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SPECIAL CONFERENCE ISSUE: NEW THINKING ON SUSTAINABILITY

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CONTENTS

SPECIAL CONFERENCE ISSUE: NEW THINKING ON SUSTAINABILITY

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DIVING IN THE DEEP END: PRECAUTION AND SEABED MINING IN NEW ZEALAND'S EXCLUSIVE ECONOMIC ZONE

Catherine J Iorns Magallanes* *and Greg Severinsen*****

Environmental precaution has developed as one of the cornerstones of modern law concerning sustainability. The idea is that where there is uncertainty as to the effects of a proposed activity, such uncertainty should not be used as an excuse for taking no action to address effects. While New Zealand's key environmental statute, the Resource Management Act 1991 (RMA), does not specifically refer to precaution in its consenting context, the courts have seen a precautionary approach as inherent in its provisions in a variety of ways. The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act), in contrast, specifically requires decision makers to favour caution and environmental protection in s 61(2) when information is uncertain. However, the exact ways in which this is to occur are unclear. The EEZ Act closely mirrors the structures of the Resource Management Act, and the ways in which precaution has been recognised in the latter might also be recognised in the former without the need to refer to s 61(2). It is therefore helpful to consider what that section will add to a regime into which precaution can already be read. This article explores the merits of various ways in which precaution could be implemented under s 61(2). It also investigates the way in which precaution has been treated by the Environmental Protection Authority in the context of deep seabed mining in the first two consenting decisions made under the Act. It concludes that, despite some comments that s 61(2) is vague and weak, the most persuasive interpretation is one that has at least the potential to be relatively liberal and strongly precautionary.

I INTRODUCTION

Since the mid-1990s, the concept of precaution has become one of the most debated and confused areas of environmental law in New Zealand. At its most basic, environmental precaution involves the idea that it is better to be safe than sorry when the effects of activities are uncertain. Simply because

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one may not be able to prove conclusively a causal relationship between an activity and effects on the environment should not be good reason to postpone taking action to prevent possible effects.[1] While references to precaution in international legal instruments are now widespread and there appears to be a high degree of consensus that the concept is important in the marine context, a number of formulations of the concept exist (depending on the particular context) and it would be difficult to argue that a single wording has yet attained the status of custom.[2] It is in this uncertain and fragmented environment that New Zealand has taken a variety of approaches to precaution in its domestic legislation concerning natural resources.

This article is concerned with how precaution has been treated in the consenting context in New Zealand's most recent regulatory environmental statute: the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act) in the consenting context. This Act lays down a framework for regulating the environmental effects of activities taking place in and above the seabed beyond the territorial sea, and draws heavily upon the structures and processes in the Resource Management Act 1991 (RMA), which performs a comparable function within New Zealand's territory.[3] In particular, this article seeks to explore the extent to which precaution may be approached differently under the consenting process in the EEZ Act than the RMA, due largely to its express inclusion of a precautionary principle, and how the Act may be interpreted so as to promote precautionary outcomes more effectively. It considers the extent to which this has been done in the first two consenting decisions under the Act, both concerning deep seabed mining.

II THE CONCEPT OF PRECAUTION

Environmental precaution cannot realistically be described, in the abstract, as a principle. On opening any general international law textbook on the subject, one is confronted with a multitude of versions of precaution, most of which are incompatible with each other.[4] Thus while some

1 For an exposition of the concept of precaution in its international law and more general sense, see Philippe Sands and Jacqueline Peel *Principles of International Environmental Law* (3rd ed, Cambridge University Press, Cambridge, 2012) at 217–228. See also Alexander Gillespie "Precautionary New Zealand" (2011) 24 NZULR 364 at 365.

2 For discussion on the status of precaution in international law, see David Freestone "International Fisheries Law Since Rio: The Continued Rise of the Precautionary Principle" in Alan Boyle and David Freestone (eds) *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, Oxford, 1999) 135; Lothar Gundling "The Status in International Law of the Principle of Precautionary Action" (1990) 5 IJECL 23; and James Cameron and Juli Abouchar "The Precautionary Principle: A Fundamental Principle of Law and Policy for the Protection of the Global Environment" (1991) 14 BC Int'l & Comp L Rev 1. See also JE Hickey and VR Walker "Refining the Precautionary Principle in International Environmental law" (1995) 14 Va Envt'l LJ 423.

3 Both on land and in the territorial sea.

4 Elizabeth Mitchell *Legal Opinion on the Application of the Precautionary Principle to Deep Seabed Mining in the Pacific Region* (Environmental Law Alliance Worldwide, August 2012) at 3; and Gillespie, above n 1, at 371.

conservative international formulations see a precautionary response as necessary only where there is a risk of serious and irreversible harm,[5] others implement a presumption that harm will occur and have in response effectively imposed international moratoria on certain activities.[6] Precaution can at best be characterised as an idea, or a set of beliefs about the general protective way in which we approach environmental risk.

More firm precautionary principles can be discerned in particular legal contexts, both international and domestic. Some have sought to define a precautionary principle in contradistinction from a precautionary approach. The former has been seen as strong, liberal and protective, whereas the latter has been characterised as weaker, more conservative and more development oriented.[7] However, it is by no means a foregone conclusion that a precautionary principle, when seen as an express provision contained in a legal instrument, is necessarily more environmentally protective than the general approach taken by an instrument that does not refer to precaution specifically. A more useful way to see the distinction is between an instrument that requires a direction to delegated decision makers (and thus an express principle) and an instrument that itself implements precaution by the operation of its substantive or procedural provisions.[8] Either one can be strong or weak, which is often dependent on the nature of the threat.[9] Thus while some may hail the inclusion of a specific reference to precaution in the EEZ Act as a victory for environmental integrity, this does not necessarily guarantee more precautionary outcomes than another statute such as the RMA, which does not itself specifically refer to precaution.[10]

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5 For example, in the United Nations Framework Convention on Climate Change 1771 UNTS 107 (signed 9 May 1992, entered into force 21 March 1994), art 3(3) [UNFCCC]; and 1992 Rio Declaration on Environment and Development A/Conf.151/26 vol 1 (1992), 31 ILM 874 (1992), principle 15 [Rio Declaration].

6 For example, see 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter [2006] ATS 11 (signed 7 November 1996, entered into force 24 March 2006), 36 ILM 1 (1997) [London Dumping Protocol]. See also Catherine Iorns Magallanes "The Precautionary Principle in the New Zealand Fisheries Act: Challenges in the New Zealand Court of Appeal" (2014) VUWLRP No 59 at 5.

7 Gillespie, above n 1, at 371.

8 For example, the London Dumping Protocol implements a strong precautionary approach through the use of a reverse list, whereby all substances are deemed to be prohibited for dumping unless specifically allowed. This is much stronger than the precautionary principle contained within the UNFCCC, which requires high thresholds of harm and probability.

9 Gillespie, above n 1, at 371.

10 That is, the RMA does not use this particular term. That is not to say that the Act does not refer to risk and uncertainty; notable in the planning context is the direction in s 32 to consider uncertainties. Equally notable, however, is the absence of any direction to treat risks in a particular way, or any reference to precaution in the consenting context of the RMA.

III THE RELEVANCE OF INTERNATIONAL LAW

The concept of precaution has developed most prominently in the international legal arena and now populates a number of global and regional treaties and soft law instruments.[11] The international context has attracted a substantial amount of scholarship, partly because many environmental issues that require a precautionary approach are global in nature (for example, climate change, the management of migratory fish stocks and the marine dumping in areas where the international community has an interest). However, such international law is of limited relevance within the legal framework of New Zealand, as most instruments provide only vague or aspirational statements of precaution and do not themselves provide direction as to implementation.[12] Furthermore, they cannot be enforced unless directly incorporated into domestic law.[13]

It is therefore not the intention of this article to consider the development of the precautionary principle overseas or in international law, or to revisit the foundations upon which the basic concept rests. Many other texts have done so admirably.[14] However, one feature of international law in the context of the EEZ is worth noting: the jurisdictional and duty-imposing provisions of the United Nations Convention on the Law of the Sea (UNCLOS).[15] In contrast to the aspirational notions of precaution found in many other international instruments, UNCLOS clearly provides that the jurisdiction given to states to exploit the natural resources of their EEZs and continental shelves are contingent on the duty to protect and preserve the marine environment.[16] While precaution is not expressly mentioned, and UNCLOS is not directly enforceable as law in the New Zealand courts, precaution is aimed at protecting the environment and thus UNCLOS may be an important aid to

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11 For example in: UNFCCC, above n 5; London Dumping Protocol, above n 6; Rio Declaration, above n 5; and *United Nations Sustainable Development United Nations Conference on Environment & Development: Local Agenda 21* (3–14 June 1992).

12 Some exceptions exist, such as the highly precautious London Dumping Protocol, which requires that states impose a general prohibition on dumping subject only to specific exceptions.

13 *Sellers v Maritime Safety Inspector* [1999] 2 NZLR 44 (CA). See also *Police v Teddy* [2013] NZHC 432, [2013] NZAR 299 at [20].

14 For example, see Sands and Peel, above n 1. See also Alan Boyle and David Freestone (eds) *International Law and Sustainable Development: Past Achievements and Future Challenges* (Oxford University Press, Oxford, 1999); K von Moltke "The Vorsorgeprinzip in West German Environmental Policy" in Royal Commission on Environmental Pollution *Twelfth Report: Best Practicable Environmental Option* (Cm 310, HMSO, London, 1988) 57; Klaus Bosselmann *The Principle of Sustainability: Transforming Law and Governance* (Ashgate, Burlington, 2008) at 81–97; and David Freestone and Ellen Hey (eds) *The Precautionary Principle and International Law* (Wolters Kluwer, Alphen aan den Rijn, 1995).

15 United Nations Convention on the Law of the Sea 1833 UNTS 3 (opened for signature 10 December 1982, entered into force 16 November 1994) [UNCLOS].

16 Article 193. See Parliamentary Commissioner for the Environment "Submission to the Local Government and Environment Select Committee on the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill" at 3–4.

interpretation under the EEZ Act, or a factor influencing a decision maker's exercise of discretion. However, if a provision of UNCLOS were to suggest that the EEZ Act was inconsistent with international law, it is unlikely that an interpretation would favour UNCLOS. This is because s 11 as enacted simply deems the Act to be consistent with New Zealand's international legal obligations rather than requiring compliance with them.[17] In addition, under the RMA the Courts have expressed reluctance to import the requirements of international law even as persuasive rather than legal considerations.[18] The RMA presents a similarly structured regime and function to the EEZ Act, so may offer useful precedents for interpretation.

IV THE EEZ ACT

The EEZ Act is the culmination of a number of years of marine research by central government, and implements a variety of New Zealand's international obligations with respect to the oceans.[19] It is a piece of framework legislation, in the sense that it provides for most substantive rules and policies to be created via regulation.[20] Two key opportunities for interpretation of the Act have arisen in the EPA's decisions on the Trans-Tasman Resources (TTR) application to conduct iron sands mining off the coast of Taranaki[21] and the Chatham Rock Phosphate application to mine phosphate nodules on the Chatham Rise.[22] The decisions are discussed in more detail later in the context of the precautionary sections of the Act, but it is worth noting at this point, when identifying the main features of the Act, some of the EPA's more general findings. The Act has a purpose of promoting the sustainable management of the natural resources of the EEZ and continental shelf.[23] This emulates the purpose

17 See also Environmental Protection Authority *Trans-Tasman Resources Ltd Marine Consent Decision* (June 2014) at [91]–[93] [*Trans-Tasman Resources*].

18 See *Shirley Primary School v Christchurch City Council* [1999] NZRMA 66 (EnvC) at [222].

19 For example, see Ministry for the Environment *Offshore Options: Managing Environmental Effects in New Zealand's Exclusive Economic Zone* (2005) and Ministry for the Environment *The New Zealand Marine Environment Classification Overview* (2005). See also Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012, s 11 [EEZ Act].

20 EEZ Act, pt 3.

21 The EPA delegated its decision making power to a decision making committee in both cases; however, for simplicity and to ensure clarity in terms of the statutory language, reference is made in this article to the EPA.

22 Environmental Protection Authority *Decision on Marine Consent Application: Chatham Rock Phosphate Limited, To mine phosphate nodules on the Chatham Rise* (February 2015) [*Chatham Rock*]. A third consent application was also decided late in 2014: Environmental Protection Authority *Decision on Marine Consent Application: OMV New Zealand Ltd* (15 December 2014); but it provides minimal comment on the precautionary features of the Act so is not addressed in this article.

23 Amendments have also been passed in the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Amendment Act 2013 (although they are not yet in force) inserting a second purpose concerning discharges and dumping (to protect the environment from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter). See EEZ Act, s 7.

of the RMA to a large extent, although has important differences, including the fact that its scope does not extend to the management of "physical" or man-made resources.[24] It also provides for a regime by which regulations assign activity statuses to activities, which determine whether marine consent is required and which notification rules apply. In short, permitted activities do not require consent, prohibited activities cannot be applied for or granted consent, and discretionary activities require consent (discretionary activities can also be either notified or non-notified, the latter of which require consent but are not subject to public submission).[25] Given that the EEZ is within centralised jurisdiction and not divided into localised administrative areas as under the RMA, rules and policies can be contained within regulations (although many are built into the Act itself). The framework is not one that envisages the development of complex policy and planning instruments like those under the RMA. Regulations can include rules relating to all activities that are restricted by the Act, most notably those contained in s 20.[26] Given that relatively few regulations are yet in force,[27] it is significant that the default status for activities requiring consent under the Act is discretionary. This also reflects the basic presumption underpinning the RMA that a wide range of marine activities are to be prohibited unless expressly allowed (in contrast to the presumption underpinning the use of land, where activities are presumed to be unrestricted unless expressly restricted in subordinate planning documents).[28]

Once an application for a discretionary activity has been made under the EEZ Act, the EPA is obliged to make a decision either granting or declining the application (or granting subject to conditions). Echoing s 104 of the RMA, the EPA as consent authority must take into account a number of criteria (under ss 59, 60 and 61), before making an overall broad and discretionary judgment as to whether the proposal meets the purpose of the Act under s 62.[29] Section 10 of the Act also makes express reference to the fact that, in order to achieve the Act's purpose, decision makers must take into account not only the criteria in s 59 (generally concerning the effects of an activity and reflecting

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24 *Trans-Tasman Resources*, above n 17, at [78]–[90]; and *Chatham Rock*, above n 22, at [78].

25 EEZ Act, ss 29D and 35–37.

26 Further restrictions relating to discharges and dumping have been passed in the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Amendment Act 2013, but have not yet entered into force.

27 Regulations currently in force as at the close of 2014 are: Exclusive Economic Zone and Continental Shelf (Environmental Effects – Permitted Activities) Regulations 2013; Exclusive Economic Zone and Continental Shelf (Environmental Effects – Non-notified Activities) Regulations 2014; and Exclusive Economic Zone and Continental Shelf (Environmental Effects – Fees and Charges) Regulations 2013. Draft discharge and dumping regulations have also been developed for consultation purposes but have not yet been promulgated.

28 Resource Management Act 1991 [RMA], ss 9 and 12.

29 Despite some potential arguments concerning this topic under the RMA (stemming from the Supreme Court's decision in *Environmental Defence Society Inc v New Zealand King Salmon Co Ltd* [2014] NZSC 38, [2014] 1 NZLR 593) the characterisation of this exercise under the EEZ Act as one of judgment and weighing rather than bottom lines is supported by the EPA's decision in *Trans-Tasman Resources*, above n 17, at [106].

the importance of both environmental protection and development), but also the information principles in s 61.

