
Big Decisions in Uncertain Depths: Adaptive Risk Management of Deep Seabed Mining in International Waters

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The International Seabed Authority (ISA) is in the process of drafting regulations to provide for the exploitation of the minerals of the deep seabed in the area beyond national jurisdiction (the Area). To manage the risk and uncertainty inherent in deep seabed mining, the ISA intends to incorporate adaptive management into the future exploitation regime. This article argues that the ISA's important role in controlling activities in the Area and ensuring these activities are carried out for the benefit of humankind as a whole must be taken into account when designing an effective adaptive management framework under the exploitation regulations. It is proposed that the ISA and the contractor operate under a co-regulatory approach, where the ISA is involved in the management of the mining activity, rather than primarily being involved in an enforcement sense to ensure compliance with the conditions of the contract. Under a co-regulatory approach, the balance between flexibility and certainty can be achieved through the incorporation in the contract of a formal amendment procedure outlining the process by which decisions to review the contract would be made. Such a decision-making process would require the ISA to consider and balance principles such as natural justice, public participation, transparency and review to ensure that the exploitation contract contains sufficient administrative flexibility whilst maintaining certainty and fairness to the contractor base.

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1. INTRODUCTION

The deep seabed has been described as the next frontier in resource extraction.¹ Proclaimed as the new “global goldrush”,² deep seabed mining involves the mining of mineral deposits at the seabed for use in gadgets, electric cars and clean energy, amongst other sectors.³ The International Seabed Authority (ISA) has granted 29 contracts to organisations to explore the seabed for minerals in the seabed beyond national jurisdiction (the Area). The ISA is currently in the process of drafting regulations which allow these minerals to be “exploited”, or in common parlance, mined.⁴ However, there is significant uncertainty over the likely impacts mining will have on the fragile and slow-recovering ecosystems of the deep sea.⁵

To manage the risk and uncertainty inherent in deep seabed mining, the ISA intends to incorporate the precautionary principle and adaptive management (AM) into the future exploitation regime.⁶ AM has been recognised as enabling the application of a precautionary approach to managing risk whilst allowing some development to proceed when there is uncertainty over the effects of the development.⁷ AM is considered to be well suited to managing the effects of activities in systems which are complex and subject to change.⁸

AM is primarily a procedural tool.⁹ It operates as an iterative decision-making process which allows management practices to adjust to new

1 J Hunter, P Singh and J Aguon “Broadening Common Heritage: Addressing Gaps in the Deep Sea Mining Regulatory Regime” (16 April 2018) Harvard Environmental Law Review <<http://harvardelr.com/2018/04/16/broadening-common-heritage/>>.

2 BC Howard “The Ocean Could Be the New Gold Rush” (14 July 2016) National Geographic <<https://www.nationalgeographic.com.au/nature/the-ocean-could-be-the-new-gold-rush.aspx>>.

3 K Miller and others “An Overview of Seabed Mining Including the Current State of Development, Environmental Impacts, and Knowledge Gaps” (2018) 4(418) *Front Mar Sci* 1 at 5.

4 See Draft Regulations on Exploitation of Mineral Resources in the Area ISBA/24/LTC/WP.1/Rev.1 (9 July 2018) [Draft Exploitation Regulations].

5 LM Wedding and others “Managing mining of the deep seabed” (2015) 349(6244) *Sci* 144 at 144.

6 Draft Exploitation Regulations, above n 4, draft reg 2(b), annex VII, s 2(g).

7 JB Ruhl “Regulation by Adaptive Management — Is It Possible?” (2005) 7 *Minn J L Sci & Tech* 21. See also the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (NZ), s 61(3), which states “if favouring caution and environmental protection means that an activity is likely to be refused, the marine consent authority must first consider whether taking an adaptive management approach would allow the approach to be undertaken”.

8 CS Holling *Adaptive Environmental Assessment and Management* (John Wiley & Sons, Chichester, UK, 1978) at 25–37.

9 A Jaeckel “Deep Seabed Mining and Adaptive Management: The Procedural Challenges for the International Seabed Authority” (2016) 70 *Mar Policy* 205 at 205.

information concerning the effects of an activity on the environment.¹⁰ To be an effective tool for managing the effects of deep seabed mining activities, AM will need to be properly integrated into the ISA's decision-making framework.¹¹

The application of AM is particularly interesting in the context of deep seabed mining due to the tension caused by the need to balance the administrative flexibility required by AM with the resource user's desire for investment certainty. Such tension has been recognised by the ISA, which has noted the need to develop:¹²

a regulatory framework that provides certainty, predictability and stability for the contractor base and other stakeholders, while at the same time providing flexibility and adaptability to adjust the framework as the industry develops and new knowledge becomes available.

However, the ISA is yet to get this balance right. Under the exploration regulations, investment certainty appears to have been prioritised at the expense of administrative flexibility.

How an AM framework should balance flexibility with certainty is to a large extent shaped by the regulatory and factual context AM is intended to operate under. The ISA's important role in controlling activities in the Area and ensuring these activities are carried out for the benefit of humankind as a whole is an essential component of the mining regime in the Area. This article will argue that the nature of the ISA's role requires it to have administrative flexibility throughout the life of the exploitation contract. The ISA should have the administrative flexibility under exploitation contracts to require adjustments to be made to mining operations if required to prevent serious harm to the marine environment. The ISA's administrative flexibility can be legitimised through the creation of a structured process by which adaptive risk management decisions can be made.

The article will begin by outlining the legal framework under which the Area is governed. Understanding the legal framework is important, as it is under this framework that AM must operate. The principles which govern the management of the Area, and the roles of the ISA's various organs which regulate activities taking place at the deep seabed, will influence how an AM framework should take shape under future exploitation contracts. The article will then move to consider the factual context of deep seabed mining, with

10 R Craig and JB Ruhl "Designing Administrative Law for Adaptive Management" (2014) 67 Vand L Rev 1 at 1.

11 Jaeckal, above n 9.

12 Legal and Technical Commission *Draft regulations on exploitation of mineral resources in the Area: Note by the Legal and Technical Commission* (International Seabed Authority, ISBA/24/C/20, 10 July 2018) para 22.

an emphasis on the considerable level of uncertainty inherent in mining the deep seabed. With this context in mind, the focus of the article will shift to the principle of AM and explore how it can be incorporated in future exploitation contracts between the ISA and mining operators.

2. DEEP SEABED MINING IN INTERNATIONAL WATERS: THE LEGAL CONTEXT

The deep seabed is governed under pt XI of the United Nations Convention on the Law of the Sea (UNCLOS/Convention).¹³ Concerns by many Western countries over elements of the deep seabed regime¹⁴ resulted in pt XI being adjusted through 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 (1994 Agreement).¹⁵ The 1994 Agreement and pt XI of the Convention are to be “interpreted and applied together as a single instrument”, with the 1994 Agreement taking precedence in the event of an inconsistency.¹⁶

The Convention refers to the deep seabed as “the Area”, which is defined as “the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction”.¹⁷ The limits of national jurisdiction are either 200 nautical miles from the territorial sea baselines, or further beyond this distance to the outer limits of the continental shelf established by states in line with art 76 of the Convention.¹⁸

The ISA has responsibility under pt XI of the Convention to put the deep seabed mining regime into effect.¹⁹ The ISA organises and controls activities in the Area, with an emphasis placed on administering the Area’s resources.²⁰ The ISA’s jurisdiction is limited to the mineral resources at the seabed,²¹ meaning

13 United Nations Convention on the Law of the Sea 1833 UNTS 397 (opened for signature 10 December 1982, entered into force 16 November 1994) [UNCLOS].

14 The main concern regarded the nature and powers of the International Seabed Authority: see D Rothwell and T Stephens *The International Law of the Sea* (2nd ed, Hart, Portland, 2016) at 137. For a discussion on the changes made by the 1994 Agreement see ED Brown “The 1994 Agreement on the Implementation of Part XI of the UN Convention on the Law of the Sea: Breakthrough to Universality?” (1995) 19 Mar Pol 5.

15 Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982 GA Res A/48/263 (1994) [1994 Agreement].

16 1994 Agreement, above n 15, art 2(1).

17 UNCLOS, above n 13, art 1(1).

18 Rothwell and Stephens, above n 14, at 130.

19 At 141.

20 UNCLOS, above n 13, art 157(1).

21 Article 133; defined as all solid, liquid or gaseous mineral resources in or beneath the seabed, including polymetallic nodules.

it does not have control over other activities which impact on the seabed.²² However, its jurisdiction is not spatially restricted, with the ISA having the responsibility of protecting the water column, coastal areas and other marine life, in addition to the seabed, when facilitating the mining regime.²³

2.1 The Structure of the International Seabed Authority

The ISA has a tripartite constitutional structure, with the principal organs being the Assembly,²⁴ the Council and the Secretariat.²⁵ As seabed mining activities are developed, the functions of each organ of the ISA will develop alongside, based on an “evolutionary approach”.²⁶ The Council, Secretariat and the Legal and Technical Commission (LTC), a subsidiary body of the Council, are the main bodies involved in granting and administering contracts to prospect, explore and exploit the resources of the deep seabed.

2.1.1 The Council

The Council is the executive arm of the ISA²⁷ and is its main decision-making organ.²⁸ Its main responsibilities are supervising and coordinating the implementation of the deep seabed mining regime,²⁹ and approving Plans of Work for exploration or exploitation after they have been reviewed by the LTC.³⁰ The Council is made up of 36 members who are elected by the Assembly.³¹ The make-up of the Council is set by a formula to ensure adequate representation of several groups of states,³² including major consumers of minerals, major

22 Such activities could include deep-sea trawling, the laying of pipelines and submarine cables, military activities or conducting marine scientific research: see Rothwell and Stephens, above n 14, at 143.

23 UNCLOS, above n 13, art 145; A Jaeckal *The International Seabed Authority and the Precautionary Principle: Balancing Deep Seabed Mineral Mining and Marine Environmental Protection* (Brill, Leiden, 2017) at 125.

24 See UNCLOS, above n 13, arts 159, 160.

25 Rothwell and Stephens, above n 14, at 143.

26 1994 Agreement, above n 15, annex, s 1(3); R Wolfrum “Legitimacy of International Law and the Exercise of Administrative Functions: The Example of the International Seabed Authority, the International Maritime Organization (IMO) and International Fisheries Organizations” (2008) 9(11) *Ger Law J* 2039 at 2046.

27 UNCLOS, above n 13, art 161(1).

28 Jaeckal, above n 23, at 93.

29 UNCLOS, above n 13, art 162(2)(a).

30 Article 162(2)(j). The process for approving Plans of Work for exploration and exploitation is discussed below at part 2.2.2.

