

UK Seabed Resources (UKSR) is pleased to submit our response to the International Seabed Authority (ISA) stakeholder survey on topics to be addressed in the promulgation of a regulatory framework for mineral exploitation (Framework). UKSR is a UK-sponsored contractor, authorised to explore for polymetallic nodules in the Clarion Clipperton Zone (CCZ), and as such is a direct stakeholder in the timely development of the Framework. As a direct stakeholder, we are committed to being engaged in this process, and would like to be included by the ISA in consultations going forward. Furthermore, we also request that our comments be made publically available.

We applaud the ISA for its initiative in launching this preliminary public stakeholder consultation, as adoption of the appropriate Framework is the only way to unlock the value of the polymetallic nodules for the full range of stakeholders – Member States, contractors, the scientific and environmental communities, and ultimately upstream consumers of the products that increasingly depend on expanded and affordable sources of these minerals.

The ISA has the opportunity to accelerate the development of this emerging market and the associated benefits. To do so, it is critical that the regulatory framework be predicated upon certain key regulatory principles – stability, predictability, transparency, non-discrimination, technology neutrality, and adaptability. These principles underpin our responses to the 4 parts of the survey and the individual questions contained therein. Furthermore, as a general matter, but also in particular given current resource constraints, we urge the promotion and adoption of regulations that are clear and simple to administer.

Our comments below are intended to contribute to the ISA's development of a Framework that advances economic, environmental and scientific successes in the commercial recovery of deep seabed polymetallic minerals. In fact, we would respectfully suggest that the ISA's ultimate success will be measured by whether a new, economically viable, market for polymetallic minerals, recovered in an environmentally responsible manner, emerges in a timely manner.

Part A: Financial Terms & Obligations

1. *In delivering a best revenue opportunity for the ISA and an overall fair and equitable system, which payment mechanism would you consider preferable for the ISA and Contractors and why?*
 - For reasons of both simplicity and transparency it is likely that a royalty payment system will be the easiest one to implement, and monitor. However given the innovatory nature of likely exploitation proposals, the technical challenges, and the current absence of market pricing, a flexible mechanism will need to be put in place which will enable the calculation of such prices in the absence of market signals; this is critical to providing the price transparency on which a royalty system can be based. We address this in more detail in response to question 5.
2. *If a royalty mechanism is adopted for reasons of administrative convenience, how can a royalty mechanism capture, for example, economic rents over the life of an exploitation contract?*

- In order for a sustainable and viable market to emerge, a contractor must be able to conclude that a royalty mechanism is feasible over a long period of time – that is, the royalty must represent a reasonable and bearable cost so that the paying entity can remain competitive with providers of similar products. Royalties are, therefore, just one input cost that has to be taken into account when reviewing the economic rent of a project over the life of an exploitation contract. We respectfully suggest that there are additional considerations that have to be borne in mind, including:
 - The input costs for the early movers in this untested market are likely to be higher than those of later participants, due to the greater uncertainties from a commercial exploration and recovery point of view. This will lead both to higher expenditure on one-off bases and to redundant expenditures as contractors test different technologies, only some of which may prove efficient.
 - The financial costs of the early movers are likely to be higher than later participants. This is due to the higher risk associated with an unproven market, which will in turn be reflected in higher costs of access to both equity and debt. The proportion of equity as opposed to debt for commercial exploitation that will need to be raised and deployed is also going to be higher.
 - A considerable effort will need to go into the creation of a market for these mineral resources as they are different from currently available mineral feedstock. This is likely to require collaboration with/incentives for other market participants with the downstream skills to convert these resources into marketable commodities.
 - The above and similar issues will affect the cost of recovering the polymetallic nodules, and also the ability of achieving an appropriate financial return compared with allocating private investment resources to other opportunities. There may also be considerable delays due to uncertainties in actually receiving payment for these resources. In addition the potential for revenue collection during the establishment of the market means that a distinction should be drawn between the obligation to pay royalties and the time at which those royalties become payable, so that there are no disruptive and unreasonable cashflow demands placed on the contractors exploring, extracting and commercialising the minerals.
 - While predictability and stability in the overall regulatory framework is critical to build confidence in the yet to emerge polymetallic nodule market, we also recognize it is worth discussing whether there is a need for a transitional exploitation payment regime, until such time as a firm market has been established for these resources and a sufficient communality of practice in respect of the cost of recovery enables a long term regime to be finalised.
3. *Are you aware of any alternative payment mechanisms that would merit consideration by the ISA?*
- For the reasons given above it seems that a royalties regime is the one that is most likely to be practical, and practicable, in the current circumstances; however, any royalties regime will necessarily have to take into account the current uncertainty in respect of the risk return ratios relating to the mineral exploitation activities being contemplated. As a general matter, it bears restating that any payment mechanism

