



**Background Note on the Legal Basis for Impact
Reference Zones and Preservation Reference Zones**

**Prepared for the International Seabed Authority Workshop on
the Design of Impact Reference Zones and Preservation
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Impact Reference Zones and Preservation Reference Zones

I. Introduction

1. The purpose of this briefing note is to discuss the legal basis for Impact reference zones (IRZs) and Preservation reference zones (PRZs), being one tool as part of the environmental management and monitoring of activities in the Area. The note also highlights some ambiguities, and potential lack of consistency in the language and approach adopted to date, and throughout a number of documents. The annex to this note provides a list of source references to the IRZ and PRZ concepts, and associated text.

II. Background to the development of Impact Reference Zones and Preservation Reference Zones

2. The notion of the use of reference zones and/or areas in the context of seabed mining can be traced to the early 1980s. The *Deep Seabed Hard Minerals Resources Act* (U.S.) provides for the establishment of “stable reference areas...to be used as a reference zone or zones for purposes of resource evaluation and environmental assessment of deep seabed mining in which no mining shall occur”.¹ The Act contemplates a negotiation with all nations in establishing international stable reference areas (SRAs). To advance discussion on SRAs, the National Oceanic and Atmospheric Administration requested the National Research Council’s Ocean Policy Committee (OPC) to study the SRA provision, its intent and validity. These discussions developed further the concept of such stable reference areas (SRAs) and recommended the inclusion of two types of SRA, namely preservational reference area and impact reference area, and reported on their scientific validity.² These concepts have been incorporated in the United States *Deep Seabed Mining Regulations for Commercial Recovery Permits* under the heading “At-sea monitoring”.³

3. In 1992, the draft final report of Special Commission 3 of the Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, which was charged with preparing draft regulations for the future Authority prior to entry into force of the Convention, proposed draft article 107 relating to “environmental reference areas”.⁴ This would require the Council, based on recommendations of the Legal and Technical Commission, to set aside parts of areas covered by a plan of work, to be used exclusively as preservation reference zones and

¹ Sec. 109(2)(f) 30 U.S.C. 1401. This sub-section also stipulates that the subsection shall not be construed as requiring any substantial withdrawal of deep seabed areas from deep seabed mining authorized by this Act.

² See *Deep Seabed Stable Reference Areas: Report of a Study*, National Academy Press, Washington D.C. (1984). This report is an interesting study, and identifies a number of questions and issues that remain valid today. Available at http://www.gc.noaa.gov/documents/gcil_062711-161244.pdf.

³ §971.603 Deep Seabed Mining Regulations for Commercial Recovery Permits (U.S.), 15 CFR Part 971. See annex for text.

⁴ Part VIII, Draft regulations on prospecting, exploration and exploitation of polymetallic nodules in the Area, Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, Special Commission 3, New York, 10-21 August 1992, LOS/PCN/SCN.3/1992/CRP.17, 22 July 1992.

impact reference zones.⁵ The concepts were likely sourced from earlier U.S. regulatory discussions and development.

4. This notion of the function and characteristics of IRZs and PRZs flowed through to the *Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area*,⁶ with guidance provided subsequently by the Legal and Commission in its *Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area*.⁷

III. Relevant legal framework

5. Under the 1982 United Nations Convention on the Law of the Sea, the International Seabed Authority must adopt appropriate rules, regulations and procedures prescribing the necessary measures to be taken to ensure the effective protection for the marine environment from harmful effects which may arise from such activities. Such rules, regulations and procedures are designed to prevent, reduce and control pollution and other hazards to the marine environment having the potential to interfere with the ecological balance of the marine environment, as well as to protect and conserve the natural resources of the Area, preventing damage to the flora and fauna of the marine environment.⁸

6. Under the 1994 Agreement relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982, the Authority must, prior to the approval of the first plan of work for exploitation, focus on the adoption of rules, regulations and procedures incorporating applicable standards for the protection and preservation of the marine environment.⁹

7. Additionally, and in connection with marine environmental protection, the Convention places a number of obligations on the Legal and Technical Commission. In particular the Commission must:¹⁰

- (e) make recommendations to the Council on the protection of the marine environment, taking into account the views of recognized experts in that field;
- (f) formulate and submit to the Council the rules, regulations and procedures taking into account all relevant factors including assessments of the environmental implications of activities in the Area;
- (g) keep such rules, regulations and procedures under review;
- (h) make recommendations to the Council regarding the establishment of a monitoring programme to observe, measure, evaluate and analyse, by recognized scientific methods, on a regular basis, the risks or effects of pollution of the marine environment resulting from activities in the Area, ensure that

⁵ For this purpose, PRZs were defined as “areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the flora and fauna of the marine environment”; IRZs as “areas to be used for assessing the effect of each contractor’s activities in the Area on the marine environment an designated in each mining site so as to be: (a) representative of the environmental characteristics of the site; and (b) located in a portion of the site scheduled to be mined early under the contract”.