Some of the criteria in s 59 are broadly similar to those under the RMA, such as the effects of allowing the activity and any other matter that is relevant and reasonably necessary to determine the application. An "effect" is defined in a non-exhaustive manner and includes potential effects of varying probabilities.[30] However, some criteria are expressed or located differently from those in the RMA. The kinds of high level principles contained in ss 6 and 7 of the RMA are instead located within s 59 of the EEZ Act, such as the protection of ecosystems and species, and the spirit of the phase two RMA reforms currently underway has been expressed through the specific inclusion of the benefits of economic development.[31] Most significant for present purposes, however, is the inclusion of "information principles" in s 61, which are not found at all in the RMA. The section provides:

> **61 Information principles**
>
> (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… .

The first and most obvious comment to be made about s 61 is its apparent similarity with s 10 of the Fisheries Act 1996. Section 10 contains the first example of an express precautionary principle in New Zealand legislation (although several policy documents embraced the concept earlier). It was designed specifically to "allow the adoption of precautionary approaches",[32] and provides:

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30 EEZ Act, s 6(1)(f).

31 Section 59(f) and (g). See also Ministry for the Environment *Resource Management Summary of Reform Proposals 2013* (ME 1119, August 2013); and Ministry for the Environment *Improving our Resource Management System: A Discussion Document* (ME 1103, February 2013).

32 Hon D Kidd MP, Minister of Fisheries, statement upon introducing the Bill: (6 December 1994) 545 NZPD 5390.

> **10 Information principles**
>
> All persons exercising or performing functions, duties, or powers under this Act, in relation to the utilisation of fisheries resources or ensuring sustainability, shall take into account the following information principles:
>
> (a) decisions should be based on the best available information:
>
> (b) decision makers should consider any uncertainty in the information available in any case:
>
> (c) decision makers should be cautious when information is uncertain, unreliable, or inadequate:
>
> (d) the absence of, or any uncertainty in, any information should not be used as a reason for postponing or failing to take any measure to achieve the purpose of this Act.

It is of some assistance to look briefly at the application of s 10, if only to provide some background to and comparison with s 61 of the EEZ Act. While the four separate aspects of s 10 only have to be taken into account by decision-makers, and they are embedded within an Act which requires authorities to maximise the long-term utilisation of fisheries, the requirements in s 10(c) and (d) were seen as positive steps for the marine environment when they were enacted. However, the application of the section in practice has enabled precautionary decisions to be struck down, and weaknesses in its wording have been exposed.

The first and primary weakness in s 10 is the separation of the four aspects in a hierarchical manner, with the requirement for best available information appearing first. Precautionary ministerial decisions have been struck down upon judicial review, on the basis that they did not first utilise the best available information; thus the application of paragraphs (c) and (d) did not even arise for consideration.[33] This is despite the fact that paragraphs (a)–(d) only need to be taken into account, and might not appear on their face to be intended to provide such a ground for such judicial action.

A second weakness of s 10 is the use of "should" in paragraph (c). It is neither specific nor directive on a decision-maker, and thus presents a less clear (as well as a weaker) approach to precaution than it otherwise might.

A third weakness is the lack of specificity concerning the aim of precautionary measures to be taken under s 10(d). It was clear that the section was intended to adopt a precautionary approach, and thus designed to enable the adoption of measures in favour of environmental protection.[34] However, the reference to enabling "a measure to achieve the purpose of this Act" could also arguably refer to the Act's purpose of utilising fisheries. Thus under this interpretation, for example, precautionary

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33 See, for example, *Northern Inshore Fisheries Co Ltd v Minister of Fisheries* HC Wellington CP235/01, 4 March 2002; *Squid Fishery Management Co Ltd v Minister of Fisheries* CA 39/04, 13 July 2004; *Antons Trawling Co Ltd v Minister of Fisheries* HC Wellington CIV-2007-485-2199, 22 February 2008. For more information see Iorns, above n 6.

34 See, for example, the Minister of Fisheries' statement upon introducing the Bill: above n 32.

measures taken to protect marine mammals that would prevent fisheries utilisation may be undermined.[35]

Overall, these weaknesses have combined to result in the use of s 10 in the courts to defeat precautionary measures, more than it has been used to uphold them. Arguably this is contrary to its intended purpose. If one were designing a truly precautionary principle for inclusion in a new statute, one would not expect to see the fisheries formulation copied. Section 61 of the EEZ Act appears to be modelled on the structure of s 10 of the Fisheries Act, with the same separation of its four elements. However, there are some differences between the sections in the two Acts.

Two broad but related kinds of information principles can be discerned from s 61. Firstly, the EPA is obliged to use the best available information. This is clearly taken from s 10 of the Fisheries Act, but made more directive through the use of "must" instead of "should" in s 61(1)(b). Given that decisions under the less directive provision in the Fisheries Act have been invalidated for failing to use best available information, the EEZ Act appears to maintain this ability even more clearly. It is therefore possible that s 61 is weaker than it initially appears, even though this weakness may be clear only to those who know the history of s 10 and its application.

Secondly, s 61(2) introduces a form of precautionary principle. Interestingly, the wording of the principle has been changed from s 10 of the Fisheries Act and does not reflect existing and well-known formulations in international law; this has been criticised by those eager to see greater protection of the marine environment.[36] One may ask: why has reference not simply been made to the importance of the precautionary principle as outlined in the widely-accepted Rio Declaration? A cynical view may characterise the wording as a means to escape the requirements of existing versions of the principle, but it is possible to take a more optimistic view.[37] The famous formulation in the Rio Declaration has a higher threshold of risk before it applies (harm must be serious or irreversible), it applies only according to the capabilities of states, and it does not require any measures that are not cost-effective.[38] On its face, s 61(2) is not limited in these ways.

The requirement in s 61(2) is potentially more precautionary than its predecessor under the Fisheries Act. Despite the fact that aspects of its wording appear to have drawn from these sources,

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35 This issue was identified during the case *ORH1 Exploratory Fishing Co Ltd & Ors v Minister of Fisheries & Ors* HC Wellington CIV-2006-485-002099, 19 October 2006. A Bill was introduced to amend s 10 to make it clear that precautionary measures were for the purposes of sustainability as opposed to utilisation: see the Explanatory Note to the Fisheries Act 1996 Amendment Bill 2007. However, the Bill was discharged from Select Committee without report and abandoned in July 2008, without reasons given.

36 For example, see the debate on the first reading of the Bill: (13 September 2011) 675 NZPD 21214.

37 The Select Committee Report on the Bill noted that it is uncertain whether it is meant to be more or less stringent than the international conception of the principle: Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill (321-2) (Select Committee Report) at 9.

38 Rio Declaration, above n 5, principle 15.

the information principles have taken a stricter approach to the precautionary principle itself. Under the EEZ Act, decision makers *must favour* caution and protection rather than *take into account* the principle that they *should* be cautious. The requirement in s 61(2) is strong and directive. While the principle in the Fisheries Act exhorts the Minister to be cautious, and to ensure uncertainty is not used as a reason to fail to achieve the purpose of the Act (which includes both utilisation and sustainability), s 61(2) requires both caution and environmental *protection* (not simply the achievement of sustainable management). The favouring of environmental protection where there is uncertainty in information is itself deemed to be an integral part of achieving sustainable management.[39] This clear link between precaution and the overall purpose of the Act is an important step forward.

Although comparisons with the statutory wording of the Fisheries Act are useful, it is less useful to compare how that Act has been applied to specific decisions. Perhaps surprisingly, the more interesting comparison is with the application of precaution in decisions under the RMA. This is because the fundamental decision-making process in the consenting provisions of the EEZ Act has been modelled to a large extent on the RMA framework and because there has been extensive discussion by the courts concerning the approach to precaution (and its various elements). It is thus worthwhile at this point to consider how precaution has developed in case law under the RMA. The nature and effect of s 61(2) may then be better understood by considering what it adds to, and how its interpretation and application might be affected by, the precautionary approach that the courts have already perceived as being inherent in the RMA.

V A PRECAUTIONARY APPROACH UNDER THE RESOURCE MANAGEMENT ACT

A Introduction

In contrast to the specific reference to caution in s 61(2) of the EEZ Act, the RMA does not contain an express precautionary principle in the consenting context.[40] This can be explained largely by the fact that the RMA was enacted before the principle came to the fore in New Zealand's environmental thinking.[41] Subsequent amendment has not been seen to be necessary, because the Courts have been prepared to read into the Act a precautionary approach. In other words, the idea of precaution has been seen as inherent in the mechanics of the Act, for example in the definition of a potential effect, the ability to place weight on policies emphasising the avoidance of effects and by having regard to policies that themselves refer to the need for precaution.[42] More specifically, the Courts have seen precaution as playing a role in the standard of proof, the burden of proof and in the consent authority's

39 EEZ Act, s 10(3)(b).

40 Although it is a weak requirement and does not refer to precaution or caution specifically, some may choose to see a precautionary principle in the planning context in s 32 of the RMA.

41 Precaution was not expressly mentioned in legislation until the Fisheries Act 1996.

42 For example see *Shirley*, above n 18, at [223].

overall broad judgment. However, exactly how precaution should be implemented in such areas continues to be an area of some confusion and debate under the RMA.[43]

B The Standard of Proof

Two broad case law traditions have arisen on the topic of the standard of proof under the RMA. The basic problem that they seek to address is the same. The Act clearly provides, in its definition of a potential effect, that a consent authority must consider effects of high impact but low probability.[44] In other words, when a decision maker in its objective fact finding role is determining the effects that a proposal could have, it is obliged to recognise effects that have a chance of occurrence of below 50 per cent. Such effects, once accepted by the consent authority, become mandatory considerations to which the consent authority gives relative weight, according to the relevant objectives, policies, other relevant matters and pt 2 of the Act. This relative weight then informs the outcome of the application when the decision maker exercises its overall judgment to grant or decline consent.[45] The Act therefore has an inbuilt precautionary safeguard in the fact finding process. The Courts have recognised that using the ordinary civil standard of proof, the balance of probabilities, would require a decision maker to ignore any effect that had a probability of occurrence of under 50 per cent. In *Long Bay-Okura Great Park Soc Inc v North Shore City Council*, the Environment Court held that "[i]f the authority applied a 'balance of probabilities' standard of proof, [an] effect [of a 16.67 probability] would be disregarded".[46] The Court in *Shirley Primary School v Christchurch City Council* also noted with approval the following comment of the Privy Council in *Fernandez v Government of Singapore*:[47]

> There is no general rule of English law that when a Court is required, either by statute or at common law, to take account of what may happen in the future and to base legal consequences on the likelihood of its happening, it must ignore any possibility of something happening merely because the odds on its happening are fractionally less than evens.

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43 See Claire Kirman, Ellis Gould and Catherine Somerville "Carrying the Burden: Considering the Appropriate Evidential Tests in Resource Management Decisions" (August 2006) RMJ 3; and D Nolan (ed) *Environmental and Resource Management Law* (4th ed, LexisNexis, Wellington, 2011) at 1186.

44 RMA, s 3(f).

45 While there may be questions over whether this decision should be described as one of bottom lines rather than overall broad judgment in light of the Supreme Court's decision in *King Salmon*, above n 29, the Environment Court has since continued to defend the concept of an overall broad judgment in the consenting context: see *KPF Investments Ltd v Marlborough District Council* [2014] NZEnvC 152. See also Board of Inquiry, *Final Report and Decision of the Board of Inquiry into the Basin Bridge Proposal*, 29 August 2014 at [176]-[188].

46 *Long Bay-Okura Great Park Society Inc v North Shore City Council* [2011] NZEnvC 204 at [310].

47 *Fernandez v Government of Singapore* [1971] 2 All ER 691 (PC) at 696 as cited in *Shirley*, above n 18, at [117].

One of the two case law traditions, expressed most cogently in *McIntyre v Christchurch City Council*,[48] has implicitly accepted that the concept of proof retains value in the establishment of potential effects. The solution here has therefore been to alter the standard of proof, by adopting a standard of "the balance of probabilities and having regard to the gravity of the matter".[49] In other words, in situations where the potential impact of an effect is high, a decision maker must be convinced to a greater degree that the effect would not occur. Some cases in the spirit of *McIntyre* have seen this as actually altering the standard to which allegations of fact need to be proved (although never to the criminal standard).[50] Others have allowed only for a flexible application of the ordinary civil standard.[51] On this latter view, while the degree to which a decision maker must be convinced remains unaltered, a severe potential impact may require stronger evidence for this degree of persuasiveness to be achieved.

The other case law tradition has responded to the problem of low probability potential effects by abandoning the concept of a standard of proof in favour of the expert evaluation of the consent authority. The leading judgments espousing this approach are *Shirley* and *Clifford Bay Marine Farms v Marlborough District Council*.[52] These cases have considered it vital to recognise that, in establishing the existence of potential effects, a decision maker is not only deciding facts, but is making judgments or evaluations by using its own expert knowledge and discretion.[53] The concept of proof is thus irrelevant in this context, and there is no need to debate how the standard of proof changes in accordance with the gravity of a question. Debates over whether the *Shirley* or the *McIntyre* approach is correct remain to this day.[54] However, a more fundamental observation is that the Courts have been united in their view that the Act implements a degree of precaution in the fact finding process through its inclusion of low probability potential effects as a mandatory consideration.

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48 *McIntyre v Christchurch City Council* [1996] 2 ELRNZ 84 (PT).

49 At 106.

50 *Transpower New Zealand Ltd v Rodney District Council* PT Auckland A85/94, 14 November 1994 at 21.

51 *Royal Forest and Bird Protection Society of New Zealand Inc v Buller District Council* [2006] NZRMA 193 (HC) at [73]. This is likely to be the better law, given more recent comments of the Supreme Court in *Z v Dental Complaints Assessment Committee* [2008] NZSC 55, [2009] 1 NZLR 1 at [102]–[107].

52 *Clifford Bay Marine Farms Ltd v Marlborough District Council* EnvC Christchurch C131/2003, 22 September 2003.

53 At [131]; and *Shirley*, above n 18, at [117].

54 Later cases appear to support both: see *Director General of Conservation v Marlborough District Council* EnvC Christchurch C113/2004, 17 August 2004 at [44]; in contrast to *Contact Energy Ltd v Waikato Regional Council* (2000) 6 ELRNZ 1 (EnvC) at [42]; and *Sea-Tow Ltd v Auckland Regional Council* EnvC Auckland A066/2006, 30 May 2006 at [342]–[343]. More generally on the topic of risk, proof and future effects, see Lee Loevinger "Standards of Proof in Science and Law" (1992) 32 Jurimetrics 323 at 328; Royden Somerville "Policy Adjudication, Adaptive Risk Management and the Environment Court" [2013] RM Theory & Practice 13; and Royden Somerville "A Public Law Response to Environmental Risk" (2002) 10 Otago LR 143.

C *The Burden of Proof*

A standard of proof is generally accompanied by a burden or onus of proof, which can be characterised as a rebuttable presumption in favour of one party.[55] In essence, a burden or onus of proof is an active obligation to prove an alleged fact to the required standard. Generally, if a burdened party fails to discharge its onus, then its assertion (for example, the existence of a potential effect or the absence of a potential effect) is rejected as a statement of fact and there is a presumption that it is not true.[56]

As with the debates over the standard of proof, divergent views have developed over the correct burden of proof under the RMA. In general terms, advocates of precaution have been eager to recognise a burden of proof applying to an applicant, as the party who is seeking to change the status quo, and some have described this as a "reversal" of the burden of proof.[57] In other words, on this view, an applicant would be required to prove that a potential effect would not occur or would not have the magnitude or scope suggested by an opponent. If evidence were finely balanced, the benefit of the doubt would go to the protection of the environment rather than the applicant. Opponents would not be required to prove anything in order to retain the status quo. A number of cases have seen this burden as applying in a wider sense than just the establishment of potential effects and recognised an overall burden on an applicant to prove that a proposal achieves the purpose of the Act.[58] To some extent this reflects a precautionary approach in that an applicant who fails to discharge this overall burden will be declined consent.[59]

Others have been more hesitant to impose a burden of proof on an applicant to disprove the existence of potential effects because of the inquisitorial and administrative nature of proceedings under the RMA. The purpose of the Act is to promote sustainable management and is not primarily to resolve disputes between parties. On this view, the only burden (which rests equally on all parties) is to adduce evidence tending to support a proposition asserted by a party.[60] This has been described as an evidential burden, although it may more accurately be characterised as an informal or tactical

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55 Don Mathieson (ed) *Cross on Evidence* (9th ed, Lexis Nexis, Wellington, 2013) at 527.