should take into account the long term capital expenditure requirements for the exploitation of these minerals, and, therefore, the requirement of the financial institutions providing funding for predictability of return over the period during which the borrowing is to be serviced and repaid.

4. *In your view, how frequently should any payment mechanism be reviewed from a regulatory viewpoint?*

- If an appropriate flexible methodology is established and applied, with clear external triggers for regulatory review, there should be no requirement to establish specific review periods. Again, predictability and stability in the Framework will be important in enabling this currently non-existent market to actually develop.

5. *The point(s) of valuation for any payment obligations under the regulatory framework needs to be identified. In land-based regimes and oil and gas regimes, theory determines that the valuation point is as close as possible to the point of extraction of the resource. In land-based regimes an approximation for this is usually the first arm's length sale in the downstream process. Often a free on board export price or a net back system is adopted for royalty calculation purposes. For activities in the Area, there may be a number of possible valuation points for the minerals and metals to be exploited. Please would you consider and advise which valuation point(s) the ISA should consider in determining an arm's-length value for the purposes of calculating the fair value of the mineral and metal resources. From an administrative viewpoint, which valuation point would be the simplest to determine?*

- As we mentioned above, the market for these particular minerals in their unprocessed state has yet to be established. There are a number of different pricing points between the commercial recovery of these resources and their ultimate use by industry, in respect of transport, processing etc. As the ISA has identified, at least in terms of transparency, obtaining a valuation point as close to the point of extraction is theoretically preferable. However given the undeveloped nature of the market, it will be some time before there is an 'arm's length sale' framework which can provide such a point of valuation. The simplest, most enabling approach in the near term would therefore be to premise the royalty on a single rate across the Area based on tonnage of the nodules.
- Establishing a valuation point in respect of the post processing value of the metallic content would be a far more complex approach to administer and control, since a number of other technological differences, tax differences and changing cost inputs could affect such pricing arrangements, quite apart from problems in respect of transparency, potential transfer pricing issues, and enforceability issues depending on the relevant jurisdiction of the entities processing and owning the content. A valuation of the nodules themselves would be the simplest for the ISA to implement, and the creation of a market for such resources in their unrefined state would promote clarity of valuation.
- In addition, any system would have to take into account the interests and expectations of Sponsoring States and any economic return to which they are entitled under national regimes as a consequence of the Administration's regulatory oversight.

6. *In connection with any late or overdue payments / returns by Contractors, in your opinion, what penalty or fine mechanisms should be adopted by the ISA*

- The underlying legal system(s) to be used for governing the relevant contractual obligations between the parties will also be relevant in determining both the quantum and methodology of any system of fines or penalties. However, doubtless there are precedents for dealing with these issues in comparable situations which can be of considerable assistance (e.g., late payment penalties such as interest or daily late fees). A pattern of overall non-payment of royalties established would likely warrant some level of enforcement activity by the ISA in its regulatory capacity.

Other considerations impacting financial terms and obligations

7. The current Exploration Regulations state that an applicant must be “financially and technically capable” of carrying out a plan of work for exploration. This is considered of relevance to future exploitation regulations as well.

a. In your view what key elements should be considered in respect of “technical” capability? and

b. Similarly, in your view what key elements should be considered in respect of “financial” capability?