31 UNCLOS, above n 13, art 161(1).

32 Such as “States with large populations, States which are land-locked or geographically disadvantaged, island States, States which are major importers of the categories of minerals

investors in deep-sea mining, developing countries and countries with “special interests”.³³ In addition, there must be an “overall equitable geographical division of seats at the Council as a whole”.³⁴

2.1.2 *The Legal and Technical Commission*

Although a subsidiary body of the Council, the LTC has a central role in developing and implementing the deep seabed mining regime.³⁵ It is made up of 24 members, appointed by the Council, who have expertise in fields relevant to deep seabed mining, such as geology, marine science, economics and law.³⁶ The LTC specialises in dealing with scientific and other technical issues,³⁷ with the Council subsequently adopting decisions based on the LTC’s recommendations.³⁸ The function of the LTC ensures a central role for scientific information in the decision-making process. In doing so, it ensures decisions are based on scientific advice, which is in line with the precautionary approach.³⁹

2.1.3 *The Secretariat*

The Secretariat consists of a Secretary-General and the staff required to fulfil the administrative functions of the ISA.⁴⁰ The Secretary-General functions as the ISA’s chief administrative officer⁴¹ and is elected by the Assembly for a term of four years.⁴² The staff of the Secretariat consist of qualified scientific, technical and other personnel required to fulfil the administrative functions of the ISA.⁴³ Article 169 provides for the Secretary-General to make suitable arrangements⁴⁴ for consultation and co-operation with international and non-governmental organisations.⁴⁵ This function enables these organisations to

to be derived from the Area, States which are potential producers of such minerals and least developed States”: 1994 Agreement, above n 15, annex, s 3(15)(d).

33 1994 Agreement, above n 15, annex, s 3(15); UNCLOS, above n 13, art 161(1).

34 1994 Agreement, above n 15, annex, s 3(15)(e).

35 Jaeckal, above n 23, at 96.

36 UNCLOS, above n 13, art 165(1).

37 Rothwell and Stephens, above n 14, at 144.

38 Jaeckal, above n 23, at 96.

39 A Jaeckal *The Implementation of the Precautionary Approach by the International Seabed Authority: Discussion Paper No 5* (International Seabed Authority, March 2017) at 8.

40 UNCLOS, above n 13, art 166(1); S Nandan, M Lodge and S Rosenne (eds) *The United Nations Convention on the Law of the Sea 1982: A Commentary, Vol VI* (Martinus Nijhoff, The Hague, 2002) at [166.1].

41 UNCLOS, above n 13, art 166(3).

42 Article 166(2).

43 Article 167(1).

44 With the Council’s approval.

45 UNCLOS, above n 13, art 169(1).

send members to observe meetings of the different organs of the ISA,⁴⁶ with procedures for obtaining the views of such organisations also being established in appropriate cases.⁴⁷

2.2 The Mining Code

2.2.1 A brief overview

The Mining Code (Code) is made up of “Regulations” and “Recommendations” adopted by the ISA. The Code, along with the Convention and 1994 Agreement, provides the framework for mining activities in the Area.⁴⁸ The Code characterises mining operations as consisting of three stages: prospecting, exploration and exploitation. Prospecting is defined as “the search for deposits of polymetallic nodules in the Area ... without any exclusive rights”.⁴⁹ Exploration involves “searching for deposits of polymetallic nodules in the Area with exclusive rights” and includes “studies of the technical, economic, commercial and other appropriate factors that must be taken into account in exploitation”.⁵⁰ Exploitation means “the recovery for commercial purposes of polymetallic nodules in the Area and the extraction of minerals therefrom”.⁵¹ It is expected that the most serious environmental impacts will occur during the exploitation phase because this is where large-scale disruption of the seabed will take place.⁵²

The Code presently is made up of three sets of regulations. These are the Regulations on Prospecting and Exploration of Nodules,⁵³ the Regulations on Prospecting and Exploration for Sulphides⁵⁴ and the Regulations on Prospecting and Exploration on Crusts.⁵⁵ In addition, there are several Recommendations, including the Recommendations to Guide Contractors on Assessing

46 Although the ability to attend meetings is dependent on the rules of procedures of the particular organ.

47 UNCLOS, above n 13, art 169(2).

48 Article 153; Rothwell and Stephens, above n 14, at 148.

49 Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area, ISBA/6/A/18 (13 July 2000), amended by ISBA/19/C/17 (22 July 2013) [Nodules Regulations], reg 1(3)(e).

50 Nodules Regulations, above n 49, reg 1(3)(b).

51 Regulation 1(3)(a).

52 See Jaeckal, above n 23, at 154.

53 Nodules Regulations, above n 49.

54 Regulations on Prospecting and Exploration for Polymetallic Sulphides in the Area ISBA/16/A/12/Rev.1 (15 November 2010), amended by ISBA/19/A/12 (25 July 2013) and ISBA/20/A/10 (24 July 2014) [Sulphides Exploration Regulations].

55 Regulations on Prospecting and Exploration for Cobalt-rich Ferromanganese Crusts in the Area ISBA/18/A/11 (27 July 2012), amended by ISBA/19/A/12 (25 July 2013) [Crusts Regulations].

Environmental Impacts of Exploring Minerals.⁵⁶ The ISA is currently drafting regulations which will allow for the exploitation of the three types of seabed minerals.⁵⁷ The first working draft of the exploitation regulations was released in July 2016,⁵⁸ with the most recent working draft (at time of writing) released in July 2018.⁵⁹

One of the core principles governing the deep seabed mining regime is the common heritage of mankind (CHM) principle.⁶⁰ The main elements of the CHM principle in the deep seabed context include:⁶¹

- (1) the non-appropriation of seabed areas and seabed resources by states or private entities;
- (2) a system of international management of deep seabed mining through the ISA, which was established by the Convention;
- (3) the sharing of benefits from deep seabed mining for the common good of humanity; and
- (4) the peaceful use of deep seabed areas.

The characterisation of the Area and its resources as the CHM influences all aspects of the deep seabed mining regime and creates a difference between the water column and the seabed in the Area in the eyes of the law.⁶²

The Convention incorporates a strong environmental tone, with art 145 requiring necessary measures to be taken “with respect of seabed mining activities in order to provide effective protection of the marine environment from harmful effects which may arise from such activities”.⁶³ Before mining operations are under way, the ISA can prevent serious harm to the marine environment either by setting aside areas where mining is not allowed or denying an applicant a contract to conduct mining activities on the seabed.⁶⁴ Once mining operations are under way, the ISA can issue Emergency Orders

56 Recommendations to Guide Contractors on Assessing Environmental Impacts of Exploring Minerals ISBA/19/LTC/8 (1 March 2013).

57 Rothwell and Stephens, above n 14, at 150.

58 Legal and Technical Commission *Working Draft Regulations and Standard Contract Terms on Exploitation for Mineral Resources in the Area* (International Seabed Authority, February 2016).

59 Draft Exploitation Regulations, above n 4.

60 See UNCLOS, above n 13, arts 136, 137(2) and 140.

61 Rothwell and Stephens, above n 14, at 127. See generally C Joyner “Legal Implications of the Concept of the Common Heritage of Mankind” (1986) 35 ICLQ 190 at 191–195.

62 Jaeckal, above n 23, at 74. The water column has been termed the “High Seas” and is primarily governed under pt VII of UNCLOS. For further information see Rothwell and Stephens, above n 14.

63 UNCLOS, above n 13, art 45; Rothwell and Stephens, above n 14, at 153.

64 L Levin and others “Defining ‘serious harm’ to the marine environment in the context of deep-seabed mining” (2016) 74 Mar Pol 245 at 250.

requiring a contractor to suspend or alter their operations,⁶⁵ which underscores the power of the ISA's role under the Convention. If environmental harm does occur, the ISA can hold the contractor and sponsoring state liable.⁶⁶

2.2.2 Procedure for assessing mining applications in the Area

The process of becoming a contractor begins with an application to the ISA with a Plan of Work to explore or exploit a specific mineral deposit.⁶⁷ Under the proposed exploitation regulations,⁶⁸ the Secretary-General will receive and review the application,⁶⁹ before making the Environmental Impact Statement, Environmental Management and Monitoring Plan (EMMP) and the Closure Plan available to the public, with stakeholders and members of the ISA invited to submit written comments.⁷⁰ The draft regulations then propose for the Plan of Work to be considered by the LTC. The LTC will consider multiple factors in deciding whether to approve the Plan, which, along with the financial and technical competence of the contractor, include the Plan's:⁷¹

- (1) compliance with the Convention;
- (2) benefit to humankind;
- (3) economic and technical viability; and
- (4) impact on the marine environment, including other uses of the marine environment and the application of the precautionary approach.

If the LTC is satisfied the criteria have been met, it will recommend the Council approve the Plan of Work. The Council is then required to approve the application, unless a two-thirds majority does not approve the application, including half the members of each special interest chamber.⁷² After the Council has approved the Plan of Work, it is prepared in the form of a contract between the ISA and the applicant.⁷³ The Plan of Work, combined with the regulations, forms the contract which creates the obligations the contractor is required to

65 UNCLOS, above n 13, arts 162(2)(w) and 165(2)(k).

66 Levin and others, above n 64, at 246.

67 Jaeckal, above n 9, at 206.

68 Draft Exploitation Regulations, above n 4.

69 Draft reg 10(1).

70 Draft reg 11(1)(a).

71 See draft regs 13 and 14.

72 1994 Agreement, above n 15, s 3(11)(a).

73 Rothwell and Stephens, above n 14, at 152.

give effect to.⁷⁴ It is proposed that the maximum initial term for the exploitation contracts will be 30 years,⁷⁵ with further renewal periods of 10 years available.⁷⁶

3. DEEP SEABED MINING IN INTERNATIONAL WATERS: THE FACTUAL CONTEXT

The ISA currently regulates the exploration of three groups of minerals: polymetallic nodules, polymetallic sulphides and cobalt-rich crusts.⁷⁷ Polymetallic nodules are found in soft sediment at the bottom of the ocean, with polymetallic sulphides found near hydrothermal vents.⁷⁸ The mining of these minerals is likely to result in a plume of suspended sediment which will destroy the surface where organisms live, bury organisms under sediment and change the chemical composition of the surrounding water.⁷⁹ Mining the seabed near hydrothermal vents poses a particular risk that rare species, some of which remain unknown, could be lost.⁸⁰

Cobalt-rich crusts are found mainly on the summits of seamounts and the outer rim of ocean terraces.⁸¹ These minerals are technically difficult to mine, as they must be separated from the substrate rock to prevent the mineral from diluting.⁸² Research has demonstrated that there may be little recovery of mined locations, even years after mining has concluded.⁸³

74 At 207.

75 Draft Exploitation Regulations, above n 4, draft reg 21(1).

76 Draft reg 21(4).

77 J Markussen “Deep Seabed Mining and the Environment: Consequences, Perceptions and Regulations” in HO Bergensen and G Parmann (eds) *Green Globe Yearbook of International Cooperation on Environment and Development* (Earthscan, London, 1994) 31 at 31–32.