56 Ibid, at 527.

57 Elli Louka *International Environmental Law* (Cambridge University Press, Cambridge, 2006) at 50; and Gillespie, above n 1, at 373.

58 *Shirley*, above n 18, at [121]. This was also the view of the Court of Appeal in *Ngati Rangi Trust v Genesis Power Ltd* [2009] NZCA 222, [2009] NZRMA 312 at [23].

59 This is only to some extent, because precaution applies only in cases of scientific uncertainty. The failure to discharge a burden to prove sustainable management may be based on substantive and known factors where considerations are finely balanced, rather than based on uncertainty as to the effects of an activity.

60 See *McIntyre*, above n 48, at 105. See also *Auckland/Waikato Fish and Game Council v Waikato Regional Council* EC Auckland A85/2002, 26 April 2002 at [53]–[55]; and *Contact Energy*, above n 54, at [42].

burden that simply reflects the practical reality that the party adducing stronger evidence will prevail.[61] If matters are finely balanced, there is no presumption in favour of applicant or opponent; the decision maker must simply investigate further to find the correct answer. This approach is, however, arguably less precautionary because it gives no benefit of the doubt to the environment.[62]

D Precaution in the Court's Overall Judgment

The most controversial way in which the Courts have approached precaution under the RMA is in the exercise of a consent authority's overall judgment. In contrast to the mechanical operation of legal rules such as the standard and burden of proof, the weighing of various matters in s 104(1) involves the expert discretion of a decision maker. Once again, the Courts have taken two divergent views on how precaution can inform the exercise of this discretion.

The first view has seen precaution as inherent in the mechanics of the Act itself.[63] Thus s 104(1)(a) expressly provides that the potential effects of an activity (including elements of uncertainty in terms of both occurrence and impact) are matters that must be considered. Furthermore, the same section provides a number of other mandatory considerations that are capable of enhancing precautionary outcomes. For example, if relevant, regard must be had to the New Zealand Coastal Policy Statement, which itself contains express reference to the importance of precaution.[64] Various subordinate planning documents at both the regional and district levels are also capable of referring, and in a number of cases do refer, to precaution.[65] These can all be given weight according to the expert judgment of the decision maker and uncertainty as to effects in light of strongly worded precautionary policies may prove determinative to a decision to decline consent, or at least result in conditions designed to avoid effects or mitigate uncertainties.

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61 See Mathieson, above n 55, at 527.

62 For a more detailed discussion, see Greg Severinsen "To Prove or not to Prove? Precaution, the Burden of Proof and Discretionary Judgment under the Resource Management Act" (2014) 13 Otago LR 351; and Greg Severinsen "Bearing the Weight of the World: Precaution and the Burden of Proof under the Resource Management Act" (2014) 26 NZULR 375.

63 See *Shirley*, above n 18, at [134]–[135].

64 Department of Conservation *New Zealand Coastal Policy Statement 2010* (November 2010) at 12, policy 3(1).

65 For example, see Environment Canterbury *Canterbury Regional Policy Statement 2013* (Canterbury Regional Council, R14/22, December 2013) at policies [7.3.12] and [11.3.5] and issue [18.1.1]; explanations to objectives 19 and 22 of the Hawke's Bay Regional Council *Hawke's Bay Regional Resource Management Plan* (HBRC 3881, 28 August 2006, republished 8 November 2014) at [3.6.3] and [3.8.3]; Environment Waikato *Waikato Regional Policy Statement* (Waikato Regional Council, Environment Waikato Policy Series 2000/30, October 2000) at 80, ch 3.5.4 policy 3; Northland City Council *Regional Policy Statement for Northland* (31 March 1999) at [22.4(a)]; and Wellington Regional Council *Regional Policy Statement for the Wellington region* (GW/EP-G-13/21, 24 April 2013) at 109–110, policy 29.

The above view has considered that it is unnecessary and unhelpful for consent authorities to make recourse to a separate, non-statutory formulation of a precautionary principle.[66] However, other cases have seen room in s 104 for weight to be placed on a general international law formulation of precaution, in addition to the approach inherent in the Act. While most of these decisions have declined in the event to place weight on such a precautionary principle, they have recognised that it is possible to do so by treating it as "any other matter … relevant and reasonably necessary to determine the application".[67]

This brief summary of the various and divergent ways in which precaution has been implemented under the RMA forms a useful foundation for understanding the potential role of s 61(2) of the EEZ Act. However, before turning to that exercise, it is worth noting briefly the existence of one other precautionary principle in New Zealand legislation.

It is suggested that the precautionary principle contained in s 7 of the Hazardous Substances and New Organisms Act 1996 (HSNO Act) can be of only limited assistance in the interpretation of s 61(2). Under s 7 a decision maker is simply obliged to take into account the need for caution in managing adverse effects where there is uncertainty about those effects. Again, the direction to take caution into account is, comparatively speaking, weaker than the direction to favour protection. One commentator has opined that the language of "managing" effects "seems to place it in the realm of preventative or reactionary measures rather than precautionary measures"[68] and that true precaution "does not simply mandate that one conduct a risk assessment, but rather mandates a specific response to uncertainty".[69] The HSNO Act simply ensures that a decision maker turn its mind to the need for caution. Similarly, key regulations in setting the approach of the EPA to risk and uncertainty are characterised by non-mandatory language.[70] Furthermore, the HSNO Act is much narrower in scope than the EEZ Act, and its purpose is different. It is also significant that the High Court in *Bleakley v ERMA* considered that interpretive issues under the HSNO Act were not automatically transferable to

66 *Shirley*, above n 18, at [134]–[135]; and *Re Meridian Energy* [2013] NZEnvC 59 at [57]–[58].

67 RMA, s 104(1)(c). See also *McIntyre*, above n 488, at 104 and 106; *Telecom New Zealand Ltd v Christchurch City Council* EnvC Christchurch W165/96, 15 November 1996 at 11; *Environmental Defence Society Inc v New Zealand King Salmon Co Ltd* [2013] NZHC 1992, [2013] NZRMA 371 at [85] (this aspect being undisturbed on appeal); *JW Paterson & Sons Ltd v Bay of Plenty Regional Council* EnvC Auckland A135/2000, 27 November 2000 at [84]–[85]; *Rotorua Bore Users Assoc Inc v Bay of Plenty Regional Council* EnvC Auckland A138/98, 27 November 1998 at 50–51; and *Golden Bay Marine Farmers v Tasman District Council* EnvC Christchurch W42/2001, 27 April 2001 at [418].

68 Andrew Hayward "The Hazardous Substances and New Organisms Act, Precaution, and the Regulation of GMOs in New Zealand" [2005] 9 NZJEL 123 at 146.

69 At 153.

70 Hazardous Substances and New Organisms (Methodology) Order 1998, cls 29–35.

the different regime of the RMA,[71] and emphasised the importance of interpreting precautionary provisions in the particular statutory context in which they arise.[72] In that case, the contextualisation of s 7 in terms of the specific application being made under the Act meant that its meaning was not as it may have appeared on its face.[73] As noted above, the EEZ Act bears much greater resemblance to the RMA than the HSNO Act. As such, it is likely to be more fruitful to consider the effect of s 61(2) in the context of a regime that is of similar character to the RMA. Furthermore, the judgment in *Bleakley* should tell us that the meaning of s 61(2) it to be ascertained in light of its integration with other key provisions and processes of the EEZ Act.

That said, some useful general points can be extracted from case law under the HSNO Act. The High Court has treated a direction to an expert decision maker to be cautious as one that relates to its discretion in making a substantive decision, and as a matter of weight.[74] The direction has also been treated as requiring a decision to be guided closely by regulations that have passed through a public participatory process.[75] Although it is difficult to see the equivalent provision in the EEZ Act as a matter to which discretionary weight can be assigned (for reasons discussed in a moment), it is illustrative that the provision in the HSNO Act has not been seen as a direction to alter the standard or burden of proof when finding facts. A more general point to come out of *Bleakley* is that a carefully worded statutory expression of caution should not be conflated with the international precautionary principle (if, indeed, a precise formulation of this is possible).[76]

VI A PRECAUTIONARY PRINCIPLE UNDER THE EEZ ACT

There are obvious parallels between the consenting regimes under the RMA and the EEZ Act. The basic structures of the regimes have been compared earlier. Both require a decision maker to consider the effects of a proposed activity, which are defined as including effects of low probability and of variable impact.[77] Scientific uncertainty as to the occurrence and extent of effects is therefore a consideration that is inbuilt into the concept of a potential effect in both regimes. Consequently, the underlying logic for recognising a precautionary standard and burden of proof (or, alternatively, the abandonment of proof in favour of the Court's expert evaluation) under the RMA, as developed in

71 *Bleakley v Environmental Risk Management Authority* HC Wellington CIV-2010-485-823, 16 December 2010 at [39]–[72].

72 At [152] and [160].

73 At [160]–[167].

74 *GE Free NZ in Food and The Environment Inc v Environmental Risk Management Authority* [2011] NZRMA 45 (HC) at [11].

75 At [13]–[14].

76 *Bleakley*, above n 71, at [152].

77 RMA, s 3(f); and EEZ Act, s 6(f).

McIntyre, *Shirley* and other cases, would appear to apply equally under the EEZ Act. Similarly, the existence of a catch all consideration in s 59(2)(m), being any other relevant matter necessary to determine an application, suggests that the case law on the equivalent provision under the RMA may be highly persuasive.[78] The *McIntyre* interpretive tradition under the RMA has been willing to see an extra-statutory) precautionary principle (that is, the international law conception) as a valid matter for consideration under that section, and there would appear to be no additional barrier to that logic contained within the EEZ Act. In fact, while the EPA has been reticent to state explicitly that the character of sustainable management in the EEZ is the same as or different to that under the RMA, in practice it emphasised the close similarities.[79] However, the adoption of a specific statutory expression of precaution may lead the Courts to interpret the EEZ Act in line with cases like *Shirley*,where the Environment Court held that the international conception of precaution is confusing and of little use given that the RMA already contains its own inbuilt mechanism for assessing risk.[80] That inbuilt mechanism is even more obvious in the EEZ Act.[81]

There are a number of criticisms that can be made of the case law that has developed around precaution under the RMA.[82] There is also not yet a single settled approach to any of the questions surrounding the correct standard of proof, burden of proof, or the role of precaution in the judgment of a consent authority.[83] However, such questions are beyond the scope of this article. The important point for present purposes is that the structure and concepts underpinning the approach of the EEZ Act to scientific uncertainty are sufficiently similar to the RMA for the various general approaches of the courts to be equally valid under both regimes.

One may ask what the additional specific information principle in s 61(2) can add to the precautionary approach present in the RMA. The introduction of specific wording in the EEZ Act is clearly significant: as the Parliamentary Commissioner for the Environment has stated: "Uncertain and inadequate information on the effects of marine activities is likely to be the norm rather than the exception, so how these principles are expressed is extremely important."[84]

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78 To the extent that they related to the natural, and not physical (man-made), environment.

79 *Chatham Rock*, above n 22, at [48].

80 *Shirley*, above n 18, at [222].

81 While writing this article, this view has been corroborated by a third consenting decision made under the EEZ Act in *OMV*, above n 22. At [334] it was noted that international instruments do not require considerations additional to the criteria and information principles set out in the Act.

82 See Severinsen, above n 62; and Greg Severinsen "Letting our Standards Slip? Precaution and the Standard of Proof under the Resource Management Act 1991" (2014) 18 NZJEL 173.

83 See Nolan, above n43, at 1186; and Kirman, Gould and Somerville, above n 43, at 3.

84 Parliamentary Commissioner for the Environment, above n 16, at 9.

The EPA in the *Trans-Tasman Resources* and *Chatham Rock* decisions made some valuable interpretive findings in relation to the Act as a whole. However, while its comments concerning the way in which the precautionary principle fits within the wider context of the Act are useful, they are also general in character. It was held, for example, that the language used in s 61(2) is directive and absolute,[85] that the information principle concerning caution is "a 'lens' through which [it] must view the proposal to determine if it meets the purpose of the Act"[86] and that "the taking of risks in this environment is not encouraged".[87] There appears to remain scope for argument as to the correct role of the section in the decision making process. In particular, there are at least three ways in which one may interpret the direction in s 61(2): as a procedural direction to consider information in a cautious way when finding facts, as a matter to be weighed among others in an overall judgment or as a direction to implement a concrete response to any uncertainty. The question arises because it is not immediately apparent whether the direction has procedural or substantive value. In other words, it is unclear whether it requires the EPA to be cautious when finding facts or when exercising its judgment, or both.

The relationship between fact finding and discretionary judgment under the RMA is relatively settled. As the Environment Court noted in *Ngati Kahu Ki Whangaroa Co-operative Society Limited v Northland Regional Council*, "the Court makes a judgment on … an application after finding facts".[88] The process of weighing matters in s 104 of the RMA is, while difficult in practice, also relatively clear on a conceptual level. A consent authority uses its expert discretionary judgment to assign weight to various listed matters according to relevance and importance, with all being subject to the purpose and principles of the Act in pt 2. The single purpose of the Act feeds into a single weighing exercise and results in a single overall judgment to grant or decline consent.

This process appears more complex under the EEZ Act. While the Act also has a single purpose for most activities,[89] the ways in which the purpose is achieved is then spelt out in a way not found in the RMA:

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85 *Trans-Tasman Resources*, above n 17, at [116] and [139].

86 At [775].

87 At [139].

88 *Ngati Kahu Ki Whangaroa Co-operative Society Ltd v Northland Regional Council* [2001] NZRMA 299 (EnvC) at [161].

89 EEZ Act, s 10. Confusingly, a 2013 Amendment Act will (when the relevant provisions come into force) introduce a second purpose that applies to discharge and dumping activities. It is not clear whether both purposes apply to these activities, or whether the second purpose supplants the purpose of sustainable management.

10 Purpose

(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.

…

(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.

The relevant decision making criteria described in subsection (a) above in the context of marine consents are found in s 59 of the Act, which provides for similar kinds of matters as found in s 104(1) and pt 2 of the RMA. However, while the information principles described in subsection (b) and found in s 61 do not have an equivalent in the RMA, and appear to be based rather on the similar provision in the Fisheries Act, they are clearly intended to be as important to the achievement of the Act's purpose as the matters in s 59.[90] It is not immediately apparent how the EPA is expected to integrate these two sets of considerations to come to a conclusion as to whether marine consent should be granted. Section 62, which provides for the EPA's overall broad judgment, offers scant guidance. The section simply provides that the EPA may grant or decline consent, or grant consent in part or with conditions, *after* complying with both of ss 59 and 61.