- Given the early stages of the technology and the different technologies that may be deployed to achieve the same ends, it is difficult to assess what may be the appropriate parameters that might be used in respect of technological capability; furthermore, we would urge an approach that does not skew technology choices, but recognises the regulatory principle of technology neutrality. It is more likely at the exploitation phase that the managerial, operational experience and expertise of applicants, together with the resources (both financial and other), will be of more importance than specific technology or technical capability.
- Of potential value would be the level of demonstrated “technical capability” through the submission of a “pre-feasibility study” prepared in accordance with widely accepted and applicable professional standards (e.g., the Committee for Mineral Reserves International Reporting Standards (CRIRSCO)) and equivalent professional standards in mineral valuation and oversight of national securities exchanges.
- In addition, there will inevitably be an element of qualitative rather than just quantitative assessment to be made, and the track record of applicants in understanding and managing the requirements of high risk projects, providing for the health and safety of operations, and the difficulties of operating in harsh environments should be key elements in the Framework.

8. In your view, how can the regulatory framework be structured to encourage optimum extraction of low grade mineral resources?

- The regulatory framework should allow for the market to drive what are the “optimum” decisions with respect to commercial extraction of polymetallic nodules.

9. *Do you have any suggestions for incentive mechanisms that would encourage investment in the Area and / or support best environmental operating practices?*

- Any mechanisms which reduce risk and increase return would tend to encourage investment in the Area. To the extent that the ISA would wish to combine this goal and that of supporting best environmental operating practices, it is possible to envisage a fund supported by some percentage of the royalty payment streams. And, once the fund reached a certain level, there could be a discount or repayment mechanism for contractors with a positive track record for environmental operating practices (e.g., lack of any infractions over X period of contract length).

10. *For what term (in years) should an exploitation contract be granted? What do you consider best practice in terms of renewal periods for the same contract?*

- To successfully exploit polymetallic nodules, and develop a market for them, which will also require the creation of processing capabilities for the minerals, will require substantive investment, in the billions, which will be subject to high risk. Therefore, a stable, long term approach to access to the Area is required in order to attract and deploy the levels of internal and external investment required and to be able to do so at viable rates. There is a global competition for investment monies of this scale and nature; the stability and predictability of the emerging polymetallic nodule market must therefore be attractive relative to both other mineral and wider opportunities.
- Ideally, there should be no requirement for renewal, but rather a requirement of demonstrated exploitation within a given period of the effectiveness of the license/contract. We believe that this approach could model that of the UN-affiliated agency, the International Telecommunications Union's (ITU) regulations governing access to orbital slots. At the ITU, one must begin to use the orbital slot within 7 years of claiming access and then maintain use consistently, notify of suspension of activities, and relinquish rights if there is a lack of use for a given period. While the exact approach may not be directly transferable, the general approach to required use may prove useful.

11. *In your view, what criteria should Contractors / the ISA consider in connection with the optimum size of exploitation areas within a contract area?*

- It may be preferable to have exploitation areas corresponding with contract areas, so that the contractor can take a commercial view as to the most effective way of managing areas to their best potential.

12. *It would seem appropriate, in line with existing extractive industry regimes, that financial penalties are considered as part of the regulatory framework. The Agreement provides, subject to judicial remedies that in the case of violations of non-fundamental contract terms (or in place of any suspension or termination of a contract), monetary penalties may be imposed on Contractors. Contractors may also be subject to other penalty regimes beyond that of the ISA (for example, by sponsoring States under the terms of domestic licences or permits).*

a. In your view, what penalty mechanisms should be adopted in the regulatory framework and imposed specifically by the ISA? For example this could be fixed penalties in

connection with the breach of procedural obligations, including environmental procedural obligations;

b. In addition, do you have any recommendations as to the classification (seriousness of the violation, duration etc.) of violations and a range of penalty amounts?

c. Finally, your recommendations on the use of any penalty amounts collected by the ISA? For example, should these amounts be directed toward an inspection regime only?

