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**THE REGULATION OF HYDRAULIC FRACTURING IN
NEW ZEALAND: RISKY BUSINESS?**

**LAWS 529: The Opportunities and Pitfalls of Regulatory Reform
Submitted for the LLB (Honours) Degree**

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Abstract:

As resources of conventional oil and gas have dwindled, the international industry has responded through utilising a raft of techniques to access “unconventional” energy sources. The most controversial technique is hydraulic fracturing. This paper focuses on the regulation of hydraulic fracturing in New Zealand. Environmental concerns are outlined such as the high demand on water use, potential for groundwater contamination and deterrence of renewable energy investment. The current regulatory framework is found to devolve all responsibility for managing the environmental effects of hydraulic fracturing to local authorities. The relevance of the precautionary principle considered, finding that at present its utilisation is left to the discretion of the decision maker. This paper finds that lack of central government guidance has led to varying approaches to regulation across regions. The current regulation shows a lack of local government power and lack of appropriate remedies. Finally three options for reform are presented. Firstly, central government guidance through a National Policy Statement, National Environmental Standard or both. Secondly, transfer of consenting responsibility to a centralised body. Finally, declaration of a moratorium. New Zealand looks destined to experience a boom in hydraulic fracturing and this paper advocates for a tightening of regulation so that regulators stay ahead of the game.

Key words: Fracking, Hydraulic Fracturing, Resource Management Act 1991, Regulation, Precautionary Principle.

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I Introduction

New Zealand is a country rich in an abundance of energy resources. Energy is an essential input to all sectors of the economy and the world has grown dependent on a range of energy sources to fuel the day-to-day life of modern society. As resources of conventional oil and gas have dwindled, the international industry has responded through utilising a raft of techniques to access “unconventional” energy sources. The most controversial of these techniques is hydraulic fracturing. Looking to New Zealand, there have been approximately 30 to 40 wells fracked in the Taranaki region since the 1990s. Now, the oil industry is on the brink of a large expansion. There has been an increase in land permitted for such uses, and large overseas oil companies are setting aside millions for capital expenditure.

Similar expansions in other countries have left regulators scrambling to catch up. The range of regulatory responses to hydraulic fracturing that have occurred worldwide demonstrate that there is no one-size-fits-all approach. This technology has experienced rapid growth over the last decade and government reaction has been varied across the world. Many countries or states have called bans or moratoria on fracking including Germany, France, Ireland and more recently, Scotland and Wales. In Australia, fracking is prohibited in Victoria but New South Wales has recently lifted its moratorium, with restrictions.

Hydraulic fracturing has become a matter of increasing public interest in the last decade and this paper seeks to provide an overview of the key issues in the New Zealand context as well as recommending options to improve the current regulatory regime.

This paper will first outline the hydraulic fracturing process and associated environmental concerns. For example, environmental scientists are concerned about the potential for groundwater contamination from faulty wells and leaks. These incidents have led to underground sources of drinking water becoming contaminated across America due to a fast spreading industry which has been left largely unregulated.

In the New Zealand context, the Parliamentary Commissioner for the Environment (PCE), Dr Jan Wright, has issued two reports on fracking in New Zealand. An interim report was released in 2012. The Prime Minister has publically stated that this report gave fracking a tick of approval.¹ This is not the case. The report did state that the

¹ Rob Maetzig “Key’s fracking speech angers Greens” Stuff.co.nz (online ed, New Zealand, 23 March 2013).

environmental risks of fracking can be managed through regulation. However, Wright expressed significant concerns that the regulatory environment for fracking in our country is “fragmented and complicated”.²

This paper then proceeds to outline the current regulatory framework that relates to hydraulic fracturing within New Zealand, covering the three main statutes involved in managing environmental effects. Fracking has no fit for purpose regulations in New Zealand. Instead consents for operations are assessed under the general environmental law framework. This paper assesses the ability of the current consenting framework to manage risk generally, and with reference to specific fracking risks. Special consideration is given to the precautionary principle as a tool to guide decision makers. The high level conclusion is that while the framework is, at face value, capable of dealing with fracking risk, local government is ill-equipped and lacking in power in the consenting process. It is concerning that public participation is curtailed through the use of non-notified consenting pathways and bundling of consents.

This paper then assesses the remedies available in the case of adverse environmental effects. While the Resource Management Act 1991 (RMA) provides statutory remedies, alongside the potential for citizens to find avenues for relief at common law these remedies are considered inadequate. This is related to the obstacles to gaining relief at common law such as cost and evidential difficulties. Environmental bonds or enforced public liability insurance are considered as options to protect landowners and the community in the event of environmental damage.

Finally, three options for regulatory reform are offered. Firstly, central government guidance is highly recommended most likely through a National Policy Statement or National Environmental Standard. Secondly, the option of removing consenting responsibility from local councils to a centralised body such as the Environmental Protection Authority (EPA) is considered. Thirdly, the declaration of a moratorium is discussed. The Government’s intends to exploit the major economic opportunity of continuing demand for oil and gas. To ensure this exploitation does not result in irreversible environmental harm, consistent and robust regulation should be implemented.

² Jan Wright *Evaluating the environmental impacts of fracking in New Zealand: An Interim Report* (Parliamentary Commissioner for the Environment, November 2012) at 74.

II Hydraulic Fracturing and Environmental Concerns

This paper does not intend to provide a comprehensive analysis of the technical process and environmental issues associated with hydraulic fracturing but instead to provide context for the regulatory analysis that is to follow.

A What is “Fracking”?

Most oil and gas that has been extracted in New Zealand (known as “conventional” oil and gas) is found in reservoir rock that is “porous and permeable” and therefore easy to access.³ In rock formations that have low permeability, oil and gas is harder to extract. In order to economically access the unconventional resources, techniques beyond conventional vertical well drilling are needed. Unconventional resources are much more costly to extract and therefore require specialised technology to make development economically worthwhile.⁴

Hydraulic fracturing is a controversial method of extraction for these natural oil and gas resources that are found within unconventional formations.⁵ Commonly referred to as “fracking”, the process involves a high-pressure injection of fluids consisting of water, sand and chemicals up to 4000 metres down into a well to artificially fracture rocks underground.⁶ This produces fissures in the rock strata, increasing the flow of oil and gas.⁷ Natural gas and oil escape through the fissures and are drawn back up the well to the surface, where the resources are processed and refined.

Contrary to popular opinion, hydraulic fracturing is far from a new technique. The technique has been used commercially since the 1950s when it was introduced by Standard Oil to improve the flow of hydrocarbons.⁸ Fracking has a shorter history in New Zealand with the first known frack occurring in 1989 in Taranaki.⁹ New Zealand has

³ Wright, above n 2, at 13.

⁴ Jason Burwen and Jan Flegal *Unconventional Gas Exploration & Production* (American Energy Innovation Council, Case Studies on the Government’s Role in Energy Technology Innovation, March 2013) at 1.

⁵ Joanne Hawkins “Fracking: minding the gaps” (2015) 17 *Env L Rev* 8 at 9.

⁶ Yangmay Downing “Hydraulic Fracturing and Protection in Law from Negative Effects in New Zealand” (2012) 16 *NZJEL* 243 at 244.

⁷ Clarissa Bierstedt “What’s the Fracking Problem?: Hydraulic Fracturing, Silica Sand, and Issues of Regulation” 2015 (63) *Drake L Rev* 639 at 641.

⁸ Carl Montgomery and Michael Smith “Hydraulic Fracturing: History of an Enduring Technology” (2010) *J. Petro. Tech* at 26.

⁹ Wright, above n 2, at 27.

multiple basins with hydrocarbon potential, but the Ministry for the Environment (MFE) has only identified the Taranaki basin as currently producing.¹⁰ There have been less than 100 fracking operations in New Zealand since the technology was first used here and almost all have occurred in Taranaki.¹¹

In recent years, the pace of hydraulic fracturing operations has drastically increased worldwide. This is due to developments that allow application of the basic fracking technique to release vast amounts of natural gas and oil from “porous, but relatively impermeable” rock layers deep underground.¹² This has transformed the global oil and gas industry, most notably in the United States where unconventional extraction techniques allowed the United States to increase its estimated natural gas reserves by 75 percent in the seven years between 2004 and 2011.¹³

In New Zealand, there are three types of rocks containing hydrocarbons where fracking is, or could be, used to extract oil and gas.¹⁴ In the Taranaki region, sandstone with low permeability can be fracked. Most of the fracking that has taken place worldwide, and especially in the United States, has been to extract natural gas from shale rock. Drilling into shale is beginning to occur in the east of the North Island. Fracking will likely occur if this gas is to be extracted from the shale in a commercially viable manner.¹⁵ Lastly, coal seam gas has been extracted by fracking in the Waikato by Solid Energy. In Australia, most of the fracking to date has been to release coal seam gas from coal deposits.

B Concerns Associated with Fracking

The long term environmental impacts of hydraulic fracturing are poorly studied, because the practice has expanded exponentially in recent times.¹⁶ This paper will attempt to canvas the predominant concerns that arise in the debate surrounding hydraulic fracturing.

¹⁰ Ministry for the Environment *Managing Environmental Effects of Onshore Petroleum Development Activities (Including Hydraulic Fracturing): Guidelines for Local Government* (March 2014) at 3.

¹¹ Wright, above n 2, at 27.

¹² Amanda C. Leiter “Fracking, Federalism and Private Governance” (2015) 39 Harv Envtl LRev 107 at 109.

¹³ At 115.

¹⁴ Jan Wright, *Drilling for Oil and Gas in New Zealand: Environmental oversight and regulation* (Parliamentary Commissioner for the Environment, June 2014) at 13.

¹⁵ At 13.

¹⁶ Downing, above n 6.

1 *Water Use and Contamination*

Fracking is an intensive process that requires large volumes of water. This use of water could place high demands on water in some areas of New Zealand in the future.¹⁷ The US EPA estimates fracking requires 20 million litres of freshwater per frack. This would likely result in competition for water use with agriculture, especially on the East Coast where there is already stress on water reserves.

One of the prime concerns associated with the fracking process is the potential link between fracking fluid injection and water contamination.¹⁸ The threat is that fractures created by the high-pressure injection may extend into underground aquifers that would allow oil and gas and fracking fluids to “migrate” into surrounding rock and eventually into groundwater sources used for drinking supplies.¹⁹

There are at least four ways in which fracking can cause ground water contamination:²⁰

First, during or after the fracturing itself, fracturing fluid might migrate...into water wells and aquifers; second, natural gas released or disturbed by fracturing might seep into water wells and aquifers...third, vibrations from drilling and fracturing might disturb contaminants lying at the bottom of a water well, mixing them into the well water; fourth, used fracturing fluid or waste products generated by the production of oil and gas, might be disposed of in ways that pollute well waters and aquifers.

2 *Fracking Fluids*

In New Zealand, the fracking fluids currently used have three key components which are:²¹

- A proppant, such as sand to prop the cracks open;
- A gelling substance to carry the sand into the cracks; and
- A de-gelling substance to thin the gel to allow the fracking fluid to return to the surface while leaving the sand in the fractures.

Some of the chemicals used in these fluids may be toxic to humans and the environment. The fracking fluids in New Zealand are usually made up of 97 percent water and

¹⁷ Wright, above n 2, at 39.

¹⁸ Hawkins, above n 5, at 10.

¹⁹ Mark Zoback, Saya Kitasei and Brad Copithorne *Addressing the Environmental Risks from Shale Gas Development* (World Watch Institute, Briefing Paper 1, 2010) at 7.

²⁰ Thomas Merrill and David Schizer *The Shale Oil and Gas Revolution, Hydraulic Fracturing, and Water Contamination: A Regulatory Strategy* (2013) 98 Minn L Rev 145 at 158.

²¹ Wright, above n 2, at 39.

3 percent chemicals.²² Each chemical that is used in the fracking process has a specific purpose and the make-up of any particular fracking fluid “can differ depending on the requirements of the planned job”.²³ In Australia, the National Toxics Network said, of the chemicals used, that:²⁴

The ones we were able to identify concerned us because of their potential to cause significant damage to the environment and human health. Some are linked with cancer and birth defects, while others damage the hormone system of living things and affect aquatic species at very low levels.

A large volume of fracking fluid is needed per frack. For example, the largest frack to date in Taranaki used over 2000 cubic metres of fluid, the equivalent to 70 full tankers.²⁵

From 2001-2005, diesel based fracking fluids were used in Taranaki. These fluids contain low levels of B-TEX compounds, which can have harmful effects on humans if introduced to water or soil.²⁶ MFE guidelines state that “because of the risks associated with diesel-based hydraulic fracturing fluids, water-based fluids should be strongly preferred”.²⁷ In Queensland, laws restrict the use of B-TEX chemicals in fracking. Because the levels of allowed B-TEX chemicals are so low, in practice these chemicals cannot be added to fracking fluids.²⁸ In New Zealand, there is currently no regulation in place preventing an operator from deciding to use B-TEX compounds.

