TARANAKI REGIONAL COUNCIL

Offshore Petroleum Drilling Review

August 2015

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Reviewed by	TRC
Date	August 2015
Report status	FINAL

Contents

1 Background

Currently, offshore drilling for petroleum within the bulk of the Taranaki Coastal Marine Area ["CMA"] is regulated by a suite of rules contained within the *Regional Coastal Plan for Taranaki* (RCP). Where activities have been directly associated with drilling, such as disturbance of the seabed by drilling or discharges of drilling muds, cuttings and drilling fluids, these are largely Permitted Activities, subject to meeting standards, terms and conditions to avoid, remedy or mitigate adverse effects on the environment. Other associated activities such as the temporary exclusive occupation of the Coastal Marine Area (CMA) for the purpose of drilling and the depositing of drilling muds, cuttings and fluids on the seabed, are covered by 'catch-all' discretionary rules and require a resource consent.

The Council is currently reviewing its RCP, and has sought advice on the magnitude of environmental effects associated with offshore drilling and whether the current rules still represent an appropriate level of regulation.

To this end, and in light of recent developments in offshore Taranaki, the following have been reviewed:

- four recent Environmental Protection Authority ["EPA"] decisions on drilling within the EEZ, two non-notified applications and two notified applications for marine consents under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 ["EEZ Act"];
- recent post-drilling monitoring undertaken for a number of wells drilled within the EEZ over the past two summers, required by Maritime NZ pursuant to the Maritime Transport Act and specifically Marine Protection Rules Part 200 ["MPR200"]; and
- recent monitoring of the environmental effects of the offshore production platforms, again under the requirements of MPR200 (using a methodology known as the Offshore Taranaki Environmental Monitoring Protocol, or OTEMP, developed by the Cawthron Institute), which is relevant in that a multiple number of wells have been drilled at each location, and hence this monitoring would also be of utility in determining what, if any, are the longer term environmental effects of such drilling (as distinct from the one-off wells drilled and monitored above).

This report presents the results of the review, and makes recommendations as to the future treatment of offshore drilling within the RCP, including draft rules associated with offshore drilling.

The author's experience and expertise in the offshore petroleum industry and its associated environmental effects are set out in Appendix 8 to this report.

Finally, by way of background, the word "installation" refers to both drilling rigs and production platforms in this report, although the report concerns itself only with drilling operations and effects.

1.1 The Basics of Offshore Drilling

Once the analysis of basic geological information, seismic data acquisition surveys etc has identified a potential petroleum reservoir, the only way to prove one way or the other is to drill into the likely-looking formation.

There are essentially three types of drilling rig that work in the offshore – semi-submersibles, jack-ups, or drill ships. A semi-submersible rig is sunk below the water surface to a pre-determined depth, and its weight plus ballast and anchors secure the rig in location. A jack-up rig has long legs attached which are then jacked down to the seabed once on location, thereby raising the rig off the surface of the water and securing the rig. A drill ship can be secured by anchors, or have complex dynamic positioning systems and multiple thrusters to secure it in place.

Whilst a complex operation, offshore petroleum drilling can be broken down simply into its component stages as follows:

- moving the rig to the site of the well – this can involve towing the rig using tugs, having the rig transported by what is known as a heavy lift vessel, or if a drill ship is to be used, sailing it to the well location. The main issue arising from the transport of the rig is in the area of biosecurity, although there is also the potential for a marine oil spill through a maritime casualty incident. There are also "normal operation discharges" – see below;
- positioning and securing the rig – once on site, the rig is secured in place either by an array of anchors (for a semi-submersible rig and possibly a drill ship) or by legs which are jacked down to the seabed from a jack-up rig. The main impact of securement is disturbance of the seabed, albeit on a very minor scale;
- commencing drilling – drilling commences with the installation of a marine riser, in essence a down-pipe through which the hole will be drilled, and a blow-out preventer. This latter is a complex array of automatically and manually operated shut-off valves that prevent loss of well integrity and a blow-out, in particular if underground pressures are higher than expected. There is some localised disturbance of the seabed during this operation. The well is then drilled into the seabed;
- drilling – drilling is undertaken in a series of stages, with larger diameter holes at the top, getting narrower and narrower as depth increases (like a telescope). Drilling fluids or muds are circulated down the inside of the drill pipe, to both lubricate the drill bit as well as bring up the cut rock (cuttings) to the surface. Here the cuttings and fluids are separated, the fluids often re-used and the cuttings generally discharged into the sea below the surface (although sometimes they are retained and disposed of ashore). In order to secure the well, and to enable a smaller hole to be drilled inside a larger one, well casings (tubing) are inserted into the well to provide a strong and sealed lining. They have cement pumped behind them for structural integrity. The cement is pumped down the wellbore, around the bottom of the casing and fills the space between the casing and the irregular rock surface of the well outside the casing. The main actual or potential environmental issues associated with drilling are the discharge of cuttings onto the seabed, an associated but localised sediment plume in the water (generally not visible at the surface), the potential for contaminants in the discharged cuttings and adherent muds, noise, vibration and lighting impacts on marine mammals and protected wildlife and possibly fish, and operational discharges from the rig (stormwater, sewage and grey water etc);
- well completion – if the well is dry, it is securely plugged and abandoned. If it shows evidence of petroleum in potentially-economic amounts, more wells may be drilled in advance of establishing a producing field and related facilities (separate production facility, or a pipeline tying the well back to an existing production facility). Testing of the reservoir will involve flaring off of any hydrocarbons, as these will generally not be able to be utilised until a production facility has been established. Hydrocarbons from the reservoir may be flared for hours or days either to test the properties of the reservoir or to clean solids and unwanted liquids from the well. These hydrocarbons are flared from the rig using specialist equipment and following separation of liquid hydrocarbons. The main associated environmental issue is the discharge of contaminants to the air.

2 RMA Provisions

The Resource Management Act 1991 ["RMA"] is the controlling legislative regime that applies to offshore drilling within the Taranaki CMA, including in particular section 15B which specifically relates to discharges from ships and offshore installations – this section is re-printed as Appendix 1 to this report.

Also of relevance are the Resource Management (Marine Pollution) Regulations 1998, in particular in terms of what discharges from offshore installations are permitted – the relevant clauses of these Regulations are also attached within Appendix 1. It should be noted here that in recent years there has been a considerable tightening of the international rules pertaining to the discharge of garbage from vessels and installations, as reflected within these Regulations, such that discharge of garbage from an offshore installation within the CMA is now prohibited (see below), apart from two exceptions – to secure the safety of the installation or its personnel, or arising from an unpreventable accident.

2.1 Current Regional Coastal Plan Provisions

The following section briefly summarises the provisions of the current RCP pertaining to offshore petroleum drilling within the Taranaki CMA.

The Taranaki CMA is divided up into four areas according to their environmental sensitivities – areas of outstanding coastal value (Area A), estuaries (B), open coast (C), and the port industrial area (D).

The following tables outline the activities associated with offshore petroleum drilling along with the applicable Rule number and classification from the current RCP. Included as Appendix 2 are more detailed tables for the four areas which also include the rule activity description from the current RCP.

Coastal Management Area A (areas of outstanding coastal value) activities and associated RCP rules and classification

Activity	**Rule Number**	**Classification**
Temporary exclusive **occupation** of the common marine and coastal area	G1.2	Discretionary
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	A3.3	Discretionary
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	A3.3	Discretionary
Discharge of drilling muds, cuttings and fluids to water	G2.13	Discretionary
Discharge of incidental water	G2.9	Permitted
Discharge of contaminants to air via flaring	G2.10	Permitted
Discharge of contaminants to air from machinery on-board	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	A3.5	Discretionary
Taking of incidental water		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

Coastal Management Area B (estuaries) activities and associated RCP rules and classification

Activity	Rule Number	Classification
Temporary exclusive **occupation** of the common marine and coastal area	G1.2	Discretionary
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	B3.4 or B3.5	Discretionary or Non-complying Depending on location
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	B3.4 or B3.5	Discretionary or Non-complying Depending on location
Discharge of drilling muds, cuttings and fluids to water	B2.6	Discretionary
Discharge of incidental water	G2.9	Permitted
Discharge of contaminants to air via flaring	G2.10	Permitted
Discharge of contaminants to air from machinery on-board	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	B3.8 Or B3.9	Discretionary Or Non-complying Depending on location
Taking of incidental water		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

Coastal Management Area C (open coast) activities and associated RCP rules and classification

Activity	Rule Number	Classification
Temporary exclusive **occupation** of the common marine and coastal area	G1.2	Discretionary
Erect, reconstruct, or **place** an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	C3.1	Permitted
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	C3.5	Discretionary
Discharge of drilling muds, cuttings and fluids to water	G2.8	Permitted
Discharge of incidental water	G2.9	Permitted
Discharge of contaminants to air via flaring	G2.10	Permitted
Discharge of contaminants to air from machinery on-board	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	C3.9	Discretionary
Taking of incidental water		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

Coastal Management Area D (Port) activities and associated RCP rules and classification

Activity	Rule Number	Classification
Temporary exclusive **occupation** of the common marine and coastal area	G1.2	Discretionary
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	D3.2	Controlled
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	D3.6	Discretionary
Discharge of drilling muds, cuttings and fluids to water	G2.8	Permitted
Discharge of incidental water	G2.9	Permitted
Discharge of contaminants to air via flaring	G2.10	Permitted
Discharge of contaminants to air from machinery on-board	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	D3.9	Discretionary
Taking of incidental water		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

The Resource Management (Marine Pollution) Regulations 1998 (administered by the Ministry for the Environment) cover discharges from ships and offshore installations including the discharge of garbage, oil, sewage, ballast water, and discharges made as part of the normal operations of a ship or offshore installation. These rules supersede rules G2.1, G2.2, G2.3, G2.4, G2.5, G2.6, G2.7, and the relevant sections of G2.11 in the current RCP.

Depending on the classification of an activity a resource consent may or may not be required. A 'permitted activity' can be undertaken without a resource consent provided all of the standards, terms and conditions associated with that rule can be met. A 'controlled activity' requires a resource consent but must be granted by Council. With a 'discretionary activity' a resource consent is required and Council can decide whether or not to grant the consent. 'Non-complying activities' require a resource consent and Council cannot grant a consent unless the effects of the activity are minor and the activity is not contrary to the objectives and policies of the RCP. The final classification is 'prohibited' where an activity cannot proceed and no resource consent can be applied for. None of the activities associated with offshore petroleum drilling are currently prohibited.

As shown in the above tables the rules applying to offshore petroleum drilling in each management area are numerous and the classifications differ greatly from permitted through to non-complying and require several consents to be applied for. One way to simplify this process would be to bundle these activities under a single rule so a single consent could be applied for that would cover offshore petroleum drilling and all of the associated activities.

With regard to the discharge to air of greenhouse gasses and the subsequent impact on climate change, this is a matter which concerned submitters and others regularly raise as an issue, commencing even with initial seismic data acquisition surveys and drilling. This

is justifiable when viewed from the perspective that drilling is the initial step in discovering oil and gas reserves which, if produced and subsequently burned, would contribute to increasing greenhouse gas emissions in the atmosphere, and hence climate change. Council would seemingly, on the face of s104 of the RMA, have to have regard to climate change impacts in its decisions; however, s104 was amended in 2004 to preclude such considerations, as follows:

Decisions on applications relating to discharge of greenhouse gases

104E Applications relating to discharge of greenhouse gases

(1) When considering an application for a discharge permit or coastal permit to do something that would otherwise contravene section 15 or section 15B relating to the discharge into air of greenhouse gases, a consent authority must not have regard to the effects of such a discharge on climate change, except to the extent that the use and development of renewable energy enables a reduction in the discharge into air of greenhouse gases, either—

(a) in absolute terms; or

(b) relative to the use and development of non-renewable energy.

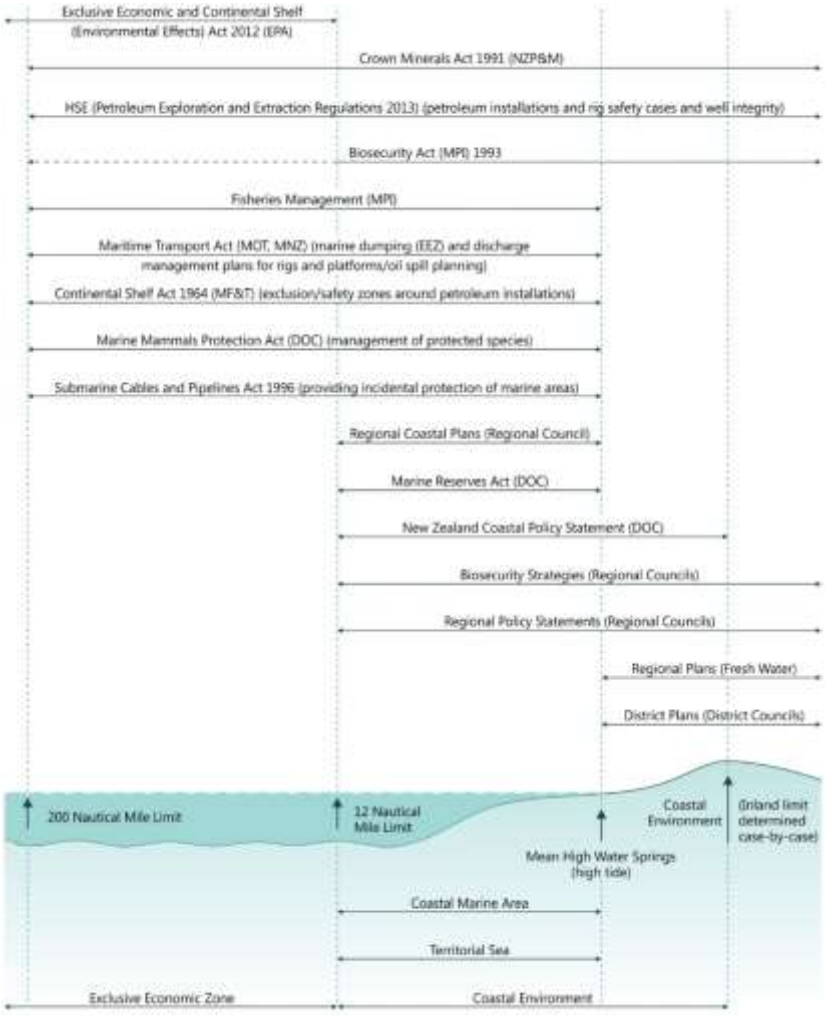
The Supreme Court in the "Buller Coal" case (2013) held that the consideration of greenhouse gas emissions, restricted as it is by s104E, only applies to activities that would ordinarily require a resource consent for the direct discharge of contaminants to air, that is consents for the discharge to air of greenhouse gasses, and that such "non-consideration" cannot be circumvented by imposing climate change-related conditions upon activities not directly involving air discharges. In the Buller Coal case, the argument was that climate change was a relevant consideration for a land use consent to mine coal, even though the burning of that coal was to be overseas, or even (hypothetically) elsewhere in New Zealand subject of an air discharge consent. The Supreme Court rejected that argument, in light of the then Government's climate change policies, in favour of a literal and logical interpretation of s104E.