78 Miller and others, above n 3, at 2.

79 Markussen, above n 77, at 33.

80 Miller and others, above n 3, at 3.

81 At 4.

82 At 4.

83 CL Van Dover “Impacts of Anthropogenic Disturbances at Deep-Sea Hydrothermal Vent Ecosystems: A Review” (2014) 102 *Marine Environ Res* 59 at 65–66; J Halfar and RM Fujita “Danger of Deep-sea Mining” (2007) 316 *Sci* 987 at 987; K Moskvitch “Health Check for Deep Sea Mining: European Project Evaluates Risks to Delicate Ecosystems” (2014) 512 *Nature* 122 at 123; H Bluhm “Re-establishment of an Abyssal Megabenthic Community After Experimental Physical Disturbance of the Seafloor” (2001) 48 *Deep-Sea Res II* 3841 at 3841; C Borowski “Physically Disturbed Deep-sea Macrofauna in the Peru Basin, Southeast Pacific, Revisited 7 Years After the Experimental Impact” (2001) 48 *Deep-Sea Res II* 3809 at 3819–3820, 3828–3829; and D Miljutin and others “Deep-Sea Nematode Assemblage Has Not Recovered 26 Years After Experimental Mining of Polymetallic Nodules (Clarion-Clipperton Fracture Zone, Tropical Eastern Pacific)” (2011) 58 *Deep-Sea Res I* 885 at 886.

There is significant uncertainty concerning the potential impacts of deep seabed mining. Large amounts of microbial taxa remain completely unknown to science, making it impossible to predict how mining the seabed will impact these species.⁸⁴ Added to this uncertainty is the enhanced risk of deep-sea ecosystems being pushed beyond their adaptive capacity, as deep-sea ecological processes typically operate on longer timescales than ecological processes on land or in shallow water.⁸⁵ The cumulative effects of multiple mining operations and other stressors such as climate change on marine life could further reduce ecosystem resilience and increase the risk of environmental collapse.⁸⁶

The risk of mining causing unexpected and irreversible environmental harm to the deep seabed emphasises the importance of adopting exploitation regulations which have two key features. Firstly, the regulations must be designed to be cautious in the face of uncertainty. Secondly, the regulations must be designed to be adaptable to respond to unexpected impacts on the marine environment which were not considered at the time the contract was granted.

4. ADAPTIVE MANAGEMENT

One way to address uncertainties inherent in the deep-sea environment, short of prohibiting an activity, is to use environmental management as a science experiment, using the knowledge gained over the course of the activity to influence decision-making. This process, effectively “structured learning by doing”,⁸⁷ has been termed “adaptive management” and has been described as a pragmatic way of building precaution into a framework regulating uncertain impacts on complex systems.⁸⁸ Central to the principle of AM is the concept of making small interventions, which do not result in serious harm, to create further knowledge about the effects of an activity. The knowledge can then be used to reassess whether the activity should continue, and if so, how it should be managed.⁸⁹

84 C Corinaldesi “New Perspectives in Benthic Deep-sea Microbial Ecology” (2015) 2 *Front Mar Sci* 1 at 1.

85 See Miller and others, above n 3, at 2.

86 JI Ellis and others “Environmental management frameworks for offshore mining: the New Zealand approach” (2017) 84 *Mar Policy* 178 at 181.

87 Department of Conservation *The New Zealand Biodiversity Strategy 2000–2020* (Department of Conservation, Wellington, February 2000) at 137.

88 Jaeckal, above n 23, at 58.

89 R Cooney “A Long and Winding Road? Precaution from Principle to Practice in Biodiversity Conservation” in E Fisher, J Jones and R von Schomberg (eds) *Implementing the Precautionary Principle: Perspectives and Prospects* (Edward Elgar, Cheltenham, 2006) 223 at 238.

4.1 Features of Adaptive Management

Adaptive management utilises a structured framework which applies a scientific methodology to designing, implementing and evaluating activities.⁹⁰ AM involves the following steps:⁹¹

- (1) the definition of the problem;
- (2) determination of goals and objectives for the management of ecosystems;
- (3) determination of the ecosystem baseline;
- (4) development of conceptual models;
- (5) selection of future restoration options;
- (6) implementation of management actions;
- (7) monitoring the ecosystem response; and
- (8) evaluation of restoration efforts and proposals for remediation actions.

Hulme-Moir summarises these steps into three key parts.⁹²

Part 1: Determination of management goals and determination of ecosystem baseline;

Part 2: Application of management actions; and

Part 3: Monitoring, evaluation, and adjustment of management actions.

It is this structured process which sets AM apart from a “trial and error” approach, which essentially consists of adopting a management strategy, followed by an ad hoc revision of the strategy if the original strategy did not achieve the desired results.⁹³

AM can be conceptualised as being located on a spectrum, with a focus on research and learning at one end and a focus on implementation and

90 C Engler “Beyond rhetoric: navigating the conceptual tangle towards effective implementation of the ecosystem approach to oceans management” (2015) 23 *Environ Review* 288 at 293.

91 Craig and Ruhl, above n 10, at 7; Committee on Endangered and Threatened Fishes in the Klamath River Basin: National Research Council *Endangered and Threatened Fishes in the Klamath Basin: Causes of Decline and Strategies for Recovering* (National Academies Press, Washington DC, 2004) at 332–335. See also *Crest Energy Kaipara Limited v Northland Regional Council* [2009] NZEnvC 374 (22 December 2009) at [101].

92 W Hulme-Moir “Risk and Uncertainty in New Zealand’s Fisheries Management: Adaptive Management under the Fisheries Act 1996” (2017) 21 *NZJEL* 229 at 236.

93 Engler, above n 90, at 293. See *Newcastle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48 at [183], where Preston CJ aptly noted “adaptive management is not a ‘suck it and see’, trial and error approach to management”.

management at the other.⁹⁴ An “active AM” approach is located down the learning end of the spectrum and has been described by Walters as a “deliberate probing for information”.⁹⁵ An active AM approach consists of a multi-step process involving ecological modelling, the intentional generation of scientific hypotheses, and field experimentation through careful interventions with the aim of testing the original scientific hypotheses.⁹⁶

In contrast, a “passive AM” approach focuses on managing the effects of an activity, rather than deliberately experimenting to gain new knowledge of the environment.⁹⁷ The essence of a passive AM approach is captured in Ruhl’s definition of AM as “an iterative, incremental decision-making process built around a continuous process of monitoring the effects of decisions and adjusting decisions accordingly”.⁹⁸ Under passive AM, a management plan is adopted based on historical data and experience, with the implementation of the plan monitored and adjusted to achieve better management.⁹⁹ Karkkainen notes that natural resource management has more commonly adopted a passive AM approach over an active AM approach.¹⁰⁰

4.2 Adaptive Management versus Traditional Environmental Management

Decisions concerning whether an activity should be approved, and if so under what conditions, are traditionally made at the beginning of the process. The desire for legal certainty often results in a limited scope to reconsider the initial decision.¹⁰¹ In contrast, AM views the “front-loading” of decisions as a weakness, as it means regulatory decisions are often based on incomplete information.¹⁰² Instead, AM allows for changes to an activity to be made at the

94 A Kwasniak “Use and Abuse of Adaptive Management in Environmental Assessment Law and Practice: A Canadian Example and General Lessons” (2010) 12 J Env Assessment Policy Management 425 at 433.

95 C Walters *Adaptive Management of Renewable Resources* (Macmillan, New York, 1986) at 232.

96 BC Karkkainen “Panarchy and adaptive change: around the loop and back again” (2005) 7(1) Minn J L Sci & Tech 59 at 70.

97 At 70; Kwasniak, above 94, at 433.

98 Ruhl, above n 7, at 28; see Karkkainen, above n 96, at 71.

99 Kwasniak, above n 94, at 433.

100 Karkkainen, above n 96, at 71.

101 JB Ruhl “Taking Adaptive Management Seriously: A Case Study of the Endangered Species Act” (2003–2004) 52 U Kan L Rev 1249 at 1252; Ruhl, above n 7, at 30; and see Holling, above n 8, at 188, where it is stated that “prediction and traditional ‘environmental impact assessments’ supposed that there is a ‘before’ and ‘after’, whereas environmental management is an ongoing process”.

102 M Angelo “Stumbling Toward Success: A Story of Adaptive Law and Ecological Resilience” (2009) 87 Neb L Rev 950 at 965; S Shapiro and R Glicksman “The Missing Perspective” (2003) 20 Env Law Forum 42 at 42–43. See Holling, above n 8, at 188, where

“back end” when the effects of the activity are better known.¹⁰³ By reducing the weight placed on the initial decision, AM could be conceived as reducing the “social commitment” on the initial environmental impact assessment (EIA), allowing for changes to be made to the activity as the models used for the EIA are adjusted to account for new, previously unconsidered, information.¹⁰⁴

4.3 Adaptive Management versus Monitoring Conditions

The importance that AM places on learning to reduce the uncertainty of the effects of an activity was captured in a recent decision by the New Zealand High Court in *Taranaki-Whanganui Conservation Board v The Environmental Protection Authority*.¹⁰⁵ The key issue for the Court was whether the monitoring and other conditions placed on the consent amounted to an AM approach under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act),¹⁰⁶ as an AM approach is not allowed under a marine discharge consent.¹⁰⁷ The main conditions which, when combined, were found to constitute an AM approach included:¹⁰⁸

- (1) a two-year period of pre-commencement monitoring of 16 matters;
- (2) a requirement for the consent holder to demonstrate recovery of the macroinfauna benthic community within five years following completion of seabed material extraction where mining first occurred;
- (3) a requirement that extraction activities cease if suspended sediment concentration limits were exceeded; and
- (4) various conditions requiring an operational response from the consent holder as a result of information obtained from monitoring.

it is stated that an “environmental assessment should be an ongoing investigation into, not a one-time prediction of, impacts”.

¹⁰³ Ruhl, above n 7, at 30.

¹⁰⁴ See B Wynne “Uncertainty and Environmental Learning: Reconceiving Science and Policy in the Preventative Paradigm” (1992) 2 *Glob Environ Chang* 111.

¹⁰⁵ *The Taranaki-Whanganui Conservation Board v The Environmental Protection Authority* [2018] NZHC 2217.

¹⁰⁶ At [350]. [Ed. See also *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* [2020] NZCA 86 (HC decision setting aside mining consent upheld on other grounds).]

¹⁰⁷ Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (NZ), s 64(1AA). See *The Taranaki-Whanganui Conservation Board v The Environmental Protection Authority*, above n 105, at [348], where the Court noted “it is not obvious why [New Zealand’s] Parliament chose to classify the discharge of the residue of seabed mining activities as the discharge of a hazardous substance (and thereby make adaptive management unavailable). It cannot have been to further in [sic] New Zealand’s international obligations because the relevant international conventions restrict the prohibition of adaptive management to dumping rather than discharge.”

¹⁰⁸ *Taranaki-Whanganui Conservation Board*, above n 105, at [378].

The Court held that what distinguished these conditions from “normal monitoring conditions” was that the purpose of the monitoring was not simply to ensure compliance with environmental standards, but rather:¹⁰⁹

monitoring to establish what the environmental baselines are, because of uncertainty or inadequate information coupled with a potential modification or cessation of the activity, depending upon the circumstances revealed by the information.

Therefore, for conditions to amount to an AM approach under the EEZ Act, the conditions should be used “as a tool for managing uncertainty”.¹¹⁰ The case emphasises the nature of AM as a tool to increase knowledge and reduce the uncertainty of the impacts of the activity on the ecosystem, rather than a mechanism chiefly aimed at ensuring compliance with already known environmental baselines.

