

**BEFORE THE EPA  
CHATHAM ROCK PHOSPHATE MARINE CONSENT APPLICATION**

**IN THE MATTER** of the Exclusive Economic Zone and Continental Shelf  
(Environmental Effects) Act 2012

**AND**

**IN THE MATTER** of a decision-making committee appointed to consider a  
marine consent application made by Chatham Rock  
Phosphate Limited to undertake rock phosphate  
extraction on the Chatham Rise

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**CLOSING LEGAL SUBMISSIONS FOR  
CHATHAM ROCK PHOSPHATE LIMITED**

**Dated: 19 November 2014**

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1. Chatham Rock Phosphate (**CRP**) has provided more than sufficient information and evidence to enable the decision-making committee (**DMC**) to grant a marine consent in respect of its proposal. That information and evidence demonstrates that the CRP proposal achieves the purpose of the EEZ Act, and that there are no issues or effects of such significance that warrant consent being declined.
2. These submissions will elaborate on the reasons why this submission is made.

## **INTRODUCTION AND PRELIMINARY MATTERS**

3. Having reviewed the opening legal submissions for CRP,<sup>1</sup> it is submitted that what was outlined in opening has either been borne out by the evidence considered by the DMC, or has not been materially disturbed by the cases presented by other parties.
4. As such, the substance of the position set out in opening continues to be relied upon by CRP, albeit that there have been some modifications on matters of detail as the hearing has progressed. We will endeavour therefore not to repeat the opening submissions, but there will inevitably be some degree of overlap.
5. There are several incontrovertible matters that it is useful to set out as a background:
  - (a) phosphorous is an essential element which is critical to food production and New Zealand's economy;
  - (b) CRP's product is a high quality, low-cadmium, local source of phosphate and is a strategic resource of national significance;
  - (c) the project will result in a number of benefits to New Zealand, both in terms of those that can be measured by economists, as well as less measurable strategic benefits;<sup>2</sup>

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1 Opening submissions for CRP, 25 September 2014.

2 Strategic benefits include security of supply, given the known geopolitical risks relating to existing sources; reduction of cadmium accumulation; and the ability to improve freshwater quality.

- (d) this is a serious project which is the product of tens of millions of dollars of investment and years of research,<sup>3</sup> and is far from being a trifling or fanciful experiment; and
  - (e) the level of scientific information and analysis underpinning CRP's proposal has significantly added to the base knowledge of the Chatham Rise environment (which was already the best-studied part of the EEZ) and will contribute to global management of marine mining projects.
6. In all projects, it is inevitable that there will be imperfect information, but there are very limited aspects of this project which give rise to significant environmental risks – and it is the *risks* that should be the focus of the DMC's consideration, rather than just uncertainty about outcomes. It was apparent that a number of the witnesses for submitters, and indeed the EPA staff, undertook their assessments without giving due regard to the context of uncertainty, with the result that by implication or assertion the severity and consequences of issues and risks they identified have been overstated.
7. It is not accepted by CRP that the information before the DMC is anything other than the best available information as defined by the Act (being information that, in the particular circumstances of this application, is available without unreasonable time, cost or effort). There are some areas where witnesses have suggested further information should have been obtained,<sup>4</sup> but it is submitted that the information:
- (a) is either not required to be gathered at this stage due to the absence of risks associated with the subject matter (ie the information is not required at this stage in order to manage any specific risks);
  - (b) will be gathered as part of the collection of baseline (pre-mining) information; or

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3 CRP has spent approximately \$31 million so far, and the historical work before CRP pursued the project is estimated to be worth between \$60-80 million in today's terms.

4 For example, information about the nature, abundance and behaviour of marine mammals on the crest of the Rise.

- (c) will be gathered once mining commences to validate predictions of effects and/or for use as part of the proposed adaptive management regime.
8. It is submitted that there is no barrier, based on a material inadequacy of information, that would prevent the DMC granting consent in this instance.

#### **Observations about submissions and cases of other parties**

9. It is submitted that the positions outlined in the opening submissions for a number of parties<sup>5</sup> were unreliable for several reasons, including that they:
- (a) either ignored or failed to recognise the positions that had been reached at expert conferencing, such that various assertions about the nature or severity of effects were either at odds with or unsupported by their own experts;<sup>6</sup>
  - (b) wrongly characterised or misunderstood CRP's position on important issues;<sup>7</sup>
  - (c) failed to engage with or tackle key issues raised in CRP's opening;
  - (d) were based on an inaccurate understanding of the project and its impacts;
  - (e) did not correctly apply the EEZ Act;<sup>8</sup> and
  - (f) significantly overstated the uncertainties and risks of the project.
10. More will be said about these issues in relevant sections later in these submissions.

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5 Including the opening submissions for the Deep Water Group (**DWG**), Ngai Tahu, EDS, Forest & Bird, and KASM et al.

6 For example, alleged severe adverse impacts on commercial fishing.

7 For example, Ngai Tahu regarding the scope of their existing interests.

8 For example, the suggestion in the submissions for Ngai Tahu and DWG that the mining exclusion areas have no value and should not be recognised because the areas are not currently mined and have some measure of protection as Benthic Protection Areas (**BPA**s). Similarly, EDS adopted a highly academic approach founded in the evidence of Dr Brown as to why the mining exclusion areas deserved no weight.

11. It is also necessary at this point to make some general observations about the manner in which the cases of two parties have been pursued. The first is the case run by Greenpeace, KASM and the DSCC. While it is understood that these parties may not have significant financial resources at their disposal, it is submitted that the manner in which their case was conducted was unfortunate. Matters of concern included:
- (a) technical and unmeritorious process points were repeatedly raised, when in reality there was no particular prejudice to those parties or any other participant in the process;
  - (b) ironically, process concerns were raised when considerable leeway was given by the DMC to those parties when they had not followed the correct process (eg carrying out prolonged and unhelpful questioning of witnesses where no prior notice of cross-examination had been given, and filing a supplementary statement of evidence where no leave to do so had been sought or granted);
  - (c) repeated assertions as to the honesty or integrity of CRP witnesses in terms of their ability to appear as experts, when a number of those parties' own witnesses strayed well beyond their area of expertise<sup>9</sup> and/or did not prepare or present their evidence as an objective expert witness should;<sup>10</sup> and
  - (d) the apparent unwillingness of those parties to approach the hearing in a constructive manner and seek to assist the DMC in its consideration of relevant issues.
12. The second party is the Crown. It is useful to remind the DMC that the Crown made a submission that covered a range of responsibilities of the Crown, and was expressed to be neutral. At numerous times during the course of the hearing, and particularly during questioning of some of CRP's witnesses, one could be forgiven for wondering what in fact the Crown's position was.

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9 Professor Watling being the most obvious example.

10 For example, Associate Professor Slooten.

13. The only evidence called by the Crown was narrowly focused on matters identified in Part 3 of its submission, being conservation-focused matters. Notwithstanding its very balanced written submission, no evidence was called by the Crown on Part 1 (the Government's business growth agenda and the potential economic impacts of the proposal) or Part 2 (issues relating to commercial fishing and fisheries, including Benthic Protection Areas, biosecurity, soils and food safety).
14. While it is entirely within the province of each party to determine the manner in which they run their case and the evidence that they seek to call, it is submitted that there is little doubt that the Crown case could and should have contributed much more to the full range of matters addressed during the hearings, rather than focusing solely on matters administered by the Department of Conservation.

#### **Expert vs non-expert evidence**

15. One remarkable aspect of this hearing is the level of consensus reached by various experts for the parties. It appears that most experts engaged in the conferencing process constructively, and understood their role and duties under the Code of Conduct.
16. It is submitted that the DMC should have some confidence in the expert evidence that is before it, and should in almost all instances prefer the evidence produced by the experts over information or representations provided by non-experts. This is appropriate in any event when the nature of the environment in which the proposal is located means that scientific and technical evidence is essential, and should prevail over the personal views or value judgments expressed by non-experts.
17. Where the evidence of non-experts might warrant some weight relates to the area of factual observations and knowledge attained due to first-hand experience. In that respect, the evidence given by a number of experienced fishermen who have worked on the Chatham Rise is relevant. This includes observations about things such as:
  - (a) the types and behaviour of seabirds;
  - (b) the presence, behaviour and distribution of marine mammals;
  - (c) the location and behaviour of fish; and

(d) the nature of currents, weather patterns and sea-state.

18. While there was a degree of variability in the factual observations of some of these witnesses, it is submitted that in most instances their evidence either corroborates or is not in serious conflict with the evidence of the experts.

## **THE ACTIVITY AND MINING METHOD**

19. It is submitted that the nature of the activity and the mining method are clear, and the information provided through these hearings is entirely consistent with the information outlined in the application and the EIA. Criticisms of the mining method being "conceptual" are misguided.
20. The CRP evidence is very clear that all components of the mining system are based on existing, conventional technology. While the design of the system needs to be completed and the system needs to be built, it is both convenient and self-fulfilling for uncertainty to be asserted by opponents simply because the activity has not been undertaken before at the depths proposed and the equipment proposed to be used is not yet in existence. Why would any responsible and commercially astute company invest millions of dollars in designing and building the equipment until there is some certainty that consent will be granted, and it knows what parameters and thresholds it will need to work within? Someone always has to be first, and without the incremental advance of technology such as proposed in this application, society would not be where it is today.
21. The fundamental aspects of the mining system that will determine the nature and extent of potential environmental impacts are known: the size of the draghead and power of the pump unit; the size of the riser and sinker and design criteria of the diffuser; and the components of the onboard processing plant. Details of these will be determined as the engineers complete the integration of the system with the chosen mining vessel, but these details will not add any substantial information that would assist the DMC to assess the likely environmental effects of mining.
22. The evidence of the Boskalis witnesses demonstrated that they have a high level of technical knowledge and have at least as much experience

and expertise as any operator in the world to undertake this project. Their evidence was that they also have the capacity and capability to adapt operations to enhance their performance as their experience builds. This is not to say however that they will not be able to meet the necessary standards right from the outset; to the contrary, the evidence indicates a lengthy and impressive track record of reliability and strong environmental performance in challenging environments around the world.

- 23.** One of the main areas of concern appears to be the potential for the draghead to dredge substantial amounts of the chalk-ooze layer beneath the sediments. The evidence of Mr van Raalte is that this can be effectively managed as part of the process by varying the speed and power of the jets on the draghead, and by visual observations as to the level of chalk that is brought up to the mining vessel.<sup>11</sup> In addition, there is a disincentive for the operator to contact this layer as it will not allow the separation process to operate as efficiently as intended and hence not allow phosphorite production to be maximised.<sup>12</sup> It is noted that Mr Longdill's experience is that dragheads are very carefully controlled and operate with a high level of precision.<sup>13</sup>
- 24.** The configuration and design of the draghead jets will be optimised to mine the phosphorite layer. Laboratory tests indicate that the physical properties of this layer are like a silt, and that because the physical properties of the chalk-ooze layer are similar to a clay, even if the jets penetrate the chalk-ooze layer they will tend to cut slots in the ooze rather than recover large volumes of the material.<sup>14</sup>
- 25.** In addition, the pre-mining seabed surveys and core samples to be collected within mining blocks will provide useful information about sediment depth<sup>15</sup> and the stiffness of the underlying layer across the block, such that mining operations can be adjusted, and contact with the chalk-ooze layer will be minimised. It will also identify features that might affect mining operations, such as areas of seabed irregularity (eg furrows or areas of basement rock), as well as the distribution of benthic habitats.

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<sup>11</sup> van Raalte EIC, paras 36 and 86; Transcript, van Raalte, page 594 (Day 5).

<sup>12</sup> van Raalte EIC, para 43; Transcript, van Raalte, pages 612-613 (Day 5).

<sup>13</sup> Transcript, Longdill, page 658 (Day 6).

<sup>14</sup> Transcript, van Raalte, pages 592 and 593 (Day 5).

<sup>15</sup> Transcript, van Raalte, page 603 (Day 5).



- 26.** In any event, the chalk-ooze layer should not be a matter which assumes undue importance. Any uncertainty is already appropriately accounted for given that the sediment plume modelling:
- (a) is highly conservative and therefore over-estimates the spread of the plume; and
  - (b) already anticipates some chalk content in the mined sediment.
- 27.** As to the height of the diffuser above the seabed, the evidence was that there would be sophisticated equipment on board the vessel to monitor and adjust the height of the sinker pipe above the seabed, even when wave conditions are towards the higher level of the operational envelope. This will enable the discharge of returned sediments to occur at 10 metres, on average, above the seabed across the mining block.<sup>16</sup> The monitoring conditions require the height of the diffuser to be recorded sufficiently frequently so the DMC can have confidence that the performance of the system controlling the height of the diffuser can be assessed.
- 28.** In terms of weather conditions, and the ability to mine in high energy seas, the mining vessel will be about 250 metres long, longer than the Cook Strait ferries, and will provide a very stable platform for mining operations. Oceanographic records have guided the design of the vessel and mining system, and the Boskalis engineers are confident that it can operate in 4 metre seas. Modelling predicts that in seas of this size the vertical motion of the diffuser head will be about 2 metres up and 2 metres down.<sup>17</sup>
- 29.** Concerns have been raised about the environmental consequences if things go wrong. Largely, these environmental risks are generic and already exist due to the presence of other vessels across the Chatham Rise (eg oil spills, etc.). There is no reason to single out CRP's vessel or operations for different treatment in this regard.

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<sup>16</sup> van Raalte EIC, paras 51-54; Transcript, van Raalte, pages 607-608; Transcript, Steenbrink, page 533 (Day 5).

<sup>17</sup> Transcript, van Raalte, pages 595-596; Transcript, Steenbrink, page 534 (Day 5).

- 30.** Dealing with issues or concerns regarding risks specifically associated with the mining method, the evidence of Mr van Raalte was clear that if there is a problem with the mining or processing system then the mining stops – nothing is dredged, processed, or discharged.<sup>18</sup> The environmental risks associated with a failure of a component of the mining system are relatively low as the primary consequence would be a return of unprocessed seabed material to the seabed. There is no chance of a release of material foreign to the environment (such as an oil well blowout) or a spill of processing chemicals.
- 31.** Finally, a question has been raised about who will actually undertake the mining. While it is true that a contract has not yet been signed between Boskalis and CRP, at this point it is inconceivable that another company will undertake the mining given Boskalis' current substantial investment in the project and shareholding in CRP. The DMC is entitled to proceed on the assumption that Boskalis will be the mining operator and take whatever confidence it considers is required in terms of their skill, experience and expertise.

## **THE CONTEXT**

- 32.** As noted earlier, the context of the concerns about the application's risks is an important consideration for the DMC despite it receiving little attention or being downplayed by some parties. When the effects of the CRP proposal are assessed in light of the existing environment and put in their proper context, it is apparent that most of the effects or risks are not significant.
- 33.** An important aspect of context relates to the scale and significance of effects, both in terms of their spatial and temporal extent. When considered narrowly, aspects of the proposal might be considered to have significant adverse impacts. A very different picture emerges however when the following matters are considered:
- (a) the existing environment and existing activities;
  - (b) the risks and effects those existing activities produce;
  - (c) the legal and regulatory framework that applies to the area;

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<sup>18</sup> van Raalte EIC, para 87.

- (d) the duration of mining both within a calendar year and for the life of the project; and
  - (e) the scale and location of the CRP proposal in the context of the wider Chatham Rise and EEZ.
- 34.** It is not appropriate to consider effects or risks in a vacuum. The annual area of seabed mined would be 30 km<sup>2</sup>, for at least 15 years and for a maximum of 35 years. For 15 years of mining, the area impacted would be less than half of 1% of the Chatham Rise shallower than 1000m. While effects would not be solely limited to the mined areas, the evidence indicates that they will not spread far beyond those areas.
- 35.** If CRP obtains further mining permits, meets the requirements of the proposed conditions to enable it to move beyond the mining permit area, and its project is extended to the full proposed term of its consent (35 years), the total area of seabed mined would be a maximum of approximately 1,050 km<sup>2</sup>.
- 36.** The areas mined will be small compared to the marine consent area and the Chatham Rise (and areas affected by commercial fishing). The areas mined are 0.6% of the marine consent area per year, 8.6% over 15 years, or 20% over 35 years. It also needs to be borne in mind that the proposed mining exclusion areas cover 19% of the marine consent area, an area almost equivalent to the maximum area that could be mined.<sup>19</sup> The activity and its effect is miniscule on an EEZ-wide scale.
- 37.** It is submitted that the direct effects are limited, in terms of scale, extent and severity. This statement holds true when considered in the context of the marine consent area, the wider Chatham Rise, and the EEZ.
- 38.** The primary existing activity across the wider Chatham Rise is fishing, which largely occurs by bottom trawling and some long-lining. Other than the impacts on fish stocks which are managed through the Fisheries Act and its associated management regime (eg, the quota management system), the physical and environmental impacts of fishing are unregulated under the EEZ Act.

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<sup>19</sup> In practice the non-mined area is about 80% of the consent area, although some of that area may have sediment deposition.

- 39.** On the Chatham Rise, fishing activities cause significant environmental effects. These are described in Dr Tuck's evidence between pages 7 to 16. As described by Dr Tuck, bottom trawling gives rise to environmental effects through dragging heavy trawling equipment over very extensive areas, which both damages sensitive benthic organisms (including corals) and generates sediment plumes in areas where commercial fish species accumulate. Areas of seabed and all manner of marine life are disturbed and impacted by bottom trawling, often multiple times in a year, and year after year. The annual average trawl footprint over recent fishing years on the Chatham Rise has been 17,791 km<sup>2</sup>.<sup>20</sup> This figure does not account for multiple fishing events in the same area which fishing witnesses acknowledge that they increasingly seek to achieve.<sup>21</sup>
- 40.** About 385,000 km<sup>2</sup> of seabed in the EEZ is estimated to have been affected by bottom trawling since the 1989/1990 fishing year. About 50,000 km<sup>2</sup> of seabed in the EEZ and Territorial Sea was affected by bottom trawling in the 2009/2010 fishing year. Of this, approximately 3,200 km<sup>2</sup> is estimated to be previously untrawled seabed, affected with no environmental oversight such as that required for CRP's project.
- 41.** In terms of the widespread sediment plumes and sedimentation generated by bottom trawling, the annual footprint of sedimentation greater than 1mm (a threshold for sensitive benthic organisms identified by Dr Hewitt in her evidence) is estimated to be 18,000 km<sup>2</sup>. While witnesses for the fishing industry were at pains to point out that the sedimentation created by fishing activities is different compared to CRP's proposal, there can be no dispute that the scale of impact and associated effects are significant.
- 42.** These effects are also in areas acknowledged by fishermen to be important for spawning (increasing the potential for impacts on fish eggs and larvae), in contrast to CRP's proposed consent area that is not recognised as a significant spawning area. Annual degradation of benthic habitats by bottom trawling on the Chatham Rise is almost six hundred times greater in extent than that proposed for seabed mining (17,791 vs 30 km<sup>2</sup>). It is hard to understand how loss of an additional 0.2% would

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<sup>20</sup> Tuck EIC, para 36.

<sup>21</sup> Evidence of Dr Helson at para 94; Transcript, Connolly, page 1896 and 1897 (Day 19).

substantially affect commercial fisheries, a conclusion supported by the modelling of fish populations reported by Mr Dunn in his evidence.

43. Apart from the direct effects on habitats, fish, and other marine organisms by fishing activities, there are also risks posed to marine mammals and seabirds in terms of vessel strike, noise, lighting, entanglement, and impacts on food sources.
44. It is submitted that existing activities and their effects provide the wider context that must be considered when assessing the nature, scale, and significance of the effects of CRP's proposal and making your decision on CRP's application.

