EXPLORING THE DEEP FOR MINERALS

The Cook Islands Exclusive Economic Zone (CIZ) is sizeable at almost 2 million km², with about 70 percent of that area very deep sea approximately 5,000m in depth.

OUR SEABED MINERALS

From over 20 years of SPC research, we now know that we have a type of Seabed Mineral (SBM) called Manganese Nodules in great abundance in our CIZ. This may be very valuable in future global minerals markets. See Abundance Map below. These nodules have been found to contain cobalt, nickel, copper, manganese, titanium and valuable Rare Earth Elements (REE). These nodules can be reduced to precious metals that are used in the communications and other industries, and for most smart and green technologies.

Nodule Abundance
Surveyed at EEZs of 5 coastal states

Found high abundant area at the central area of Cook Islands waters
Why the Cook Islands are interested in developing its deep seabed minerals

The first Premier of the Cook Islands in the 1960s, Albert Henry, is known to have said when talking about national development issues: “Auraka tetai tangata i runga i te vaka kia akarukena’ia”, that “no one in the tribe must be left behind”. That community minded concept and outlook continues to motivate national leaders and people today with regard to gaining the best use and benefit of our national natural resources.

However, as we develop our national seabed minerals sector, we must balance competing desires to welcome foreign investment in SBM and to protect and enhance our national, social, economic and environmental well-being.

A NEW ECONOMIC OPPORTUNITY

The previous two Cook Islands Governments wished to see the development of a new economic sector, based on these nodule resources and enacted the Seabed Minerals Act 2009. The Act states that all seabed minerals in the Cook Islands are vested in the Crown for the benefit of the Cook Islands people. We have the exclusive right to utilise and develop our national manganese resource for our national benefit. Serious controls on how the seabed minerals sector can develop and operate are contained in the Act, which formally commenced on 1st March 2013.

The international deep sea minerals sector is new and it is early days for the new industry. Nowhere in the world have any deep sea minerals been commercially extracted and nowhere in the world has a license been given to any company to mine manganese nodules. To date, no viable deep sea commercial recovery process for manganese nodules has been developed.

Deep sea mineral exploration has been occurring in the international zone for 15 years or more under the control of the International Seabed Authority. Actual deep sea mining (also called extraction or exploitation) is predicted to start in the next decade – some five to 10 years away. By that time, it is expected that exploration will have identified areas suitable for mining and will be able to use new sustainable recovery technologies and secured markets for the minerals extracted. Based on estimates, substantial revenue for the Cook Islands will be generated in about three to five years after mining commences.

WHAT ARE NODULES?

Manganese nodules are rocky lumps up to 10 cm in size that sit on the seafloor at more than 5,000 metres below sea level. They are made up of many minerals including iron and manganese oxides as well as other commercially sought after metals such as Cobalt, Nickel, Copper, Manganese, Titanium, Vanadium and Rare Earth Elements (REE).

These minerals are in high need to satisfy global demand and are becoming harder and more costly to obtain on land. As the world tries to find viable alternative sources, preliminary surveys have revealed that the South Pacific Ocean has the highest concentration of deep sea mineral deposits in the form of manganese nodules, Seafloor Massive Sulphides (SMS) and Cobalt Rich Crusts (CRC).

A recent estimate for Manganese nodules within the Cook Islands’ EEZ states the seabed mineral resource to be in excess of 10 billion tonnes (2013 Cronan report, Imperial College, London). This is the richest Nodule resource in any nation’s EEZ in the world. The international deep sea zone has 26 billion tonnes.
SEABED MINERALS POLICY

Any Applications to explore must follow the underlying principles set out in our Seabed Minerals Policy, approved by Cabinet in 2014; that seeks to guide the planning and implementation of our Government’s sustainable management of SBM resources under the control of the Cook Islands and to enable the wise regulation of SBM activities. The Policy states our Government’s position on the implementation of key aspects of the legislative scheme for SBM Activities set out in the SBM Act, Environmental Act, Permits and Consents Regulations, and Tax Act.