As a consequence, the discharge of greenhouse gasses to the atmosphere from offshore drilling operations cannot involve consideration of impacts on climate change, even if due to, for example, hydrocarbon flaring.

3 Other Legislative Provisions

This section outlines the various other environmental (directly or non-directly) legislative regimes and provisions which cover the offshore petroleum drilling operations. In a more general sense, the figure below shows all of the marine management regimes of relevance, and their geographical coverage.

Several of the more directly-relevant regimes have been specifically considered by the EPA in its recent decisions on marine consent applications for offshore drilling, in particular noting that it is not appropriate for the EPA to "re-litigate" the environmental effects managed pursuant to these other regimes. For the sake of completeness, these regimes are briefly described below.



3.1 The Health and Safety in Employment Act & Crown Minerals Act

It is an age-old adage in the maritime community that if you look after safety at sea, you by and large also look after the environment. This is in recognition of that fact that,

apart from deliberate acts of "vandalism", most if not all major environmental incidents at sea arise from an incident that affects safety – for example a shipwreck or collision.

In relation to oil and gas drilling operations, well integrity is the critical operational component from a health/safety as well as an environmental perspective.

Well integrity can be defined as containment and prevention of the escape of petroleum (i.e. liquids or gases) to subterranean formations or the surface. Further it can be defined as the structural soundness and strength of a borehole drilled for the purpose of exploring for, appraising, or extracting petroleum. It also includes any borehole used for injection or reinjection purposes, down-hole pressure containing equipment, and any pressure containing equipment on top of the well.

New Zealand's Health and Safety in Employment Act ["HSE"] regime is the primary regime which addresses these matters and also public concerns associated with the petroleum industry via the HSE (Petroleum Exploration and Exploitation) Regulations 2013 ["HSE Regs"]. In particular, the HSE Regs set out the requirements for what is known as a safety case, that is the documentation, for acceptance by WorkSafe NZ, which clearly sets out how the operator of an installation will protect the health and safety of crew and personnel aboard that installation and associated support vessels. The details of a safety case are attached as Appendix Two.

As a general duty, the operator must take all practicable steps to ensure that an installation, including a drilling rig, and all operations and activities there-on are safe for any person on or near it, and the installation must at all times possess such integrity as is reasonable practicable. More specifically, the safety case must set out how all well integrity risks have been identified, and the appropriate management and control systems that are in place to ensure continued integrity.

To this end, the safety case regime is the "fence at the top of the cliff rather than the ambulance at the bottom".

Specifically, with regard to offshore drilling, one issue repeatedly raised by sections of the public is that of loss of control of a well during drilling, a blow-out, and ensuing pollution. The recent Deepwater Horizon incident in the Gulf of Mexico and resultant adverse environmental effects is often referred to. It is the safety case regime in New Zealand that explicitly requires that operators of installations must demonstrate how they will manage well control and prevent a loss of control, including, at the worst case, a blow-out (refer the highlighted section of Appendix 2). This includes ensuring that the well is fully secure post-abandonment.

The Regulations also require appropriate management of all hazardous liquids, vapours, and waste petroleum, and have in place appropriate controls on sources of ignition. As well, the rig must be subject of certification regime as follows:

45 Duty holder must ensure installation has compliant certificate of fitness

(1) A duty holder must ensure that an installation is not operated unless there is a current certificate of fitness in respect of the safety of—

(a) the structure of the installation; and

(b) all equipment necessary for the safe operation of the installation.

Associated with this are a set of requirements relating to verification that the management of all safety-critical elements of the operation meet specifications accepted by WorkSafeNZ, as follows:

54 Meaning of verification scheme

(1) In regulations 55 to 62, **verification scheme** *means a written scheme for ensuring, by the means described in subclause (2), that the safety-critical elements—*

(a) are or, where they are yet to be provided, will be suitable; and

(b) where they have been provided, remain in good repair and condition.

(2) The means referred to in subclause (1) are—

(a) examination, including testing where appropriate, of the safety-critical elements by an independent and competent person:

(b) examination of any design, specification, certificate, or other document, marking, or standard relating to the safety-critical elements:

(c) examination of work in progress by independent and competent persons:

(d) the taking of appropriate action following a report by an independent and competent person:

(e) the taking of such steps as may be properly provided for under regulation 55 and Schedule 6:

(f) the taking of any steps incidental to the means described in this subclause.

Regulation 55 sets out requirements for the development of the requisite verification scheme, and Schedule 6 sets out what the scheme must address, as follows:

Schedule 6
Information required for verification scheme

1 The principles to be applied by the duty holder for the installation in selecting persons—

(a) to perform functions under the scheme; and

(b) to keep the scheme under review.

2 Arrangements for the communication of information necessary for the proper implementation, or revision, of the scheme to the persons referred to in clause 1.

3 The nature and frequency of examination and testing, including—

(a) examination (including testing where appropriate) of the safety-critical elements; and

(b) examination of any design, specification, certificate, or other document, marking, or standard relating to those safety-critical elements; and

(c) examination of fabrication, construction, and repair work in progress.

4 Arrangements for review and revision of the scheme, including—

(a) review of the record of safety-critical elements; and

(b) review of the methods for examination of the safety-critical elements; and

(c) revision and issue of the documented scheme.

5 The arrangements for the making and preservation of records showing—

(a) the examination and testing carried out; and

(b) the findings; and

(c) remedial action recommended; and

(d) remedial action performed.

6 Arrangements for communicating the matters contained in clause 5 to an appropriate level in the management system of the duty holder for the installation.

As a consequence these Regulations and the safety case regime are critical to ensuring not just safety of personnel but also protection of the environment from all aspects of the drilling operation, including the effects of a loss of well control and ensuing blowout.

On a more general note, the HSE (Emergency Management) Regulations place requirements upon the operators of any "place", which includes vessels and rigs, to have in place a comprehensive system for managing hazardous substances, including appropriate emergency plans. Again, whilst in the main focussed on worker health and safety, it also has an incidental environmental benefit in terms of prevention of incidents that might lead to an adverse environmental effect. This regime overarches the requirements of the Maritime Transport Act and its associated Marine Protection Rules Part 200, and in particular the requirement for a Discharge Management Plan to address such matters (see below).

There is also the risk that demonstration activities against petroleum mining operations (see below), for whatever reason (fear of blow-outs and associated marine oil spill, climate change, etc) may pose a risk to the safety of an installation and its operations, thereby potentially also resulting in an environmental incident. To prevent this from happening, the Crown Minerals Act ["CMA"], administered by NZ Petroleum & Minerals ["NZPaM"], was amended to specifically include provisions which make it an offence to interfere with an installation and its operations, and to enable a "non-interference zone" to be established, for a period of up to three months, around the installation for the purposes of ensuring its integrity and safety. The relevant provisions of the Act are attached as Appendix 3. For clarity, the definition of "mining operations" is also included and highlighted – the definition includes lawful petroleum drilling and associated activities and discharges. For "permanent" installations such as the Maui, Maari, Tui, Kupe and Pohokura platforms, 500m exclusion zones have been set up via Regulations under the Continental Shelf Act, and go for the life of the installation rather than the 3 months max under the Crown Minerals Act (above)

Finally, the Crown Minerals (Petroleum) Regulations, also administered by NZPaM, stipulate (clause 36) that "*A permit holder must avoid wasting petroleum resources by conducting mining operations in accordance with good industry practice.*" The Regulations also set limits on flaring of hydrocarbons for exploration wells, which can only occur if needed to deal with an emergency, or during initial well testing but then only for up to 30 days' duration. Whilst this limit is in the main to ensure compliance with Clause 36, it does of course have an associated environmental benefit.

3.2 Maritime Transport Act & Associated Marine Protection Rules

Despite its title, the Maritime Transport Act ["MTA"] also includes provisions and requirements for the protection of the marine environment from maritime sector activities, including the offshore petroleum industry. It is New Zealand's primary legislative regime for giving effect to numerous international treaties and conventions that cover maritime activities, ranging from navigational safety and vessel collision prevention to the prevention of marine pollution from vessels and installations.

A significant set of conventions given effect to by the MTA concerns the prevention of marine oil spills and response to a spill should it occur. It is this aspect of the MTA which

primarily has effect within the CMA (although other requirements of the MTA also apply therein). With regard to offshore installations, it is Marine Protection Rules: Part 200 ["MPR200"] that is the primary regulatory tool – **NOTE** however that this is about to be significantly amended, following the transfer of various functions from Maritime NZ and the MTA regime to the EPA and the EEZ Act regime.

Pursuant to the MTA and in particular the associated MPR200, operators of offshore installations in the EEZ are currently required to obtain an approved Discharge Management Plan ["DMP"]. For the EEZ this addresses not just the prevention of and response to marine oil spills, but also the management of all environmentally-hazardous substances. Within the CMA however, the discharge of oily water, sewage, greywater, deck drainage *et al* are controlled via the Resource Management (Marine Pollution) Regulations 1998 - it is only the marine oil spill aspect that is required by the MTA regime (with a few additional matters, see below and Appendix 1). The relevant provisions of MPR200 are attached as Appendix 4. The marine oil spill provisions of MPR200 will remain with Maritime NZ after the forthcoming transfer of other currently Maritime NZ functions to the EPA.

The DMP approval functions of Maritime NZ are about to transfer to the EPA and the EEZ Act. However, this will have no impact on current arrangements for installations within the CMA. A draft Marine Protection Rules Part 131 is about to be finalised, which sets out *inter alia* the requirements for installations within the CMA, in particular in terms of marine oil spill plans, garbage management plans and record books, oily water filtering equipment, oil sludge tank management, oil record books, and International Oil Pollution Prevention Certificates.

The MTA regime also require owners/operators of offshore installations to carry a andrew@pepanz.com stipulated level of liability insurance to cover any claims for oil pollution damage arising from a marine oil spill, and the clean-up of that spill (Marine Protection Rules Part 102). Currently the level of insurance is set at 14 million IMF Units of Account, an international "currency", which is equivalent to ~ US$20 million. However, in recognition of the costs for clean-up of, and damages arising from, recent industry-related spills, and indeed what installation owners/operators actually carry by way of insurance (generally in the hundreds of millions of dollars), work is currently underway to increase this minimum stipulated amount.

Finally, virtually all of the Taranaki CMA falls within an International Maritime Organisation maritime Precautionary Area. This has been set up to ensure that all vessels navigating with the Area take special care to avoid collision with the six offshore production platforms and, in some cases, associated FPSOs, and thereby avoid marine pollution by oil - see Appendix 5. To ensure this, several of the offshore platforms, most drilling rigs and all commercial vessels have AIS (Automatic Identification System) which tracks the position and movement of all craft at all times for use by, *inter alia*, other vessels. Coupled with the availability of being subject of a Coastal Navigation Warning, which alerts all maritime traffic of the presence and location of a drilling rig, drilling rigs within the Precautionary Area would therefore also have the benefit of a level of additional protection over and above what is required by the HSE Regulations (above).

3.3 Marine Mammals Protection Act and Wildlife Act

Whilst more "general" in nature, these two pieces of legislation specifically provide for the protection of marine mammals (cetaceans and pinnipeds) and protected wildlife (including many species of seabird and corals), species which are often raised as "at risk" from potential impacts incidental to petroleum drilling. For example the attraction of and

injury to seabirds caused by night-lighting, impacts of seabed disturbance on protected corals, and underwater noise effects on cetaceans.

The Marine Mammals Protection Act has the purpose of avoiding and preventing interference with and detrimental impacts on marine mammals, and makes it an offence for anyone to have such impacts. For offshore drilling, operators are required to prepare and have approved a Marine Mammal Impact Assessment application.

The Wildlife Act similarly has the purpose of ensuring the protection of certain listed species, and has a permit regime which allows for, in certain circumstances, an activity to have an impact upon otherwise protected wildlife. As an example, seabed mining proponent Chatham Rock Phosphate Ltd recently applied for such a permit to take cold-water corals off the Chatham Rise, the corals being attached to the phosphate nodules it wishes to mine. However, the Act also allows for interference with protected wildlife if that interference is incidental to another activity – the bottom-trawling fishing industry is a good example of this, whereby no permit is required for this activity even though it can cause serious damage to areas of benthic wildlife, including protected corals.

3.4 Biosecurity Act

The Biosecurity Act addresses the prevention of incursions of un-wanted and potentially damaging foreign species into New Zealand, including its waters, and is administered by the Ministry for Primary Industries ["MPI"].