#### PURPOSE OF THE EEZ ACT

45. The purpose of the EEZ Act is fundamental to your decision. It guides the interpretation and application of the EEZ Act, including the decision making sections. Given its importance, we have set out section 10 in full below (our emphasis added):

- (1) The purpose of this Act is to promote the **sustainable management of the natural resources** of the exclusive economic zone and the continental shelf.
- (2) In this Act, **sustainable management** means managing the use, development, and protection **of natural resources** in a way, or at a rate, that enables **people to provide for their economic well-being while—**
  - (a) sustaining the potential of natural resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
  - (b) safeguarding the life-supporting capacity of the environment; and
  - (c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.
- (3) In order to achieve the purpose, decision-makers must—
  - (a) take into account decision-making criteria specified in relation to particular decisions; and

- (b) apply the information principles to the development of regulations and the consideration of applications for marine consent.

- 46. Central to the purpose of the Act is the definition of "sustainable management". The definition envisages a balancing exercise whereby provision for economic development is balanced against environmental considerations.
- 47. Economic development and environmental protection are not necessarily mutually exclusive, as CRP's evidence has demonstrated – particularly the evidence of Mr Wood in terms of the opportunity to achieve improved biodiversity outcomes while also enabling a valuable and strategic mineral resource to be won.
- 48. The balance to be struck is outlined in the opening legal submissions for the Crown (see paragraphs 10 to 15 in particular), where it is noted that it is an explicit Government policy goal to make the most of our abundant energy and mineral resources, through encouraging environmentally responsible development and efficient use of those resources.
- 49. A number of parties expressed a view in their opening submissions, based on the Supreme Court's decision in *King Salmon*<sup>22</sup> regarding the similar, but materially different definition of "sustainable management" in the Resource Management Act 1991 (**RMA**), that the matters in section 10(2)(a), (b) and (c) of the EEZ Act are bottom lines that must be met.<sup>23</sup>
- 50. That position is submitted to be incorrect and, when the Supreme Court's judgment is considered, there is no such finding to that effect.
- 51. Rather, we maintain that the Supreme Court emphasised the balancing exercise within the RMA definition of "sustainable management". It noted the definition should be read as an integrated whole and that:

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22 *Environmental Defence Society Inc v New Zealand King Salmon Company Ltd* [2014] NZSC 38, (2014) 17 ELRNZ 442 at [24](c).

23 For example, see opening legal submissions for KASM et al, paras 18 and 19; opening legal submissions for EDS, paras 7 to 11.

the use of the word 'while' before sub-paras (a),(b) and (c) means that those paragraphs must be observed in the course of the management referred to in the opening part of the definition. That is, 'while' means 'at the same time as'.

52. Clearly, the other parties favour an interpretation that "at the same time as" means that the three sub-paragraphs (a), (b) and (c) in section 5(2) of the RMA must be achieved as environmental bottom lines. It is submitted that if the Supreme Court had intended that interpretation, it would have said so explicitly in its decision. A careful reading of the judgment will confirm that it did not do so. A more plausible interpretation, when reading both the statutory language and the Supreme Court's discussion of the issues on their face, is that the sub-paragraphs are not environmental bottom lines as such but are to be weighed in the balancing exercise. Neither the sub-paragraphs nor the preceding part of the definition prevail, but rather they need to be read as an integrated whole. A similar approach should apply to the EEZ Act's purpose.
53. In addition, it is significant that the definition of "sustainable management" in the EEZ Act is different to the equivalent definition in the RMA in an important aspect, which in turn flows through into the definition of existing interests and the mandatory considerations in sections 59 – 64 of the EEZ Act.
54. The EEZ Act's definition of "sustainable management" refers to enabling "*people to provide for their **economic wellbeing***" whereas the equivalent definition in the RMA refers to enabling "*people and communities to provide for their **social, economic, and cultural wellbeing and for their health and safety***".
55. Parliament's deliberate exclusion of social and cultural wellbeing in the EEZ Act definition means that "sustainable management" for the purposes of the EEZ Act has a greater economic focus, and that fundamentally the EEZ Act is a resource and economic development statute. There is no dispute that environmental protection is a key element of sustainable management,<sup>24</sup> but it does not prevail and does not have the effect of

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<sup>24</sup> See opening legal submissions for EDS, para 12.

making the EEZ Act an environmental protection statute, as seems to be suggested by some other parties.

56. The absence of social and cultural factors from the EEZ Act definition of "sustainable management" also means that the focus of your decision must be on economic and environmental considerations. Social or cultural considerations may still be relevant, but it is submitted that they deserve less weight, except to the extent that they may be captured in defined terms such as "existing interest".
57. Section 10(3) lists two mandatory requirements to give effect to the purpose of the Act, but consideration of these two matters does not of itself give effect to the purpose of the Act. The decision-making criteria and information principles referred to in section 10(3) must be taken into account and applied, but do not encapsulate the Act's purpose.

## INFORMATION PRINCIPLES

58. Section 61 of the EEZ Act provides:

- (1) When considering an application for a marine consent, the Environmental Protection Authority must—
  - (a) make full use of its powers to request information from the applicant, obtain advice, and commission a review or a report; and
  - (b) base decisions on the best available information; and
  - (c) take into account any uncertainty or inadequacy in the information available.
- (2) If, in relation to making a decision under this Act, the information available is uncertain or inadequate, the EPA must favour caution and environmental protection.
- (3) If favouring caution and environmental protection means that an activity is likely to be refused, the EPA must first consider whether taking an adaptive management approach would allow the activity to be undertaken.
- (4) Subsection (3) does not limit section 63 or 64.
- (5) In this section, **best available information** means the best information that, in the particular circumstances, is available without unreasonable cost, effort, or time.

59. It is worth considering the elements of this section in further detail. In terms of the powers available under sub-section 1(a), both the EPA and the DMC have exercised such powers on several occasions. Despite invitations from some parties for further information to be sought or



witnesses called, the DMC appears to have reached the conclusion that it has sufficient information to enable it to determine the application. If in fact it has not reached that conclusion, then it is submitted that it is required to put that issue to CRP and give it an opportunity to resolve the perceived information gap.

- 60.** In that respect, it is submitted that section 61(1) imposes a positive duty on the DMC to exercise powers or consider options that enable it to have the information that it requires.
- 61.** In terms of the process for fulfilling that duty, from CRP's perspective there are two main options if the DMC requires further information:
- (a) the DMC giving notice following the conclusion of the hearing of an identified issue that it considers will prevent it from determining the application, and inviting CRP to provide additional information about that issue; or
  - (b) the DMC issuing an interim decision which indicates an intention to grant consent, but requesting further work be done on conditions to address any areas of remaining concern or uncertainty.
- 62.** Obviously, either of these options would require CRP as the applicant to consent to or request an extension of timeframes to enable further information to be provided or carry out further refinement of conditions. While the EEZ Act does not explicitly deal with or authorise either option, in reality, the only party that would be prejudiced by the DMC's refusal to follow those courses is CRP.
- 63.** It is noted that section 62 provides the power for you to either grant (in whole or in part) or refuse an application for consent. Similar to the position under the RMA, it is submitted that it is implicit within this power that the DMC may issue interim decisions. The power to make decisions in the RMA are worded in a similar manner to section 62 of the EEZ Act,

which suggests that the power to issue interim decisions is also available in the EEZ Act.<sup>25</sup>

- 64.** Interim decisions are commonly issued under the RMA and are a way of recording findings on a number of matters, but also allowing the applicant to work through any outstanding conditions or issues before a final decision is issued.
- 65.** For the avoidance of doubt, we record that CRP will consent to and/or request an extension of time to enable further information to be provided, further work to be done on conditions of consent (perhaps through additional conferencing of relevant experts), and for the hearing to be reconvened in either instance if necessary.

*Best available information*

- 66.** The definition of "best available information" is set out in section 61(5) and means:

The best information that, in the particular circumstances, is available without unreasonable cost, effort, or time.

- 67.** This definition has been addressed earlier in these submissions, but it is worth recapping the information that is before the DMC. The Chatham Rise is the best studied part of New Zealand's EEZ and the Mining Permit Area (**MPA**) is the best studied part of the Chatham Rise. The information gathered by and relied upon by CRP was summarised at paragraphs 52 – 59 of CRP's opening legal submissions. When the DMC reconsiders that summary, it is submitted that it clearly demonstrates both the depth and adequacy of the information which has informed this proposal. The time, cost, and effort that has gone in to producing the information which is before the DMC (including the outputs of expert witness conferencing) is considerable and sufficient to assess the likely nature and extent of environmental effects at a scale appropriate to the mining project.

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<sup>25</sup> See sections 104A, 104B, 104C and 104D of the RMA.

- 68.** A number of scientific witnesses have expressed the view that additional information would be of assistance, but have acknowledged the time, cost and effort that would be required to obtain this information.<sup>26</sup>
- 69.** A number of criticisms have been made about the reliability of modelling and the fact that further information will be required to validate the models. That is simply a function of modelling – all models involve predictions, and can only ever be validated when further data are gathered. If actual measurements of effects were available, it might not be necessary to use models. The use of models as a means of predicting effects and outcomes is, however, unavoidable given the offshore environment.
- 70.** One further observation is warranted with regard to the models prepared by CRP witnesses. All of the models are based on significant amounts of data and are implemented by well recognised algorithms that describe the physical and biological responses of real world processes. Taking the modelling undertaken by Dr Rowden and his team as an example, it has always been accepted that the outputs of the model would need to be validated and that there was a degree of uncertainty with the outputs. That should not, however, be confused with an absence of input data underlying the model.
- 71.** As Dr Rowden explained, a significant amount of base data and information were used in preparing the models that his evidence addressed. The results are not simply an educated guess as to the nature and location of benthic communities. To the contrary, there is a relatively high level of confidence in the accuracy of the model's predictions about suitable habitats. Indeed, the model and its outputs are submitted to be far more sophisticated and reliable than some parties have sought to assert.<sup>27</sup> And, contrary to the comments of other experts as noted by Dr Rowden, the model included internal validation by setting aside a portion of the benthic biological data and using that data to check model predictions.
- 72.** Assessment of the quality and usefulness of the models needs to consider the scale of the mining project. Analysis of the videos and high resolution

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<sup>26</sup> For example, Dr Fulton's evidence regarding the time and costs of validating the trophic model.

<sup>27</sup> Transcript, Rowden, pages 1985 to 1988, 2020 and 2025; Transcript, Leathwick, pages 393 and 394.

bathymetry shows that thickets of stony corals occur as relatively small patches on seabed elevations, and that these are concentrated in the northeast part of the MPA. Observation of large scale patterns of habitat and communities (the strength of the benthic modelling) is what is relevant in terms of considering the effects of mining. For example, Dr Rowden in his evidence said that it would be possible for mining to proceed for some years in the western part of the MPA without creating an undue risk to communities characterised by stony corals.

- 73.** The DMC also needs to bear in mind that the modelling and predictions undertaken by CRP and its witnesses have incorporated an appropriate level of conservatism to reflect the information on which they are based and the environment in which they are made. The models are, as described by many of the expert caucus groups, "fit for purpose" as a means of assessing the likely effects of the proposal. Many of the models have also been subjected to sensitivity testing,<sup>28</sup> where the inputs into the model were altered, in some instances to an extreme or implausible extent, to see what difference that made to the outputs. In the case of the Rowden, Pinkerton and Dunn models, the changes to the outputs were negligible, indicating that the models were robust.
- 74.** The individual circumstances of any application in the EEZ are a key consideration in determining what constitutes "best available information". Activities within the EEZ inherently involve deep water and large distances offshore and hence there will always be a greater degree of uncertainty than for projects undertaken closer to shore. Existing research is more limited than for inshore parts of New Zealand, for obvious reasons. Additionally, further research is more expensive and generally requires greater planning and coordination. In many cases, the gain in scientific knowledge will not come close to being proportionate to the time, effort and cost involved, balanced against the incremental reduction of environmental risk that might be achieved.
- 75.** It appears to be inevitable that scientists will seek more complete and detailed information sometimes only for the purpose of adding to the base

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<sup>28</sup> For example, as described by Dr Rowden, Dr Pinkerton, and Mr Dunn.

of scientific knowledge.<sup>29</sup> This is however not always feasible and in many instances is simply unnecessary, particularly when it is directed toward understanding the general nature of the environment (such as how fish hear), or is unrelated or disproportionate to the particular effects or risks posed by the proposal (such as systematic surveys of seabirds).

- 76.** In the particular circumstances of this proposal, it is submitted that there should be no difficulty for the DMC in concluding that the information before you meets the EEZ Act's definition of "best available information". And even if you conclude that some of it does not, then you have the options of seeking further information or allowing the proposed conditions to address the issues through validation and monitoring once mining commences.

#### *Uncertainty*

- 77.** As we predicted in our opening submissions, "uncertainty" was a greatly overused term during the course of the hearing and was often a fall-back position for some experts, notwithstanding a consensus on the evidence. It was used indiscriminately in all manner of circumstances, and was frequently decoupled from the issue of environmental risk.
- 78.** It is submitted that the effect of section 61(2)<sup>30</sup> regarding uncertainty cannot be that the DMC must favour caution or environmental protection in every instance. If certainty is always required (which is both subjective and, in the offshore environment, impossible), then the effect will be an unnecessarily cautious approach in every instance. That cannot have been Parliament's intention.
- 79.** It is more appropriate that activities in the EEZ are viewed through the lens of "risk" and "risk management". When considering uncertainty, what is called for is an assessment of materiality in terms of the nature of effects and level of risk. If there is uncertainty, but low or no risk, then a decision in favour of a project could still be considered "cautious", and appropriate conditions could deal with any small residual risks to ensure environmental protection.

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<sup>30</sup> For example, Associate Professor Slooten, Dr Huber, and Emeritus Professor Popper. Section 61(2) provides that, in relation to making a decision under this Act, the information available is *uncertain or inadequate*, the EPA must favour caution and environmental protection".

- 80.** As we noted in our opening submissions, there is a risk that overuse of the word uncertainty could lead to inappropriate or less vigorous decision-making in some circumstances. It has proven to be very easy for submitters to assert uncertainty without acknowledging the context or engaging with how a particular issue could be managed or addressed. There were a number of instances where submitters' witnesses could not fault the fundamentals of the scientific research and modelling undertaken by CRP's experts and agreed with their conclusions, but still fell back on "uncertainty" to justify a negative or unduly conservative opinion.<sup>31</sup>
- 81.** We reiterate that lack of detail should not be confused with lack of certainty. In this proposal, the nature and variability of the habitats and ecosystems are understood at a scale appropriate for the scale of the likely impacts from mining. The addition of more detail is not likely to affect the evaluation of the environmental significance of those impacts. In almost all instances, there has been sufficient information for experts to express an opinion as to the likely effects, which has from CRP's perspective mostly involved conservative or worst-case assessments.
- 82.** It will never be possible to assess every effect on every species or organism at a given threshold or parameter. CRP's witnesses have however been able to assess the likely extent and severity of effects of the activity, based on the impacts of a given level of sedimentation or TSS and what the plume modelling predicts. That is the envelope of effects approach which has been adopted by CRP and its experts, and it is submitted to be clear what the activity is that consent is being sought for, and the extent of effects that are predicted due to the sediment plume. Identifying thresholds for compliance purposes is likely to make little difference to the area where adverse effects are predicted to be likely.
- 83.** It is submitted that the basis for and CRP's predictions of effects has largely been confirmed in conferencing, bearing in mind that it does involve elements of uncertainty as to the detail of those effects. The suggestion by counsel for Ngai Tahu that something has been "lost in

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<sup>31</sup> See for example, Transcript; Middleton, pages 1221 – 1225.

translation" is not accepted, and appears to apply a black and white approach to the question of uncertainty.

- 84.** Even in the area where it is perhaps most difficult for the experts to express a view (impacts on potentially unique coral-dominated communities), the issue is not so much about the likely impact of the activity, but about the value, vulnerability and rarity of those communities.
- 85.** Accordingly, in terms of the need for so-called "baseline information", it is submitted to be evident that a greater level of baseline information is not required to accurately predict effects or impacts. To justify its collection, further "baseline" information must be both meaningful and serve a useful purpose. For example, having further information about seabirds or marine mammals will not alter any mitigation that is appropriate to be undertaken. The risk from lower levels of baseline information can and will be managed by adaptive management.<sup>32</sup>
- 86.** In any event, conditions are proposed to manage and mitigate the environmental effects of the mining operations, based on conservative analyses of environmental factors. From CRP's perspective, there are no areas where further information is necessary to assist the understanding of the issues and the impacts such that it would materially change the proposed conditions.
- 87.** We repeat the submission made in our opening: assertions of uncertainty or inadequacy of baseline information should not sway the DMC. Rather, the DMC should consider whether the approach adopted to assessing effects or predicting an outcome is reasonable and sufficiently conservative, what the risks might be if the approach is not sufficiently conservative, and how effectively the proposed conditions manage this risk.

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<sup>32</sup> We will address this concept in further detail later in these submissions, but the reference to a "suck it and see" approach is unhelpful when in reality adaptive management is better characterised as "learning by doing", which entails the sequential making of decisions as new information comes to hand, over time.

## EPA STAFF REPORTS

- 88.** The value and relevance of reports prepared by EPA staff has been a bone of contention to CRP both prior to and throughout the course of this hearing. CRP has, on several occasions, expressed its views and concerns about the staff reports in terms of the way that they raise issues of bias, fairness, natural justice, lack of expertise, timeliness, relevance, and the level of assistance that they provide to the DMC.
- 89.** CRP does not resile from any of the previously expressed concerns. If anything, the presentation of the second EPA staff report has heightened its concerns and has only served to demonstrate that a staff report has no useful role and has added no value whatsoever to this process.
- 90.** Resolution of the timing, content, role, and transparency of a staff report is a matter that clearly requires Parliament's attention through amendment to the legislation.
- 91.** While CRP appreciated the opportunity to test the authors of the second EPA staff report, it is CRP's view that the results of that exercise were alarming and reflect very poorly on the organisation.
- 92.** CRP's concerns with the first staff report can be best summed up by the comments made by Dr Bull in paragraph 86 of his evidence, when he pointed out that the EPA staff report did not understand the composition and nature of phosphorite nodules.<sup>33</sup> Unfortunately there was nothing factually correct about the assessment put forward by EPA staff, which is surprising for an organisation that administers the Hazardous Substances and New Organisms Act 1996 (**HSNO**). What was even more alarming was that, notwithstanding Dr Bull's very clear and uncontroverted evidence which addressed this error, this issue reappeared in the second EPA staff report.
- 93.** The EPA staff's answers to questions on the second staff report revealed a number of major and fundamental concerns:

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<sup>33</sup> At page 157 of the report EPA staff identified that the phosphorus in the nodules "is present in the form of diphosphorus pentoxide (P<sub>2</sub>O<sub>5</sub>), a hazardous substance..." and then on pages 161 and 162 of the report discussed the issues associated with handling this substance.



- (a) an unduly negative and conservative assessment, in which the authors fell back on "uncertainty" without even attempting to consider materiality, possibly due to their misunderstanding or lack of analysis of the evidence;<sup>34</sup>
- (b) a failure to have read or understood documents or material that they sought to draw to the DMC's attention as relevant to CRP's proposal;<sup>35</sup>
- (c) a failure to assess CRP's effects and issues in context, notwithstanding agreement that this approach is appropriate;<sup>36</sup>
- (d) the failure of the organisation to seek legal advice as to the appropriate interpretation of an important and contentious definition in the EEZ Act;<sup>37</sup>
- (e) an inability to explain how and why the organisation had made decisions or reached a view as to how the Act should be administered or applied;<sup>38</sup>
- (f) a misunderstanding or ignorance of the expert evidence presented and which was not in dispute;<sup>39</sup>
- (g) a failure of EPA staff to seek advice about the relevance of a separate piece of legislation administered by the EPA itself, with the consequence that a legally incorrect and misleading view was presented to the DMC;<sup>40</sup>
- (h) fundamentally incorrect understandings of basic scientific issues;<sup>41</sup>

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34 The word "uncertainty" was mentioned in the second EPA staff report approximately 125 times.