⁶ Regulation 31(6). [ISBA/19/C/17](#), 25 July 2013.

⁷ [ISBA/19/LTC/8](#), 1 March 2013.

⁸ Article 145, annex III, art. 17(1)(b)(xii) & 17(2)(f).

⁹ Annex, section 1, para. 5(f).

¹⁰ Article 165(e)-(h).

existing regulations are adequate and are complied with and coordinate the implementation of the monitoring programme approved by the Council.’

8. States must also endeavour under the Convention, and as far as reasonably practicable, either directly or through competent international organizations, “to observe, measure, evaluate and analyse, by recognized scientific methods, the risks or effects of pollution of the marine environment”.¹¹ This wording is repeated in article 165(h), as set out above.

9. As to rules, regulations and procedures formulated for the protection of the marine environment, and making reference to IRZs and PRZs, the *Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area*, state:

‘Contractors, sponsoring States and other interested States or entities shall cooperate with the Authority in the establishment and implementation of programmes for monitoring and evaluating the impacts of deep seabed mining on the marine environment. When required by the Council, such programmes shall include proposals for areas to be set aside and used exclusively as impact reference zones and preservation reference zones. “Impact reference zones” means areas to be used for assessing the effect of activities in the Area on the marine environment and which are representative of the environmental characteristics of the Area. “Preservation reference zones” means areas in which no mining shall occur to ensure representative and stable biota of the seabed in order to assess any changes in the biodiversity of the marine environment.’¹²

10. The *Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area*, provide some further guidance, albeit cursory, on (i) the delineation of impact reference areas and preservation reference areas for the purposes of mining tests¹³ and (ii) the recommended notification of proposed impact reference zones and preservation reference zones during the mining tests.¹⁴

11. Section 5 of the standard clauses for exploration contract is directed at environmental monitoring by contractors of their activities in the Area. In particular, section 5.4 obliges a contractor to “in accordance with the Regulations, establish and carry out a programme to monitor and report on such effects on the marine environment” and to co-operate with the Authority in the implementation of such monitoring.¹⁵ Section 13.2(b) requires the contractor to, *inter alia*, comply with the applicable obligations created by the provisions of the Convention and the rules, regulations and procedures of the Authority;

¹¹ Article 204(1).

¹² An equivalent regulation is contained in the Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area ([ISBA/16/A/12/Rev.1](#)) and the Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area at ([ISBA/18/A/11](#)) at regulation 33(6).

¹³ Para. 26(d).

¹⁴ Para. 53. It is assumed that “zone” and “area” are synonymous in this context.

¹⁵ Section 5.5 provides for a reporting obligation on the contractor in relation to the implementation and results of such a monitoring programme. The *Recommendations for the guidance of contractors on the content, format and structure of annual reports* ([ISBA/21/LTC/15](#)) of 4 August 2015 at annex I, para 10(c) requires the contractor to provide “information on the environmental impact of test-mining activities as measured in the impact reference zones”.

section 13.2(e) requires the contractor to “observe, as far as reasonably practicable, any recommendations which may be issued from time to time by the Legal and Technical Commission”.

12. The current *Draft Regulations on Exploitation of Mineral Resources in the Area*¹⁶ make reference to IRZs and PRZs in annex VII to the draft (content of an Environmental Management and Monitoring Plan) in terms of location and planned monitoring of such zones, and not within a regulatory text. Annex VII requires expert review. There is no reference to IRZs and PRZs within an environmental assessment context in annex V to the draft (Environmental Impact Statement Template) which has been subject to expert preparation.

IV. Discussion

13. As evident from section III above, neither the Convention nor the Agreement make specific reference to either the IRZ or PRZ concepts. Their legitimacy (depending on their specific purpose and objective) flows from the adoption of appropriate rules, regulations and procedures, which should reflect applicable standards, relating to monitoring programmes.