The leading problem internationally in this area is that fracking fluids may be able to be protected as trade secrets.²⁹ Push for regulation has led to mandatory disclosure in over 16 states in America since 2010.³⁰ The public backlash against the secrecy of fracking fluids has even led to voluntary disclosure. In the United States, some companies have self-reported the chemicals used in their operations to FracFocus, an online resource

²² Wright, above n 2, at 111.

²³ At 113.

²⁴ National Toxics Network “Call for moratorium as report finds fracking chemicals have never been tested for safety” (21 February 2011) <www.ntn.org.au>.

²⁵ Wright, above n 2, at 39.

²⁶ Ministry for the Environment *Managing Environmental Effects of Onshore Petroleum Development Activities (Including Hydraulic Fracturing): Guidelines for Local Government* (March 2014) at 28.

²⁷ At 28.

²⁸ Department of Environment and Heritage Protection (Queensland) “Fracking and B-TEX fact sheet” <www.eph.qld.gov.au>.

²⁹ Keith Hall “Hydraulic Fracturing: Trade Secrets and the Mandatory Disclosure of Fracturing Water Composition” (2013) 49 Idaho L Rev 399 at 406.

³⁰ At 408.

containing information about fracking jobs in various areas. The site was created to provide the public access to reported chemicals used for hydraulic fracturing in their area.³¹ Fitzgerald sees this sort of resource as a “comfortable compromise” for operators as it allows information to be released to reduce public pressure but the voluntary level of disclosure recognises the operator view that a fracking fluid mix is proprietary information.³² Although the trade secrets issue hasn’t arisen in New Zealand, public disclosure of chemical mixes could lead to greater public awareness and less backlash. It may also aid in the social license issue discussed later.

3 *Seismic Activity*

A link with earthquakes has captured the public interest, perhaps more than any other environmental issue relating to fracking. The latest study in Oklahoma shows that 300 million-year-old fault lines have been awakened and are capable of producing a 6.0 magnitude quake.³³ Geologists have known for 50 years that fluid injection of waste water can increase pressure on seismic faults, leading to induced quakes.³⁴ Fluid injection changes pressures underground and triggers dormant faults. In February, the United States Geological Survey definitively acknowledged that “the increased seismicity is due to fluid injection associated with new technologies that enable the extraction of oil and from previously unproductive reservoirs”.³⁵

Fracking advocates point to 23 years of fracking in the Taranaki region without incident. A GNS report in 2012 found no evidence of fracking having an observable effect on natural earthquakes in the region.³⁶ However, different regions have different physical characteristics that lead to different risk factors. The Hawke’s Bay has been highlighted as the next area for fracking.³⁷ Being a region with major known earthquake faults may mean that wells are more vulnerable to damage from seismic activity or this activity may be exacerbated.

³¹ FracFocus <www.fracfocus.org>.

³² Timothy Fitzgerald “Frackonomics: Some Economics of Hydraulic Fracturing” (2013) 63 Case Western Reserve Law Review 1337 at 1355.

³³ Jon Herskovitz “Reactivated fault lines in Oklahoma could cause major quake: study” (17 March 2015) Reuters <www.reuters.com>.

³⁴ William Ellsworth “Injection-Induced Earthquakes” (12 July 2013) Science <www.sciencemag.org>.

³⁵ Susan Garcia and Leslie Gordon “Coping with Earthquakes Induced by Fluid Injection” (19 March 2015) U.S. Geological Survey <www.usgs.gov>.

³⁶ Steven Sherburn and Rosemary Quinn *An Assessment of the Effects of Hydraulic Fracturing on Seismicity in the Taranaki Region* (GNS Science Consultancy Report, 2012/50, February 2012).

³⁷ Wright, above n 2, at 5.

4 *Disposal of Wastewater*

When the pressure is released after a frack has occurred, the flow back period begins. During this period, some of the fracking fluid returns to the surface. It is mixed with saline water and dissolved minerals from the rock formation (formation water) and together this is the wastewater.³⁸ Disposing of the waste is a cause for concern because it generally contains a number of contaminants:³⁹

These include the chemicals in the fracking fluid, natural gas, solids and radioactive components released in the fracking process, and proppants and gels that make up the fracking fluid; it is highly saline as well (due to mixing with underground saline water).

Two main methods are used in Taranaki to dispose of this type of waste. The first is deep well injection. This has been the approach used most commonly in the United States. Deep injection of wastewater could cause groundwater contamination through migration into aquifers, in the same way that fracking fluid could.⁴⁰ There is also a risk that deep well injection could trigger earthquakes, including larger tremors than those caused by fracking because a greater volume of fluid is injected over a longer period of time. Keene argues that this concern holds more weight in New Zealand where there are already heightened seismic risks.⁴¹ Our unique geology could raise additional risks of an earthquake dislodging injected wastewater causing contaminating groundwater.

The other main technique used is known as landfarming. This involves spreading the fracking waste over large portions of land. Landfarming is a form of bioremediation, which allows the bacteria in soil to break down waste constituents (particularly hydrocarbons, other organic compounds and nitrogen).⁴² This justification does not address other pollutants in the waste that could contaminate the soil.⁴³

The main legislation that applies to the disposal of waste water in New Zealand is the Resource Management Act 1992 (RMA) which leaves the regulation to consenting authorities:⁴⁴

³⁸ Keene, above n 38, at 28.

³⁹ At 28.

⁴⁰ Wright, above n 2, at 47.

⁴¹ Keene, above n 38, at 28.

⁴² Mary Beth Adams "Land Application of Hydrofracturing Fluids Damages a Deciduous Forest Stand in West Virginia" (2011) 40 *Journal of Environmental Quality* 1340.

⁴³ Keene, above n 38, at 28.

⁴⁴ At 28.

A resource consent is required for land or water-based disposal of wastewater, unless there is a National Environmental Standard or rule in a regional plan permitting the activity, or unless the wastewater is treated to remove the contaminants.

Later this paper advocates that the issue of disposal of wastewater is a problem that would be best regulated by a National Environmental Standard. This would ensure a consistent and appropriate response is applied across regions by limiting discretion of consenting authorities and providing high-level guidance. Pennsylvania provides the best example of a response to this problem by requiring private treatment of waste water before disposal. This shifts the onus onto companies to ensure they implement adequate disposal measures.⁴⁵

5 Lack of Renewable Energy Development

Natural gas is often touted as a “transition fuel” in the movement towards low-carbon energy use to mitigate climate change.⁴⁶ Environmentalists argue that the short-term economic gains associated with fracking are distracting the sense of urgency from transitioning to renewable energy such as wind or solar power.⁴⁷ The International Energy Agency has warned that the rapid increase of unconventional gas extraction (expected to triple by 2035) will stop investment in renewable energy if governments do not take action.⁴⁸

The burning of natural gas has a lesser toll on the environment than the burning of oil and coal.⁴⁹ However, the level of methane that is released during fracking is concerning. Studies carried out in the United States show that three percent or more of natural methane gas extracted through fracking can escape during the process.⁵⁰ Although methane does not remain in the atmosphere for as long as carbon dioxide (9 to 15 years compared to 50 to 100 years), it still has a potent effect on the environment and is especially damaging in the short term.⁵¹

⁴⁵ At 29.

⁴⁶ Eleanor Stephenson, Alexander Doukas and Karena Shaw “Greenwashing gas: might a ‘transition fuel’ label legitimize carbon-intensive natural gas development” (2012) 46 *Energy Policy* 452 at 452.

⁴⁷ Andrew Groom “How and when can Australia go 100% renewable” (2014) 32 *Energy News* 16 at 18.

⁴⁸ Fiona Harvey “‘Golden age of gas’ threatens renewable energy, IEA warns” *The Guardian* (online ed, United Kingdom, 29 May 2012).

⁴⁹ Economist “Natural Gas: Cleaner, not Cooler” (6 August 2011) <www.economist.com>.

⁵⁰ Jeff Tollefson “Methane leaks erode green credentials of natural gas” (2 January 2013) *Nature* <www.nature.com>.

⁵¹ Environmental Protection Agency “Overview of Greenhouse Gases: Carbon Dioxide Emissions” and “Overview of Greenhouse Gases: Methane Emissions” <www.epa.gov>.

III Parliamentary Commissioner for the Environment Reports

The PCE has commented that New Zealand is “poised on the brink of what could be a large and rapid expansion of oil and gas production”.⁵² In March 2012, the PCE announced an investigation on fracking in New Zealand, in response to requests from both sides of the House, councils and members of the public.⁵³ The high level conclusion from this report was that the environmental risks associated with fracking can be managed effectively if operational best practices are implemented and enforced through regulation.⁵⁴

However, the PCE was not confident that such best practices were being enforced. The investigation entered a second phase to consider the monitoring and regulation of fracking in New Zealand. It is also unclear what exactly the “operational best practices are” and if these are accepted or agreed by both regulators and players in the industry. The phrase was borrowed from a Royal Society review of hydraulic fracturing in the United Kingdom.⁵⁵

The second report *Drilling for Oil and Gas in New Zealand: Environmental oversight and regulation* was released in June 2014 and found the government regulation to be inadequate, “even without the potential for rapid growth” in the industry.⁵⁶ Extensive reform of New Zealand’s laws, agencies and processes was not judged to be required, but due to the potential for rapid expansion there was a call for changes. The then Minister for the Environment Amy Adams and Minister of Energy and Resources Simon Bridges welcomed the report but stated that MFE guidelines,⁵⁷ released prior to the second PCE report, were sufficient to encourage “best practice” and provide “clear direction so that hydraulic fracturing is carried out in a robust, controlled and well regulated manner”.⁵⁸ These government guidelines, discussed later, were criticised by the Commissioner for “containing a great deal of information” but doing little more than describe current industry management in Taranaki.⁵⁹

⁵² Wright, above n 2, at 69.

⁵³ At 5.

⁵⁴ At 5.

⁵⁵ The Royal Society and The Royal Academy of Engineering *Shale gas extraction in the UK: a review of hydraulic fracturing* (June 2012).

⁵⁶ Wright, above n 14.

⁵⁷ Ministry for the Environment, above n 10, at 28.

⁵⁸ Amy Adams and Simon Bridges “Ministers welcome final PCE report on oil and gas” (press release, 4 June 2014).

⁵⁹ Wright, above n 14, at 5.

The last chapter of the report consists of six recommendations for improvements to the regulatory framework:⁶⁰

1. Government provision of national direction through a National Policy Statement, paying particular attention to unconventional oil and gas;
2. Revision of regional council plans – propose revised rules for the oil and gas industry;
3. Ensure that wells have ‘integrity’ for protection of workers and the environment;
4. Require companies to hold public liability insurance and set up a liability regime;
5. Amend legislation (or regulations) so that regional councils are legally responsible for enforcing the provisions of HSNO on oil and gas work sites;
6. Convene a working group to consider how solid waste from oil and gas wells in the East Coast basin should be disposed of before wells begin to proliferate.

IV The Current Regulatory Framework

Minister Bridges claims that the government has built a “world-class regulatory framework” to ensure that any oil and gas development occurs in an environmentally responsible and safe way.⁶¹ However, this paper supports the PCE view that current government oversight and regulation of the industry is complex and fragmented.⁶² This paper will now outline the current framework through discussion of the core statutes involved in the regulation of fracking operations.

A Crown Minerals Act 1991

Ownership of petroleum is vested in the Crown.⁶³ The allocation and access of Crown-owned minerals is governed by the Crown Minerals Act 1991 (CMA), while environmental regulation of development occurs under the RMA.⁶⁴ These two statutes, by separating the allocation of rights to minerals and the environmental regulation of activities, significantly changed the previous statutory regime.⁶⁵

⁶⁰ At 73-82.

⁶¹ New Zealand Government “Oil and Gas Block Offer 2015 announced” (press release, 30 March 2015).

⁶² Wright, above n 2, at 76.

⁶³ Crown Minerals Act 1991, s 10.

⁶⁴ Downing, above n 6, at 262.

⁶⁵ Michelle Van Kampen “The Adequacy of Legislation Regulating the Environmental Effects of Mining” (2012) 16 NZELJ 203 at 218.

Before a company can consider drilling a fracking well, it must obtain a permit under the CMA from New Zealand Petroleum and Minerals who manage the Government's crown minerals estate. The purpose of the CMA was amended in 2013 to record the Government's desire to "promote prospecting for, exploration for, and mining of Crown owned minerals for the benefit of New Zealand".⁶⁶ The Minerals Programme for Petroleum, which defines how the CMA is administered and applied, provides that:⁶⁷

The Minister considers that, within the context and mandate of the Act, "the benefit of New Zealand" is best achieved by increasing New Zealand's economic wealth through maximising the economic recovery of New Zealand's petroleum resources.