35 Transcript, Lamping, pages 1781 and 1782 (Day 18).

36 Transcript, EPA Officers (Lamping), page 1793 (Day 18).

37 Transcript, Graham, page 1801 (Day 18) in relation to the definition of "existing interests".

38 Transcript, Graham, pages 1800-1801 (Day 18).

39 For example, the failure of EPA Staff to take into account or understand the expert evidence of Dr Hermanspahn in relation to radiological risk: Transcript, EPA Officers, pages 1789 and 1790.

40 EPA Staff failed to seek legal advice about the administration of the HSNO: see Transcript, EPA Officers (Weller), page 1790 (Day 18).

41 For example, Dr Weller's lack of understanding that all rock phosphate contains uranium: Transcript, Weller, page 1791 (Day 18).

- (i) an almost total failure and/or unwillingness to advise the DMC about possible conditions or how it should approach various evidential issues in its decision; and
  - (j) unwillingness to express a view on expert evidence (presumably because they simply did not understand it), instead repeatedly deferring answers on a range of questions to "the experts".
- 94.** Regrettably, this exercise served to demonstrate that staff reports are inherently unreliable in this process and that it would be an error for the DMC to rely on a finding in a staff report which was inconsistent with expert evidence before you, or place weight on any findings in it.
- 95.** Finally, it is submitted that it is entirely unfair for applicants to have to bear the cost of these exercises. If other EPA staff reports have been prepared in a similar manner and with a similarly poor level of care and rigour, it can only adversely affect the credibility of the marine consent process. There is also the likelihood of adverse commercial impacts being borne by other applicants, as occurred in this instance.
- 96.** We will address the EPA staff's comments on some aspects of the proposed conditions later in these submissions.

## **EXISTING INTERESTS**

- 97.** CRP's position regarding existing interests was covered in some detail in its opening submissions and its view has not changed in any material respect. Accordingly, we refer the DMC to paragraphs 69 – 89 of the opening submissions and continue to rely on that analysis.
- 98.** Some further comments and analysis are however required. Firstly, as we noted earlier with regard to the second EPA staff report, it is both surprising and disappointing that the EPA has not sought to clarify or issue some public guidance on its view of the scope or meaning of the definition of "existing interests". This is despite it being put on notice by CRP in 2013 when it first lodged marine consent applications that it had concerns about the EPA's apparently broad interpretation of the definition and sought clarification and guidance on how it expected applicants to approach this issue.

99. Despite repeated requests, CRP received no meaningful guidance or advice. It is simply not good enough and it does not assist applicants seeking to navigate their way through what is already an extremely costly and complex process to have the regulator clearly holding a view, but not being prepared to explain why it holds that view. It should not have required the DMC to seek advice from its counsel about this issue.

100. We set out the definition of "existing interests" in the EEZ Act in full below for the DMC's convenience:

**existing interest** means, in relation to New Zealand, the exclusive economic zone, or the continental shelf (as applicable), the interest a person has in –

- (a) any lawfully established existing activity, whether or not authorised by or under any Act or regulations, including rights of access, navigation and fishing;
- (b) any activity that may be undertaken under the authority of an existing marine consent granted under section 62;
- (c) any activity that may be undertaken under the authority of an existing resource consent granted under the Resource Management Act 1991;
- (d) the settlement of a historic claim under the Treaty of Waitangi Act 1975;
- (e) the settlement of a contemporary claim under the Treaty of Waitangi as provided for in an Act, including the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992;
- (f) a protected customary right or customary marine title recognised under the Marine and Coastal Area (Takutai Moana) Act 2011.

101. In respect of the advice received by the DMC through its counsel in the memorandum dated 12 November 2014 (**DMC memorandum**),<sup>42</sup> we record that CRP is largely content with the substance of that advice although disagrees with aspects of the reasoning. CRP's position in respect of the advice sought by the DMC on the definition of existing interests is as follows:

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42 Memorandum of Counsel to assist the Decision-making Committee, 12 November 2014 (**DMC Memorandum**).

- (a) the natural meaning of the words in paragraph (a) of the definition, and when considered in the context of the rest of the definition, does support a "hard line" about its scope;<sup>43</sup>
- (b) the recognition of cultural interests is encapsulated through paragraphs (d) to (f) and is not required to be extended to (a);
- (c) the focus in paragraph (a) of the definition is not on "interests" but on defining what the "lawfully established *activities*" are and therefore does not support a broad approach;<sup>44</sup>
- (d) the references in section 60 of the EEZ Act are fundamentally "activity based", in that an existing interest is regarded as an activity in itself which again implies that the interest is the activity itself, not the value judgments or overlays that an individual applies to that activity;<sup>45</sup>
- (e) giving additional weight to multiple asserted interests or values in a single lawfully established activity is precisely the double-counting of effects which is of concern to CRP;<sup>46</sup>
- (f) it is not necessary to give the use of the word "rights" in paragraph (a) of the definition any particular significance when quite plainly the focus of that paragraph is on an activity<sup>47</sup> - the use of the word "rights" simply reflects the legal basis, be it statutory or otherwise, to conduct the activity; and
- (g) as we noted in opening, the EEZ Act does recognise "protected customary rights" under the Marine and Coastal Area (Takutai Moana) Act 2011, but section 51(2)(e) of that Act establishes that "protected customary right[s]" do not include activities that are based on a spiritual or cultural association, unless that association is manifested by the relevant group in a physical activity or use related to a natural or physical resource – which reinforces the physical activity point made above.<sup>48</sup>

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43 In contrast to the suggestion at paragraph 37 of the DMC memorandum.

44 In contrast to the suggestion at paragraph 37 of the DMC memorandum.

45 Compare with paragraphs 45 and 46 of the DMC memorandum.

46 See paragraph 48 of the DMC memorandum.

47 See paragraphs 55(a) and (b) of the DMC memorandum.

48 This point appears to be accepted at paragraphs 55(d) and (e), 57 and 58 of the DMC memorandum.

- 102.** While we agree with the conclusion at paragraph 63 of the DMC memorandum that the resolution of this issue might not be of great significance in the assessment of this particular application, it is submitted that breaking down the definition and isolating where and how an existing interest might arise and be manifested is important because:
- (a) there still needs to be a nexus between the effect of CRP's activity which is of concern and the alleged interference with the activity giving rise to the existing interest;
  - (b) the person asserting the existing interest still needs to show how their existing interest is affected for the purposes of assessment under sections 59 and 60, rather than make general assertions of an interest and an unspecified effect (ie impacts on the ability to exercise kaitiakitanga); and
  - (c) to the extent that a cultural value is asserted in an activity, it should be demonstrated how and when this value or interest arose (ie does it involve the application of a traditional cultural value to a relatively modern activity and, if so, does that deserve different weight compared to longer-standing cultural interests?).
- 103.** Put another way, it is submitted that an assertion of an existing interest, without providing a suitable foundation for the scope and extent of that interest to be established, should not suffice. The onus is on those who claim an existing interest to make it out. For example, in terms of paragraph (a) of the definition, what is the lawfully established existing activity (ie does it fit within the scope of the paragraph?), and what is the evidential basis for the claim? As a matter of fact and evidence, it is submitted that the identification of a lawfully established existing activity is the starting point.
- 104.** In that respect, we agree with the observation at paragraph 29(a) of the DMC memorandum that the submissions and evidence of a number of submitters provide a complex picture of cultural values without always clearly or consistently identifying in what ways they constitute existing interests or in what ways they are said to be affected. There is, in most

instances, little evidence and simply an assertion of an interest which is affected.

- 105.** Finally, for the avoidance of doubt, CRP accepts that Te Rūnanga o Ngāi Tahu is in a special and different position in that it has a range of existing interests, some of which involve cultural interests, as a consequence of the specific recognition of those interests through legislation and Treaty settlements. CRP cannot and does not dispute that those interests exist, rather it considers that there is some doubt that those interests are adversely affected by its proposal and certainly not to the extent claimed.<sup>49</sup>
- 106.** In any event, it is not the case that CRP is disregarding cultural concerns. It has sought to address cultural concerns associated with the fossilised whale bones by reducing the marine consent area and including any remaining identified areas within mining exclusion areas. It intends to enable cultural interests to be brought to bear on an ongoing basis through its proposed Environmental Reference Group, its Chatham Islands Trust, and the Environmental Compensation Trust.
- 107.** It simply says that cultural concerns which do not qualify as an existing interest, where established, should not be given undue weight in the decision-making process.

## **INTERNATIONAL CONVENTIONS**

- 108.** It is convenient at this point to address the issue of international conventions, which has also been the subject of a request by the DMC for legal advice.
- 109.** Once again, CRP maintains the view expressed in its opening legal submissions about this issue (see paragraphs 234 – 240). It is also largely in agreement with the advice received by the DMC through its counsel, again in the DMC memorandum dated 12 November 2014.

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<sup>49</sup> In saying this, CRP is conscious that its proposal is not within the Ngāi Tahu takiwa, but accepts that some of Ngāi Tahu's interests can extend beyond that line, and that theoretically some of the indirect effects of CRP's proposal might extend into the takiwa.

- 110.** While the DMC memorandum reaches the same legal conclusion as to the relevance and application of international conventions in the context of this application, it is submitted that the approach and interpretation outlined in our opening submissions is preferable. In essence, CRP considers that section 11 of the EEZ Act is conclusive and provides binding Court of Appeal authority on that point, whereas the DMC memorandum does not refer to that case law and says that section 11 allows for further analysis on the particular facts and circumstances as to whether international conventions might be applicable or binding.
- 111.** Either way, it is accepted that international conventions might have some relevance in terms of providing guidance on best practice in relation to an industry or activity.<sup>50</sup> They are not, however, relevant as "any other applicable law",<sup>51</sup> because they are not part of New Zealand law unless incorporated into domestic legislation.
- 112.** It is submitted to be clear that by making a decision in accordance with the EEZ Act, the DMC will have implemented New Zealand's international obligations.

#### **ANALYSIS OF SECTIONS 59-64 OF THE EEZ ACT**

- 113.** Except as expressly covered elsewhere in these submissions, CRP continues to rely on its analysis of these sections as outlined in its opening (see paragraphs 221 – 233). However, it is worth reiterating some key points.
- 114.** As we noted in opening, section 59(2)(a) and (b) require the DMC to have regard to effects on the environment. The definition of "environment" is much narrower than the RMA's definition of "environment" in that it does not incorporate reference to people and communities or social and cultural considerations, and only refers to the "natural environment".

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<sup>50</sup> See section 59(2)(h) of the EEZ Act.

<sup>51</sup> See section 59(2)(l) of the EEZ Act.

115. Anthropogenic considerations are expressly relevant in terms of sections 59(2)(c) and (f),<sup>52</sup> potentially through information received in accordance with section 59(3),<sup>53</sup> and existing interests under section 60. Nevertheless, it is submitted that the statutory scheme indicates that the focus of the EEZ Act is more narrowly confined than the RMA, and relates primarily to consideration of natural resources and the natural environment.
116. That is the focus of the "sustainable management" purpose of the EEZ Act, which is in turn emphasised by the reference in section 10 to "*managing the use, development and protection of natural resources*".

### ADAPTIVE MANAGEMENT

117. Section 64(1) provides you with a power to incorporate an adaptive management approach into a marine consent.
118. Section 64(2) sets out two examples of what an adaptive management approach can be, and is set out in full below:

An **adaptive management approach** includes-

- (a) allowing an activity to commence on a small scale or for a short period so that its effects on the environment and existing interests can be monitored:
  - (b) any other approach that allows an activity to be undertaken so that its effects can be assessed and the activity discontinued, or continued with or without amendment on the basis of those effects.
119. Section 64(3) permits the DMC to use conditions to incorporate an adaptive management approach so that the management of the activity can be done in "stages". Section 64(4) clarifies that the "stages" referred to in section 64(3) can relate to the duration of the consent, the area over which consent is granted, the scale and intensity of the activity, or the nature of the activity.

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52 These provisions provide that the EPA must take into account the effects on human health and the economic benefits to New Zealand of allowing an application.  
53 This provision provides that the DMC must consider submissions, advice and reports received, and advice from the Maori Advisory Committee.



- 120.** A number of parties have criticised CRP's approach as not being consistent with their view of what adaptive management entails.
- 121.** CRP has taken on board a number of the comments made by other parties and its own experts through witness caucusing. It has undertaken considerable further analysis and work on its proposed conditions to provide additional detail around environmental thresholds and triggers, and on the actions that it would need to take as further information is gathered. It is now explicitly proposing a carefully defined and spatially confined location of mining activities in the first 3 years of the consent being exercised, in order to enable validation of various model predictions.
- 122.** CRP is willing to have full-time independent observers on the mining vessel for the first two years to monitor and report on the presence of seabirds and marine mammals in order to enable findings to be made about the efficacy of its mitigation measures, and if necessary to enable modification of its activities to address any demonstrable risks.
- 123.** There are now a number of examples of steps and processes encapsulated within CRP's proposed conditions which are consistent with an adaptive management approach, irrespective of whether the DMC is obliged under section 61(3) of the EEZ Act to consider this route as a means of allowing the granting of consents.
- 124.** It is submitted that there is little doubt that most if not all of these measures are expressly within the scope of the definition of adaptive management in section 63(2) of the Act. In any event, as has been accepted by many expert witnesses during the course of this hearing, the EEZ Act's definition of adaptive management is inclusive and there is no specific statutory formula for what qualifies.
- 125.** The EEZ Act has its own legislative provision about adaptive management. The environment where activities that are the subject of marine consent applications must also be reflected in establishing adaptive management responses. As has been submitted earlier, the context is important. The very nature of activities within the EEZ means that different approaches are appropriate to those in a terrestrial or inshore setting, given the distance from shore, depths and environments where

those activities take place, and the available information about those environments.

- 126.** It is submitted to be clear that there is no constraint on what might qualify as adaptive management for the purposes of this application under this legislation as a consequence of the Supreme Court's decision in *Sustain our Sounds*.<sup>54</sup> What counts as adaptive management is not an academic exercise<sup>55</sup>, it is a practical and evidential exercise based on the particular circumstances of an application and the environment in which the activity is proposed.
- 127.** For parties to suggest that CRP's approach is a "suck it and see" approach is not only wrong as a matter of fact and law, but is as meaningful as repeated references to "uncertainty" without addressing materiality.
- 128.** Most accepted contemporary definitions of adaptive management<sup>56</sup> incorporate the concept that adaptive management involves iterative decision-making, within a framework of "learning by doing"<sup>57</sup>. The EEZ Act definition and approach should not restrict the DMC from making a decision which effectively authorises some discretionary judgment being exercised by the EPA at some stage in the future about the manner in which the activity is undertaken or modified, albeit on a transparent and informed basis. That flexibility is integral to the concept of adaptive management and, from a practical perspective, is one of the main ways to achieve workability and appropriate environmental management in the context of the offshore environment.

## **SEDIMENT PLUME**

- 129.** The unanimous agreement about nearly all aspects of the sediment plume model indicates the exercise was robust and represents the best possible prediction of how the sediment plume will behave.

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<sup>54</sup> Provided in CRP's casebook with opening submissions.

<sup>55</sup> See for example, the evidence of Dr Brown for EDS.

<sup>56</sup> For example, in the NZ Coastal Policy Statement (2010) Guidance Note Policy 3; IUCN "Guidelines for applying the precautionary principle to biodiversity conservation and natural resource management" (2007); and US Department of the Interior, Adaptive Management: Technical Guide V (2009).

<sup>57</sup> Confirmed by Ms Rickard in her EIC, para 32.

**130.** As was traversed in the hearing, the sediment plume model is highly conservative, so much so that the modelling results for a discharge at the seabed, as opposed to the modelling results for discharge at 10 metres above the seabed, is considered to be a more accurate representation of the behaviour of the plume when it is released at an average of 10 metres in practice. The reasons for this are set out in the responses to requests for further information, numbers 3, 4, 5 and 7, including the HR Wallingford Review. The reasons include:<sup>58</sup>

- (a) conservative assumptions of settling speeds by Deltares; and
- (b) over estimation of dispersion through over coarse resolution of the numerical model which then reduces plume concentrations and prevents the model taking into account collapse as a density current on the bed.

**131.** It is submitted that the following agreements from the joint conferencing statement of sediment modellers are of particular relevance:

- (a) The particle size distribution (**PSD**) applied for the modelling adequately represents the mining permit area for the purpose of the mining assessment. It is recognised that there may be additional sediment variability within the mine permit area.
- (b) The presence of the chalk-ooze layer has been adequately included in the model, recognising that the model assumes an average chalk content of 4% which in turn assumes operations will avoid substantial disturbance of the chalk-ooze layer (which we have discussed above).
- (c) If the percentage of clay in the mine sediment were to double, the predicted plume size would still be within the limits of the base case modelling results as reported in paragraph 25 of the EIA (noting that Dr Spearman considered that the conservatism in the model would mean that the doubling of the clay composition would result in a plume within the limits of what is predicted (ie

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<sup>58</sup> HR Wallingford, Chatham Rock Phosphate Review of Deltares Plume Assessment, July 2014, pages 8 and 9.

the modelled outputs for discharge at the seabed)). The experts also agreed that the conservative modelling approach can account for some, *if not all*, variability in the fine sediment percentage of the particle size distribution in the mining area. Dr Longdill disagreed with this wording to the extent that in his view the conservative modelling approach can account for some variability.

- 132.** The plume model will be validated as soon as possible after mining commences; it cannot be done beforehand because it is impossible to adequately replicate the plume generation in a small scale trial.<sup>59</sup> The grainsize distribution of the seabed in each block will be determined by sampling before mining commences.
- 133.** Should mining move beyond the MPA, CRP will collect sediment samples and particle size distribution data, current meter data, and suspended solid concentration and characterisation data before the area is mined, as recommended by the sediment modelling experts.
- 134.** Sediment modellers agreed that resuspension of discharged sediments is unlikely after approximately 24 hours. The sediment modellers also agreed that natural resuspension occurs to some degree, which suggests that benthic organisms may have some resilience to it. This is also relevant when considering the likely effect of very small amounts of sediment (1 mm or less deposited over several months) on these organisms.

#### *Tides and currents*

- 135.** To the extent that there is any disagreement between fishermen and sediment modellers in relation to tides and currents, CRP considers that in reality there is little actual difference between their views. There are differences between near bottom current speeds reported by fishermen and those measured and modelled by CRP, fishermen reporting higher speeds. This is probably because the fishing is mainly on the flanks of the Rise whereas the CRP data and activities will be on the crest. The

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<sup>59</sup> See draft condition 13.

apparent discrepancy could also arise because fishing is mainly on the flanks of the Rise where high speed current 'jets' are reported whereas the CRP data and activities will be on the crest.<sup>60</sup> The sediment modellers are the experts in the field who studied the marine consent area in detail and therefore, their evidence should be preferred.

- 136.** A number of the fishermen conceded that they were not experts. They were reporting some of their observations, which were made in different locations to the marine consent area on the flanks of the rise. Those observations are therefore not attributable to the marine consent area, or in all instances the bottom 50 metres of the water where the sediment plume will disperse. We also note that the current speeds recorded from the Chatham Rise moorings showed the current speeds were nearly double near the surface to what is experienced at the seabed.<sup>61</sup>
- 137.** It is submitted that the sediment modellers' agreement in the joint statement sets out why fishermen's observations may be different to the modelling results for the water column near the seabed. Issue 8 in the joint statement notes that residual currents flow in different directions near the seabed as opposed to the middle section and surface of the water columns.<sup>62</sup>
- 138.** The current model (Hybrid Coordinate Ocean Model) discussed in Ms Lescinski's evidence combined with the use of the tide TPXO Global Tides Model, which was then validated through six months of measured data, is reliable. The sediment modelling experts agreed that six months is a reasonable model validation period.<sup>63</sup>

## **BENTHIC EFFECTS**

- 139.** CRP's application, its evidence and our opening submissions all recognise and accept that the project will have significant adverse effects on benthic communities and habitats within the mined areas and the areas immediately adjacent to mining blocks. CRP considers these are the most

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60 Appendix 8 of the EIA, Chiswell 2013, page 7.

