Summary of responses to stakeholder comments on the report entitled:

Collector Test Study – Environmental Impact Statement – Testing of polymetallic collector system components in the NORI-D contract area, Clarion Clipperton Zone, Pacific Ocean.

Background:

Nauru Ocean Resources Inc. (NORI) plans to carry out testing of a polymetallic nodule collector system in the NORI-D contract area of the eastern Clarion Clipperton Zone (CCZ), Central Pacific Ocean, in Q3/2022. The Collector Test Environmental Impact Statement (EIS) must be submitted to the ISA for review no later than one year in advance of the collector test.

NORI submitted the EIS to the Secretariat of the ISA on 29th July 2021. The document was then released for public review on 6th October 2021 via a dedicated website (www.eisconsultationnauruun.org.). This was preceded by an online public workshop on 5th October during which stakeholders were familiarised with the format of the document and the process for providing comment.

A 45-day period was allocated for submission of written comments from 5/10/21 to 19/11/21.

Submissions:

Submissions were received either in the form of individual comments through a portal on the Nauru website or in the form of a written submission emailed directly to the Government of Nauru.

Submissions were received from the following sources:

- Federal Republic of Germany (FRG)
- Deep-Ocean Stewardship Initiative (DOSI)
- Deep Sea Conservation Coalition (DSCC)
- Deep Sea Mining Campaign (DSMC)
- Mining Watch Canada (MWC)
- Government of the United Kingdom (UKGov)
- The Pew Charitable Trusts (PEW)
- United States Government (USGov)
- 10 Submissions from individuals via website portal

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Comment Themes:

Across all submissions a total of 632 comments were received relating to the following 24 common themes:

1. Alternatives analysis
2. Baseline data
3. Climate change
4. Collector test operations
5. Cumulative and transboundary impacts
6. Ecotoxicology
7. EIA process
8. Light impacts
9. Mitigation measures
10. Monitoring plan
11. Noise impacts
12. Oxygen impacts
13. Plume impacts and monitoring
14. PRZ identification
15. Regulatory conformance
16. Social impacts
17. Sponsor state roles and responsibilities
18. Stakeholder engagement process
19. Temperature impacts
20. VECs/risk identification process
21. Clarifications of elements of the EIS text

Valid, Relevant and Novel Comments:

NORI appreciates the time and effort stakeholders took to review and comment on the EIS and was pleased with the level of engagement.

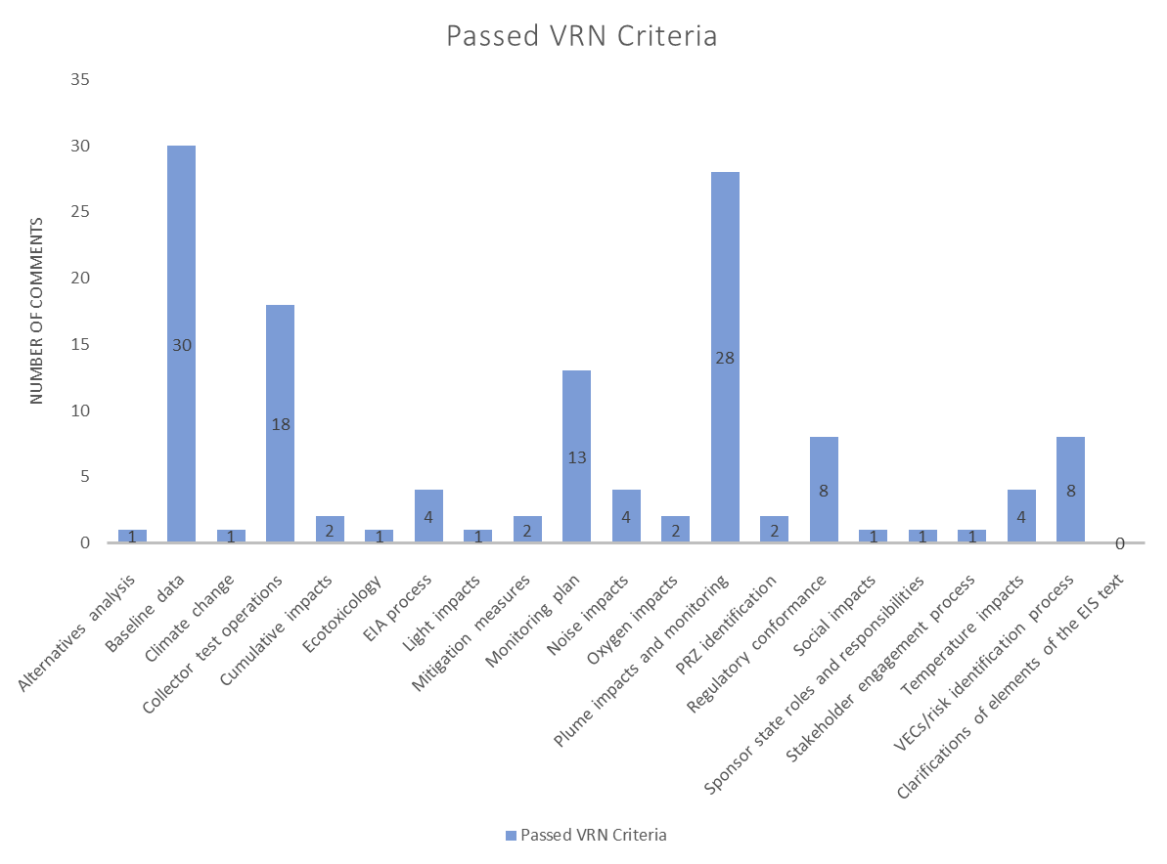
Of the 632 comments received a large proportion were either duplicates, statements of opinion, or not relevant in the context of the Collector Test EIS. As such only comments that were deemed to be ***valid, relevant and novel*** (VRN) have been responded to.