With regard to drilling rigs and support vessels from overseas, generally the norm in New Zealand is these craft are subject to the 2014 Craft Risk Management Standard – Biofouling on Vessels Arriving to New Zealand. However, this is currently a voluntary Standard (until 2018). It requires that vessels must be cleared for entry into New Zealand waters, in the main by inspection at the port of overseas departure, as well as evaluation of records of most recent hull de-fouling. Ballast water management is also subject of an Import Health Standard pursuant to the Act.

4 Review of Recent EPA Decisions

The EPA has recently announced decisions on four applications for marine consents for drilling operations under the EEZ Act – two of these were non-notified applications (STOS' Ruru-2 and Maui-8; and OMV's Whio-1), whilst two were publically notified and proceeded to a hearing (OMV's Maari development drilling of up to seven wells; and STOS's Maui operations which include future drilling). This section reviews those decisions, in particular whether or not the environmental effects of drilling were considered minor, or greater than minor.

The reports of the decisions on both non-notified applications are brief, but provide an excellent guide to the acceptance by the EPA-appointed Decision-Making Committees ["DMCs"] of the nature of the anticipated environmental effects associated with these drilling programmes as well as the now-known effects of earlier drilling. The decisions in both of these applications are consistent, with the only effects not evaluated as of low or less than low risk, risk (defined as the product of likelihood of occurrence and consequence of occurrence) being on benthic and planktonic species, and major oil spills – both evaluated as a medium risk. However this classification was heavily biased by the magnitude of the consequence of the incident that would lead to the effect, for example an oil spill (catastrophic) despite the fact that its likelihood was evaluated as remote).

Those effects evaluated as low or very low risk covered effects on:

- marine mammals including Hector's and Maui's dolphins;
- seabirds;
- fish;
- marine reserves and conservation areas;
- marine biota from the cumulative build-up on the seafloor of drill cuttings and sediment from adjacent multiple-well drilling;
- chemical bioaccumulation in fish species;
- marine biota and existing interests from operational noise;
- marine biota and existing interests from marine traffic collisions;
- Maori interests;
- worker health and safety; and
- marine biota from minor operational spills of chemicals and hydrocarbons.

As noted above, the prevention of and response to marine oil spills are addressed through the HSE Regulations and the MTA regimes, and the CMA insofar as it prevents environmental incidents arising from demonstrations and other deliberate interference activity. The DMCs specifically noted the import of these other marine management regimes in assisting to achieve the purposes of the EEZ Act, which is in crucial areas the same as for the RMA, and imposed conditions ensuring that the operators of the drilling programmes prove that they have the requisite approvals pursuant to those other regimes, and abide by them. The DMCs also attached conditions relating to the annual monitoring, for a period of three years, currently required by Maritime NZ pursuant to MPR200.

The EPA decision (via another DMC) in the notified OMV marine consent application, which followed the decisions on the two non-notified applications discussed above, expanded upon the above to a considerable degree, but again the decision was wholly consistent with those earlier evaluations. A point of note at the hearing was the array of

experts who both assisted the DMC, in particular Genesis Oil & Gas Consultancy of Aberdeen who have specific oil drilling expertise, and also those who presented evidence on behalf of all parties, and who addressed all aspects of the potential environmental effects of the proposed drilling programme. This lead to the DMC noting that "*….we are satisfied that we have been able to make our decision based on the best available information in accordance with section 61(1)(b) of the EEZ Act.*"

This decision noted that the overall effect of the development drilling on the environment was minor, localised and temporary given the high-energy environment in which the operations were to be undertaken, and that the risk of long-term environmental changes would be negligible.

With regard to the STOS Maui marine consent application, this decision follows a major consent hearing where any and all potential environmental effects associated with the operation of the Maui facility, including new drilling, were canvassed and debated. The tenor of the decision and the conditions attached to the approved marine consent clearly confirm that offshore drilling in the Taranaki region has negligible if any environmental effects, with the possible exception of marine biosecurity and on iwi interests, both of which are able to be managed appropriately according to the DMC. Salient points from the STOS decision are attached as Appendix 6.

One issue raised by submitters to the hearings was climate change, noted as being the "*elephant in the room*", however, as the DMCs noted, the applications were not for recovery and burning of any oil discovered, merely for the drilling of the wells, and also the EEZ Act specifically excludes climate change from matters that it could take into account, similar to provisions within the RMA (in recognition that climate change is a national issue, to be dealt with nationally rather than on an *ad hoc* basis region-by–region). This is consistent with the Supreme Court's findings in the Buller Coal case discussed above.

Another matter raised at the OMV hearing was that of toxic algal blooms, and the role of offshore drilling in creating or stimulating these. Expert evidence however debunked that claim, noting that such blooms are a naturally occurring event, which evidence the DMC accepted. Indeed the occurrence of algal blooms within the Kahurangi upwelling to the south-west of the drilling area, and its associated occurrence of significant krill blooms is the reason why a semi-resident population of blue whales is found in the area (for much of the year).

Also with regard to the notified OMV decision, the DMC was advised that the type of oil found in the offshore Taranaki area at Maari, and the pressures it is under, are such that the oil must be heated and pumped to the surface – it does not flow under its own accord. As a consequence, the likelihood of a blow-out causing a major marine oil spill was accepted as extremely remote. Other fields however have different reservoir pressures and oil consistency – the Tui field is very much like Maari, whereas at Maui, Kupe and Pohokura the gas/condensate mixture flows naturally. However, at these latter fields, the oil (more appropriately referred to as condensate) is very light in nature, akin to diesel, and on exposure to the environment it evaporates very quickly, leaving behind a small residual of wax which has a minimal environmental impact compared with the heavier crudes.

Specific conditions were attached to the notified OMV and STOS consents relating to marine mammals, seabirds, testing of any discharge, ongoing monitoring, biosecurity, and marine oil spills (*inter alia*), in the main in recognition of the import of the other marine management regimes, and to ensure compliance with these (in essence a tautology but of value in informing interested parties not familiar with those other management regimes of the extent and nature of their respective requirements and obligations).

With regard to biosecurity, the DMCs noted that the current Craft Risk Management Standard – Biofouling on Vessels Arriving to New Zealand is currently voluntary, and so in order to enforce the provisions of that Standard upon OMV a condition specifically requiring compliance was attached to the marine consent (with OMV's acceptance).

Of note is that the OMV DMC was satisfied with its conclusions as to the effects of the drilling operation that it did not need to avail itself of the adaptive management provisions of the EEZ Act, colloquially known as the "learning by doing" provisions – this is indicative of their surety of and comfort with their evaluation.

With regard to the notified OMV consent, the DMC concluded "….. *that the information provided in the Impact Assessment, the Genesis Oil and Gas Consultancy Limited Report and the evidence from other government organisations indicates that the development drilling programme will be undertaken in accordance with industry-recognised best practice*." This is a significant finding, and accords with the situation world-wide and in particular brought about in New Zealand with recent amendments to and updating of relevant legislation (such as the HSE Regulations).

One important aspect of all four decisions above is the linkage between the post-drilling and OTEMP monitoring required by the MPR200 regime with the marine consents under the EEZ Act, insofar as no additional monitoring was required via conditions in the approved marine consents (the STOS consent reinforced the need for such monitoring by way of a condition). This is totally appropriate as there would be nothing to gain in duplicating that MTA-based monitoring given that it covers all of the "bases" that the EEZ Act would otherwise contemplate for such operations, with the exception of water quality monitoring during drilling. However, Council may wish to consider whether or not additional monitoring might in fact be required in certain areas of the CMA, particularly those close to shore and potentially sensitive environments (such as the Maui dolphin sanctuary, the North and South traps etc). The results of these current monitoring programmes are summarised below.

In all four cases, the decisions noted that granting marine consents for the drilling operations "… *meets the purpose of the* [EEZ] *Act*.". For completeness, the purpose of the EEZ Act is reprinted below:

> *10(1) The purpose of this Act is to promote the sustainable management of the natural resources of the exclusive economic zone and the continental shelf.*
>
> *10(2) In this Act,* ***sustainable management*** *means managing the use, development, and protection of natural resources in a way, or at a rate, that enables people to provide for their economic well-being while—*
> *(a) sustaining the potential of natural resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
> *(b) safeguarding the life-supporting capacity of the environment; and*
> *(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

Finally, advice from the EPA is that, despite the decisions to date, applications for marine consents will still be required for offshore drilling, either non-notified (exploration) or notified (production), and there are no moves at this stage to classify drilling as a Permitted Activity [Richard Johnson *pers. comm*.]. This is a stance different from the current situation the Council manages (drilling is permitted) and this is discussed further below in terms of where the Council may wish to go in future with regard to the treatment of drilling in its Regional Coastal Plan.

5 Review of Recent Monitoring Results

5.1 Post-drilling Monitoring

The Cawthron Institute undertook pre-drilling and post-drilling surveys around a 2011-12 drilling programme at Maui-B, with sampling sites commencing at 250 m from the platform. This work is appended to the Maui marine consent EIA and is part of that application. Concluding comments in the post-drilling report's Executive Summary were:

> "*Overall, a comparison of the results between the pre- and post-drill investigations showed; consistently low levels of sediment contamination (excluding barium), similar evidence of minor anthropogenic debris, and evidence of moderate spatial variability in benthic macrofaunal communities. Significant spatial gradients relative to the platform facility were observed only for barium and the occurrence of minor debris; however in both cases, absolute levels, gradients and distances were generally similar to those noted for the baseline survey. While this is suggestive of some wider-scale spatial variation, differences to pre-drill conditions, where apparent, were not clearly attributable to discharge effects from the most recent drilling operation."*

Maritime NZ has recently started to require post-drilling monitoring of offshore wells. As a consequence, several new exploration wells (Tui, Whio, Ruru-2 and Maui-8) have been monitored, but unfortunately, for a number of reasons, these reports were unavailable to the author at the time of writing.

5.2 OTEMP Monitoring

In January 2012, the Cawthron Institute commenced a three-year benthic environment monitoring programme (using OTEMP) around the offshore petroleum production platforms in Taranaki waters, in the main the EEZ (at Tui, Maari and Maui A & B in particular).

This section summarises the findings of the first round of that programme for two of those platforms, this was because it would be that first round of monitoring that would be closest to the cessation of exploration and development well drilling at or about the platform sites, and hence would be an indicator of the cumulative effects of multiple well drilling, and subsequent environmental recovery. As an example, at Tui, drilling commenced in 2006 and eventually stopped in July 2010, with ten wells being drilled. The first OTEMP monitoring was therefore 18 months after the final well was drilled.

For each platform, sites were selected in transects, the "major" lines running along the known axes of predominant water currents/flow, and "minor" transects selected along other points of the compass, the latter both to pick up any effects that might occur in those areas but also to act as, in essence, platform-specific controls (assisting in determining any spatial differences that might occur on the finer scale). On the major transects, sampling stations commenced at 300 m from the platform, whereas for the minor sites this was 500 m, sampling sites on all transects stopped at 6000 m from the platforms.

Two far-field control sites were established for use at all three platform sites.

In all three cases, the only effects observed that could be attributed to drilling and platform operations (as distinct from natural variability) were:

- weak graded patterns in sediment physical characteristics, with coarser grain size fractions closer to the site, possibly associated with turbulence caused by the presence of the structure causing finer sediment to be moved away or as a result of the deposition of drill cuttings. Sediment characteristics drop to background rapidly (but noting the significant natural variability around Taranaki);
- evidence of production platform-related debris such as paint flecks, garnet flakes, rust etc, but again only in close proximity to the site; and
- a slight elevation in barium concentrations close to the sites, dropping to background levels very rapidly (see below).

With regard to barium, a naturally-occurring element, one of its salts, barium sulphate, also known as barite, is commonly used in drilling muds as a weighting agent. Barium sulphate is biologically inert and practically insoluble in water. No toxicity or accumulation of barium from barite is expected when released in the environment. Some commercial mud barites can be contaminated with other trace metals during formulation, for example cadmium and zinc, however these metals are tightly bound with the formulation and drilling muds/cuttings such that they are not readily released into the environment. Barium is known to remain in marine sediments post-drilling, and can therefore act as a tracer, showing where drilling muds and material will have moved following discharge into the sea. This matter was traversed at some length in the notified OMV decision under the EEZ Act, and that DMC concurred with the above, as noted in the following paragraph from their decision:

> *"Barium is found within subsurface rock and most drilling muds. Its bioavailability is limited. We accept the evidence of Mr Asher that there appears to be no direct correlation between barium concentrations and macro-benthic taxa health in the monitoring undertaken to date."*

The benthic communities at each site were comparable to the control sites, with a suggestion however that species richness and abundance closer to the sites was slightly lower, possibly due to differences in substrate composition and grain size distribution.

There was no evidence of an increase above the variable background levels of trace metals and hydrocarbons in the sediment, all were below the relative ANZECC trigger levels (ISQC Low).

In all cases it was concluded that "*…..any observed differences between the* [site] *and the control sites are likely attributable to natural spatial variation."*

Surveys have also been undertaken <u>within</u> 500 m of the Maui platforms (April 2013), and Maui-A results showed that Zn and Pb occurred at some sites above the relevant ANZECC 2000 ISQC Low concentrations, whilst at other sites there were elevated concentrations (above background) of Zn, Pb, Cu and Cd but below the relevant ANZECC 2000 concentrations. Similarly elevated concentrations of some petroleum hydrocarbons were noted, believed to be associated with historic drilling and cuttings disposal. The elevated concentrations of Zn may be associated with cathodic protection, where zinc is used; and Pb may well be associated with the use of lead-based paint. In both cases these are historic, and associated with the "permanent" production platform and its maintenance rather than a temporary drilling rig.

The survey results at Maui-A concluded that the benthic macrofaunal patterns closer to the structure are related to the physical placement of the platform, causing minor substrate variation especially higher concentrations of fine sand/barium and increased deposition of platform-related debris. At Maui-B noted that macrofaunal richness and diversity declined in samples closest to the platform.

In all other respects, the findings were similar to those for the more general OTEMP monitoring.