14. As part of best environmental management practice, environmental monitoring will be an essential component: to validate the assessments made in an environmental impact statement; to contribute to an evaluation of mitigation strategies and management responses as new information and knowledge come to light, and to ensure compliance with the terms and conditions of a contract. The significance of a monitoring programme in assessing the effects of activities is recognised by articles 165(h) and 204(1) of the Convention.

15. To this end, IRZs and PRZs have been incorporated into the respective sets of exploration regulations as an integral part of programmes for monitoring and evaluating the impacts of deep seabed mining. The first part of regulation 31(6) of the polymetallic nodule exploration regulations, requires various actors to co-operate in the establishment and implementation of programmes for monitoring.¹⁷ The second part of the regulation specifies that monitoring programmes must include proposals for the designation of IRZs (to be used for assessing the effect of activities) and PRZs (to assess any changes in the biodiversity). IRZs and PRZs are thus explicitly associated by the regulations with monitoring activities, but only “where required by the Council”.

16. The stipulation in regulation 31(6) that IRZs and PRZs will only be part of monitoring programme proposals “where required by the Council” can be traced back to the development of the sulphides and crusts regulations. The language originally adopted in the nodules regulations provided for the contractor to propose IRZs and PRZs only where it applies for exploitation rights.¹⁸ In the context of sulphides and crusts, the obligation to propose these set-aside areas (an obligation on all contractors) was brought

¹⁶ [ISBA/23/LTC/CRP.3*](#), 8 August 2017.

¹⁷ The language fulfils the requirements of article 204(1).

¹⁸ Draft regulation 31(7), Draft Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area [ISBA/6/C/8](#). Adopted by the Council on 13 July 2000 ([ISBA/6/C/12](#)).

forward to the exploration phase, and the wording “where required by the [Council]” added. This was considered justified by the lack of knowledge of the characteristics of the marine environment at potential exploration sites for sulphides and crusts.¹⁹ It was only in 2013, at the Authority’s 19th session, that the nodule regulations were amended in line with the sulphide and crust regulations so as to require the consideration of IRZs and PRZs at an earlier phase of activities in the Area.²⁰

17. Notwithstanding the regulations, the Commission’s *Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area* (see para. 11 above) appear in some situations to bring the requirement to delineate IRZs and PRZs back to even earlier phases of exploration activities. However, the notion of IRZs and PRZs are not fully embodied in a comprehensive manner in the text and recommended requirements of the recommendations; that is, they appear isolated from the Commission’s main recommendations for environmental assessment, suggesting that neither their objective(s) nor functioning is fully understood. This should be capable of resolution through the technical workshop.

18. The language adopted in regulation 31(6)²¹ suggests that, in addition to requiring monitoring programmes at project level, this regulatory provision has the potential to operate at a wider scale even beyond contract areas, provided such programmes are approved by the Council on the basis of recommendations by the Commission. Consequently, it is arguable that there exists the possibility for the Council to require designation of the respective zones outside contract areas through co-operation with the relevant actors contemplated by that paragraph of the Regulation. This may be necessary where mining areas are adjacent to third party contract areas or areas remaining vested in the Authority.

19. In terms of its contractual obligations, a contractor must “observe, as far as reasonably practicable, any recommendations which may be issued from time to time by the Legal and Technical Commission” (see para. 12 above). It is accepted that it would be challenging currently to observe the recommendations for IRZs and PRZs given the lack of criteria for their development; hence the need for a workshop to develop agreed criteria for the design of such zones. Equally, and in the context of the exploration regulations, it is important to note that a contractor’s obligation in observing the recommendations applies only *as far as reasonably practicable*. That is, there needs to be a balance with the effort and cost²² associated with monitoring programmes. The design and implementation of

¹⁹ Analysis of the draft regulations on prospecting and exploration for polymetallic sulphides and cobalt-rich ferromanganese crusts in the Area. Part II: Provisions relating to the protection of the marine environment, [ISBA/12/C/2 PART II](#), 24 May 2006.

²⁰ Decision of the Council of the International Seabed Authority relating to amendments to the Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area and related matters, [ISBA/19/C/17](#), 22 July 2013.

²¹ It is interesting to note that the regulations on prospecting and exploration for polymetallic nodules in the Area, adopted by the Assembly on 4 October 2000 ([ISBA/6/A/18](#)) provided at regulation 31(7), that IRZs means “areas to be used for assessing the effect of each contractor’s activities in the Area”.