- a) It would seem appropriate to look at other international agreements for precedents in this regard, while bearing in mind that the penalties for breaches of procedural obligations (i.e., breaches without definable consequential impact) should be the minimum amount consistent with ensuring that the integrity of the procedural framework is upheld.
- b) As above, the finer detail of such a regime should look to existing international norms for precedents in assessing the way in which such penalties should be calculated, and the practicality of the enforcement mechanisms.
- c) It is certainly arguable that any amounts raised through such a system could be deployed for the wider aims of environmental protection (such as a specific fund) etc., and could also be deployed in defraying the costs of an enforcement regime; however, it is important to avoid creation of incentives to generate revenue by imposing high penalties.

13. The Exploration Regulations require Contractors to maintain appropriate insurance policies that are in accordance with generally accepted maritime practice. Do you have any recommendations as to any specific insurance products that should be reflected in the exploitation regulatory framework?

- There will be a number of insurance policies which will be applicable to some of the risks being contemplated, but we believe it is too soon to say the degree to which general marine risk policies can be adapted to deal with the specific risks associated with, for example, the harvesting and transport etc. of marine mineral nodules, or whether new policies will need to be created to deal with particular aspects of these procedures. The experience of the oil and gas industry, for example, indicates that the insurance industry is accustomed to assessing the implications of risk when operating in harsh maritime environments to recover resources.

Specific environmental considerations

14. It is common practice in land-based regimes to require an environmental guarantee or bond. In some regimes, a cash amount is paid under a trust arrangement or to a special bank account. What are your recommendations for including such a guarantee or cash contribution in the exploitation regulatory framework? Please advise on the nature of any guarantee, the quantum of the guarantee (its calculation methodology), its use and rationale (for example, for restorative obligations, agreed penalty amounts) and the suggested duration before release / return.

- We believe a degree of sensitivity needs to be exercised in respect of the international nature of the regulatory regime when considering guarantees. In particular, it is a feature of this anticipated market that there are arrangements between private entities and sponsoring sovereign states, which provide the function which such guarantees are designed to provide in land based systems. Any guarantee based system is designed to be easily enforceable in order to provide a degree of contingency reserve and a degree of certainty of the availability of funds. In order to achieve the same benefit in an

international maritime regime it may, therefore, be preferable to provide for part of the royalty contributions to be considered as a kind of levy, repayable if no environmental infraction takes place over a specified number of years, as more fully described below.

15. The Seabed Disputes Chamber recommended that consideration be given to establishing a trust fund in the event an environmental liability gap arises. Western Australia, for example, has implemented a Mining Rehabilitation Fund to cover situations where an operator fails to rehabilitate the environment. However, the concept of a trust fund may have wider appeal. Your comments would be welcome therefore on the setting up of a general environmental trust fund under the exploitation regulatory regime on the basis of the “polluter pays” principle. Please also provide your comments on how any contribution to the fund should be calculated and suggested, specific uses of trust monies.

- There may be merit in consideration of the establishment of a specific fund to meet environmental goals. Thus, there may be an argument to use part of the royalties derived from the activities contemplated to provide for contributions to a fund which would enable long term resources to be made available for environmental protection, monitoring and remediation separate from any actions that the ISA might be in a position to take against specific contractors where there has been a particular incident of environmental damage and an identifiable party responsible.
- In addition, depending on the level of contribution decided upon, it might be possible to envisage a partial repayment of contributions to those operators who had not caused any environmental infractions. Such a fund could provide at least some financial resources to monitor the environmental impact of the mineral gathering operations and potentially to remedy the consequences of any infractions while the ISA pursued any legal avenues available to it in respect of any such infraction. There could be the added incentive to operators that they would receive a rebate from the fund in the absence of any such infractions over a period of time in order to further encourage environmental best practices.

Part B: Environmental Management Terms & Obligations

16. Please describe any general recommendations that the ISA should consider in developing rules, regulations and procedures on the prevention of damage to the marine environment from activities in the Area.