61 Joint Statement of Experts in the Field of Sediment Modelling, Attachment 3.

62 Joint Statement of Experts in the Field of Sediment Modelling, Schedule 1, page 14 (Issue 8, columns 2 and 4).

63 Joint Statement of Experts in the Field of Sediment Modelling, Schedule 1, page 14 (Issue 8, column 3).

significant effects of the proposal. At paragraphs 156 to 162 of our opening submissions we discussed those impacts and relevant factors for the DMC's consideration on this matter. We continue to rely on those submissions, but make some additional comments below.

- 140.** Before we address benthic effects, the irony of the concerns expressed by the fishing industry<sup>64</sup> about the impacts of mining on benthic habitats and organisms is worthy of note. All of the concerns expressed<sup>65</sup> involve integral, ongoing, and far more widespread unregulated effects caused by the fishing industry, year after year.

*Information in context*

- 141.** The environmental context influences what level of information is adequate for assessing the likely extent and significance of impacts arising from the proposed mining activity (particularly in relation to predicting and identifying benthic communities, and identifying endemism).
- 142.** Information about deep sea communities, endemism and abundance of organisms and communities is constrained by the difficulties in conducting research in the deep sea. It is submitted that the information standard must reflect this reality. This context must also be reflected in the risk assessment, particularly in relation to perceived endemic species.
- 143.** The point is illustrated by Dr Rowden's evidence and aspects of the joint conferencing statement for benthic ecology and spatial planning. For example, at paragraph 31 of Dr Rowden's evidence, he states:

Determining levels of endemism in the deep sea is confounded by sampling density, and availability of taxonomists who can identify the specimens recovered by even limited sampling. As such estimates for endemism for deep sea habitats are often unreliable and over-estimated (e.g., seamounts, Rowden et al 2010), and are really estimates of "apparent endemism". Despite the difficulties in obtaining scientific data, there must be a point at which informed decision-making on applications under the EEZ Act is available.

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64 Closing submissions for DWG, paras 30 – 33.

65 Loss of habitat; noise; sedimentation and increased TSS; potential release of heavy metals and contaminants; food web/trophic effect; adverse effects on juvenile fish, fish eggs and fish; spawning.

- 144.** It is submitted that CRP's extensive work must at least meet the threshold at which informed decision-making is available under the EEZ Act.
- 145.** In Dr Rowden's presentation, he noted that typically data used for habitat identification and decision-making in the deep sea is taken from tens to hundreds of data points. In contrast, through CRP's work, *thousands* of data points have been used.<sup>66</sup>
- 146.** The benthic ecologists agreed that there is sufficient knowledge to inform decision-making with regard to potential impacts on the resources within the mining permit area.<sup>67</sup> Dr Rowden expressed the opinion that there is sufficient certainty about the distribution of benthic habitats and communities that mining could start before validation of these habitats and communities is complete.<sup>68</sup>
- 147.** The conditions proposed by CRP will allow validation of the predicted distribution of benthic communities during the first three years of mining, and will include provisions for adaptive management sufficient to respond to any differences in nature and extent of effects on benthic organisms beyond those predicted by the plume modelling. The conditions include provision for reassessment of the effectiveness of the proposed mining exclusion areas, and their revision if necessary to maximise the protection of areas with high biodiversity value. In his evidence, Mr van Raalte gave examples of how the mining method might be modified if thresholds are exceeded or if effects on benthic organisms are greater than predicted.

*Key communities, section 59 and the purpose of the EEZ Act*

- 148.** The impacts on benthic communities are likely to be relevant to the application of sections 59(2)(d) and (e), which we set out in full below for ease of reference.

(2) the EPA must take into account - ...

(d) the importance of protecting the biological diversity and integrity of marine species, ecosystems, and processes; and

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<sup>66</sup> Transcript, Rowden, page 1991 (Day 21).

<sup>67</sup> Joint Statement of Experts in the Field of Benthic Ecology and Spatial Planning, Schedule 1, page 1 (Issue 1, column 5).

<sup>68</sup> Transcript, Rowden, pages 2025 and 2026 (Day 21).

- (e) the importance of protecting rare and vulnerable ecosystems and the habitats of threatened species; and ...

- 149. The communities with a high abundance of *G. dumosa* are acknowledged to be habitat forming communities which, to date, have not been recorded outside the marine consent area although they are not comprised of endemic species (*G. dumosa* is found throughout the EEZ. *G. dumosa* is listed as a protected species under the Wildlife Act 1957.
- 150. There is, however, something of a challenge in assessing what is known about these communities against the statutory language of section 59(2) of the EEZ Act.
- 151. Apart from the reference to "biological diversity", section 59(2)(d) is somewhat imprecise. In addition, it is submitted that the "integrity of marine species, ecosystems, and processes" appears to be more akin to broad ecosystem effects, rather than more confined effects associated with a particular community.
- 152. The EEZ Act does not define "biological diversity" but under section 4(2) the EEZ Act adopts the definition in the RMA. It was Dr Rowden's evidence that the communities dominated by *G. Dumosa* were an "ecological complex".<sup>69</sup> Accordingly, it appears that the communities would be within the scope of section 59(2)(d).
- 153. In relation to section 59(2)(e), the EEZ Act does not define what a "rare and vulnerable ecosystem", nor does it specify what an "ecosystem" is. It is submitted that the common use of both terms is the appropriate interpretation when approaching the question of the effects of CRP's proposal on the relevant communities.
- 154. The joint statement of benthic ecologists used the term "ecosystem" as being the Chatham Rise, as did the experts on ecosystem effects. For example the benthic ecologists agreed that the Chatham Rise is one of the most productive ecosystems and distinct ecosystems in New Zealand's EEZ. In relation to the particular clusters of *G. Dumosa*, they described

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69 Transcript, Rowden, page 2024 (Day 21).



them as benthic "communities" rather than an "ecosystem". The *G. Dumosa* dominated community also fits within the definition of a sensitive environment, not an "ecosystem" in the EEZ Act Permitted Activities regulations, as discussed by Dr Rowden when he presented evidence. The term "sensitive environment" is not, however, referred to in either section 59(2)(d) or (e).

- 155.** Accordingly it is submitted that the "ecosystem" in this context refers to the Chatham Rise ecosystem rather than the particular *G. Dumosa* dominated areas which are better described as "communities". We note in passing that Mr Lamping, an EPA officer, agreed that it was the communities of *G. Dumosa* that are of interest, not the corals themselves.<sup>70</sup>
- 156.** *G. Dumosa* is not listed as a threatened species,<sup>71</sup> and therefore any effects on the communities will not be effects on a "habitat of any threatened species".
- 157.** Therefore, the potentially unique community of *G. dumosa* does not appear to fall within the scope of section 59(2)(e) because it is neither a "rare or vulnerable ecosystem" or a "habitat of any threatened species".
- 158.** All of that said, CRP recognises that these communities are an important part of the benthic environment within and near the MCA and therefore CRP intends to minimise its effects on them, as discussed further below. CRP's proposal recognises "the importance of protecting" the unique value of these communities, regardless of whether they fall within the scope of section 59(2)(d) and (e). We note that "the importance of protecting" is not absolute protection. If Parliament had intended absolute protection, it would have said so.

### **Effects on benthic organisms**

- 159.** The predicted effects on benthic organisms are considered in Dr Hewitt's, Dr Rowden's and Mr Kennedy's evidence, as well as in the joint statement of benthic ecologists.

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<sup>70</sup> Transcript, EPA Officers (Lamping), page 1780 (Day 18).

<sup>71</sup> Transcript, Rowden, page 2014 (Day 21); see also <http://www.doc.govt.nz/getting-involved/consultations/all-consultations/2013/new-listing-of-the-threatened-status-of-nz-aquatic-organisms/>

- 160.** By way of summary, CRP has assumed all organisms in mined areas will be destroyed.
- 161.** In relation to indirect effects, Dr Hewitt has identified that a range of effects can be expected between 0.5 mm to 5 cm of sedimentation. Dr Hewitt's evidence is that small encrusting bryozoans protruding no more than 0.5 mm from the substrate could be affected by 0.5 mm of sedimentation. Other organisms could suffer serious adverse effects with an increase in sediment of 5 cm lasting. Between those levels, a range of effects will occur which will depend on the type of organism, its lifecycle stage, its size, etc. Both total suspended sediments (**TSS**) levels and duration of exposure are factors in assessing the likely impacts of suspended sediment on benthic organisms. Dr Hewitt stated that she expected that benthic organisms would need to be exposed to TSS levels of 100 mg/L for at least 1 month before adverse effects are likely to be observed.<sup>72</sup>
- 162.** The size of the area predicted to be affected by the most damaging levels of sedimentation and TSS is confined to the areas immediately adjacent to the mining blocks. The area with sedimentation >5cm is not much bigger than the mining blocks. The area covered by TSS levels >100mg/L for longer than 1 month is entirely within the mining blocks. The area covered by 1 – 5 cm of sedimentation during the course of mining within a block is predicted to extend less than 1 km from the mining blocks.<sup>73</sup>
- 163.** The area where the gradient of effects will occur due to 1 mm to 1 cm of sedimentation is predicted to extend no more than 7 km from the mining blocks, covering an area between 18 to 61 km<sup>2</sup> per mining block, over the course of mining activities within that block.<sup>74</sup>
- 164.** Some species will be able to dig themselves out of a few millimetres of sedimentation or otherwise clean themselves. It is submitted that a number of benthic organisms could be expected to have some resilience to sedimentation given the natural TSS levels from natural resuspension events. It is also important to bear in mind that where the model predicts

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72 Hewitt EIC, paras 29 to 35.

73 Response to further information requests 3,4,5 and 7, page 13.

74 Ibid.

there will be, say, 2mm of sedimentation, that is the *total* sedimentation. The rate of this deposition is likely to be very low as this amount would be deposited sporadically over the 4 month period required to mine each block.

- 165.** There has been considerable discussion and perhaps confusion about the proposed monitoring of suspended solid concentrations and the impact of sediment on benthic organisms. In the case of suspended solids, it is submitted that it would be impossible to meaningfully measure the impacts of elevated levels of TSS on organisms (eg displacement of fish or epibenthos) so CRP proposes to measure the TSS levels. As explained in Mr Kennedy's evidence, validation of the model by a condition defined as a threshold and distance (i.e., 50 mg/L at 5 km) has been chosen because it can be readily tested. The model will also be validated by TSS measurements made by the landers and other measurements made by the AUV or similar equipment, including radial transects from the mining block.
- 166.** In the case of effects on benthic organisms, CRP has investigated means of effectively monitoring for such effects. It is very hard if not impossible to measure sedimentation as small as 1 mm with "off-the-shelf" instruments. For this reason, we propose to measure the impacts of sedimentation directly by analysis of images and sediment samples collected along radial transects from the mining blocks. Having sought advice from CRP's relevant expert witnesses, it was concluded after much discussion that determining a reliable quantitative estimate of the impact along the gradient between the predicted 5cm deposition at the boundary of the mining block, and the outer limit of 1mm sedimentation, is also difficult or impossible. It is easier to estimate whether there are any effects at all, so CRP has therefore proposed a condition to the effect that there will be no observable effects on benthic organisms beyond the distance predicted to have 1 mm of sediment.
- 167.** As far as recolonisation is concerned, it is predicted to occur with time, both in mined areas (where different communities will form) and non-mined areas affected by sedimentation (where the same communities may recover). Recolonisation was described fully by Dr Rowden in his evidence and in his presentation.

- 168.** It is submitted that the scale of these effects is important in order to put them into context. As set out in our opening submissions, the total area affected by the proposal represents a small percentage of the Chatham Rise, and a modest percentage of the marine consent area and BPA. A far greater area of the Chatham Rise is exposed to the effects of fishing on benthic organisms.
- 169.** It is also important to note that the area predicted to be suitable for hard substrate communities covers a relatively small portion of the proposed consent area. Observations show that elsewhere nodules are commonly exposed at the surface without these communities, and it is unlikely that these communities will be or could be reestablished beyond their current extent. The majority of the proposed consent area is characterised by soft substrate with phosphorite nodules. In terms of environmental function, the change of this area to soft substrate without nodules may be less significant than the loss of hard substrate habitat.

### **Mitigation**

- 170.** CRP proposes to avoid its effects on the most likely sensitive communities by locating its early mining blocks away from the areas where they are known or are likely to occur in the early years of mining, as set out in condition 11.
- 171.** Additionally, we note that the two largest predicted areas of suitable habitat for *G. dumosa* dominated communities are found immediately north of and adjacent to the MPA, and to the northwest of the MCA.
- 172.** CRP has proposed a number of no-mining areas that will protect representative biodiversity from the effects of mining, as well as other important geological features and whale bone graveyards, as described by Mr Wood. CRP has put considerable effort into identifying these areas, and they are volunteered in good faith. CRP rejects suggestions that these initiatives have no value or amount to window dressing. None of these areas enjoys any legal protection from activities that might affect them, other than bottom trawling (if they are in a BPA). Those arguments are akin to saying that a mechanism providing protection of indigenous

vegetation in a land use consent context has no value because the vegetation is currently untouched.

- 173.** CRP acknowledges the need to validate the predictions from the habitat modelling exercises before the no-mining areas are finalised. This is provided for in the draft conditions. However, validating the model and making any adjustments to the no-mining areas can take place during the early years of mining without causing any significant risk to important communities. It is submitted that this is an example of responsible adaptive management.
- 174.** The proposed no-mining areas and areas characterised by communities with high densities of *G. dumosa* will also be protected from sedimentation by a buffer zone. The proposed buffers will not provide absolute protection from the effects of sedimentation, but are intended to maintain the integrity and function of those areas.
- 175.** Instead, they are protected from nearly all sedimentation in the early years. In subsequent years, the buffer zones will be 1.7 km wide. The buffers mean that no more than 5 mm of sediment is predicted to be deposited at the boundary of the no mining areas.
- 176.** In CRP's opinion, this level of protection is adequate and represents an appropriate balance between environmental protection and economic development in accordance with the concept of "sustainable management". Sedimentation of 5 mm (that is total sedimentation, which will occur slowly) is likely to have adverse effects on some organisms, but less than 5mm is predicted to be deposited in the centre of the no mining areas and this amount of sediment is at the lower end of the spectrum of impacts identified by Dr Hewitt. Monitoring of the benthic communities is required by the conditions, and, if necessary, adaptive management responses will also ensure that these important communities will be adequately protected.
- 177.** There is also one infauna community that is associated with phosphorite nodules which may be unique to the marine consent area. However, that community is predicted to be widely dispersed throughout the MPA,

including within the proposed no mining areas. The extent of this community has not been assessed outside the MPA, but it is likely that suitable habitat (soft sediment with phosphorite nodules) will occur elsewhere in the proposed consent area.

### **Environmental compensation**

- 178.** CRP also proposes environmental compensation for its unavoidable impacts on benthic communities. The proposed Environmental Compensation Trust (**Trust**) would administer a fund of \$350,000 per year (\$5,250,000 over 15 years; \$12,250,000 over 35 years). It has never described this as an offset or a form of direct environmental mitigation, instead it goes to the balancing exercise within the purpose of the Act.
- 179.** CRP considers it is appropriate for independent trustees to determine how the fund is best allocated. CRP recognises the difficulty in compensating for environmental effects "like for like" in the deep sea, which is nearly impossible and almost equally impossible to place a dollar value on. The only hypothetical possibility could be purchasing quota from bottom trawl fisheries and not leasing the annual catch entitlements to reduce the annual trawl footprint.<sup>75</sup> However, that approach requires being able to purchase quota, and there is no certainty that CRP's opponents would sell quota to it<sup>76</sup>. Further, if the biomass of the species in which the Trust owned quota increased, the Ministry for Primary Industries could increase the total allowable catch, which could undo the mitigation intended by the purchase of quota.
- 180.** Accordingly, it is necessary to look elsewhere to provide environmental compensation. In CRP's view, that task is best done by independent experts after consent is granted. CRP has, however, identified supporting the Chatham Islands Taiko trust to establish a second breeding colony as an initial option. If the Trust settled on that option, and it was successful, the conservation and biodiversity enhancement benefits from the proposed environmental compensation could be long lasting and significant.

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<sup>75</sup> This would not be to compensate fisherman, because there are no predicted effects on fish stocks.

<sup>76</sup> Even if quota could be purchased, CRP would have no ability to control the behaviour of or effects generated by other quota holders.

**181.** We note that under the RMA, which as we discussed earlier has a similar purpose to the EEZ Act, environmental compensation which results in "no net loss" is not consistent with the definition of "sustainable management". The Board of Inquiry for the designation and resource consents application for Transmission Gully Motorway proposal summarised the position:<sup>77</sup>

... while we recognise the desirability of achieving a situation of no net loss of biodiversity from a project, we do not believe that it is a requirement of the RMA that no net loss be achieved in any given case. The principle of sustainable management requires a broad consideration of a range of sometimes competing factors. A consent authority is entitled to conclude that consent ought to be granted to the proposal notwithstanding that all adverse effects of the proposal have not been avoided, remedied or mitigated. In other words there may be a net loss of some values or aspects of the environment. The significance of that loss and its *weighting* against the benefits of any given proposal is a matter to be determined by a consent authority under s 5(2) RMA. [original emphasis]

**182.** In summary, taking into account the scale of the adverse effects, and CRP's mitigation measures and compensation, it is submitted that the adverse effects on benthic communities do not mean that sustainable management under the EEZ Act is not achievable.

## **ECOSYSTEM EFFECTS**

**183.** It is submitted that the proposal is highly unlikely to have any noticeable ecosystem effects on the Chatham Rise (i.e. population-level effects on individual species).

**184.** The experts agreed that there will be no effects on or within the photic zone where phytoplankton live and detritus is formed. Detritus then falls out of the surface layer and provides food for benthic organisms.<sup>78</sup>

**185.** Dr Pinkerton stated that the direct and habitat mediated impacts of mining on 10 of the 11 trophic groups with the highest trophic importance are likely to be low or negligible.<sup>79</sup> Dr Pinkerton carried out a qualitative assessment of ecosystem effects considering direct (trophic) and habitat

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<sup>77</sup> At para [462].

<sup>78</sup> See Dr Pinkerton's presentation and transcript pages 957 and 958 (Day 9).

<sup>79</sup> Transcript, Dr Pinkerton, page 966 (Day 9).

mediated effects on the groups with the highest trophic importance which confirmed this position.

- 186.** The other group with high trophic importance was small demersal fish. Dr Pinkerton's evidence was that there is very little known about this group but if the mined areas were a particular hot spot for some species, then there could be a greater risk of ecosystem effects.<sup>80</sup> However, Dr Pinkerton was clear that there is at present no knowledge either way as to whether this was likely, but in response to a question from Dr Ryder he confirmed that it would be unlikely that any particular species of small demersal fish would become extinct.<sup>81</sup>
- 187.** It is also submitted that in terms of habitat induced effects, by protecting the communities dominated by *G. dumosa* which are likely to provide habitat and structure for these species and others, the risk of any significant habitat induced effects on these species will be reduced.
- 188.** It is further submitted that this risk of habitat induced effects is not unique to the mined areas. It is the evidence of Dr Tuck that bottom trawling destroys upright benthic fauna which provides habitat. Several fishing witnesses expressed concerns about the impacts of bottom trawling and sought to modify their methods.<sup>82</sup>
- 189.** Even though there has been broad scale bottom trawling on the Chatham Rise and corresponding widespread destruction, damage, and removal of upright habitat-providing fauna such as corals and sponges, there appear to be no observed ecosystem effects resulting from this habitat loss – the fishermen appear to catch their quota from the same places year after year. We also note that fishing removes tens of thousands of tonnes of hoki from the Chatham Rise ecosystem and although hoki has a high trophic importance, yet again there appears to be no evidence of significant ecosystem effects. In comparison to CRP's comparatively modest proposal:

- (a) the area affected is far smaller;

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80 Transcript, Dr Pinkerton, pages 964-965 (Day 9).