²² The Western Australia Environmental Protection Act 1986 defines practicable as meaning reasonably practicable having regard to, among other things, local conditions and circumstances (including costs) and to the current state of technical knowledge.

IRZs and PRZs, in particular their monitoring objective, spatial and temporal extent, and associated monitoring programmes, should balance the needs and cost-effectiveness of such monitoring, including obligations arising under a closure plan. Consequently, contractors should be provided with reasonable parameters within which to adopt reference zones, but the flexibility to adjust their monitoring programmes and reference zones accordingly.

V. Further observations

20. In the course of researching the content for this paper, the development of IRZs and PRZs has led to some confusion and ambiguity, particularly in connection with the role and purpose of PRZs or PRAs.

21. Early discussions flowing from the U.S. legislation, indicate that the concept of a preservational reference area was akin to the Authority's concept of an Area of Particular Environmental Interest, as formulated in the Environmental Management Plan for the Clarion-Clipperton Zone. Indeed, a 1984 report²³ contemplated a need for a set of nine characteristic environments, with each containing one provisional preservational reference area. Furthermore, an academic article written in 2008 by expert participants in the workshop to *Design Marine Protected Areas for Seamounts and the Abyssal Nodule Province in Pacific High Seas*, Oct 23-26, 2007, University of Hawaii at Manoa, observed that “[t]he setup of a regional system of PRAs will remove the burden from individual contractors of designing their own PRAs, and will initiate conservation management of the CCZ as a whole, an approach necessitated by the space and time scales of expected nodule mining impacts”.²⁴ It is suggested that the workshop may wish to consider whether APEIs planned at regional scale, with associated monitoring mechanisms, could be used in appropriate circumstances to modify the requirement for smaller-scale PRAs.

22. There remains a concern, given the historical development of PRZs, ambiguous language, and lack of clear objectives and operational needs that some stakeholders will wish to attach a degree of permanency to PRZs that is not implicit from their monitoring function. For example, they may be seen by some stakeholders as *de facto* marine protection areas within a contract area, designed to serve the function of providing a potential source of representative biodiversity to repopulate mined areas. This, however, is the principle role and function of APEIs, acting as “bank accounts” for regional biodiversity. The use of the word “preservation” will inevitably drive a preservationist approach toward conservation measures.

23. The U.S. regulations provide for the study of two types of area (see annex), including an “interim preservational reference area located in a portion of a permit area tentatively determined: to be non-mineable, *not to be scheduled for mining during the commercial recovery plan, or to be scheduled for mining late in the plan*”. The language of this regulation provides for the necessary degree of permanence during the term of the recovery plan.

²³ See note 2.

²⁴ Smith CR, Gaines S, Friedlander A et al., “Preservation Reference Areas for Nodule Mining in the Clarion Clipperton Zone: Rationale and Recommendations to the International Seabed Authority”, February 2008, <http://bit.ly/2wH2pHu>.

24. Care does need to be taken in the formulation of wording in connection with IRZs and PRZs to ensure that their appropriate use and function does not go beyond their primary purpose of serving as monitoring reference / control sites. For example, in the context of the environmental management plan for the Clarion-Clipperton Fracture Zone, it is stated that one of the management objectives for the contract areas is that:

Contractors will provide in their environmental management plans the designation of the required impact and preservation reference zones for the primary purposes of ensuring preservation and facilitating monitoring of biological communities impacted by mining activities.²⁵

Here, it is suggested that the language of “preservation” is not helpful as to what is the intended purpose of a IRZ and PRZ, and fails to convey that a PRZ is intended to be a control area for comparison against an impact zone.

25. There are other examples of where the terminology of IRZs and PRZs has been used by the scientific community to support “set-aside” areas for the purposes of recruitment and re-establishment of biota.²⁶ That said, the MIDAS project concluded that: “the need to include multiple preservation reference zones and impact reference zones within mining claims, as well as larger scale no-mining “areas of particular environmental interest” across nodule fields”,²⁷ implies a recognition that that PRZs are not intended to provide the degree of permanence attached to regional scale APEIs.