Valid Query warrants a response (i.e., isn't a standalone statement of fact or opinion)

Relevant Query is relevant in the context of the Collector Test

Novel Query is not a duplicate

The number of comments meeting all VRN criteria totalled 132. Comments falling into this category reference each theme in the proportions shown below:



Changes to the EIS:

After careful consideration of the novel, valid and relevant comments received, changes were made to the EIS report as appropriate. NORI believes that the revised EIS is now a more robust document than the original version, demonstrating the value of the stakeholder engagement process. These changes are described below under each theme and updated chapters of the EIS are referenced:

NAURU OCEAN RESOURCES INC.

1. **Alternatives Analysis** – Comment was made that consideration of alternatives was normal practice in EIA and was notably absent from the EIS. It is acknowledged that consideration of alternatives is usually an essential component of an EIA. However, as testing of mining components is recommended by the ISA as a means of collecting information to inform the Commercial EIS, this exercise was considered somewhat redundant in the context of a Collector Test as the alternatives would be a) not to test the components; b) to test the components on land only; c) to test the components in an area other than the CCZ; none of which would satisfactorily meet the requirement of collecting preliminary information that would be of use in informing the Commercial EIS.

   The valid point was made that an assessment of the spatial and temporal alternatives of the test program and test site would be of value; and this has been incorporated into Chapter 3 of the updated EIS.

2. **Baseline Data** – This was by far the most commented on theme. It should be noted that status of the baseline information was acknowledged by NORI in the original report and the following commitment was made in Section 6.2:

   ''*Over the 12-month period required by the ISA to assess the Collector Test EIS, additional data and information will be submitted by the research institutions as outlined in Table 6-2. As this information becomes available it will be collated and submitted to the ISA both as part of the NORI Annual Report, and as an addendum to the EIS. Information that will not be available prior to the collector test has been highlighted in Table 6-2. As uncertainty in the biological baseline has been incorporated into the risk assessment (see Section 13.3) it is unlikely that new information will arise that will require a material change in the findings of this EIS. Should this occur however, revised findings will be submitted based on the new information*.''

   Since submission of the original EIS report on 29th July 2021 over a dozen reports have been submitted to NORI from the science teams contracted to conduct the baseline studies. A summary of this information has now been provided in Chapters 5, 6, 7 and 8 of the EIS, adding over 200 pages of additional baseline information to the report.

   The inclusion of this information provides sufficient baseline data to competently inform impact and risk assessment for the proposed activities. Specifically, the additional information now informs several issues that were identified by the

stakeholder comments as requiring clarity, including: justification for the depth of the return water discharge point at 1,200 m; suitability of the PRZ as a control site for BACI monitoring studies; and potential impacts of noise on pelagic biota.