Companies obtain permits to explore for oil and gas through the annual Block Offer process.⁶⁸ The Petroleum Block Offer is an annual tender used to allocate petroleum exploration permits. The 2015 Annual Tender for oil and gas exploration permits was launched on 30th March by Minister Bridges.⁶⁹

At this stage, New Zealand Petroleum & Minerals will assess the technical and financial capability of the bidder, and undertake a high-level assessment of an operator's capability to comply with applicable health, safety and environmental legislation.⁷⁰ Once a permit is granted, the holder has an exclusive right to the oil and gas under the ground covered by the permit for a set time period. Permits granted in Block Offer 2015 will be granted for 10 to 15 years.⁷¹ An exploration permit gives the permit holder the rights to search for commercially recoverable reserves of oil and gas in a specific area.⁷²

A permit to prospect, explore or mine does not give a right of access to land – an access arrangement must be arranged.⁷³ However, as private landowners do not own the oil and gas under their land, they cannot outright prevent a permit holding company from drilling on their land. If an agreement cannot be reached between the company and the landowner

⁶⁶ Section 1A.

⁶⁷ New Zealand Petroleum and Minerals *Petroleum Programme (Minerals Programme for Petroleum 2013)* (24 May 2013) at 6.

⁶⁸ Prior to 2012, petroleum exploration permits were allocated on a first-come, first-served approach where the government had little influence over when or where companies applied for petroleum exploration permits.

⁶⁹ New Zealand Government "Oil and Gas Block Offer 2015 announced" (press release, 30 March 2015).

⁷⁰ New Zealand Petroleum and Minerals *Guide to Government Management of Petroleum* (June 2014) at 2.

⁷¹ At 6.

⁷² At 7.

⁷³ Section 47.

then an arbitrator can be appointed and mandatory arbitration imposed.⁷⁴ If an exploratory well indicates that commercial quantities of oil and gas can be extracted, the company can then apply for a petroleum mining permit as long as this application is made before the exploration permit expires.

B Resource Management Act 1991

Hydraulic fracturing activities are predominantly regulated under the RMA. The RMA is New Zealand's primary statute setting out the management of the environment and natural resources, particularly focusing on how the effects of activities should be managed. An application to undertake hydraulic fracturing must comply with the RMA's requirements. All resource consents granted under the RMA must be consistent with its general purpose: to "promote the sustainable management of natural and physical resources".⁷⁵ Controls can be set by local authority decision makers in two broad ways under the RMA.

Firstly through planning considerations, such as policies and rules in regional and district plans. Regional Policy Statements are made to provide:⁷⁶

An overview of the resource management issues of the region and policies and methods to achieve integrated management of the natural and physical resources of the whole region.

Regional councils also prepare plans which set out rules as to how activities are classified.⁷⁷ To use drilling as an example: in most district and regional plans, drilling (whether for oil and gas or water) is a permitted or controlled activity and therefore will always be allowed, but be subject to conditions.⁷⁸ Consents are required when an activity is *discretionary* in the plan.⁷⁹ In the Gisborne region, drilling for oil and gas is a discretionary activity.⁸⁰ Drilling (as an example) shows that there is little consistency in the way regional plans are written and further variation can exist within regions at the district council level. Another activity requiring consent is injecting fracking fluid into a

⁷⁴ Section 66.

⁷⁵ Resource Management Act 1991, s 5.

⁷⁶ Section 59.

⁷⁷ Sections 63 and 67(1).

⁷⁸ Wright, above n 2, at 56.

⁷⁹ Section 104B.

⁸⁰ Wright, above n 14, at 21.

well as this is considered to be a “discharge” for the purposes of the RMA.⁸¹ No regional council plans currently allow fracking as a permitted activity or classify it as its own distinct activity.⁸² After fracking has been carried out and production has ended the well will be abandoned. Councils generally have their own provisions for well abandonment and site restoration, but the nature of these provisions can vary widely. In Waikato there is a very broad single objective for well disposal whereas Gisborne has a very prescriptive provision.

The second way a regional or district council can control hydraulic fracturing is through conditions in resource consents (if and when these consents are granted). As outlined above, whether consenting is required for an activity will depend on how that activity is classified.⁸³ If an activity is classified as permitted, it will not require a resource consent.⁸⁴ A resource consent is required when a particular activity is not described as permitted by the Act, a regulation or a regional or district plan.⁸⁵ A local authority has to grant a resource consent for a controlled activity, with some exceptions, but can refuse to grant a resource consent for a restricted discretionary, discretionary or non-complying activity.⁸⁶ In applying for resource consents, companies need to demonstrate how they will manage the effects on the environment.⁸⁷ Companies may apply for all consents required for establishing a well site together, or they can be ‘unbundled’ and applied for separately. There are mixed views on unbundling. Some see this approach as a good way to stage a development but others think it prevents consideration of the whole operation and denies public participation. Concerns regarding lack of public participation in the regulation of fracking are discussed later.

C Hazardous Substances and New Organisms Act 1996

Any chemicals used in the fracking process that are considered hazardous need to be approved by the Environmental Protection Authority (EPA). The Hazardous Substances and New Organisms Act 1996 (HSNO Act) sets out obligations for handling, use, storage and implementing spill contingency plans for fracking fluids. The purpose of these requirements is to avoid or minimise risks to human health and the environment

⁸¹ Section 15.

⁸² Wright, above n 2, at 58.

⁸³ Section 87A.

⁸⁴ Section 87A(1).

⁸⁵ Section 87A.

⁸⁶ Section 87A.

⁸⁷ Section 104(1)(a).

associated with the storage or use of hazardous substances,⁸⁸ including chemicals used in fracking at well sites.

In New Zealand, most substances used in fracking fluid are classed as hazardous under the HSNO Act.⁸⁹ The operator of a well site that uses hazardous substances while fracking must ensure compliance with a wide range of HSNO Act requirements including maintaining a register of hazardous chemicals stored on site and separating storage tanks.⁹⁰ Currently, any hazardous substances that might be used in fracking do not require specific EPA approval for use for this purpose. Rather than circumventing HSNO controls altogether, the operators apply for the fluids under a group standard. A group standard is an approval for a group of hazardous substances of a similar nature, type or use.⁹¹ EPA states that a group standard sets out the conditions that enable a group of hazardous substances to be managed safely.⁹²

Climate Justice Taranaki has alleged that the EPA “admitted in April 2012 that the majority of fracking chemicals were self-assessed by companies and approved under the group standard “additives, process chemicals and raw materials”.⁹³ This group standard is for products that are used in the manufacture or processing of other products.⁹⁴

The EPA, in reply to Climate Justice Taranaki, has stated:⁹⁵

Currently we *do not have any controls that relate to the use of a substance in a hydraulic fracturing activity* as, to date, we have not processed a Part 5 application for a substance where fracking was the sole proposed use (or mentioned in the application as a possible use). ... The other mode of approval primarily for mixtures is via a ‘group standard’. .. a ‘blanket’ approval for a group of substances ... This is how the majority of the hydraulic fracturing substances are said to be approved. The

⁸⁸ Hazardous Substances and New Organisms Act 1996, s 4.

⁸⁹ Wright, above n 2, at 115.

⁹⁰ *Submission of Taranaki Regional Council to Parliamentary Commissioner for the Environment on the Future Regulation of Fracking* (Taranaki Regional Council, 9 October 2013).

⁹¹ Environmental Protection Authority “Group standards” <www.epa.govt.nz>.

⁹² Environmental Protection Authority, above n 91.

⁹³ *Parliamentary Commissioner for the Environment Investigation into Hydraulic Fracturing in New Zealand: Second Submissions by Climate Justice Taranaki* (Climate Justice Taranaki, 12 August 2013) at 6.

⁹⁴ Environmental Protection Authority, above n 91.

⁹⁵ *Climate Justice Taranaki Submission to the Parliamentary Commissioner for the Environment’s Investigation into Hydraulic Fracturing in New Zealand* (Climate Justice Taranaki, 12 November 2012) at 3.

relevant group standard is the ‘Additives, process chemicals and raw materials group standards’ ... *It is up to the importer to determine if the substance is approved via a group standard*

Councils can consider the use of chemicals in the resource consent process but the PCE report concluded that “it is largely up to councils to consider the environmental risks of using particular chemicals in fracking fluid. It is not clear whether councils are relying on generic HSNO Act approvals rather than assessing the environmental risk of the chemicals used at each particular site”.⁹⁶ This concern is further discussed later, in the context of the precautionary principle.

V Risk and Regulation

The regulatory issue can also be framed as: are risks inherent in the fracking process properly characterised and regulated for? The control of undesirable risk is a central justification for regulation.⁹⁷ It is a role of a regulator to develop intervention strategies designed to influence commercial operators in managing or reducing risks to social and environmental values.⁹⁸ Human activities associated with advancing interests for economic gain will often introduce risks to social and environmental values.

Over recent decades, there has been an increasing focus among policymakers towards setting risk management as a focus of regulation. The term risk-based regulation covers a very broad range of approaches.⁹⁹ A risk-based approach to regulation provides a framework that will enable regulators to justify decisions around regulatory interventions and ensure responses are proportionate to the nature of the risk.¹⁰⁰ Environmental law and regulating for risk go hand in hand as the law seeks to balance individual and corporate freedoms with the perceived public good in environmental protection.¹⁰¹

⁹⁶ Wright, above n 2, at 58.

⁹⁷ Bridget Hutter *The Attractions of Risk-based Regulation: accounting for the emergence of risk ideas in regulation* (ESRC Centre for Analysis of Risk and Regulation, Discussion Paper No 33, March 2005) at 3.

⁹⁸ Alastair R. Lucas, Theresa Watson and Eric Kimmel “Regulating Multistage Hydraulic Fracturing” in Donald N. Zillman and others *“The Law of Energy Underground: Understanding New Developments in Subsurface Production, Transmission, and Storage”* (Oxford University Press, Oxford, 2014) at 133.

⁹⁹ Hutter, above n 97, at 3.

¹⁰⁰ Lucas, Watson and Kimmel, above n 98, at 133.

¹⁰¹ S.W. Christensen and W.D. Jennings “Legal Issues relating to Environmental Risk Management” (paper presented to the Advantage New Zealand Petroleum Summit, 2013) at 1.

Risks are exacerbated where the industry is left to ‘self-regulate’. The PCE identified that in New Zealand, companies appear to be not only regulating themselves, but monitoring their own performance.¹⁰² Companies, through the consenting process, are relied upon to submit large amounts of technical information to local government consenting authorities, New Zealand Petroleum & Minerals and to the EPA who may be ill-equipped to evaluate the accuracy of this information.¹⁰³ This impairs their ability to ensure that regulatory responses are proportionate to the nature of the risk.

The definition of risk can take many forms and is disputed among academics. The term risk is commonly used to refer to situations involving an element of “chance”.¹⁰⁴ However, the term also incorporates the concepts of ‘harm’, and ‘threat’.¹⁰⁵ The Oxford English Dictionary defines the term “risk” as a chance or possibility of danger, loss, injury or other adverse consequences. For the purposes of this paper, the term risk is used in this basic sense. Risk can never be completely eliminated, all decisions involve an element of risk and even deferring a decision can involve risk.

This paper now seeks to assess how risk is managed under the RMA. Risk management involves:¹⁰⁶

Establishing where a risk falls in terms of likelihood and impact and then developing an organisational strategy to manage the risk. It is a systematic approach to setting the best course of action under uncertainty by identifying, assessing, understanding, acting on and communicating risk issues.

A The Resource Management Act and Risk

Under New Zealand law, the power imbalance between non-monetary societal interests and the industry interests are addressed by legislation such as the RMA.¹⁰⁷ The framework can be described as effects-based. It regulates the effects of activities rather than the activities themselves. Every application for a resource consent requires an applicant to provide an Assessment of Environmental Effects.¹⁰⁸ This term is used to

¹⁰² Wright, above n 2, at 77.

¹⁰³ At 77.

¹⁰⁴ Alan Randall *Risk and Precaution* (Cambridge University Press, Cambridge, 2011) at 31.

¹⁰⁵ At 31.

¹⁰⁶ Linda Cameron “Environmental Risk Management in New Zealand – Is There Scope to Apply A More Generic Framework?” (New Zealand Treasury Policy Perspectives Paper 06/06, July 2006) at 6.

¹⁰⁷ Christensen and Jennings, above n 101, at 1.

¹⁰⁸ Section 88(2)(b).

describe the assessment of positive and negative effects on the environment.¹⁰⁹ The RMA provides for public notification and participation where effects are classified as “more than minor”.¹¹⁰

In deciding whether or not to grant resource consents, s 104 requires consent authorities to have regard to “any actual and potential effects on the environment of allowing the activity”.¹¹¹ The term “effect” is defined very widely in the RMA, and includes:¹¹²

- (a) any positive or adverse effect; and
- (b) any temporary or permanent effect; and
- (c) any past, present, or future effect; and
- (d) any cumulative effect which arises over time or in combination with other effects—
regardless of the scale, intensity, duration, or frequency of the effect, and also includes—
- (e) any potential effect of high probability; and
- (f) any potential effect of low probability which has a high potential impact.

This wide definition implicitly includes risk by referring to potential effects of high probability¹¹³ and any potential effects of low probability with a high potential impact.¹¹⁴ The Environment Court in *Shirley Primary School v Christchurch City Council* noted that through this definition, Parliament may have intended the decision maker to consider two different types of risk:¹¹⁵

The first is a risk based on scientific fact (a fact that can be proven beyond 50% or even higher but never absolutely). The second is a risk where there is a plausible (but with no scientific certainty to back it up) chance that an effect may occur.