26. Whether additional set-aside areas (field-specific APEIs) will be required for conservation measures, including those for recolonization purposes is a separate discussion, and potentially resource specific. In the context of polymetallic nodules, and the Clarion-Clipperton Fracture Zone, it should be remembered that under an exploitation contract, a contract area will be equivalent to a current exploration area (+- 75 000 km²). Only some 10-15 per cent of a contract area will likely be identifiable as mineable areas, mined within a foreseeable time frame (+- 30 years). Consequently, areas within a contract area will, by default, be “set-aside” with any consequential conservation benefits, including connectivity channels. The spatial distribution of these areas will be evident from the mining plan. There remains, however, a public perception of “vast” mining areas, on an unprecedented scale and magnitude, and it is important to recognize that this will simply not be the case.

27. There is a need for clarity and harmonization in the terminology used to date. For example, given the words “zone(s)” and “areas” appear to be used interchangeably, was/ is there an intended distinction between the use of the word “zone(s)” and that of “area(s)”, and indeed that of “site(s)”²⁸? Zones and areas imply a scale in terms of size. Arguably, larger areas will be

²⁵ Para 41(c), Environmental Management Plan for the Clarion-Clipperton Zone, ISBA/17/LTC/7, 13 July 2011. See also Review of the implementation of the environmental management plan for the Clarion-Clipperton Fracture Zone, [ISBA/22/LTC/12](#), 17 June 2016 at para. 10(h) repeating the same text.

²⁶ Boschen RE et al, Mining of deep-sea seafloor massive sulfides: A review of the deposits, their benthic communities, impacts from mining, regulatory frameworks and management strategies, 2013 (84) *Ocean & Coastal Management* 54-67.

²⁷ MIDAS, Report on the implications of MIDAS results for policy makers with recommendations for future regulations to be adopted by the EU and the ISA, Deliverable 9.6, WP 9, 16 December 2016 at 1.3.

²⁸ ISBA/19/LTC/8 at para. 26(d) states: The reference site will be important in identifying natural variations in environmental conditions. Which or what “reference site”? A reference site within an IRZ and / or PRZ, i.e. a monitoring station(s)?

costlier to monitor. The size of the IRZs and PRZs must be proportionate to their needs, and provide a cost-effective solution. Equally, where it is considered that multiple zones or areas are necessary for statistically robust sampling needs, technology and cost should also be factored in to any discussion.

28. There is currently an inconsistency between the regulations and the Commission's recommendations for the guidance of contractors. The Council has yet to determine the requirement for IRZs and PRZs, whereas the Commission's recommendations are recommending the delineation of IRZs and PRZs at a much earlier stage than envisaged by the regulations. Assumedly, as soon as the necessary design and implementation criteria for IRZs and PRZs are determined, the Commission will make recommendations to the Council, on the basis of recognized scientific methods, appropriate monitoring programmes, including fit-for-purpose reference areas. The development of such programmes should also reflect technical and economic constraints.²⁹ Equally, any recommendations should provide general parameters and guidance for such programmes, and related monitoring tools, thus offering a degree of flexibility to contractors to suit project-specific needs.

29. There is also a danger of "re-inventing the wheel". In a monitoring context, there are plenty of examples, for instance from the UK dredging industry, and oil and gas regimes,³⁰ as to the implementation of environmental monitoring programmes, and the need for impact reference sites and control reference sites, and their respective purposes, design and implementation.

VI. Conclusion and recommendations

30. As analysed above, the primary function served by IRZs and PRZs is as part of a monitoring programme. Their spatial and temporal extent should be proportionate to that function. Their legitimacy flows from the recognition of a need for monitoring programmes in accordance with the Convention, and through the use of recognized scientific methods for such monitoring.

31. It is recommended that prior to any discussion on defining selection and implementation criteria,³¹ the clear objectives and rationale for the respective zones, and their association and relationship with APEIs, are discussed and properly formulated. While one of the aims of the forthcoming workshop is to ensure a consistent application of IRZ and PRZ concepts, the concepts themselves could also benefit from further elaboration and clarification. Since IRZs and PRZs are essentially monitoring tools, the requirements of a monitoring programme should drive the appropriate monitoring tools, and be based on existing best practice within parallel industries, adjusted for spatial needs in the Area.

32. Two points made by the Secretary-General at the March 2017 workshop in Berlin, should be reinforced, namely not to re-invent the wheel and to take a realistic view of the

²⁹ This is supported by the language of article 204(1).

³⁰ E.g. Guidelines for offshore environmental monitoring: The petroleum sector on the Norwegian Continental Shelf, October 2011.