Since 2012, the Authority has been seeking expert international advice and assistance on how best to manage this resource, including numerous consultations with our people and communities. We are also learning important lessons from deep sea minerals activities in other Pacific Islands like Papua New Guinea and Tonga, which have already issued Exploration Licences. PNG has issued the world’s first SBM Mining Licence. But so far, no deep seabed mining has occurred anywhere in the world.

Our biggest priority is to ensure that the economic benefit of deep sea mining is obtained under an effective, sustainable system, bearing in mind our responsibilities to not only utilize our natural resources but also to conserve and protect our ocean and its resources and habitats.

As we evaluate applications, due diligence will be undertaken on the Work Plan and financial and technical capability of the Companies which apply for Exploration Licence rights.

CURRENT EXPLORATION TECHNIQUES OF THE DEEP SEA

TENDER PROCESS

When the Regulatory Framework for Seabed Minerals commences, the Authority will call for Tenders from interested and capable parties to apply to be granted licence rights to undertake exploration activities in Cook Islands’ waters.

The call for Tenders for Exploration Licence rights is a major step towards the Cook Islands becoming active in the growing international deep seep sea minerals sector and capitalising on our national minerals resource to serve the global demand for minerals and metals.

Our Seabed Minerals Regulatory Framework covers the controls that we want the sector to operate under so the best interests of the Cook Islands remains at the heart of any arrangements entered into.

Exploration - tender process and its checks and balances

Evaluation of exploration applications will involve government and relevant stakeholders in the process.
After the evaluation, which will involve a panel of local and overseas experts, if an applicant meets all the necessary criteria and is ranked first, the SBM Authority will issue Offer documents to them and they will have 30 days to accept the Offer.

When the SBM Authority receives the completed Offer documents, the four year Exploration License will be granted (with a Fee paid, and terms and conditions applying) outlining all that is involved in the licenced exploration activities.

There are built in checks to the process to ensure that the best interests of the people of the Cook Islands are being served by any arrangement put in place.

The successful Applicant becomes a Licence Holder and may commence exploration activities in the Cook Islands limited to its Licenced Area (an area equal to a 100km x 100km block). The exploration work will be regularly monitored for compliance with the conditions set out in the Exploration License. At the end of the term of the Exploration License, the License holder may have their license renewed or cancelled depending on outcomes. Exploration data must be shared with and evaluated by the Cook Islands.

A decision on actual extraction may be considered later, based on the data derived from Exploration results.

Revenue from seabed mining

There will be important, but not substantial, revenue to be derived by the Cook Islands as the resource owner at the exploration phase. This will come from application and annual fees charged to Licence Holders. There may be between three and 10 capable potential applicants who we may be able to attract to the Cook Islands EEZ to undertake SBM Exploration activities.

This may then result, in five to 10 years time, in two or three potential long-term parties involved in manganese nodule extraction in our EEZ; after the exploration phase is successfully completed in four to 8 years time. Depending on cost of capital used by the Licence Holder, operating costs and global mineral prices in the 2020s, the most basic type of revenue stream for the Cook Islands will be from royalties and taxes which could be between USD50-300 million per year, based on estimates for seabed mining projects of this type.

POSSIBLE EXTRACTION TECHNIQUE
PROTECTING THE REVENUE FROM SEABED MINERALS

The building blocks for a robust national Sovereign Wealth Fund are presently being put in place to ensure that the wealth that will be generated from deep sea mining is shared by current and future generations of people in the Cook Islands.

We have accepted the best international advice on revenue protection from the IMF, ADB, Commonwealth Secretariat, Australia and Norway.

We look to countries such as Norway who decades ago made a far-sighted decision to place a proportion of revenue from exploiting its North Sea oil and gas fields into a special fund. It is commonly known as the Oil Fund and is now worth US$700 billion. It is the largest pension fund in Europe.

The UK’s University of Southampton devised a Feasibility Study, of great relevance to the steady and sensible Cook Islands SBM development.

