



## **Template for the review of the draft standards and guidelines associated with the Draft regulations on exploitation of mineral resources in the Area**

### **I. Background**

1. The Draft regulations on exploitation of mineral resources in the Area ([ISBA/25/C/WP.1](#)) require that certain issues are addressed in accordance with, or taking into account, standards and guidelines to be developed by the organs of the Authority. The standards will be adopted by the Council and will be legally binding on Contractors and the Authority, whereas the guidelines will be issued by the Legal and Technical Commission or the Secretary-General and will be recommendatory in nature.
2. Stakeholders consultations are an integral part of the process decided upon by the Commission for the development of the standards and guidelines ([ISBA/25/C/19/Add.1](#)).
3. The Legal and Technical Commission will consider the comments received through the stakeholders consultation at its next session.
4. The drafts include a cover page containing substantive background and contextual information on the approach taken by the Commission in developing each standard and guidelines. Review comments are not being sought on this background information.
5. Issues of format and consistency across the standards and guidelines will be reviewed by the secretariat and Commission once the content of the various standards and guidelines is finalized following stakeholders consultations.

### **II. Submitting Comments**

6. To ensure that your comments are given due consideration, please send them by e-mail to [ola@isa.org.jm](mailto:ola@isa.org.jm), at your earliest convenience but **no later than the date announced on the ISA website for the relevant draft standards and guidelines**.
7. When submitting comments, please adhere to the following guidance as much as possible:
  - a. Please provide all comments in writing and in an MS Word .doc or .docx format using the table provided below.
  - b. The table format allows for an unlimited number of comments to be added. To add more comments, you may add more rows.

- c. Please provide full contact information for the individual/Government/organization submitting the comments.
  - d. Please avoid commenting on issues related to format, grammar, spelling or punctuation, unless it affects the overall meaning of the text, as the document will be formatted and edited when the final draft is prepared.
  - e. To facilitate the revision process please be as specific as possible in your comments. In areas where you feel additional or alternative text or information is required, please suggest what this text may look like or what information should be included.
  - f. Text may be copied from the draft into the table if stakeholders wish to use "track changes" in editing text (this is encouraged to ensure accuracy and avoid numbering errors).
  - g. If you refer to additional sources of information, please include these with your comments when possible or provide a complete reference or hyperlink.
  - h. All review comments will be posted on the ISA website, unless otherwise requested by the submitting entity.
8. Should you have any questions regarding the review process, please contact [ola@isa.org.jm](mailto:ola@isa.org.jm).

### III. Template for Comments

- 9. Please use the review template below when providing comments.
- 10. Line and page numbers have been provided in the drafts. Please use these as a reference as illustrated in the table below.

#### TEMPLATE FOR COMMENTS

<i>Document reviewed</i>	
<b>Title of the draft being reviewed:</b>	Draft Guidelines for the establishment of baseline environmental data
<i>Contact information</i>	
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*General Comments*

1. We broadly welcome the approach, to have clear, common guidelines for the establishment of baseline environmental data
2. We support the development of these guidelines to ensure that comprehensive information is gathered in order both to predict and assess the effect of any extractive activities on the seabed.
3. "The primary goal of the acquisition of baseline data is to enable an assessment of the possible impacts of exploration and exploitation activities on the marine environment prior to those activities taking place" – We support this goal and furthermore stress that for any subsequent assessment to be transparent, all environmental baseline information that is collected should be freely available and accessible, ensuring that any assessment can be replicated independently. Suggest the guidelines specify that Creative Commons licences, (perhaps Creative Commons Attribution-NonCommercial-ShareAlike) are used for any data produced by the project to ensure that this is possible.
4. In light of the primary goal stated above, the link between the collection of data and how it will be used (primarily to populate predictive models) should be explicit throughout the guidance– if information collected is not useful in order to build, calibrate and validate a model of the exploration area and its surroundings, it's of marginal use.
5. The sampling program needs to be targeted to focus on parameters liable to be affected by the specific extraction technique that is proposed. There is a risk that these guidelines encourage the applicant to monitor a very wide range of parameters in insufficient depth, rather than parameters likely to affect biology. Baseline data is essential to predict and ultimately mitigate risk effectively, but some of the parameters described here, such as nutrients, are perhaps of marginal interest in the locations where this guidance is likely relevant.
6. The proposed guidelines should elaborate on how the baseline information can be used to set trigger / action levels for the operational phase of the deep sea mining project – it is important that if, for example, the 95%ile exceedance of natural turbidity is to be used as an action level, both project and permitting authority are confident that the baseline provides an accurate estimate of this statistic.
7. Gathering sufficient baseline information to comply with the requirements of these guidelines in the open ocean at a depth of several kilometers will be very technically challenging – but it is very important that this is done, in order to ensure that exploitation of this relatively pristine deep sea environment is demonstrably sustainable, and that the effects of these mining activities are predicted accurately.
8. It is important to note that most of the species living in the deep-sea is not yet described. For benthic macrofauna, one of the most important fractions for environmental monitoring, 95% of the species remain to be described and named but also larger animals such as many megafauna species, are currently not possible to identify to species. The taxonomic work to describe the species present in the deep-sea (including morphology and DNA barcodes), is a major part of the effort to assess baseline community structure and connectivity and thus a prerequisite for any future

