

ADAPTIVE MANAGEMENT

WORKSHOP: TOWARDS AN ISA ENVIRONMENTAL MANAGEMENT STRATEGY
FOR THE AREA, BERLIN - MARCH 20-24

Dr. A. Neil Craik
University of Waterloo

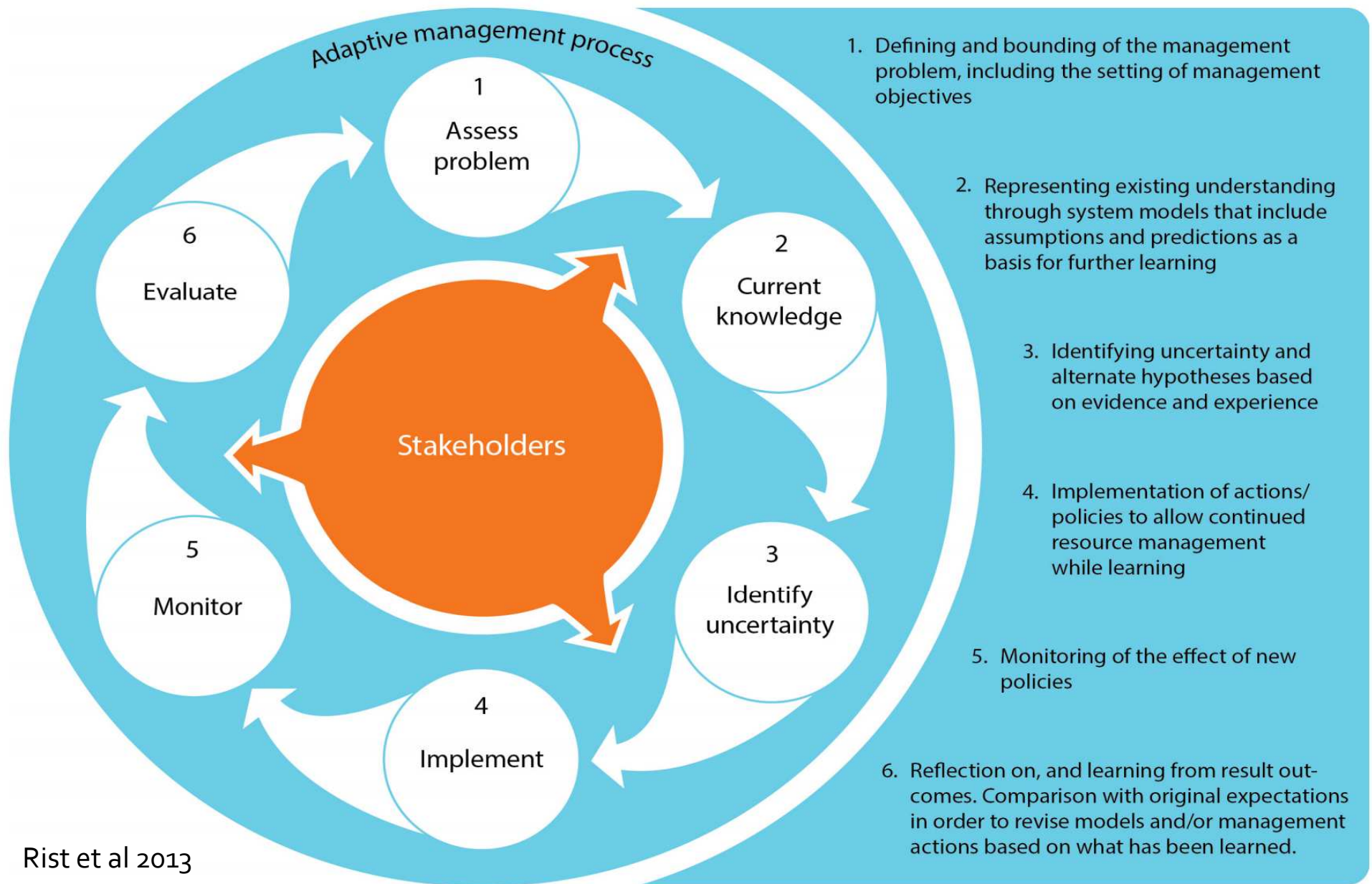
Why adaptive management?