A Precaution as a Procedural Information Principle

Firstly, it is possible to see the information principles in s 61 as being procedural, while the matters in s 59 are substantive. On this view, as long as all information is tested in accordance with the methodological requirements of s 61, these information principles cannot then affect or guide the weight to be assigned to the substantive matters in s 59. In other words, the information principles could be seen to apply to the treatment of information at the fact finding stage (in, for example, establishing the existence of potential effects). The substantive matters in s 59 are to be weighed only after such facts have been established and this discretion would not then be constrained by consideration of the information principles in s 61. On this view, the two steps of applying information principles and weighing the decision-making criteria are separate and consecutive. One applies to the fact finding process, the other to the subsequent exercise of discretion.

It is straightforward to see the requirement to use the best available information as a procedural requirement, which has effect during the fact finding process rather than at the point where the EPA exercises its discretion. The powers to request information, obtain advice and commission reports are all measures that are relevant to the stage when the EPA is hearing evidence and thus considering the facts before it. Similarly, the obligation to base decisions on the best available information can comfortably be interpreted as referring to the process by which the EPA decides on the most persuasive set of facts, to which it will *then* apply weight. The fact that a discretionary judgment must

90 *Trans-Tasman Resources*, above n 17, at [139].

be based on the best available information means that information must be accepted as such before a judgment is made. This is consistent with the way in which these principles were treated by the EPA in the *Trans-Tasman Resources* decision.[91] The direction to take into account any uncertainty in information should also be seen simply as an instruction to note any uncertainty that remains in the factual scenario that is adopted by the EPA, rather than a substantive direction to treat uncertainty in any particular manner (although in practice this may often legitimately be discussed in conjunction with the direction in s 61(2)).

It is, however, more difficult to see the principle relating to precaution in this light, because it has substantive rather than procedural value. The EPA is required to "*favour* caution and environmental protection" in its substantive decision where information is uncertain or inadequate, not simply have regard to it or take it into account.[92] There is one, ultimately unconvincing, way in which this direction could be seen as a procedural requirement only. One could argue that it is a vague reference to the standard or burden of proof to be applied when proving the existence of potential effects. For example, one can imagine an opponent to a proposal disputing an applicant's assertion that an activity would cause no adverse effects. The opponent might then be able to show that there was uncertainty in the information provided by the applicant. In this scenario, the direction to favour caution may mean that the EPA has an obligation to prefer the evidence of an opponent, require the applicant to disprove the assertion of the opponent, or at least to refrain from accepting an applicant's evidence if it meets only an ordinary civil standard of proof. There is a hint in the *Chatham Rock* decision that favouring caution impacts on the proof of potential effects, given that the EPA cited s 61(2) as a reason to accept that certain ecosystems were rare.[93]

Although this approach may sound sensible, and in line with decisions such as *McIntyre* under the RMA that have recognised a sliding scale of proof, the argument in some cases may offend the separate requirement in s 61 to base decisions on the best available information. If, for example, an applicant's evidence concerning potential effects was accepted on the balance of probabilities as being true, yet contained some uncertainty (that is, it was not proved to a higher, criminal standard), it would still amount to better or more persuasive evidence than that tendered by an opponent. Adopting less persuasive evidence would be in breach of the requirement to use the best available information, a requirement that ultimately is appropriate in a regime with an inquisitorial and administrative character. A statute should not be constructed in a way that produces internal inconsistency, especially inconsistency within a single section that forms an integral part of achieving the purpose of the Act. However, simply because evidence may be more persuasive or "better" does not mean that it contains no uncertainty. Caution is still needed to respond to any remaining uncertainty irrespective of whether a standard of proof has been met or a burden of proof has been discharged.

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91 *Trans-Tasman Resources*, above n 17, at [117]–[128].

92 EEZ Act, s 61(2) (emphasis added).

93 *Chatham Rock*, above n 22, at [895].

B Integrating Precaution with the Question of Weight

One is left with the perplexing result that the precautionary information principle, having substantive value, must somehow be reconciled with or integrated into the matters that are required to be weighed under s 59. One possible way to resolve the confusion, while recognising that the principle has substantive and not just procedural value, may be to treat it simply as another matter to take into account under that section. This has effectively been done by some cases under the RMA, where the precautionary principle has been recognised as a relevant matter.[94] The approach would retain the simplicity of having a series of matters that can all be weighed together by the EPA using its expert judgment.

However, this approach begs the obvious question: if it were intended to be treated as just another matter to which weight could be given, why did Parliament chose to include precaution in a separate information principles section distinct from those other matters? The approach would also potentially undermine the strength of the precautionary direction in s 61, by enabling precaution to be balanced against (and potentially outweighed by) other factors. This has been the general experience under the RMA, where the Courts have recognised but declined to implement an international law conception of the precautionary principle and often sought to resolve scientific uncertainty by instead imposing conditions.[95]

Furthermore, treating precaution simply as another matter to be weighed would be to ignore the absolute wording of the statutory obligation. Section 61 provides highly directive language, as noted by the EPA: the decision maker *must favour* caution and environmental protection in the event of uncertainty or inadequacy in information, not just have regard to or weigh the need for caution.[96] It is thus an obligation that must operate independently from the discretionary weighing exercise under s 59. Analogous objections have been made by the Supreme Court in the *King Salmon* decision, where it was held that treating directive policies in the NZCPS as simply another matter to be weighed ignores the firm direction in the Act that such policies must be "given effect to" essentially as bottom line requirements.[97]

A sensible interpretation of s 61(2) is therefore that it requires some concrete action, in the event of scientific uncertainty, to address that uncertainty. It does not simply require caution to be weighed,

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94 For example, in *McIntyre*, above n 48, at 106.

95 For example, in *Aquamarine Ltd v Southland Regional Council* EnvC Christchurch C126/97, 15 December 1997 at 147.

96 *Trans-Tasman Resources*, above n 17, at [116]. In this regard the obligation does not reflect the precautionary provision in the HSNO Act, where caution must simply be taken into account (and potentially discarded): for the meaning of "take into account" under that Act see *Jackson v Te Rangi* [2014] NZHC 2918 at [79]; and Bleakley, above n 71, at [72].

97 *King Salmon*, above n 29, at [80] and [122]–[127].

and possibly outweighed, in a balancing exercise.[98] In this sense, precaution cannot get lost amongst considerations in favour of economic development, and the section can be interpreted as a relatively liberal approach to precaution. This approach is consistent with the EPA's implicit findings that s 61(2) has at least some substantive value. In other words, caution is to be favoured when making a substantive decision as to whether consent should be granted, not simply (and perhaps not at all) when deciding whether a potential effect exists: "We have decided on the evidence that favouring caution and environmental protection in light of the uncertainty and inadequacy of the information available means that we have refused consent."[99]

C A Concrete Precautionary Response

It is suggested that the concrete action required by s 61(2) can be achieved most appropriately through one of two responses. Firstly, in cases where there is uncertainty as to whether effects will be large, widespread or irreversible, favouring caution and environmental protection may require consent to be declined outright. This is generally consistent with the treatment of s 61(2) in the *Trans-Tasman Resources* and *Chatham Rock* decisions; although the EPA did not place thresholds or parameters around when caution would require consent to be declined, it considered on the evidence that the uncertainty and inadequacy of information meant this would be the result. Because the information principles operate independently of the matters in s 59, consent may still be legitimately declined even if considerations of economic benefits would otherwise have outweighed considerations of environmental protection.[100] That favouring caution can result in a refusal of consent is contemplated directly by s 61(3) of the Act. If caution cannot be favoured in the event of uncertainty, then s 10 stipulates that the purpose of the Act cannot be achieved, and consent must be declined.[101]

Secondly, a precautionary response could be achieved in some cases by declining an application only in part or by imposing conditions to address uncertainty. The ability for conditions to amount to a favouring of caution is also contemplated by s 61(3), where the imposition of an adaptive management approach is mentioned as one way (depending on the circumstances) in which the obligation in s 61(2) could be discharged.

The strength of conditions and therefore precautionary outcomes under the Act will be largely dependent on the meaning of the term favour. This term was likely deliberately left vague, to enable responses to differ according to the circumstances of the case. While the direction to favour caution should certainly not be watered down, the meaning of the term favour could legitimately vary

98 *Trans-Tasman Resources*, above n 17, at [139].

99 *Trans-Tasman Resources*, above n 17, at [141].

100 A point hinted at by the EPA: see [139].

101 While it is curious that the decision making criteria are not explicitly subject to the purpose of the Act as they are under the RMA, it is axiomatic under a purposive approach that the purpose of a statute should inform the discretions made under it.

according to the nature of potential harm. This echoes Professor Gillespie's comment that a precautionary response should be proportionate to the threat.[102] How the term is interpreted may depend on whether an application presents uncertainty relating to the matters specifically emphasised as important through their inclusion in ss 10 and 59, and also depend on the substantive provisions of regulations.[103] At the stronger end of the spectrum of precaution, where potential impacts could be moderate, high or irreversible, conditions should be imposed that require certain effects to be avoided. While the Act does not specifically require this,[104] it is still an action that is available to the EPA. At the weaker end of the spectrum, where effects were of lower magnitude and known to be reversible, favouring caution may well be achieved by the imposition of mitigation or adaptive management conditions. It is noteworthy that the EPA in the *Trans-Tasman Resources* decision appears to have doubted whether an applicant's flexibility to change an approach before adverse effects become irreversible can amount to "adaptive management", which is more accurately seen as the staging of a development in terms of duration, scale or intensity.[105] While adaptive management conditions are not the only kind of conditions that can be imposed to favour caution and environmental protection in the event of uncertainty, the practical ability of an applicant to fulfil conditions may determine whether they are, in reality, sufficient to meet the obligation in s 61(2).

It is also worth reiterating that the precautionary principle should not be seen as a general tool of environmental protection or management in the same sense that sustainable management is. It is a narrower concept. Precaution relates not to adverse effects per se, only to uncertainty and inadequacy in information. For example, if an alleged effect of a certain magnitude were accepted to be near 100 per cent certain to occur, and was weighed against other matters in s 59 with no ultimate impact on the outcome of the application, then the directive in s 61(2) could not itself justify a change to that outcome.

Seeing the information principle in s 61(2) as requiring concrete action, through the use of conditions that are proportionate to the uncertainty in question (or by declining consent), is the most defensible way to approach precaution under the EEZ Act. This approach recognises that the direction is concerned with substantive rather than procedural responses, operates independently of the weighing exercise in s 59 and uses strongly directive and absolute language. However, it also recognises that the actual response required will vary according to the context, including the level of uncertainty, the potential impact and scope of an effect and the importance assigned to that effect under the Act and regulations. Exactly what response is required will depend on how these factors

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102 Gillespie, above n 1, at 373.

103 For example, if a proposal threatens rare and vulnerable ecosystems.

104 See Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill (321-2) (select committee report) at 14.

105 *Trans-Tasman Resources*, above n 17, at [145].

interact.[106] As a general statement, it is suggested that *any* uncertainty as to either the occurrence of an effect, or the severity or scope of impact, triggers the need for a precautionary response. The obligation to favour caution applies not only when a certain threshold of uncertainty exists. What exactly this response should be then depends on an expert and discretionary assessment of how significant that uncertainty is. Its significance should not be determined only by how uncertain an effect is, but by an interaction between the extent of uncertainty (including as to occurrence and as to impact), the extent of the impact if it occurred and the importance placed on that impact in substantive provisions of the Act and regulations. It is not suggested that this interaction is capable of resolution by assigning each factor a numerical score or value. As under the HSNO Act and the RMA, Parliament has intended that risk management is to be achieved through the expertise and experience of a specialist body.[107] However, in general terms, a more robust precautionary action should be needed where there is greater uncertainty, where the potential impact is more severe or where emphasis is placed under the Act on avoiding that kind of effect.

The approach is also consistent with the RMA because it does not upset the case law that has developed under it concerning the role of precaution in the standard and burden of proof and in the overall broad judgment of the consent authority. It simply reiterates that, when setting conditions, no aspect of uncertainty can be ignored or remain unaddressed. The requirement to favour caution where there is inadequacy in information can be seen as a reminder that uncertainty can arise not just in the information that is tendered, but can also be inferred from the absence of information.

VI AN ANALYSIS OF THE EEZ ACT IN THE CONTEXT OF THE DEEP SEABED MINING

While the *Trans-Tasman Resources* and *Chatham Rock* decisions have been referenced above in terms of their general findings of statutory interpretation concerning s 61(2), the article now considers them as case studies of precaution under the Act in the context of seabed mining. The EPA declined consent for the TTR proposal in June 2014, and an appeal by the applicant challenging the decision in the High Court was withdrawn. Similarly, the Chatham Rock application to mine phosphate nodules on the Chatham Rise was refused in February 2015. Both decisions rested heavily on the treatment of uncertainties in information.

A Mining and the EEZ Act

While New Zealand's offshore petroleum sites are well known and substantial oil and gas resources are currently in production, other mineral reserves are also known, even if not yet exploited. These include iron sands, which are sands that have high concentrations of titanomagnetite and are

106 A wide variety of interactions are possible. For example, there may be uncertainty as to whether an effect would occur, but no uncertainty as to the scope or severity of its impact if it *were* to occur. On the other hand, there may be little doubt that an effect would occur, but significant uncertainty as to the impact it would have.

107 *GE Free* NZ, above n 78, at [13]–[14].

potentially valuable as sources of iron for high purity steel production.[108] New Zealand has large offshore iron sand resources from Kaipara to Wanganui, stemming from the Taranaki volcanic area and creating the iconic west coast black sand beaches.[109] Iron sands have been mined for decades in the onshore coastal environment[110] and a substantial resource has been located beyond New Zealand's territorial sea in the EEZ.[111] A significant untapped phosphate resource also exists in New Zealand's offshore waters, notably on the Chatham Rise. While on a practical level it is difficult and costly to exploit reserves from the deep seabed, phosphorite nodules present a potentially lucrative resource for the production of fertiliser and have become commercially viable to extract.

In respect of iron sands, Trans-Tasman Resources received mining permits under the Continental Shelf Act (which now effectively imports the requirements of the Crown Minerals Act 1991) to mine an area in the EEZ off the South Taranaki coast, which directly abuts the boundary line with the territorial sea.[112] However, these authorisations did not affect the need to obtain consent for restricted activities under the EEZ Act, and applications for marine consent to mine were lodged with the EPA in October 2013. In respect of phosphate nodules, Chatham Rock Phosphate also obtained permission under the Continental Shelf Act and was required to apply for marine consent under the EEZ Act.

No one has yet attempted to mine iron sands from the deep seabed in New Zealand's EEZ, nor harvest phosphorite nodules. The technology used to mine in the deep sea environment is different from mining near the coast (which makes use of conventional dredges). In short, the process for sand mining in the deep seabed context involves suction dredging.[113] An area of seabed is required to be excavated in a swath 10 to 20 m deep, which exposes the iron sand resource beneath. This is done in strips. Using suction, the sand is then moved from the ocean floor to a processing ship above. Here, magnets are used to separate the iron ore from the remainder of the sand (amounting to roughly 90 per cent by mass), which is then re-deposited on the sea floor (in the order of approximately 45 million tonnes per year, as proposed). The iron ore is then processed.

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108 Tony Christie and Bob Braithwaite *Mineral Commodity Report 15 – Iron* (New Zealand Petroleum and Minerals, Minerals Commodity Report 15) at 3 and 14.

109 Ibid, t 5.

110 For example, at Taharoa iron sand has been mined by dredging beach and dune sand.

111 *Trans-Tasman Resources*, above n 17, at [42].

112 Under s 5AA of the Continental Shelf Act 1964, the Crown Minerals Act 1991 regime is deemed to apply beyond the coastal marine area if applications were lodged after a certain date.

113 Described in *Trans-Tasman Resources*, above n 17, at [10]–[29]. See also National Institute of Weather and Atmospheric Research *Expert Risk Assessment of Activities in the New Zealand Exclusive Economic Zone and Extended Continental Shelf* (Ministry for the Environment, Wellington, 2012) at 52.

