Comparative Review of Health, Safety and Environmental Legislation for Offshore Petroleum Operations

Ministry of Economic Development

September 2010
Final Report

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ERM

FINAL REPORT

Ministry for Economic Development

Comparative Review of Health, Safety and Environmental Legislation for Offshore Petroleum Operations

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E.1 INTRODUCTION

This Report considers whether the New Zealand health, safety and environmental regulatory framework requires improvement or modification to meet the needs of the growing offshore petroleum exploration and production sector while ensuring appropriately high standards of health, safety and environmental protection apply.

The recommendations in this Report are based on a high level comparative overview of the health, safety and environmental offshore petroleum regulatory framework in four selected countries; the New Zealand Regulatory Report prepared by the Ministry of Economic Development; and informal discussions with representatives of the Ministry of Economic Development and other relevant government agencies throughout the preparation of this Report. No formal consultation or interviews were undertaken with industry, the public or other stakeholders. In addition, detailed technical or operational issues involved in implementation of the regulatory framework are outside the scope of this Report.

The term "HSE" when used in this report refers generally to health, safety and environmental issues. Within this general term more specific references are made to "Health and Safety (Workplace)" and "Health and Safety (Process)". The term "EIA" refers to environmental impact assessment and is used in various contexts[1].

E.2 COMPARATIVE OVERVIEW OF OFFSHORE OIL AND GAS HSE PRACTICE

The HSE regulatory frameworks in the United Kingdom, Australia, Ireland and Norway were reviewed to identify a number of important characteristics which should be considered in the development of a robust HSE regulatory framework. These characteristics include.

Administrative and Institutional Arrangements

- Separation of resource allocation from HSE regulation;
- Specialist offshore health and safety regulator;
- Frameworks for regulatory collaboration;
- Consolidation of offshore jurisdiction;
- Provision for regulatory cost recovery;
- Integration of environmental with health and safety regulation; and
- Integration of workplace health and safety with process safety.

[1] Note a full glossary of the abbreviations used in this Report is set out in *Annex A*.

HSE Frameworks

- Risk based framework with employee involvement;
- Environmental framework based on EIA and public notification;
- Insurance and liability requirement;
- Strategic environmental assessment within resource allocation;
- HSE requirements for licensee applications;
- Safety Case approach;
- Regulator review and acceptance of environmental and Safety Case; and
- Inspection and notification based enforcement regime.

E.3 ANALYSIS OF THE CURRENT NEW ZEALAND APPROACH

The New Zealand approach to HSE regulation already incorporates a number of the key characteristics and with one exception (the lack of an environmental permitting regime in the exclusive economic zone) no major gaps or serious omissions were identified. However, given the planned expansion of offshore petroleum activity; the demonstrated unpredictability of accidents; and the need for a responsible precautionary approach to health, safety and environmental issues, there is little room for complacency about the current regime. This is particularly, given the inherently limited resources and expertise available to New Zealand regulators, and the very large offshore area within which petroleum activities may be undertaken in the near future. The Review identifies a number of important areas in which New Zealand could strengthen or improve the existing regulatory framework.

E.4 RECOMMENDATIONS

This report makes the following recommendations (in order of priority):

- Government to investigate as a matter of priority, options for cost recovery and the provision of other additional sources of funding to ensure that appropriate technical expertise, organisational capacity (including training) and funding (including cost recovery) are available to DoL and MNZ to fulfil their functions. At the same time, DoL and MNZ identify expanded opportunities for interagency cooperation, coordination, and sharing of expertise and resources;
- Ministry of Economic Development (Crown Minerals) be legally empowered to require and consider relevant HSE information (including strategic environmental assessments) at the resource allocation stage;