4.4 What Must Adaptive Management Contain to be a Successful Environmental Management Technique?

In *New Zealand King Salmon Requests for Plan Changes and Applications for Resource Consent*,¹¹¹ the Board of Inquiry outlined four requirements for AM to be an acceptable method for managing the environmental effects of an activity:¹¹²

- (1) there must be good baseline information about the receiving environment;
- (2) the conditions must provide for effective monitoring of adverse effects using appropriate indicators;
- (3) thresholds must be set to trigger remedial action before the effects become overly damaging; and
- (4) effects which could arise must be able to be remedied before they become irreversible.

Although the decision was made in the context of New Zealand’s Resource Management Act 1991, arguably these requirements are broad enough to capture the general essence of AM and can thus be incorporated into other

109 At [401].

110 At [404].

111 *New Zealand King Salmon Requests for Plan Changes and Applications for Resource Consent* Blenheim, 22 February 2013.

112 At [181]. These requirements were subsequently upheld by the New Zealand Supreme Court: *Sustain our Sounds Inc v New Zealand King Salmon* [2014] NZSC 40 (2014), 17 ELRNZ 520 at [133].

regulatory regimes. These general principles are particularly helpful for framing discussion about AM in the Area and should be considered by the ISA if it decides to incorporate an AM framework in future exploitation contracts. The remainder of the article will focus on the fourth requirement, with a particular focus on procedures the ISA can adopt to ensure any effects from deep seabed mining can be remedied before they become irreversible.

To ensure any effects from deep seabed mining can be remedied before they become irreversible, management practice must be continually evaluated and refined in light of new scientific information.¹¹³ As Ruhl states, “the central objective for institutional design is quite apparent: decision-makers need to be in a position to adjust decisions based on reliable monitoring feedback”.¹¹⁴ A mechanism for altering the course of the activity is important to ensure that the knowledge gained through an AM approach can be applied to reduce harm to the environment.¹¹⁵ Such a mechanism may result in technological and operational changes to the activity.¹¹⁶ In certain situations, the mining activity may have to be down-scaled, put on hold, or in cases where potentially irreversible harm is being caused to the environment, the activity may need to be terminated.¹¹⁷ As Doremus pertinently stated, “a management program cannot be adaptive unless decisions are always subject to re-evaluation in light of new information”.¹¹⁸

Although adopting an adaptable management programme may sound relatively straightforward in theory, in practice it is much more difficult. The difficulty of implementing AM in practice is highlighted by the exploration regulations, which do not provide the ISA with the administrative flexibility required to implement an iterative AM approach under the exploration contracts. The next section will consider four potential methods through which the ISA can implement AM under the exploration contracts. It will then outline why none of these methods provide the ISA with the required administrative

113 *Golden Bay Marine Farmers v Tasman District Council* W19/2003, 27 March 2013 at [402]; Jaeckal, above n 9, at 205; Craig and Ruhl, above n 10, at 18.

114 Ruhl, above n 7, at 55.

115 Craig and Ruhl, above n 10, at 30.

116 See Craig and Ruhl, above n 10, at 35, where it is stated, in relation to AM generally, that as new information from the monitoring becomes available to decision-makers, objectives, models or performance criteria may require alteration or recalibration.

117 See Craig and Ruhl, above n 10, at 53; *Golden Bay Marine Farmers v Tasman District Council* W19/2003, 27 March 2013 at [461]; and *Crest Energy Kaipara Limited v Northland Regional Council* [2009] NZEnvC 374 (22 December 2009) at [101], where the Court held there must be a “real ability to remove all or some of the development that has occurred at that time if the monitoring results warrant it”.

118 H Doremus “Adaptive Management, the Endangered Species Act, and the Institutional Challenges of ‘New Age’ Environmental Protection” (2001) 41 *Washburn LJ* 50 at 55. See also Ruhl, above n 7, at 35.

flexibility to implement AM. This analysis will provide valuable insight into what is required to ensure that the exploitation regime provides the ISA with sufficient administrative flexibility to implement AM in future exploitation contracts.

4.5 Putting the Theory to the Test: Adaptive Management Under the Exploration Regulations

Jaeckal has identified four potential methods through which the ISA can implement an AM approach under the exploration contracts granted by the ISA.¹¹⁹ The first method Jaeckal identified is to amend the exploration regulations to incorporate new environmental standards.¹²⁰ However, the issue with this approach is that changes made to the exploration regulations do not automatically bind contractors who have already been granted exploration contracts. Instead, the ISA must enter into negotiations with the contractors on an individual basis if it wishes to incorporate any changes made to the regulations into the exploration contract.¹²¹ Therefore, the exploration regulations do not give the ISA the administrative flexibility required to implement an iterative AM approach.

Another option open to the ISA is to review a contractor's programme of activity.¹²² The programme of activity sets out the specific activities a contractor will undertake throughout the following five-year period and, as it is annexed to the exploration contract, is binding on the contractor.¹²³ The purpose of the review is to assess the activities which occurred over the past five years.¹²⁴ However, under the current review procedure, the ISA is not able to incorporate new environmental standards into the following five-year programme of activities. As such, the review can more accurately be characterised as a compliance mechanism, rather giving the ISA the ability to review the contractor's mining activities on the basis of new information.

The third potential way the exploration contracts could provide for AM is through the amendment of "Recommendations".¹²⁵ Recommendations are created and adopted by the ISA's Legal and Technical Committee to help contractors implement the regulations and are generally of a

119 Jaeckal, above n 9, at 205.

120 At 207.

121 At 207.

122 The programme of activity is reviewed by the ISA Secretary-General every five years.

123 Jaeckal, above n 9, at 208; see, for example, Sulphides Exploration Regulations, above n 54, annex III, annex IV, s 4.

124 At 208. The review of the programme of activities is conducted jointly by the contractor and the Secretary-General of the ISA.

125 At 207.

technical or procedural nature.¹²⁶ Significantly, the LTC can flexibly amend recommendations,¹²⁷ which the contractors must “observe, as far as reasonably practicable”.¹²⁸ Although a relatively strong direction, there is a level of discretion for the contractors, meaning changes to recommendations cannot be considered strictly binding on contractors.¹²⁹

A fourth potential option to implement an AM framework under the exploration contracts is for the ISA to update regional environmental plans. At present, the only regional plan in existence is the Environment Management Plan for the Clarion-Clipperton Zone (EMP-CCZ).¹³⁰ The EMP-CCZ is a spatial management plan which covers the Clarion-Clipperton Zone, where a large amount of deep-sea minerals are thought to be located.¹³¹ The EMP-CCZ foresees flexibility for the nine no-mining areas to allow for advances in scientific knowledge and can be altered without the consent of the contractors.¹³² However, the EMP-CCZ’s legal status is not clear. As a result, it does not attempt to create new obligations for existing contractors.¹³³

In summary, the ISA’s current procedural framework for regulating exploration contracts does not give the ISA the administrative flexibility required to implement an iterative AM framework. The lack of administrative flexibility available to the ISA under the exploration contracts may be explained, at least partially, by the prioritisation of investment certainty and predictability for the contractor base. The next part of this article aims to stand back and consider the wider regulatory context of the Convention to consider how the exploitation contracts should provide for the balance between administrative flexibility and certainty for the contractor. Locating where this balance should be is an essential step in allowing for an effective AM framework to be implemented under future exploitation contracts in the Area.

126 At 207; see, for example, Sulphides Exploration Regulations, above n 54, reg 41(1).

127 At 207.

128 See, for example, Sulphides Exploration Regulations, above n 54, annex IV, s 13.2.

129 Jaeckal, above n 9, at 208.

130 Environmental Management Plan for the Clarion-Clipperton Zone, ISBA/17/LTC/7 (13 July 2011).

131 Jaeckal, above n 9, at 208.

132 At 208.

133 At 208; see Environmental Management Plan for the Clarion-Clipperton Zone, above n 130, para 41(a).

5. SHAPED BY CONTEXT: EFFECTIVE ADAPTIVE MANAGEMENT UNDER THE EXPLOITATION CONTRACT

5.1 The Hypothesis

The previous part of this article concluded that the exploration contracts do not provide the ISA with the administrative flexibility required to implement an AM framework which allows for the ISA to alter mining operations in light of new information. Under the exploration contracts, investment certainty appears to have been prioritised, arguably at the expense of regulatory flexibility. The priority the exploration regulations place on certainty over flexibility is supported by ideologies traditionally found in property and contract law being incorporated into certain articles of pt XI of the Convention, most notably art 153.¹³⁴ Article 153 summarises the system for exploration and exploitation in the Area,¹³⁵ setting down the norms on which the basic conditions for prospecting, exploration and exploitation contained in annex III are based.¹³⁶ The article provides for the Plan of Work to be in the “form of a contract” concluded between the ISA and the applicant.¹³⁷ It further provides in para 6 that a contract between the ISA and the contractor “shall provide for security of tenure”.¹³⁸ Paragraph 6 then links the security of tenure concept with the ability to revise the contract, noting that, “[a]ccordingly, the contract is not able to be revised, suspended or terminated unless it is done so in accordance with Annex III, articles 18 and 19”.¹³⁹

The incorporation of property and contract law principles into art 153 could be argued to give the relationship between the ISA and the contractor a private law flavour. Such a private law flavour may have manifested in the design of the exploitation contract through an emphasis on protecting the contractor’s security of tenure at the expense of regulatory flexibility. A comparable argument has been made concerning the ability to implement an AM approach in New Zealand’s fishing industry.¹⁴⁰ Hulme-Moir argues that the Fisheries Act 1996 (NZ) has been structured in a way which prioritises the private property interests of the commercial fishing industry in the fish stock over administrative

134 UNCLOS, above n 13, art 153.

135 Nandan, Lodge and Rosenne, above n 40, at [153.1].

136 At [153.2].

137 UNCLOS, above n 13, art 153(3); see also annex III, art 3.

138 Article 153(6). See Nandan, Lodge and Rosenne, above n 40, at [153.14(f)], where it is stated art 153(6) “establishes another fundamental principle which is that a contract with the Authority shall provide for security of tenure”.

139 UNCLOS, above n 13, art 153(6).

140 Hulme-Moir, above n 92.

flexibility aimed at ensuring the sustainability of the resource.¹⁴¹ Arguably the emphasis placed on protecting private property interests creates a conflict with AM as “AM is grounded in an ecosystem ideology which places environmental sustainability ahead of human interest”.¹⁴²

At this point, it is prudent to note that characterising the legal nature of a relationship between a regulator and an organisation is complex.¹⁴³ The aim of the following sections is not to definitively characterise the nature of the relationship between the ISA and contractors under the exploitation contract, but rather to hypothesise whether conceptualising the contract as either a public or private law instrument has wider ramifications for the amount of administrative flexibility which should be provided for under future exploitation contracts.