The process proposed for mining phosphorite nodules shares many features with that of iron sands. It also involves suction, using a trailing drag-head to retrieve material from the seabed, after which the material is processed at sea. The waste material is re-deposited on the seabed using a discharge pipe with a diffuser.[114]

Both proposals required marine consent for a number of activities restricted by the Act.[115] Section 20 of the Act requires that, unless an activity is classed as permitted in regulations, marine consent must be obtained for (among other things) the removal of non-living natural material from the seabed, the disturbance of the seabed in a manner likely to have an adverse effect on the seabed or the destruction, damage or disturbance of the seabed in a manner likely to have an adverse effect on marine species or their habitats.[116] The Act also now appears to require marine consent to be obtained for any discharge of harmful substances or for dumping, and at the time of the *Trans-Tasman Resources* decision the EPA considered that effects of discharges were effects that fell within its jurisdiction.[117]

B Potential Effects and Uncertainty

Many of the effects of deep seabed mining are untested in the real world setting, and in this way the role of the precautionary principle is highly relevant to such proposals. These potential effects and the degree of uncertainty in related information were seen by the EPA as a key reason to decline consent in both applications.[118]

The categories of effects where uncertainty was held to give rise to the application of the Act's precautionary principle were manifold.[119] In the *Trans-Tasman Resources* decision, some uncertainty was held to exist concerning the effects of the re-deposition or dumping of sand to the seabed, which had the potential to have wider effects.[120] It was found that plumes may increase total suspended

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114 *Chatham Rock*, above n 22, at ch 5.

115 *Trans-Tasman Resources*, above n 17, at 1; and *Chatham Rock*, above n 22, at 1.

116 EEZ Act, s 20.

117 Exclusive Economic Zone and Continental Shelf (Environmental Effects) Amendment Act 2013, s 11; and *Trans-Tasman Resources*, above n 17, at [98]–[103]. The position is not currently clear, given that amendments have come into force allowing the creation of regulations concerning dumping and discharges, but other amendments restricting dumping and discharges have not yet entered into force. Furthermore, s 20 of the EEZ Act continues to provide that certain discharges and dumping remain within the purview of the Maritime Transport Act 1994.

118 *Trans-Tasman Resources*, above n 17, at [773]; and *Chatham Rock*, above n 22, at [826]–[827].

119 For example, see *Trans-Tasman Resources*, above n 17, at [846].

120 At [290].

sediment levels well beyond the direct mining site.[121] Experts agreed that returned sand could spread and settle on an area wider than the directly mined area, thus smothering a much larger region of benthic life and have uncertain flow on effects.[122] Mining would also create a plume in the water column, which could shade phytoplankton, and interfere with the food chain that forms the foundation of local ecosystems.[123] In *Chatham Rock*, uncertainties were found in relation to the nature of the local environment, environmental baselines, and the spatial and temporal extent of the indirect impacts of mining.[124]

The most significant point for present discussion is not the specific effects that were alleged or found. It is rather that there was held to be a general lack of practical knowledge as to whether the proposal could have those, or indeed other, effects in such a remote area where human activity has hitherto been limited. Ecosystem interactions may be more complex than can be ascertained from analysing a project footprint or the area immediately adjacent. Thus the EPA held in the *Trans-Tasman Resources* decision that:[125]

> [T]here is an acknowledged lack of baseline data, few quantitative environmental performance parameters and we are being asked to trust others to come up with a monitoring regime and appropriate performance parameters … We find that there is considerable uncertainty in the information provided as to both the nature of the environment and the way the mining operation might affect it. … A feature of this application is the considerable uncertainty as to the nature of the marine environment that might be affected by the proposal and the environmental performance standards necessary to ensure that significant adverse effects are avoided, remedied or mitigated. … [W]e do not know if the effects on the receiving environment that would have already been created would be irreversible, i.e. they may have already caused irreversible damage such as to biogenic areas, permanently affected commercial and recreational fishing interests, affected iwi's existing interests and relationship to Tangaroa and affected marine mammals.

Similar findings were made in *Chatham Rock*, where the EPA held that:[126]

> [I]t is incontestably the case that there remained significant gaps in the data and information provided about the consent area's marine environment as well as uncertainty about the impact of the proposal on existing interests and the environment.

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121 At [290].

122 At [272] and [278].

123 At [228].

124 *Chatham Rock*, above n 22, at [xv], [823]–[827] and [860]. Although the actual (near certain) effects of the mining (destruction of rare biological communities) also received particular emphasis.

125 *Trans-Tasman Resources*, above n 17, at [137]–[138], [129] and [846].

126 At [823].

C Mining and Section 61(2)

This article is not intended to be an expert appraisal of the quality of evidence in these particular cases and does not comment on the merits of the applicants' and opponents' cases or evidence. However, it seeks to offer some thoughts on how the precautionary principle in the Act has been applied in the context of mining given that substantial scientific uncertainty was found by the EPA as a matter of fact.

The EPA made some valuable comments on the precautionary provisions of the Act and other features can be inferred from its decision. Still further observations can be made by analysing the statutory language. Discussion can usefully be categorised into three areas: the kinds of uncertainty that trigger the obligation to favour caution and protection, the extent to which adaptive management is an appropriate response to uncertainty and the ways in which caution and protection may in practice be favoured.

Firstly, the requirement to favour caution and environmental protection is triggered in the Act by any uncertainty in information. Some common sense parameters are clearly necessary here; for example, an opponent could not point to uncertainties or inadequacies contained within its own evidence to justify a cautious or protective approach, or point to interpretative uncertainties in the Act or regulations. The focus needs to be on uncertainties as to the effects of an activity. However, uncertainty is not limited to particular kinds or classes of uncertainty and could legitimately encompass, for example, any doubt as to whether there would be a cumulative effect. Such impacts are provided for specifically in the definition of an effect, which mirrors the broad and inclusive definition under the RMA.[127] For example, evidence of a highly dynamic natural marine environment where sands already shift and redistribute should not be taken as proof that anthropogenic disturbance of sand would have no further or cumulative impact.

It is also notable that the principle in s 61(2) appears to be more liberal than many formulations under international law. It requires only that there be *any* uncertainty in the information before the EPA before it is obliged to favour caution and not some form of fundamental scientific ignorance of causative relationships. To provide a hypothetical example, the effects of an oil spill on marine bird life may be well understood, but the principle would still require concrete action to favour caution if there were some doubt as to whether mitigation strategies would be effective in preventing such spills. This is better than some case law under the RMA concerning sand mining which has seen the precautionary principle as relevant only if there is a basic lack of information or understanding and not where there is uncertainty as to whether an effect actually will or will not occur:[128]

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127 RMA, s 3(f); and EEZ Act, s 6(f). For the wide and non-exhaustive scope of an effect under the RMA, see *Baker Boys Ltd v Christchurch City Council* [1998] NZRMA 433 (EnvC) at [45].

128 *Sea-Tow*, above n 54, at [462].

> A precautionary approach should only be applied where there is scientific uncertainty or ignorance about the nature or scope of environmental harm. Conflicting opinions about whether a proposal would result in adverse effects, where the expert witnesses were in no doubt about how the effects arise, what creates them, what might cause them, are not lack of scientific knowledge.

Positively, this approach has not been replicated under the EEZ Act, where Parliament has provided a broad and clear direction to act in the face of *any* uncertainty in information. If a decision maker considers that there exists an adequate understanding of the relationship between, for example, the re-deposition of mining sediment and adverse effects on marine life, it should still take some concrete action to address any doubt as to whether the proposal would result in such effects. This expansive understanding of uncertainty is reflected in the *Trans-Tasman Resources* decision, where the EPA doubted that the applicant possessed sufficient flexibility to reverse any adverse effects.[129] In other words, in contrast to some jurisprudence that has developed under the RMA, the need for precaution was treated as arising not only where there exists a fundamental lack of scientific understanding but also where there is any doubt as to whether an effect will or will not end up occurring (due to, for example, an applicant's practical capabilities to remediate). This approach is comprehensive and is to be preferred.

Similarly, some concrete action should be required irrespective of whether there is a high probability of a low impact effect or a low probability of a high impact effect, although the action required to favour caution may be different depending on the facts. Generally, the more certain an effect is (even if it is of high magnitude), the more the focus should shift from the need for precaution under s 61(2) to the substantive weighing of effects under s 59. In other words, as an effect becomes more certain, the power of the precautionary principle to provide environmental protection becomes more limited. This power is, and rightly so, transferred to the substantive regulations and principles under the Act. Thus, for example, a negligible level of uncertainty could legitimately be met with a negligible precautionary response, even if the magnitude of the effect were high.[130] In such cases, it would be essential for regulations to provide strong policy guidance or regulatory standards rather than relying on precaution.

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129 *Trans-Tasman Resources*, above n 17, at [145].

130 This is not to say that the weight to be placed on that effect would be negligible under s 59, only that the uncertainty associated with it would receive little response under s 61. For example, there may be very little doubt that a very high impact effect would occur. Here, precaution can play little role, because there is little uncertainty to address. However, it may be likely, depending on the other matters to be weighed under s 59, that this effect would be given significant and possibly determinative weight in a decision to decline consent under the overall broad judgment in s 62. In contrast, an effect may be of very small potential impact but there may be a great deal of uncertainty as to whether it would occur. In that case, the effect may receive little weight in the overall broad judgment but would require some form of precautionary response to address that uncertainty under s 62. This response may in practice be insignificant because it would be proportionate to the threat.

Uncertainty in information may arise not only from the assertions of probability made by expert witnesses or from the absence of information on a certain effect. It could also arise from the degree to which the EPA is convinced that an assertion of fact is true or from a witness' self-evaluation of confidence. Such uncertainties are often not capable of mathematical precision but remain worthy of a concrete response. While the degree to which a matter has been proved may be a relevant matter under the RMA in determining the weight given to a potential effect, it is suggested here that the EEZ Act requires, in addition to the assignment of weight, a concrete response proportionate to that uncertainty. It is already intrinsic in the purpose of the Act that adverse effects be mitigated, but the s 61(2) direction emphasises that this action be targeted at the uncertainty involved (the prevention of risk) rather than the effect itself (reducing the severity of the impact).

One more point can be made in relation to the kinds of uncertainty that trigger the Act's precautionary principle. The obligation to favour caution and protection is triggered by uncertainty in information. The broad scope of this term, which is not defined in any meaningful sense in the Act,[131] may be seen as a deliberate choice. It would have been open to Parliament to refer instead to uncertainty as to the adverse effects of an activity, but it did not. An interesting possibility is that any uncertainty as to whether the *benefits* of an activity will be realised may also require, under s 61(2), a decision either declining consent or the imposition of conditions to protect the environment. In other words, if the EPA were not convinced that a project would deliver projected economic benefits, this may trigger an obligation to impose conditions that would be more protective of the environment than if positive economic effects were more certain.[132] In the *Trans-Tasman Resources* decision, the EPA found that some forms of alleged economic benefits from mining were uncertain and clearly placed weight on this finding when weighing the various s 59 factors in its overall judgment.[133] But it did not comment on whether the obligation in s 61(2) would require this uncertainty to be met with a precautionary response over and above its s 59 weighting.[134]

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131 In s 4 "information" is simply defined as "including analysis".

132 Despite a confusing reference to social well-being in *Trans-Tasman Resources*, above n 17, at [752], the purpose of the EEZ Act does not include reference to social and cultural matters but is limited to enabling people to provide for economic well-being.

133 At [753].

134 That said, even if uncertainty as to positive effects could be interpreted to require a precautionary response under s 61(2), it is difficult to see how this could be implemented in practice. The content of any conditions are expressly limited to the protection of the environment rather than the attainment of economic goals, because s 63(1) empowers the EPA to impose only conditions that "deal with adverse effects of the activity". In contrast to the broader powers to impose conditions under s 108 of the RMA, there may be little room in the EEZ Act for the acceptance of Augier conditions if they relate to the attainment of positive economic effects rather than the avoidance, remediation or mitigation of adverse effects. This is despite the apparent willingness of the EPA in the *Trans-Tasman Resources* decision to accept such a condition in future. Therefore it is more persuasive to see the reference to uncertainty in information as relating only to uncertainty concerning adverse effects.

Secondly, the express provision of adaptive management under the Act should not be seen as a silver bullet to address precaution. As the Parliamentary Commissioner for the Environment noted in her submission on the EEZ Bill, adaptive management and precaution "can work together and are largely interdependent", but the former is "not always appropriate".[135] The Act simply requires the EPA to consider whether adaptive management conditions might allow consent to be granted if it would otherwise be refused, and does not provide guidance on when this might be the case. This should not be confused with the idea that a "learning as you go" approach is sufficient to manage all risks that are worth considering, even if there is some evidence that potential effects are reversible.[136] The relatively robust parameters around adaptive management under the RMA, as set out by the Supreme Court in *King Salmon*, were held by the EPA to be persuasive, although not necessarily determinative, in the context of the EEZ.[137]

A sensible interpretation of s 61(2) and one consistent with *King Salmon* is that it requires a response proportionate to the uncertainty, in terms of the potential magnitude, scope and occurrence of an effect. In some cases, proportionality may demand only that an activity proceed on a reduced scale, intensity or timeframe, but this would not be sufficient if this trial version would have the potential for large or irreversible effects, or effects that may not become noticeable for a period of time. In light of this it is intriguing that the EPA in the *Trans-Tasman Resources* decision rejected the adaptive management approach proposed by the applicant but also noted that staged development may have been appropriate had it been pursued by the applicant, despite significant uncertainties involving potentially serious impacts.[138] Similarly, the EPA in *Chatham Rock* speculated that a robust adaptive management approach may have remedied the uncertainties in information but that this would have frustrated the consent due to questions over its commercial viability.[139] The role of the applicant in rejecting or not considering some adaptive management solutions in these cases suggests that the true ability of adaptive management to fulfil s 61(2) has not yet been fully tested.

An adaptive management regime also requires robust baseline information from which effects can be monitored. In the context of the EEZ, where an understanding of relationships outside the project area may not be understood, such baseline data may be difficult to obtain. Inadequate baseline data

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135 Parliamentary Commissioner for the Environment, above n 16, at 11.

136 *Trans-Tasman Resources*, above n 17, at [145] and [805].

137 *Chatham Rock*, above n 22, at [835]–[836]; *Trans-Tasman Resources*, above n 17, at [800]–[805]; and *Sustain Our Sounds Inc v New Zealand King Salmon Co Ltd* [2014] NZSC 40 at [133].

138 *Trans-Tasman Resources*, above n 17, at [795].

139 *Chatham Rock*, above n 22, at [927].

and consequent trigger points for remedial action were important in the decision of the EPA to decline consent in both the TTR and Chatham Rock applications.[140]

Thirdly, the degree of concrete action required to favour caution may depend on the extent to which the precautionary principle is seen as anthropocentric. In this sense, it is unclear whether there is a difference between the term "caution" in s 61(2) and the term "environmental protection". The inclusion of both terms is confusing. Is caution designed to refer to a broader, human-focused concept than environmental protection?[141] Even if the obligation is considered to relate only to the natural world, different views of the environment are possible. The environment is defined in the Act as meaning the "natural environment".[142] However, when assessing the potential magnitude of an effect, it could be possible to downplay an impact where it did not directly or indirectly affect humans. This is a notable risk in the context of deep seabed mining, where locations are more likely to be isolated from people and communities.[143]

Despite the fact that precaution is potentially more important in isolated environments, because of a fundamental lack of knowledge of baselines and causative relationships, one may run the risk of approaching precaution on an out of sight, out of mind basis. This raises broader ontological questions over our approach to environmental management, and requires one to consider the traditional model of environmental stewardship and newer ideas concerning the intrinsic worth of the natural world.[144] It is a debate that is unlikely to be resolved in the Courts of law, but it is worth remembering that the Act itself is not overtly anthropocentric: it does not require precautionary measures only if an environmental effect on the natural world has flow on effects on people, nor is the concept of the environment characterised only in terms of resources.[145] While a feature of the RMA that is noticeably and worryingly absent in the EEZ Act is reference to the intrinsic worth of ecosystems and water,[146] the EPA has shown itself willing to take a relatively risk-averse approach in environments where direct human contact is minimal.

