Invitation to comment on Facing Finance statement

Community Consultation

One of the many advantages of seafloor mining is that there are no local landowners or people living on the site. The Solwara 1 Project site is approximately 25 km from land, in water depths of 1,600 meters. There are no local landowners, or traditional "land uses" which the Mining Warden in Papua New Guinea (PNG) has stated this at numerous Exploration License (EL) hearings over a period of 10+years. It should also be noted that that traditional fishing rights in PNG do not extend much past the edge of coral reefs - they never had the need to go any further as there is plenty of fish out to this point! All tuna, snapper and other fish rights are the property of the State because of this, and have never been disputed by landowners for the simple reason they have never traditionally fished out in the deep ocean. Another advantage of our Project is that at 1600m water depth and using a fully enclosed pump and pipe system to extract the mineralised material from the seafloor, there is no mixing of the water column and there is no extraction impact shallower than 1300 m water depth at Solwara 1 (>800 meters below where most tuna, whales etc live)

The mining laws in PNG detail how companies must operate and carry out their activities. To obtain an Exploration Licence in PNG you first have to have a "Wardens Hearing". This is a public hearing on the site of the proposed permit where landowners get to discuss the project and give their opinion (approval or disapproval). These views are recorded by the Warden, and taken into account in deciding if the licence is granted. Commonly the licence is granted with a series of conditions. Occasionally the licence is not granted if the Warden decides that there are valid grounds for not granting approval for exploration due to local community views/opposition. Every exploration licence in PNG has a Wardens Hearing before it is granted (or declined). Exploration licences last for two years, and are then renewed. Before renewing the licence, another Warden's Hearing is held on the site, where once again community views are sought by the Warden, and if appropriate the licence is granted with additional conditions.

The Solwara 1 exploration licence was originally granted in 1997, and was renewed every 2 years as per PNG law. The EL had around seven Warden's hearings over the years. The hearings were held in Kavieng, not on site (as no one lives on site), but otherwise complied with the Act. No objections were ever recorded at any of the hearings. The Mining Warden records are kept in the Mineral Resource Authority (MRA) offices in Port Moresby if anyone would like to check the records.

Granting of a mining licence in PNG also requires public hearings. Our Solwara 1 licence was granted in 2011 after public hearings were held in Port Moresby (POM), Rabaul, and Kavieng. Up to 300 people were present in the public hearings (Rabaul was the largest). No objections were recorded at any of the hearings - once again records can be viewed in the MRA offices in POM.

Since grant of the Mining Lease (ML) Nautilus has been holding "awareness" meetings and public outreach programs on a quarterly basis (sometimes more frequently), with representatives from the local Provincial Government and MRA present at almost all these meetings.

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The company also held an EIS "inception report" in Port Moresby in 2007 where various stakeholders (govt agencies, anthropologists, universities, scientists, NGO's, etc) were invited to help guide what needed to be covered in the EIS. Greenpeace and WWF **were invited** but declined to attend. The results of this meeting helped form the basis of what work was covered by the EIS, in consultation with the Department of Environment.

So to say there has been no public consultation is completely false and Nautilus would welcome the opportunity to speak with the people making these claims.

Nautilus Minerals' EIS

Nautilus Minerals' EIS has been acknowledged publicly by the International Seabed Authority (ISA) as being to a very high standard, and is used as the basis or template for their own EIS process. It has contributions from world leaders in various fields, as well as some of the world's top research groups (Uni of Toronto, Duke University, Woods Hole, Scripps, CSIRO, James Cook Uni, etc). We stand behind the report and since it was first published back in 2009. Our EIS was approved by the PNG Government after it was reviewed and critiqued by an independent third party (Cardino). The Solwara 1 Project was granted its Environmental Permit in 2009 off the back of Cardino's review, and contains around 80 conditions the Company must meet. Nautilus has continued to collect even more data since the EIS was published which will form part of its Environmental Management Plans that are required as part of the EIS review. Drafts of these are currently being prepared.

Accountability Zero Report

The report "Accountability Zero" that was referred to was produced by the anti-seafloor mining NGO groups in response to a report completed by Earth Economics (EE) on the Solwara 1 Project. EE is a large, independent Washington State (Seattle) based NGO group who use Natural Capital Accounting to help inform and guide investment decisions in the extractive industries, and in overcoming environmental problems. They are known worldwide for their expertise in this field, have the largest database in the world with respect to natural capital accounting (tables etc), and do significant work for the USA Government, State Governments (in the USA), World Bank, etc. EE reviewed the Solwara 1 Project, and their report finds it actually compares very favourably to terrestrial mining on a per tonne of copper produced basis - having order of magnitude less environmental impact, much lower CO_2 emissions, no tailings, no impact on fresh water, etc.