5.2 Flexibility Under a Private Law Relationship

Contract law allows for flexibility to be achieved under a contract in certain situations if it is clear that all parties have agreed to give one party power to unilaterally alter the contract.¹⁴⁴ The importance of flexibility in contracts which reflect and adapt to the changing nature of relationships between parties is reflected in the relational theory of contract,¹⁴⁵ and can commonly be found in agreements ranging from employment contracts,¹⁴⁶ to gas balancing and joint operating agreements (JOA) in the oil and gas industry,¹⁴⁷ to rent review conditions common in commercial leasing arrangements.¹⁴⁸ Conceptualising the relationship between the ISA and the contractor as governed under private law principles should not prevent the ISA from incorporating the procedural flexibility required to implement an AM approach into the future exploitation contracts. However, it would be prudent for the ISA to consider concepts found

141 At 272.

142 At 272–273.

143 See, for example, B Barton “Property Rights Created under Statute in Common Law Legal Systems” in A McHarg and others (eds) *Property and the Law in Energy and Natural Resources* (Oxford University Press, Oxford, 2010) 80; B Barton “The nature of resource consents: statutory permits or property rights” (NZLS Seminar, Wellington, 2009); and L Fraser “Property Rights in Environmental Management: The Nature of Resource Consents in the Resource Management Act 1991” (2008) 12 NZJEL 145.

144 See I MacNeil *The Relational Theory of Contract: Selected Works of Ian MacNeil* (D Campbell (ed), Sweet & Maxwell, London, 2001) at 223.

145 For greater detail on the relational theory of contract readers should consult MacNeil, above n 144.

146 See, for example, *Bateman v Asda Stores* [2010] IRLR 370.

147 See, for example, *Todd Pohokura Limited v Shell Exploration NZ Limited* [2015] NZCA 71.

148 See MacNeil, above n 144, at 223.

in contract and property law, such as sanctity of contract, consideration,¹⁴⁹ non-derogation from grant and the “takings” doctrine, which may constrain administrative flexibility under an AM approach if not carefully considered.¹⁵⁰ For example, Grinlinton notes that the change in the nature of minerals permits in New Zealand from “leases”¹⁵¹ under the Coal Mines Act 1979 to the current characterisation under the Crown Minerals Act 1991 as “neither real nor personal property”¹⁵² may have been driven partially by the aim of the government of the day to prevent claims for compensation for “takings” of property rights where mining permits were withdrawn or otherwise modified to the detriment of the permit holder.¹⁵³

5.3 Recasting the Relationship in Public Law Terms

A second, and perhaps more fundamental, point to note is that conceptualising the relationship between the ISA and the contractor as being governed by private law principles may fail to recognise the important regulatory role the ISA has in relation to mining activities taking place on the deep seabed. The regulatory role of the ISA is perhaps framed most strongly in arts 153(4), which gives the ISA responsibility to “organise, carry out, and control activities in the Area”, and 162(2)(1), which requires the Council to “exercise control over activities in the Area”.¹⁵⁴

The nature of a formal relationship between a public regulatory body and a private organisation was considered in two contrasting cases in the England and Wales High Court Administrative Court (EWHC (Admin)). In *R (Dean) v*

149 At 223, where it is stated “to cope with the difficulties created by its own doctrine of consideration, the transactional legal structure has produced, however, a wide range of concepts, provisions, and other devices limiting the impact of the doctrine. The drafter desiring to achieve workable flexibility must be aware of both the limitations the law imposes on the techniques that may be used and the opportunities it offers.”

150 See D Grinlinton “Evolution, Adaptation, and Invention: Property Rights in Natural Resources in a Changing World” in D Grinlinton and P Taylor (eds) *Property Rights and Sustainability: The Evolution of Property Rights to Meet Ecological Challenges* (Martinus Nijhoff, Leiden, 2011) 275 at 297.

151 See *Tainui Maori Trust Board v Attorney-General* [1989] 2 NZLR 513 at 519–525 per Cooke P concerning coal mining leases under the Coal Mines Act 1979 (NZ).

152 Crown Minerals Act 1991 (NZ), s 92(1). However, the reader should note the characterisation of minerals permits in the New Zealand context is complex in practice: see Grinlinton, above n 150, at 297.

153 See Grinlinton, above n 150, at 297. Sections 36 and 39 of the Crown Minerals Act 1991 (NZ) allow changes to permits and their revocation by the Minister of Energy and Natural Resources under certain circumstances.

154 UNCLOS, above n 13, arts 153(4), 162(2)(1). See Jaeckal, above n 39, at 9.

Secretary of State for Business, Energy and Industrial Strategy,¹⁵⁵ the Court was required to decide whether a petroleum licence granted under the Petroleum Act 1998 (UK) was a statutory instrument governed under public law or a contract subject to ordinary contract law principles. The Court observed that the starting point of any analysis into whether an instrument is to be governed under public or private law principles is the relevant legal framework under which the grant was issued, with the label used to describe the instrument¹⁵⁶ not being a relevant consideration.¹⁵⁷ In that case, the Court held a Petroleum Exploration and Development Licence granted under the Petroleum Act was a private contract. Central to the Court's reasoning was the fact the Petroleum Act did not create any regulatory functions for the licensing authority when granting a petroleum licence, such as to regulate a market or protect or promote the interests of consumers or parties affected by the activities of licensees. The Court held that the Petroleum Act essentially provided a regime under which the Crown could divest itself of the exclusive rights it otherwise had to search for and obtain petroleum.¹⁵⁸

In contrast, in *Data Broadcasting International Limited v Ofcom*,¹⁵⁹ the EWHC (Admin) held that licences granted by the Office of Communications (Ofcom) under the Broadcasting Act 1990 (UK) were to be treated as a public law instrument, with principles of contract and property law not being determinative of the relationship between Ofcom and the broadcasting companies.¹⁶⁰ The Court made the point that, if the licences were to be treated as contracts, Ofcom may have been exposed to liability for damages, which would have been inconsistent with Ofcom's role and responsibilities as a regulator.¹⁶¹

Interestingly, the Court was also concerned that imposing a private law contractual relationship may impose on Ofcom's duties to act in the public interest, as required by the legislation, particularly to secure the optimal use of the broadcasting spectrum.¹⁶² Although the regulatory context of Ofcom and the ISA are significantly different, it may be possible to make an analogy with the Court's reasoning and the ISA's obligation to regulate activities in the Area for the benefit of humankind.¹⁶³ The power the CHM principle gives the ISA is perhaps best illustrated by the Convention's benefit-sharing provisions.¹⁶⁴ Under

155 *R (Dean) v Secretary of State for Business, Energy and Industrial Strategy* [2017] EWHC 1998 (Admin) (Holgate J).

156 For example, contract, permit, consent or licence.

157 *R (Dean)*, above n 155, at [20]–[21].

158 At [128].

159 *Data Broadcasting International Limited v Ofcom* [2010] EWHC 1243 (Admin).

160 At [88].

161 At [94].

162 At [94].

163 UNCLOS, above n 13, art 140.

164 Jaeckal, above n 9, at 209.

the benefit-sharing provisions, financial and other economic benefits sourced from activities in the Area, including deep-sea mining, are to be distributed equally by the ISA for the benefit of humankind.¹⁶⁵

As Jaeckal pertinently states, the ISA needs to be understood as much more than simply a contract partner with prospective contractors.¹⁶⁶ In addition to its role as a contract partner, the ISA fulfils multiple roles, including:¹⁶⁷

- (1) trustee of the Area, requiring it to act for the benefit of humankind as a whole;
- (2) regulator and administrator of resources in the Area;
- (3) decision-maker on whether to grant contracts;
- (4) being responsible for ensuring the effective protection of the marine environment; and
- (5) having the potential to engage in mining activities itself through the enterprise.

As a consequence of the ISA wearing multiple “hats”, a departure from “governance as usual” principles is arguably required.¹⁶⁸ The ISA appears to have reached a similar conclusion, with the ISA Technical Study 11 noting:¹⁶⁹

[...] the ISA will need to reserve for itself substantial power and authority to manage, regulate and oversee the exploitation regime based upon the principles of:

1. High sensitivity to environmental concerns and use of the precautionary principle.
2. Highly technical and as yet unknown challenges associated with successful deep ocean mining.
3. Obligation to preserve and to direct benefit flows to the developing world.
4. Actively demonstrating good governance.
5. Maintaining the reputation of the UN as a fair, independent and competent regulator.

As part of its role, the ISA is given the difficult task of balancing the economic, social and environmental goals contained in the Mining Code. This contrasts with other regulators of mineral permits. For example, New Zealand’s

165 UNCLOS, above n 13, arts 140(2), 157(1).

166 Jaeckal, above n 9, at 209.

167 At 209.

168 At 210.

169 AL Clark, J Cook Clark and S Pintz *Towards the development of a regulatory framework for polymetallic nodule exploitation in the area (Technical Study No. 11)* (International Seabed Authority, 26 February 2013) at 20.

Ministry of Business, Innovation and Employment¹⁷⁰ is primarily concerned with the economically efficient extraction of minerals.¹⁷¹ The fact the ISA is required to give effect to numerous, and at times potentially conflicting, policy objectives lends further weight to the argument that the ISA requires strong regulatory powers under the exploitation regime. Therefore, when the ISA's "fiduciary" duties to humankind come into conflict with their "contractual" duties owed to contractors under exploitation contracts, the overall scheme of the Convention arguably suggests the fiduciary duty to humankind as a whole under the CHM principle should take priority. As such, the exploitation contracts should be designed to ensure that the ISA has the flexibility to consider the concerns of wider humankind when performing its obligations under the contract.

6. OPERATIONALISING ADAPTIVE MANAGEMENT IN THE EXPLOITATION CONTRACTS

6.1 A "Co-Regulatory" Approach to Adaptive Management

The last part of this article concluded by emphasising the important regulatory role the ISA has been given under the Convention. The next issue which requires consideration is how the nature of the ISA's role under the Convention can be applied to the context of AM. In particular, how can the ISA use AM as a tool to "control"¹⁷² mining activities in the Area under the exploitation regime?

Under traditional development scenarios, the resource user typically prefers to control how the physical resource is utilised.¹⁷³ In the context of deep seabed mining, a contractor is likely to want to maintain control over how the exploitation of the mineral resource is conducted. The role of the regulator is focused on maintaining the integrity of the natural resource.¹⁷⁴ In the context of deep seabed mining, this may involve protecting water quality or the health of the marine ecosystem.

An alternative to the traditional approach is a co-regulatory approach.¹⁷⁵ Under a co-regulatory approach, the regulator is involved in the management

170 Which is responsible for administering mineral permits under the Crown Minerals Act 1991 (NZ).

171 Crown Minerals Act 1991 (NZ), s 1A; see *Greenpeace of New Zealand Incorporated v The Minister of Energy and Resources* [2012] NZHC 1422.

172 See UNCLOS, above n 13, arts 153(4), 162(2)(l).

173 See *Golden Bay Marine Farmers v Tasman District Council* W19/2003, 27 March 2013 at [409].

174 At [409].

175 At [409].

of how the activity is conducted, rather than primarily being involved in an enforcement sense to ensure compliance with the conditions of the permit. The New Zealand Environment Court has stated that a co-regulatory approach involves the regulator being involved in aspects of the activity which include:¹⁷⁶

- (1) designing and implementing management plans;
- (2) reviewing the conditions of the consent;
- (3) monitoring programmes; and
- (4) the staged development of the project.