- DoL to continue to have lead responsibility for health and safety but that an interagency review be undertaken as a matter of priority to determine ways in which regulatory coordination and organisational capability to monitor and enforce health and safety can be improved and that consideration be given to establishing a specialist offshore process safety unit;
- The current regulatory approach to Safety Cases be maintained but DoL investigate ways in which the regulatory consideration of individual Safety Cases might be enhanced or improved;
- An environmental regulatory framework for petroleum permitting, based on EIAs, be established within the exclusive economic zone;
- An agency be allocated responsibility for environmental assessment and decision making within the exclusive economic zone;
- Government investigate whether current levels of insurance and liability are sufficient and consider ratifying international instruments which provide additional or stronger levels of insurance and liability in relation to both shipping and installations involved in offshore petroleum activities ;
- Consideration be given in the future to consolidating the offshore environmental jurisdiction in relation to offshore oil and gas activities within one agency.

1 INTRODUCTION

1.1 BACKGROUND

In late 2009 the New Zealand Government announced the Petroleum Action Plan. The review of New Zealand's HSE regulatory arrangements is part of the Action Plan. In June 2010, the Ministry of Economic Development (**MED**), as the lead agency for the review, issued a request for proposals for a high level comparative review of HSE regulatory frameworks applicable to oil and gas operations in a range of other international jurisdictions. The baseline review of New Zealand regulation was undertaken by MED in consultation with the other government agencies involved in the review, including, the Ministry for the Environment (**MfE**), Ministry of Transport (**MoT**), Maritime New Zealand (**MNZ**) and Department of Labour (**DoL**), (**Other Government Agencies**).

In July 2010, the specialist environmental law firm Atkins Holm Joseph Majurey Ltd, and the international environmental consultants ERM New Zealand Ltd, (together **the Consultants**) were appointed by MED to undertake the high-level review set out in this Report.