This shows that potential risks are not beyond the scope of the RMA. The standard of proof that applies to predictions about the future will necessarily differ from the standard of proof traditionally applied to fact finding about events that have occurred

¹⁰⁹ Vernon Rive “Environmental Assessment” in Derek Nolan (ed) *Environmental and Resource Management Law* (LexisNexis, Wellington, 2015) at 1168.

¹¹⁰ Sections 95-95G.

¹¹¹ Section 104(1)(a).

¹¹² Section 104(1).

¹¹³ Section 101(1)(e).

¹¹⁴ Section 101(1)(f).

¹¹⁵ [1999] NZRMA 66 (EnvC) at [116].

previously.¹¹⁶ In fact, in 2008 the Environment Court concluded that there is no standard of proof for “future events”.¹¹⁷ A decision maker is required to make an assessment of the probabilities of the future events (even if lower than 50 percent) and then consider costs and benefits to assess the risk.¹¹⁸

There is no burden of proof placed on any party to a resource consent application. However, sufficient evidence must be provided to give the decision maker the ability to make a judgement:¹¹⁹

Each party must provide enough evidence to prove that the risk (if there is one) is either acceptable or not acceptable in the circumstances (i.e. proving a negative) to the decision maker. In environmental decisions this generally starts with the applicant. As the evidence mounts the burden will shift between parties eventually resting with the party that will fail without further evidence.

This paper submits that this all shows that the framework of the RMA is not ill-equipped or unable to deal with risk. At a purely structural level, there is a solid framework in place for the provision of information about a wide range of environmental effects as well as scope for consideration of potential effects (i.e. risks) in the decision-making process. However, as discussed later the implementation of regulation by local government who are ill-prepared to manage fracking operations means that risk is not managed adequately.

B Precautionary Principle

Fracking appears to have the potential to create “diffuse, widespread, and damaging environmental impacts for which liability will be difficult to assign”.¹²⁰ This has led some academics to propose that the ideal regulatory theory to deal with the activity will be a theory that utilises the “precautionary principle”.¹²¹ Where there are difficulties in ascertaining the risk of future adverse impacts on the environment, there is often

¹¹⁶ Christensen and Jennings, above n 101, at 8.

¹¹⁷ *Long Bay Okura Great Park Society Inc. v North Shore City Council* NZEnvC A078/08.

¹¹⁸ At [321].

¹¹⁹ Christensen and Jennings, above n 101, at 9.

¹²⁰ Robert Holahan and Gwen Arnold “An institutional theory of hydraulic fracturing policy” (2013) 94 *Ecological Economics* 127 at 132.

¹²¹ For example, see: Holahan and Arnold, above n 120, at 132; Downing, above n 6, at 255; Madelon Finkel and Adam Law “The Rush to Drill for Natural Gas: A Public Health Cautionary Tale” (2011) 101 *Am J Public Health* 784 at 785; Zachary Lees “Anticipated Harm, Precautionary Regulation and Hydraulic Fracturing” (2012) 13 *VtJEnvtlL* 575 at 605; Sara Phillips and Mark Goldberg “Natural gas development: extracting externalities - towards precaution-based decision-making” (2013) 9 *McGill Int'l J Sust Dev L & Pol'y* 175.

reference to the precautionary principle as a basis for resource management decision-making.¹²² The concept assumes that science does not always provide the insights needed to protect the environment in an effective manner.¹²³ Over recent times, precaution has become “indispensable” as a legal tool to manage risk.¹²⁴ The precautionary principle is especially relevant to fracking as the development and spread of the technique outpaces our understanding of its effects.¹²⁵

The most recognised and cited international formulation of the principle is included in Principle 15 of the 1992 Rio Declaration on the Environment and Development:¹²⁶

In order to protect the environment the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

The principle is a formulation of the classic notion that it is “better to be safe than sorry”.¹²⁷ Under the precautionary principle, a lack of absolute certainty as to the negative effects of an activity should not prevent action from being taken to prevent or mitigate these effects.¹²⁸ Lees describes the principle as having the beauty of a two-fold approach:¹²⁹

First, it justifies regulation before full scientific certainty can be established (and before permanent environmental damage occurs), and second, it enables legislators to shift the burden of proof from the traditional structure that requires regulators prove that regulation is necessary to requiring that the industry prove that regulation is unnecessary.

¹²² Claire Kirman and Justice Christian Whata “Environmental litigation and dispute resolution” in Derek Nolan (ed) *Environmental and Resource Management Law* (5th ed, LexisNexis, Wellington, 2015) at 1271.

¹²³ David Freestone and Ellen Hey (eds) *The Precautionary Principle and International Law – The Challenge of Implementation* (Kluwer Law International, The Hague, 1996) at 12.

¹²⁴ Greg Severinsen “Bearing the Weight of the World: Precaution and the Burden of Proof under the Resource Management Act” (2014) 26 NZULR 376 at 376.

¹²⁵ Lees, above n 121, at 584.

¹²⁶ United Nations Conference on Environment and Development, Rio Declaration, June 14 1992, UN Doc A/Conf.151/5/Rev.1 31 (1992) at 15.

¹²⁷ Alexander Gillespie “Precautionary New Zealand” (2011) 24 NZULR 364 at 365.

¹²⁸ Greg Severinsen “To Prove or not to Prove? Precaution, the Burden of Proof and Discretionary Judgment under the Resource Management Act” (2014) 13(2) Otago LR 1 at 1.

¹²⁹ Lees, above n 121, at 584.

This can be seen as an articulation of the precautionary principle in its strongest form. In this form, the principle is acting to reverse the burden of proof. That is, regulators should place the burden on fracking operators to show their processes are safe before being allowed to proceed. The flexibility of the precautionary principle is a double edged sword; it allows its application to an array of environmental and health issues but its generality means it lends little guidance to shape policy. Gillespie emphasises that “any measures adopted under the precautionary principle are of a transitory nature and may be eclipsed when a greater scientific evidence is ascertainable”.¹³⁰ Therefore, if scientific evidence can conclusively suggest no harm will occur out of an operation, the measures adopted can be reversed.

A leading Australian opponent of fracking, Drew Hutton, has accused the oil and gas sector and government in his country of using a “suck it and see approach” that “throws the precautionary principle” out of the window.¹³¹ US academics have questioned whether the precautionary principle seems to have missed its chance at halting the gas rush until more is known of its effects.¹³² As parts of New Zealand are yet to be exploited through fracking, we still have the opportunity to take a cautious approach.

New Zealand’s environmental law has made no general declaration to adopt the precautionary principle, but it is already at play throughout environmental regulation including, to varying extents, within the legislation currently regulating oil and gas production. Although there is no direct reference to precaution in the RMA it is implicit in the way the Act is implemented.¹³³ The RMA is equipped to deal with the application of the precautionary principle, but the application is largely left to the discretion of the decision maker. It seems that the RMA is not able to apply the precautionary principle in a strong manner specifically towards fracking. Nolan states that “the adoption of the precautionary principle within the RMA...can be seen in the need to have regard to the potential effects of activities on the environment”.¹³⁴ *Shirley Primary School v Christchurch City Council* held that the precautionary approach was inherent in the RMA and that to apply the principle separately would lead to double-counting of the need for caution.¹³⁵ Every application for a resource consent requires an applicant to provide an

¹³⁰ Gillespie, above n 127, at 366.

¹³¹ Rebecca Macfie “Fracking in New Zealand: the debate continues” *The Listener* (online ed, New Zealand, 18 August 2012).

¹³² Lees, above n 121, at 612.

¹³³ Cameron, above n 106, at 16.

¹³⁴ Kirman and Whata, above n 122, at 1271.

¹³⁵ *Shirley Primary School v Christchurch City Council* [1999] NZRMA 66 (EnvC) at 134-135.

Assessment of Environmental Effects, but the precautionary principle is utilised as part of the overall broad judgement instead of expressly incorporated.

As discussed earlier, another issue with regards to the precautionary principle is that there is no burden of proof for resource consent applications. This could not necessarily be solved easily. If you were to reverse the burden of proof for fracking operations this would likely raise complicated issues of evidence. For example, how safe is safe and who will decide? Operators' definition of safe could be very different from what the regulators or the public see as being safe.¹³⁶ Most of the critiques of the precautionary principle focus on the issue of what level of proof is sufficient for both "triggering pre-emptive actions as well as demonstrating that an activity is safe".¹³⁷ It is likely to be politically unacceptable to require industry operators to prove to a high standard that their operations are risk free as this would raise costs of production and deter investment in the oil and gas sector in New Zealand.

This paper argues that there is scope within the current framework to employ the precautionary principle in consenting decisions but leaving it as part of the overall broad judgement approach relies on the decision maker's discretion. Peterson argues that allowing decision makers this high level of discretion as to when and how to apply the precautionary principle may lead to "unpredictable and inconsistent environmental management decisions".¹³⁸ This is also a disadvantage for industry as lack of clarity does not provide clear guidance for business decisions and opens the door for the appeal of decisions. This paper claims that if the precautionary principle is judged to be required in deciding whether to grant consents for fracking, clearer guidance should be given in a National Policy Statement. This would have to be incorporated into local authority plans and rules and therefore considered by all decision makers.¹³⁹

Even where the need for precaution is directly laid out in the relevant statute, it can be avoided. A good example is the regulation of fracking fluids. Most of the chemicals used in fracking fluids are classified as hazardous substances under the HSNO Act.

¹³⁶ R.E. Lofstedt "The Precautionary Principle: Risk, Regulation and Politics" (2003) 81 Trans IChem E 36 at 38.

¹³⁷ Lees, above n 121, at 589.

¹³⁸ Cameron, above n 106, at 14.

¹³⁹ Resource Management Act, s 55.

Section 7 states:

Precautionary approach

All persons exercising functions, powers, and duties under this Act, including but not limited to, functions, powers, and duties under sections 28A, 29, 32, 38, 45, and 48, shall take into account the need for caution in managing adverse effects where there is scientific and technical uncertainty about those effects.

This section has been regarded as akin to the precautionary principle by emphasising the need for caution in managing adverse effects “where there is scientific and technical uncertainty about those effects”.¹⁴⁰ It shows a clear legislative attempt to place a high value on precaution.¹⁴¹ However, critics believe that this legislation is “far from adequate in protecting the environment from fracking impacts”.¹⁴² This paper earlier discussed how importers can self-assess and bring in hazardous substances under the “additives, process chemicals and raw materials” group standard umbrella. As of April 2012, the EPA had not processed a single application for a substance where fracking was mentioned as a possible use rather than under a group standard.¹⁴³

There is scope within the resource consent process for fracking operations under the RMA to require disclosure of all fracking compounds intended for use, as part of the consent application.¹⁴⁴ However, the PCE report concluded that “it is largely up to councils to consider the environmental risks of using particular chemicals in fracking fluid. It is not clear whether councils are relying on generic HSNO approvals rather than assessing the environmental risk of the chemicals used at each particular site”.¹⁴⁵ This is concerning. In addition, the HSNO Act provides that RMA instruments can only include more stringent requirements than the HSNO Act when they are considered necessary for the purposes of the RMA.¹⁴⁶ When the HSNO Act requirements are sufficient to meet the purposes of the RMA that test will not be met. Here we are seeing a careless approach where the regime allows group standards to be used for fracking fluids. This shifts the responsibility of considering environmental risks from the central regulator with industry

¹⁴⁰ Cameron, above n 106, at 16.

¹⁴¹ Gillespie, above n 127, at 377.

¹⁴² Climate Justice Taranaki, above n 93, at 15.

¹⁴³ At 6.

¹⁴⁴ *Submission of Taranaki Regional Council to Parliamentary Commissioner for the Environment on the Future Regulation of Fracking* (Taranaki Regional Council, 9 October 2013).

¹⁴⁵ Wright, above n 2, at 58.

¹⁴⁶ Section 142.

expertise to the local authority, despite a statutory requirement to use caution where there is scientific uncertainty about effects.

Later in this paper, the option of shifting the responsibility of consenting fracking operations to a centralised body (the EPA) is discussed. The EPA currently makes decisions for marine consents under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act), guided by information principles. The principles are set out in s 61 and include a requirement for the EPA to favour caution and environmental protection when information available is uncertain or inadequate.¹⁴⁷ There is no equivalent to these information principles in the RMA. Section 61 is directive, in contrast to the RMA's overall broad judgement approach. If consenting for hydraulic fracturing was considered by the EPA decision-making committee, taking into account the directive information principles, then precaution more prevalent in the decision of whether or not to allow a project. The EPA's method of making decisions under information principles seems to be a more effective way to explicitly apply the precautionary principle to fracking. This is more desirable than leaving the precautionary principle as a mere discretionary consideration under the overall broad judgement of the decision maker under the RMA.

VI Analysis of Current Regulation

From a practical viewpoint, the current regulatory regime is by no means satisfactory. Within New Zealand's current legal and environmental regulatory framework, it is understandable that fracking activities are primarily regulated under the RMA. The RMA is our main statute setting out the management of the environment and natural resources, particularly focusing on how the environmental effects of our activities should be managed.