- Two conditions
 - The need or desire to manage an activity
 - The need to improve scientific understanding of managed activity
- Recognition of increased complexity (i.e., emergence; non-linearity) and dynamic influence— i.e. climate change
 - Management interventions, if structured appropriately, provide an opportunity to reduce uncertainty and improve outcomes
 - Intuitively attractive – “learning while doing”
 - BUT....

Defining Adaptive Management

Natural resource management conducted in a manner that purposely and explicitly aims at increasing knowledge and improving environmental management outcomes

Distinct from adaptive governance – which refers to the adaptation and evolution of institutional arrangements (norms, rules, procedures) over time (Ostrom)



Rist et al 2013

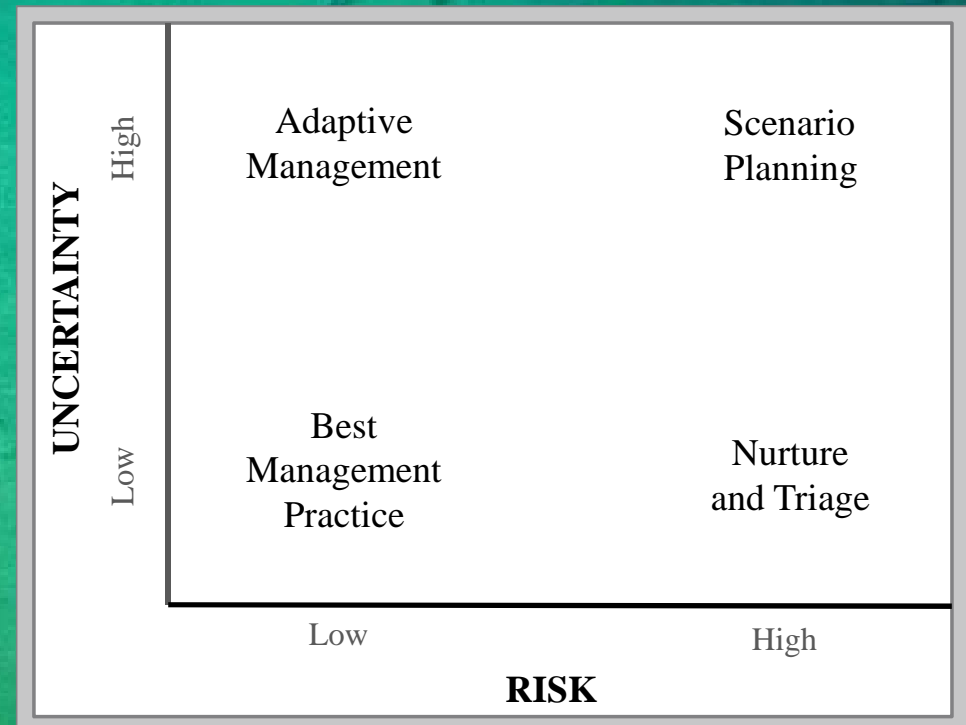
Forms of adaptive management

Varies in terms of:

- the degree to structured to test specific, multiple hypotheses (active v. passive)
- Responsibility for conducting
- Regulatory environment
- Degree of precision – triggers, responses
- Distinct from
 - periodic reviews
 - monitoring
 - contingency planning