3. **Climate Change –** Comments relating to Climate Change addressed two specific issues, a) the GHG emissions from Collector Test related activities, and b) how the disturbance of sediment may contribute to the release of sequestered carbon.

   The GHG emissions from activities related to the collector test have now been calculated in Chapter 7, and a commitment made to offset these emissions.

   The issue of contributing to global GHG emissions through the release of carbon by disturbance of benthic sediments is not considered to be a valid impact pathway in the context of the Collector Test. An explanation as to why this impact pathway has not been considered by the EIA is provided in Chapter 7.

4. **Collector Test Operations** – Several commentators made the point that the EIS should include more information about how the Collector System will perform during the test, Specifically, more information was requested on issues such as:
   i. optimal mid-water discharge depth;
   ii. % of nodule fines in the return slurry;
   iii. laminar flow behind the PCV;
   iv. survivability of fauna passing through the PCV;
   v. optimal speed of PCV for steady state production;
   vi. collector head penetration depth; and
   vii. nodule slurry processing procedures onboard the SSV.

   Additional information has been to Chapter 3, which has been updated to include greater detail on the surface vessel processing procedure. One of the fundamental objectives of the collector test, is to test the performance of the collector system and its components. The information collected during collector test will provide the information required to answer such questions and these learnings will be incorporated into the commercial system.

5. **Cumulative and Transboundary Impacts –** Due to the small scale of the collector test and very small footprint it was decided to address the bigger issue of cumulative and transboundary impacts in the Commercial EIS as this it would be a more relevant and meaningful discussion in this context. While NORI still contends that this discussion would be of more value if considered in the context of full-scale

operations, Chapter 9 has been updated to include a discussion of the potential for cumulative impacts from the scientific study scale collector test.

6. **Ecotoxicology –** Details of ecotoxicological assessment for the sediments, water column and target taxa have now been included in the updated baseline (see point 2). During the collector test additional sediment and water samples will be collected and tested for the same ecotoxicological parameters (nutrients, metals etc.) that were included in the baseline. These before-and-after disturbance comparisons will be used to assess the potential for increased bioavailability of sediment derived toxins during commercial operations. Chapter 6 has been updated to include information on the ecotoxicological baseline of the sediments, water column and target taxa.

7. **EIA Process –** It was recognised by commentators that there is no explicit guidance under the exploration regulations and Recommendations as to appropriate methods for sensitivity assessment. In the absence of such guidance NORI adopted the concept of 'Valued Ecosystem Components (VECs)' to help simplify complex impact pathways into sub-components that can be readily assessed. This methodology is widely used by Impact Assessment Professionals and is well described in the relevant literature [1,2,3]. As the identification of VECs is a precursor to Ecosystem Based Management (EBM) planning, this approach is considered appropriate. Chapter 4 has been updated to provide an explanation of the approach taken and the process that was used to identify appropriate VECs. Several additional VECs have also been added following suggestions from commentators, although the relevance of these suggestions in the context of the collector test is questionable.

8. **Light Impacts** – Impacts from light have been expanded on in Chapter 7. This stressor was not identified to have the potential to be significant by the EIA process in the context of the Collector Test.

9. **Mitigation Measures** – Opportunities for impact mitigation will occur throughout the project cycle and these have now been highlighted in Chapters 7 and 8. The EIA demonstrates how due to the small scale of the Collector Test, design features of the equipment, and the temporary nature of the proposed activities, no significant impacts are anticipated. test. All negative impacts are reduced to less than significant levels by the design features built into the equipment and test program. Therefore, there is no requirement for the development of focused mitigation measures to further reduce residual impacts to less than significant levels.

10. **Monitoring Plan** – At the time of writing Requests for Proposals (RFPs) have been issued for key components of the Collector Test studies and monitoring, and proposals have been received and are under consideration. A planning meeting with the science partners is scheduled for early Q2 2022, to finalise the Collector Test monitoring and study plan. Representatives from the ISA and Nauru Seabed Minerals Authority will be invited to attend this planning meeting. A detailed EMMP will be submitted to the ISA no later than 2-months prior to the planned start date of activities in the CCZ.