TOP REASONS TO GET INVOLVED IN DEEP SEA MINING

- Financial returns from involvement in Deep Sea Mining such as royalties and taxes will assist the Cook Islands economy and future generations.
- The Cook Islands balance of exports can reverse and we can become a net exporter of product from our nation rather than a net importer from overseas.
- The Cook Islands economy can diversify, at the moment we have an over-reliance on Tourism and Aid, both of which are not within our control.
• We will be servicing a long term global demand for minerals allowing for long term financial prosperity and growth.
• We can use the new revenue to develop our outer islands infrastructure and needs from our own resources.
• We can create new economic opportunities to generate new household incomes and thereby make the Cook Islands a more attractive place to live and retire for our people and reduce or reverse population migration.
• Cook Islands resources are to be used, where possible, as outlined in the National Seabed Minerals Policy.

• There is the strong expectation for new in-country employment and training opportunities for Cook Islanders with the relevant experience or qualifications.
• Cook Islands students may also be able to learn from the research.
• Cook Islands Institutions could benefit from shared research which will enable them to gain greater knowledge of the seabed and marine life at deeper levels.
• Research and samples that are collected during the exploration phases remain the property of the Cook Islands Government and are therefore able to be used as a knowledge base of the seabed in the CIZ.
• Managed correctly, these minerals could assist with green technologies which will also benefit future generations. This is especially important as global fossil fuels are exhausted.
• The environmental risk and impact is lower with Seabed Minerals than the continued exploitation of dwindling land mineral resources.

SEABED MINERALS AND MARINE RESOURCES
(Fish, whales and other sea life)

If there’s one thing we want to make sure of as we embark upon this new journey is the health of our fisheries. We must preserve our marine resources and existing ocean activities.

Our main fish species like skipjack, bigeye, yellowfin and albacore tuna usually go no lower than 500 metres. Even deep sea commercial fishes like bluenose are not found deeper than 700 metres.

When deep sea mining of nodules happens it will be at depths of 5000 metres or more. This is far below where fish stocks exist and there will be little effect on fish habitats and current fishing activities. We also intend to establish 50nm Exclusion Zones around islands.

Whales are known to dive to depths usually no deeper than 1,900 metres. There should and must be limited impact on their normal habitat. There will be no discharges of nodule waste or mud at the surface or in the water column. All unused deep sea water will be filtered and returned to where it came from. Due to the great pressure and low current at this depth, all returned discharge is
There are a few species of unusual fish and other organisms that live on the seabed. Any company applying for a licence to explore must satisfy our strict environmental regulations.

Rules and monitoring processes will be put in place to ensure that discharges, plumes, noise or lights are eliminated or minimised in all seabed minerals activities, which will also take into account other marine users in our EEZ.
THE IMPACT OF EXTRACTING MANGANESE NODULES FROM THE DEEP

Seabed minerals are not a renewable resource. Manganese nodules have developed in the Cook Islands seabed over millions of years. Once they are extracted it is likely to be millions of years before any more nodules form. Mining seabed minerals is a one-time only opportunity to turn a deep sea minerals blessing into sustainable financial blessings for generations of people in the Cook Islands. The aim is to do this while also upholding high environmental objectives.

The potential impact of mining activities on the marine environment is the removal of some deep sea life along with the mineral deposits. Protecting the marine environment is important so decisions about seabed mineral development will be made to maintain the overall biodiversity and health of the marine ecosystem, preventing and reducing adverse effects of extraction where possible.

How Deep Sea Mining will be carried out can only be determined in future based on research findings but we can assume that it will likely involve:

- the use of remotely operated vehicle/s (such as remote-controlled treaded vehicles) which will suck up the nodules on the seafloor
- the transport of nodules via a pipe from the seafloor to a vessel or platform on the sea surface
- the separation of the nodules from water (and return of the water to the deep sea in a closed return pipe)
- the transfer of the dry nodules from the vessel, via a barge, to an onshore processing centre – most likely in an industrial hub (such as China, Korea or Mexico), where the nodules can be processed in order for the metals to be extracted for sale.
The Cook Island’s Seabed Minerals Authority (the Authority) is authorised to implement the SBM Act 2009 and establish a licencing process based on best international standards and advice, with the involvement of key stakeholders.

In 2014/15, the complex background work and drafting has been continuing to set a robust and effective Regulatory Framework (Laws, Regulations and Rules) as required under the Act.