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140 *Trans-Tasman Resources*, above n 17, at [137]–[138], [129] and [846]; and *Chatham Rock* at [413], [541] and [823]–[824].

141 See Parliamentary Commissioner for the Environment, above n 16, at 10.

142 EEZ Act, s 4, definition of "environment".

143 Although they may also be located in areas of lower biodiversity, given the generally higher concentration of marine life closer to shore.

144 For a particularly good summary focused on the New Zealand context, see Stephanie E Curran "The Preservation of the Intrinsic: Ecosystem Valuation in New Zealand" (2005) 9 NZJEL 51.

145 EEZ Act, s 4, definition of "environment".

146 See RMA, ss 2, 7(d) and 199.

VII CONCLUDING COMMENTS

As it has been for years under the RMA, the role of precaution under the EEZ Act can be the subject of heated debate. The latter's approach to precaution appears materially similar to that of the former, with the important difference that s 61(2) contains an express information principle requiring the EPA to favour caution and environmental protection in the event of uncertainty in information. On its face it certainly appears to be a strong and liberal expression of precaution and one that provides more transparent and obvious reassurance than the RMA to the public that decisions will be precautious. A sensible interpretation (and one supported by the EPA in its first decisions for marine consent made under the Act) may be that the principle requires a concrete and substantive precautionary response to any uncertainties concerning adverse effects, and one that is independent of the weighing exercise under s 59. This response could be achieved through conditions or by declining consent outright.

Although the ultimate decision on a consent application is one to be made on careful consideration of the facts and all the evidence, this article has offered some further thoughts on how the precautionary principle could usefully be applied, some of which can also be perceived in the EPA's decisions. Firstly, the Act does not limit precautionary responses to cases where uncertainties stem from fundamental ignorance of causative relationships or how effects arise. Such responses must also be sensitive to uncertainties that arise through expert assertions of probability, the absence of information, the persuasiveness of witnesses and self-evaluations of witness confidence. Secondly, adaptive management should not be seen as a solution to the precautionary problem. It is only one means by which uncertainty can be reduced to acceptable levels and will not apply in all cases. Thirdly, treating effects with a human element as more important than those relating only to the intrinsic value of nature is an ever-present risk in the isolated environment of the EEZ and the EPA is to be commended for not having fallen into this trap.

The inclusion of an express precautionary principle in a key piece of environmental legislation is a positive step and reflects a growing awareness of the importance of precaution in the 21st century. However, it is ironic that a principle intended to address uncertainty itself remains uncertain in some areas. While the Act is clear in its requirement that the EPA favour caution and environmental protection in the event of uncertainty, it is unclear what the term favour caution demands in practice and the precise formulation used has no precedent in domestic law. The Act also provides that the information principle in s 61(2) and the decision making criteria in s 59 are equally important in achieving the purpose of the Act but fails to direct how these two sets of considerations are to be integrated in the single consenting process.

The most important uncertainty, however, is the absence of regulations made under the EEZ Act. One is left with a sense that the Act was passed before the regime was fully ready and that applicants and decision makers now find themselves climbing a statutory framework with few regulatory handholds for guidance. It will be challenging in early days for the EPA to make principled decisions on the precautionary responses required, when little policy has been developed on particular activities,

specific geographical areas, the kinds of uncertainties that are unacceptable and the responses needed to favour caution. It is also concerning that regulations temporarily imposing prohibited activity status, on the grounds of precaution, have not yet been promulgated for activities with particularly uncertain and potentially harmful effects.[147] On a positive view, however, this can be remedied. The next few years should hopefully see a proliferation of targeted regulation and a filling of the current policy vacuum. They should also see research bodies move to increase our understanding of our deep seabed and its complex relationships outside specific subject sites, thereby reducing the need for s 61(2) to be applied at all.

147 Such as those for which a prohibited activity status has been recommended by NIWA: see National Institute of Weather and Atmospheric Research, above n 113, at 9, 69, 78 and 93.

STUDENT ESSAY: CARBON EMISSIONS AND ELECTRIC CARS – INTRODUCING THE POTENTIAL OF ELECTRIC VEHICLES IN NEW ZEALAND'S CLIMATE CHANGE RESPONSE

Nathan Jon Ross*

Regardless of the efficacy of New Zealand's emissions trading scheme, a suite of complementary measures will remain necessary if New Zealand is to avoid free-riding on other States' efforts to mitigate climate change. A key growth sector in our emissions profile has been transport. Demand-side measures, such as cycling and public transport, are one side of the coin, and supply-side measures are the other. In particular, New Zealand is extremely well-placed to extract the maximum mitigation potential from electric vehicles (EVs) because of our high and growing use of renewable electricity. This essay assesses the potential role of light EVs in our climate change response, surveying functionality, environmental performance, economics, and market and regulatory barriers. It concludes that targeted government intervention to hasten the uptake of EVs is justifiable. A number of general policy options are then identified for further investigation.

I INTRODUCTION

Debates on mitigating climate change often focus on central pillar policies aimed at economy-wide changes, such as carbon taxes and emissions trading schemes (ETS), which are intended to

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internalise a cost for greenhouse gas (GHG) pollution. However, a portfolio of complementary measures will remain necessary to hasten the transition to a low-carbon future.

In most developed nations, mitigation efforts focus largely on electricity generation. However, as is well known, New Zealand's emissions profile is relatively unusual. Because 75 per cent of our electricity is generated from renewable energy[1] and because renewables are widely expected to be preferred over fossil fuels for meeting any new electricity demand,[2] the four priority areas for mitigation are instead agriculture, transport, stationary energy (process heat and electricity) and industrial processes.[3]

Transport generates two-and-a-half times as much GHG as stationary energy and is a growing component of New Zealand's emissions profile.[4] Between 1990 (the baseline for the Kyoto Protocol)[5] and 2013, transport emissions rose by 69.4 per cent (from 7.4 million to 12.7 million tonnes of carbon dioxide equivalents (CO_2e)) and, as a proportion of New Zealand's total emissions, rose from 12.2 to 15.67 per cent.[6]

Measures to reduce GHGs from transport tend to focus on the demand-side, namely public transport, cycling, walking and urban design. However, despite discrete success stories, behavioural and structural barriers make demand-side mitigation notoriously difficult and sometimes impossible. Promisingly, ongoing technical developments in supply-side measures, fuel-switching from petroleum to renewable biofuels or electricity, have already created real opportunities to simply get around those behavioural barriers.

This essay assesses the potential role of light electric vehicles (EVs) in New Zealand's climate change response. It covers battery EVs (BEVs) and plug-in hybrid EVs (PHEVs) as the two classes of ultra-low carbon vehicle. It does not include hybrid vehicles that are predominantly powered by petroleum (petrol or diesel) nor other vehicle classes such as motorbikes. This essay also surveys

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1 Ministry of Business, Innovation and Employment *Energy in New Zealand* (2014) at 50 and 55.

2 Geothermal and wind generation is generally cheaper for electricity than fossil fuel generation, as evidenced by the ongoing increase in geothermal supply. See Ministry of Business, Innovation and Employment, above n 1, at 55.

3 Ministry for the Environment *New Zealand's Greenhouse Gas Inventory 1990–2013: Fulfilling reporting requirements under the United Nations Framework Convention on Climate Change and the Kyoto Protocol* (April 2015) at viii.

4 At ix.

5 Kyoto Protocol to the United Nations Framework Convention on Climate Change 2303 UNTS 162 (opened for signature 11 December 1997, entered into force 16 February 2005).

6 Ministry for the Environment, above n 3, at viii–x.

potential market barriers that may need to be overcome to improve the uptake of EVs and capitalise on the potential they offer. It concludes that EVs need to and can play an important role in New Zealand's climate change mitigation response, but that government intervention will be required.

II HISTORY

Between 1828 and 1835, EVs were invented independently in Hungry, Scotland, Holland and America. Battery technology improved and by 1897, a fleet of New York taxis was entirely EVs.[7] In 1900, EVs outsold petrol and steam-powered cars. However, the EV market was undermined by the combined effects of longer roads demanding longer range, the discovery of cheap oil in Texas and the development of mass production by Henry Ford. Niche markets began to re-emerge in the 1960s and 1970s and, since the 1990s, growing concerns and regulation regarding air pollution and climate change have gradually seen the re-development of EVs and EV markets.

III CURRENT EV TECHNOLOGY AND ENVIRONMENTAL PERFORMANCE

Most car manufacturers now have one or two BEV or HPEV models in their range, but it still pales in comparison to the vast range of petroleum vehicles currently satisfying the market's diverse preferences. That said, the contemporary EV market is relatively new and is expanding at a promising rate, in part due to government policies to incentivise the uptake of EVs elsewhere around the globe.

The driving range for internal combustion engine vehicles (ICEVs) on one tank of petroleum is generally 350 to 700 km and PHEVs have comparable ranges.[8] The range for BEVs is generally smaller, with most at around 160 to 320 km.[9]

Regarding the environmental performance of EVs, there is a myth in the public arena that EVs have a greater environmental footprint than ICEVs because of batteries.[10] Life-cycle analysis has found that manufacturing EVs does create more GHGs than the manufacturing of ICEVs and that the total lifecycle impact of EVs is in fact higher than ICEVs *if* they are charged with *only* coal fired electricity.[11] Critically, however, that same analysis found that, once renewable energy is in the electricity generation mix, EVs' life-cycle GHGs are lower than ICEVs'. In other words, the additional GHG created during manufacturing of EVs is more than offset over the lifetime of the vehicles. It also

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7 See generally Mary Bellis "History of Electric Vehicles" About <www.about.com>.

8 United States of America Department of Energy "Compare Plug-in Hybrids Side-by-Side" <www.fueleconomy.govt>.

9 United States of America Department of Energy "All-Electric Vehicles" <www.fueleconomy.govt>.

10 Catherine Harris "Electric cars 'simply transfer pollution to power station'" (29 March 2010) Stuff <www.stuff.co.nz>.

11 Troy R Howkins and others "Comparative Environmental Life Cycle Analysis of Conventional and Electric Vehicles" (2013) 17 Journal of Industrial Ecology 53 at 56.

seems probable that the carbon footprint of manufacturing EVs will decline with economies of scale, as the energy and carbon intensity of production reduces with each unit. Furthermore, some manufacturing could be increasingly powered by renewable energy, as is expected with Tesla's new battery production facility.[12]

In New Zealand, with our predominance of renewable electricity, GHGs per vehicle kilometre travelled (VKT) are, on average, 86 per cent lower for EVs than for ICEVs. EVs generate 21 grams of CO_2e per VKT, compared to 152 grams of CO_2e for petrol.[13] New Zealand has a goal of 90 per cent renewable electricity by 2025 and, when renewable energy replaces aging thermal plant, GHG emissions for EVs will be cut even further.[14] Therefore, the life-cycle CO_2e benefits of EVs in New Zealand could be significant and improving further.[15]

IV HOW DO THE ECONOMICS STACK UP?

The potential GHG savings are significant, so how much might it cost to achieve those savings? There are numerous variables that affect any calculation of the net present value (NPV) of EVs compared to ICEVs. The analysis in this essay therefore relies on a number of assumptions, which are described below. It is noted that those used here are mostly conservative and tend to favour ICEVs. Therefore, if less conservative assumptions were used, EVs would be cast in a more positive light.

The first assumption is that the marginal cost of a new EV is $6,500 (comparing a Nissan Leaf to a Toyota Corolla, a superficially comparable ICEV).[16] Note that this difference will continue to decrease as economies of scale develop in manufacturing cars and key components, such as batteries. Furthermore, the marginal cost is already slightly lower in the second-hand market because of the lower resale value of EVs: the imported 2012 and 2013 model Nissan Leaf cars on Trade Me cost $22,000 to $32,000, having done just 4,500 to 19,000 km, whilst the 2012 and 2013 model Toyota

12 Domenick Yoney "Sun and wind power could power Tesla Gigafactory for EV batteries in Nevada" (21 February 2014) Autoblog <www.autoblog.com>.

13 Mike Underhill, CEO of the Energy Efficiency and Conservation Authority "New Zealand: An ideal market for electric vehicles" (APEV Ministerial Round Table Meeting, Wellington, 8 May 2014) at 6.

14 Ministry of Economic Development *New Zealand Energy Strategy 2011–2021 and the New Zealand Energy Efficiency and Conservation Strategy 2011–2016* at 25.

15 This analysis is highly sensitive to assumptions used, such as the energy used in manufacturing, the kilometres travelled and the energy used for charging. See Howkins, above n 11.

16 Indicative prices were taken from various websites, including, inter alia, Donavan Edwards "Powered Up: How practical are electric cars in real world conditions" (Autumn 2014) AA <www.aa.co.nz>.

Corollas cost around $16,000 to $28,000 but having done 20,000 to 80,000 km.[17] Further, it is arguable that cheaper alternatives to the Toyota Corolla could have been used for this comparison, plus it is noteworthy that the Leaf has higher specifications than the Corolla.

Secondly, the life of the EV is assumed to be 20 years. Thirdly, there is only one owner. On average, New Zealanders replace their car every 18 years, but this assumption avoids accounting for potential differences in re-sale value, which are highly variable.[18] Fourthly, electricity costs 17 cents per kilowatt-hour (kWh) and an EV therefore costs 3.4 cents per km, and petrol costs $2.10 per litre and an ICEV therefore costs 13.9 cents per km.

Fifthly, the battery is replaced every five to eight years, depending on mileage and other factors. Note that there is data that suggests certain batteries will last for as long as ten years.[19] Sixthly, battery replacement costs $9,000.[20] Note that this cost is 35 per cent lower than it was in 2008 and should continually decrease with economies of scale and innovation. Indeed, it may be that batteries already cost as little as $5,000.[21] Note, too, that EV batteries still have around 80 per cent capacity and can be re-used for other applications, (as is already happening overseas). An on-sale value of $1,000 is accounted for in this analysis.[22]

Seventhly, there are no differences in maintenance and repair costs. Note that the Association for the Promotion of Electric Vehicles (APEV) asserts that such costs "can be 30% lower than an ICE", but no evidence of this has been found.[23] Finally, a discount rate of 8 per cent has been applied.[24]

Using all of these mostly-conservative assumptions, the NPV of an EV is equal to or less than an ICEV if the owner travels 20,000 km per annum or more, which is around 70 km per day and easily within the battery range of EVs, six days per week, 48 weeks per year.

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17 Survey of Trade Me by author of vehicles for sale on 22 June 2015 <www.trademe.co.nz>.

18 Ministry of Transport "Driver Travel" (April 2013) <www.transport.govt.nz>.

19 See Jesse Jenkins "Cost of Batteries for Electric Vehicles Falling More Rapidly than Projected" (13 April 2015) The Energy Collective <www.theenergycollective.com>.

20 United States of America Office of Energy Efficiency and Renewable Energy "Vehicles"<www.energy.gov>; and Peter Kelly-Detwiler "The Afterlife for Electric Vehicle Batteries: A Future Source of Energy Storage?" (18 March 2014) Forbes <www.forbes.com>.

21 See Zachary Shahan "Are EV Battery Prices Much Lower Than We Think? Under $200/kWh?" (7 January 2014) Clean Technica <www.cleantechnica.com>, in which batteries are estimated to cost US$3,600.