The nature of the ISA's role under the Convention points towards the ISA having a comparable co-regulatory function under the exploitation contracts. A co-regulatory function arguably best accords with the ISA's requirement to "control" mining activities in the Area by enabling the ISA to be involved in decision-making throughout the term of the exploitation contract. Such an approach can allow the ISA to ensure that activities in the Area are carried out for the benefit of humankind as a whole throughout the term of the contract.¹⁷⁷

Additionally, the Convention contains strong environmental bottom lines which,¹⁷⁸ in combination with a precautionary approach,¹⁷⁹ arguably requires activities to be adjusted prior to harm occurring.¹⁸⁰ The ISA already has the power to make emergency orders which require contractors to suspend or adjust operations to prevent serious harm from occurring.¹⁸¹ A co-regulatory AM approach under the exploitation contract could be seen as building on the emergency orders and creating a procedure to ensure that the ISA's control over mining activities in theory is also applicable in practice.

6.2 Balance Through Process

Implementing AM under exploitation contracts may also require reconceptualising how the concept of "certainty" can be incorporated in the contract. Law generally prefers decisions made to be final and certain, so parties are aware of their position and can arrange their affairs accordingly.¹⁸² However, the idea that a one-off, final decision can be made, without the opportunity

176 At [409].

177 UNCLOS, above n 13, art 140.

178 Article 145.

179 See Draft Exploitation Regulations, above n 4, draft reg 2(b).

180 See JE Hickey and VR Walker "Refining the Precautionary Principle in International Environmental Law" (1995) 14 VJEL 423 at 425.

181 UNCLOS, above n 13, arts 162(2)(w) and 165(2)(k).

182 J Benidickson and others *Practicing Precaution and Adaptive Management: Legal, Institutional, and Procedural Dimensions of Scientific Uncertainty, Report to the SHHRC and Law Commission of Canada* (UOIE, Ottawa, 2005) at F-7.

to revisit it further down the track, does not sit comfortably with AM. AM allows for initial decisions to be classified as hypotheses made in the face of uncertainty, which are subsequently tested and re-evaluated as additional information becomes available.¹⁸³ Therefore, any definition of “certainty” under an AM approach will already incorporate a degree of flexibility. The question then becomes how the contractor can be provided with sufficient certainty and stability, notwithstanding the flexibility inherent in AM.

One way of providing certainty to the contractor whilst ensuring that the ISA has the administrative flexibility to implement an AM approach would be to explicitly acknowledge the relevance of risk and uncertainty when entering into an exploitation contract.¹⁸⁴ It must be made clear to the contractor at the time the contract is entered into that the terms of the contract are approved on the basis of existing scientific knowledge of the deep-sea environment and technological advancement, both of which are likely to change over the term of the contract.¹⁸⁵ In the contract itself, boilerplate terms could be drafted to provide for a review of the conditions if new knowledge concerning the impact of the activity on the marine environment comes to light. Such a review condition could be incorporated into the contractor’s Environmental Management and Monitoring Plan.¹⁸⁶

A comparable approach is taken in several statutes managing resource extraction in New Zealand. Under the Resource Management Act, a consent authority¹⁸⁷ can review the conditions of a resource consent for any purpose specified in the consent.¹⁸⁸ Under the Crown Minerals Act, the Minister can amend the conditions of a permit in the manner the permit provides.¹⁸⁹ Further,

183 At F-7.

184 At F-7.

185 At F-7.

186 See Draft Exploitation Regulations, above n 4, annex VII(g), where it is proposed the contractor include an adaptive management technique, if appropriate, in the contractor’s Environmental Management and Monitoring Plan. See also *Golden Bay Marine Farmers v Tasman District Council* W19/2003, 27 March 2013 at [407]–[408], where the Environment Court notes the content management plans on large developments could incorporate review conditions, amongst other conditions.

187 “[A] regional council, a territorial authority, or a local authority that is both a regional council and a territorial authority, whose permission is required to carry out an activity for which a resource consent is required under [the] Act”: Resource Management Act 1991 (NZ), s 2.

188 Resource Management Act 1991 (NZ), s 128(a)(iii). A similar process is also contained in the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (NZ), s 76(1)(ii).

189 Crown Minerals Act 1991 (NZ), ss 36(1)(c), 36(2)(a).

the EEZ Act allows the Environmental Protection Agency to review the conditions of a marine consent:¹⁹⁰

If information becomes available to the EPA that was not available ... when the consent was granted and the information shows that more appropriate conditions are necessary to deal with the effects of the exercise of the consent.

If the ISA were to adopt a similar approach, the balance between flexibility and certainty would be achieved through the incorporation in the contract of a formal amendment procedure outlining the process by which decisions to review the contract would be made.¹⁹¹ The key to legitimising any formal amendment procedure lies in ensuring that principles of good governance are followed. This would involve considering how principles such as natural justice, public participation, transparency and review could be incorporated into the amendment procedure to create a process which the ISA would need to follow when making decisions under an AM approach.¹⁹² Under the future exploitation contracts, such a formal amendment procedure could specify:¹⁹³

- (1) what decisions have to be made;
- (2) by which people;
- (3) at which level of the agency;
- (4) at what time;
- (5) which parties must be consulted, and if so, how they should be consulted;
- (6) who must be informed of the decision outcome; and
- (7) whether the decision can be challenged or reviewed in any way.

It is through a well-designed process that certainty and stability can be provided to the contractor, while also ensuring the legitimacy of the ISA's administrative flexibility under the contract.¹⁹⁴ In the words of Maclean,

190 Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (NZ), s 76(1)(e).

191 See R Craig and others "Balancing stability and flexibility in adaptive governance: an analysis of tools available in US environmental law" (2017) 22(2) *Ecology and Society* 3 at 8.

192 At 7. For a more detailed discussion of the principles of good governance see M Lockwood and others "Governance principles for natural resource management" (2010) 23(10) *Soc Nat Resour* 986.

193 See Common Compliance Capability Programme Steering Group *Achieving Compliance: A Guide for Compliance Agencies in New Zealand* (Department of Internal Affairs, Wellington, June 2011) at 85.

194 See J Maclean "New Zealand's Resource Management Act 1991: Process with Purpose" (1999) 7 *Otago LR* 538 at 543.

“the process can become a purpose”.¹⁹⁵ Furthermore, having an amendment procedure built into the contract would prevent the need for a formal revision of the conditions of the contract under annex III, art 19.¹⁹⁶ Therefore, such a process arguably complies with the security of tenure provisions in the Convention,¹⁹⁷ whilst allowing the ISA to maintain control over the exploitation activities. The next part of this article will analyse how the ISA can put in place a decision-making procedure under an AM approach which balances the ISA’s regulatory role with the contractor’s need for certainty.

7. A DECISION-MAKING PROCESS UNDER A FLEXIBLE ADAPTIVE MANAGEMENT FRAMEWORK

The key to implementing a successful AM framework for mining activities in the Area lies in balancing regulatory flexibility with fair and certain outcomes for the contractor base.¹⁹⁸ The provision of a formal amendment procedure in the exploitation contract offers one way of providing the administrative flexibility necessary to implement an AM approach while maintaining a sufficient level of certainty and stability for the contractor.¹⁹⁹ The following section will consider principles which should be taken into account by the ISA when designing the process of how decisions will be made under an AM approach. The principles explored are by no means exhaustive, and there are various alternative ways that the principles discussed could be incorporated into the decision-making process under an AM framework.

7.1 The Decision-Maker Under an Adaptive Management Framework

7.1.1 Good environmental decision-making

In determining which body should make decisions under an AM framework, we can begin by looking at the elements that good environmental decision-making

195 At 543.

196 See *Newcastle and Hunter Valley Speleological Society Inc v Upper Hunter Shire Council and Stoneco Pty Ltd* [2010] NSWLEC 48 at [187], where it is stated that “[a]n adaptive management regime provides the potential for addressing changes without creating a requirement to seek formal amendment of conditions”.

197 UNCLOS, above n 13, art 153(6), annex III, arts 18 and 19; see part 5.1 above.

198 Legal and Technical Commission, above n 12, at para 22.

199 See UNCLOS, above n 13, arts 153(1), 162(1).

requires. Gregory and others argue that good environmental decision-making requires the following elements:²⁰⁰

1. Good information concerning the facts (i.e. how the world is and the anticipated consequences of proposed actions).
2. Good information about values (i.e. what priorities and preferences for different outcomes are).
3. A process for integrating facts and values in relevant analysis and a constructive-deliberative exchange.

Gregory and others refer to the first element as “risk assessment”. Science can offer significant value to the risk assessment process. It does so by determining the likely consequences of an activity on the environment, thus bringing to our attention problems which require action.²⁰¹

In contrast to the risk assessment stage, the second and third elements of good environmental decision-making require information concerning values. Science has little expertise on values and thus is of limited help in answering questions concerning what action should be taken to address an issue (“risk management”). As Somerville neatly summarises:²⁰²

Determining what is an acceptable or manageable risk requires a value judgment. Scientists usually prefer not to make a value judgment on behalf of society. Ultimately, environmental risk management is governed by values which determine the choices made by decision-makers, and by society at large.

While scientific knowledge gained through monitoring and reporting can provide light on the environmental impacts of the mining operation, it cannot address broader issues such as the level of harm acceptable in the deep-sea environment,²⁰³ or how the ISA should balance the social, economic and environmental principles contained in the Mining Code.

In terms of operationalising the distinction between risk assessment and risk management in the AM context, the New Zealand Environment Court has expertise the ISA could draw upon. One example is *Golden Bay Marine Farmers v Tasman District Council*,²⁰⁴ where the local authority approved a staged development of a mussel farm under a staged AM approach. One

200 R Gregory and others “Some Pitfalls of an Overemphasis on Science in Environmental Risk Management Decisions” (2006) 9 J Risk Res 717 at 725.

201 At 725.

202 R Somerville “Policy adjudication, adaptive management and the Environment Court” (2013) 9 Resource Management Theory & Practice 13 at 23.

203 See Jaeckal, above n 39, at 3.

204 *Golden Bay Marine Farmers v Tasman District Council* W19/2003, 27 March 2013.

matter the Court was required to consider was how the decision regarding the further staging of the farm would be made. The Court decided the best option was to give ultimate decision-making authority to the local authority, which would act on the advice of a specialist “Ecological Advisory Group” (EAG)²⁰⁵ made up of marine ecologists with expertise in either benthic or water column sustainability.²⁰⁶ The EAG was to be selected by, and operate for the benefit of, the local authority, for the purpose of receiving and analysing the results of the ecological monitoring of the marine farm.²⁰⁷ As an advisory group only, the EAG was effectively limited to the task of risk assessment, with the responsibility of the risk management stage and ultimate decision on how to proceed based on the modelling results left in the hands of the local authority.

7.1.2 Adaptive management decision-making under the exploitation contract

The approach taken by the New Zealand Environment Court in *Golden Bay Marine Farmers* neatly separates the role of science from the role of values and the deliberative-constructive process involved in environmental decision-making. Due to the important role of science in the risk assessment stage, it would be preferable for any risk assessment panel to be limited to marine ecologists or scientists with relevant experience. Further, to maximise objectivity, it is important that, while the panel should be funded by the contractor, any panel should be appointed by the ISA, for the benefit of the ISA.