Suitability: Uncertainty & Risk

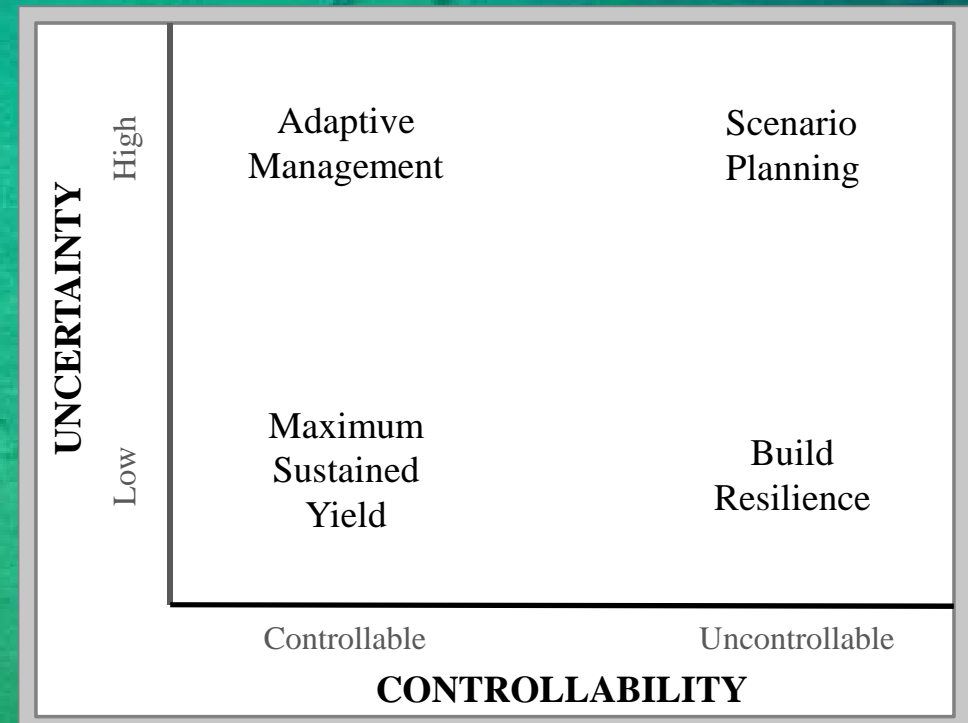
- Uncertainty a necessary but insufficient condition
- AM should require sufficient knowledge to understand that adaptation a reasonable (feasible) option
 - Guided by due diligence
- AM may not be suitability where:
 - high risk of irreversible or large scale harm (safe failures?)
 - Temporal lags
 - Effects experienced over large scales
 - Uncertainty not likely to be reduced through experimentation
 - Confounding variables



(Allen & Gunderson, 2011)

Controllability

- AM is only suitable where management interventions can be subject to adaptation
- Requires an assessment of the available management levers:
 - Mitigation measures
 - Production measures
 - Spatial adjustments
- Consistency with other regulatory requirements and rights
- Supported by adequate resources



(Allen & Gunderson, 2011)