- The ISA employs a precautionary approach in its development of regulations and procedures. The United Nations Food and Agriculture Organization Code of Conduct for Responsible Fisheries defines this as follows:
 - States should apply the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.
- We would therefore encourage the ISA to take the general conservation measure of formally designating Marine Protected Areas for seabed areas within the Clarion-Clipperton Zone (CCZ) of the northeastern tropical Pacific. Indeed, the United Kingdom’s Department of Environment, Food and Rural Affairs Joint Nature Conservation Committee concludes that: “We know that human activities can

adversely affect our environment. Marine Protected Areas (MPAs) are one of the tools that can be used to ensure such activities do not have an unacceptable environmental impact on the variety of life in our seas. Uncertainties regarding benthic communities will persist well beyond any reasonable period for the acquisition of environmental baseline data in the CCZ prior to commercial recovery operations. The formal establishment of MPAs within the region should therefore be a high priority for the ISA. This designation will directly address any uncertainty by reserving in perpetuity a significant percentage of the seabed within this region from any commercial recovery operations.” See <http://jncc.defra.gov.uk/page-4524>.

- The ISA should utilize the deep expertise of existing resources of professional societies and standards bodies to minimize duplication of effort and to apply existing expertise. For example, internationally-developed, consensus-based standards should be a preferred basis for ISA exploitation regulations.

17. The Exploration Regulations do not reflect any restorative or rehabilitative obligations in the marine environment. In your view, under an exploitation framework, what general restorative or rehabilitative obligations should be incorporated?

- As discussed at length above, a transparent pricing system is essential to achieve the ISA objectives for the prudent exploitation of polymetallic nodules in the Area, and any additional obligations that undermine this could make it difficult or impossible for commercial recovery operations to proceed. Again, with specific regard to polymetallic nodules, we would respectfully suggest that at this time there is no need to add any such obligations; quite simply, it is impossible to assess whether any restorative actions will even be needed from the recovery of polymetallic nodules; rather we should focus near term on the adoption and implementation of best practices intended to limit or minimise disruption of the marine environment. This will obviate any development of a need for restorative activities as a result of commercial recovery operations for polymetallic nodules

18. As part of the approval process for exploitation, Environmental Assessments and Environmental Management Plans will be required. What procedural steps should be incorporated into the regulatory framework to evaluate Environmental Assessments and Environmental Management Plans? What independent verification procedures should be adopted by the LTC in reviewing Environmental Assessments and Environmental Management Plans?

- Nation states worldwide have established well-vetted procedures for environmental assessment. The United Kingdom, for example, has well documented procedures for completing and evaluating environmental assessment documents.¹ The ISA should leverage the extensive experience available from this and other relevant sources for environmental assessment to formulate its own efficient and effective procedures, which should maximize use of existing relevant best practice and international standards (i.e., ISO 14001). Transparent review of all environmental processes and documentation will ensure effective evaluation.

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211852/pb13897-ep-core-guidance-130220.pdf

19. *As to any damage to the marine environment following the removal of a substrate (e.g. polymetallic nodules) what do you consider the most appropriate advance response strategies to conservation, restoration and natural remediation of biological diversity and ecosystem functioning? Is remediation best achieved by the development of Areas of Particular Environmental Interest and Preservation Reference Zones envisaged by the Exploration Regulations?*

- The single most effective way to guarantee the protection of biological diversity and ecosystem functioning in the CCZ will be the formal designation of the Areas of Particular Environmental Interest (APEIs) as MPAs. The preservation zones within Contract areas will not be suitable as MPAs, because their inevitable proximity to commercial recovery operations will preclude the assurance that these areas will truly be unaffected by commercial recovery operations.

20. *In connection with question 19 above, what ecosystem functions are critical to restore and / or what levels of biological diversity should be conserved at regional levels, local scales and over what time periods?*

- The formal establishment of MPAs within the CCZ, consisting of the currently recognised APEIs, will provide the protection of sufficient seabed area within this region to ensure the preservation of the existing ecosystem functions and biological diversity.