81 Transcript, Dr Pinkerton, page 973 (Day 9).

82 See Summerton EIC, paras 17 and 18; Transcript, Woods, pages 1328 and 1329 (Day 12).



- (b) the area is not thought to be a significant habitat for any commercial fish species; and
- (c) the activity is highly unlikely to result in the loss of any significant volume or habitat of any species with a high trophic importance.

**190.** It is submitted that the distribution of commercial fish species and Dr O'Driscoll's evidence that the MCA is not an important habitat for any of the species examined, suggests that the area does not have a particularly strong habitat function. Dr Fulton said in response to a question that the distribution of fish species (such as those covered by Dr O'Driscoll's evidence), is often used as a proxy to locate "good" habitat. Dr Fulton noted that it is widespread scientific practice to use any available data as a proxy but she noted that it is not a "100% cast-iron guarantee" and observed that a particular area could have a disproportionate role in the system.<sup>83</sup> Though this in itself does not provide unequivocal evidence, it is further indication that the risk of significant ecosystem effects from the proposal is low.

**191.** Dr Fulton made a number of suggestions to improve the trophic model and predictions of ecosystem effects. The majority of those suggestions were completed by Dr Pinkerton in his further work or the stock assessment modelling exercise. Leave was reserved for Dr Fulton to prepare any supplementary evidence in relation to Dr Pinkerton's evidence, however no further statement from Dr Fulton was filed.

**192.** We reiterate that the likelihood of any ecosystem effects is in part a function of the scale of the activity. As set out in our opening submissions, the scale of the activity is very small compared to the Chatham Rise and the ecosystems on it. Because the key organisms of high trophic importance which could encounter the plume are widespread over the Chatham Rise, the likely effect on their populations and therefore on the ecosystem is minor or negligible.

**193.** In many respects, this was demonstrated in the stock assessment modelling exercise which is discussed further below.

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<sup>83</sup> Transcript, Dr Fulton, page 1005 (Day 9).

## **FISH AND COMMERCIAL FISHING**

- 194.** We discussed the potential effects on fish and fishing in our opening submissions between paragraphs 104 and 145. We rely on those submissions in full and do not intend to repeat them in any detail. It is submitted that the outcomes of expert conferencing and the presentation of evidence affirmed earlier submissions.
- 195.** In summary, there is unlikely to be any discernible effect on fish stocks or fishing because:
- (a) the marine consent area is not an important habitat for commercial fish species;
  - (b) because of that, very little fishing has occurred in the marine consent area, including before the BPA was put in place;
  - (c) the area is unimportant for spawning fish;
  - (d) the effects of mining are limited to the mining block and areas immediately adjacent to the mining blocks;
  - (e) the scale of mining is small compared to the size of the Chatham Rise;
  - (f) juvenile fish are distributed across the Chatham Rise so the percentage which could be displaced is small;
  - (g) there will be no effects on primary productivity and there is a very low risk of ecosystem effects occurring; and
  - (h) sound from the operation poses a minor risk to fish (both physically and behaviourally).
- 196.** We repeat our earlier submission that the greatest risk to fish and fishing is from the commercial fishing industry's own activities, which remove thousands of tonnes of fish, damage benthic habitats, and release millions of tonnes of sediment in areas where fish aggregate to spawn.

- 197.** The stock modelling exercise for ling, hoki and hake prepared in conjunction with the DWG reaffirmed that the effects on commercial fishing are negligible.
- 198.** The DWG has attempted to emphasise the uncertainty in this exercise because the stock modelling relies on estimates of the size of the plume carried out by the sediment modellers. However, due to how the stock modelling assessment and sediment modelling exercises were undertaken, the risk of the sediment plume being larger than predicted and the corresponding risk of effects on these fish stocks being larger than predicted is very low. This is because:
- (a) as discussed previously, the sediment modelling exercises were done on a conservative basis;
  - (b) the stock modellers' inputs used worst-case assumptions which the modellers recognise are unlikely to be realistic, including:
    - (i) assuming that all fish that encounter a sediment plume at 3mg/litre die. This is unlikely to be realistic because the stocks are not at carrying capacity;<sup>84</sup> and
    - (ii) habitat loss for ling is permanent and no recovery was assessed.
- 199.** The stock assessment modellers ran a sensitivity analysis which doubled the size of the affected areas from sediment plumes and sedimentation which demonstrated that effects would be equally low. The necessary outcome of this sensitivity test is that if the sediment modellers are out by 100%, which appears very unlikely given the evidence of the sediment modellers, then the potential effects on fish stocks remain very low.
- 200.** The only result from the modelling exercise that was beyond the non-negligible range was the result from the habitat loss model for ling which predicted a cumulative reduction in recruitment at the *end* of the 35 year period (ie year on year cumulative impacts) at about 1.6%. However, that result needs to be considered in light of the following:

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84 Transcript, Middleton, page 1237 (Day 11).

- (a) The model also did not take into account the fact that ling aggregate in area away from the east of the marine consent area to spawn. Dr Middleton recognised that *"clearly if no ling spawning takes place within the consent area, then no ling spawning is affected by activities that are constrained within the consent area."*<sup>85</sup>
- (b) The result is cumulative, which means it is the total loss after 35 years. The loss of habitat each year is much smaller.
- (c) The model assumes no recovery or suitability for spawning in areas that have been mined.

**201.** Given the worst case assumptions used in the stock assessment model and the conservative nature of the sediment plume model, it is submitted that if mining were to commence, then the actual impacts on commercial fish species and fishing are likely to be even less than those predicted by the stock assessment exercise. This was recognised in the joint conferencing statement for commercial fishing whereby it was agreed that *"we have noted that multiple precautionary assumptions can have the effect that the model results significantly overestimate the actual impact"*.<sup>86</sup>

**202.** In relation to other commercial species, including scampi, Mr Dunn made a pertinent remark regarding what the outcome of modelling exercises similar to those conducted for the ling, hake and hoki might conclude:

Mr Hill                    Do you think it would be appropriate to carry out further modelling of impacts at all, in light of the confirmations from the sediment joint witness statement?

Mr Dunn                    There are two answers to that, one, I'm a modeller, yes, I would say, yes, but how much use it would be, I think that would be something that would need to be evaluated. **I think that the issue is that when relative size of impact is relatively small, then it is fairly obviously what the outcome would be.** Were those impacts believed to be larger, then yes, then you would need to start to address that question, I think, in more detail".

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<sup>85</sup> Transcript, Middleton, page 1236 (Day 11).

<sup>86</sup> Joint Statement of Experts in the Field of Commercial Fishing, Schedule 1, page 8.

- 203.** Dr O'Driscoll concluded that the marine consent area is not important for any commercial fish species, including scampi. Based on this, it is submitted that the output of further modelling for these stocks would also be similarly small, due to the small size of the area affected by mining.
- 204.** In relation to scampi, it is Dr O'Driscoll's evidence that 6.56 % of the total Chatham Rise scampi biomass is found within the MCA. Because the marine consent area is approximately 3.7% of his study area (the area between 200 – 800 m deep), Dr O'Driscoll's figure could suggest that the abundance of scampi is relatively high compared to the rest of the Chatham Rise.
- 205.** If the biomass was evenly spread over Dr O'Driscoll's study area, the expected that the percentage of the biomass in the MCA would be equal to the percentage of MCA in relation to the study area, which is 3.7%. Because the biomass is 6.7 %, it appears that nearly twice as much scampi occurs in the MCA compared with a hypothetical situation where scampi are evenly spread over the study area. However, when the *actual* habitat of scampi is considered, the relative abundance of scampi is lower.
- 206.** It was Mr Shaw's evidence that scampi are mostly found at depths between 200 and 500 m. That area is smaller than Dr O'Driscoll's study area (200 to 800 m deep). Dr O'Driscoll explained how this affects his results in relation to silverside:<sup>87</sup>

...there are some species where the densities are higher than they are on average over the whole Chatham Rise but you would expect that. Some species, silverside for example, typically are only found between 200 and 400 metres.

So if I looked at the revised consent area as a proportion of the depth between 200 and 400 metres on the Rise it may not look like silverside, you know, are standing out as having a higher density but because I am comparing it to an area with a wider depth, a smaller depth range, might stand out as appearing more important because this area, as you know, is mostly within that shallower depth band.

- 207.** Because scampi live in an area smaller than Dr O'Driscoll's study area, the relative abundance of scampi within the MCA will be less than what is

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<sup>87</sup> Transcript, O'Driscoll, page 1172 (Day 10).

implied by Dr O'Driscoll's tables. If, for example, the MCA is 10% of the scampi habitat (the area between 200 and 500 m), the occurrence of 6.7% of the biomass within that area suggests that the area is of relatively less importance to scampi.

**208.** We note that Dr Middleton said that in evidence that scampi appear to be more abundant in the marine consent area based on Dr O'Driscoll's evidence.<sup>88</sup> Dr Middleton appears not have taken into account this subtlety of Dr O'Driscoll's evidence.

**209.** It is submitted that potential effects on scampi populations are likely to be low because:

- (a) only a small percentage of scampi's biomass occurs within the MCA;
- (b) the annual area mined is only a small percentage (0.6%) of the MCA (over 15 years, the percentage of the MCA mined is 8.6% and after 35 years the percentage of the MCA mined is 20%);
- (c) scampi are a relatively large burrowing crustacean and it is likely that they can dig their way out of 5 cm of sedimentation deposited over 4 months;
- (d) the soft sediment habitat in mined areas is likely to be suitable habitat for scampi;<sup>89</sup> and
- (e) the scampi fishery is concentrated on around the Mernoo Bank on the Western side of the Rise which is a significant distance away from the MCA.<sup>90</sup>

## **MARKET EFFECTS, BENTHIC PROTECTED AREA AND MSC CERTIFICATION**

**210.** The DWG raised two potential market impact issues for its fisheries, which were potential impacts on Marine Stewardship Council (**MSC**) certification and market perception effects from release of heavy metals. It is

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<sup>88</sup> Middleton and Starr EIC, para 71; Transcript, Middleton, page 1233 (Day 11).

<sup>89</sup> Kennedy, Environmental Impact Assessment, para 113.

<sup>90</sup> See Transcript, Helson, page 1195; Transcript, Middleton, page 1233 (Day 11).

submitted that both of these concerns were highly speculative and lacked any real factual foundation. The probability of these effects occurring is low to negligible.

### **MSC certification**

- 211.** The DWG witnesses failed to demonstrate any real risk of potential effects on MSC certification.
- 212.** This is unsurprising because any reasonable accreditation body (and MSC appears to be reasonable) is unlikely to penalise the activity it is assessing or certifying for sustainability due to third party activities. As MSC is a voluntary accreditation body, if it undertook its role in such a manner, the fishing industry would most likely turn their backs on it and seek accreditation from another body.
- 213.** It is submitted that the evidence provided by the DWG in relation to MSC certification was unreliable and should be given little weight. Dr Helson stated that he is not an expert in MSC certification.<sup>91</sup> Mr Clement's evidence was not prepared in reliance on the Code of Conduct and therefore was not provide expert evidence. Mr Clement is a known advocate for the fishing industry; indeed that is an important aspect of his role. Additionally, Mr Clement could not explain why his evidence about the 2012 Hoki Reassessment Process was fundamentally inaccurate and potentially misleading.<sup>92</sup>
- 214.** The DWG witnesses and other relevant experts could not point to any part of the MSC standard that took into account third party activities and effects in MSC certification, be it the substantive certification,<sup>93</sup> reassessment,<sup>94</sup> or any procedural part of either aspect of certification.
- 215.** The three principles for MSC certification are:

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<sup>91</sup> Transcript, Helson, page 1192 (Day 11).

<sup>92</sup> Transcript, Clement, pages 1867 and 1868 (Day 19).

<sup>93</sup> Transcript, Pierre, page 1299 (Day 11).

<sup>94</sup> The MSC standard on reassessment does not indicate that third party activities could affect reassessment timing: See Transcript, Pierre, page 1286 (Day 11).

- (a) Principle 1: Sustainable fish stock – the **fishing activity** must be at a level which is sustainable for the fish population. Any certified fishery must operate so that fishing can continue indefinitely and is not over-exploiting the resource.
- (b) Principle 2: Minimising environmental impact – **fishing operations** should be managed to maintain the structure, productivity, function and diversity of the eco-system upon which the fishery depends.
- (c) Principle 3: Effective Management – **the fishery** must meet all local, national and international laws and must have a management system in place to respond to changing circumstances and maintain sustainability. [our emphasis]

**216.** The focus of these principles is on the fishery itself. There is no suggestion the MSC factors in third party activities, or even other fisheries operating in the same area, in its assessments. This point was clarified through questions of Dr Pierre:<sup>95</sup>

MR HARWOOD: Are you aware of any fisheries losing their MSC certification due to a third parties activity?

DR PIERRE: No, I am not. If they did it would be based on the application of the MSC standard so it will be some way that the broader environment related to the fishery specifically, the MSC never assesses the third party activities in their own right.

MR HARWOOD: That's all right. It would seem to me like it would be inherently unfair for somebody such as the MSC to punish an activity if someone else is causing the problem?

DR PIERRE: **I do not envisage they would ever, ever do that. They are very clear that their focus is the sustainability of the fishery. Whether those fisheries occur on Mars or the Atlantic Ocean, it does not matter as long as they are sustainable in accordance with the MSC standard. That is their focus, that is their *raison d'être* if you like.**

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<sup>95</sup> Transcript, Pierre, page 1299 (Day 11).



- 217.** In New Zealand, fishing is currently the only substantial activity in the EEZ and there is little interaction between fisheries and other activities. However, in the Northern Hemisphere there is far heavier interaction between fishing and other activities which also cause adverse effects on the environment.
- 218.** A large number of Northern Hemisphere fisheries are also MSC certified.<sup>96</sup> If there was a risk that MSC certification could be affected by third party activities, it could be expected that that risk would have featured in MSC assessments for fisheries overseas where that interaction takes place. However, no witness or submitter produced any evidence of any third party activity affecting a MSC certification in anyway whatsoever.
- 219.** During questioning of Dr Pierre, three fisheries were put to her that were either MSC certified or going through the MSC certification process. Each of those fisheries interacted with third party activities which had adverse effects on the eco-system. The examples were the Norway North-East Arctic and North Sea saithe fisheries, the Louisiana Blue Crab fishery and the Louisiana Oyster, Dredge, Scrapper and Tong fishery.
- 220.** The Norway saithe fisheries have significant interaction with the other activities.<sup>97</sup> Page 96 of the MSC Fishery Assessment Report for the saithe fisheries produced to Dr Pierre recorded that the other relevant users include fish farming, the oil and gas industry, offshore windmill parks, ship traffic and in a few cases mining industries. The report notes that there is *"some concern that pollution from such industries may influence stock reproduction and survival"*. However, the MSC assessment document in our searches makes no further reference to these activities and instead focusses on the saithe fishing itself.<sup>98</sup>
- 221.** The Louisiana Blue Crab Fishery MSC Assessment Report noted that the ecosystem is currently damaged by high fishing pressure, oil and gas

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<sup>96</sup> See <http://www.msc.org/about-us/21-facts#the-msc-is-a>.

<sup>97</sup> Transcript, Pierre, pages 1293 and 1294 (Day 11).

<sup>98</sup> The MSC Fisheries Assessment Report (Final Report and Determination, 21 May 2013) for the Norway North East Arctic and North Sea saithe fisheries is available at:  
<http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/north-east-atlantic/norway-north-east-arctic-saithe/reassessment-downloads>

production, pollution, shoreline development, hydrologic changes through artificial drainage, agriculture, and nutrient loading.<sup>99</sup>

**222.** The report also noted the following activities have the potential to affect recruitment and survival of stocks:<sup>100</sup>

- 1) developments of ports, marinas, and maintenance dredging for navigation;
- 2) discharges from wastewater plants and industries;
- 3) dredges and fill for land use development;
- 4) agricultural runoff;
- 5) ditching, draining, or impounding wetlands;
- 6) oil spills;
- 7) thermal discharges;
- 8) mining, particularly for phosphates and petroleum;
- 9) entrainment and impingement from cooling operations associated with industrial activities;
- 10) dams;
- 11) alteration of freshwater inflows to estuaries;
- 12) saltwater intrusion; and
- 13) nonpoint source discharges of contaminants (Lindall et al 1979).

**223.** Despite the ecosystem effects and direct effects on crab stocks from other activities, the MSC focussed on the impacts the crab fishery itself might have on the particular habitats that support it. Dr Pierre noted when this document was put to her that "*...the CAB is certainly obliged to, well, required to focus on the fishery impacts specifically.*"<sup>101</sup>

**224.** Dr Pierre suggested that the blue crab fishery has limited effects on habitat as compared to the hoki fishery, which is why the hoki fishery benefits from setting aside areas where there are no impacts. We discuss that suggestion further below, but note in passing that the MSC report recorded that crab pots have the potential to affect sensitive bottom

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99 MSC Public Certification Report, Louisiana Blue Crab Fishery, March 2012, page 29. The report is available at: [http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/western-central-atlantic/louisiana\\_blue\\_crab/assessment-downloads-1/20120309\\_PCR.pdf](http://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/western-central-atlantic/louisiana_blue_crab/assessment-downloads-1/20120309_PCR.pdf)

100 MSC Public Certification Report, Louisiana Blue Crab Fishery, March 2012, page 30.

101 Transcript, Pierre, page 1296 (Day 11).

habitats, such as submerged aquatic vegetation or non-vegetated live bottom (stony corals, gorgonians, sponges).<sup>102</sup>

**225.** The American Oyster Dredge, Scraper and Tong Fishery Pre-Assessment report also noted a number of other effects on the ecosystem of the fishery from third parties, but recorded that "*in this assessment we will consider only the ecosystem effects of the fishery and these are primarily related to habitat issues that have been noted above and will be repeated here*".<sup>103</sup>

**226.** It is notable that the two Louisiana State fisheries were subject to the effects of the 2010 Deepwater Horizon oil spill.

*Hypothetical ways CRP's proposal was suggested to impact MSC certification for NZ fish species*

**227.** Dr Pierre discussed the possibility that the proposed mining might remove habitat and suggested that:<sup>104</sup>

if mining...was to have a broad impact on areas that were not impacted by the fishery, it would, if you like, reduce the amount of available habitat to act as a buffer for fisheries impact."

So say – if I can put it in numbers, that is probably easiest. If you have got 100% of habitat type A, fishing through the bottom trawl method impacts 50% of habitat type A then you have got 50% less so that 50/50 ratio may, in an assessment body's view, provide for an adequate mechanism if you like, to address method impacts of the fishing method.

If another activity, I mean, it could be a wind farm, it could be a mine, it could be a number of things, impacts 30% of that original habitat, there is only 20% left to provide resilience from fishing impact, for example.

So you are essentially putting more and more uses into that habitat area, and at some point the assessment body may decide that the unimpacted habitat of habitat type A remaining is not sufficient to provide resilience from the fishing or the fishery impact.

**228.** Applying Dr Pierre's approach to this particular activity demonstrates that due to the small size of the mined area, there can be no real suggestion

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102 MSC Public Certification Report, Louisiana Blue Crab Fishery, March 2012, pages 30 and 31.