The "Accountability Zero" report contains many erroneous facts and claims that many NGO reports consistently make about deep sea mining and our Solwara 1 project (see below for more details on this).

DSMC Accountability Zero Report

NOTE: Red text is copied from the DSMC report. ESBA refers to Earth Economics' Environmental and Social Benchmarking Analysis of Nautilus Minerals Inc. Solwara 1 Project.

The ESBA utilises partial data inappropriate to the marine environment to argue that the social and environmental impacts of the proposed Solwara 1 are lower than those of three of the world's most destructive terrestrial mines - the Bingham Canyon mine in Utah, USA, the Prominent Hill mine in South Australia and the proposed Intag Mine in Ecuador.

The three mines that were picked by Earth Economics Report were chosen for the following reasons:

- The Bingham Canyon mine in Utah – typical large scale porphyry copper system that has been operating for over 100 years (with increasing demand for copper going forward more new mines will be developed to extract porphyries like this mine, so it is a good comparison to what we can expect to see more of in the future from mining on land).
- The Prominent Hill mine in South Australia - very similar in size to the proposed Solwara 1 mine in terms of copper and gold production per annum.
- The proposed Intag Mine in Ecuador - this was selected due to the location of the proposed mining site and that fact that is considered a precious eco system by many environmentalists. Going forward a number of the new coppers mines that will be needed on land will be developed in areas like this one.

The use of natural assets, ecosystem services and values that describe terrestrial environments but bear no relevance to deep sea and marine environments. As a result, the ESBA undervalues, or values at zero the ecosystem goods and services provided by deep sea and marine ecosystems;

Incorrect - data used in the EE Report is from UN approved tables. In addition zero value was assigned when it was deemed there would be no impact whatsoever. Where there was not a table for an assessed impact the highest known land value was assigned for that impact, so valuations are actually conservative.

A failure to account for the social, cultural and economic values of oceans;

Incorrect – they were included but deemed to have very little to no impact at Solwara 1 which is located 30km from the nearest coast; there are no people to be moved, no social dislocation at all, and no social impacts.

The failure to account for the cumulative impacts of the several deep sea mines Nautilus intends to operate in the Bismarck Sea;

Incorrect - the EE Report calculations were based on a per tonne of copper produced and each mine would be assessed on this. On this basis seafloor mining compares very favourably.

A partial and incomplete analysis that rests its case entirely on copper production and omits the analysis of gold production.

For purposes of comparison to terrestrial mines, copper only was chosen. In terms of the seafloor mining operation, mining for copper alone, or copper and gold, is identical; had the EE Report included gold the results would be even more favourable for Solwara 1.

Most notably, the ESBA fails to ask key research questions vital to good decision making about DSM such as:

- What are the net costs and benefits across environmental, social and economic dimensions over time and

- Do the net benefits outweigh the costs of impacts?

The EE Report assesses and provides a comparative value to precisely these costs/impacts and identifies benefits.

It is doubtful that a rigorous cost benefit analysis would determine in favor of Solwara 1 over the existing and potential future uses of the Bismarck Sea.

SPOAC conducted a CBA, and it came out in favour of seafloor mining because, in part, goods and services such as fishing are not impacted.

It is acknowledged that there is a paucity of data about the impacts of DSM, the properties of the deep sea, and its ecosystem services. However, it is incumbent upon researchers to incorporate the most meaningful impact data available. This was not done in the ESBA.

Yes it was. Where data was not available the highest cost land values were assessed to be conservative. The EE Report employed UN approved data.

A sound and independent natural accounting framework would have drawn on a range of information sources (not only Nautilus's own data) from other development activities in the sea (e.g., gas and oil drilling, military use, bridge construction, bottom trawling and other coastal developments) to assess the impacts on deep sea ecosystems, sea water quality, the sea bed, artisanal and commercial fisheries, marine and bird species, tourism, local livelihoods and culture, as per the risks identified in section 2 of this paper. Moreover, it would draw attention to the deficiencies in impact data, gaps in knowledge requiring further research, and alert readers to the consequent need to adopt a precautionary approach.

Comparison of the Solwara 1 site to drilling for oil is meaningless as there is no drilling being conducted at Solwara 1.

By dismissing the risks associated with Solwara 1, Earth Economics commits what it itself describes as the greatest error in monetising impacts – "that of omission, or not valuing important assets at all" (p79, ESBA). "For when natural capital assets and ecosystem services are not considered in economic analysis, they are effectively valued at zero" (p37, ESBA). Thus even by its own measure, the ESBA fails to deliver a credible natural resource economic analysis of the proposed Solwara 1 mine.