These results would support the EPA's recent decisions (above) as well as the Council's position that the (benthic) environmental effects of offshore drilling in the Taranaki CMA, even at sites where multiple wells have been drilled, are minor, localised and temporary. The DMC in the notified OMV decision drew the following conclusions with regard to impacts on the benthic environment:

> *"The available baseline information on macro-benthic communities and the monitoring that has been undertaken subsequent to previous drilling operations (within the permit area and at other sites) provides us with sufficient confidence regarding the assessment of potential effects on benthic sediment and macro-benthic communities. We agree with the conclusions of Mr Asher and Dr Skilton that the potential adverse effects on macro-benthic communities from the deposition of the drill cuttings and muds, the contamination of benthic sediments and the presence and removal of the ENSCO 107 will be extremely localised, minor and temporary. Any long-term changes will be negligible. We note also that both Mr Asher and Dr Skilton agreed, when questioned, that they would not regard the observed changes in macro-benthic communities as significant or adverse."*

It is noted however that this monitoring did not involve water quality testing before, during and after drilling, an issue that was raised by the EPA (as a request for further information, in part) in STOS's marine consent application for the Maui-A and –B platforms. However, the DMC in the notified OMV consent found as follows with regard to potential water column impacts from that drilling programme:

> *Having considered the information available, submissions and evidence, we find the following in respect to the potential adverse effects of the drilling programme on plankton communities:*
>
> *(a) We accept the evidence of Dr MacKenzie that the inherent toxicity of WBM and SBM constituents to phytoplankton and zooplankton communities is low.*
>
> *(b) Whilst we acknowledge the concerns of submitters regarding the toxicity of the waste material discharged, we accept the evidence that the metals/metalloids in drilling fluids and cuttings are not bioaccumulated by marine organisms and do not present a hazard to marine food webs.*
>
> *(c) The total volume of drill cuttings and muds discharged over the course of the drilling programme will be so small as to be immeasurable compared with the sediment sources entering the South Taranaki Bight from the surrounding environment. The effects, including cumulative effects, on water column turbidity and phytoplankton productivity will be negligible.*
>
> *(d) The discharge and dispersal modelling data presented shows that the concentration of total suspended solids in the water column will rarely exceed natural background values or extend beyond 500 m from the WHP. Any potential effects associated with the discharge of drill cuttings and muds will be further minimised by the rapid flocculation, dilution and dispersal that will occur in the open ocean.*
>
> *(e) The South Taranaki Bight is a highly dynamic and biologically productive region. The upwelling and mixing processes result in a good supply of nutrients to fuel phytoplankton productivity. The Kahurangi upwelling has a major effect that at times directly influences the water column and plankton communities over the permit area. We accept the conclusion of Dr MacKenzie that any potential effects from the drilling programme on nutrient dynamics and plankton productivity will be minor*.

And further:

> *(a) We agree with Dr MacDiarmid that any adverse effects of noise and the discharge/deposition of drill cuttings and muds on fish species will be negligible and that fish have the ability to move away from the discharge plume.*
>
> *(b) The discharge/deposition of drill cuttings and muds will not have significant effects on drifting planktonic fish eggs and larvae.*

And as noted in Appendix 6, the STOS Maui DMC found likewise.

6 Discussion

In summary of the above, there are multiple jurisdictional responsibilities for managing adverse effects in the coastal marine area associated with offshore drilling activities. The following table sets out the various phases of offshore drilling, the associated environmental effects, if and how these are managed under other marine management regimes, and therefore what gaps there are for the Council to manage pursuant to the RMA and its RCP.

Drilling Phase	**Environmental Issues**	**Management**
Moving rig to site, including towing of semi-submersible and jack-down rigs, the use of heavy-lift vessels, and the sailing to location of drill ships	Marine oil spill Biosecurity	MTA 1994 [Maritime NZ] Biosecurity Act 1993 & associated ballast water Import Health Standard and biofouling craft risk management standard [MPI]
Securing rig on site	Seabed disturbance (including by anchors & jack-down legs) Exclusive occupation of the seabed (RMA) Demonstrator-related incidents Marine oil spill insurance	**TRC** **TRC** CMA 1991 [NZPaM] MTA 1994 [Maritime NZ]
Commencement of drilling	Seabed disturbance Initial cuttings and related discharges Health & safety, prevention of loss of well control (well integrity management)	**TRC** **TRC** HSE Act 1992, HSE Petroleum Regs 2013 & safety case [WorksafeNZ]
Drilling	Discharges apart from "normal operational" (drilling muds & fluids; other contaminants) "Normal operational" discharges such as stormwater, deck drainage, greywater etc Taking produced water during drilling Noise & vibration Lighting Discharges of contaminants to	**TRC** RM (Marine Pollution) Regs 1998 **TRC** **TRC***; Marine Mammals Protection Act 1978; Wildlife Act 1953 [DoC] Wildlife Act 1953 [DoC]

	air other than from flaring Emergency management including marine oil spills	**TRC** MTA 1994 [Maritime NZ]; HSE (Emergency Management) Regs 2001 [WorksafeNZ]
Well completion including testing	Flaring of hydrocarbons Associated climate change impacts	**TRC**; Crown Minerals (Petroleum) Regs 2007 [NZPaM] National regime including ETS
Miscellaneous	Monitoring if considered needed	**TRC**; HSE Regs [WorksafeNZ]

* Note, for the purposes of effective integrated management, TRC transferred its powers regarding noise in the coastal marine area to NPDC and STDC

From the discussion within sections 3, 4 and 5, and the table above, it can be concluded that the environmental effects of offshore drilling are largely minor, localised and temporary provided the process is managed appropriately. Importantly the majority of those effects that have been rated as more than minor by the EPA in its decisions to date are effects managed under other legislative regimes, in particular the HSE Regs and associated safety case regime, and (currently) the MPR200 regime. As such, any move by the Council to regulate those matters addressed by these other regimes would be an unnecessary duplication, and would run the risk being inconsistent with, in particular, the primary management regime, the HSE Regs.

There are four areas where the Council may wish to more clearly set out in revised rules the measures to avoid, remedy or mitigate any adverse effects associated with the broad range of offshore drilling activities (some of which have been previously highlighted by public comment and concerns with regard to offshore drilling) These are:

- explicit controls over well blow-out prevention and resultant marine oil spills, specifically to ensure that the operator has meet the well integrity and abandonment requirements and received approval of its health and safety case, and would furnish evidence of this to the Council;
- explicit controls over the types of drilling muds and fluids used during the drilling process;
- explicit control over the nature and volume of other contaminants discharged into the water column, air, or onto the seabed; and
- requirement to undertake environmental monitoring.

Consequently it is recommended that for Coastal Management areas C (open coast) and D (Port) the Council move to having **exploratory offshore petroleum drilling** and associated activities classified as **Controlled Activities** in Coastal Management areas C and D. As an alternative Council could move to Permitted Activity status however it would then not be in the position of being able to monitor the activity and publically report the results of such monitoring. The recent EPA decisions discussed above place some importance on this, and hence it is recommended that Council move to re-classify exploratory offshore petroleum drilling in Areas C and D of its CMA as a Controlled Activity.

Due to the increased scale of activities, and therefore effects, associated with **construction and operation of an offshore petroleum production installation**

(including drilling of production wells) it is recommended that these activities are classified as **Discretionary Activities** in Coastal Management areas C and D.

In order to simplify the consent process for applicants it is recommended that all of the associated activities are bundled so that there are two Rules one for exploratory offshore petroleum drilling and a second for construction and operation of an offshore petroleum production installation. This will allow the applicant to apply for a single consent related to the activity being undertaken rather than multiple consents as is the case currently.

Production drilling could be classified as a controlled activity, as the effects are similar to those for exploration drilling, with a separate discretionary rule covering the other activities associated with construction and operation of an offshore petroleum production platform. However this would require an applicant to apply for two separate consents as production drilling would not occur without the construction and operation of an offshore petroleum production platform. Therefore it is considered simpler for the applicant if all activities are bundled into a single discretionary Rule.

It is suggested that such applications to undertake exploratory offshore petroleum drilling could be dealt with by the Council on a non-notified basis. As noted above, this is the case with exploration drilling in the EEZ which requires a marine consent. The recent EPA decisions discussed above would lead one to conclude that it is fully appropriate for Council to determine what controls if any should be placed upon a consent, rather than going through a full public process where, as with the EPA hearings, much of the material placed before the DMCs was of little or no relevance (e.g. climate change), yet cost the applicants a very large amount of money for the process.

Regarding the matters listed above where Council could exercise controls, the prevention of blow-outs and resultant oil spills are areas specifically and comprehensively addressed by the well integrity provisions of the HSE Petroleum Regulations (2013), as set out above. Any attempt by Council at exerting controls over these areas would potentially be an unnecessary costly duplication, and one of conflict between requirements of different regimes (and a similar comment could be made about biosecurity). It is therefore recommended that Council simply add a requirement in a rule that these various other regimes have to be complied with. Council could require that evidence to that end be furnished to it (in essence that would be a tautology, as drilling operations cannot commence in the absence of these other permits and approvals). Of note the EPA's DMCs inserted similar conditions into the marine consents they approved.,

With regard to types of drilling muds and fluids, current General Rule G2.8 permits the discharge of drilling muds, cuttings and fluids into the sea except within coastal management areas A and B. It would be prudent if a condition specified that only water-based and synthetic-based muds and fluids are able to be discharged, that is that the discharge of oil-based muds are requiring of some form of tighter control/management regime.

Regarding monitoring, given the EPA's conclusions summarised above that the environmental effects of drilling are minor, localised and temporary, then on the face of it there would be no need to require monitoring of a drilling operation (before, during and post-drilling). In support of this stance would be the results of the post-drilling and OTEMP monitoring, reviewed above, that currently occur within the EEZ, required by Maritime NZ pursuant to MPR200. However, the STOS marine consent DMC placed a benthic monitoring condition relating to both the ongoing operation of the Maui platforms, as well as future drilling campaigns (refer Appendix Six, condition 18). Council may wish to consider doing likewise, if for no other reason than to be consistent with the EPA's decisions, and in light of the fact that drilling within the Taranaki CMA is often in areas of greater potential environmental sensitivity compared with further offshore.

As noted above, the recent EPA decisions for the offshore oil and gas industry noted the desirability of those operators to establish more formal relationships with iwi, including the possibility of involvement in on-going management decisions and monitoring. However, this must be viewed in the light of the fact that the EPA has no planning regime as do regional councils, that is councils have the opportunity, many would say duty, to involve iwi far earlier on than resource consent application processes (hearings). The development of the Regional Coastal Plan, for example, is the ideal opportunity for iwi to get involved far earlier on, to provide the Council with areas of interest and concern, and have these addressed accordingly in policies and rules.

Finally, the Council may wish to know when drilling activities commence, and therefore could, if so desired, require notification of the commencement of operations by the operator involved. This is recommended.

In Coastal Management areas A (outstanding coastal value) and B (estuaries) where the ecosystems are particularly sensitive and of high value it is recommended that offshore petroleum drilling and associated activities be classified as **Non-complying Activities** which would mean that Council would not grant a consent for drilling unless the effects of the activity are minor or the activities are not contrary to the objectives and policies in the RCP.

6.1 A comment about policy options and associated costs

By way of final comment, as an input into Council's s32 analysis for its review of its RCP, it is noted here that a company drilling an offshore well in the Manawatu CMA some years ago, Tap Oil, expended ~$220-270,000 on obtaining the requisite resource consents, noting however that all of the consultation was undertaken by company staff and has not been costed in. This was a non-notified consent application, approved after sign-off by all affected parties.

STOS expended ~ $500,000 to obtain its marine consent for the Ruru-2 well, again a non-notified consent application. This however did not cover the costs associated with preparation of the Discharge Management Plan and marine oil spill plan, for approval by Maritime NZ, but also taken into consideration by the EPA's DMC.

With regard to costs associated with a notified consent for drilling, it is believed that OMV expended several millions of dollars on the notified marine consent process for the Maari development drilling. The costs associated with STOS' marine consent application for the Maui field are unknown, but are also reputed to be in the millions of dollars.

It should be noted that costs to an operator to undertake drilling within the Taranaki CMA are associated with obtaining the required discretionary consents. An application recently processed by Council was limited notified and therefore might be considered to cost in the order of the non-notified Tap Oil and STOS applications above.

Operator costs are likely to remain similar should exploratory offshore petroleum drilling be classified as a controlled activity that will be non-notified. However, the operator will benefit though having business certainty as applications for a controlled activity cannot be turned down by Council. Applications to undertake a discretionary activity, as currently required, can be turned down by Council.

7 Conclusions & Recommendations

In order to simplify the consent process for applicants it is recommended that activities are 'bundled' so that only a single consent is needed at a particular stage of the activity. It is proposed that rules are developed for a revised RCP that specifically address **exploratory offshore petroleum drilling** and **construction and operation of an offshore petroleum production installation**.

The classification of these activities differs depending on the Coastal Management Area as discussed further below.

7.1 Coastal Management Areas C and D

It is recommended that **exploratory offshore petroleum drilling** and associated activities be classified as **controlled** activities in Coastal Management areas C (open coast) and D (Port). The following tables below show how the classifications will change compared to the current RCP.