This paper has assessed the RMA as having broad scope to consider risks in consenting decisions due to the wide definition of "effect".¹⁴⁸ However, this paper argues that the existing scheme is not adequate to deal with the specific environmental issues raised by fracking. No risks are certain, so the key issue for regulators is managing the likelihood of risk. The controversy around fracking worldwide has led many countries to simply ban the practice. This shows that for some, the likelihood or potential risk is above an

¹⁴⁷ Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012, s 61(2).

¹⁴⁸ Section 104(1).

acceptable level. Because there is often a time delay before the appearance of environmental damage it is not yet known whether fracking has occurred elsewhere without environmental consequences. However, evidence has already arisen of immediate detrimental effects as discussed earlier in this paper.

The lack of a fit for purpose regulatory regime exacerbates the likelihood of risks occurring. The RMA is not well suited to managing cumulative effects or expanding technologies– the PCE has framed the issue as: “the straw that breaks the camel’s back generally receives consent more readily than the first straw”.¹⁴⁹ Another issue with the RMA is that although a project can be given consent subject to conditions after an effects assessment, there is no continuous regulatory control after this point:¹⁵⁰

Overall, one sees that the grant of a resource consent subject to conditions is an event that comes to final conclusion, subject only to monitoring of compliance and to formal review procedures. The RMA is not arranged in a manner that allows on-going responsive regulatory action over an extended period.

This paper will now outline issues with the current regulatory process.

A Lack of Local Government Power

Due to the lack of a specific fracking regulatory regime, most regional plans do not have specific rules that deal with discharges of hydraulic fracking fluids separately from other discharges.¹⁵¹ Therefore, fracking is dealt with in the same way as many other activities under the RMA. This means that a council has limited discretion in how it can deal with an application involving fracking. Regional councils (as consent authorities) are legally obligated to consider any consent application on its merits – and refusal to do so may invite either judicial review or appeal proceedings.¹⁵² In many cases the individual activities that are undertaken as part of an oil exploration proposal are controlled or restricted discretionary activities.¹⁵³

¹⁴⁹ Wright, above n 14, at 7.

¹⁵⁰ Barry Barton, Kimberley Jordan and Greg Severinsen *Carbon Capture and Storage: Designing the Legal and Regulatory Framework for New Zealand* (Centre for Environmental, Resources and Energy Law, September 2013) at 36.

¹⁵¹ Simpson Grierson “Local Government: Can Councils Tell Oil and Gas Companies to Keep the Frack Away?” (July 2012) <www.simpsongrierson.co.nz> at 2.

¹⁵² At 2.

¹⁵³ At 2.

1 *Lack of Public Participation*

Public participation in environmental regulation worldwide has been described as “the rule rather than the exception”¹⁵⁴ This holds true in New Zealand with public participation described as a founding principle of the RMA.¹⁵⁵ The purposes of the public participation process were stressed in *Discount Brands Ltd v Westfield (New Zealand) Ltd*.¹⁵⁶

The purposes of [the] public participatory processes [in the RMA] are twofold – first, to recognise and protect as appropriate the particular rights and interests of those affected and more general public interests and, secondly, to enhance the quality of the decision making.

While complex due to scientific and technical elements, decisions about the use of natural resources and the effects of these activities on the local environment have broader cultural and social facets.¹⁵⁷ This explains why decisions about whether to notify resource consent applications are so controversial.

A council must consider whether an application for a resource consent should be notified. There are two types of notified resource consent applications – publically notified and limited notified.¹⁵⁸ A consent authority must, within 20 working days of receiving an application of a resource consent, decide whether to give public or limited notification of the application.¹⁵⁹ If an application is publicly notified, any member of the public may make submissions or ask to be heard at a public hearing.¹⁶⁰ If an application is “limited notified” then notice of the application is served on persons identified as being adversely affected and only those persons may lodge a submission.¹⁶¹ In relation to fracking, if a council considers the environmental impacts of the proposed activity are “more than

¹⁵⁴ Mark Bennett and Joel Colón-Ríos “Public Participation in New Zealand’s Regulatory Context” in Susy Frankel and Deborah Ryder (eds) *Recalibrating Behaviour: Smarter Regulation in a Global World* (LexisNexis, Wellington, 2013) at 6.3.3.

¹⁵⁵ Bronwyn Carruthers and Simon Pilkinton “Eroding the founding principles of the Resource Management Act 1991” (2013) *Resource Management Journal* 17 at 18.

¹⁵⁶ *Discount Brands Ltd v Westfield (New Zealand) Ltd* [2005] NZSC 17, [2005] 2 NZLR 597 at [46].

¹⁵⁷ Bennett and Colón-Ríos, above n 154, at 6.3.3.

¹⁵⁸ Section 2AA.

¹⁵⁹ Section 95.

¹⁶⁰ Section 96.

¹⁶¹ RMA Quality Planning Resource “Notified and Limited Notified Resource Consent Applications” <www.qualityplanning.org.nz>.

minor” it must publically notify the application.¹⁶² A rule or National Environmental Standard, discussed later, can also require public notification of an application.¹⁶³

All consent activities must be treated and assessed in the same way. Therefore a council cannot be more vigilant during its effects assessment for fracking activities than it is for any other activity.¹⁶⁴ If there is no apparent evidence of adverse effects, then the council may not be able to publically notify the application, despite public desire. A high level of public interest does not necessarily meet the alternative notification threshold of “special circumstances” existing.

“Special circumstances” have been defined by the Court of Appeal as those that are unusual or exceptional, but they may be less than extraordinary or unique.¹⁶⁵ In *Murray v Whakatane District Council*, Elias J stated that circumstances which are “special” will be those which make notification desirable, notwithstanding the general provisions excluding the need for notification.¹⁶⁶ Exploratory wells are now being drilled in the East Coast Basin – both in Manawatu and in Gisborne. The PCE believes these wells have the potential to be the beginning of a rapidly growing industry in this area of the country. On its face, it seems arguable that these new exploratory wells present “special circumstances.” Nevertheless, neither of the Horizons Regional Council nor Gisborne District Council publically notified the consent applications for drilling these exploratory wells.¹⁶⁷

The Supreme Court has recognised the gravity of the decision around notification. Elias J stated that processing consent applications on a non-notified basis “deprives others of the right to participate in the determination of the resource consent application” by removing the ability to make a submission.¹⁶⁸ In Taranaki, there were 20 resource consents for fracking issued between 2011 and 2013 and none were publically notified.¹⁶⁹ This means that the public cannot appeal any consent that is granted because standing is triggered by

¹⁶² Sections 95A(2)(a) and 95D.

¹⁶³ Section 95A(2)(c).

¹⁶⁴ Simpson Grierson, above n 151, at 2.

¹⁶⁵ *Peninsula Watchdog Group (Inc) v Minister of Energy* [1996] 2 NZLR 529 (CA).

¹⁶⁶ *Murray v Whakatane District Council* [1999] 3 NZLR 276 (HC).

¹⁶⁷ Wright, above n 14, at 69.

¹⁶⁸ *Discount Brands Ltd v Westfield (New Zealand) Ltd*, above n 156, at [21].

¹⁶⁹ Simon Hartley “Fracking consenting done, not notified” *Otago Daily Times* (online ed, Dunedin, 31 August 2013).

an original submission.¹⁷⁰ Judicial review is the only remedy to appeal the non-notification decision.¹⁷¹

The lack of public participation can also be analysed from a social issues angle. The Environmental Protection Authority of Western Australia has stated “community confidence about the effective management of environmental impacts and risks associated with this industry is best achieved through open and transparent regulatory processes”.¹⁷² It has been noted that fracking has struggled to gain a “social license” in New Zealand.¹⁷³ The Chief Economist of the International Energy Agency has warned that “if this new industry is to prosper, it needs to earn and maintain its social license to operate”.¹⁷⁴ The term “social license to operate” refers to a local community’s acceptance or approval of a project.

The International Energy Agency pointed out that “the environmental and social hazards relating to fracking and other features of unconventional gas development have generated keen public anxiety in many places”.¹⁷⁵ This has led to the lack of a social license to operate in the communities where fracking operations occur. While a social license to operate is not required to legally operate, failing to acquire social acceptance is likely to lead to ongoing conflict.¹⁷⁶ Changes in the scope of public engagement could help. Bowen argues that without opportunities for active participation and empowerment, communities are less likely to issue their approval and support.¹⁷⁷ Although increasing the level of publically notified resource consent applications may slow decision-making, and therefore slow fracking operators, public participation serves the rationale of producing “socially acceptable environmental results”.¹⁷⁸

¹⁷⁰ Carruthers and Pilkinton, above n 155, at 19.

¹⁷¹ At 19.

¹⁷² Environmental Protection Authority (WA) *Hydraulic Fracturing of Natural Gas Reserves* (Environmental Protection Bulletin No. 15, September 2011).

¹⁷³ Wright, above n 2, at 77.

¹⁷⁴ International Energy Agency “IEA sets out the “Golden Rules” needed to usher in a Golden Age of Gas” (press release, 29 May 2012).

¹⁷⁵ International Energy Agency *Golden Rules for a Golden Age of Gas* (2012) at 17.

¹⁷⁶ Evan House “Fractured Fairytales: The Failed Social License for Unconventional Oil and Gas Development” (2013) 13 Wyo L Rev 5 at 51.

¹⁷⁷ Jason Prno and D. Scott Slocombe “Exploring the origins of ‘social license to operate’ in the mining sector: Perspectives from governance and sustainability theories” (2012) 37 Resources Policy 346 at 349.

¹⁷⁸ Benjamin Richardson and Jona Razzaque “Public Participation in Environmental Decision-Making” in Benjamin Richardson and Stepan Wood (eds) *Environmental Law for Sustainability: a reader* (Hart Publishing, Oxford, 2006) 165 at 179; Bennett and Colón-Ríos, above n 154, at 6.3.3.

2 *Unbundling of Consents*

Another issue with the consenting process is the staged application approach. This describes the situation where a company will apply for various consents for one well separately – i.e. ‘unbundling’ the consents. For example, the exploratory Punawai-1 well in Gisborne used a sequential consenting process.¹⁷⁹

Under s 91 of the RMA, councils have a ‘discretionary’ deferral power. This allows a council to require a company to ‘bundle’ consent applications so that a whole operation can be assessed at the same point in time. The council can defer any given application, with the test being whether deferral would lead to a better overall understanding of all the activities of the proposal as a whole, and the effects of those activities.¹⁸⁰ If the council understands the consent application before it, that test might not be met.¹⁸¹

The RMA Quality Planning Resource recommends bundling of consents as good practice for these types of operations because:¹⁸²

Where more than one activity is involved and those activities are inextricably linked, the general rule is that the activities should be bundled and the most restrictive activity classification applied to the overall proposal. Splitting the proposal into its separate applications for the purposes of notification and assessment of effects could mean that the council failed to look at a proposal in whole.

Fracking provides a prime example of how the consenting process can be used in a way that prevents councils from assessing the proposal as a whole. Where resource consents (e.g. for discharge, land-use and water take) are granted separately, an unbundled procedure fails to consider the cumulative effects of the proposal as a whole, and the overall impacts on the environment and local communities. It also may lead to the decision that an individual consent does not meet the threshold for public notification, resulting in reduced public participation as discussed above.

3 *Lack of Power to Prevent Fracking*

Because the consenting of fracking operations lies with regional councils, territorial authorities are unlikely to have a direct role in regulation.¹⁸³ Therefore, even if a

¹⁷⁹ Wright, above n 14, at 69.

¹⁸⁰ Resource Management Act, s 91.

¹⁸¹ Simpson Grierson, above n 151, at 2.

¹⁸² RMA Quality Planning Resource “Separate activities or holistic assessment?”
<www.qualityplanning.org.nz>.

territorial authority wished to declare their area as a frack-free zone this is unlikely to have any legal effect on the ability of an operator to seek consents or carry out the activity. As already laid out, a regional council has a legal duty to process resource consent applications according to the statutory timeframes unless there is a prohibited activity status.¹⁸⁴ Imposing a prohibited activity status would be the way, under the current regulatory framework, for a council to implement a ban that would have the force of law.¹⁸⁵ Alternatively, a National Environmental Standard may prohibit an activity, but this would have to occur through central government leadership.¹⁸⁶ Arguments for greater central government guidance are presented later in the paper.

Before a regional council is able to impose prohibited activity status, the council would need to be able to show that prohibited activity status is the most appropriate way to achieve the objectives of the regional plan, and ultimately, the purpose of the RMA.¹⁸⁷ Environmental lawyers have speculated that to meet this test the council would need to have robust evidence of a “significant risk of adverse effects on the environment if the activity is allowed to proceed”.¹⁸⁸ Mere perceptions of risk which are not well-founded will not suffice.¹⁸⁹ These issues can be linked to the discussion of the precautionary principle earlier. As outlined, individual consenting decisions leave scope for the decision maker to consider a spectrum of risks, including any potential effects of low probability which have a high potential impact.¹⁹⁰ The imposition of a prohibited activity status requires meeting a higher evidential threshold of effects. This is understandable because if fracking was to be declared a “prohibited activity”, operators would not be able to apply for, and a council would not be able to grant, a resource consent.¹⁹¹ Generally speaking, the ability to classify an activity as prohibited should not be used liberally as a planning tool to deter activities or development.¹⁹² Prohibited activity status should be limited to situations of significant risk to health, safety or land use.¹⁹³

¹⁸³ Territorial authorities are the second tier of local government including city and district councils.