21. *The Exploration Regulations (and the Convention) envisage an emergency response (known as “emergency orders”) where an incident has caused, is causing, or poses a threat of serious harm, to the marine environment. Please describe any recommendations you have in the light of best practices on the measures and procedures that should be adopted in connection with an emergency response.*

- The concepts related to emergency responses have been promulgated within the context of offshore oil operations. No potential exists for the catastrophic release of large quantities of oil or other toxic materials that can be caused by oil recovery and transport operations. At risk for commercial recovery operations for polymetallic nodules within the CCZ will be quantities of ore actively being recovered and transported by the harvesting system and the petroleum and other chemicals present on the ships and barges involved in commercial recovery. Best practices described in the Safety of Life at Sea (SOLAS) conventions, which have been embraced by the 1982 United Nations Law of the Sea Convention (UNCLOS), will be incorporated into commercial recovery and transport operations to minimize the probability of emergency incidents and to provide standard safety equipment on the vessels to minimize harm to the operators at sea.

22. *A number of international and domestic legal instruments, including the Exploration Regulations, incorporate terms such as “serious harm” or “vulnerable marine ecosystems” in connection with the protection of the marine environment. How do you think these terms should be better defined and interpreted in the exploitation regulatory framework?*

- These terms should be evaluated as required on a case-by-case basis within the context of each environmental impact analysis completed for each commercial operation. Similar terms incorporating standards of “harm” remain general and undefined in treaty-based regulations adopted and implemented by the International Telecommunications Union, an intergovernmental organization affiliated with the United Nations; their application is on a case-by case basis, and any overly general definition does not allow for individual cases, and simply complicates the analysis with no countervailing gains in clarity or certainty for the permit holders or for the ISA.

23. *How can the ISA most usefully promote and encourage the use of best practice (including technology advances and scientific research) to better protect the environment during exploitation operations?*

- Exploitation permits should include clear and minimal monitoring requirements that will ensure that the permit holder operates its commercial recovery system within the operating parameters specified in the permit. Each operator must be responsible for the incorporation of new technology as appropriate for efficient system operation. The regulatory process should not impose additional burdens on the operators beyond the specific permit conditions established at the time the permit is issued; doing so unilaterally, may in fact jeopardise the viability of the operation, thus thwarting any ability to benefit from the recovery of the polymetallic nodules from the seabed floor.
- The ISA may specify that best practices and internationally developed consensus standards be followed by operators as a condition of licences, but it should depend upon existing standards bodies and/or professional organisations for those standards and practices, as well as national licensing bodies to enforce compliance. It is envisaged that adoption of, and compliance with, existing best practices and internationally developed standards will also be enforced by the insurance companies that are providing insurance coverage for commercial recovery operations.
- The ISA may also encourage professional organisations and conferences (International Society of Offshore and Polar Engineers, the International Marine Mineral Society and the Offshore Technology Conference) to focus their attention on areas in which technology may make substantial contributions to protection of the marine environment during exploitation operations. In coordination with private sector, in particular the contractors, and other relevant stakeholders, the ISA could identify high-priority research areas for academia and scientific communities.
- The ISA should work with international and national standard setting and professional practice organizations to develop best practices and widely accepted industry standards. Organizations such as the Committee for Mineral Reserve International Reporting Standards, the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) and the Australasian Institute of Mining and Metallurgy have well established processes for developing best practices and codifying industry standards. The ISA should work with such organizations to develop best practices and industry standards for deep seabed mining.

24. *Are there any other fees or levies that the ISA should consider to promote environmental compliance?*

- As discussed above, a transparent pricing system is essential to achieve the ISA objectives for the prudent exploitation of seabed mineral resources in the Area. The ISA may choose to revoke an exploitation permit if the operator is persistently conducting activities that are significantly outside of the conditions specified in the permit, but all fees and levies must be included within the established royalty regime.