Security of tenure

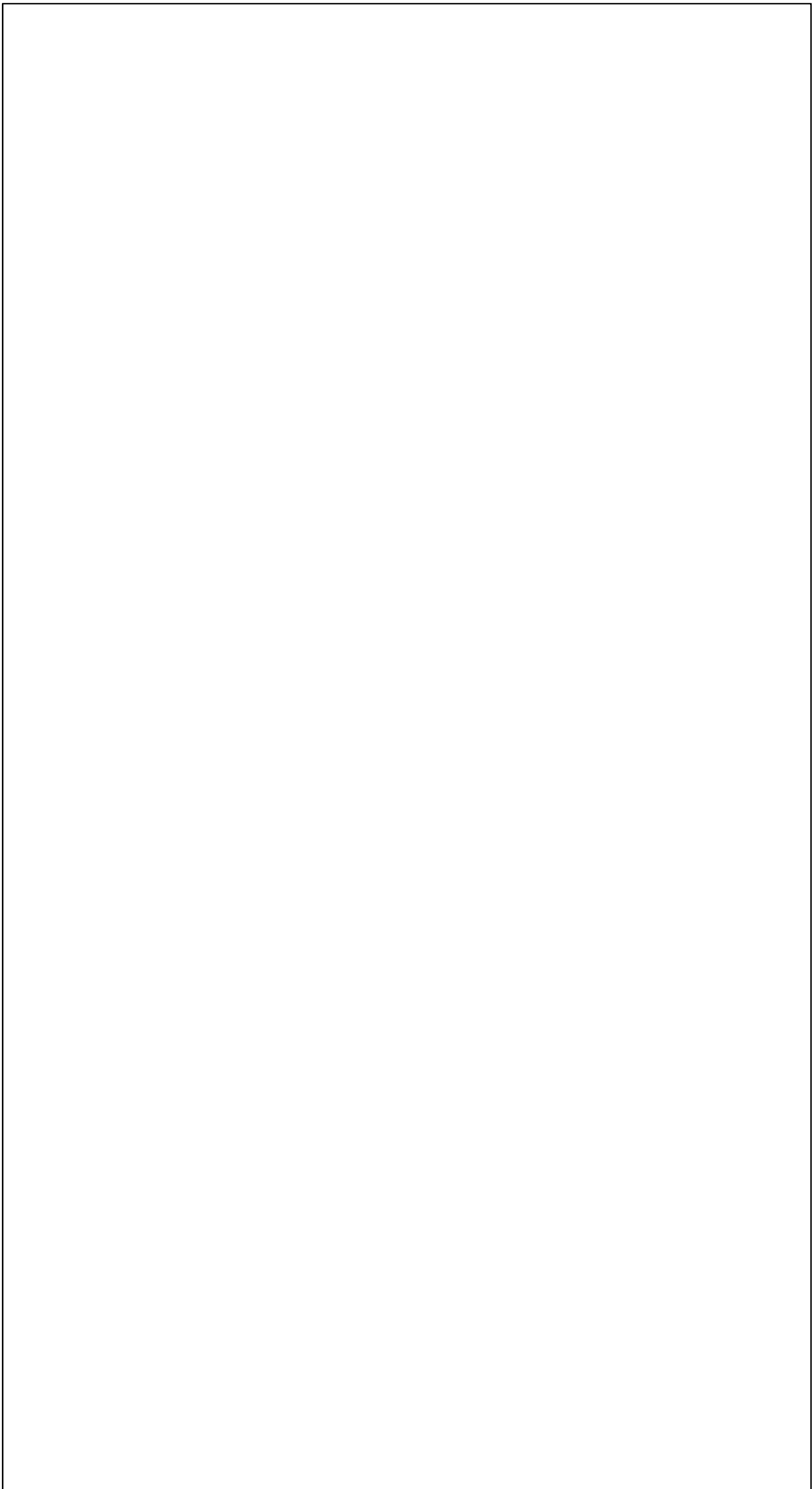
- Potential constraints on AM arise due to the contractual nature of mining arrangement and desire for investment certainty
- Security of tenure embedded in article 153(6), as well standard contract terms – but must be read in light of obligations under Article 145
- AM may provide a pathway
- Could influence form or extent of AM
 - i.e. measures that impact production levels or interfere with vested exploitation rights
- Conditions (triggers/responses) likely need to be clearly defined
- Attention needs to be paid to consistency of AM with other part of Mining Code, i.e. requirement for “material change” (DR 48)
- AM measures must be anticipated and explicitly addressed in standard terms

Implementing adaptive management

- Anticipated under Draft Regs to apply to EMMP – could be implemented as part of EMMP or require amendment to EMMP
- Many elements present
 - EIAs identify sources of uncertainty
 - Monitoring commitments
 - Preservation impact zones
- AM could also apply to inform other regulatory instruments, such as standards (Environmental Targets), guidelines, higher order planning documents
 - More scientifically structured periodic review
 - need to think through impacts of changes on existing contracts (grandfathering?) and non-discrimination requirements