¹⁸⁴ Ministry for the Environment “Resource consent process for notified/limited notified applications” and “Resource consent process for non-notified applications” (2015) <www.mfe.govt.nz>.

¹⁸⁵ Resource Management Act, s 77A.

¹⁸⁶ Section 43A.

¹⁸⁷ Section 32.

¹⁸⁸ Simpson Grierson, above n 151, at 2.

¹⁸⁹ At 2.

¹⁹⁰ Resource Management Act, s 104(1)(f).

¹⁹¹ Section 87A(6).

¹⁹² Kenneth Palmer “Resource Management Act 1991” in Derek Nolan (ed) *Environmental and Resource Management Law* (LexisNexis, Wellington, 2015) at 213.

¹⁹³ At 217.

This could prove to be an issue as limited New Zealand based studies have been carried out. Councils would be reliant on expert evidence provided to them. For example, a GNS report in 2012 found no evidence for fracking having an observable effect on natural earthquakes in the region.¹⁹⁴ There is overseas evidence that could be relevant such as the April 2015 United States Geological Survey report confirming induced seismicity as a result of underground injection wells.¹⁹⁵ However, different regions have different physical characteristics that lead to different risk factors. As the environmental impacts of fracking are largely dependent on the local environment this overseas evidence may hold less weight. The Hawke's Bay has been highlighted as the next area for fracking.¹⁹⁶ Being a region with major known earthquake faults may mean that wells are more vulnerable to damage from seismic activity.

Alternatively, councils could base their argument for prohibited activity status on the lack of reassuring evidence.¹⁹⁷ Section 32(4)(c) of the RMA allows a council to consider “the risk of acting or not acting if there is uncertain or insufficient information about the subject matter of the provisions.” This is a recognition of the precautionary principle. The Court of Appeal in *Coromandel Watchdog* identified categories of situations that could lead to a prohibited status being imposed. The categories included taking a precautionary approach if there is insufficient information about an activity to determine what provision should be made for that activity in the local authority's plan.¹⁹⁸

Similar issues concerning the local authorities' lack of power are currently occurring in the United Kingdom. Very recently, the UK Energy Secretary revealed ministers will have new powers to “call in” an application for shale gas exploration as soon as it is submitted to a local authority.¹⁹⁹ Critics argue that this removes local communities from the heart of the decision-making process and allows the government to “push their agenda of a shale gas revolution” and prioritise the interests of developers.²⁰⁰

¹⁹⁴ Sherburn and Quinn, above n 36.

¹⁹⁵ USGS Newsroom “New Insight on Ground Shaking from Man-Made Earthquakes” (press release, 23 April 2015).

¹⁹⁶ Wright, above n 2, at 5.

¹⁹⁷ Simpson Grierson, above n 151, at 2.

¹⁹⁸ *Coromandel Watchdog of Hauraki Inc v Chief Executive of the Ministry of Economic Development* [2007] NZCA 473, [2008] 1 NZLR 562 at [41] and [45].

¹⁹⁹ Emily Gosden “Fracking: new powers for ministers to bypass local councils” *The Telegraph* (online ed, United Kingdom, 13 August 2015).

²⁰⁰ Gosden, above n 199.

If the justification for decentralised decision-making in the RMA is to allow those closest to the effects to regulate the activities, then this should be comprehensive power to allow local communities to decide to prevent fracking in their region or territory. Potential for a moratorium is discussed further later in the paper.²⁰¹

B Problems with Remedies

Widespread intergenerational environmental risk leads to considerable complexities for policy makers. As the extent of the potential effects are unknown and will plague future generations, Ogus argues it is harder to correct the externality through private instruments as there will be a “time lag in the private rights accruing”.²⁰² Additionally, pinning fault for harmful effects specifically on fracking operators is hard to do as fracking occurs hundreds of meters below ground where “verification is costly if not impossible”.²⁰³

1 Enforcement under the RMA

The RMA provides a number of enforcement mechanisms which are designed to ensure compliance with the legislative regime.²⁰⁴ Section 338 sets out offences against the RMA.

The most serious offences are set out in s 338(1)-(1B) and include breaches of obligations imposed under Part 3 of the RMA. Most relevantly in the fracking context is the breach of duties relating to water, other water bodies and discharge of contaminants.²⁰⁵ The most serious offences can attract imprisonment of up to two years and fines of up to \$300,000.²⁰⁶ Section 339(1)(b) states that the maximum fine for a body corporate is \$600,000.

²⁰¹ See Section VII Options for Reform.

²⁰² Bronwen Morgan and Karen Yeung *An Introduction to Law and Regulation* (Cambridge University Press, Cambridge, 2007) at 22.

²⁰³ Fitzgerald, above n 32, at 1356.

²⁰⁴ Janette Campbell “Statutory remedies: the enforcement provisions of the Resource Management Act 1991” in Derek Nolan (ed) *Environmental and Resource Management Law* (LexisNexis, Wellington, 2015) at 1377.

²⁰⁵ Resource Management Act, s 338(1).

²⁰⁶ Downing, above n 6, at 258.

While these offences are not strict liability in the traditional sense,²⁰⁷ it is generally unnecessary to prove an intent to commit the offence.²⁰⁸ A relevant comparator case is *McKnight v New Zealand Biogas Industries Ltd* where there was no evidence that the defendant was aware of the facts giving rise to the discharge of waste.²⁰⁹ Gault J held that “it is difficult...to see room for any mental element in the act of discharge”.²¹⁰ This reiterates that if a fracking operator was to discharge waste in a manner inconsistent with consent under the RMA, they would be strictly liable.

Members of the public can apply for an abatement notice under ss 322-325 of the RMA. These are issued by local authority enforcement officers and could be used as an option to solve a nuisance problem suffered by a person affected by hydraulic fracturing.²¹¹

This paper has only offered two examples of enforcement options under the RMA but there are a raft of techniques in the statute designed to enforce compliance and deal with environmental damage. However, these provisions are not an ideal fit for the type of offences they act to punish. With corporate defendants, there is always the risk that the company will wind up and depart offshore and a guilty party will not be able to be found. Fines may be insufficient to outweigh the cost of restoring harmed sites. In relation to fracking operations a fine will likely be an inadequate remedy as serious harms (such as contaminated drinking water) are often irreversible.

2 Common Law

Section 23(1) of the RMA states that “compliance with this Act does not remove the need to comply with all other applicable Acts, regulations, bylaws, and rules of law.” A granted resource consent and ownership of a mining permit will not create an exemption from tortious liability.²¹² This has been confirmed by New Zealand courts.²¹³ There is potential for common law remedies to provide relief for any potential economic harm caused by fracking.

²⁰⁷ Campbell, above n 204, at 1386. The statute provides limited defences to these offences such as reasonable action in a severe emergency, or unforeseeable act beyond the defendant’s control. Both occurrences must be followed by remedial action after damage occurred.

²⁰⁸ Downing, above n 6, at 258.

²⁰⁹ *McKnight v New Zealand Biogas Industries Ltd* [1994] 2 NZLR 664 (CA).

²¹⁰ At 669.

²¹¹ Downing, above n 6, at 260.

²¹² At 264.

²¹³ *Ports of Auckland Ltd v Auckland City Council & Ors* [1999] 1 NZLR 601 (HC) at 611.

It is beyond the scope of this paper to assess the viability of common law claims in depth. An example of a common law remedy against fracking operators could be a claim in nuisance. In general terms, nuisance is an “unreasonable interference with a person’s right to the use or enjoyment of an interest in land”.²¹⁴ While private nuisance involves an invasion of the right to use and enjoy land, public nuisance must:²¹⁵

...seriously interfere with the health, convenience, or comfort of the public generally, and must, therefore, actually affect a not inconsiderable number of people, or interfere with rights which members of the community generally might otherwise enjoy.

Given that the rights of the general public would be seriously harmed if hydraulic fracking causes groundwater aquifers to be polluted or contaminated, there may be scope for a public nuisance claim in the context of fracking operations.

In terms of private nuisance, the House of Lords in *Cambridge Water* held that the right of a landowner to extract clean ground water beneath their land is a natural right of ownership.²¹⁶ This decision was followed by the New Zealand Court of Appeal in *Autex Industries*.²¹⁷ Therefore it is likely that New Zealanders who suffer groundwater contamination from fracking activities could rely on the New Zealand courts to follow the *Cambridge Water* approach to interference with their right to clean ground water.²¹⁸

The rule in *Rylands v Fletcher* could also be used to found a claim against fracking operators. A summation of the rule is:²¹⁹

the true rule of law is, that the person who, for his own purposes, brings on his land, and collects and keeps there anything likely to do mischief if it escapes, must keep it at his peril, and, if he does not do so, is prima facie answerable for all the damage which is the natural consequence of its escape.

The New Zealand Court of Appeal has recognised that the rule in *Rylands v Fletcher* is a special form of private nuisance.²²⁰ As it is a tort, foreseeability of harm must be

²¹⁴ Stephen Todd *The Law of Torts in New Zealand* (6th ed, Brookers, Wellington, 2013) at 510.

²¹⁵ *Attorney-General v Abraham and Williams* [1949] NZLR 461 (CA) at 484.

²¹⁶ *Cambridge Water Co Ltd v Eastern Counties Leather* [1994] 2 AC 264.

²¹⁷ *Autex Industries Ltd v. Auckland City Council* [2000] NZAR 324 (CA).

²¹⁸ Shona Walter “A Fracking “Nuisance”” (2012) 42 E P & L 268 at 271.

²¹⁹ *Rylands v Fletcher* (1866) LR 1 Ex 265 per Blackburn J at 279-280.

²²⁰ *Hamilton v Papakura District Council* [2000] 1 NZLR 265 (CA).

proven.²²¹ *Matheson v Northcote Board of Governors* stated that liability under *Rylands v Fletcher* would arise if:²²²

- (a) A thing which is dangerous per se escapes, causing damage; or
- (b) There is a non-natural use of land, as a result of which damage is caused by the escape of a thing which, although not dangerous in itself, proves to be dangerous in all the circumstances

It is therefore arguable that any claims relating potential harms caused by fracking could use the *Rylands v Fletcher* rule as the process involves inherently dangerous contaminants (e.g. toxic chemicals in fracking fluids) and the escape of gas could cause damage.²²³

Anticipatory nuisance has been floated by US academics as another possible cause of action.²²⁴ Tort law generally requires injury or damage before an action for damages or injunction relief can be asserted.²²⁵ Support for this position is found in the principle that it is unfair to assume that a defendant will conduct its activities in a way that will create injury.²²⁶ This is a less than desirable barrier to claiming relief as environmental damage should be avoided as far as possible. The common law doctrine of anticipatory nuisance enables courts to “prevent permanent harm in circumstances where it may be difficult or even impossible to restore the damage”.²²⁷ It is unclear whether this doctrine would find favour in New Zealand courts.

In any case, the common law is not a desirable fallback for remedying adverse environmental effects. High legal costs are often a bar against a potential plaintiff bringing an action. Costs in bringing a claim will involve both the costs of legal representation but also likely the costs of hiring an expert witness to provide evidence of environmental harm.²²⁸ There is also the risk of being ordered to pay the defendant’s

²²¹ At 282-284.

²²² *Matheson v Northcote Board of Governors* [1975] 2 NZLR 106 (SC) at 117.

²²³ Downing, above n 6, at 267.

²²⁴ Andrew Sharp “An Ounce of Protection: Rehabilitating the Anticipatory Nuisance Doctrine” (1988) 15 BC Env'tl Aff L R 627 at 637; Lees, above n 121, at 592.

²²⁵ At 637.

²²⁶ At 638.

²²⁷ Lees, above n 121, at 592.

²²⁸ Lucy Boys “Cleaning up Contamination Law: An Analysis and Critique of the Resource Management Act and Common Law Causes of Action” (LLB (Hons) Dissertation, University of Auckland, 2001) at 7.

costs if the claim is not successful. These costs and the risks of an unsuccessful outcome may mean that potential plaintiffs will be deterred from bringing a claim at common law.

Although these issues are common to all litigation, Gearty notes that these difficulties are especially relevant to cases involving environmental damage as “often a big business concerned is the defendant and the alleged pollution may be the result of a complicated scientific process”.²²⁹ Civil remedies are often inappropriate for resolving contamination and environmental disputes due to the problems of causation and burden of proof. Remedies usually focus on returning the plaintiff to the position they would have been in if there was no damage and this fails to recognise the intrinsic value of natural resources.²³⁰ Time limits on common law claims may also be an issue. Where contamination results from deep underground activities a plaintiff may be unaware at the time the contamination occurs or be unaware of the extent of the damage.

