or a combination of the two, depending on the framework chosen for establishing the EPA. Functional objectives are those that relate to the specific functions of a given phase while goal-based objectives are focused on achieving specific parameters within each phase.
11	396	"Add 4bis. The Contractor shall ensure the Objectives of the Plan include at a minimum: • Provision of a framework for preventing and managing the impacts of incidents and emergencies; • Detail of activities to be undertaken during an incident or emergency to minimize the effects of such an event; • Provision of a communications framework for internal and external communication during an incident, including with the ISA, Sponsoring States, Flag States, external groups including the media, close proximity operators (such as other shipping vessels in the area) and employees' next of kin; • Provision of a framework for monitoring the effects and impacts arising from emergencies and incidents, including but not limited to the monitoring of environmental impacts, human health and safety, and status and condition of assets. Add 4ter. The Plan must conform with the requirements of the Exploitation Regulations in relation to the notification of emergency incidents to the ISA, and the procedural assessment of the circumstances in order that the Contractor may be obliged not to continue or proceed with any activities under the Plan of Work where those activities may contribute to the continuation of an incident or emergency situation, or prevent the timely and effective management of such an incident."
11	396	The scope should clearly define the assets, infrastructure, processes, tasks and personnel which the Plan covers. ~~object being addressed, i.e. installation, system, plant, activity, etc. and the description of actions involved for the object being addressed.~~

		~~Depending on the system(s) subjected to the assessment and the objectives of the process, the emergency preparedness assessment may include establishment of escape, evacuation and rescue (EER) strategies.~~
11	402	"Define Roles and Responsibilities"
11	404	~~"While~~ The Roles and Responsibilities of the Contractor organisation in relation to the implementation of the Plan must be clearly defined, including an accountability structure, and processes for managing performance in relation to the implementation of the Plan. ~~defining responsibilities, it is imperative to factor in the necessary competence of the personnel involved and ensure sufficient level of authority within the respective organizations to execute relevant tasks expected out of the responsibilities. As an example, organizational hierarchy should not hinder the level of authority while executing the aforementioned responsibilities."~~
12	414	"7. The Contractor shall ensure that expertise is gathered from within the Contractor organisation and, where relevant, external organizations with relevant experience and expertise in emergency response and planning, in order to inform the development of the Plan. ~~An example of relevant personnel to be included and involved in life-cycle phases during an EPA is as follows:~~ ~~(a) operational experience (e.g. senior marine crew, mining crew etc.);~~ ~~(b) emergency preparedness assessment (regulatory requirements, methods);~~ ~~(c) HSE personnel;~~ ~~(d) external emergency resource representatives, if applicable and required."~~
12	423	Replace para 8: "The Contractor shall ensure that any contingency measures in relation to incidents that may have harmful effects on the environment are aligned with the guidance and intent of the Environmental Risk Assessment and the Environmental Impact Statement. Any amendment to the Plan of Work and subsequent Environmental Risk Assessment and Environmental Impact Statement should include an amendment to the Emergency Response and Contingency Plan to ensure consistency in relation to response measures and to confirm the project continues to have appropriate emergency response measures in place relative to the environmental risks associated with the Plan of Work."
12	431	Delete para 9
12	436	"For environmental emergency preparedness analyses, the Contractor should set goals for reduction of the environmental risk, including goals for protecting the vulnerable environmental KPIs prior to the emergency preparedness analysis. The analyses should also cover minor discharge incidents and measures to limit and combat these. ~~The selection of historical incidents should be considered so that an incident with a significant consequence is not excluded.~~"