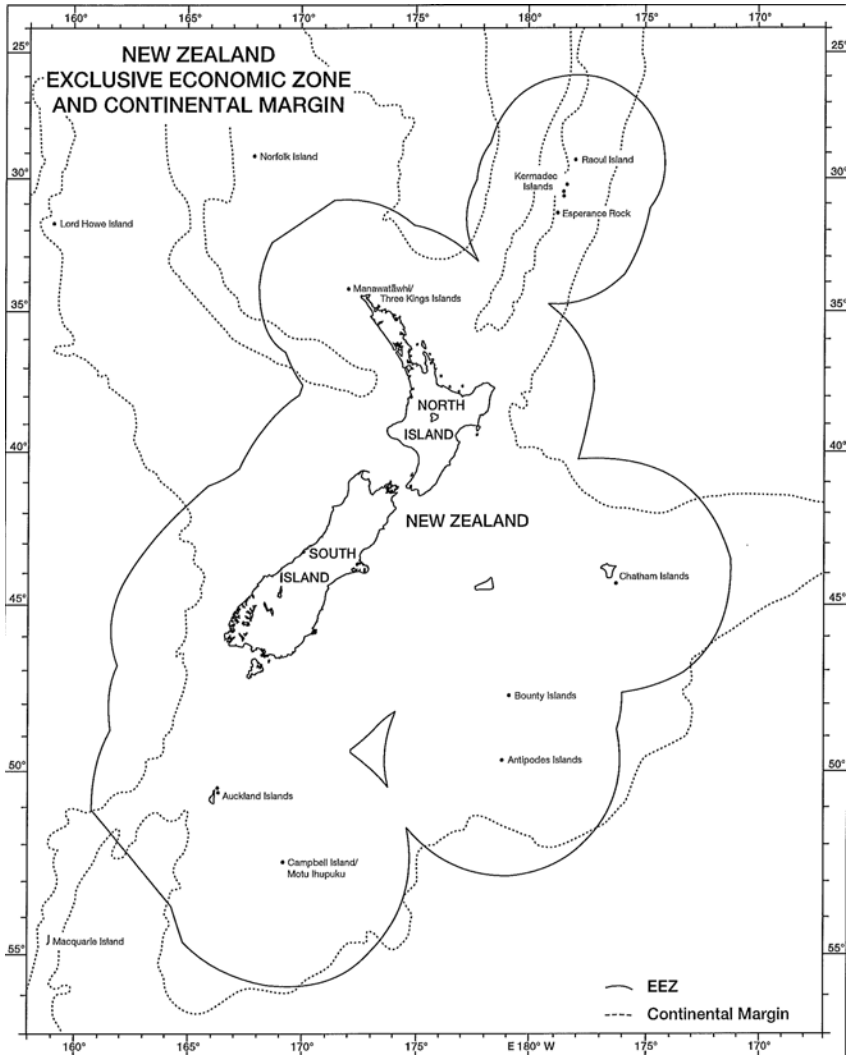
1.2 NEW ZEALAND PETROLEUM RESOURCES

In order to put this review in the proper jurisdictional context it is important to note that New Zealand has a comparatively large area that it is entitled to use to prospect for and exploit petroleum resources. This area, as shown in *Figure 1.1* below, includes:

- The territorial sea, being the area up to and including 12 nautical miles (**nm**) offshore;
- The exclusive economic zone (**EEZ**), being the area from 12 nm up to 200 nm offshore; and
- The New Zealand extended continental shelf area being the seabed and subsoil of those submarine areas that extend beyond the territorial limits of New Zealand, throughout the natural prolongation of the land territory to the seaward-side boundaries[2].

[2] Refer section 2 of the Continental Shelf Act 1964

Figure 1.1: New Zealand Territorial Sea and Continental Shelf



In total the available area covers in excess of 4.4 million km^2. By comparison with other petroleum nations New Zealand has, to date, had a relatively low profile in respect of petroleum development. Large parts of the available area remain unexplored and/or undeveloped. Under current government policies, and in response to growing international demand for new sources of petroleum, there is likely to be an increase in offshore petroleum activity in the future. A number of new offshore petroleum exploration permits have been granted over the last 12 months (Petrobras International, Roc Oil (New Zealand) Ltd, New Zealand Oil and Gas Ltd, Octanex NZ Ltd, AWE New Zealand Pty Ltd and Kea Oil and Gas Ltd). While no new mining activities (outside of the Taranaki basin) are under consideration, there is an important window of opportunity to review New Zealand's regulatory framework before approvals for any major new development activity are lodged. A recent global petroleum survey, ranked New Zealand the 18th most attractive jurisdiction out of the 133 jurisdictions surveyed[3].

[3] Fraser Institute, Global Petroleum Survey 2010, (June 2010) available from www.fraseramerica.org/commerce.web/product_files/global-petroleum-survey-2010_US.pdf

1.3 PURPOSE OF THE HIGH-LEVEL REVIEW

Given the future potential for new petroleum exploration and development, the purpose of the high-level review was to assess whether the existing HSE regulatory framework in New Zealand had any major gaps, (by comparison to other relevant petroleum nations), or required strengthening or improvement ensure that high standards of HSE protections apply in New Zealand's extensive offshore areas.

The review was not designed to undertake an exhaustive or comprehensive evaluation of regulatory provisions and practices of all other petroleum producing countries. Instead, it sought to broadly review a selected cross section of countries whose regulatory framework could be readily used to provide a practical and relevant comparison with New Zealand. This cross section was selected in consultation with MED and the Other Government Agencies and included countries with a range of legislative approaches applying to offshore petroleum at different stages of development or regulatory HSE reform (refer *Annexes B and C*).

1.4 METHODOLOGY

A four phase methodology was employed to undertake the high-level review:

Phase One: *Global Review*

An initial scan of the offshore operating contexts for a cross-section of oil and gas producing nations was undertaken in order to identify the four countries that would form the focus of the international review. A table summarising the global review and an explanation of the rationale for the selection of the four Review Countries is set out in *Annex B*.