Coastal Management Area C (open coast) activities and associated RCP rules and recommended classifications

Activity and Associated Rule Number	**Current Classification**	**Recommended Classification**
Temporary exclusive **occupation** of the common marine and coastal area (G1.2)	Discretionary	Controlled
Erect, reconstruct, or **place** an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA	
Disturbance of the seabed by drilling (C3.1)	Permitted	
Disturbance of the seabed by anchors or jack-down legs of drilling rigs (C3.5)	Discretionary	
Discharge of drilling muds, cuttings and fluids to water (C2.8)	Permitted	
Discharge of incidental water (G2.9)	Permitted	
Discharge of contaminants to air via flaring (G2.10)	Permitted	
Discharge of contaminants to air from machinery on-board (G2.13)	Discretionary	
Deposit drilling muds, cuttings and fluids on the seabed (C3.9)	Discretionary	
Taking of incidental water	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA	

Coastal Management Area D (Port) activities and associated RCP rules and recommended classifications

Activity and Associated Rule Number	Current Classification	Recommended Classification
Temporary exclusive **occupation** of the common marine and coastal area (G1.2)	Discretionary	Controlled
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA	
Disturbance of the seabed by drilling (D3.2)	Controlled	
Disturbance of the seabed by anchors or jack-down legs of drilling rigs (D3.6)	Discretionary	
Discharge of drilling muds, cuttings and fluids to water (G2.8)	Permitted	
Discharge of incidental water (G2.9)	Permitted	
Discharge of contaminants to air via flaring (G2.10)	Permitted	
Discharge of contaminants to air from machinery on-board (G2.13)	Discretionary	
Deposit drilling muds, cuttings and fluids on the seabed (D3.9)	Discretionary	
Taking of incidental water	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA	

It is suggested that these activities be bundled into a single controlled activity rule which covers all of the activities associated with exploratory offshore petroleum drilling in order to simplify the process for applicants.

The rule developed should allow Council to maintain control over the following:

- Nature and volume of contaminants discharged into the water, air or onto the seabed;
- Monitoring;
- The type of drill muds and fluids used;
- Notification of the commencement of drilling activities;

and require that operators comply with relevant Health and Safety in Employment regulations.

Classifying exploratory offshore petroleum drilling as a Controlled activity will offer operators business certainty as applications for a controlled activity cannot be turned down by Council.

Draft rules for exploratory offshore petroleum drilling in Coastal Management areas C and D are included below as Rules 1 and 2.

It is recommended that **construction and operation of an offshore petroleum production installation** and associated activities be classified as a discretionary activity

due to the increased scale of activities, and therefore effects, associated with this activity.

The draft rule for construction and operation of an offshore petroleum production installation within Coastal Management Areas C and D is included below as Rule 3.

7.2 Coastal Management Areas A and B

In Coastal Management areas A (outstanding coastal value) and B (estuaries) where the ecosystems are particularly sensitive and of high value it is recommended that **exploratory offshore petroleum drilling** and associated activities be classified as **Non-complying Activities**. This would mean that it would be extremely difficult to obtain consent to drill in these areas as Council cannot grant a consent unless the effects of the activity are minor and the activities are not contrary to the objectives and policies in the RCP. The following tables below show how the classifications will change compared to the current RCP.

Coastal Management Area A (areas of outstanding coastal value) activities and associated RCP rules and recommended classifications

Activity and Associated Rule Number	Current Classification	Recommended Classification
Temporary exclusive **occupation** of the common marine and coastal area (G1.2)	Discretionary	Non-complying
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA	
Disturbance of the seabed by drilling (A3.3)	Discretionary	
Disturbance of the seabed by anchors or jack-down legs of drilling rigs (A3.3)	Discretionary	
Discharge of drilling muds, cuttings and fluids to water (G2.13)	Discretionary	
Discharge of incidental water (2.9)	Permitted	
Discharge of contaminants to air via flaring (G2.10)	Permitted	
Discharge of contaminants to air from machinery on-board (G2.13)	Discretionary	
Deposit drilling muds, cuttings and fluids on the seabed (A3.5)	Discretionary	
Taking of incidental water	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA	

Coastal Management Area B (estuaries) activities and associated RCP rules and recommended classifications

Activity and Associated Rule Number	Current Classification	Recommended Classification
Temporary exclusive **occupation** of the common marine and coastal area (G1.2)	Discretionary	Non-complying
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA	
Disturbance of the seabed by drilling (B3.4 or B3.5)	Discretionary or Non-complying Depending on location	
Disturbance of the seabed by anchors or jack-down legs of drilling rigs (B3.4 or B3.5)	Discretionary or Non-complying Depending on location	
Discharge of drilling muds, cuttings and fluids to water (B2.6)	Discretionary	
Discharge of incidental water (G2.9)	Permitted	
Discharge of contaminants to air via flaring (G2.10)	Permitted	
Discharge of contaminants to air from machinery on-board (G2.13)	Discretionary	
Deposit drilling muds, cuttings and fluids on the seabed (B3.8 or B3.9)	Discretionary Or Non-complying Depending on location	
Taking of incidental water	Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA	

The draft rule covering exploratory offshore petroleum drilling within Coastal Management Areas A & B is included below as Rule 4.

It is also recommended that construction and operation of an offshore petroleum production installation and associated activities be classified as Non-complying activities in Coastal Management Areas A and B.

The draft rule for construction and operation of an offshore petroleum production installation with Coastal Management Areas A & B is included below as Rule 5.

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Drilling of an offshore petroleum exploration or appraisal well The temporary exclusive occupation of the common marine and coastal area (CMCA) by an offshore installation or drilling ship for the purpose of drilling an offshore petroleum exploration or appraisal well pursuant to sections 12(1) and 12(2) of the RMA, and any associated: • erection, reconstruction, placement, alteration, extension of a well structure fixed in, on, under, or over any foreshore or seabed pursuant to section 12(1)(b) of the RMA; • taking of water incidental to the drilling process pursuant to section 14(1) of the RMA • discharge of contaminants into water, into, on or under the foreshore or seabed, or into air pursuant to section 15B(1) of the RMA; • disturbance of the foreshore or seabed or deposition of contaminants in, on, or under the seabed pursuant to section 12(1) of the RMA Note (1) Discharges covered by the Resource Management (Marine Pollution) Regulations 1998 are not covered by this rule.	1	C & D	Controlled	(a) The operator must comply with the relevant provisions of: (i) Part 6 *Well Operations* provisions of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 2013[1] (ii) the Maritime Transport Act 1994 and associated Marine Protection Rules[1] (iii) the Resource Management (Marine Pollution) Regulations 1998.[1] (b) The operator must provide Council with: (i) a copy of the well examiners verification of the well examination scheme under Part 6 *Well Operations* provisions of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 2013[1] (ii) a copy of its approved Discharge Management Plan as required under Part 200 of the Marine Protection Rules *(soon to become Marine Oil Spill Contingency Plan under Part 131 of the Marine Protection Rules)* [1] (iii) a copy of the valid International Oil Pollution Prevention Certificate applicable to the offshore installation being used as required under Part 200 of the Marine Protection Rules *(note as above)* [1] no later than 30 days in advance of drilling commencing (c) The operator must advise Council of the commencement date of the drilling programme no later than 30 days in advance of drilling commencing. (d) Drilling is not undertaken directly into any reef system. (e) Drilling is undertaken 2000 metres or more from the line of mean high water springs (excluding Coastal Management area D) or Xm[2] from the boundary of Coastal Management Area A. (f) Only water-based or synthetic-based drilling fluids and muds may be used. (g) There shall be no subsurface discharge of fluids from the well unless authorised by another rule in this plan or a resource consent. (h) Any unauthorised subsurface discharge from the well must be reported to Council within two working days of its occurrence. (i) Activity complies with the general standards in Section X of	Control is reserved over: (a) Location of the well. (b) Well integrity and decommissioning. (c) Timing of works. (d) Monitoring and information requirements. (e) Measures to avoid, remedy, or mitigate adverse effects on the environment. (f) Volume of cuttings. (g) Duration of consent. (h) Review of conditions of consent and the timing and purpose of the review. (i) Payment of administrative charges and financial contributions. Resource consent applications under this rule will not be publicly notified.	

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Note (2): When directional drilling is used and a well originating landward of the CMCA enters the CMCA under the seabed only the relevant standards, terms and conditions will apply. Note(3): If the activity does not meet the standards, terms and conditions in this rule refer to Rule 2				this Plan.		

[1] Note legal issues associated with RMA rules and conditions referencing and aligning with other legislation are being investigated and further consulted on.

[2] Further investigation is being undertaken to determine an appropriate buffer distance from Coastal Management Area A.

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Drilling of an offshore petroleum exploration or appraisal well The temporary exclusive occupation of the common marine and coastal area (CMCA) by an offshore installation or drilling ship for the purpose of drilling an offshore petroleum exploration or appraisal well pursuant to sections 12(1) and 12(2) of the RMA, and any associated: • erection, reconstruction, placement, alteration, extension of a well structure fixed in, on, under, or over any foreshore or seabed pursuant to section 12(1)(b) of the RMA; • taking of water incidental to the drilling process pursuant to section 14(1) of the RMA • discharge of contaminants into water, into, on or under the foreshore or seabed, or into air pursuant to section 15B(1) of the RMA; • disturbance of the seabed or deposition of contaminants onto the seabed pursuant to section 12(1) of the RMA and does not comply with the standards, terms and conditions of Rule 1 Note (1) Discharges covered by the Resource	2	C & D	Discretionary			

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Management (Marine Pollution) Regulations 1998 are not covered by this rule. Note (2): When directional drilling is used and a well originating landward of the CMCA enters the CMCA under the seabed only the relevant standards, terms and conditions will apply.						

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Offshore petroleum production installation construction, operation, maintenance, modification and abandonment. The exclusive occupation of the common marine and coastal area (CMCA) by an offshore installation or drilling ship for the purpose of drilling offshore petroleum production wells and establishing an offshore production installation including the placement of any pipelines. pursuant to sections 12(1) and 12(2) of the RMA, and any associated: • erection, reconstruction, placement, alteration, extension of a well structure fixed in, on, under, or over any foreshore or seabed pursuant to section 12(1)(b) of the RMA; • taking of water incidental to the drilling process and the taking of produced water pursuant to section 14(1) of the RMA • discharge of contaminants into water, into, on or under the foreshore or seabed, or into air pursuant to section 15B(1) of the RMA; • disturbance of the seabed or deposition of contaminants onto the seabed pursuant to section 12(1) of the RMA	3	C & D	Discretionary			

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Note (1) Discharges covered by the Resource Management (Marine Pollution) Regulations 1998 are not covered by this rule. Note (2): When directional drilling is used and a well originating landward of the CMCA enters the CMCA under the seabed only the relevant standards, terms and conditions will apply.						

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Drilling of an offshore petroleum exploration or appraisal well The temporary exclusive occupation of the common marine and coastal area (CMCA) by an offshore installation or drilling ship for the purpose of drilling an offshore petroleum exploration or appraisal well pursuant to sections 12(1) and 12(2) of the RMA, and any associated: • erection, reconstruction, placement, alteration, extension of a well structure fixed in, on, under, or over any foreshore or seabed pursuant to section 12(1)(b) of the RMA; • taking of water incidental to the drilling process pursuant to section 14(1) of the RMA • discharge of contaminants into water, into, on or under the foreshore or seabed, or into air pursuant to section 15B(1) of the RMA; • disturbance of the seabed or deposition of contaminants onto the seabed pursuant to section 12(1) of the RMA Note (1) Discharges covered by the Resource Management (Marine Pollution) Regulations 1998 are not covered by this rule. Note (2): When directional drilling is used and a well	4	A & B	Non-complying			

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
originating landward of the CMCA enters the CMCA under the seabed only the relevant standards, terms and conditions will apply.						

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Offshore petroleum production installation construction, operation, maintenance, modification and abandonment. The exclusive occupation of the common marine and coastal area (CMCA) by an offshore installation or drilling ship for the purpose of drilling offshore petroleum production wells and establishing an offshore production installation including the placement of any pipelines. pursuant to sections 12(1) and 12(2) of the RMA, and any associated: • erection, reconstruction, placement, alteration, extension of a well structure fixed in, on, under, or over any foreshore or seabed pursuant to section 12(1)(b) of the RMA; • taking of water incidental to the drilling process and the taking of produced water pursuant to section 14(1) of the RMA • discharge of contaminants into water, into, on or under the foreshore or seabed, or into air pursuant to section 15B(1) of the RMA; • disturbance of the seabed or deposition of contaminants onto the seabed pursuant to section 12(1) of the RMA	5	A&B	Non-complying			

Activity	Rule	Coastal management units	Classification	Conditions/standards/terms	Control/discretion/notification	Policy reference
Note (1) Discharges covered by the Resource Management (Marine Pollution) Regulations 1998 are not covered by this rule. Note (2): When directional drilling is used and a well originating landward of the CMCA enters the CMCA under the seabed only the relevant standards, terms and conditions will apply. .						

Dr Mike Patrick

August 2015

APPENDIX 1

Resource Management Act Provisions

RESOURCE MANAGEMENT ACT 1991

15B Discharge of harmful substances from ships or offshore installations

(1) No person may, in the coastal marine area, discharge a harmful substance or contaminant, from a ship or offshore installation into water, onto or into land, or into air, unless—

(a) the discharge is permitted or controlled by regulations made under this Act, a rule in a regional coastal plan, proposed regional coastal plan, regional plan, proposed regional plan, or a resource consent; or

(b) after reasonable mixing, the harmful substance or contaminant discharged (either by itself or in combination with any other discharge) is not likely to give rise to all or any of the following effects in the receiving waters:

(i) the production of any conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(ii) any conspicuous change of colour or visual clarity:

(iii) any emission of objectionable odour:

(iv) any significant adverse effects on aquatic life; or

(c) the harmful substance or contaminant, when discharged into air, is not likely to be noxious, dangerous, offensive, or objectionable to such an extent that it has or is likely to have a significant adverse effect on the environment.

(2) No person may, in the coastal marine area, discharge water into water from any ship or offshore installation, unless—

(a) the discharge is permitted or controlled by regulations made under this Act, a rule in a regional coastal plan, proposed regional coastal plan, regional plan, proposed regional plan, or a resource consent; or

(b) after reasonable mixing, the water discharged is not likely to give rise to any significant adverse effects on aquatic life.

(3) Where regulations are made under this Act permitting or controlling a discharge to which subsections (1) or (2) apply, no rule can be included in a regional coastal plan, proposed regional coastal plan, regional plan, or proposed regional plan, or a resource consent granted relating to that discharge unless the regulations provide otherwise; and regulations may be made prohibiting the making of rules or the granting of resource consents for discharges.