11. **Noise Impacts** – A desktop noise assessment has been competed the findings of which have been incorporated into Chapters 7 and 8. This assessment concludes that underwater noise generated in the shallow-water environment (surface support vessels in DP mode), midwater environment (riser tests), and deep ocean environment (seabed nodule harvesting test runs) are unlikely to trigger any long-term, persistent, deleterious impacts upon marine fauna within these three environmental compartments recognised by the ISA (2020). Noise impacts are discussed in Chapters 7 and 8, and a preliminary noise assessment has been added as Appendix 4.

12. **Oxygen Impacts** – Chapter 7 has been updated to address this issue. It is anticipated that localised increases in oxygen from the testing of the riser system will have a negligible effect when considered as a cumulative effect together with global ocean deoxygenation, or potentially as a slightly positive effect on midwater ecosystem functioning when considered as an individual effect.

13. **Plume –** The plume modelling has been updated to include a more granular assessment of the impacts of sedimentation. Sedimentation modelling depths now encompass <0.01; 0.01-0.05; 0.05-0.1 mm; whereas in the original version of the plume model the initial minimum depth of sedimentation was illustrated at 0.5 mm. The Plume Report has also been updated to clarify many of the stakeholder comments received. The updated version of the report has been included as Appendix 5.

14. **Preservation reference zone (PRZ) Identification** – Analysis of the baseline data from the physicochemical and biological components of the Preservation reference zone (PRZ) and the Collector test area (CTA) are somewhat inconclusive in terms of the comparability of the two sites, and hence the value of the PRZ as a control site for the post-disturbance monitoring. To mitigate any potential issues arising from non-parity, up to two additional sites have been added to the monitoring design

specifically as control sites for the Before-After-Control-Impact (BACI) studies that will be conducted on the Impact Reference Zone (IRZ). The rationale behind this assessment is discussed in Chapter 3.

15. **Regulatory Conformance** – NORI reviewed the comments received and it was determined that no amendments were required to the EIS.

16. **Social Impacts** – NORI reviewed the comments received and it was determined that no amendments were required to the EIS.

17. **Sponsor State Roles and Responsibilities** – Clarifications have been made in Chapter 13.

18. **Stakeholder Engagement Process** – Clarifications have been added to Chapter 13.

19. **Temperature Impacts** - Any heat stress resulting from the midwater plume during Collector Test activities is anticipated to be negligible, due to the small temperature differential; temporary, due to periodic relocation of the discharge location; and localised, due to high turbulence, mixing and dilution of discharge water with ambient seawater. The rationale behind this assessment is discussed in Chapter 3 of the EIS.

20. **VEC/Risk Identification Process** - The importance of Vulnerable Ecosystem Components (VECs) relevant to the Collector Test were identified by a review of the current literature on the risks of polymetallic mining activities. The rationale behind this assessment is discussed in Chapter 4 of the EIS.

21. **Clarifications in the Test of the EIS** – Clarifications, corrections and additional information has been added to the EIS in response to points raised in stakeholder comments.

References

[1]MacKinnon, Aaron J., Peter N. Duinker, and Tony R. Walker. The application of science in environmental impact assessment. Routledge, 2018.

[2]Freedman, B., and Environmental Ecology. "The Ecological Effects of Pollution, Disturbance, and Other Stresses." Google. Obtido em 6.09 (1995): 2008.

[3]Burton, A. C., & Chetkiewicz, C. L. B. (2021). Monitoring those matters: towards effective ecological monitoring to address cumulative impacts on biodiversity. In Handbook of Cumulative Impact Assessment. Edward Elgar Publishing.

[4]EC (European Commission). 2001. Guidance on EIA screening. Luxembourg, p. 25; [accessed 2014 Mar 6].

[5]CEQ (Council on Environmental Quality), Executive Office of the President. 2005. Regulations for implementing the procedural provisions of the National Environmental Policy Act. Government of the United States of America.

[6]World Bank. 2013. Operational policy 4.01 – environmental assessment. Washington, DC: World Bank

[7]SadlerB, FullerK, RidgwayB, McCabeM, BaileyJ, SaundersR. 2002. Environmental impact assessment training resource manual. 2nd ed. Geneva: United Nations Environment Programme.

[8]Ehrlich, A & W. Ross. 2015. The significance spectrum and EIA significance determinations, Impact Assessment and Project Appraisal, 33:2, 87-97, DOI: 10.1080/14615517.2014.981023