Phase Two: *Selected Country Review*

Phase Two centred on a high-level review of the frameworks and implementation mechanisms used to regulate offshore oil and gas HSE within the four selected countries – the United Kingdom, Australia, Ireland and Norway (**Review Countries**). Details of key legislative instruments regulating offshore oil and gas HSE throughout the exploration and production life cycle were reviewed for each of the selected countries and a list of important characteristics of HSE regulatory regimes were developed. For more information on the international comparison and the regulatory frameworks within the four Review Countries refer *Annex C* (the International Comparison), *Annex D* (the United Kingdom), *Annex E* (Australia), *Annex F* (Ireland) and *Annex G* (Norway).

Phase Three: *Comparison with New Zealand*

The important characteristics of the HSE regulatory regimes resulting from the country review were then compared with the New Zealand regulatory framework as provided by MED (refer *Annex H*). Areas of alignment, divergence and gaps were identified along with areas for improvement.

Phase Four: *The Recommendations*

Based on the findings of the *Selected Country Review* and the *Comparison with New Zealand* a series of recommendations were made for strengthening and improving the New Zealand regulatory framework in both the short and long term.

1.5 SCOPE OF REPORT

As noted above, the scope of this Report is a high level comparison of HSE regulatory frameworks for offshore petroleum operations (in four selected countries) with the regulatory framework in New Zealand. Information on the New Zealand regulatory framework and institutional capacities was provided by MED (refer *Annex H*) and through feedback from MED and the Other Government Agencies throughout the preparation of this Report.

The scope of the Review did not include a detailed comparison or evaluation of technical or operational issues arising from the regulatory frameworks. Nor did it include formal consultation or interviews with industry, regulators or other stakeholders.

The recommendations arising from the Review indicate there are a number of important ways in which the existing New Zealand regulatory regime for HSE can be strengthened or improved to ensure New Zealand has in place a robust regulatory approach for managing the HSE impacts and risks associated with increased offshore petroleum operations. With the offshore petroleum activity set to expand, it is timely that these changes are acted upon reasonably promptly to ensure New Zealand has a robust and comprehensive framework in place before major new offshore mining developments are subject to approval.

2 *COMPARATIVE OVERVIEW OF OFFSHORE OIL AND GAS HSE PRACTICE*

This Chapter outlines a comparative overview of the important characteristics identified within the offshore oil and gas HSE frameworks in the four Review Countries – the United Kingdom, Australia, Ireland and Norway.

The characteristics have been identified through the high-level review and international comparison as those key considerations which need to be carefully addressed in the development of a robust HSE regulatory framework. The important characteristics encompass administrative and institutional arrangements as well as the general HSE frameworks and are summarised in *Table 2.1* below and presented in *Table 2.2* as a potential model on which a robust HSE regulatory framework could be based.