assessment of impact.		
9. Reference sites/stations are crucial to include in the sampling strategy/program (using BACI design) and should be sampled before any mining activities take place.		
10. It should be noted that there are existing international standards for sampling and processing of samples, for example for macrofauna (ISO 16665:2014 provides guidelines on the quantitative collection and processing of subtidal soft-bottom macrofaunal samples in marine waters)		
<b><i>Specific Comments</i></b>		
Page	Line	Comment
5	124	“The arrangement should consider typical ocean current directions” <b>Suggest that prior to sampling, enough information is gathered on current speed and direction to produce current roses that can justify the positioning of the sampling sites.</b>
7	159-162	“Observations should be carried out at different times of the year to cover seasonal changes in productivity and hydrodynamic conditions specifically covering periods of contrasting bottom water flow regimes and at different seasons in terms of organic matter availability.” <b>This is an important concept and the draft guidelines are <u>insufficiently ambitious</u>. Specify that, unless demonstrably impossible, continuous high frequency monitoring should be conducted for representative lengths of time, such as a spring-neap cycle or longer as is determined relevant to the specific location. Instantaneous observations may be acceptable for certain parameters (like zoobenthos) but where it is possible to collect high frequency data, this should be recommended.</b>
7	174-176	“When temporal or spatial comparisons are being made, the other component should be kept constant. For example, to compare between seasons, samples from the same physiographic unit and depths should be compared.” <b>See general comment 4 above – temporal and spatial scales should match the models, which evaluate the impact, and be chosen in order to be representative of relevant effects.</b>
7	195-196	“Random replicates should be obtained from each sample site and sufficient replication should be obtained to cover the variability and discriminate between units.” <b>Stress that replicates are only relevant for certain parameters – need to also focus on temporal resolution of the water quality and physical parameters.</b>
8	222-228	<b>This section, requiring BAT and feedback, is very helpful. If applicable, add an independent review stage, ensuring any proposed monitoring program is independently verified to be fit for purpose and in line with the guidelines prior to commencement.</b>
8	237	“Where possible, measurement of different variables should be aligned, both temporally and spatially, to facilitate integrated data analyses and to strengthen explanatory power.” <b>Also <del>emphasise</del>emphasize that this is needed to enhance the predictive power of subsequent modelling</b>
9	251	<b>See general comment 3 above – specify that all data must be made freely</b>

		<b>available, recommend that the guidelines stress this as forcefully as the format allows.</b>
9	266-270	“A good agreement between state-of-the-art models and observations of the different variables is considered a strong indication of a baseline data set of good quality, consistency, and completeness. <b>[Comment-baseline data populates most models – agreement here is not an indication of data quality, strictly.]</b> A comparison of observations to model results should therefore be a core component of reporting and should include reference to all information needed to run the model and reproduce results..” <b>[Comment- this is standard validation procedure]</b>
11	343	Objective “To assess the potential dispersion and size of any operational and discharge plume” <b>agree this is fundamental, but rephrase to “To assess the potential dispersion, and size and characteristics of any operational and discharge plume” – the impact of the plume may vary in space and time, depending on its composition</b>
11	358	“Optical properties - Light penetration and its availability are crucial for many processes in the upper part of the water column including the formation of biomass by oceanic phytoplankton through photosynthesis, biogeochemical cycling through photochemical reactions and the heating of the upper ocean” <b>Natural turbidity near the seabed is also an important optical property of relevance to these guidelines.</b>
13	424	“Sediment traps and other relevant equipment should be deployed at moorings in order to obtain data on the temporal variability of other water characteristics and sedimentation processes” <b>Agree, this is important, to understand the composition of the material that’s causing natural turbidity, and where possible enable a local correlation between turbidity and suspended solids. Sediment traps, water samples, nephelometers should ideally operate in tandem.</b>
15	527	Good section, covers some of the comments above. <b>Perhaps reiterate that wherever possible, these instruments should be collocated and synchronous with turbulence, tide and current measurements.</b>
16	540	Lists how to obtain optical properties – this is simply a list of all the ways to gather this information. <b>Would be better to give a clear preference towards using benthic platforms/landers, which enable longer series of high frequency data to be collected.</b>
16	557 & 561	In two places the guidelines mention that turbidity sensors can be in a variety of configurations, using numerous methods. <b>This is a weakness. Turbidity is arguably the most important operational impact mechanism of a dredging / mining operation. These guidelines should give very clear guidance as to how it should be measured, using which methods and technology. It’s essential the applicant/operator gets this right.</b>
17	577	Measured variable Noise – <b>it may be very difficult to get a credible estimate of ambient sound using monitoring in an area frequented by survey vessels and other monitoring gear. Better to use estimates from other studies. Alternatively, use dedicated moored hydrophone arrays.</b>