3 Environmental Bonds/Public Liability Insurance

An interesting issue that could raise regulatory implications is liability for ongoing environmental impacts from well leaks or closure. For example, a council may require liability insurance or a bond to be paid. In America, Pennsylvania Act 13 requires owners and operators to file with the department a bond covering the well and well site.²³¹

Currently, there is no requisite level of public liability insurance for companies operating wells.²³² Section 108A(2)(d) of the RMA allows councils to require companies to pay a bond as a condition to granting a resource consent to “secure performance of conditions of the consent including conditions relating to any adverse effects on the environment that become apparent during or after the expiry of the consent.” The PCE assessed that councils do not appear to have used this provision in relation to oil and gas activities but points to the example of Waikato District Council requiring a \$100,000 bond from the consent holder in relation to a landfill works consent.²³³

²²⁹ Conor Gearty “The Place of Private Nuisance in a Modern Law of Torts” (1989) 48 CLJ 214 at 216.

²³⁰ Boys, above n 228, at 7.

²³¹ LeRoy Paddock and Jessica Wentz “Hydraulic Fracturing and Shale Gas in the US” in in Donald N. Zillman and others *“The Law of Energy Underground: Understanding New Developments in Subsurface Production, Transmission, and Storage”* (Oxford University Press, Oxford, 2014).

²³² Wright, above n 14, at 45.

²³³ At 90.

Different issues arise when there is a leak from an abandoned well because once a consent is surrendered, the landowner will be liable for any future problems.²³⁴ This paper presents an option of implementing the insurance requirement at the permit stage. For offshore drilling installations the Maritime Transport Act 1994 requires each operator have a valid certificate of insurance that is accepted by the Director of Maritime Safety.²³⁵ The relevant rules require the owners of regulated offshore installations to hold insurance cover for approximately \$27 million to cover any claims for pollution damage arising from any spill of harmful substances.²³⁶ A similar insurance requirement could be implemented for those applying for a permit to frack. If fracking operations, as speculated, migrate into the offshore environment any discharge of fracking fluid into the sea from an installation will be regulated under the Maritime Transport Act 1994 through a discharge management plan and an insurance certification will be required.²³⁷ It would therefore make sense to have an equivalent insurance against onshore contamination.

VII Options for Reform

Implementation of the regulation reveals a key regulatory policy question: is it appropriate for local government to deal with fracking operations as it does conventional oil drilling projects or should the responsibility be moved or shared such as it has been with offshore drilling?

A Central Government Guidance

Decentralised decision-making is central to the operation of the RMA. This devolution of authority from a higher to a lower level of government is based on the premise that local decision makers are best placed to make the decisions that affect their communities the most.²³⁸ Law and economics scholars commonly advocate for regulation to occur at the level of government that is closest to the problem and subsumes all or most of the costs and benefits of the activity to be regulated.²³⁹ The PCE expressed concern at a perceived

²³⁴ At 80.

²³⁵ Maree Baker-Galloway, Paul Franklin and Lauren Wallace “The Wider Environmental Law Landscape – Overlapping and Interlinked Legislation” (paper presented to the New Zealand Law Society Environmental Law Intensive Conference, April 2014) 89 at 125.

²³⁶ At 126.

²³⁷ Mark Christensen, Stephen Christensen and Monique Thomas “Evaluating the Environmental Impacts of Fracking in New Zealand” Anderson Lloyd Lawyers <www.andersonlloyd.co.nz>.

²³⁸ Barton, Jordan and Severinsen, above n 150, at 28.

²³⁹ David Spence “Federalism, Regulatory Lags, and the Political Economy of Energy Production” (2013) 161 U Pa L Rev 431 at 462.

disconnect between central and local government; government receives the financial return from the production of oil and gas but the responsibility of regulating the production lies on regional and district councils.²⁴⁰

Central government has a role in setting policy on matters of national significance and monitoring the implementation of the RMA. Although there is a role for central government within the RMA framework, in practice most decisions occur at the level of regional and territorial government. When the RMA was enacted, it was originally intended that central government would play a strong support role for local government regulating consents, for example through National Policy Statements and National Environmental Standards.²⁴¹ However, the government has not played an active role in this respect both generally and with regards to fracking. There have been a limited number of National Policy Statements with only four in place.²⁴² Difficulties with the implementation of these instruments is discussed later.

The MFE can provide central government assistance through either the provision of “RMA instruments”²⁴³ or through guidance. To date, the Ministry has released guidelines in March 2014, titled *Managing Environmental Effects of Onshore Petroleum Development Activities (Including Hydraulic Fracturing): Guidelines for Local Government*. However, these guidelines are not enforceable. For example, the waste produced by fracking has controversially been disposed of on farmland in Taranaki after consent was approved by the council.²⁴⁴ Although the new guidelines do not support the practice, MFE is allowing councils to “decide whether or not to follow best practice” and then offer deep-well injection as an alternative.²⁴⁵ As discussed earlier, deep-well injection comes with its own set of undesirable environmental impacts including an increased risk of seismic activity and aquifer contamination.

²⁴⁰ Wright, above n 2, at 5.

²⁴¹ Barton, Jordan and Severinsen, above n 150, at 28.

²⁴² “National Policy Statements” (July 2015) Ministry for the Environment <www.mfe.govt.nz>.

²⁴³ National Policy Statements and National Environmental Standards.

²⁴⁴ Benedict Collins “New guidelines for fracking waste” (Radio New Zealand, 2 April 2014) <www.radionz.co.nz>.

²⁴⁵ Collins, above n 244.

The MFE guidelines state “these guidelines have been prepared by Rhys Armstrong and Sabrina Young of GHD Ltd.” Upon a closer look, the GHD Ltd 2013 Annual Report states that the company:

expanded our capabilities in energy and resources with two mergers: Hill Michael Engineering in the power sector and ProMet Engineers in the mining sector. This, alongside our momentum in oil and gas, has facilitated engagements in major projects in Australia, Chile and the Philippines.

It is concerning that these guidelines, held out as a model of best practice for the industry, were prepared by a company with significant interests in the sector. This paper argues that guidance should be given from central government in the form of an RMA instrument which has strong procedural requirements including scope for public submissions. This type of guidance is preferable to guidelines that have been prepared by a self-interested party which raises concerns of regulatory capture. RMA instruments can impose particular policy choices of central government so that local authority decision makers no longer approach decisions under the general policy framework of the Act.²⁴⁶ These instruments must be given effect by regional councils and district councils and by a board of inquiry if a proposal is called in.²⁴⁷

1 National Policy Statement

One of the recommendations coming out of the PCE review process, called for the Minister for the Environment to direct MFE to prepare a National Policy Statement on onshore oil and gas exploration and production.²⁴⁸ Preparing a National Policy Statement is discretionary and made on the recommendation of the Minister for the Environment.²⁴⁹

The purpose of National Policy Statements is “to state objectives and policies for matters of national significance”.²⁵⁰ National Policy Statements are an instrument for central government to use to retain control over the management of resources by guiding local government in a high-level policy framework.²⁵¹ The New Zealand Treasury states that

²⁴⁶ Barton, Jordan and Severinsen, above n 150, at 43.

²⁴⁷ Sections 44A and 55.

²⁴⁸ Wright, above n 14, at 73-82.

²⁴⁹ Section 24(a).

²⁵⁰ Section 45.

²⁵¹ Aimee Brown “The role of central government in resource management: less extraordinary under the Resource Management Act 1991?” (LLM Dissertation, University of Otago, 2009) at 89.

National Policy Statements “give central government the opportunity to elaborate on the legislative text, by providing policy direction and guidance”.²⁵²

The PCE believes that a National Policy Statement could “give clear direction to both regional and district councils on how they should deal with the on shore oil and gas industry in their policy statements and plans, focusing on areas where industry expansion is likely.” A National Policy Statement requires only one decision-making process as to how fracking should be classified and regulated, so a National Policy Statement saves on costs of decision-making by cutting out duplication.²⁵³

National Policy Statements guide subsequent decision-making under the RMA at the national, regional and district levels and can therefore significantly affect resource management practices in New Zealand.²⁵⁴ Local authorities must amend, as soon as practicable, all relevant documents to give effect to a National Policy Statement once promulgated.²⁵⁵ This includes proposed or existing regional policy statements, or proposed or existing regional or district plan.²⁵⁶ At present, it is particularly concerning that most regional plans do not distinguish between the drilling of an oil and gas well and the drilling of a water well.²⁵⁷ This is something that could be implemented in the National Policy Statement. A National Policy Statement can also direct local authorities as to what is required for planning responses.²⁵⁸ For example the New Zealand Coastal Policy Statement requires a “precautionary approach” to be applied in certain circumstances.²⁵⁹ This would go beyond the inherent approach to the precautionary principle in the RMA and require decision makers to explicitly take a precautionary view.

The RMA does not prescribe the content of National Policy Statements. Section 46B provides that they may by reference incorporate standards, requirements or recommended

²⁵² Kevin Guerin *Central government guidance and the Resource Management Act* (New Zealand Treasury, Policy Perspectives Paper 05/02, March 2005) at 4.

²⁵³ Suzi Kerr, Megan Claridge and Dominic Milicich *Devolution and the New Zealand Resource Management Act* (New Zealand Treasury, Treasury Working Paper 98/7, 1998) at 22.

²⁵⁴ Environment Foundation “Planning Documents and Processes: National Policy Statements” (2014) Environment Guide <www.environmentguide.org.nz>.

²⁵⁵ Resource Management Act, s 55.

²⁵⁶ Section 55(1).

²⁵⁷ Wright, above n 14, at 35.

²⁵⁸ Philip Milne “When is Enough, Enough? Dealing with Cumulative Effects under the Resource Management Act” (February 2008) Horizons Regional Council <www.horizons.govt.nz> at 26.

²⁵⁹ New Zealand Coastal Policy Statement 2010, Policy 3.

practices of national or international organisations and other countries or jurisdictions and any other written material that deals with technical matters and is too large or impractical to include in the standard.

It should be recognised that National Policy Statements are not without their own inherent limitations. The process of making a National Policy Statement can be described as slow and cumbersome.²⁶⁰ This is largely because time is allowed for many interests groups and the public to submit. Lack of public participation in the current consenting framework has been highlighted as a major problem with the status quo, so allowing community groups and interested parties to submit on a National Policy Statement is desirable despite the extra time and potential expense involved. With an electoral term of three years, any government commencing the National Policy Statement process would need to be confident of more than one term in power or cross-party support as it is likely that the creation process would take more than one parliamentary term.²⁶¹

2 National Environmental Standard

The other relevant instrument that could be issued by central government is a National Environmental Standard. Section 43 of the RMA makes provision for National Environmental Standards to be established through regulations. These standards give central government an opportunity to promote the adoption of consistent standards at regional and district levels as a National Environmental Standard applies nationally and overrides regional rules.

The regulations may prohibit an activity, or allow an activity subject to compliance with rules.²⁶² This will achieve nationwide consistency as regional and local councils will have to enforce the same standard. Consistency is also in the interests of industry, as they will have familiarity in regulatory processes if operating in one or more regions. National Environmental Standards may act as a minimum baseline and allow councils to impose stricter standards in their own plans or it may be absolute so that local rules cannot be more lenient or stricter than the standard.²⁶³

²⁶⁰ David Young *Values as Law: The History and Efficacy of the Resource Management Act* (Institute of Policy Studies, 2001) at 42.

²⁶¹ Nicky McIndoe “National Policy Statements: at the whim of politics?” (2010) 8 BRMB 158 at 159.

²⁶² Section 43A.

²⁶³ Section 43B.

Currently, the “National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health” applies to fracking operators where a well has contaminated soil at a site that is to be converted to a different use.²⁶⁴ A suggestion for creating another relevant National Environmental Standard is surrounding the issue of wastewater. As outlined earlier in this paper, the disposal of wastewater is concerning and largely unregulated. Keene argues that the best option is a legally-binding standard requiring full treatment of wastewater before disposal.²⁶⁵

This could be promulgated as a National Environmental Standard under s 43 of the RMA. This would put constraints on consenting authorities when considering consents for fracking, while retaining their ability to reject or put further conditions on the activity of fracking overall. Making the industry responsible for the full environmental impacts of its activities would create economic incentives for innovation.

The United States left disposal of wastewater unregulated at a national level and allowed a state-by-state regulation of wastewater disposal.²⁶⁶ This resulted in widely varying standards. Although Pennsylvania has a strong regulation requiring private treatment of wastewater,²⁶⁷ other states do not have these standards so polluted waste can be exported. This presents a strong argument for central government regulation so that operators cannot exploit weaker regulatory regimes in neighbouring regions. National Environmental Standards would be useful for specific aspects of the fracking process such as waste disposal where clear technical standards for the whole country can be set.

B Centralised Body

The industry is against a central agency controlling fracking consents. Large player Todd Energy argued in a submission that “local consenting is more flexible and responsive to local conditions than ‘command and control’ from the centre, which would inevitably be more prescriptive”.²⁶⁸ However, as outlined earlier in the paper the current piecemeal regulation is inadequate and leading to wide variation in regulation across regions. Another option for reform is that the EPA could be given responsibility for managing

²⁶⁴ Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.