22 See Kelly-Detwiler, above n 20.

23 Rob McEwen, Executive Director of the Association for the Promotion of Electric Vehicles "Electric Vehicles: Setting the Stage" (APEV Ministerial Round Table Meeting, Wellington, 8 May 2014) at 8.

24 The Treasury "Current Discount rates" (17 March 2015) <www.treasury.govt.nz>.

The average distances driven each year by New Zealanders is 12,000 km for men and 8,000 km for women.[25] When driving 8,000 km per annum, an EV costs $400 extra per annum ($8,022 over 20 years), and at 12,000 km per annum, an EV costs $264 extra per annum ($5,280 over 20 years).

An important measure for deciding and prioritising climate change measures is the cost per unit of GHG offset. On the economic analysis above:

- At 8,000 km, an EV saves 1.05 T-CO_2e per annum at $317 per tonne.
- At 12,000 km, an EV saves 1.57 T-CO_2e per annum at $168 per tonne.
- At 20,000 km, at EV saves 2.62 T-CO_2e per annum at $12 per tonne.
- Greater than 20,000 km, the cost per tonne is negative.

It is important to remember that the purchase prices of two to three year old second-hand Nissan Leaf cars are in a comparable range as two- to three-year old Toyota Corollas. So, if the marginal cost was zero, then, even after accounting for the battery replacement cost, the NPV of the EV is equal to the ICEV if the owner travels 11,000 km per annum, which is below the average distance men drive and means that the owner saves $37 per annum and saves CO_2e at a cost of –$23.50 per tonne. At 8,000 km per year, the EV owner will pay $100 extra per annum and save CO_2e at a cost of $30 per tonne, a 90 per cent saving compared to the price with new EVs.

V MARKET ENVIRONMENT

New Zealand has 3,100,000 light passenger vehicles, which are used for 77 per cent of travel and account for 65 per cent of vehicle GHG emissions.[26] Over half of New Zealand households have two or more vehicles, with the average number of vehicles per household being 1.8; both of those statistics are increasing.[27] On average, New Zealanders drive less than 40 km per day, with our working day commute averaging 28 km. With those statistics, it is estimated that the battery range for EVs could cover 95 per cent of daily travel needs.[28] This is particularly pertinent for those people who have two or more cars, since their daily commute, which is the bulk of their driving requirements, could be powered by renewable electricity, and they can hold on to an ICEV for the rarer times when they need to drive longer distances.

The global market for EVs is growing, with a 43 per cent increase in 2014 alone, bringing the worldwide number of EVs to a total of 740,000.[29] The largest selling EV is the Nissan Leaf, with

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25 Underhill, above n 13.

26 Ministry of Transport *The New Zealand Vehicle Fleet: Annual Fleet Statistics 2014* (August 2014) at 6 and 10.

27 Ministry for the Environment *Environment New Zealand 2007* at 92 and 97.

28 Energy Efficiency and Conservation Authority *Deploying electric vehicles in New Zealand: A guide to the regulatory and market environment* (February 2012) at 3; and Underhill, above n 13, at 7.

29 James Ayre "Electric Car Demand Growing, Global Market hits 740,000 Units" (28 March 2015) Clean Technica <www.cleantechnica.com>.

150,000 sold worldwide.[30] In New Zealand in December 2013 there were 108 new EVs (as well as 277 electric motorbikes and 62 electric buses), though unfortunately there is no more recently released data.[31]

The last remaining aspect of the market environment relates to charging infrastructure. Over 85 per cent of homes have garages with a power outlet suitable for overnight EV charging.[32] Charging a car for 160 km takes 12 hours in a regular power point (2.3 kW) or six hours using a charger connected to the main switchboard (5 kW).[33] Most electricity retailers offer lower tariffs during off-peak times or at night, which will help to minimise charging costs.[34] There are also 74 rapid charging stations in public places around New Zealand.[35] At a national level, Transpower, which owns the main electricity transmission system, has confirmed that the electricity grid is able to accommodate substantial EV capacity.[36]

VI LEGAL ENVIRONMENT: VEHICLE REGULATIONS, TAXES AND THE ETS

Like any vehicle, EVs must comply with various regulations. First, the New Zealand Transport Agency (NZTA) maintains rules that aim to ensure safety.[37] The NZTA also administers rules which regulate exhaust emissions, but only for air quality (emissions harmful to human health), not for GHGs.[38] EVs must also comply with electrical safety regulations. These regulations apply to any supply and use of electricity, so by default they apply to both EVs and charging equipment (if any).[39] Another simple compliance issue is that the sellers of ICEVs are required to display energy efficiency

30 Ayre, above n 29.

31 Ministry of Transport, above n 26, at 2 and 45.

32 At 4; and Rob McEwen, above n 23, at 12.

33 Kieran Devine, Trustee of the Centre for Advanced Engineering and System Operator Transpower "Is the New Zealand Grid Ready for Electric Vehicles?" (APEV Ministerial Round Table Meeting, Wellington, 8 May 2014) at 7.

34 Energy Efficiency and Conservation Authority, above n 28, at 4.

35 See Drive Electric "Chargers in New Zealand" <www.driveelectric.co.nz>.

36 Devine, above n 33, at 8.

37 Land Transport Act 1998, s 152; and see New Zealand Transport Agency "Approved standards" (9 February 2015) <www.nzta.govt.nz>.

38 Land Transport Rule: Vehicle Exhaust Emissions Amendment 2012, r 33001/6.

39 Ministry of Transport, above n 26, at 5; and Electrical (Safety) Regulations 2010.

ratings at the time of sale.[40] The energy rating labels for EVs are voluntary and they differ to those for ICEVs, showing kilowatts per 100 km instead of litres per 100 km, and also showing the vehicle's range in kilometres, which is not on the label for ICEVs.[41]

Vehicle users contribute to the costs of the land transport system through fuel excise (for petrol vehicles) or Road User Charges (RUCs). RUCs are payable for light vehicles "with motive power that is not wholly derived from petrol".[42] This regulation reflects the now-outdated paradigm that vehicles are only petrol or diesel, as this regulation is targeted at diesel vehicles. RUCs would normally apply to EVs but there is an exemption from August 2012 until June 2020.[43] The revenue raised by these levies is significant, with the RUC raising $420 million (and the fuel excise raising $1.86 billion) in the 2012–2013 financial year.[44]

Like RUCs, vehicle users also contribute to the cost of the ACC scheme.[45] ACC levies are paid differently on petrol and diesel vehicles.[46] On diesel vehicles (and vehicles with a non-excisable fuel source such as EVs and PHEVs), the ACC levy is paid at registration only. But for petrol vehicles, it is part-paid on registration and part on petrol at time of purchase at the pump. ACC has confirmed that a PHEV is currently considered non-petrol powered, thus it pays a higher rate on registration, like a diesel vehicle. But when petrol is used in the vehicle, the owner of a PHEV also pays the petrol ACC levy, so that the total combined average ACC levy rate will be higher than a petrol or diesel vehicle presuming it is driven the same average amount. This is the current situation, with no exemption like for RUC to 2020.

The last main piece of the regulatory jigsaw is the ETS, which, theoretically, should incentivise low or non-carbon polluting alternatives by internalising the cost of pollution. Petroleum suppliers must participate in the ETS, and so the additional costs of petroleum products ought to push consumers towards alternatives such as EVs (and biofuels).[47] However, the current design of New Zealand's ETS

40 Energy Efficiency (Vehicle Fuel Economy Labelling) Regulations 2007, ss 5–8 and 11.

41 Energy Efficiency and Conservation Authority, above n 28, at 6.

42 Road User Charges Act 2012, ss 7 and 5, definitions of "RUC vehicle" and "light RUC vehicle".

43 Road User Charges (Exemption Period for Light Electric RUC Vehicles) Order 2012, reg 4.

44 McEwan, above n 23, at 5.

45 Accident Compensation Act 2001, s 214.

46 Email from Elizabeth Yeaman (General Manager, Transport, Energy Efficiency and Conservation Authority) to the author regarding ACC levies (28 July 2014).

47 Climate Change Response Act 2002, ss 198–203 and sch 3, pt 2.

has meant that it has failed to alter behaviour and curb emissions.[48] Indeed, of the world's 26 ETSs, the World Bank rates New Zealand's as the least effective.[49] Unsurprisingly, the government tool that should be most effective at enticing consumers towards EVs is ineffectual.

VII COUNTERFACTUAL

What if there was no government intervention to increase EV uptake?

The number of new passenger vehicles registered annually has increased in every year since 2009: from 54,404 in 2009 to 90,635 in 2014.[50] However, sales of new cars represent a mere 2.65 per cent of the total national fleet, so the rate of renewal is extremely slow. Thus, the turnover of the national fleet is very slow and with only 108 registered EVs; this is a miniscule fraction of that slow turnover.[51]

That said, the market will see some natural increase in the number of EVs in the New Zealand market because of, inter alia, manufacturers' sales targets and the arrival of lower-cost second hand imports. Roughly half of the cars that New Zealand imports are second-hand,[52] so our market will gradually see more EVs. This is because the countries of origin of these cars, especially Japan and Europe, implement regulations and incentives to mitigate climate change.[53] As a result of those countries' climate change policies, New Zealand will "accidentally" reduce emissions, but only to an extremely limited extent given the other market trends described above. Second-hand EVs are already for sale in New Zealand for around $17,000 to $33,000.[54]

Despite the immediate (and limited) availability of the cheaper, second-hand EVs, there is a general inertia against replacing our cars that stands in the way of broad uptake. As noted earlier, New Zealanders only replace their car every 18 years. For EVs, this inertia may be exacerbated due to perception-related problems. The perception remains that EVs are expensive despite declining prices and despite the growing second-hand import market. There are also general misperceptions about

48 See Euan Mason "Why NZ's Emissions Trading Scheme is Failing and How We Could Fix It" (19 December 2013) Hot Topic <www.hot-topic.co.nz>.

49 Rod Oram "Perpetuating the ETS scam" (8 June 2014) Stuff <www.stuff.co.nz>.

50 Motor Industry Association "Registration data – 1975 onwards" (July 2015) <www.mia.org.nz>, excluding data for second-hand import vehicles.

51 Ministry of Transport, above n 26, at 45.

52 Mark Gilbert, Chair of the Association for the Promotion of Electric Vehicles "Opening Presentation" (APEV Ministerial Round Table Meeting, Wellington, 8 May 2014), at 2.

53 At 2.

54 See generally Trade Me <www.trademe.co.nz>.

performance capabilities, particularly in relation to battery range and replacement (frequency, cost and inconvenience). Moreover, consumers are not aware of the potential environmental and economic benefits.[55]

The industry has also recorded its own barriers to wider uptake, including concerns about the international variability of safety standards, along with the lack of standardisation of charging regimes and equipment, which could be an impediment to the second-hand market and re-sale value, thereby also hindering the new car market.[56] The industry may be less concerned about overcoming these barriers than suits the public good outcome, since any lost EV sale is perhaps just a gain to an ICEV sale.

Incentives for consumers are much stronger, given the reduced carbon footprint and running costs and, in fact, the more they drive, the more they save. For government, however, the exact opposite is true. Whilst the RUC exemption is in place, government is losing revenue that goes into transport development and maintenance.[57] If New Zealand had, say, 10,000 EVs each travelling 20,000 km per year, that would be $11,600,000 in lost revenue.[58] This issue is currently negligible because of the very small number of EVs, but the current eight-year exemption could create an expectation amongst sellers and buyers that EVs remain exempt, which might affect transport networks funding and be opposed by levy-paying road users.

That said, the exemption will continue to be important for two reasons. First, fleet owners have already indicated that the uncertainty about the longevity of the RUC exemption is a barrier to uptake of EVs now.[59] Secondly, the RUCs are payable on kilometres travelled and it has been noted that, where it should be more economical to operate a small diesel vehicle, the RUCs negate that incentive altogether.[60] The exact same problem will face EV drivers, particularly those who would otherwise get a greater benefit because of their greater annual VKT.

In summary, the overall pattern is that the rate of turnover of New Zealand's light fleet is very slow and that EVs comprise a tiny fraction of that slow renewal. Even if EV sales increased to 100 or 200 per month, the impact on total transport emissions would remain negligible. Given the aforementioned market trends and barriers, any GHGs avoided by EVs will be lost to the rising GHG

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55 Gilbert, above n 52, at 3.

56 Energy Efficiency and Conservation Authority, above n 28, at 2.

57 Ministry of Transport "Road user charges" (29 May 2014) <www.transport.govt.nz>.

58 The RUC for 2014 is $58 per 1,000 km. See Ministry of Transport "Road user charges (RUC) calculator" <www.transport.govt.nz>.

59 Yeaman, above n 46.

60 Robert Barry "RUC makes small diesel cars unviable says Hyundai GM" (23 July 2014) AutoTalk <www.autotalk.co.nz>.

emissions from the increased demand for ICEVs, and therefore transport emissions will continue to rise. This will be even more so with the government's agenda for investing significantly in roads, which could be expected to increase usage. So, for EVs to have a meaningful role in reversing the upward trend of transport emissions, government intervention will be essential.

VIII OPTIONS FOR GOVERNMENT INTERVENTION

This assessment has demonstrated that EVs have significant GHG mitigation potential; they can service the functional requirements of many New Zealanders and the economics of EVs can match comparable vehicles. However, there are clearly significant market barriers, largely relating to consumers' inertia with vehicle replacement, and these barriers persist even if less conservative assumptions are used when comparing the economics of EVs and ICEVs. These factors combined with the urgency to abate GHGs mean that EVs are a valid target for government intervention aimed at increasing their uptake to replace or avoid ICEVs and their GHG emissions.

What types of intervention might overcome the aforementioned barriers? Below is an outline of measures that could be explored, but it is outside the scope for this essay to fully analyse potential efficacy and risks of these and other options.

The central piece of any reputable climate change policy is a price on carbon that effectively adjusts incentives away from fossil fuels, whether it comes in the form of a carbon tax or an ETS. A transport-specific alternative (or in addition to a carbon price) is to apply a pollution tax directly to ICEVs pro rata according to their GHG emissions. Whichever form of levy is imposed, the revenue raised can be recycled to promote EVs (and perhaps biofuels). Japan, France, the United Kingdom and the United States of America all have variations of such schemes.[61] The key is that any pollution pricing tool must actually work as a disincentive for consumers to purchase ICEVs, rather than work merely as a tool for governments to give the appearance of being good global citizens without actually reducing GHGs. Ideally, any levy-subsidy scheme would be cost-neutral or close to it, but a cost-benefit analysis that is governed by a national, scientific carbon budget should identify whether and how much government input should support the policy's objective of reducing GHGs.

There are, of course, other means of incentivising uptake of a desirable technology. Examples applied to EVs include: (a) direct subsidies; (b) a buy-back scheme for consumers with ICEVs older than (say) ten years that are being replaced by an EV; (c) extending the RUCs exemption; (d) an exemption from import duties for EVs;[62] and (e) preferential treatment for EV owners, such as the

61 KPMG International *The KPMG Green Tax Index: An exploration of green tax incentives and penalties* (2013).

62 See New Zealand Customs Service "Duties & charges" <www.customs.govt.nz>.

ability to use bus lanes and prioritised central city parking. All incentive schemes have risks and complexities and they, of course, need to be identified and evaluated so that preferred options can be determined. This is merely a basic outline of some options.