20	738	NO <sub>x</sub> , NH <sub>x</sub> and DO in the water column can also be measured with sensors, rather than discrete samples.
23	827	Measured variables – nutrients. <b>Consider cutting this section considerably; there is an unnecessary level of detail here, and these guidelines are likely to be used in deep offshore environments unlikely to be affected by eutrophication. Suggest the guidelines focus on how to monitor and model turbidity.</b>
24	905	Baseline information on sediment oxygen demand and uptake rates is interesting, but likely to be very different to the oxygen demand exerted by the same sediment following/during disturbance. In order to inform the modelling, this should also be determined experimentally – there is a risk of localized hypoxia resulting from these activities.
35	1361	“Sediment properties and habitat classification –important to <del>characterise</del> <u>characterize</u> the benthic habitat. Additionally, the properties should be used to quantify deformation and changes of seafloor sediment physical properties during mining gear operations, and for the design of the mining system” <b>In order to estimate any potential effect on near bed currents, perhaps consider baseline assessments of bottom friction or Chezy coefficient.</b>
38	1492	Turtles and fishes are other important groups. “well as information on sea mammals, birds, <b>turtles, fishes</b> and large gatherings of surface nekton.”
38	1494	It should be noted that most of the species living in the deep-sea is not yet described. For benthic macrofauna, one of the most important fractions for environmental monitoring, 95% of the species remain to be described and named but also larger animals such as many megafauna species, are currently not possible to identify to species. The taxonomic work to describe the species present in the deep-sea (including morphology and DNA barcodes), is a major part of the effort to assess baseline community structure and connectivity and thus a prerequisite for any future assessment of impact (Glover, A. G., Wiklund, H., Chen, C., & Dahlgren, T. G. (2018). Managing a sustainable deep-sea 'blue economy' requires knowledge of what actually lives there. <i>Elife</i> , 7, e41319.)
38	1503	Add “the sediment” to “The benthos is the biota living in <b>the sediment</b> or near the seafloor as adult.
39	1511	Larval dispersal in relation to areas defined as sinks or sources of high biodiversity is another important factor to consider.
39	1512	Delete “and” in the sentence “Ecosystem Functioning – a knowledge of ecosystem functioning enables <del>and</del> understanding of how small-scale disturbances can lead to shifts in food-web structure and organic-matter cycling activity by the resident benthic community.
39	1516	Metals can also have negative effects on reproduction. “Ecotoxicology - Metals released during mining operations may impact organism physiology <b>and reproduction</b> , and therefore it is important to understand the potential toxicity of these.”
39	1519	Add threatened or endangered species. “...it is important to record the

		presence of sensitive, <b>threatened</b> or <b>endangered</b> <del>protected</del> species that occur in the general contract area.
40	1579	Para 229 is about sampling strategies. It is important with a BACI design that also include a reference site- see general comment 9 above. "...and those indicted by other variables to be potentially affected by secondary impacts (e.g. areas where plumes may settle) <b>as well as a reference site</b> ".
42	1640	Add "zooplankton and" in "composition of <b>zooplankton and</b> other faunal groups" for clarification.
42	1662	Replace "animals" with "invertebrates".
44	1742	2. Macrofauna. This section should benefit from having an illustration of the different samples taken from the box-corer.
44	1753	Insert "before the nodules are" in "the nodules should be recorded <b>-before the nodules are</b> preserved in formalin or cold ethanol".
45	1758	Very good. We strongly support that the use of formaldehyde as a fixative should be carefully considered. Ethanol is a good replacement of formaldehyde for preserving most fauna groups.
45	1766	Recommend adding about 5% glycerol to all ethanol mixtures when preserving invertebrate fauna.
46	1822	266 is linked to 261. Consider to combine with 261 or move up to after 261
46	1826	267 is linked to 263. Consider to combine with 263 or move this para after it.
47	1864	Delete "environmental drivers for" since there are no estimates presented on these parameters here.
47	1879	Replace "be then" with " <b>then be</b> "
48	1891	It is not always possible to identify species. Therefore consider to revise "... identified <b>to lowest taxonomic level possible</b> " or <b>"species/Genus level"</b> .
49	1946	Unclear what is meant by "identification". There need to be a diversity parameter, for example by replacing "identification" with "list of identified microbiota"
51	2049	Please define the size of megacores
52	2059	In addition, it would be valuable to include higher trophic levels like predators of benthic feeding organisms in the sampling, e g fish. See above "Demersal fishes and scavengers"
54	2149	Replace "for ore" with " <b>before</b> "
<i>Additional rows can be added to this table by selecting "Table" followed by "insert" and "rows below"</i>		

Comments should be sent by e-mail to [ola@isa.org.jm](mailto:ola@isa.org.jm)