103 Global Trust MSC Pre-Assessment Report, Louisiana State American Oyster, Dredge, Scraper and Tong Fishery, March 2011, page 53. The report is available at:  
[http://www.wlf.louisiana.gov/sites/default/files/louisiana\\_state\\_american\\_oyster\\_msc\\_pre\\_assessment.pdf](http://www.wlf.louisiana.gov/sites/default/files/louisiana_state_american_oyster_msc_pre_assessment.pdf)

104 Transcript, Pierre, pages 1265 and 1266 (Day 11).

that the proposed activity will displace any "buffer habitat" to an extent that might affect MSC certification.

- 229.** There are two important points to consider. First, is the spatial scale at which such MSC assessments are made. It was Dr Pierre's evidence that in the MSC standard released on 1 October 2014 the "*unit of assessment was the units allocated by the Fisheries management administered under the Ministry for Primary Industries like Hoki 1.*" Dr Pierre said "*Or Hoki 1, if in the Hoki sense it's the entire (INDISTINCT) largely, almost the entire EEZ.*"<sup>105</sup>
- 230.** The broad spatial scale of assessment was also apparent in the resolution of the condition attached to the Hoki certification in 2012. In summary, the original 2012 assessment used the BOMECE classifications as the "bioregions or regions" to assess the effects on habitat. For BOMECE 9, which is on the flanks of the rise, a significant portion of that area had been fished.
- 231.** However, the DWG successfully challenged the interpretation of the MSC standard in relation to the use of BOMECE classifications as a proxy for bioregions or regions. The MSC confirmed bioregions or regions could be broader than the BOMECE classifications. The effect of this was that essentially the assessment "zoomed out" and took into account a broader area of the EEZ. In doing so, the apparently significant effects on BOMECE 9 in particular were less significant because there are other parts of New Zealand's EEZ that accommodated that habitat class.<sup>106</sup>
- 232.** Therefore, it appears that the appropriate scale for a comparative assessment of habitat loss through trawling is broad, and certainly broader than the BOMECE classifications. However, even if the finer BOMECE classification were used, the percentage of the BOMECE habitat class of concern, BOMECE 8, which would be mined is very small.
- 233.** BOMECE 8 covers an area of 138,551km<sup>2</sup>. The annual area mined, 30 km<sup>2</sup>, is 0.02% of BOMECE 8. After 15 years, a total of 450km<sup>2</sup> would be

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105 Transcript, Dr Pierre, page 1266 (Day 11).

106 Transcript, Clement, pages 1865 – 1869 (Day 19).

mined, 0.3% of BOMECE 8. And after 35 years, a total of 1,050km<sup>2</sup> could be mined, 0.8% of BOMECE 8.

- 234.** Obviously, the percentage of total area affected by mining decreases as the assessment area increases. New Zealand's EEZ is approximately 4,083,744 km<sup>2</sup>, so if a similar exercise was completed for the hoki fishery, the percentage of total area affected would be tiny.
- 235.** Applying Dr Pierre's methodology to the facts related to this application illustrates that the likelihood of the proposal affecting the MSC certification of fisheries through a loss of "*habitat buffer*" is negligible.
- 236.** The second way in which Dr Pierre suggested the proposal could feature in MSC certification is through the effectiveness of the fisheries' management, via principle 3 of MSC standards.<sup>107</sup> Dr Pierre suggested that mining in the BPA could be discussed in a reassessment in terms of the reliability of the management framework.<sup>108</sup> Dr Pierre observed that "*if you have a benthic protected area, and it only protects those benthic habitats against fishing, the overall management regime is weaker in terms of the seabed impacts of economic development*".<sup>109</sup>
- 237.** Dr Pierre's observation reflects the reality of the protection offered by BPAs. The level of protection will remain the same whether or not this consent is granted, unless and until there is some legislative change.
- 238.** The fact is that BPAs protect benthic habitats from bottom trawling only and no other activities. That was Parliament's decision. It is submitted that Parliament has already considered and resolved the alleged precedent concern expressed in closing submissions for the DWG. If the DMC is inclined to place weight on the DWG's precedent concern as a reason for declining a marine consent, then it would be akin to stepping into Parliament's shoes.

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107 Annual Review Report for Deep Water Fisheries for 2012/13, Ministry for Primary Industries, March 2014, pages 36 and 37.

108 Transcript, Dr Pierre, pages 1264 to 1269 (Day 11).

109 Transcript, Dr Pierre, page 1269 (Day 11).

- 239.** It is also somewhat curious that the Crown, in its closing submissions<sup>110</sup>, should express concerns about the impacts on the BPA (or the BPA concept) in terms of the possible grant of a marine consent in this instance, when it is the author of this position and elected not to call any evidence on the basis for, role, importance, or function of BPAs.
- 240.** Whether or not a new activity lawfully commences within the BPA or not, that in itself does not affect the legal protection offered by the BPA framework.
- 241.** Instead, any change within that area would be a reflection of how the legal framework was intended to work. Because there would be no difference in the protection offered by BPAs and the New Zealand fisheries regime, it is submitted that there can be no new influence on MSC certification (unless the MSC had used incorrect assumptions about BPAs). If MSC certification required full legal protection for protected benthic areas, legislative change would be necessary regardless of whether this application is granted.
- 242.** In any event, Dr Pierre noted that a full spatial planning exercise with a series of marine reserves is not a requirement of MSC certification.<sup>111</sup>

#### **Further comments about BPAs**

- 243.** We note that some of the evidence presented at the hearing suggested that BPAs are either out-of-date or have limited utility.
- 244.** First, it was Mr Clement's evidence that the percentage of the EEZ that has been contacted by bottom trawling is roughly 8%.<sup>112</sup> If correct, then about 92% of the EEZ has not been affected by bottom trawling, which suggests that there is no real threat to the majority of New Zealand's EEZ from bottom trawling. Additionally, there appears to have been no real threat to the benthic habitats within the BPAs because they were never heavily fished, comprise a small percentage of the total unfished area, or are too deep to fish.

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110 Crown's closing submissions, para 67.

111 Transcript, Pierre, page 1290 (Day 11).

112 Clement EIC, para 28 and footnote 5; Transcript, Clement, page 1825 (Day 19).

- 245.** This suggests that BPAs may have utility as a "hearts and minds" or promotional exercise, rather than offering any real conservation value.<sup>113</sup> Certainly, the imposition of the BPAs resulted in no sacrifice of resource to the fishing industry for conservation or ecosystem purposes.
- 246.** Secondly, as set out in Mr Wood's evidence, the BPAs were identified through desk top exercises using the Marine Environment Classification system (**MEC**). MEC was subsequently updated to the benthic optimised marine environment classification (**BOMECE**). BOMECE was discussed at several points during the hearing.
- 247.** Mr Clement is inconsistent in his discussion of BPAs. On one hand he promotes the value of the BPAs<sup>114</sup> but on the other he says the system through which they were identified is flawed. When Mr Clement presented his evidence, he spent some time criticising the value of the BOMECE system and suggested that the DWG had moved away from it.<sup>115</sup> If the BOMECE system (and its predecessor the MEC system) have as little value as Mr Clement suggested, then the value of the BPAs as protection of important habitat may also have a correspondingly limited value.
- 248.** In any event, as shown by Mr Wood in his evidence to the DMC, many areas or ways in which the conservation values protected by the BPA could be included in a revised mid-Chatham Rise BPA, if that is desirable.<sup>116</sup>
- 249.** Dr Pierre noted that the MSC would "*be less concerned with things like the shape or location and more concerned with how effectively that new shape or location or whatever, addressed the scoring guideposts of the MSC standard*".<sup>117</sup> The evidence of Mr Wood, Dr Rowden, and Dr Leathwick shows that a better conservation outcome can be readily achieved using Zonation and the more detailed data collected by CRP and other

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113 For example, see the brochures annexed to Mr Paulin's evidence.

114 Clement EIC, paras 9, 40, 41, 53, and 83.

115 Transcript, Clement, pages 1871 (Day 19).

116 Transcript, Wood, page 228; see also figures of BOMECE 8 numbers in Transcript, Clement, Page 1872 for example.

117 Transcript, Pierre, page 1289, (Day 11).

researchers. This information and Zonation was not available when the BPAs were created in 2007.

- 250.** It appears that there would be benefits for DWG, the Department of Conservation, and others for a better and more refined series of protected areas to be created. Dr Pierre agreed a comprehensive suite of fully protected marine areas could be useful for MSC certification.<sup>118</sup>
- 251.** CRP's proposed non-mining areas and its best endeavours to achieve full legal protection for them could be an important first step for that process. It is submitted that CRP's initiative should not be devalued simply because it involves a volunteered "best endeavours" approach. Given the vacuum of national ocean management policy that is all that can realistically be done at this time.

#### **Market perception from heavy metals and radiological effects**

- 252.** The DWG's suggestion that market impacts based on heavy metal accumulation and radiological concerns were baseless. Reference was made to the Deepwater Horizon oil spill and the Fukushima nuclear disaster as examples of events that caused market perception issues. These events were disasters of the largest scale that attracted worldwide media attention. There was no suggestion that CRP's proposal has either the physical potential to cause a disaster of such a scale or would attract significant overseas media attention.

#### **TOXICOLOGY/RADIOLOGY**

- 253.** It is submitted that the evidence confirms that there is no real risk of adverse effects from toxicological or radiological aspects of the mining discharge on water quality. Uranium accumulation in soil is an equally low environmental risk and served to be a distraction rather than an issue of substance at the hearing.
- 254.** In relation to toxicological effects for marine biota, the experts agreed that *"exposure of biota to metal species will be affected by the length of time the plume exists at a given location"*, and also *"any non-motile*

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<sup>118</sup> Transcript, Pierre, page 1289, (Day 11).



*organisation that is trapped in the plume will be negatively affected by the lack of dissolved oxygen but will also be negatively affected by discharged sediment material.*<sup>1119</sup> Any toxicological effects will be confined to the area close to the discharge pipe and pose a negligible additional risk to organisms which will already be significantly affected by sedimentation and TSS.

- 255.** In relation to radiological risk in the marine environment, the experts agreed that potential radiological risk would be limited to the near field plume, and that dilution in the far field (beyond 250 metres) from the diffuser is calculated to be so great as to require no further consideration.<sup>120</sup> The experts also agreed that the radionuclides of interest do not biomagnify.<sup>121</sup>
- 256.** Regardless, CRP proposes a range of further experiments and monitoring to ensure that toxicological and radiological risks are monitored.<sup>122</sup> In the highly unlikely event that unexpected adverse impacts occur, they will be controlled through the general adaptive management condition and the review of consent conditions.<sup>123</sup>
- 257.** It is notable that the fishing industry disturbs a significant volume of marine sediment (between 21 to 42 million tonnes per year<sup>124</sup>) which is likely to pose a similar radiological and toxicological risk to marine biota (if there is in fact any such risk).<sup>125</sup>
- 258.** There was no evidence of the fishing industry undertaking any monitoring similar to what CRP proposes with regard to these possible effects, despite its long history of bottom trawling and apparent concern at market effects, as discussed above.

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119 Joint Statement of Experts in the Field of Toxicology and Water Quality, Schedule 1, page 7 (Issue 4, column 2).

120 Joint Statement of Experts in the Field of Radioactivity, Schedule 1, pages 1 and 2 (Issue 1: column 2, bullet 5; column 5, bullet 3).

121 Joint Statement of Experts in the Field of Radioactivity, Schedule 1, pages 1 and 2 (Issue 1: column 2, bullet 5; column 5, bullet 3; column 2, bullet 8).

122 See evidence of Mr Kennedy and Schedules 2A and 2B of the proposed conditions.

123 Conditions 41, 73 and 74..

124 Tuck EIC, para 6.

125 Kennedy EIC, para 92. Transcript, Kennedy, page 946.

- 259.** The possible accumulation of uranium in soil was raised by the Crown but the experts agree it is a national issue which needs to be managed by the government, if it is inclined to do so. It is the evidence of Dr Bull that uranium is present in all phosphate rock, and that the levels of uranium in Chatham Rise rock phosphate are higher than imported rock, but not significantly so. The experts agreed, on current rates of application of phosphate fertiliser, it would take several decades before concentrations of uranium soil would reach a point triggering the need for exploring soil guideline values.<sup>126</sup> In any event, matters concerning the end use of Chatham Rise rock phosphate are out of CRP's control and cannot be managed through this process.
- 260.** While the Crown raised this issue in this forum, it appears not to have turned its mind to discussing or managing the issue in the appropriate manner through the Ministry for Primary Industries or the Ministry for the Environment, or both.<sup>127</sup>

## **SEABIRDS**

### **Context and available information**

- 261.** Like many other aspects of the proposal, the nature and extent of effects from fishing on the Chatham Rise is useful context for both identifying the probability of adverse effects on seabirds, and informing adequacy and suitability of mitigation measures.
- 262.** As became apparent at the hearing, the Chatham Rise is intensively used by commercial fishing vessels. The casualties of seabirds from fishing on seabirds are estimated to number in the thousands.<sup>128</sup> However, only a very small percentage of those fatalities is caused by deck strike. Over the last seven years, only three vessel strikes have been reported within FMA4.<sup>129</sup> This evidence suggests that the risk to seabirds from vessel strike is very low compared to risks associated with fishing.

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<sup>126</sup> Joint Statement of Experts in the Field of Radioactivity, Schedule 1, page 5 (Issue 3, column 5).

<sup>127</sup> We note in the Crown's opening submissions at paragraph 32, they referred to what it called CRP engaging its expert on uranium accumulation in soil, which may have implied CRP had "taken" its expert on the matter. For the record, we note that Dr Hermansphan was first engaged by CRP in 2013. He then subsequently prepared his report which was annexed to the Crown's submission, before he prepared his evidence on behalf of CRP.

<sup>128</sup> Thompson EIC, para 25.

<sup>129</sup> Thompson EIC, para 3.

- 263.** We heard from Mr Smith and Mr Connolly that factory trawlers operate on the Chatham Rise year round and their operation is 24/7. It was Mr Thompson's view that some fishing vessels are "lit up like Christmas trees".<sup>130</sup>
- 264.** Fishing vessels' lighting arrangements are currently unregulated and there was no evidence that fishing vessels utilise mitigation measures similar to what CRP is proposing. The Crown memorandum on seabirds, dated 14 October 2014, addresses the requirements on vessels with regard to risks to seabirds, particularly Voluntary Vessel Management Plans (VMP). Paragraph 20 of that memorandum states:
- To minimise the risk of a deck strikes occurring at night, MPI and the DeepWater Group Ltd, recommend that when a vessel is not operating (i.e. steaming, sheltering, processing, and as long as there is no safety risk), lights should be kept to a minimum. This non-regulatory measure is included in each deepwater vessel's VMP.
- 265.** In paragraph 23 of the Crown memorandum, a link is provided to a VMP. Although the paragraph 20 statement says lighting is in each VMP, lighting does not seem to be a specific component of the template VMP. In addition, there is reference at paragraph 29 of the memorandum to the MPI report "*National plan of Action – 2013 to reduce the incidental catch of seabirds in New Zealand Fisheries*". This plan aims to reduce incidental catch of seabirds, but when that plan is considered, lighting is mentioned in only one paragraph in the document, at paragraph 92.
- 266.** Therefore, under New Zealand law, there is no restriction or regulation for any vessel, regardless of size or function, operating at night, year round, with whatever lighting arrangement suits it. There is no requirement to have regard to potential risk to birds from bird strike.
- 267.** Mr Thompson and Dr Bull agreed that systematic year round surveys to provide baseline and ongoing monitoring data over more than a year would have merit as a scientific experiment, but they did not consider that this should be a requirement on CRP. It is submitted that their view is correct. The existing data are sufficient to identify the importance of the

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130 Transcript, Thompson, page 447 (Day 4).

area to seabirds, and any additional research would not influence lighting mitigation strategies. Conducting a year round survey would involve a vessel being present on the Rise for the whole year which would be disproportionately expensive compared to the low risk to seabirds.

### **Risk to seabirds**

- 268.** As mentioned above, although the risk from vessel strike is low compared to other aspects of fishing, the particular risk for Chatham Islands Taiko and Chatham Islands Petrel is different because of their low population and conservation status. Discussion at the hearing focussed on the Chatham Islands Taiko which has only 20 breeding pairs<sup>131</sup>. The evidence was that loss of a single bird could have population level effects.
- 269.** It was Mr Taylor's evidence that Chatham Islands Taiko spend only a small amount of time within the proposed marine consent area. Mr Taylor's evidence was that Chatham Islands Taiko spend the majority of their time great distances east of the Chatham Islands, not west.<sup>132</sup>
- 270.** The risk to these birds must however be considered in the context of existing activities and their use of the Chatham Rise. A number of fishing vessels operate closer to the Chatham Islands and are clearly within areas regularly used by the Taiko. Examples include the ling fishermen fishing the spawning ground east of the marine consent area, and inshore fishermen. These activities pose a greater risk of vessel strike and fatality through incidental capture and entanglement to this species.
- 271.** CRP's proposal would add to this risk through the presence of an additional large vessel. However, it is submitted that the additional risk would be low compared to the existing risk, and further reduced when the proposed lighting management plan, the lack of biological attracters for seabirds, and the lack of a comparable entanglement/capture risk from fishing equipment are taken into account. It is submitted that the likelihood

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<sup>131</sup> The suggestion at para 8.3 of the Crown's closing submissions that the Chatham Island taiko and Chatham Petrel are the most at-risk species from mining is rejected. They may be the most at-risk species as a matter of fact, but there is no evidence that the mining is the greatest source of risk to these species.

<sup>132</sup> Taylor presentation, slides 2 to 4.

of CRP's proposal affecting Chatham Islands Taiko or Petrel is low, while recognising that any adverse effects could be significant.

### **Mitigation measures**

- 272.** The lighting mitigation strategies incorporated in the draft conditions and the draft lighting management plan represent best practice. All lights will be downward facing, shutters will be used, and unnecessary lights turned off at night. CRP will also use green lights where possible. The only outward facing lights would be those required by maritime law, which are necessary on all vessels.
- 273.** In relation to the green lighting, it is recognised that the effectiveness of that measure has only been demonstrated for a few species in limited circumstances. However, the evidence suggests that green lights may be effective.
- 274.** It is noted that the Crown has belatedly proposed a condition requiring CRP to conduct green light trials. This suggested condition is not accepted by CRP. It is disproportionate and unnecessary, and seeks to shift a responsibility that should be borne by the Crown to CRP. The likely process, as described by Mr Rendall, is time-consuming and unwieldy, and the burden on CRP would be unfair in the circumstances.
- 275.** CRP's adaptive management conditions incorporate an element of flexibility so the lighting arrangement/colour can be adjusted if another arrangement proves to be more effective.
- 276.** There is no evidence of any vessel currently operating in the EEZ adopting a similar proactive and cautious approach as that proposed by CRP. In addition, it does not appear that the Crown is taking any active steps to prevent vessel strike or investigate possible mitigation methods through any non-voluntary means.<sup>133</sup>

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133 Transcript, Taylor, pages 484-485 (Day 4); Crown Memorandum dated 14 October 2014.