³¹ See Review of the implementation of the environmental management plan for the Clarion-Clipperton Fracture Zone, [ISBA/22/LTC/12](#), 17 June 2016 at para. 23 setting out the aims of the workshop on developing guidelines for contractors to use in setting up IRZs and PRZs.

magnitude and scale of future mining operations. These remain pertinent to development criteria for reference sites.

Definitions / content of IRZs and PRZs

Source	Text
<p>Title 30 – Mineral Lands and Mining Chapter 26—Deep Seabed Hard Mineral Resources</p>	
<p>§ 1419. Protection of the environment</p>	<p>(f) Stable reference areas</p> <p>(1) Within one year after June 28, 1980, the Secretary of State shall, in cooperation with the Administrator and as part of the international consultations pursuant to section 1428 (f) of this title, negotiate with all nations that are identified in such subsection for the purpose of establishing international stable reference areas in which no mining shall take place: Provided, however, That this subsection shall not be construed as requiring any substantial withdrawal of deep seabed areas from deep seabed mining authorized by this chapter.</p> <p>(2) Nothing in this chapter shall be construed as authorizing the United States to unilaterally establish such reference area or areas nor shall the United States recognize the unilateral claim to such reference area or areas by any State.</p> <p>(3) Within four years after June 28, 1980, the Secretary of State shall submit a report to Congress on the progress of establishing such stable reference areas, including the designation of appropriate zones to insure a representative and stable biota of the deep seabed.</p> <p>(4) For purposes of this section “stable reference areas” shall mean an area or areas of the deep seabed to be used as a reference zone or zones for purposes of resource evaluation and environmental assessment of deep seabed mining in which no mining will occur.</p>
<p>Deep Seabed Mining Regulations for Commercial Recovery Permits (U.S.), 15 CFR Part 971</p>	
<p>§971.603</p>	<p>(c) The monitoring plan shall include determination of (1) the spatial and temporal characteristics of the mining ship discharges; (2) the spatial extent and severity of the benthic impact, including recovery rate and pattern of benthic recolonization; and (3) any secondary effects that result from the impact of the mining collector and benthic plume.</p> <p>(d) The monitoring of benthic impact shall involve the study of two types of areas, each selected by the permittee in consultation with NOAA, which areas shall be representative of the environmental characteristics of the permittee's site:</p>

	<p>(1) An impact reference area, located in a portion of a permit area tentatively scheduled to be mined early in a commercial recovery plan; and</p> <p>(2) An interim preservational reference area, located in a portion of a permit area tentatively determined: to be non-mineable, not to be scheduled for mining during the commercial recovery plan, or to be scheduled for mining late in the plan.</p> <p>Reference areas may be selected provisionally prior to application for a commercial recovery permit.</p>
<p>Preparatory Commission for the International Seabed Authority and for the International Tribunal for the Law of the Sea, Special Commission 3, New York, 10-21 August 1992, 22 July 1992</p>	
<p>LOS/PCN/SCN.3/1992/CRP.17</p>	<p>(3) "impact reference zones" means areas to be used for assessing the effect of each contractor's activities in the Area on the marine environment and designated in each mining site so as to be:</p> <p>(a) representative of the environmental characteristics of the site; and</p> <p>(b) located in a portion of the site scheduled to be mined early under the contract;</p> <p>(4) "preservation reference zones" means areas in which no mining shall occur to ensure representative and stable biota of the sea-bed in order to assess any changes in the flora and fauna of the marine environment.</p> <p><i>Article 107</i> <i>Environment reference zones</i></p> <p>1. After the reserved area has been designated in accordance with article 28(4), the applicant shall propose areas to be set aside and used exclusively as impact reference zones and preservation reference zones.</p> <p>2. Upon the recommendation of the Legal and Technical Commission and taking into account the proposal of the applicant, the Council shall, at the time of approving the plan of work, set aside parts of the areas covered by the plan of work to be used exclusively as preservation reference zones and impact reference zones.</p>
<p>Environmental Management Plan for the Clarion-Clipperton Zone, ISBA/17/LTC/7, 13 July 2011</p>	
<p>ISBA/17/LTC/7 (para. 41(c)) 13 July 2011</p>	<p>[The management objectives for the contract are the following:] Contractors will provide in their environmental management plans the designation of the required impact and preservation reference zones for the primary purposes of ensuring preservation and facilitating monitoring of biological communities impacted by mining activities. Impact reference zones should be designated to be within the seabed</p>