²⁶⁵ Keene, above n 38, at 29.

²⁶⁶ At 29.

²⁶⁷ 25 PA Code 95.10 (2010).

²⁶⁸ Helen Harvey “Todd submission favours local fracking consents” *Taranaki Daily News* (online ed, New Plymouth, 12 November 2013).

consents for any extraction projects involving fracking. There are already processes in place within the agency due to their experience with managing consenting for activities in the exclusive economic zone (EEZ) and managing the decision-making process for proposals of national significance under the RMA.

The EPA is a Crown agent under the Crown Entities Act 2004.²⁶⁹ The key reason for establishing the EPA was to provide greater central government direction in environmental regulation and address weaknesses in the environmental management framework.²⁷⁰ The EPA has a range of functions under various environmental legislation and regulations.²⁷¹ For example, the EPA is responsible for fracking fluids under the HSNO legislation and it would be desirable to incorporate more of the fragmented process under one regulatory body. This paper has discussed the issue of councils relying on HSNO Act approvals without further assessment. The EPA is better placed and informed on hazardous substances to deal with these approvals in the context of the wider consenting process.

In particular, the EPA has experience with managing the environmental effects of activities such as petroleum exploration and mining in the EEZ. Prior to the EEZ Act, activities in these areas were unregulated. The activities managed include the construction of petroleum platforms, seabed mining, possible aquaculture developments, carbon capture and storage and marine farming.²⁷² The RMA only extends to New Zealand's territorial sea, out to 12 nautical miles, and therefore legislation was needed to fill a gap in our environmental law.

The public debate around the exploration of our EEZ, much like fracking, involves the same fundamental tension between economic opportunities and environmental protection. Due to the EEZ's largely unknown qualities, it is a significant zone of untapped space and resources that mining investors are looking to for future developments.²⁷³ There is overlap on the issues of public resistance and the struggle for a social license to operate.²⁷⁴ Introduction of the legislation followed the "Deepwater Horizon" incident in

²⁶⁹ Schedule 1.

²⁷⁰ Ministry for the Environment *Environmental Protection Authority Bill: Initial Briefing for the Local Government and Environment Select Committee* (February 2011) at 3.

²⁷¹ Environmental Protection Authority "What we do" <www.epa.govt.nz>.

²⁷² (13 September 2011) 675 NZPD 21214.

²⁷³ Ministry for the Environment *Improving Regulation of Environmental Effects in New Zealand's Exclusive Economic Zone* (August 2007) at 2.

²⁷⁴ Chris Simmons "The RMA at Sea?" [2012] NZLJ 385 at 387.

the Gulf of Mexico, and more recent protests regarding the entrance of international mining companies to the New Zealand off-shore mining scene.

Changes to the initial legislation, triggered by public submissions, have seen a final EEZ Act that is aligned much more closely with the RMA than was originally intended. Industry see this as a “backwards step” due to the widespread dismay at the slow and cumbersome nature of the RMA when attempting development.²⁷⁵ However, this close alignment would make the transfer of consenting responsibilities less difficult. The EEZ Act has two pathways for marine consent applications, notified and non-notified. Seabed mining is classified as a publicly notified activity and therefore the views of the public and people with existing interests are taken into account during the application process.²⁷⁶ Fracking could also be classified in this way to allow for greater public participation.

Energy companies are beginning to employ controversial fracking operations in deep waters off the United States, South American and African coasts.²⁷⁷ It has not been used in New Zealand’s offshore environment to date but it were proposed it would be considered under the EEZ regime.²⁷⁸ This supports that the EPA could play a role in consenting for hydraulic fracturing operations onshore, as it may well take on this responsibility in the offshore environment soon.

C Moratorium

The third option presented is for the declaration of a moratorium on all fracking activities. There have been calls from local government for the government to call a moratorium on fracking. As at 2012, Waimakariri District Council, Kaikoura District Council, Christchurch City Council and Selwyn District Council had called for an urgent moratorium. A moratorium is a temporary suspension until future events warrant a removal of the suspension or issues regarding the activity have been resolved. In April 2012, the Christchurch City Council voted unanimously to declare the city a “fracking-free zone”.²⁷⁹ Under present law, this is largely a symbolic gesture. As discussed earlier, any resource consent applications for fracking must be lodged with Environment Canterbury as the regional council has jurisdiction over consenting underground

²⁷⁵ At 388.

²⁷⁶ Environmental Protection Authority “Applications for EEZ activities” <www.epa.govt.nz>.

²⁷⁷ David Wethe “Deep Water Fracking Next Frontier for Offshore Drilling” (28 August 2014) Bloomberg Business <www.bloomberg.com>.

²⁷⁸ “Hydraulic fracturing” (17 August 2015) New Zealand Petroleum and Minerals <www.nzpam.govt.nz>.

²⁷⁹ Sam Sachdeva “Christchurch’s frack-free status hailed” *The Press* (online ed, Christchurch, 13 April 2012).

discharges. Christchurch City Council has stated they would lodge an objection to any applications and consider appealing any decision to grant permits for fracking.²⁸⁰

It would not be a world first to declare a moratorium on fracking. The most notable moratorium to be declared is in the state of New York. Perhaps more than anywhere else, fracking has helped to “revolutionise” the domestic oil and gas supply outlook in the United States.²⁸¹ The industry has been transformed as a result of fracking, so that the output from hydraulically-fractured wells now makes up 43 percent of the oil production and 67 percent of the country’s natural gas production. Current regulatory debate in the US about hydraulic fracturing has focused on the merits of federal versus state regulation.²⁸² In December 2014, New York Governor Andrew Cuomo announced an open-ended prohibition of fracking. New York sits above the Marcellus Shale Formation which also underlies parts of Pennsylvania, Ohio, West Virginia and parts of Maryland and Virginia. Geologists believe that the Marcellus could hold up to 500 trillion cubic feet of natural gas, making it potentially the second largest natural gas field worldwide.²⁸³

The economic potential of fracking activities is undeniable. A report prepared by Venture Taranaki, Taranaki’s regional development agency, suggests that:²⁸⁴

When compared to the impacts of a moratorium, a business as usual scenario – maintaining the current level of the practice – will result in an additional 773PJ of gas, 277PJ of oil, and return \$10.5 billion in revenue, \$5.1 billion in exports and \$1 billion - \$1.6 billion in royalties to the Government over the next decade.

If fracking is to expand at the rate predicted, this figure would be much higher:²⁸⁵

If a growth model is permitted, compared to a moratorium hydraulic fracturing could contribute \$29.4 billion in revenue, \$23.7 billion in exports and up to \$4.4 billion in royalties over the next decade. Further, this scenario could deliver \$799 million in total GDP and an average of 7,386 jobs annually.

However, these cost assessments assume that there are no detriments to allowing fracking operations to go ahead. An assessment of the potential environmental

²⁸⁰ Sam Sachdeva, above n 279.

²⁸¹ Fitzgerald, above n 32, at 1361.

²⁸² At 1355.

²⁸³ Institute for Energy Research “Marcellus Shale Fact Sheet” <www.instituteforenergyresearch.org>.

²⁸⁴ Venture Taranaki “Unlocking the Potential: Economic Impact of Hydraulic Fracturing of Oil and Gas Wells in New Zealand” (December 2012) <www.taranaki.info>.

²⁸⁵ Venture Taranaki, above n 284.

damages should be balanced against the economic benefits. There has been no such assessment in New Zealand. A report by Environment America concluded that long term the public will be exposed to many different costs as a result of fracking including potentially millions of dollars of expenditure to combat air pollution and drinking water contamination.²⁸⁶ Furthermore, the delayed appearance of harm and diffuse regional impacts result in the public bearing these costs and industry players remaining unaccountable.²⁸⁷ There are limitations of using cost-benefit analysis in decisions such as whether to impose a moratorium. This is because cost-benefit studies often focus on quantified benefits of the proposed action as many benefits of preventing environmental harm cannot be quantified.²⁸⁸

In both investigations, the PCE refused to conclude that a moratorium was necessary. The oil and gas industry makes a large contribution to the New Zealand economy – as at 2012 oil was New Zealand’s fourth largest export and the industry contributes almost \$3 billion to GDP.²⁸⁹ The current government has expressed that the strategic direction of the economy involves further exploitation of our natural resources. Fracking advocates point to over 20 years of fracking in the Taranaki region without incident and it is unclear how a moratorium would affect operations in that region. However, political will could change. Declaration of a moratorium is the strongest action possible, and can be described as the embodiment of the precautionary principle in its strongest form.

²⁸⁶ Tony Dutzik, Elizabeth Ridlington and John Rumpler *The Costs of Fracking: The Price Tag of Dirty Drilling’s Environmental Damage* (Environment America Research & Policy Center, 2012).

²⁸⁷ At 32.

²⁸⁸ Lisa Heinzerling and Frank Ackerman *Pricing the Priceless: Cost-Benefit Analysis of Environmental Protection* (Georgetown Environmental Law and Policy Institute, 2002) at 27; David Driesen “The Societal Cost of Environmental Regulation: Beyond Administrative Cost-Benefit Analysis” (1997) 24 *Ecology LQ* 545 at 555.

²⁸⁹ Ministry of Business, Innovation and Employment *Economic contribution and potential of New Zealand’s oil and gas industry* (Economic Development Group, Occasional Paper 12/07, August 2012).

VIII Conclusion

International experience shows that a fracking boom can spread very quickly across a country and regulators are often left scrambling to catch up. This paper has outlined the current regulatory framework in New Zealand. Regulation is spread over a number of statutes and a number of regulatory agencies which results in a fragmented and confusing regime. Local authorities are left with the responsibility of consenting despite complex environmental issues being at play. There is no consistency in regional plans and rules about how fracking operations should be managed which leads to different treatments in different areas. Areas of particular concern have been outlined such as the need to bundle consents, where operators apply for resource consents for a project separately. This makes it hard for the total effects of a project to be assessed at the consenting stage.

This paper outlined, and drew on, the work of the PCE who has conducted two investigations into hydraulic fracturing in New Zealand. These reports did not advocate for a moratorium but did emphasise concerns about the state of current regulation. The PCE urged the government to “get ahead of the game” and implement central government guidance for the management of onshore unconventional oil and gas development. The Government’s response has been described as “polite rather than enthusiastic”.²⁹⁰ Despite stating that the recommendations will be considered, no timeframe has been given and there has been no movement on implementing policy from a central government level.

This paper explored the precautionary principle and how a precautionary attitude could be adopted when considering consenting fracking operations. It concludes that while there is scope within the RMA to take into account the precautionary principle, it would be more desirable for decision makers to be obliged to “favour caution and protection of the environment” as required in the marine consenting process under the information principles in the EEZ Act.

The RMA is designed to facilitate community participation in decisions about the sustainable management of natural resources. Fracking has grown as an issue in the public consciousness, particularly in the last five years, and members of the public feel strongly engaged with the issue. This paper highlighted the problems with curtailing public participation through processing consents on a non-notified basis. Public submissions can bring a wider range of viewpoints to the resource management

²⁹⁰ Karen Kemp “Looking ahead to a frack-filled future” (8 July 2014) Chapman Tripp <www.chapmantripp.co.nz>.

discussion and industry efforts to engage with local communities can help operators to earn a social license to operate.

This paper assessed the RMA from a risk regulation perspective and found that the framework for regulating risk is in place but implementation is currently exacerbating risks due to a lack of local government power. Options for reform have been presented. Central government guidance is urged, either in the form of a National Policy Statement or National Environmental Standard. The RMA consenting process is inherently limited by the requirement that all consent applications are assessed in the same manner and to the same degree. Nationalised standards should be implemented before further fracking consents are evaluated. This would solve problems in the current regime. A consistent national regulatory framework provides clarity and consistency for both local government and industry operators. It would also allow central government to require decision makers to apply the precautionary principle to fracking consenting decisions or could impose a prohibited activity status. Alternatively, a centralised body (the EPA being the obvious candidate) could be given responsibility for managing the consenting process for operations that involve fracking. This allows an expert body, with greater knowledge of the area to apply this understanding, and evaluate consent proposals.

Reform is needed immediately. Exploration for unconventional oil and gas is expanding in New Zealand, particularly in new areas such as the East Coast Basin. The East Coast Basin ranges from Gisborne down to the Wairarapa and the shale in this area potentially holds “billions of barrels of oil”.²⁹¹ TAG Oil has claimed that New Zealand is destined to become the “Texas of the South.” Fracking has occurred for over 20 years in Taranaki without incident but it is vital that the government is not complacent about the need for tighter regulation. The degree of environmental harm is greatly dependent on the geography of the region, and the East Coast is very geographically different to Taranaki. Fracking shale in East Coast Basin could produce very different risks from the fracking that has occurred in the tight sands of Taranaki.²⁹² New Zealand needs robust, consistent and sector-specific regulation.

²⁹¹ Wright, above n 2, at 75.

²⁹² Wright, above n 2, at 36.

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