- 277.** CRP proposes to use independent trained observers for the first year of operations and up to a maximum of two years.<sup>134</sup> The mitigation purpose for observers is to record any vessel strikes, which would feed into the adaptive management condition on seabirds.
- 278.** Observers would also collect data regarding seabird presence, which would have scientific value as opposed to any specific mitigation function.
- 279.** It is submitted that after the initial one to two year period, trained workers on the vessel will be perfectly capable of identifying birds which suffer vessel strike and recording the incidents appropriately.
- 280.** Accurate recording of fatalities from vessel strike involves taking a photo of the bird and/or returning the body to appropriate officials. This function can be performed by trained staff and does not require an independent observer. The challenges faced in identifying a bird which hits the vessel and falls into the sea, particularly at night, are the same regardless of whether an independent observer or a trained member of the crew is undertaking observation.
- 281.** The proposed conditions identify an adaptive management regime for seabirds which includes specific and easily measureable triggers. Adaptive management solutions, should they be triggered, will depend on the cause and nature of the event. Any number of responses would be available to CRP and it is not possible now to specify which response would be appropriate in any specific circumstance.
- 282.** For example, the response to a chance collision from two common and non-threatened species may be different to the response if it appears that the Chatham Island Taiko or any other species is attracted to the vessel at certain times of the year. Adaptive management in this sense would involve determining whether the cause fact due to lighting or something else, and then developing a specific solution. In extreme circumstances, a solution could include the actions suggested by the seabird experts, including not operating during cloudy conditions or at certain times of the year.

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<sup>134</sup> Condition 20(a).

- 283.** The suggestion that Chatham Rock should be prohibited from operating during the fledging period for Chatham Islands Taiko is submitted to be unreasonable. No other operator, be it fishing or shipping or oil and gas, has any restriction on their operations during this period. It is perfectly lawful for a ship of equivalent size to circumnavigate the Chatham Islands at this time of year with no special lighting management regime in place. It would be unreasonable and unfair to impose such a constraint on CRP when CRP will be adopting the most advanced mitigation strategies it can and there is no evidence that Taiko will be particularly attracted to the vessel.
- 284.** In conclusion, the risk to seabirds from the mining operation is low, and the residual risks, including those to Chatham Islands Taiko and Chatham Islands Petrel, will be effectively managed.

## **MARINE MAMMALS**

### **Available information**

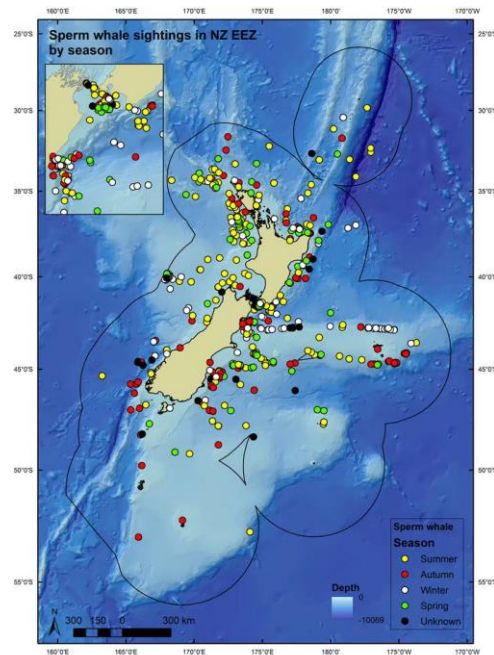
- 285.** The existing data on marine mammals is both adequate and comprehensive for the purposes of your decision. Although the observation data is incidental, it spans over 30 years and is from an area of high human use, if not the area of the EEZ with the highest amount of human use.<sup>135</sup> If there was significant marine mammal activity within the marine consent area, such as significant feeding or breeding, then it is likely that it would have been observed.
- 286.** The value of the existing data is shown by the number and distribution of sightings recorded in Mr Cawthorn's evidence and the Ministry for Primary Industries report produced to Dr Childerhouse titled "*New Zealand marine mammals and commercial fisheries*".<sup>136</sup> Key facts from the observational data are:

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<sup>135</sup> Various fishing industry and parties references to Chatham Rise being the most productive deep water fishery.

<sup>136</sup> Berkenbusch, K., Abraham, E.R., Torres, L.G. (2013). *New Zealand marine mammals and commercial fisheries*. New Zealand Aquatic Environment and Biodiversity Report No.119., page 104 available at: <http://deepwatergroup.org/wp-content/uploads/2014/07/Berkenbusch-et-al.-2013-New-Zealand-marine-mammals-and-commercial-fisheries.-New-Zealand-Aquatic-Environment-and-Biodiversity-Report-No.-119.-113p.pdf>

- (a) Sightings from the Chatham Rise are frequent. The sperm whale sightings from the Chatham Rise demonstrate that observers are able to spot marine mammals. Sperm whales undergo lengthy dives and spend less time on the surface than do baleen whales, which makes them more difficult to spot.<sup>137</sup> This is set out in the plot of sperm whale sightings below:



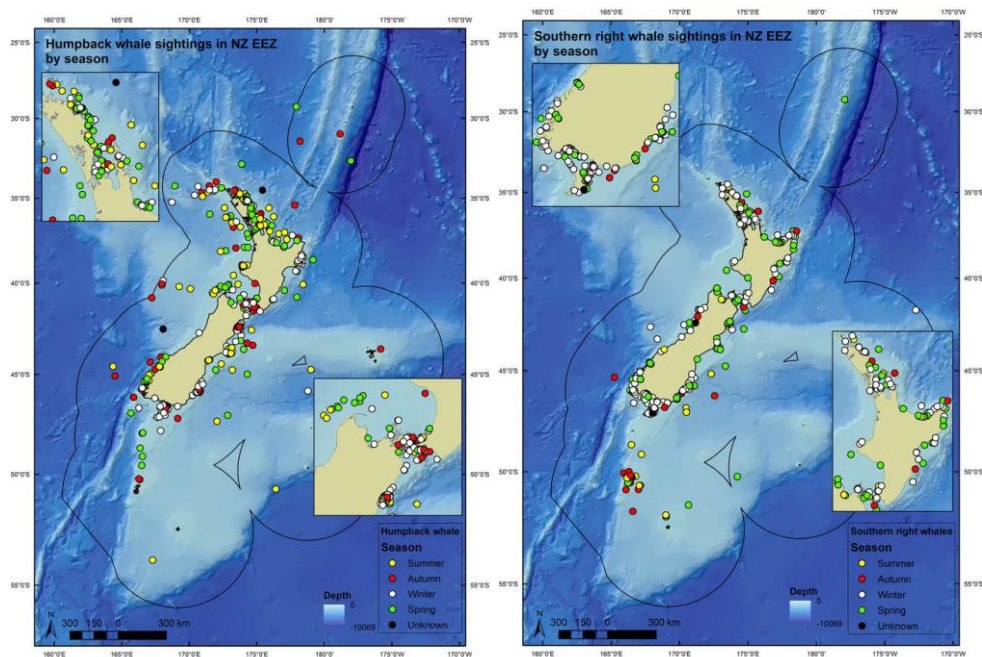
- (b) The data also suggest that baleen whales, the easiest group to spot<sup>138</sup> and the group of whales most at risk from sound effects are regularly sighted within the EEZ. This makes sense because they are large mammals that spend much of their time on the surface. However, there are very few sightings of baleen whales on the Chatham Rise and no recorded sightings of the endangered southern right whale, although it is acknowledged that modelling based on historic whaling records suggests the southern flank of the Chatham Rise could be used by some southern right whales.<sup>139</sup> The plots of humpback and southern right whale sightings are set out below:

137 Transcript, Ketten, pages 1529 and 1532; Transcript, Childerhouse, page 1574 (Day 13).

138 Transcript, Childerhouse, page 1574 (Day 13).

139 Transcript, Childerhouse page 1573; Transcript, Martin Cawthorn, page 1591 (Day 13).





(c) We have set out the plots showing sighting data for all other baleen whales in Appendix A for your reference.

287. The criticism of the existing data has been predicated on an assumption that there is very little fishing effort in the marine consent area, and therefore there is little observer effort. This was demonstrated in questioning of Dr Childerhouse:<sup>140</sup>

MR HARWOOD: And you can see there for sperm whales there are observations sort of in a bit of a ring around the crest of the Chatham Rise there. Now that would suggest to me that, you know, if there are whales to be seen, they are in fact being caught by the observers that are our in the Chatham Rise, would you agree with that?

DR CHILDERHOUSE: Again, I would qualify it. **Where there are boats looking for whales and there are whales there, you will see them.** I guess what is clear and I what I did not distil really from the Chatham Rock Phosphate application **was there is no fishing boat or effort from the Chatham Rock phosphate mining area which I believe most of these sightings come from, so if you haven't had anyone looking in these areas, you would not have expected to get any sightings from them.** So the fact that there are no dots in some of these areas does not necessarily mean there are no whales there. It means no one has looked

MR HARWOOD: No, thank you

140 Transcript, Childerhouse, page 1574 and 1575 (Day 13).

DR CHILDERHOUSE: **Or maybe that someone has looked and they aren't there.**

- 288.** As confirmed by Mr Connolly and Mr Smith, fishing vessels traverse the crest of the Rise all the time.<sup>141</sup> Mr Connolly's evidence also demonstrates the value of observation data in several exchanges.<sup>142</sup>

MR HILL: Just turning to your paragraph on marine mammals. When you say "while fishing for orange roughy sperm whales often seen nearby and pilot whales". Whereabouts in terms of the Rise are we are talking about? Are we talking sort of – well what are we?

MR CONNOLLY: Anywhere across the South Chatham Rise. As Mr Clements said a lot of these things have been called they're only bumps on the bottom. Obviously the sperm whales are predominantly there to feed on orange roughy. A lot of our orange roughy fisheries are found through sperm whales, but right across the Rise, both north and south and the other species I've named as well. I've seen them in all these aspects of right across the Rise.

MR HILL: Have you seen them in the – you might not be fishing in the area which is under the marine application, yes. Have you seen them in that area as well? So relatively shallow.

MR CONNOLLY: Yes more so dealing with the common fur seal and most probably pods of pilot whales. Not so much the larger sperm whales or humpback whales.

...

MR WINCHESTER: Right, and in terms of larger marine mammals, I think you mentioned sperm whales, and particularly around the flanks of the Rise, based on your understanding, and I know you are not an expert but you have been out there an awful lot, presumably that is where the currents meet and there is an upwelling of food and it is sort of logical for those animals to appear there?

MR CONNOLLY: Well, obviously, I mean the features that, where we traditionally see the whales are the deeper ones which are holding oreo, dory and roughy. So obviously I don't think there is enough up on those shelves of size for them to, you know, I mean I haven't actually seen them feeding there. I have seen them transit, yes, and there were times when I would have seen one going through, but not actually feeding up there, no.

- 289.** While a fishing vessel is in transit, it is unlikely that observers would be distracted by their fishing related requirements. Consequently, the

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141 Transcript, Connolly, pages 1894 and 1895 (Day 19); Transcript, Smith, pages 1939 and 1940 (Day 19).

142 Transcript, Connolly, pages 1892 to 1895 (Day 19).

evidence does in fact suggest that "*someone has looked and they aren't there.*"

- 290.** Moreover, if significant numbers of whales were aggregating in the crest of the Rise they would have to pass either or both flanks to get there and thereby transiting areas where fishing takes place and the chances of observation are likely to be higher. The distinct lack of observations suggests that no such aggregations are occurring.
- 291.** Two other areas of significance for marine mammals were mentioned during the hearing: the southern right whale breeding ground near the Auckland Islands, and the blue whale foraging ground off the South Taranaki Bight. Dr Childerhouse confirmed that both of these areas were discovered by incidental sightings, not dedicated systematic surveys.<sup>143</sup> Scientific understanding of those habitats was enhanced by systematic surveys, however it cannot be said that those surveys "discovered" these areas.
- 292.** It is notable that even through heavy fishing activity on the Chatham Rise increases the chance of marine mammal sightings, including by the required trained observer requirements, which Mr Smith said were on one third of all vessels,<sup>144</sup> there is no evidence to suggest that significant aggregations of baleen whales occur on the Chatham Rise for feeding or breeding.

#### **Collecting further information on marine mammal presence and use**

- 293.** Dr Childerhouse's suggestion that systematic surveys for marine mammals could easily be achieved on CRP's other voyages is not accepted by CRP. Any data collected from CRP's sporadic trips would not represent annual data which could accurately show marine mammal presence and usage on the crest of the Chatham Rise and account for seasonal behaviour of what are migratory species.
- 294.** Passive acoustic monitoring (PAM) using a stationary recorder would also not offer scientifically complete information. Sound recorders can

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<sup>143</sup> Transcript, Childerhouse, page 1581 (Day 13).

<sup>144</sup> Transcript, Smith, page 1940 (Day 19).

demonstrate if marine mammals are present but provide no information about what they are doing, ie whether they are feeding, breeding or simply transiting.

- 295.** To obtain complete and meaningful scientific data on marine mammal usage, would require a dedicated annual survey whereby boats or planes or both monitor the marine consent area (some 450km from main land New Zealand) for every month for at least one year, but preferably for many years to account for annual variances. As Mr Cawthorn suggests in his evidence, that would be prohibitively expensive and disproportionate to the risk of the activities to marine mammals.<sup>145</sup>
- 296.** Because the risk posed to marine mammals is low, as discussed below, it is submitted that, although collecting further data before mining starts might be scientifically useful, it will not alter the mitigation measures suggested as appropriate by CRP. Therefore, such further research, which would be costly, is unlikely to have utility for the management of the environmental impacts of the mining operation.

#### **Potential effects on marine mammals and management**

- 297.** The potential risk of the CRP proposal to marine mammals is low. The effects are limited to:
- (a) individual behavioural effects, particularly for baleen whales which have the best ability to hear dredging sound; and
  - (b) the *potential* for temporary threshold shift (TTS) effects if whales remain within the immediate vicinity of the mining vessel for an extended period of time.
- 298.** There is no suggestion from any of the marine mammal experts that there will be any population level effects for any species. Nor is there any suggestion that there will be any permanent physical injuries or death. This is in contrast to fishing which has captured thousands of marine mammals between the 1992/1993 and 2011/2012 fishing years.<sup>146</sup> The

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<sup>145</sup> Cawthorn EIC, paras 73 and 75.

<sup>146</sup> Berkenbusch et al (2013), page 52.

captures include hundreds of the critically endangered hookers sea lion, and a number of whales.<sup>147</sup>

- 299.** It is submitted that the limited behavioural effects involve a low risk. The type of sound and the nature of the operation is such that the potential effects are likely to be low. The operation inherently involves a soft start whereby there is sound from the ship's engines, thrusters and its dynamic positioning system. This sound will be present as the vessel arrives at the mining area and holds position for the two hours before mining starts.
- 300.** The sound will be continuous for the 4-5 day mining cycle. It was Dr Childerhouse's evidence that steady sounds would be less likely to cause behavioural change than sudden onset sounds.<sup>148</sup> The sound profile is very different to loud "stop-start" sounds generated by other marine activities such as seismic surveys and pile driving.
- 301.** The potential for temporary threshold shifts is manageable through the mitigation zone suggested by the experts.
- 302.** Marine mammal observations within the mitigation zone for the two hours before mining commences will be adequate to identify the presence of marine mammals. It was Mr Cawthorn's evidence that marine mammals within this zone would be able to be spotted by trained observers.<sup>149</sup> If a marine mammal is spotted within the vicinity of the mining operation during this time, mining would not start until the mammal leaves the area.
- 303.** Should a marine mammal venture into the exclusion zone while mining is operating, it is submitted that mining should not be required to stop. Mining should not be curtailed due to random individual marine mammal behaviour. Marine mammals are known to be intelligent and are likely to avoid an area which does not suit them.<sup>150</sup> Accordingly it can be assumed that any marine mammal that approaches the ship while it is mining is likely to be unharmed. In any event, mining should not stop in these circumstances given the consensus that the CRP operation will not lead to population-level effects on marine mammals, whatever their rarity or

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147 Transcript, Childerhouse, page 1584. See also Berkenbusch et al (2013), page 52.

148 Transcript, Childerhouse, page 1578.

149 Transcript, Cawthorn, pages 1586 to 1600.

150 For example, see questioning of Mr Ngapora at Transcript pages 1384 to 1394.

sensitivity. (We note that the Act does not require *no* effects on marine mammals in any event.)

### **Observers**

**304.** CRP has agreed to use independent observers to carry out marine mammal and seabird observations. CRP has agreed to at least one year of independent observers and a maximum of two, as set out in draft condition 20(a). It is submitted that this is reasonable given the low risk to marine mammals (and seabirds as discussed earlier) and the ability for crew members to be specifically trained to perform this role once independent observers are no longer required on board the vessel.

### **ECONOMIC IMPACT**

**305.** We discussed the direct and indirect benefits of the project to New Zealand in detail in our opening submissions. We rely on those submissions, and without repeating them, make some further comments below.

**306.** As the DMC will be aware, the area where the most disagreement occurred at conferencing was in the subject of economics.

**307.** It is submitted that Mr Murray provided useful clarity in his presentation. Mr Murray's view on key aspects of the economic position is that:

(a) the economists agreed that the project would only proceed if the applicant anticipated it would be profitable to it in a commercial sense;<sup>151</sup> and

(b) there are reasons for viewing Mr Clough's estimates of economic impact as optimistic<sup>152</sup> and there are reasons cfor oncluding Mr Sundakov's model is overly pessimistic.<sup>153</sup>

**308.** Putting this together, Mr Murray stated:

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151 Transcript, Mr Murray, page 1137.

152 Transcript, Mr Murray, page 1138.

153 Transcript, Mr Murray, page 1139.

My conclusion on that is we end up with a very wide range as to what the economic benefit might be but under either of those measures the economic benefit is significant. They are all arriving at results that are in the tens of millions on a net present value basis which while expressed as a percentage of GDP of course is a very tiny number but as an economic activity that is a significant activity.

- 309.** It is submitted that Mr Murray's summary of the position is entirely fair. The reality is that very few new industries or businesses will be "game changers" in terms of massive impacts on GDP, but that does not make the economic benefits any less significant.
- 310.** Bearing in mind Mr Murray's conclusion that the project will result in significant economic benefits, one must then examine the claims of substantial economic costs which are based on the evidence of Mr Sundakov. With respect, that evidence is submitted to be completely speculative. Quite apart from the alarmist approach to risks and costs that Mr Sundakov took, the foundation for the alleged risks and costs was subsequently demonstrated to be non-existent. Ultimately, what was produced by Mr Sundakov was submitted to be beyond speculative, and was in fact simply misleading (a point noted by Mr Murray<sup>154</sup>). That evidence as to economic costs should be given no weight whatsoever. There is no reliable evidence that CRP's proposal will cause any financial harm or loss to the fishing industry.
- 311.** In his supplementary evidence, Mr Castle described and clarified CRP's cost structure, market growth potential, initial predicted export and domestic consumption, and other economic benefits.
- 312.** At current contract prices, CRP expects an average revenue per tonne of NZD 158 million, which would generate NZD 237 million in annual revenues.<sup>155</sup>
- 313.** CRP's production cost is estimated to be approximately equivalent to current freight costs for imported phosphate, which is NZD 88.5 (USD 70)

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154 Transcript, Murray, pages 1140 – 1142, who diplomatically described Mr Sundakov's approach to identifying economic costs as "unhelpful".

155 Castle, supplementary evidence, para 4.

per tonne.<sup>156</sup> This gives CRP a highly competitive advantage within New Zealand.<sup>157</sup>

- 314.** Taking into account total costs (including port charges, environmental monitoring, community contributions, environmental compensation and business overheads), CRP's annual profit before royalties is estimated to be NZD 68 million.<sup>158</sup>
- 315.** On the basis of a 15 year mine life, using current predictions, CRP will earn pre-tax profits of NZD 663 million, pay royalties of NZD 102 million, and pay income tax of NZD 258 million.<sup>159</sup>
- 316.** There will also be significant flow on benefits to the wider economy (the "ripples" as they were called during the hearing). These are described in Mr Castle's supplementary evidence at paragraphs 29 to 31 and at paragraph 32 of his summary of evidence.
- 317.** A number of submitters have raised the issue of the degree of offshore ownership of CRP. It is submitted that this is neither a matter that the DMC can seek to control, nor is it of significant moment when the broader economic picture is considered. As noted in the Crown's opening submissions, in addition to the explicit Government policy goal to make the most of our abundant energy and mineral resources, through encouraging environmentally responsible development and efficient use of those resources:

... development of mineral resources, such as the phosphate resources on the Chatham Rise, offers potential for economic benefits **such as export earning, industry development (employment), and flow on benefits for other business, such as ports**<sup>160</sup>.