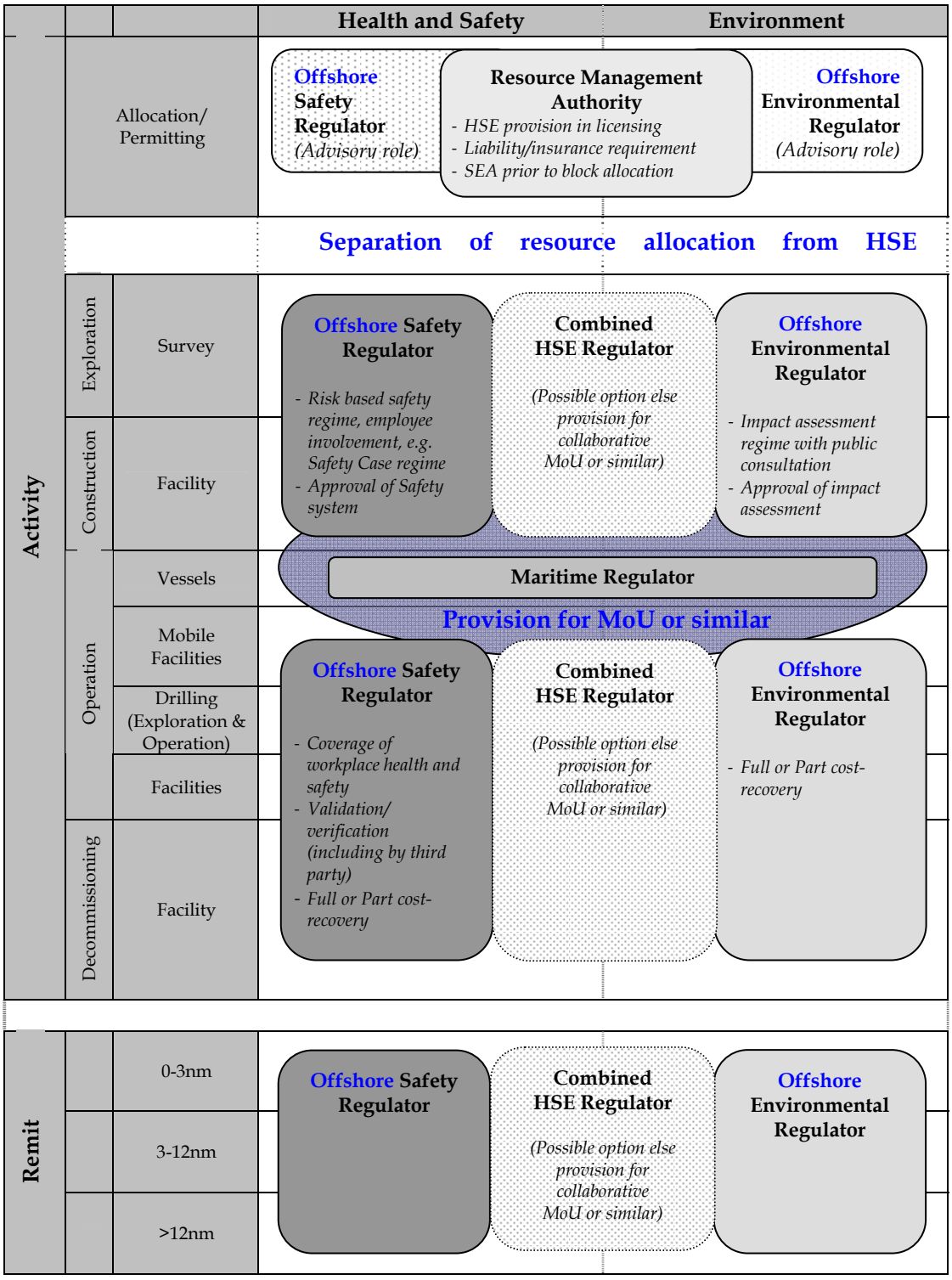
Table 2.1: Important Characteristics of HSE Regulatory Regimes

Characteristic	**Review Status[4]**
Administrative and Institutional Arrangements	
Separation of resource allocation from HSE regulation	Common Element
Specialist offshore health and safety regulator	Common Element
Frameworks for regulatory collaboration	Common Element
Consolidation of offshore jurisdiction	Majority Trend
Provision for regulatory cost-recovery	Majority Trend
Integration of environmental with health and safety regulation	Potential Option
Integration of workplace health and safety with process safety	Potential Option
HSE Frameworks	
Risk based safety framework with employee involvement	Common Element
Environmental framework based on EIA and public notification	Common Element
Insurance and liability requirement	Common Element
Strategic environmental assessment within resource allocation	Majority Trend
HSE requirements for licensee applications	Majority Trend
Safety Case[5] approach	Majority Trend
Regulator review and acceptance of environmental and Safety Case	Majority Trend
Inspection and notification based enforcement regime	Majority Trend

[4] Note in this Table, "Common Element" means that the characteristic was present in all four of the Review Countries; "Majority Trend" means that most of the countries had this characteristic in some form; and "Potential Option" means that most of the countries do not currently have this characteristic but is something worth considering.