12	445	Replace para 11: "The Emergency Response and Contingency Plan shall set out the structure and function of the internal groups, both on board and on shore, which will have responsibility for the implementation of the Plan. This may involve such designations as the Incident Response Team, for both vessel and shore-based management aspects associated with emergency response. The Plan shall set out the manner in which internal groups or teams are comprised, established, and the triggers which may result in the formation or commencement of operation of such a team. The Plan shall establish the function(s) of the teams both in general, and (where appropriate) under specific emergency scenarios. The Plan shall also set out the manner in which the teams will communicate with internal stakeholders, including clear links to roles and responsibilities associated with emergency response. The Contractor shall ensure that the Plan demonstrates that the capacity and function of emergency response teams is reflective of the nature of hazards and risks identified under the Plan."
12	450,454, 458	Delete para 12, 13, 14
13	464	~~"A suitably well manned and competent organization should be put in place to handle events that could have~~ The process for establishing the emergency response team should be sufficiently detailed to enable the response to large variations in terms of consequence and the probability of occurrence. It is also important to have links to the shore-based organization in coordinating efforts during an incident."
13	478	Replace para 17: "The Contractor shall ensure the Plan clearly sets out the manner in which communication of incidents and emergencies shall be managed, including reporting to the ISA, Sponsoring States, Flag States, and close proximity operators (such as other shipping vessels in the area). In addition, the Plan may include measures for internal communications, and communication to internal stakeholders such as employees and their next of kin."
13	496	"~~DRILLS AND EXERCISES~~ Training and Awareness"
13	497	Add "18bis: The Plan shall describe the manner in which the Contractor will ensure that all personnel responsible for the execution of the tasks and requirements contained within the Plan are competent on the basis of education, training and experience, and that each has received inductions appropriate to the specific emergency response measures outlined in the Plan. The Plan will set out the training and induction activities associated with the implementation of the plan, which may include but not be limited to: • Formal site inductions; • Training needs analyses;

		• Implementation of a training matrix developed in relation to the content of the Plan; • Delivery of daily briefings on risks, hazards and incidents; • Procedures for implementation of training drills, and the recording of performance and improvement measures identified as a result of the implementation of drills; and • Record keeping of training undertaken in support of the Plan.”
14	523	“The Plan shall establish a schedule for periodical internal and external audits and inspections in relation to the processes and infrastructure associated with emergency response. The Contractor shall establish a process within the Plan for auditing and inspections in relation to its own operations, as well as those of any subcontractor, as well as operators that may interact with the Contractor’s infrastructure (such as contractors operating ore transfer vessels and personnel transfer vessels or aircraft). 22bis. The Contractor shall be responsible for documenting such audits and maintenance of a separate register for non-conformities and observations along with the audit report. 23ter. Where relevant, the Contractor shall establish under the Plan a process for the independent external auditing of both contractor and subcontractor operations.” Periodical audits may be conducted either by the shore personnel or the personnel on board. However, it is recommended to conduct an audit by shore personnel as far as practical to ensure neutrality and also to avoid potential conflicts on board. The audits should have a structure that includes an audit intimation, an audit plan, minuting the meetings, logging of observations and non-conformities etc. The level of information capture from different types of audits may be categorized and logged according to the type of audit performed. Regardless of the type of audit, such logs should be made easily available upon request by ISA.
14	533	Replace para 23: “The Plan shall outline a clear process by which outcomes of any incidents or emergencies, as well as the outcomes of inspections, audits and drills shall be used to drive continuous improvement in emergency planning and response. The Plan will also demonstrate the process for capturing the outcomes from any continuous improvement processes in the form of updates to the Plan. Any updated Plans will be submitted to the ISA as part of the Annual Reporting Process. However, in some circumstances it may be necessary to amend the Contractor’s Plan of Work in order to reflect continuous improvement in emergency planning and response. In such circumstances the Contractor will submit an updated Emergency Response and Contingency Plan to the ISA in support of any such amendment.”

15	604	Consider how this section might be tailored further for mining operations. For instance, spills of cold, nutrient-rich, and potentially toxic, water might be released through processing and dewatering of the ore on the surface vessel and during transfer to the transport barges.
16	614	5. Add bullet to include 'leakage of the riser pipe' Add bullet to include an element relating to dewatering procedures and discharge pipe
Additional rows can be added to this table by selecting "Table" followed by "insert" and "rows below"		

Comments should be sent by e-mail to ola@isa.org.jm