	claim area actually mined. Preservation reference zones should be designated to include some occurrence of polymetallic nodules in order to be as ecologically similar as possible to the impact zone, and to be removed from potential mining impacts;
ISBA/17/LTC/7 (para. 41(e)) 13 July 2011	[The management objectives for the contract are the following:] Contractors are encouraged to collaborate with each other and independent experts to identify guidelines for uniform application in the designation of reference zones under the guidance of the International Seabed Authority;
Recommendations for the guidance of contractors for the assessment of the possible environmental impacts arising from exploration for marine minerals in the Area, ISBA/19/LTC/8, 1 March 2013	
ISBA/19/LTC/8 (para. 21)	Environmental monitoring data are required prior to, during and following test mining at the mining site and at comparable reference sites (to be selected according to their environmental characteristics and faunal composition). Impact assessment must be based on a properly designed monitoring programme that should be able to detect impacts in time and space and to provide statistically defensible data.
ISBA/19/LTC/8 (para. 26(d))	Delineation of impact reference areas and preservation reference areas. The impact reference area should be representative of the site to be mined in terms of environmental characteristics and the biota. The preservation reference area should be carefully located and large enough not to be affected by mining activities, including the effects from operational and discharge plumes. The reference site will be important in identifying natural variations in environmental conditions. Its species composition should be comparable to that of the test-mining area.
ISBA/19/LTC/8 (para. 30(h))	[The contractor is to provide the Secretary-General with some or all of the following information, depending on the specific activity to be carried out:] Resampling of local environmental baseline data at reference and test zones and evaluation of environmental impacts.
ISBA/19/LTC/8 (Annex I para. 2(c))	[A plan of work for exploration should include activities that address the following environmental requirements:] Provide data for an environmental impact assessment required for an exploitation contract for marine minerals in the Area, including the designation of impact reference zones and preservation reference zones.

<p>ISBA/19/LTC/8 (Annex I para. 24)</p>	<p>The characterization of pelagic and benthic communities should be carried out within all sub-habitats that may be impacted by mining operations and to determine the regional distributions for the creation of preservation reference areas and for mitigation strategies to promote the natural recolonization of areas affected by mining activities.</p>
<p>ISBA/19/LTC/8 (Annex I para. 39)</p>	<p>Temporal variation must be evaluated for at least one test-mining site and the preservation reference site prior to the test-mining activity (ideally, with a minimum of annual sampling over at least three years).</p>
<p>ISBA/19/LTC/8 (Annex I para. 53)</p>	<p>During the mining tests, the notification of proposed impact reference zones and preservation reference zones is recommended. The impact reference zone should be selected based on the area being representative of the environmental characteristics, including the biota, of the site where test mining will take place. The preservation reference zone should be carefully located and be large enough so as not to be affected by the natural variations of local environmental conditions. The zone should have species composition comparable to that of the test area. The preservation reference zone should be outside the test area and areas influenced by the plume.</p>
<p>ISBA/19/LTC/8 (Annex II)</p>	<p>Impact reference zones: <i>Areas used to assess the effect of activities</i> in the Area on the marine environment; must be representative of the environmental characteristics (physical, chemical, biological) of the area to be mined.</p>
<p>ISBA/19/LTC/8 (Annex II)</p>	<p>Preservation reference zones: <i>Areas representative of the test-mining site, but in which no test mining shall occur; used to assess changes in the biological status of the environment</i> caused by test-mining activities.</p>
<p>Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, ISBA/19/A/9, 25 July 2013</p>	
<p>Reg. 31(6) PN Exploration Regulations</p>	<p>Contractors, sponsoring States and other interested States or entities shall cooperate with the Authority in the establishment and implementation of programmes for monitoring and evaluating the impacts of deep seabed mining on the marine environment. When required by the Council, such programmes shall include proposals for areas to be set aside and used exclusively as impact reference zones and preservation reference zones. “Impact reference zones” means areas to be <i>used for assessing the effect of activities in the Area</i> on the marine environment and which are representative of the environmental</p>

Background Note on the Legal Basis for Impact Reference Zones and Preservation Reference Zones

	<p>characteristics of the Area. “Preservation reference zones” means areas in which no mining shall occur to ensure representative and stable biota of the seabed in order <i>to assess any changes in the biodiversity of the marine environment.</i></p>
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