- 318.** Importantly, paragraph 13 of the Crown's opening also noted:

Building a more competitive and productive economy for New Zealand is a key priority for the Government, **which has a target of increasing the ration of exports to GDP to 40% by 2025. This includes doubling the value of exports by 2025** and may require a major shift

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<sup>156</sup> Castle, supplementary evidence, para 4.

<sup>158</sup> Castle, supplementary evidence, para 7.

<sup>159</sup> Castle, supplementary evidence, para 11.

<sup>160</sup> Crown's opening submissions, para 15.



away from the production of goods and services for the domestic economy to production for international markets.

- 319.** CRP's goal is to be a major supplier to the New Zealand market, but equally it cannot and need not ignore export opportunities. Phosphate is a valuable global commodity. The project and CRP's business plan is completely consistent with the Government's economic policy targets, irrespective of overseas shareholding. As the EPA is a Crown agency, it should have regard to these matters when considering the question of economic benefits to New Zealand.
- 320.** It is submitted that it is clear that the economic benefits of the proposal to New Zealand are significant.

#### **Reduced run off from direct application fertiliser**

- 321.** It is submitted that CRP's proposal comes at a time when interest in methods to reduce run-off from farmland is high and only going to increase. It is a matter of priority for the Government, which is most clearly demonstrated by the New Zealand National Policy Statement for Freshwater Management 2014 (**FWNPS**), which regional councils must give effect through their regional plans and policy statements under sections 62(3) and 67(3) of the RMA.
- 322.** Among other things, the FWNPS sets national freshwater quality objectives and policy requirements. We have set out the FPS freshwater quality objectives and policies of the FWNPS in Appendix B for ease of reference.
- 323.** The FWNPS will trigger further work from regional councils on managing freshwater quality. It is submitted that this NPS will provide a regulatory "push" in terms of managing freshwater quality and nutrient runoff in particular that is likely to have some impact on the market's preferences for fertiliser products.
- 324.** As described by Dr Mackay, CRP's direct application fertiliser is a useful tool to help address this problem. It was his evidence that of the available options for farmers looking to better manage their run-off, changing to a direction application fertiliser would be one of the cheaper options

because it does not involve capital expenditure, unlike additional fencing, etc.<sup>161</sup>

- 325.** Dr Mackay also described how direct application fertiliser is an agronomic option for millions of hectares of New Zealand's farm land for:<sup>162</sup>
- (a) both hill and steep pastoral soils; and
  - (b) intensively farmed soils (like dairy) at the top of the pasture response curve.
- 326.** Dr Mackay's evidence is that potential for the market for direction application is large. In his view, CRP's proposal could be a "game changer" on the market for direct application fertiliser.<sup>163</sup>
- 327.** The potential market expansion for direction application fertiliser would increase CRP's profitability and therefore the economic benefit to New Zealand.

### **Cadmium accumulation**

- 328.** New Zealand would benefit from the very low concentrations of cadmium in Chatham Rise phosphorite. The cadmium levels are a factor lower than imported phosphate.<sup>164</sup> The benefits of low cadmium fertiliser were discussed by Dr Mackay.<sup>165</sup>

### **Other matters**

- 329.** It was conceded by counsel for Ngai Tahu that the phosphate resource is a strategic resource of national significance and would have a role to play in security of supply, but that it should stay where it is.
- 330.** Such a suggestion has no place in this process and should not be entertained by the DMC. Based on the position expressed by numerous participants in the process, there will never be a good time from an

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161 Transcript, Dr Mackay, page 857.

162 Mackay, EIC, paras 52 to 65.

163 Transcript, Dr Mackay, page 860.

164 Transcript, Dr Mackay, page 849.

165 Mackay, EIC, paras 44 to 51.

environmental perspective for the resource to be won. It is both economically and technically feasible for the resource to be won now, and there is no sufficiently significant down side, either economically or environmentally, for the project to be declined consent.

- 331.** It is submitted that it would be an error for the DMC to make a decision based on its views as to whether the option value of the resource might be higher remaining on the seabed than being mined and sent to the market. That is not an appropriate role or consideration for the DMC in this process.

### **MITIGATION AND ENVIRONMENTAL COMPENSATION**

- 332.** It is submitted that CRP has been quite open about what it proposes by way of mitigation of effects and in terms of other measures that it has volunteered with a view to addressing effects or concerns that have been raised. It has done this in good faith, and recognised all along that there are some impacts of its proposal that it can never avoid, remedy or mitigate. It has tended to have been other parties that have sought to characterise the measures that CRP has developed in a way that is either inaccurate, or misrepresents the purpose of the particular proposal, and then sought to criticise CRP for trying to take advantage of a benefit to which it is not entitled.<sup>166</sup>
- 333.** CRP has no interest in claiming credit for something for which no credit is warranted. It does not seek and has not sought to describe the measures that it has proposed in a way that gives them particular legal status or significance. It is simply trying to do its best to address environmental impacts, in the context of a new piece of legislation and a project which creates a wide range of practical, legal and environmental challenges, and bearing in mind what is practically achievable without significantly calling into question the viability of the project.
- 334.** CRP also accepts that there are certain measures that it proposes, such as the best endeavours condition with regard to permanent legal or statutory protection of mining exclusion areas, that may or may not deliver

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<sup>166</sup> See for example the closing submissions for Greenpeace et al at para 73, which asserts that mining exclusion areas are window dressing for something they are not, being spatial management.

the desired outcome. That does not however mean that it is not a worthwhile issue to pursue, particularly when it is evident that there are better ways of achieving spatial management of the offshore environment and the protection of biological diversity than those that were used to identify BPAs for example.

- 335.** A broader spatial management exercise leading to comprehensive Marine Protected Areas legislation does not need to and will not happen directly through this project, but if the volunteered condition can trigger action being taken towards that goal, then that must be a good outcome. On the one hand most parties agree that improved spatial planning would be a good idea, but they are then often critical of CRP for being innovative and using existing tools in a novel way. This is however a new piece of legislation, and the demands it places on both applicants and the regulator mean that there is a need for fresh thinking to try and make the legislation "work", and to not lose sight of the common goal of improving management and development of New Zealand's marine estate.
- 336.** The alternative is that a narrow and old-fashioned RMA-style approach to conditions is adopted by CRP, with the consequence that a number of worthwhile ideas and initiatives are ruled out because they do not "fit" into the orthodox model. It is worth noting in this regard that the conditions proposed by CRP, to the extent that they may not be able to be legitimately imposed, are expressly proffered on an *Augier* basis.
- 337.** We have seen the ironic situation of environmental groups implicitly supporting bottom trawling and other environmental impacts of the fishing industry, and BPAs as a mechanism for environmental protection – notwithstanding the absence of any broader protection in the EEZ Act from activities covered by other legislation that disturb the seabed or have other impacts on the environment. In some instances, environmental groups appear to have adopted this position so that they can "prevent" CRP from claiming credit for an initiative whereby other forms of seabed disturbance which are not currently constrained by law are either limited or prohibited, despite this being a worthwhile goal in itself.<sup>167</sup>

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<sup>167</sup> Greenpeace closing submissions at para 73, and 75 – 78; Forest & Bird opening submissions at paras 68 to 72.

- 338.** There is even the curious situation where the EPA, for some unknown reason, is reluctant to contemplate consent conditions which provide for the Environmental Compensation and Chatham Islands Trusts – both of which are relatively orthodox and well-known mechanisms under the RMA, and about which Ms Rickard could find no problem in terms of the drafting or mechanics of the conditions (other than a question mark as to how the dollar figures had been derived).
- 339.** In short, it matters little to CRP what label the various mitigation measures it proposes are given. The key issue for the DMC should be whether it considers what is proposed has merit and would be worthwhile, when the purpose of the EEZ Act is considered.
- 340.** The hard substrate recolonisation trials which CRP has volunteered fall into the same category. They have never been characterised by CRP as mitigation, because restoration of the seabed and mitigation of the effects of the mining, bearing in mind the depth and type of impact on the existing seabed environment, is simply not possible. It is fully accepted that there is uncertainty as to whether the trials will be successful – but that does not mean that a condition volunteered in good faith should not be imposed. It must be worthwhile finding out, other than in a laboratory, whether there are ways of assisting the recovery of these benthic habitats. It follows that if the trials are successful, then any substrate placement is better than none, and it should not be criticised just because it may be impossible to completely replace areas of hard substrate.
- 341.** Bizarrely, other parties have put forward restoration concepts<sup>168</sup> and then used them as a basis to wrongly attack CRP for calling its proposed hard substrate trials mitigation (when in fact it has never done so, nor have its witnesses). To suggest that none of the opposing evidence about the cost or efficacy of other restoration options has been substantively challenged<sup>169</sup> is rather missing the point – they were never realistic options for CRP so it has no need to tilt at windmills.
- 342.** As far as the bond condition is concerned, because it is difficult to identify the particular effects or costs of those effects that it might need to address,

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168 Such as Professor Watling's 164 million concrete blocks.

169 Greenpeace closing submissions at para 80.

it may be considered that it serves no useful purpose. It has been volunteered because it was suggested as being necessary by third parties, some of whom now criticise the condition. CRP does not consider that the condition is necessary, but is willing to have it in place as an "insurance policy" to the extent that it is a reflection of CRP's broader approach to corporate and environmental responsibility.

## **CONDITIONS**

- 343.** There is little more that needs to be said from a legal perspective about conditions. The DMC has had the benefit of recent and detailed evidence about the proposed conditions, and has a number of suggestions before it as to how the conditions might be modified.
- 344.** We have covered adaptive management earlier in these submissions and do not intend to repeat those points, other than to reiterate that it is not accepted that there is any particular formula or rule about what counts as adaptive management.
- 345.** We are however happy to answer any questions that the DMC has about legal issues arising from the proposed conditions, including workability, the reasoning why the conditions are drafted in the way that they have been, or as to the legal basis for or effect of the proposed conditions.


## **CONCLUSION**

- 346.** CRP is grateful for the patience and attention of the DMC to this process, and to the way in which it has dealt with the significant amount of material that has been placed before it.
- 347.** It remains CRP's position that this is a good project, and one that it has demonstrated is worthy of consent under the EEZ Act's framework. It will have significant benefits for New Zealand, both in terms of economic benefits, but also equally tangible strategic and environmental benefits. This is an opportunity for New Zealand that should not be missed.
- 348.** Importantly, the evidence is that it will do no harm to any other industry or resource user in New Zealand's economy. There are undoubtedly effects on the environment (ie primarily benthic habitats and organisms), but they

are not of a scale that is significant in the context of the Chatham Rise or EEZ, nor of such significance in terms of the intrinsic conservation value of those resources that they warrant consent being declined.

- 349.** To the extent that there are risks and uncertainty, and to the extent that risks are material (very few are), they are all manageable under the framework of conditions that CRP proposes.
- 350.** It is submitted that the DMC has ample evidence before it to conclude that the full consent which is sought by CRP, being mining for up to 35 years across the marine consent area, meets the sustainable management purpose of the EEZ Act.

**Dated** 19 November 2014

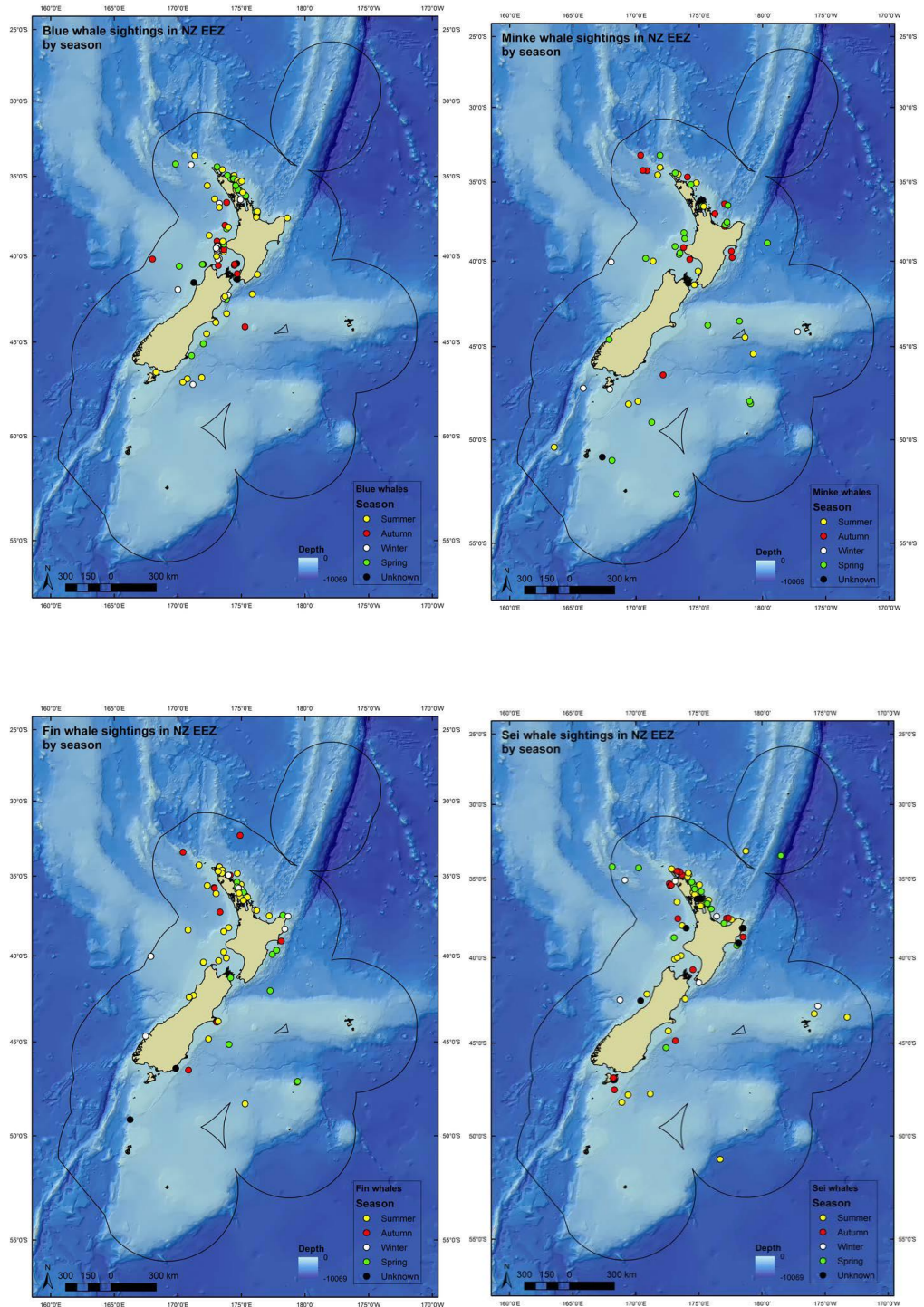


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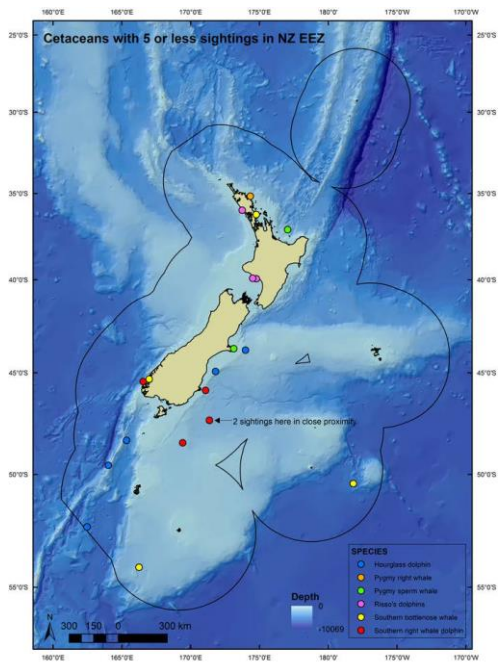
J G A Winchester / H P Harwood  
Counsel for the applicant

## Appendix A:

Sightings of baleen whales record in Berkenbusch et al (2013).







## **APPENDIX B:**

Extracts from the National Policy Statement for Freshwater Management 2014

# A. Water quality

## Objective A1

To safeguard:

- a) the life-supporting capacity, ecosystem processes and indigenous species including their associated ecosystems, of fresh water; and
- b) the health of people and communities, at least as affected by secondary contact with fresh water;

in sustainably managing the use and development of land, and of discharges of contaminants.

## Objective A2

The overall quality of fresh water within a region is maintained or improved while:

- a) protecting the significant values of outstanding freshwater bodies;
- b) protecting the significant values of wetlands; and
- c) improving the quality of fresh water in water bodies that have been degraded by human activities to the point of being over-allocated.

### **Policy A1**

By every regional council making or changing regional plans to the extent needed to ensure the plans:

- a) establish freshwater objectives in accordance with Policies CA1-CA4 and set freshwater quality limits for all freshwater management units in their regions to give effect to the objectives in this national policy statement, having regard to at least the following:
  - i. the reasonably foreseeable impacts of climate change;
  - ii. the connection between water bodies; and
  - iii. the connections between freshwater bodies and coastal water; and
- b) establish methods (including rules) to avoid over-allocation.

### **Policy A2**

Where freshwater management units do not meet the freshwater objectives made pursuant to Policy A1, every regional council is to specify targets and implement methods (either or both regulatory and non-regulatory), in a way that considers the sources of relevant contaminants recorded under Policy CC1, to assist the improvement of water quality in the freshwater management units, to meet those targets, and within a defined timeframe.<sup>10</sup>

### **Policy A3**

By regional councils:

- a) imposing conditions on discharge permits to ensure the limits and targets specified pursuant to Policy A1 and Policy A2 can be met; and
- b) where permissible, making rules requiring the adoption of the best practicable option to prevent or minimise any actual or likely adverse effect on the environment of any discharge of a contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.

### **Policy A4 and direction (under section 55) to regional councils**

By every regional council amending regional plans (without using the process in Schedule 1) to the extent needed to ensure the plans include the following policy to apply until any changes under Schedule 1 to give effect to Policy A1 and Policy A2 (freshwater quality limits and targets) have become operative:

- “1. When considering any application for a discharge the consent authority must have regard to the following matters:*
  - a. the extent to which the discharge would avoid contamination that will have an adverse effect on the life-supporting capacity of fresh water including on any ecosystem associated with fresh water and*
  - b. the extent to which it is feasible and dependable that any more than minor adverse effect on fresh water, and on any ecosystem associated with fresh water, resulting from the discharge would be avoided.*
- 2. When considering any application for a discharge the consent authority must have regard to the following matters:*
  - a. the extent to which the discharge would avoid contamination that will have an adverse effect on the health of people and communities as affected by their secondary contact with fresh water; and*
  - b. the extent to which it is feasible and dependable that any more than minor adverse effect on the health of people and communities as affected by their secondary contact with fresh water resulting from the discharge would be avoided.*
- 3. This policy applies to the following discharges (including a diffuse discharge by any person or animal):*
  - a. a new discharge or*
  - b. a change or increase in any discharge –*  
*of any contaminant into fresh water, or onto or into land in circumstances that may result in that contaminant (or, as a result of any natural process from the discharge of that contaminant, any other contaminant) entering fresh water.*
- 4. Paragraph 1 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2011 took effect on 1 July 2011.*
- 5. Paragraph 2 of this policy does not apply to any application for consent first lodged before the National Policy Statement for Freshwater Management 2014 takes effect.”*