[5] A Safety Case is a document produced by the operator of a facility that identifies the hazards and risks associated with the facility's operation; describes how the risks are controlled; and describes the management systems in place to ensure the controls are effectively and consistently applied.

Table 2.2: Model HSE Regulatory Framework based on High Level Review



Further information on the international comparison and the regulatory frameworks within the four Review Countries is provided in *Annex C* (the International Comparison), *Annex D* (the United Kingdom), *Annex E* (Australia), *Annex F* (Ireland) and *Annex G* (Norway).

2.1 *ADMINISTRATIVE AND INSTITUTIONAL ARRANGEMENTS*

Various models through which HSE regulating authorities interact and administer offshore oil and gas HSE risks and impacts are apparent within the four regimes studied. These differences arise from a number of factors, including: fundamental differences in the respective scale and history of petroleum development; the influence of different national regulatory structures outside of the respective countries' oil and gas industry; and substantial differences in the technical expertise and other resources available in support of HSE regulatory frameworks.

However, despite the different development histories and contexts of the regimes, a number of common elements are present:

- Recognition that resource allocation/royalty collection functions must be separated from HSE regulation;
- Recognition of the need for a specific regulatory unit responsible for offshore health and safety (as distinct from general workplace health and safety); and
- Recognition of the need to put in place specific legal or administrative frameworks for regulatory co-ordination and collaboration between relevant regulatory entities.

In addition, there are several broader characteristics within the institutional arrangements that have less consensus in approach, but also appear to influence the effectiveness of offshore HSE regulation. These characteristics centre on arrangements relating to:

- Offshore jurisdictional boundaries;
- Regulatory cost recovery mechanisms;
- Integration of workplace health and safety with process safety; and
- Integration of environmental regulation with health and safety.

2.1.1 *Separation of Resource Allocation from HSE Regulation*

In each of the four Review Countries, resource allocation responsibilities are separated from HSE regulation. The rationale for this separation in all cases stems from recognition that maintaining both functions within one regulatory authority can open potential conflicts of interest between management of HSE and accruing revenue from the oil and gas resource. In light of the Deepwater Horizon incident, this functional separation has also recently been implemented in the United States, with the restructuring of the Minerals Management Service[6].

[6] www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&PageID=32923

2.1.2 Specialist Offshore Health and Safety Regulator

In all four regimes studied, a specific regulatory unit has been established to oversee offshore oil and gas process safety (i.e. oil and gas installation/activity functionality). This unit in all cases sits as a separate body distinct from general workplace health and safety and maritime safety.

In the Australian and Norwegian regimes, offshore oil and gas safety is the responsibility of a distinct regulatory body, respectively the National Offshore Petroleum Safety Authority (an Australian statutory authority), and the Petroleum Safety Authority (a Norwegian regulatory authority). In the United Kingdom, whilst regulation of offshore health and safety remains under the remit of the Health and Safety Executive, who also administer workplace health and safety, there is a specific division that has been set up to administer the offshore context (the Offshore Safety Division). Recent developments within the Irish regime have placed health and safety of petroleum activities more broadly within the remit of the Commission for Energy Regulation.

In all cases, maritime regulators (specifically, the Australian Maritime Safety Authority, the Norwegian Maritime Directorate, the Maritime Safety Directorate in Ireland and the Maritime and Coastal Agency in the United Kingdom) maintain jurisdiction over HSE issues onboard vessels. These vessels include supply vessels for oil and gas facilities and when an oil and gas exploration or production installation ceases to be defined as such within the legislation (see *Annexes D* to *G* for the relevant definitions within each country).