Process questions

- Who decides?
- Degree of consultation
- Need for procedural safeguards



Passive v. Active AM

Passive AM

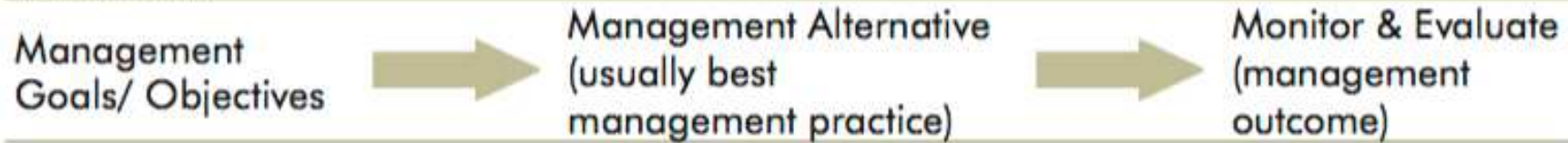


figure 2a. Passive adaptive management

Active AM



Pembina

- "[t]he concept of "adaptive management" responds to the difficulty, or impossibility, of predicting all the environmental consequences of a project on the basis of existing knowledge" and indicated that adaptive management counters the potentially paralyzing effects of the precautionary principle. Thus, in my opinion, adaptive management permits projects with uncertain, yet potentially adverse environmental impacts to proceed based on flexible management strategies capable of adjusting to new information regarding adverse environmental impacts where sufficient information regarding those impacts and potential mitigation measures already exists.

UNCLOS

- 156 - 6. A contract under paragraph 3 shall provide for security of tenure. Accordingly, the contract shall not be revised, suspended or terminated except in accordance with Annex III, articles 18 and 19.

- See also **Section 3**
Security of tenure and exclusivity

3.2 The Contractor shall have security of tenure and this Contract shall not be suspended, terminated or revised except in accordance with section 39.

3.3 The Contractor shall have the exclusive right under this Contract to exploit the resource category and to conduct Exploitation Activities within the Contract Area in accordance with the Rules of the Authority.

3.4 The Authority undertakes not to grant any rights to another person to explore for or exploit the same resource category in the Contract Area for the duration of this Contract.

3.5 The Authority reserves the right to enter into contracts with third parties with respect to Resources other than resource category specified in this Contract but shall endeavour to ensure

Section 39

Modification of terms and conditions of this Contract

39.1 When circumstances have arisen or are likely to arise after this Contract has commenced, which in the opinion of the Authority or the Contractor, would render this Contract inequitable or make it impracticable or impossible to achieve the objectives set out in this Contract or in Part XI of the Convention, the parties shall enter into negotiations to revise it accordingly.

39.2 This Contract may also be revised by agreement between the Contractor and the Authority, including where revision is necessary or desirable to reflect any rules, regulations and procedures adopted by the Authority subsequent to the entry into force of this Contract.

39.3 This Contract may be revised only:

- (a) With the consent of the Contractor and the Authority, and
- (b) By an appropriate instrument signed by the duly authorized representatives of the parties.

39.4 Subject to the confidentiality requirements of the Regulations, the Authority shall publish information about any revision to the terms and conditions of this Contract.

DR 48 Modify EMMP

Draft Regulation 48

Modification of the Environmental Plans

1. A Contractor shall not modify the Environmental Plans forming part of a Plan of Work, except in accordance with regulation 18 of the Exploitation Regulations and this Part VIII.
2. The Authority may, in consultation with a Contractor, vary or amend the Environmental Plans where there is a Material Change relating to, arising from or as a consequence of:
 - (a) a proposed change in the scale or intensity of mining activities.
 - (b) Environmental Incidents.
 - (c) a required improvement in Environmental Performance.
 - (d) Environmental audits; and
 - (e) the impact of mining activities on the Marine Environment as the direct result of increased scientific knowledge, information or experience, including that arising from the testing of collecting systems prior to the commencement of commercial mining activities.