(4) No person may discharge a harmful substance or contaminant in reliance upon subsection (1)(b) or (c) or subsection (2)(b) if a regulation made under this Act, a rule, or a resource consent applies to that discharge; and regulations or rules may be made prohibiting a discharge which would otherwise be permitted in accordance with subsection (1)(b) or (c) or subsection (2)(b).

(5) A discharge authorised by subsection (1) or subsection (2), regulations made under this Act, a rule, or a resource consent may, despite section 7 of the Biosecurity Act 1993, be prohibited or controlled by that Act to exclude, eradicate, or effectively manage pests or unwanted organisms.

RESOURCE MANAGEMENT (MARINE POLLUTION) REGULATIONS 1998

15 Discharges made as part of normal operations of ship or offshore installation

Any person may discharge, in the coastal marine area, a contaminant that is incidental to, or derived from, or generated during, the operations listed in Schedule 4 as the normal operations of a ship or offshore installation, except a contaminant that is garbage and for which no exception is provided in regulation 13A.

Schedule 4 - Normal operations of ship or offshore installation

1 Ship propulsion.
2 Heat exchange systems, including engine cooling systems, air conditioning, refrigeration, and condensers.
3 Stormwater drainage from systems and scuppers, except from those areas used for the storage of any harmful substance.
4 The use of washing facilities in the accommodation areas producing greywater from showers, handbasins, baths, galleys, dishwashers, and laundries but does not include use of any dispensary, sick bay, or other medical premises.
5 The cleaning of the ship or offshore installation, except for the exterior of the hull below the load line or parts of the ship used for carrying cargo.
6 The incineration of waste or other matter generated from a ship or offshore installation.
7 Firefighting.
8 The operation of a weapon system on any ship of the New Zealand Defence Force

APPENDIX 2

Current Coastal Plan rules relating to offshore drilling activities

Coastal Management Area C – Open Coast

Activity	Rule Activity Description	Rule Number	Classification
Temporary exclusive **occupation** of the common marine and coastal area	Any activity involving occupation of large areas of the coastal marine area	G1.2	Discretionary
Erect, reconstruct, or **place** an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	Disturbance of the seabed by drilling	C3.1	Permitted
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	Disturbance, damage or destruction of the foreshore and seabed, including any removal of sand, shell, shingle or other natural material and the activity does not come within and/or comply with any of rules C3.4 to C3.4; and is restricted by section 12(1)(c), 12(1)(e) or 12(2) of the Act	C3.5	Discretionary
Discharge of drilling muds, cuttings and fluids to water	Discharge of drilling muds, cuttings, and drilling fluids from offshore installations to the coastal marine area	G2.8	Permitted
Discharge of incidental water	Discharge of produced water from an offshore installation	G2.9	Permitted
Discharge of contaminants to air via flaring	Discharge of contaminants to air via the flaring of hydrocarbons from petroleum exploration or mining	G2.10	Permitted
Discharge of contaminants to air from machinery on-board	Discharge of contaminants to water or air in the coastal marine area and the discharge does not come within and/or comply with any of rules G2.1 to G2.12	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	Deposit of substance in, on or under the foreshore or seabed for other purposes and the activity does not come within and/or comply with any of rules C3.1 to C3.8; and is restricted by Section 12(1)(d) of the Act.	C3.9	Discretionary

Activity	Rule Activity Description	Rule Number	Classification
Taking of incidental water	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

The Resource Management (Marine Pollution) Regulations 1998 (administered by the Ministry for the Environment) cover discharges from ships and offshore installations including the discharge of garbage, oil, sewage, ballast water, and discharges made as part of the normal operations of a ship or offshore installation. These rules supersede rules G2.1, G2.2, G2.3, G2.4, G2.5, G2.6, G2.7, and the relevant sections of G2.11 in the current Coastal Plan.

Coastal Management Area A – Areas of Outstanding Coastal Value

Activity	Rule Activity Description	Rule Number	Classification
Temporary exclusive occupation of the common marine and coastal area	Any activity involving occupation of large areas of the coastal marine area	G1.2	Discretionary
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	Other disturbance, or damage or destruction of foreshore and seabed, including any removal of sand, shell, shingle or other natural material and disturbance does not come within and/or comply with rules A3.1 or A3.2; and the disturbance, damage or destruction are restricted by sections 12(1)(c) or 12(1)(e) of the Act, or removal of sand, shell shingle or other natural material is restricted by Section 12(2) of the Act.	A3.3	Discretionary
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	Other disturbance, or damage or destruction of foreshore and seabed, including any removal of sand, shell, shingle or other natural material and disturbance does not come within and/or comply with rules A3.1 or A3.2; and the disturbance, damage or destruction are restricted by sections 12(1)(c) or 12(1)(e) of the Act, or removal of sand, shell shingle or other natural material is restricted by Section 12(2) of the Act.	A3.3	Discretionary
Discharge of drilling muds, cuttings and fluids to water	Discharge of contaminants to water or air in the coastal marine area and the discharge does not come within and/or comply with any of rules G2.1 to G2.12	G2.13	Discretionary
Discharge of incidental water	Discharge of produced water from an offshore installation	G2.9	Permitted
Discharge of contaminants to air via flaring	Discharge of contaminants to air via the flaring of hydrocarbons from petroleum exploration or mining	G2.10	Permitted
Discharge of contaminants to air from	Discharge of contaminants to water or air in the coastal marine	G2.13	Discretionary

Activity	Rule Activity Description	Rule Number	Classification
machinery on-board	area and the discharge does not come within and/or comply with any of rules G2.1 to G2.12		
Deposit drilling muds, cuttings and fluids on the seabed	Other deposits of substance in, on or under the foreshore and seabed and the deposit does not come within and/or comply with rule A3.4; and is restricted by Section 12(1)(d) of the Act	A3.5	Discretionary
Taking of incidental water	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

The Resource Management (Marine Pollution) Regulations 1998 (administered by the Ministry for the Environment) cover discharges from ships and offshore installations including the discharge of garbage, oil, sewage, ballast water, and discharges made as part of the normal operations of a ship or offshore installation. These rules supersede rules G2.1, G2.2, G2.3, G2.4, G2.5, G2.6, G2.7, and the relevant sections of G2.11 in the current Coastal Plan.

Coastal Management Area B - Estuaries

Activity	Rule Activity Description	Rule Number	Classification
Temporary exclusive occupation of the common marine and coastal area	Any activity involving occupation of large areas of the coastal marine area	G1.2	Discretionary
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	Other disturbance or damage or destruction of the foreshore and seabed, including any removal of sand, shell, shingle, or other natural material and the disturbance does not come within and/or comply with rules B3.1, B3.2, B3.3 (and B3.4 (*rule B3.5 only)*)and the disturbance, damage or destruction are restricted by sections 12(1)(c) or 12(1)(e) of the Act, or removal is restricted by Section 12(2) of the Act	B3.4 or B3.5 Depending on location	Discretionary or Non-complying Depending on location
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	Other disturbance or damage or destruction of the foreshore and seabed, including any removal of sand, shell, shingle, or other natural material and the disturbance does not come within and/or comply with rules B3.1, B3.2, B3.3 (and B3.4 (*rule B3.5 only)*)and the disturbance, damage or destruction are restricted by sections 12(1)(c) or 12(1)(e) of the Act, or removal is restricted by Section 12(2) of the Act	B3.4 or B3.5 Depending on location	Discretionary or Non-complying Depending on location
Discharge of drilling muds, cuttings and fluids to water	Discharge of water or contaminant into water or onto land in the coastal marine area and the discharge does not come within and/or comply with Rule B2.5	B2.6	Discretionary
Discharge of incidental water	Discharge of produced water from an offshore installation	G2.9	Permitted
Discharge of contaminants to air via flaring	Discharge of contaminants to air via the flaring of	G2.10	Permitted

Activity	Rule Activity Description	Rule Number	Classification
	hydrocarbons from petroleum exploration or mining		
Discharge of contaminants to air from machinery on-board	Discharge of contaminants to water or air in the coastal marine area and the discharge does not come within and/or comply with any of rules G2.1 to G2.12	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	Other deposits of substance in, on or under the foreshore and seabed and the deposit does not come within and/or comply with rule B3.6, B3.7 (or B3.8(*rule B3.9 only*)) ; and is restricted by Section 12(1)(d) of the Act	B3.8 Or B3.9 Depending on location	Discretionary Or Non-complying Depending on location
Taking of incidental water	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

The Resource Management (Marine Pollution) Regulations 1998 (administered by the Ministry for the Environment) cover discharges from ships and offshore installations including the discharge of garbage, oil, sewage, ballast water, and discharges made as part of the normal operations of a ship or offshore installation. These rules supersede rules G2.1, G2.2, G2.3, G2.4, G2.5, G2.6, G2.7, and the relevant sections of G2.11 in the current Coastal Plan.

Coastal Management Area D - Port

Activity	Rule Activity Description	Rule Number	Classification
Temporary exclusive occupation of the common marine and coastal area	Any activity involving occupation of large areas of the coastal marine area	G1.2	Discretionary
Erect, reconstruct, or place an offshore installation or drilling ship that is fixed in, on, under, or over any foreshore or seabed	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 12(1)(b) of the RMA
Disturbance of the seabed by drilling	Disturbance of the foreshore and seabed by drilling	D3.2	Controlled
Disturbance of the seabed by anchors or jack-down legs of drilling rigs	Other disturbance or damage or destruction of the foreshore and seabed, including any removal of sand, shell, shingle or other natural material and the activity does not come within and/or comply with any of rules D3.1 to D3.5: and is restricted by sections 12(1)(c), 12(1)(e) or 12(2) of the Act	D3.6	Discretionary
Discharge of drilling muds, cuttings and fluids to water	Discharge of drilling muds, cuttings, and drilling fluids from offshore installations to the coastal marine area	G2.8	Permitted
Discharge of incidental water	Discharge of produced water from an offshore installation	G2.9	Permitted
Discharge of contaminants to air via flaring	Discharge of contaminants to air via the flaring of hydrocarbons from petroleum exploration or mining	G2.10	Permitted
Discharge of contaminants to air from machinery on-board	Discharge of contaminants to water or air in the coastal marine area and the discharge does not come within and/or comply with any of rules G2.1 to G2.12	G2.13	Discretionary
Deposit drilling muds, cuttings and fluids on the seabed	Other deposits of substance in, on or under the foreshore and seabed and the deposit does not come within and/or comply with rules D3.7 or C3.8; and is restricted by Section 12(1)(d) of the Act	D3.9	Discretionary

Activity	Rule Activity Description	Rule Number	Classification
Taking of incidental water	No rule		Coastal Plan is 'silent' on this activity so would be considered a discretionary activity under section 15 of the RMA

The Resource Management (Marine Pollution) Regulations 1998 (administered by the Ministry for the Environment) cover discharges from ships and offshore installations including the discharge of garbage, oil, sewage, ballast water, and discharges made as part of the normal operations of a ship or offshore installation. These rules supersede rules G2.1, G2.2, G2.3, G2.4, G2.5, G2.6, G2.7, and the relevant sections of G2.11 in the current Coastal Plan.

APPENDIX 3

HSE (Petroleum Exploration & Extraction) Regulations Provisions

Schedule 4
Information required in safety case for installation

1 The name and address of the duty holder for the installation.

2 A description of how the duty holder has taken into account any matters raised by WorkSafe in relation to a notice provided under regulation 22(1) or (3).

3 A summary of how the duty holder complied with regulation 27 in the preparation or revision of a safety case.

Safety management system

4 A detailed description of the safety management system that provides for all activities that will, or are likely to, take place on, or in connection with, the installation.

5 The safety management system must address the matters set out in Schedule 1.

Installation

6 In relation to the installation,—

(a) particulars of all New Zealand and international standards that have been applied, or will be applied, in relation to the installation, or plant used on or in connection with the installation:

(b) a description, with scale diagrams, of,—

(i) in relation to a production installation, the intended location of the installation:

(ii) the main and secondary structure of the installation and its materials:

(iii) the plant and equipment of the installation:

(iv) the layout and configuration of its plant:

(v) any designated hazardous areas:

(vi) in relation to a production installation, the connections to any pipeline or installation:

(vii) in relation to a production installation, any wells to be connected to the installation:

(c) particulars of the types of operation, and activities in connection with any operation that the installation is capable of performing:

(d) in relation to an offshore installation, the maximum number of persons expected to be on the installation at any time and for whom accommodation is to be provided:

(e) particulars of the range of operating and environmental conditions within which the installation has been designed to operate and how the installation's structures have been designed and are maintained for the stated operating and environmental conditions:

(f) particulars of the plant and arrangements that will be used to control the pressure in the well and prevent the uncontrolled release of petroleum:

(g) in relation to a production installation, a description of any pipeline with the potential to cause a major accident (where applicable), including details of—

(i) the fluid that it conveys:

(ii) its dimensions and layout:

(iii) its contained volume at declared maximum allowable operating pressure:

(iv) any apparatus and works intended to secure safety:

(h) in relation to an offshore installation, particulars of plant, equipment, and procedures for diving support and hyperbaric rescue:

(i) a description of the areas that have been classified as hazardous, including the rated classification:

(j) a description of the systems available for early detection of smoke, fire, accumulations of flammable (and other hazardous) gases, leakages of flammable liquids, and other events that may require emergency response:

(k) a description of the arrangements for giving warning of an emergency by audible, and where necessary, visual alarm systems to all petroleum workers on the installation:

(l) a description of the arrangements for communication during an emergency—

(i) between persons on the installation:

(ii) in relation to an offshore installation, between the installation and other installations, supporting aircraft, and vessels:

(iii) between the installation and remote support locations and emergency services:

(m) a description of the measures for limiting the extent of an emergency, including—

(i) measures to combat fire and explosion; and

(ii) emergency shutdown systems; and

(iii) facilities for the monitoring and control of the emergency and for organising evacuation:

(n) a description of the measures taken for the protection of petroleum workers from hazards of explosions, fire, heat, smoke, hazardous gas, or fumes during any period while petroleum workers may need to remain on an installation during an emergency:

(o) in relation to an offshore installation, a description of the temporary refuge arrangements that offer protection against an escalating major accident:

(p) a description of the evacuation and escape systems.