The new SBMA logo depicts the shape of our large South Pacific ocean space, or EEZ, showing the Nodule Abundance zones in red circles. Dark blue representing the deep, dark ocean, where nodules are found.

Participation

The SBM Authority has been proactive in seeking community views on our new seabed minerals sector and working with the community based SBM Advisory Board, various Government departments, traditional leaders, Marae Moana Marine Park Committee, and other interested local and international development partners and stakeholders.

We have a new website where all Seabed Minerals information is available for reading and comment. www.seabedmineralsauthority.gov.ck

Awareness and capacity building as we develop

Our continuing efforts in capacity building of Cook Islanders to take an active leadership role in the new Seabed minerals sector, have seen numerous local people receive training in the Advisory Board, National Environment Service, Crown Law Office, Ministry of Finance and Economic Management, Marine Resources, Ports Authority, House of Ariki & Koutu Nui, Te Ipukarea Society, Parliament, Community and Women’s groups, Schools, the private sector, Infrastructure Cook Islands and the Outer Islands.
PRESTIGIOUS STUDY FELLOWSHIP AWARD FOR SEABED MINERALS AUTHORITY LEGAL OFFICER - ALEX HERMAN

As the Cook Islands continues with leg work to establish a robust SBM Regulatory Framework (Laws, Regulations and rules) under the SBM Act 2009, some excellent news has been received from the United Nations in New York.

This month Ms Alexandrya Herman, a young Cook Islands lawyer in the SBM Authority commences an Ocean Training Legal Study Award from the United Nations, in New York City, USA.

This UN Award is highly prized, fully funded 9 month study Fellowship under the guidance of the United Nation's Division for Ocean Affairs and the Law of the Sea (DOALOS) (http://www.un.org/depts/los/index.htm) in New York City for three months. For the final six months of study, Ms Herman will be writing her legal thesis at the University of Queensland, a university which specialises in Ocean Affairs. Alex has chosen to study international legal issues relating to the new Seabed Minerals sector. This study topic is of particular interest to the Cook Islands and Alex's particular legal area of specialist interest.

The Cook Islands are now the third Pacific Island nation to have been granted this Ocean training Award, along with Fiji and Kiribati. This internationally recognised study Award is part of the United Nations – The Nippon Foundation of Japan Fellowship Programme, and is difficult to obtain. Her study time in Queensland is also partly funded by the Cook Islands Government Scholarship scheme. Ms. Herman will continue working with the Cook Islands SBM Authority during the Fellowship and return after her study is completed.

The regional EU-SPC Deep Sea Minerals project has generously agreed to a SBM Authority request to provide fully funded, additional, temporary legal assistance to the Cook Islands Seabed Minerals Authority during Alex’s absence from the Cook Islands.

In her application to the United Nations, Alex noted that the development of an industry around deep sea resources presents an opportunity to significantly increase the gross domestic product of the Cook Islands, with potential economic and social benefits and the creation of a truly independent, economically viable and sustainable future for the people of the Cook Islands.

However, she pointed out that while the Cook Islands has taken steps to ensure that a best practice policy and regulatory framework is in place prior to the commencement of deep seabed minerals activities in the Cook Islands, a critical analysis of this framework has not been undertaken.

She said it was important to measure what the Cook Islands was doing against international best practice.

"Deep sea mineral development has had major advances in recent years, but there are still many unknowns to resolve before it can become a fully realised commercial reality," she said. “The Cook Islands is entering new territory, as such, we have a responsibility to mankind and the marine environment to proceed according to best practice."

The Cook Islands Minerals Authority is proud of Alex’s achievement and looks forward to the results of her research and the help it will be to our work.

Acknowledgements
The Government of the Cook Islands
Gerald McCormack (CIHT) Commonwealth Secretariat
The former Minister, Hon. Tom Marsters SPC –EU Deep Sea Minerals Project

"Deep sea mineral development has had major advances in recent years, but there are still many unknowns to resolve before it can become a fully realised commercial reality," she said. “The Cook Islands is entering new territory, as such, we have a responsibility to mankind and the marine environment to proceed according to best practice.”