25. *For the monitoring of activities in the Area, the Exploration Regulations provide for an inspection regime. Additionally, Sponsoring States may also undertake monitoring of Sponsored Contractor activities in the Area through inspection.*

- a. *In your view what monitoring obligations should be placed on Contractors operating in the Area and included in the exploitation regulatory framework?*
- b. *Please list the key measures and characteristics of what should be considered in establishing a supervision programme to verify compliance of Contractors with the rules, regulations and procedures, particularly compliance with their monitoring obligations above. In your view, how should such an ISA regime be structured and implemented, including the frequency of inspection, by whom and how should an inspection regime be funded?*
- Exploitation permits should include clear and minimal monitoring requirements that will ensure that the permit holder operates its commercial recovery system within the operating parameters specified in the permit. The ISA, whether through its own staff or designated third-party experts, may periodically seek confirmation through inspection of compliances with the monitoring procedures at sea; however, given the extensive transportation considerations and costs to travel to and from the Clarion Clipperton Zone, the ISA should consider what its trigger to seek on-site inspection should be to ensure that it is only as necessary.
 - Following industry best practices and the ISO 14001 environmental management standards, contractors will be responsible for the transparent self-reporting on the implementation of their environmental management practices. These standards include processes for evaluation of compliance with the environmental management system standards. Consideration must also be given as to which party is responsible for bearing the costs of doing so. An underlying principle must be that any monitoring beyond that in contractor's environmental management plan should not incur additional costs unless they are compensated or incentivised by the ISA. Otherwise, self-reporting on compliance should be the accepted, relied-upon approach.
26. *What specific procedural obligations should be adopted under the precautionary approach best environmental practices and adaptive management? Are there any best practice risk management approaches (for example in an oil and gas or fisheries context) that could usefully be adapted to deep seabed mineral exploitation activities?*
- An adaptive management system must not be able to place additional burdens on the operator beyond those specified in the original operating permit.
27. *In considering environmental procedures above, what internationally-accepted environmental management standards should be reflected in the exploitation regulatory framework?*
- The environmental management standards adopted by the International Standards Organization (Geneva, Switzerland), ISO 14001, are probably the most widely-accepted and, thus commonly used, set of standards; adopting internationally developed consensus standards is a mature regulatory approach, and should be reflected in the exploitation framework. It expressly addresses environmental management from planning and application through auditing and reporting. In addition, these standards are applied in land-based mineral exploitation operations and are equally applicable to deep seabed operations.

Part C: Health Safety and Maritime Security

28. *In considering health, safety, labour and maritime security, can you suggest the general and or specific duties and obligations that should be placed on Contractors under the Exploitation Regulations? Please also consider any further specific obligations toward other users of the marine environment.*

- We would recommend adherence to relevant existing norms, international treaties/conventions, and established internationally developed, consensus standards be an express requirement within the Framework.
- We employ a strong “management systems” approach to measure and improve both our safety and environmental performance. These activities align with our focus on environmental stewardship and business sustainability. While individual contractors may have their own best practices from which to draw, we would encourage an approach that is focused on achieving performance objectives, rather than picking and choosing among methods of compliance.

Part D: General Considerations – Stakeholder Communications and Transparency

29. *How can the ISA best develop a communications and consultation strategy which both secures transparency and efficiency and provides for the needs of a broad stakeholder base? It would be helpful to include specific examples of successful communication and consultation approaches.*

We would recommend that the ISA ensure that the consultation process be expanded to include a wide range of engagement methods, including face-to-face meetings, interdisciplinary and deep-dive workshops and publication of draft regulations. There are numerous national regulators that have mature processes in place to ensure that the full range of stakeholders is consulted in the development of regulations. We encourage the ISA to look at the 2007 consultation guidelines published by the United Kingdom’s telecom regulatory authority, Ofcom. (See www.ofcom.org.uk/consultations.) As a very mature, transparent, comprehensive process, Ofcom recognises the need to respect business confidentiality.

- In terms of options, Ofcom’s consultation guidelines envision more than formal written processes, including:
 - Use of research to understand the views, needs and behaviour of people and organisations involved in or concerned about the industry; it may be based on focus groups, public meetings,
 - Speaking to a number of different people and organisations informally to understand their concerns. They may have a period of pre-consultation in some circumstances with stakeholders who might potentially be particularly affected through a mixture of informal meetings and seminars,
 - Communicating as widely as possible throughout each consultation, involving face-to-face meetings, using the website to gather feedback online and to

provide detailed background information, briefing the media using news releases, and by writing articles for magazines and newspapers.