Management of major accident hazards

7 A detailed description of the formal safety assessment for the installation, including a description of—

(a) all major accident hazards:

(b) an assessment of the risk associated with each major accident hazard:

(c) the elimination, prevention, reduction, and mitigation control measures that have been, or will be, taken to reduce the risks to a level that is as low as is reasonably practicable:

(d) the performance standards for each control measure:
(e) the assurance processes that will be put in place to confirm that the control measure remains fit for purpose:
(f) the process used to identify major accident hazards, assess the risks, identify the control measures, and set performance standards.

Performance monitoring

8 A description of—

(a) the arrangements in place for monitoring the management of major accident hazards and other workplace hazards:
(b) the arrangements for reporting, analysing, and learning from incidents and work-related illness:
(c) the arrangements for monitoring and measuring occupational health exposures:
(d) the arrangements in place for independent and competent persons to audit the management of major accident hazards and other workplace hazards:
(e)the arrangements in place for independent and competent persons to verify that safety-critical elements remain effective:
(f) the arrangements in place for the periodic assessment of the installation's integrity.

And the definition of "installation" is –

installation means a production installation or a non-production installation

APPENDIX 4

Crown Minerals Act Provisions

101B Interfering with structure or operation in offshore area

(1) A person commits an offence if the person intentionally engages in conduct that results in—

(a)damage to, or interference with, any structure or ship that is in an offshore area and that is, or is to be, used in mining operations or for the processing, storing, preparing for transporting, or transporting of minerals; or

(b) damage to, or interference with, any equipment on, or attached to, such a structure or ship; or

(c) interference with any operations or activities being carried out, or any works being executed, on, by means of, or in connection with such a structure or ship.

(2) A person commits an offence if—

(a) the person is the master of a ship that, without reasonable excuse, enters a specified non-interference zone for a permitted prospecting, exploration, or mining activity; or

(b) the person leaves a ship and, without reasonable excuse, enters a specified non-interference zone for a permitted prospecting, exploration, or mining activity.

(3) In prosecuting an offence against subsection (2), it is not necessary for the prosecution to prove that the person intended to commit the offence.

(4) A person who commits an offence against subsection (1) is liable on conviction,—

(a) in the case of an individual, to imprisonment for a term not exceeding 12 months or to a fine not exceeding $50,000:

(b) in the case of a body corporate, to a fine not exceeding $100,000.

(5) A person who commits an offence against subsection (2) is liable on conviction to a fine not exceeding $10,000.

(6) For the purposes of subsection (2), the chief executive may specify a non-interference zone by notice published in a fortnightly edition of the *New Zealand Notices to Mariners* (under Part 25 of the Maritime Rules).

(7) A notice must specify—

(a) the permitted prospecting, mining, or exploration activity to which the non-interference zone relates; and

(b) the locality of the activity; and

(c) the area of the non-interference zone to which the activity relates (which may be up to 500 metres from any point on the outer edge of the structure or ship to which the activity relates or, if there is any equipment attached to the structure or ship, 500 metres from any point on the outer edge of the equipment); and

(d) the period (which may be up to 3 months) for which the notice has effect.

(8) The chief executive, when determining the area of a non-interference zone for the purposes of a notice, must take into account the nature of the activity, including the size of any structure or ship to which the activity relates and any equipment attached to the structure or ship necessary for the carrying out of the activity.

(9) No proceedings for an offence against this section may be brought in a New Zealand court in respect of a contravention of this section on board, or by a person leaving, a foreign ship without the consent of the Attorney-General.

And the definition of "mining operations" is –

mining operations—

(a) means operations in connection with mining, exploring, or prospecting for any Crown owned mineral; and

(b) includes, when carried out at or near the site where the mining, exploration, or prospecting is undertaken,—

(i) the extraction, transport, treatment, processing, and separation of any mineral or chemical substance from the mineral; and

(ii) the construction, maintenance, and operation of any works, structures, and other land improvements, and of any related machinery and equipment connected with the operations; and

(iii) the removal of overburden by mechanical or other means, and the stacking, deposit, storage, and treatment of any substance considered to contain any mineral; and

(iv) the deposit or discharge of any mineral, material, debris, tailings, refuse, or wastewater produced from or consequent on the operations; and

(v) the doing of all lawful acts incidental or conducive to the operations; and

(c) includes any activities relating to the injection into and extraction of petroleum from an underground gas storage facility.

APPENDIX 5

MPR200 Provisions

offshore installation includes—
(a) any artificial structure (including a floating structure that is not a ship) used or intended
to be used in or on, or anchored or attached to, the seabed for the purpose of the exploration for, or the exploitation or associated processing of, any mineral, oil or gas:
(b) for the purposes of rules 200.4 to 200.12, 200.23 and 200.24, a pipeline permanently
attached to an offshore installation:

200.4 Requirement for a discharge management plan
A person must not operate an offshore installation without the Director's written approval of a
discharge management plan containing the matters prescribed in Schedule 1 that are appropriate to the operation of that installation.

Schedule 1
Contents of a discharge management plan
1 Risk identification, assessment and prevention
(1) Every discharge management plan must include—
(a) location details of the offshore installation and of the field to which the application relates;
(b) up to date and accurate drawings or plans showing—
(i) the general arrangement of the installation, in particular, the places and systems associated with the storage or transfer of fuels including tank capacity, filling arrangements, isolation valves and drainage systems highlighting the critical isolation points;
(ii) the most likely sources of any spill that may result in a pollution incident; and
(c) details of the proposed operations at the installation;
(d) particulars of all oils stored at the installation including characteristics, specifications, material safety data sheets and the maximum volume for each oil to be held on the installation;
(e) information on the oils produced by the installation, including—2
(i) physical properties including pour point, viscosity, density, API gravity, wax content and asphaltene content measured by a method approved by the Director;
(ii) weathering information including evaporation rates, emulsion-forming tendencies and changes in oil properties measured at 12, 24 and 48 hours by a method approved by the Director; and
(iii) effectiveness on selected dispersants as required by the Director on fresh oil and oil weathered for 12, 24 and 48 hours measured by a method approved by the Director;
(f) information on the likely fate of spilled produced oil taking into account weathering characteristics and the likely movement of any oil spilled from the installation;
(g) a detailed description of all the processes and activities which present a risk of pollution
from an oil spill, with a list of specific procedures to reduce the risk of an oil spill;
(h) a detailed description of all identified potential environmental impacts, including any possible social, cultural and economic implications that may result from any operational discharges or spill of oil or other substances from the installation.

2 Emergency spill response procedures for oil and other harmful substances
(1) The information required in this clause must be included as a consolidated section within the Discharge Management Plan.
(2) Every discharge management plan must contain emergency spill response procedures for oil.
(3) [not relevant to installations within the CMA].

(4) Emergency spill response procedures must include—
(a) guidance to ensure the safety of personnel;
(b) information to help personnel at the installation deal with a spill by detailing the actions necessary to stop, minimise or mitigate the effects of a spill, including procedures for—
(i) determining what action to take in response to a spill;
(ii) preventing escalation of the spill;
(iii) stopping the discharge at its source, if possible;
(iv) identifying the safety and environmental consequences of any remedial action; and
(v) determining whether the spill can be contained or cleaned up using the resources available to the owner or any other person responsible for implementing the emergency spill response procedures;
(c) details of the response options available to the installation;
(d) the procedure by which marine oil spills are to be reported in accordance with rule 200.23;
(e) [not relevant to installations within the CMA;
(f) a list of 24-hour contact information, including that of—
(i) the owner or the owner's representative;
(ii) the Director;
(iii) the regional council, if the installation is within a region;
(iv) any organisation contracted to respond to spills at the installation;
(v) the person responsible for implementing the plan;
(vi) the person co-ordinating response activities;
(vii) off-duty personnel with responsibilities for dealing with spills; and
(viii) all other persons who have interests in the vicinity of the installation that are likely to be affected by a spill from the installation;
(g) the organisational emergency response structure for the installation, including the duties of all personnel responsible for dealing with spills;
(h) an inventory and location of response equipment held on the installation and personnel responsibilities for the deployment, survey and maintenance of that equipment.

APPENDIX 6

IMO Taranaki Maritime Precautionary Area

I:\CIRC\SN\01\257.doc
INTERNATIONAL MARITIME ORGANIZATION
4 ALBERT EMBANKMENT
LONDON SE1 7SR
Telephone: 020 7735 7611
Fax: 020 7587 3210

Ref. T2-OSS/2.7.1 SN.1/Circ.257
11 December 2006

ROUTEING MEASURES OTHER THAN TRAFFIC SEPARATION SCHEMES

1. The Maritime Safety Committee, at its eighty-second session (29 November to 8 December 2006), adopted in accordance with the provisions of resolution A.858(20), the following new routeing measures other than traffic separation schemes including amendments to existing routeing measures other than traffic separation schemes, annexed hereto:

1. Area to be Avoided/Mandatory No Anchoring Area in the approaches to the Gulf of Venice (new);
2. Precautionary Area off the west coast of the North Island of New Zealand;
3. Recommended Routes in the Minches;
4. Deep-Water route west of the Hebrides;
5. Recommendation on navigation around the United Kingdom coast; and
6. Abolition of the Area to be Avoided around the EC2 Lighted Buoy including the consequential amendment relating to the cancellation of the Recommendations on directions of traffic flow in the English Channel.

2. The aforementioned routeing measures other than traffic separation schemes will be implemented at 0000 hours UTC on 1 July 2007.

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SN.1/Circ.257
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ANNEX

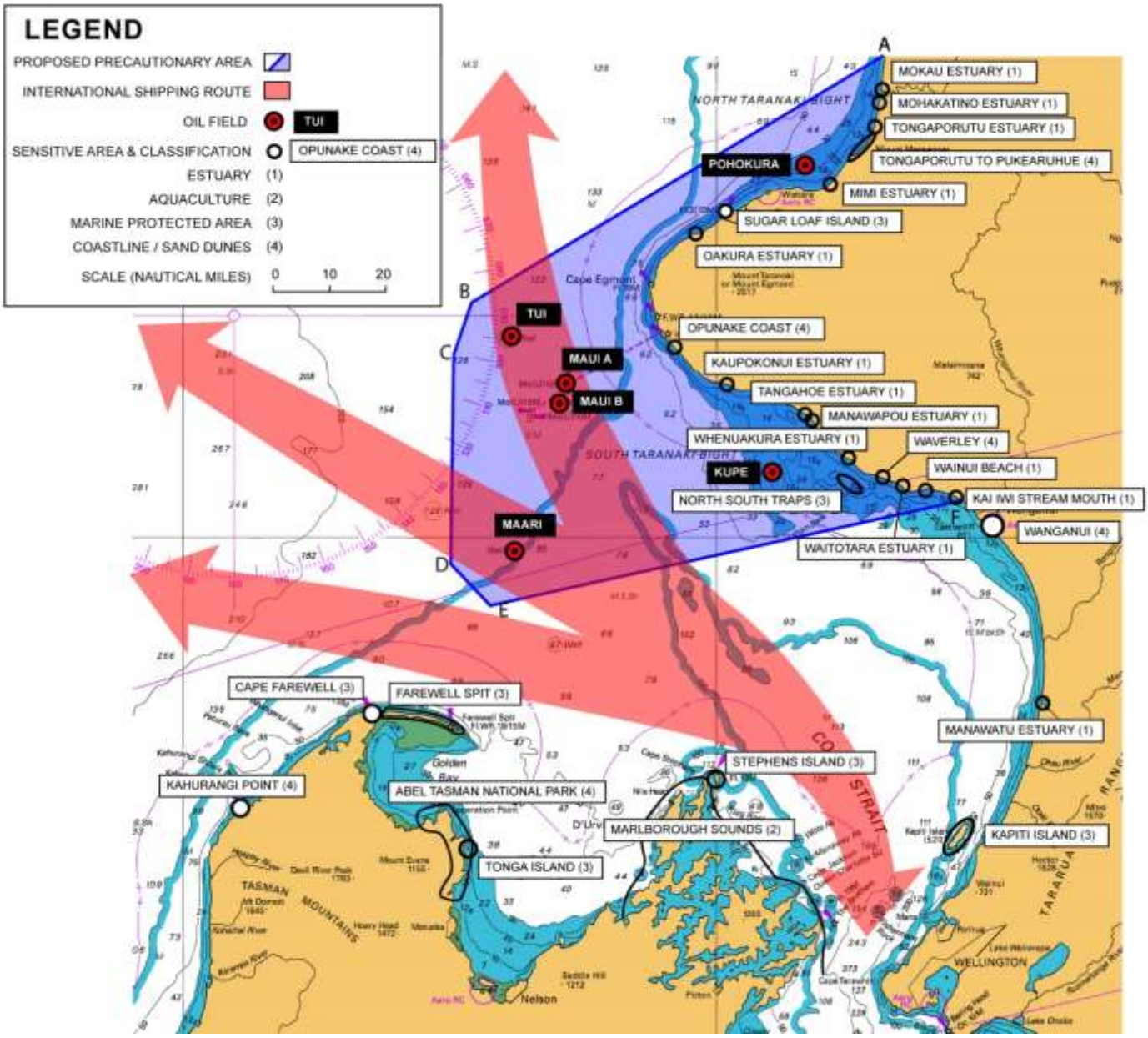
ESTABLISHMENT OF A PRECAUTIONARY AREA OFF WEST COAST OF THE NORTH ISLAND OF NEW ZEALAND

(Reference Charts: New Zealand North Island NZ23. April 2005 Edition. (WGS-84 Datum).
Western Approaches to Cook Strait NZ48. April 2000 Edition. (WGS 84 Datum)).