Metrics are valued at zero when they have no impact.

In conclusion, the ESBA is not fit for its intended purpose. It fails to provide a framework to assist decisions about the advisability of Solwara 1 or of any other DSM project.

Clearly the EE report was not read in detail or properly understood. The DSMC do not have a clear understanding of how Natural Capital Accounting reporting works.

Section 1: Overview of Concerns

Re: Cost Benefit Analysis

- The EE Report provides a framework that examines ecosystem goods and services that may be impacted by the Solwara 1 Project by applying natural capital accounting tools. Environmental concerns were addressed and potential benefits identified.

Re: Terrestrial vs marine environmental metrics

- Simply incorrect that we afforded values of zero to marine environment services; in fact the highest comparable land values were assigned to the marine environment. If a service was deemed to have no impact it was assigned a value of zero.
- EE looked at available criteria common to both environments.

Re: Failure to account for social, cultural and economic value of oceans

- Once again, simply not true. This is precisely at what the EE Report examines and applies values to ecosystem services.

Re: Questionable comparison with selected mines

- The three terrestrial mines selected are a good cross sectional representation of mining; it's not feasible to analyze every mine.

Re: Incomplete analysis looking only at copper and not gold

- For Solwara 1 it's all the same in terms of copper and gold impacts.

Section 2: Inadequate Impact Assessment]

- The DSMC claims three independent science-based reports were critical of the EIS
- We question the so-called independence and science; meanwhile Nautilus' EIS was reviewed by two truly independent organizations.
- Many of the DSM's claims about our EIS have been thoroughly addressed previously: eg. leakage, seismic events, vertical upwellings, fisheries etc.

Section 3: Fundamental Errors

Nautilus Minerals' EIS is not flawed so it is erroneous to conjecture that these "flaws" would flow through the EE report.

Re: 3.1: Flawed comparison with terrestrial mines

- The EE report quantifies potential impacts.
- "Not only are terrestrial and marine ecosystems extremely different, but while much is known about the existing and potential impacts of mines on land, there is no equivalent information for the marine environment, as no deep sea mine has yet been developed."
- While there is no natural capital assessments of marine ecosystems the EE Report took the highest comparable land values and assigned them to the ocean environment so the assessment is in fact highly conservative.

Re: 3.2: Selective and incomplete focus on copper

- In terms of the seafloor mining operation, mining for copper alone, or copper and gold, is identical; had the EE Report included gold the results would be even more favourable for Solwara 1.
- Hydrothermal vent copper grades are higher than virtually all copper grades on land, not "most."

Re: 3.3: Use of inappropriate terrestrial metrics

- While there is no natural capital assessments of marine ecosystems the EE Report took the highest comparable land values and assigned them to the ocean environment so the assessment is in fact highly conservative.

- The metrics are not false and reasoning that there is no baseline for marine mining because there is no marine mining from which a baseline could be ascertained is a circular argument and defies logic.

Re: 3.4: The social, cultural and economic values of oceans

- The EE report did look at cultural and social impacts. The DSMC makes much of the potential impacts on fishing, however, the impacts on fishing as evidenced in the research done for the EIS will be nonexistent.
- The DSMC cites a decision by New Zealand's EPA to reject licenses "because according to their estimate of costs and benefits the risks outweighed the economic benefits" failing to mention this decision had no basis in fact as no CBA or research was ever conducted and solely based on conjecture.

Re: 3.5: Scale, timeframe and cumulative impacts

- The EE Report is not misleading; it is a direct, one off, examination of Solwara 1; independent research conducted for the EIS shows that the seafloor mining ecosystem at Solwara 1 will be restored to pre-mining state within 3-5 years; the cumulative effects of seafloor mining are much less and transient in comparison to land based mines which have the potential for long lasting effects from tailing dams and waste dumps which are non-existent with seafloor mining.

Re: 3.6: Plumes and their impact

- Nautilus has conducted research and modelling studies on plume generation and disbursement at Solwara 1; water column surface measurements taken by Nautilus indicate that mining operations will not affect surface waters.
- DSMC takes issue with potential plumes generated by mining suggesting that toxic metals in the plume will harm biodiversity yet fail to acknowledge and essential dismiss the reality of an undersea volcano issuing a plume on a daily basis for decades with no discernible surface effects.

Re: 3.7: Evaluating impact and cost benefit analysis

- The DSM Campaign claims that a cost-benefit analysis (CBA) would go a long way to "assist decision making about deep sea mining" however one needs to question if even the most rigorous CBA would satisfy these "activists" whose stated goal is to eliminate seafloor mining altogether.
- This is not a science or research-based critique of the EE Report, but purely conjecture and opinion.