30. *What forms of engagement best enable you to make contributions and receive appropriate feedback? Please provide comments on any specific initiatives, including digital initiatives, that would be productive together with any observations on the structure and content of the current ISA website (www.isa.org.jm).*

- To reiterate the importance of confidence building, it will be important that the ISA address the comments received in its reasoned decision-making, and provide opportunities for the stakeholders to elaborate their concerns prior to final adoption of the regulations. In addition to the processes outlined in the Ofcom guidance, we would encourage the ISA to enable stakeholders to stay abreast of ISA's regulatory processes by registering for e-notifications or alerts when the ISA issues new information requests, programmes, or meeting opportunities. If that is not possible, then the ISA should develop a stakeholder electronic distribution list for such notices.

31. *What information on activities in the Area do you consider most important to make available publicly? How should this information be shared?*

- Environmental / scientific data should continue to be collected into the period of commercial exploitation operations; we also anticipate that contractors will seek to continually improve upon established best practices to reflect technology development, new information gathered, and acquired operational experience. Both the new environmental data and the improvements in best practices, particularly those that improve safety and security of operations, would be beneficial to all concerned. Therefore, we urge the ISA to focus on enabling an environment where such data can be readily exchanged, at a minimum, among contractors to facilitate cross-claim cooperation and perhaps standardization of terms.

32. *What aspects of the EITI do you think should be reflected in the exploitation regulatory framework?*

- The principle of regulatory transparency is critical in both emerging and existing markets. In both cases, the failure to ensure regulatory transparency can result in perceived barriers to entry, which in turn can impact the attractiveness of a given market to capital investment. Where the market does not yet even exist, as in polymetallic nodules, the cost of capital is even greater and thus there exists the need for a regulatory environment that instills greater confidence in the application of regulation on a non-discriminatory basis. Quite simply, transparency helps ensure that contractors are subject to equitable and fair regulatory requirements, comparable to the internationally accepted principles of most-favored nation.

Other considerations

33. *Are there any further comments you wish to make on the issues raised in this survey that you have not commented on elsewhere?*

- As the Trustee of deep seabed minerals on the ocean floor beyond the limits of national jurisdiction, the ISA bears an enormous responsibility in ensuring that the minerals are

able to be recovered in a technically sound, environmentally appropriate, and economically feasible manner.

- In the context of the economic feasibility of exploiting polymetallic nodules, it is critical to understand the scale of capital investment required, and required prior to generating any revenue, let alone profits. The capital expenses begin during exploration, where, for example, a single environmental survey cruise can cost approximately \$3 million, depending upon duration and numbers of scientists included. Anticipated capital costs for a nodule collection and metal processing operation are likely to exceed \$2.5 billion.
- Given the scale and cost of capital required to help develop this new market, it is important that the regulatory framework not drive the market to emerge in any preconceived manner. For example, flexibility should be incorporated in the regulations to ensure that contractors are not arbitrarily precluded from collaboration that advances commercial exploitation in a sound and viable manner. In crafting licensing terms and conditions, provisions need to have considered how and where there may be economies of scale arising from cooperation, resulting in higher standards and greater economic viability in commercial exploitation of polymetallic nodules.

34. What other areas or topics relevant to the exploitation regulatory framework do you think would benefit from future surveys and consultation, including processes and procedures?

- We commend the ISA for the scope of its survey questions. We recommend that the consultation be expanded to solicit inputs on the appropriate structure and potential structural changes to reflect its maturing regulatory role and responsibilities, on how best to ensure confidence in its regulatory decision-making and enforcement processes, and on the resources necessary to be an effective and efficient regulator. Borrowing from the WTO Agreement on Basic Telecommunications Services, there is an acceptance of, and recognition that, sound regulatory principles for a competitive market includes the need for a “regulatory body that is separate from, and not accountable to, any supplier ... The decisions of and the procedures used by regulators shall be impartial with respect to all market participants.”