Description of Precautionary Area

The precautionary area is defined by a line connecting the following geographical positions, the
landward extent of which is determined by Mean High Water Springs (MHWS):
(1) The charted line of MHWS at approximately 38° 31′.00 S 174° 37′.80 E
(2) 39° 18′.50 S 173° 05′.00 E
(3) 39° 26′.00 S 173° 01′.00 E
(4) 40° 03′.00 S 173° 04′.00 E
(5) 40° 10′.00 S 173° 16′.00 E
(6) The charted line of MHWS at approximately 39° 53′.50 S 174° 54′.50 E

Note: All ships should navigate with particular caution in order to reduce the risk of a maritime casualty and resulting marine pollution in the precautionary area.


LEGEND
PROPOSED PRECAUTIONARY AREA
INTERNATIONAL SHIPPING ROUTE
OIL FIELD
TUI
SENSITIVE AREA & CLASSIFICATION
OPUNAKE COAST (4)
ESTUARY (1)
AQUACULTURE (2)
MARINE PROTECTED AREA (3)
COASTLINE / SAND DUNES (4)
SCALE (NAUTICAL MILES) 0 10 20
A
B
C
D
E
F
MOKAU ESTUARY (1)
MOHAKATINO ESTUARY (1)
TONGAPORUTU ESTUARY (1)
POHOKURA
TONGAPORUTU TO PUKEARUHUE (4)
MIMI ESTUARY (1)
SUGAR LOAF ISLAND (3)
OAKURA ESTUARY (1)
TUI
OPUNAKE COAST (4)
MAUI A
MAUI B
KAUPOKONUI ESTUARY (1)
TANGAHOE ESTUARY (1)
MANAWAPOU ESTUARY (1)
WHENUAKURA ESTUARY (1)
WAVERLEY (4)
KUPE
WAINUI BEACH (1)
NORTH SOUTH TRAPS (3)
KAI IWI STREAM MOUTH (1)
MAARI
WANGANUI (4)
WAITOTARA ESTUARY (1)
CAPE FAREWELL (3)
FAREWELL SPIT (3)
MANAWATU ESTUARY (1)
STEPHENS ISLAND (3)
KAHURANGI POINT (4)
ABEL TASMAN NATIONAL PARK (4)
MARLBOROUGH SOUNDS (2)
KAPITI ISLAND (3)
TONGA ISLAND (3)
NORTH TARANAKI BIGHT
SOUTH TARANAKI BIGHT
COOK STRAIT
TASMAN MOUNTAINS
TARARUA
WELLINGTON
Nelson
Cape Egmont

APPENDIX 7

The STOS Decision – Salient Points

OFFSHORE DRILLING –
Relevant Excerpts from EPA's STOS Maui Decision

The following are excerpts from the June 2015 marine consent decision issued by the EPA (via a delegated DMC) with specific regard to the proposals by STOS to drill further production wells from the two Maui platforms (MPA & MPB) in future, with tie-back of any successful wells to the platforms.

From the Executive Summary of the decision:

v. The adverse effects of the activities at the Māui offshore facilities, including the proposed drilling operations, on the environment will be negligible to minor. Many of the potential adverse effects will be localised and of a short duration.

vi. We have found that sediment deposited onto the seabed and disturbance of the seafloor around MPA and MPB will result in minor, localised and transient adverse effects on benthic communities. Increased turbidity and suspended sediment in the water column will have negligible effects on planktonic communities.

vii. We have found that marine mammals and fish species have the ability to move away from the localised discharge plumes and noise emitted from production or drilling activities, and effects will be no more than negligible or minor.

xiv. We have taken into account potential effects of low probability but high potential impact – such as hydrocarbon spills. This issue was the focus of 170 submissions. Based on the evidence presented by STOS and the relevant government agencies, we accept that the probability of a major hydrocarbon spill is extremely low given the mitigation measures in place, the historical evidence of previous drilling operations, and the production and operational standards and procedures in place at the Māui offshore facilities. We accept that the gas, condensate or diesel hydrocarbon product in a spill would rapidly evaporate and weather. We are also satisfied that Maritime New Zealand and the other government agencies have the plans, processes and resources to respond to a hydrocarbon spill event. The overall environmental effects from a hydrocarbon spill event at the Māui offshore facilities on fish, zooplankton, marine mammals, seabirds and coastal ecosystems, were one to occur, would be negligible to minor

The decision:

The decision is then structured around the potential impacts on various components of the environment and associated habitats and communities, and relevant excerpts are set out below – paragraph numbering as per the decision (my underlining):

(b) Sediment will be deposited onto the seabed around MPA and MPB from the discharge of drill cuttings and muds, cement and / or cement slurry. We find that this deposition will be localised and result in minor adverse effects on benthic communities;

(b) Increased turbidity and suspended sediment in the water column from the discharge of drill cuttings and muds will have a negligible effect on the planktonic communities;

(c) Hydrocarbons and other contaminants from the discharge of produced water, drill cuttings and muds, and from other incidental discharges will have a negligible effect on the planktonic communities;

(b) The presence of stationary objects in the water column, decreased water quality from the discharge of production water, and drill cuttings disturbance to the seabed are likely to have a negligible effect on marine mammals;

(b) In the areas of impacts of turbidity, metals and noise, we agree with Dr Thompson that any potential adverse effects on seabirds relating to the ongoing operation of the facilities, and from the drilling programme, will be negligible.

(a) Suspended sediment plumes will be generated during the drilling operations. We find that the effects of these plumes on planktonic fish eggs and larvae will be negligible given the very short period of time that they are likely to contact any suspended sediments;

(b) As noted in section 5.2.3 of this decision, sediment will be deposited on the sea floor around MPA and MPB. We find that the impacts of this deposition on food sources for fish will be negligible;

(c) We find that the effect of the deposition of drill cuttings on the sea floor on fish species will be negligible. Further, we note that fish have the ability to move away from the discharge plume created during drilling operations;

(a) There will be negligible adverse effects on fishing vessels arising out of the activities at the Māui offshore facilities;

(b) The risk of collision or contact between all vessels that operate within proximity of the Māui offshore facilities will be low;

(c) With respect to commercial fishing matters, we accept Ms Gibbs' conclusion that most of the planned activities at MPA and MPB will have negligible impacts on the distribution or abundance of commercially harvested fish species. We received no submissions or evidence that the current exclusion zone has had significant adverse effects on commercial fishing. New drilling activities may result in some short term, localised changes to fish distribution. However, we find any adverse effects on commercial fishing will be negligible;

(a) No evidence was presented by any parties that there are likely to be any direct impacts on human health;

(b) While the potential for bioaccumulation in fish stocks that might subsequently be consumed exists, we note that fishing is excluded from the areas around the Māui offshore facilities, and that fish stocks that move through the area have limited opportunities to ingest sufficient affected prey species to have any significant impact;

(c) We consider there is no strong pathway for bioaccumulation to reach human food sources and impact on human health;

(d) There would be significant difficulty in attributing any bioaccumulation findings in fish species in the human food chain specifically to the activities at MPA and MPB given the exclusion area and the highly mobile nature of fished species; and

(e) We have concluded that any effects on human health from the activities at the Māui offshore facilities will be negligible.

369. Overall, we find that the expert evidence available to us, and considered under section 5 of this decision, supports the conclusion that the activities at the Māui offshore facilities will not result in any significant or permanent adverse effects on biological diversity, the integrity of marine species, or ecosystems and processes. We consider that benthic communities are likely to be the most at risk from the planned activities due to deposition of drill cuttings and muds, and physical disturbance to the sea floor. However, any adverse effects will be localised and of short duration, and at the most have a minor impact.

382. We find that the planned activities at the Māui offshore facilities will have negligible effects on the protection of rare and threatened ecosystems and habitats of threatened species.

277. Having considered the information available, submissions and evidence in respect of the potential adverse effects of the activities at the Māui offshore facilities on biosecurity, we find there to be potential risks to biosecurity outside of the EEZ (i.e. inside the CMA) from the activities associated with operations at the Māui offshore facilities that may require management.

(e) We accept that the impact of the activities at the Māui offshore facilities on cultural and spiritual values, and sense of identity, is a matter of concern and importance to iwi, and we have taken into account Māori perspectives on environmental effects in our decision. While we do not see these matters as determinative in making our decision, we do wish to recognise the importance attached to these effects by iwi.

Conditions:

Conditions relating to drilling attached to the marine consent are as follow:

10) The Consent Holder shall not use Oil Based Muds for drilling activities authorised by this marine consent.

11) The Consent Holder shall provide a Pre-Drilling and Monitoring Plan to the EPA, for its information, at least 40 Working Days prior to commencing any campaign for drilling activities authorised by this marine consent. The plan shall include details of:

(a) The proposed start and finish date for the drilling campaign;
(b) The proposed mobilisation and de-mobilisation date for any drilling rigs to be used;
(c) The Drilling Muds to be used;
(d) The anticipated in-situ volume of drill Cuttings to be removed and discharged from each well;
(e) Any drilling rig to be used; and
(f) The name and location of the well(s) to be drilled.

12) While undertaking the drilling activities authorised by this marine consent the Consent Holder shall maintain a log, to be kept on the relevant drilling platform and provided on inspection or request by the EPA, of the following:

(a) The name and location of the wells drilled;
(b) The total volume of cement used per well drilled, estimated by dry weight;
(c) The total volume of milling swarf taken onshore for disposal;
(d) Where synthetic based muds are used during the drilling activity, records showing the average retention-on-Cuttings for the total number of wells drilled in a drilling campaign;
(e) The total volume of water based muds used in each well;
(f) The total volume of synthetic based muds used in each well; and
(g) The in-situ volume of drill Cuttings removed and discharged from each well.

13) The Consent Holder shall notify the EPA within 5 Working Days following the conclusion of each drilling campaign. Within three months after the conclusion of each drilling campaign the Consent Holder shall provide a report to the EPA that summarises the information collected in the log required in accordance with Condition 12. This report shall include the combined total in-situ volume of drill Cuttings removed and discharged from MPA and MPB since the granting of this marine consent.

14) The combined total in-situ volume of drill Cuttings removed as a result of drilling at MPA and MPB authorised by this marine consent shall not exceed 4,200 cubic metres and 1,600 cubic metres respectively.

18) (i) The Consent Holder shall, within six months following the commencement of this marine consent, submit a Benthic Monitoring Plan for approval by the EPA. The plan shall be for the purpose of assessing the impacts of the activities authorised by this marine consent on the benthic environment. The plan shall include:

(a) The location of sampling sites in relation to MPA and MPB;
(b) The frequency of sampling, including prior to and after each drilling campaign;
(c) The parameters to be monitored; and
(d) The sampling methodology to be employed.

(ii) In developing the benthic sampling methodology, the Consent Holder shall seek to ensure any effects on marine mammals, fish and benthic communities are minimised. The benthic sampling programme required under Condition 18(i) shall be undertaken annually, or less frequently with the approval of the EPA.

19) Within 12 months of the completion of the benthic sampling required under the Benthic Monitoring Plan, the findings shall be reported to the EPA. An alternative date for the provision of the findings may be agreed by the Consent Holder and the EPA.

The decision also notes the desirability of STOS to engage with iwi, including in a formal sense, with regard to the management of operations at Maui.

APPENDIX 8

A Brief Summary of The Author's Experience in the Petroleum Industry

Dr Patrick has spent thirty five years involved with the oil and gas exploration and production industry in New Zealand, as follows:

As a regulator

Seven years (1981-88) at the former Taranaki Catchment Commission & Regional Water Board, now the Regional Council. During this time onshore exploration and development was "in full swing", requiring of environmental consents (then called water rights). There were also several offshore developments at the time, including the installation of rock protection of the Maui pipelines. Dr Patrick lead the various teams involved with undertaking background and project-specific environmental investigations, consenting, and monitoring of the industry.

Four years at the former Maritime Safety Authority, now Maritime NZ (1996-99). Dr Patrick was the manager of the development and maintenance of the National Marine Oil Spill Response Strategy and associated National Contingency Plan, and was responsible for approving regional marine oil spill contingency plans. He also lead the MSA team involved in approval of offshore petroleum drilling and developments pursuant to the relevant environmental provisions of the Maritime Transport Act and associated Marine Protection Rules, many of which he was involved in drafting. This included the first FPSO in New Zealand (Maui B). He represented New Zealand at the International Oil Pollution Compensation Fund in London. More generally, he also approved marine dumping permits in the EEZ, in the main involving the dumping of fish waste, dredge spoil and derelict vessels. Dr Patrick also prepared the initial NZ Guidelines for Sea Disposal of Waste (1999), which set out the requirements for obtaining a marine dumping permit within the MTA regime, including sampling and testing protocols and methodologies pre-dumping and for later monitoring.

As a consultant

Sixteen years as an environmental consultant to the industry (1988-1995; 2006-present), in particular in the offshore sector, including obtaining resource and marine consents, auditing operations and facilities against the relevant environmental standards (many internal to the client), and providing environmental-related advice subject of legislative regimes other than the RMA or EEZ & CS Act (Marine Mammals Protection Act, Wildlife Act, Biosecurity Act, the HaSNO Act *et al*). This included representing the offshore industry players in the development of the Exclusive Economic Zone & Continental Shelf (Environmental Effects) Act 2012. Dr Patrick has also undertaken considerable work in the CDEM arena, in particular reviewing and auditing systems, structures and arrangements against legislative requirements and international best practice, and is therefore very familiar with all aspects of emergency management, prevention & response including under the HSE Act and Regulations.

As an industry representative

Dr Patrick was, for seven years (2000-2006), the Executive Officer and sole employee of the Petroleum Exploration and Production Association of NZ, during which time he was deeply involved in any and all developments, legislative and otherwise, that affected the industry, including environmental. He was also the representative of the offshore industry in the Oil Pollution Advisory Committee, a statutory advisory body to Maritime NZ.