Conducting risk management under an AM framework is likely to involve the decision-maker considering the results of monitoring within an overall values framework which takes into account the concerns of the contractor and the wider public. At first glance, the LTC would appear to be the most logical body to undertake risk management decisions under an adaptive management framework. As discussed in part 2 of this article, the LTC is a specialist body which operates under the Council, with members having a range of qualifications relevant to deep-sea mining.²⁰⁸ The LTC’s range of expertise would appear to give it the qualifications necessary to integrate facts and values when making decisions under an AM framework in the exploitation contracts.

The LTC already plays a central role in the exploration and exploitation of minerals in the Area.²⁰⁹ In addition, the Convention establishes a special procedure for the approval of exploration or exploitation contracts upon the LTC recommendation, with the Council being required to approve a Plan of Work unless it is disapproved by a two-thirds majority of members present and

205 At [504].

206 At [560].

207 At [560].

208 See part 2.1 above.

209 See part 2.1 above.

voting in each Chamber of the Council.²¹⁰ In practice, this procedure makes it difficult for the Council to disapprove a recommendation made by the LTC. However, whilst the LTC's role is central to the functioning of the deep-sea mining regime, at present its role is ultimately advisory. It is the Council, rather than the LTC, which has been given the power to make orders and final decisions. The LTC has deliberately been designed to use its technical expertise to advise the Council, yet ultimately remain subsidiary to the Council.²¹¹ Therefore, any change to the nature of the LTC's role under the exploitation contracts will have to be considered to ensure that the careful allocation of power under pt XI of the Convention is not upset.

However, the features AM requires to operate successfully should not be forgotten. The exploitation regime will need to be prepared for multiple exploitation activities to be operating contemporaneously in the Area. It is questionable whether the current procedure of requiring any decision made by the LTC to have the Council's approval will allow for the flexibility required by AM due to the potential delay between the LTC making a decision and the Council's subsequent approval.²¹² Furthermore, the involvement of the Council could risk politicising what in many cases will be technical, operational decisions which may fall into the LTC's realm of expertise.

Entering the exploitation phase is arguably one of the most significant developments in the Area to date. The 1994 Agreement provides:²¹³

the setting up and functioning of the organs and subsidiary bodies of the Authority shall be based on an evolutionary approach, taking into account the functional needs of the organs and subsidiary bodies concerned in order that they may discharge effectively their respective responsibilities of the development of activities in the Area.

Therefore, if the Authority chooses to adopt an AM approach in the exploitation regulations, serious thought will need to be given as to how the organs and subsidiary bodies of the Authority can evolve to accommodate AM. It may be that the exploitation phase provides the ideal time for the role of the LTC to evolve to incorporate decision-making in certain situations.

One way of allowing the LTC's role to evolve whilst ensuring it does not upset the careful power balance between the various organs and subsidiary bodies of the ISA would be to perceive decisions of AM as being situated on a spectrum, with significant decisions, such as terminating operations, down

210 1994 Agreement, above n 15, annex, s 3(11).

211 Nandan, Lodge and Rosenne, above n 40, at [162.10].

212 See Legal and Technical Commission, above n 12, at para 25.

213 1994 Agreement, above n 15, annex, s 1 — Costs to States Parties and Institutional Arrangements (3).

one end of the spectrum and minor operational adaptations being located down the other end. Such a method could involve the LTC making certain decisions without requiring Council approval, whilst requiring more “significant” decisions to be approved by the Council upon the LTC’s recommendation. Such a method recognises that the process for making decisions under an AM framework may require a more nuanced approach, rather than a “one-size-fits-all” approach.

Determining which decisions would require which decision-making process is a complicated task. Down the “significant” end of the spectrum, allowing the Council to have the final say on whether activities should be discontinued in cases of serious and/or unexpected harm would be consistent with the procedure for emergency orders contained in arts 162(2)(w) and 165(2)(k).²¹⁴ However, defining where other decisions lie on the spectrum will be more difficult. For example, while minor technical and/or operational changes would prima facie appear to be located down the “less significant” end of the spectrum, what the ISA, contractors and other stakeholders perceive to be “minor” and/or “technical” may differ significantly. If such a decision-making method were to be implemented, consultation with stakeholders concerning which decisions in principle should lie with which body would be of primary importance.

Finally, if the ISA decides the Council should be involved in the decision-making process under AM, it would also be prudent to consider the Council’s voting procedure. The current voting procedure²¹⁵ for approving the LTC’s recommendations concerning Plans of Work in practice places a significant amount of trust in the expertise of the LTC. Such a procedure would be appropriate for any decisions made under an AM framework. The LTC has the technical expertise to decide the most appropriate outcome in each situation. Therefore, it is likely to be a rare occurrence that the Council does not approve a recommendation given by the LTC.

7.2 Procedural Fairness to the Contractor

One way of ensuring procedural fairness to the contractor is through the process of natural justice. The rules of natural justice require decisions which involve an exercise of discretion to be made in a way which is “procedurally fair”.²¹⁶ Natural justice works in practice by obliging decision-makers to disclose any prejudicial material, or the substance of it, to the person or group who may be

214 UNCLOS, above n 13, arts 162(2)(w), 165(2)(k); see part 2.1 above.

215 See part 2.1 above.

216 T Daya-Winterbottom “The Role of Administrative Law” in P Salmon and D Grinlinton (eds) *Environmental Law in New Zealand* (Thomson Reuters, Wellington, 2015) 203 at 250.

affected by the decision before the decision is made, for the purpose of giving that person or group a reasonable opportunity to respond to the material.²¹⁷

Natural justice is directly concerned with the process by which a decision is made, rather than the substantive outcome of the decision,²¹⁸ albeit the process of hearing the other party may influence the outcome of the decision. The previous New South Wales Ombudsman likened natural justice to the last meal before a hanging, affirming a “fundamental principle that procedural integrity is important, whatever the substantive outcome”.²¹⁹ The core aims of natural justice are to offer protection against arbitrary administrative action²²⁰ and to ensure that a person is treated fairly in any circumstance where another person or body interferes in their affairs to their detriment.²²¹ Requiring the ISA to consider principles of natural justice when making decisions under an AM framework could allow the ISA to retain flexibility over the substantive outcome of the decision, whilst ensuring that the contractor’s view is taken into account in the decision-making process.

7.2.1 Procedural fairness in the decision-making process

To ensure a fair and proper determination of the issue under AM, the ISA will need to consider how the contractor’s view can be heard and taken into account in the decision-making process. Natural justice can be perceived as lying on a spectrum. At one end of the spectrum is the concept of notification, whereby parties potentially affected by a decision are notified that a decision will be made, and on what information it will be based, but there is no requirement for their view to be taken into account by the decision-maker. However, simply requiring the contractors to be notified of a decision under an AM framework is unlikely to provide them with a satisfactory level of fairness or investment certainty. At the other end of the spectrum, short of a full hearing before a judge or arbitrator, lies the concept of negotiation, where the parties are required to reach a consensus before a decision can be made.²²² The issue with such an

217 *Daganayasi v Minister of Immigration* [1980] 2 NZLR 130 (CA) at 143, 144 and 149.

218 See *New Zealand Association for Migration and Investments Inc v A-G* [2006] NZAR 45 (HC) at [159].

219 Prof J McMillan “Natural Justice: too much, too little, or just right?” (2008) 58 AIAL Forum 33 at 33.

220 G Flick *Natural Justice: Principles and Practical Applications* (2nd ed, Butterworths, Sydney, 1984) at v.

221 McMillan, above n 219, at 33.

222 This is comparable to the approach taken under the exploration regulations: see part 4.5 above. See DJ Galligan *Due Process and Fair Procedures: A Study of Administrative Procedures* (Clarendon Press, Oxford, 1996) at 275–279 for a more detailed discussion concerning the use of negotiation as a form of fair procedure.

approach is that it would provide the same barrier to regulatory flexibility as the exploration regulations currently present.²²³

An alternative approach falling somewhere in the middle of the spectrum of natural justice is a requirement for the ISA to formally consult with the contractor before making a decision under the AM framework. Although the exact features consultation requires will be dependent on the specific circumstances which call for it,²²⁴ the New Zealand High Court has held that a consultation must be a “meaningful exercise”,²²⁵ with the Privy Council stating that the requirement for a consultation “is never to be treated as a mere formality”.²²⁶ However, a consultation does not necessarily involve negotiations towards an agreement²²⁷ and is instead an intermediate situation involving meaningful discussion.²²⁸ In *Wellington International Airport Ltd v Air New Zealand*,²²⁹ the Court held that a consultation in a decision-making context can be said to have occurred if the decision-maker held meetings with the parties it was required to consult, provided those parties with relevant information and with such further information as they requested, entered those meetings with an open mind, took notice of what was said and waited until they had their say before making a decision.²³⁰ While the decision-maker can have a working plan already in mind prior to the consultation, it should keep its mind open and be ready to change and even start afresh after hearing what the other party has to say.²³¹

Under the future exploitation contracts, the advantage of a consultation process lies in providing a more effective balance between regulatory flexibility on the one hand, and fairness to the contractor on the other. By requiring the ISA to go into any consultation with their mind open, the contractor could influence the substantive outcome of the decision. On the other hand, a consultation process does not limit the ISA’s ability to implement the changes to mining activities it believes to be necessary. Although consultation may not give contractors the investment certainty that they perhaps desire, it ensures that the contractor will be involved in decisions made under an AM approach whilst ensuring that the power to control mining activities throughout the term of the exploitation contract remains with the ISA.

223 See part 4.5 above. See also Jaeckal, above 9.

224 *Port Louis Corporation v Attorney-General of Mauritius* [1965] AC 1111 at 1124 per Lord Morris of Borth-y-Gest.

225 *Te Heu Heu v Attorney-General* [1999] NZLR (HC) at 127.

226 *Port Louis Corporation*, above n 224, at 1124.

227 *Wellington International Airport Ltd v Air New Zealand* [1998] 1 NZLR 671 at 672.

228 *Port Louis Corporation*, above n 224, at 1124.

229 *Wellington International Airport Ltd*, above n 227.

230 At 675.

231 At 675; *Port Louis Corporation*, above n 224, at 1124.

7.2.2 Providing written reasons

Another way of ensuring transparency and fairness for the contractor is a formal requirement that the decision-maker provide written reasons for any decision made under AM.²³² Presenting written reasons for any decision made under an AM approach will give contractors more confidence that the decision was properly thought out.²³³ Stakeholders will be able to see how their view was taken into account by the decision-maker and what arguments were given the most weight. As such, the provision of written reasons outlining the decision will help to ensure that the ISA acts reasonably under AM, acting as a check on the ISA's discretion and adding to the legitimacy of the ISA's decision-making power under the contract.²³⁴

7.3 Public Participation

When boiled down to its core, public participation arguably forms two important purposes for environmental decision-making:²³⁵

1. improving the quality of the decision; and
2. improving the legitimacy of the decision.