A basic requirement for a government programme aiming to increase consumer uptake of something is the provision of objective information and marketing to support and encourage consumers to make decisions that support the desired policy outcome. The first step regarding EVs is for government to have objective data. Then government can work with the new and second-hand markets to correct consumer misperceptions with objective information, which should move consumer preference towards EVs.[63] Industries' commercial incentives to promote their goods will see some investment in market development, and industries will understand their markets better than government. However, government will have useful data and, by working together, industries and government can share information and work strategically together to increase EV sales.

Along with incentives and consumer information, a coordinated programme for dealing with technical issues is required. Government should lead the development of national standards for certain technical topics such as charging infrastructure, based on consumer needs as well as industry requirements. In other technical aspects, there may be opportunities in niche areas for government to stimulate industry developments. For example, as noted above, EV batteries still have around 80 per cent capacity after their life in vehicles and can be re-used for other applications.[64] Government might support the development of a recycling industry, for example, in storage for solar photovoltaic systems installed elsewhere in the Pacific.[65]

The final area in which government might support the EV market is in relation to infrastructure. As already noted, the national grid can accommodate substantial EV capacity, so no work is required there. The requirements for in-home charging is readily available for most households since a standard power point can do the job, but it can be enhanced by installing the 5kW chargers that reduce charging time by more than half.[66]

Regarding public charging stations, there are at least three considerations. First, they risk exacerbating the myth of poor capacity, but an information programme as described above should help to avoid that risk. Secondly, there are claims that battery life is reduced by "fast charge" (50–60kW) technologies that are used for public charging so government could support research into this

63 See Drive Electric <www.driveelectric.org.nz>.

64 Kelly-Detwiler, above n 20.

65 Government ought not support solar photovoltaic systems in New Zealand due to the consequential increase in GHG, see the internal document Energy Efficiency and Conservation Authority "Counter-intuitive electricity CO_2 paper: What's the impact of electricity efficiency on national CO_2 emissions? (i.e. with a renewable build schedule)" (May 2014).

66 Devine, above n 33, at 7.

issue and provide objective data to local authorities and consumers.[67] Thirdly, it has been contended that fast charging is unnecessary because of the viability of home charging.[68] On the other hand, if technical concerns prove incorrect and perception risks are managed, public charging can offer flexibility, thereby enhancing consumer experiences. Also, the public nature of charging stations offers a signage platform for social marketing regarding climate change mitigation and enables prioritised central parking. These benefits combined could justify support for installing public charging infrastructure.

On the final question of funding, any support for EVs could be funded either by pollution taxes on ICEVs or reprioritising funding from policy programmes that increase emissions such as the Roads of National Significance, the Irrigation Acceleration Fund or the subsidies that go towards fossil fuels.[69]

IX CONCLUSION

New Zealand is exceptionally well-placed for realising the potential GHG savings that EVs offer because of its high use of renewable energy for electricity generation and the commercial viability for more renewables when thermal plant retires. Only two other OECD countries could capitalise on this opportunity more because of their higher use of renewables: Iceland and Norway.[70]

The potential is impeded significantly by New Zealanders' reluctance to replace their cars and their low mileage, thus reducing financial savings potential. Therefore, any government support will need to be very active to overcome those barriers. A carefully selected and designed package of specific EV measures from those described above is needed to enable EVs to play an effective role in New Zealand achieving scientifically-based GHG reduction targets. Those measures can be paid for from revenue raised from a price on GHGs and from reprioritising funding from emissions-intensive projects.

Overall, in an increasingly carbon-constrained world, EVs will have an important role in New Zealand's transport future; but active government support is essential.

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67 See Liane Yvkoff "Will DC fast charging harm electric car batteries?" (29 July 2010) CNet <www.cnet.com>; Sebastian Blanco "DC fast charging not as damaging to EV batteries as expected" (17 March 2014) Autoblog <www.autoblog.com>; and Kevin Bullis "Will Fast Charging Make Electric Vehicles Practical?" (24 September 2012) MIT Technology Review <www.technologyreview.com>.

68 Bullis, above n 67.

69 On subsidies for fossil fuel industries see World Wide Fund for Nature New Zealand *Fossil Fuel Finance in New Zealand* (2013).

70 "How Much Electricity Comes From Renewable Sources" *The New York Times* (online ed, New York, 23 March 2013).

BOOK REVIEW: FROM OBJECT TO SUBJECT – THE PRACTICE OF WILD LAW

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Book Review of Michelle Maloney and Peter Burdon (eds) Wild Law – In Practice *(Routledge, New York, 2014).*

A community's legal system creates a framework in which it can promote desirable activities while discouraging others.[1] It reflects the choices a community has made and thus the values and morality to which the majority attest.[2] The structure of environmental regulation is part of this, where the values reflected are those of the majority: human superiority and domination over the natural world.[3] Under these values, exploitation of the environment for human use is not only permissible, it is actively encouraged.[4] This anthropocentric model of environmental protection has, however, failed

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1 DE Fisher *Australian Environmental Law: Norms, Principles and Rules* (2nd ed, Thomson Reuters, Sydney, 2010) at 6.

2 Ian Lowe "Wild Law embodies values for a sustainable future" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 3 at 4.

3 Thomas Berry "Rights of the Earth: We Need a New Legal Framework Which Recognises the Rights of All Living Beings" in Peter Burdon (ed) *Exploring Wild Law: The Philosophy of Earth Jurisprudence* (Wakefield Press, Kent Town (SA), 2011) 227 at 227; Cormac Cullinan "Wild Law" (speech to World People's Summit on Climate Change and Rights of Nature, Cochabamba, 22 April 2010); and Cormac Cullinan "If Nature Had Rights What Would We Need to Give Up?" in Peter Burdon (ed) *Exploring Wild Law: The Philosophy of Earth Jurisprudence* (Wakefield Press, Kent Town (SA), 2011) 230 at 232.

4 Cormac Cullinan "Wild Law", above n 3.

us. Waterways flood with pollution while our rivers and lakes are dying.[5] We are losing biodiversity at an alarming rate and climate changes seem out of control.[6] More recently the impact of environmental mismanagement on the human population is becoming increasingly prevalent, with significant problems forecast for the future security of our food, water, health and wellbeing.[7] A new approach to environmental management and protection is sorely needed. *Wild Law – In Practice* aims to produce that new approach. In doing so it facilitates the transition of Earth Jurisprudence into a viable alternative to the current dominant model.[8]

With an impressive list of contributors including environmental activists, academics and judges, Michelle Maloney and Peter Burdon's *Wild Law – In Practice* captures the developments and challenges of implementing a new system: a system of Wild Law. *Wild Law – In Practice* succeeds in cementing Wild Law as a credible philosophy of environmental management and critical theory of law. It builds on the foundations laid by Cormac Cullinan's *Wild Law: A Manifesto for Earth Justice* and Peter Burdon's first book *Exploring Wild Law*,[9] and continues to discuss the need for a fresh approach to environmental regulation.[10]

The message that catapults the reader into *Wild Law – In Practice* is that environmental laws are stagnant, environmental protection is failing and "crisis" is no longer part of the future tense.[11] With this introduction Ian Lowe illustrates a sombre and candid study of the way in which environmental law has been approached in the last 30 years.[12] Lowe describes how environmental laws have been

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5 World Wide Fund for Nature New Zealand Beyond Rio: New Zealand's Environmental Record Since the Original Earth Summit (May 2012) at 12; and Mike Joy "Paradise Squandered; New Zealand's Environmental Asset Stripping" (2014 Bruce Jesson Memorial Lecture, University of Auckland, Auckland, 15 October 2014) at 13.

6 World Wide Fund for Nature New Zealand, above n 5, at 14; and Mike Joy, above n 5, at 4.

7 Mike Joy, above n 5, at 14, citing research which shows that 18,000–34,000 New Zealanders contract waterborne diseases every year.

8 Earth Jurisprudence is the philosophy which recognises that Earth, not human interest, is primary. It acknowledges that humans are born into an ordered and lawful universe, to whose laws we need to comply if we are to be a benign presence on Earth. Wild Law is the way in which Earth Jurisprudence principles can be introduced into the legal system.

9 Peter Burdon (ed) *Exploring Wild Law: The Philosophy of Earth Jurisprudence* (Wakefield Press, Kent Town (SA), 2011).

10 Cormac Cullinan *Wild Law: A Manifesto for Earth Justice* (2nd ed, Chelsea Green Publishing, White River Junction (Vermont), 2011).

11 Peter D Burdon "Earth Jurisprudence and the project of Earth democracy" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 19 at 19.

12 Lowe, above n 2.

exploited by commercial interests to maximise short term gain while environmental protection has been disregarded. At best, environmental law has slowed the complete degradation of nature, not for its intrinsic value however, but for future profit.

All too often texts such as this suggest there is one silver bullet to the problems the law encounters; yet *Wild Law – In Practice* refreshingly suggests that there is no one panacea to solving the problem of environmental protection. Earth Jurisprudence and Wild Law are instead lenses through which the current model of environmental regulation is critiqued.

The text is made up of four distinct parts with contributions from a range of authors. Part one focuses on the methods through which Wild Law can be introduced, with a range of solutions being canvassed. Peter Burdon discusses adaptation from inside the anthropocentric system and developing the legal and political systems of western nations to incorporate Wild Law.[13] The role of society and the "grassroots" in influencing the implementation of Wild Law is also canvassed by Karen Morrow.[14] She examines the role and benefit of challenging existing structures through increasingly sophisticated and well organised agendas for change. The Environmental Defenders Offices—offices of non-profit environmental practices—are also argued as a way for change and implementation of the Wild Law theory.[15] Full anarchy and destruction of the "growth fetish" in western capitalist democracies is argued as the only true way to build a new model and address environmental concerns in totality.[16]

Part two starts with chapters from two leading Australian jurists and explores how Wild Law and earth-centred principles can be implemented in the judicial and legislative systems.[17] Following this, Nicole Rogers looks at the challenges facing those wanting to incorporate Wild Law into western constitutions.[18] Constitutional incorporation of the rights of nature in Ecuador and protection of

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13 Peter D Burdon, above n 11; and Samuel Alexander "Wild Law from below: examining the anarchist challenge to Earth Jurisprudence" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 31.

14 Karen Morrow "Peoples' Sustainability Treaties at Rio+20: giving voice to the other" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 45.

15 Brenda Sydes "The challenges of putting Wild Law into practice: reflections on the Australian Environmental Defender's Office movement" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 58.

16 Alexander, above n 13, at 31.

17 Brian J Preston "Internalizing ecocentrism in environmental law" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 75; and D E Fisher "Jurisprudential challenges to the protection of the natural environment" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 95.

18 Nicole Rogers "Who's afraid of the founding fathers? Retelling constitutional law wildly" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 113.

nature's intrinsic value illustrates that Wild Law *is* being incorporated, yet more still needs to be done.[19] In many respects nature has become another tradable commodity: "Nature Inc", as Erin Fitz-Henry describes it.[20] Often under the guise of environmental protection, the likes of the New Zealand Emissions Trading Scheme and a variety of other biodiversity offset schemes continue the commodification of nature.[21] A Wild Law critique exposes this contradiction of environmental protection and exploitation. While many options are canvassed as a way to implement Wild Law, the core idea of personhood remains central to the discussion.

Rights discourse has been used as one of the dominant responses in seeking to undermine the foundations of the prevailing law and to provide a vision for ending exploitation of the environment. Giving personhood and legal rights to nature is often the first thought when one considers Wild Law. It encapsulates the idea that the protection of the environment requires humans and nature to be on equal footing, and that we must turn nature from an object to a subject.[22] There is, however, no sense of a one-fits-all approach. Ideas are canvassed and assessed for their impact and their conformity with Wild Law principles. Part three begins such an assessment with Erin Fitz-Henry examining the barriers currently being addressed by Rights of Nature advocates in Ecuador.[23] A more general approach to the rights of nature follows.[24] This is set within a broader context of how social movements can prevail against the crosswinds of structural barriers and citizen apathy. Specifically in the context of water, a dual rights approach is proposed that shares water rights between people and the natural world.[25] The Rights of Nature and legal pluralism is also discussed and offers insights into how the Wild Law movement can both learn and create spaces to engage with indigenous knowledge.[26]

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19 Erin Fitz-Henry "Decolonizing personhood" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 133.

20 At 133.

21 Brendan Grigg "Biodiversity offsets: a dangerous trade in wildlife?" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 213 at 225.

22 Fitz-Henry, above n 19, at 133; Mari Margil "Building an international movement for Rights of Nature" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 149; and Alessandro Pelizzon "Earth laws, rights of nature and legal pluralism" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 176.

23 Fitz-Henry, above n 19, at 133.

24 Margil, above n 22, at 149.

25 Linda Sheehan "'Water as the way': achieving wellbeing through 'right relationship' with water" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 161.

26 Pelizzon, above n 22, at 176.

This incorporation of indigenous cosmology is of particular importance and relevance to New Zealand. Indigenous peoples and their worldwide views have occupied a special position within the emerging discourse of Earth Jurisprudence from the very beginning,[27] and Māori cosmology is no different. Māori live in conscious awareness of the stars in the heavens, the flows of the rivers and the life force of *te taiao* (the environment).[28] According to Māori, humans are tightly connected to the land and to the natural world.[29] The theory of Wild Law is based on this idea, that humans are only one part of a wider earth community, rather than being the centre of it.[30] This indigenous cosmology can be further employed to encourage Wild Law ideals and create enduring environmental protection practices.

Part four of the book ends with an Earth Jurisprudence perspective of current practices in areas such as biodiversity offset schemes and carbon pricing. The idea of living within our ecological limits is excellently progressed by one of the book's editors, Michelle Maloney.[31] Wild Law is then further employed to expose the "green washing" that is taking place in society while continued harm comes to the environment.[32] Finally, Steven White provides a look at the similarities and differences in approach between Wild Law and animal law. This provides a solid base for continued discussions between these two fields.[33]

Wild Law – In Practice is an empowering text exploring a range of issues that face environmental lawyers, activists and academics. It is not solely concerned with legislative change but considers other ways in which environmental protection can be improved. In this regard it is a valuable tool for policy makers and students alike. It contains both theory and practice, application and action. It illustrates

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27 Pelizzon, above n 22, at 177.

28 Waitangi Tribunal Ko Aotearoa Tēnei: A Report into Claims Concerning New Zealand Law and Policy Affecting Māori Culture and Identity (Wai 262, 2011) vol 1 at 237. See also examples in Catherine Iorns "Maori Cultural Rights in Aotearoa New Zealand: Protecting the Cosmology that Protects the Environment" (2015) 21 Widener Law Review (forthcoming); and Catherine J Iorns Magallanes "Reflecting on cosmology and environmental protection: Maori cultural rights in Aotearoa New Zealand" in Anna Grear and Louis J Kotzé (eds) *Research Handbook on Human Rights and the Environment* (Edward ElgarPublishing, Cheltenham, 2015) 274 at 279–281.

29 This is expressed in the saying "E ai ki te Māori he hononga ita tō te tangata ki te whenua me te taiao." See Waitangi Tribunal, above n 28; and Iorns, above n 28, for examples of this view.

30 Thomas Berry *The Great Work: Our Way into the Future* (Bell Tower, New York, 1999) at 4.

31 M Maloney "Ecological limits, planetary boundaries and Earth Jurisprudence" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 193.

32 Grigg, above n 21, at 213; and Felicity Deane "Emissions trading and Earth Jurisprudence: will liabilities protect the atmospheric commons?" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 230.

33 Steven White "Wild Law and animal law: some commonalities and differences" in Michelle Maloney and Peter Burdon (eds) *Wild Law – In Practice* (Routledge, New York, 2014) 247.

the possibilities of Wild Law while also marking its most recent successes. I fully recommend this book to environmental and legal scholars; it provides many ideas of how to adopt a different approach to law and regulation of the environment, so that we can truly make a difference and ensure that the environment that we have today will be available for generations to come.

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