Public participation has been argued to be of increased importance in AM.²³⁶ Uncertainty means that decisions are being made despite experts often being unsure of the potential environmental outcome. Being precautionary and adaptive requires decision-makers, in addition to identifying and assessing risk, to take into consideration the wider public's concerns and viewpoints on risk and the acceptability of harm in the environment.²³⁷ In addition, public participation is of particular relevance for the ISA as it is required to act on

232 Benidickson and others, above n 182, at F-21.

233 Flick, above n 220, at 41.

234 At 41.

235 T Dietz and P Stern *Public Participation in Environmental Assessment and Decision Making* (National Academies Press, Washington DC, 2008) at 44. See also DC Esty "Good governance at the supranational scale: globalizing administrative law" (2006) 115 *Yale LJ* 1490 at 1520, where it is stated that the incorporation of public dialogue in the process of decision-making ("deliberative legitimacy") is an important factor in ensuring the legitimacy of decisions made by a public body.

236 Benidickson and others, above n 182, at F-16.

237 J Gupta "Glocalization: The Precautionary Principle and Public Participation" in D Freestone and E Hey (eds) *The Precautionary Principle and International Law: The Challenge of Implementation* (Kluwer Law International, The Hague, 1996) 231 at 246; Benidickson and others, above n 182, at F-16.

behalf of humankind.²³⁸ Allowing public participation in decision-making may assist in balancing the potentially competing interests of mining operators, the wider public, states and regulators.²³⁹

What is required for good public participation will vary with the purpose that the participation process is intended to serve.²⁴⁰ Therefore, how public participation should fit under an AM framework may be different from how public participation fits under other aspects of the exploitation regime. AM presents a unique set of challenges for incorporating public participation which are not present in other forms of decision-making. For example, AM may require certain decisions to be made with relative speed to prevent serious harm to the environment.²⁴¹ In addition, as decisions will often be based on the results of environmental monitoring, they are likely to be technical in nature. Finally, under the exploitation contracts, any public participation will need to be balanced with maintaining stability and predictability for the contractor as far as possible.

Craig and others argue that the best way to balance the importance of public participation in the decision-making process with the flexibility required by AM is to decide *when* the public gets to participate in the decision-making process.²⁴² The creation of the Environment Plans and the period of time prior to the LTC concluding a contractor's Plan of Work present ideal opportunities to incorporate public participation into the decision-making process under the exploitation contracts.²⁴³ Another opportunity, which would allow participation to occur throughout the life of an exploitation contract, albeit indirectly, would be to create a conservation objective.²⁴⁴ The creation of a conservation objective would require public input into a discussion concerning the level of environmental harm acceptable in the Area. The conservation objective could then be used by the LTC when responding to situations of scientific uncertainty under the AM framework and assist in determining whether the harm of a

238 See part 2.2 above.

239 J Peel *The Precautionary Principle in Practice: Environmental Decision-Making and Scientific Uncertainty* (Federation Press, Sydney, 2005) at 156–157; Jaeckal, above n 39, at 2.

240 Dietz and Stern, above n 235, at 43.

241 See Craig and Ruhl, above n 10, at 38.

242 R Craig and others “A proposal for amending administrative law to facilitate adaptive management” (2017) 12 *Environ Res Lett* 1 at 9.

243 See Draft Exploitation Regulations, above n 4, draft reg 11, which provides that the Secretary-General will place the Environmental Impact Statement, the Environmental Management and Monitoring Plan and the Closure Plan on the Authority's website for a period of 60 days, providing members of the Authority and stakeholders the ability to submit comments in writing on the above documents.

244 Jaeckal, above n 39, at 2.

project reaches an unacceptable level as part of the risk management process.²⁴⁵ Such a process would allow for the public good to be taken into account when making decisions under the AM framework, without the impact a requirement for notice and invitation for public comment could have on contractor certainty and regulatory flexibility under the AM decision-making process.

What is not so clear is whether direct public participation should occur in AM decisions made after an exploitation contract has been granted. AM decisions will generally be based on the results of monitoring and reporting, or concerned with new technological/scientific developments. It is questionable whether the wider public has the knowledge and expertise to add to the quality of the decision being made under an AM framework. Allowing for public participation after the exploitation contract has been granted may create additional uncertainty for the contractor. In addition, the time taken to allow for public participation in the decision-making process may reduce flexibility for the regulator. As noted by Craig and others, “[a] truly iterative ‘learning by doing’ may at some point run afoul of ... the demands of public notice and comment”.²⁴⁶ Therefore, public participation in the AM process (once the contract has been granted) could create additional barriers to the effective implementation of AM without any corresponding improvement in the quality of decision made.

It is possible that marine scientists, or people from similarly qualified backgrounds, may have knowledge which could contribute to the quality of decisions made under AM. One option would be to limit participation under AM to qualified experts who could perform a type of peer-review function by analysing and commenting on the environmental monitoring data. Such a process could enhance the quality of decisions made by the ISA under an AM framework, without significantly impinging on the flexibility of the decision-making process or certainty for the contractor.²⁴⁷

7.4 Transparency

Transparency and the availability of monitoring data from mining activities is a complex issue that the ISA will need to consider carefully before the exploitation regulations are enacted.²⁴⁸ Ardron argues that the combination of the ISA’s legal obligations to the Area and the biophysical conditions specific to the deep-sea environment suggest ensuring transparency is of heightened

245 At 3.

246 Craig and others, above n 242, at 9.

247 For a more detailed analysis of the role of peer reviews in the scientific context see J Kelly, T Sadeghieh and K Adeli “Peer Review in Scientific Publications: Benefits, Critiques, & A Survival Guide” (2014) 25(3) eJIFCC 227.

248 See generally Ruhl, above n 7, at 55.

importance in the management of mining activities in the Area.²⁴⁹ In addition, annex III, art 14 states that environmental and safety-related data shall not be considered proprietary. Allowing environmental data collected from mining operations to be made available to the wider public is important in ensuring that the ISA remains accountable and performs its regulatory role competently on behalf of humankind.²⁵⁰ Further, the public availability of mining data will be of increased importance if the wider public is locked out of participating in the decision-making process under an AM approach.²⁵¹ However, the ISA will need to balance the availability of monitoring data from mining operations with the confidentiality obligations owed to contractors.

The ISA is making a concerted effort to increase transparency in data and information availability in relation to the activities undertaken under the exploitation contracts.²⁵² The Draft Exploitation Regulations propose to incorporate a presumption of public availability of data and information in relation to exploitation activities being made to the public.²⁵³ Exceptions for classes of commercial activities can then be carved out of this general presumption.²⁵⁴ The draft regulations also provide for the Secretary-General to make public performance assessments of the Environmental Management and Monitoring Plan,²⁵⁵ and for the public availability of the findings and recommendations under the Secretary-General's review of the Plan of Activities.²⁵⁶

7.5 Review

Risk management decisions made by the ISA under an AM approach will in many cases necessarily involve the use of discretion. The power to review discretionary decisions by an administrative body is an important process in minimising the risk of abuse of discretionary power.²⁵⁷ The purpose of a review is to scrutinise an original decision to see whether it was properly made.²⁵⁸

249 JA Ardron "Transparency in the operations of the International Seabed Authority" (2018) 95 Mar Pol 324 at 328.

250 At 328; J Ardron, H Ruhl and D Jones "Incorporating transparency into the governance of deep-seabed mining in the Area beyond national jurisdiction" (2018) 89 Mar Pol 58 at 58.

251 See Ruhl, above n 7, at 55; JB Ruhl "A Manifesto for the Radical Middle" (2002) 38 Idaho L Rev 385 at 405.

252 Legal and Technical Commission, above n 12, at para 22.

253 Draft Exploitation Regulations, above n 4, draft reg 87.

254 See Legal and Technical Commission, above n 12, at para 26.

255 Draft Exploitation Regulations, above n 4, draft reg 50.

256 Draft reg 56.

257 Galligan, above n 222, at 395.

258 At 395.

However, art 189 of the Convention does not allow the Chamber to review any exercise of discretion by the ISA.²⁵⁹

What the Chamber can review are disputes concerning the interpretation or application of a contract²⁶⁰ and acts of a party to the contract directed at the other party or directly affecting its legitimate interests.²⁶¹ In addition, the Chamber can review any action taken by the ISA which is alleged to be in excess of jurisdiction or a misuse of power.²⁶² Therefore the main purpose of judicial review in an AM context would be in ensuring that the ISA follows the correct procedure laid down in the contract when making decisions under an AM framework.

Although the Chamber does not have the jurisdiction to review an exercise of discretion made by the ISA, there remain other available alternatives to enable a review of a decision made under an AM framework to ensure fairness for the contractors. For example, if the LTC was to be the body responsible for making decisions under the contract,²⁶³ there could be a process enabling appeals to be heard by the Council. Although the Council would not provide the level of independence and impartiality provided by the Chamber, they are a more accountable and representative body than the LTC.²⁶⁴ As stated above, it may be prudent to allow the Council to have the final say on certain decisions under an AM approach regardless.

However, it should be remembered that, at its core, AM is an iterative process which requires the regulator to have significant flexibility to make decisions. Allowing for every decision to be reviewed by the Council or another body could limit this flexibility and discourage the original decision-maker from making difficult decisions balancing the integrity of the marine environment, the concerns of humankind as a whole and the significant financial investment from the contractor.²⁶⁵ As stated above, arguably it is the LTC which is best placed to consider the technical information within a wider values framework.

259 UNCLOS, above n 13, art 189.

260 Article 187(c)(i).

261 Article 187(c)(ii).

262 Article 187(b)(ii).

263 See part 7.1 above.

264 See part 2.1 above which outlines the make-up of the Council.

265 See Craig and Ruhl, above n 10, for a more in-depth discussion of the role of judicial review in adaptive management.

8. CONCLUSION

The overarching goal of AM is to provide an approach designed to reduce the complex risk and uncertainty inherent in deep seabed mining operations. AM has the potential to provide the ISA with a tool to balance the inherent competing goals which are contained in the future exploitation regime for deep seabed mining. If designed and implemented carefully, AM can enable the ISA to fulfil its regulatory role of “controlling” mining activities in the Area whilst providing sufficient certainty and security to contractors. To be successful, AM requires adherence to a structured scientific and legal process.²⁶⁶ In a legal sense, it requires a flexible, yet structured, procedure which allows for the ISA to adjust mining operations when the activity is having a harmful effect on the marine environment.

The exploration regulations do not provide the ISA with the procedures necessary to implement an AM framework.²⁶⁷ This article has hypothesised whether this is due to underlying contract and property law ideologies taking precedence under the exploration contracts and resulting in a prioritisation of a contractor’s security of tenure at the expense of administrative flexibility. It has argued that the nature of the ISA’s role under the Convention lends support to an argument that the relationship between the ISA and the contractor should be governed under public law principles. As such, the ISA should have the administrative flexibility to make substantive risk management decisions under the exploitation contract. Such flexibility can be legitimised through the creation of a structured decision-making process which is set out in the contract. The decision-making process could allow for the views of the ISA, the contractor and the wider public to be taken into account. The nuances of AM in practice also need to be considered when designing a decision-making process. The scientific, technical, economic and legal expertise of the LTC, in addition to its role under the Convention, provides this body with the necessary qualifications to be an effective decision-maker under an AM framework.

266 Craig and Ruhl, above n 10, at 15.

267 Jaeckal, above n 9, at 209.