2.1.2.1 Frameworks for Regulatory Collaboration

Whilst a range of regulatory authorities are present within all four of the regimes studied, there is a universal recognition that comprehensive regulation and management of HSE issues within the offshore oil and gas industry requires close collaboration between these authorities. The frameworks implemented to ensure this collaboration, range from specific responsibilities for collaboration handed down from government (as in the case of the Petroleum Safety Authority in Norway) through to Memoranda of Understanding (**MoUs**) between regulatory authorities (for example between the National Offshore Petroleum Safety Authority and other designated authorities in Australia; and the Health and Safety Executive and marine authorities in the United Kingdom).

2.1.3 *Consolidation of Offshore Jurisdiction*

One of the key differences in the four regimes studied lies in the existence or otherwise of offshore regional/administrative boundaries and the allocation of HSE responsibility across these boundaries. For example, in the Australian context, there is a separation between state and commonwealth jurisdiction at the 3 nm offshore mark, whereas in contrast, Ireland and Norway do not have any such offshore regional boundaries. However, in both Ireland and Norway, there is some overlap of environmental protection responsibility within coastal reaches between the authorities that cover pollution impacts of land based activities on the marine environment and vice versa.

In general, these boundaries have been derived from historical and/or political developments within the review country rather than for any technical/process rationale. The involvement of the Scottish Government Environment Directorate within the United Kingdom regime stems for instance, from devolutionary activities, whilst the Australian offshore boundary resulted from the *Offshore Constitutional Settlement 1980*.

The net result of these offshore regional/administrative boundaries is the requirement for structures such as the Australian Joint Authority/Designated Authority model or MoUs between regulatory agencies to define responsibility between parties. Whilst such mechanisms can help to assign regulatory responsibility around these boundaries, there remains significant scope for confusion on the part of both operators and regulators, as well as the risk of HSE mismanagement. The presence of multiple regulators operating within and across regional boundaries that operators are required to liaise with also invariably increases the time and resource cost to the operator and increases the potential for project delay. Furthermore, each regulatory unit involved in the oil and gas exploration and development process, will require specific expertise in oil and gas to effectively undertake their regulatory responsibility. The regulatory burden of multiple regulators and offshore jurisdiction formed a key focus of the Review of Regulatory Burden on the Upstream Petroleum (Oil and Gas) Sector recently undertaken in Australia[7].

An alternative approach would be to remove arbitrary offshore boundaries in order to add clarity and consistency to the offshore regulatory context. Such an approach is currently being discussed within the Australian context with the integration of State and Commonwealth regulation discussed in a number of recent regulatory reviews (see *Annex D*) and in recent press coverage[8].

[7] www.pc.gov.au/projects/study/upstreampetroleum/report

[8] www.petroleumnews.net/storyview.asp?storyid=1138856&sectionsource=s0

2.1.4 Provision for Regulatory Cost Recovery

Cost recovery mechanisms vary across the regimes studied. Within the Australian and United Kingdom regimes, full cost recovery is sought, albeit through different approaches, whilst the Norwegian Petroleum Safety Authority only seek partial cost recovery, with the remainder of their funding arising from the Norwegian Treasury. Regulatory financing in Ireland currently comes directly from the Government although there is some cost recovery in terms of the licensing fees.

The presence of cost recovery mechanisms (full or partial) within most of the regimes studied highlight both a need for such mechanisms to facilitate funding of the regulatory authorities, as well as an acceptance on the part of operators to directly contribute towards HSE regulation.

In terms of cost recovery approach, both the United Kingdom and Norway seek to recovers costs on an 'actual time spent' basis, charging an hourly rate for staff along with associated expenses, such as travel. The National Offshore Petroleum Safety Authority in Australia, by contrast, operates a cost recovery mechanism that is accomplished through a system of levies placed on operators. The scale of the levies is reviewed every three years in line with Commonwealth cost recovery guidelines and is set at levels intended to recover all costs associated with the Authority's activities, although inflationary pressures and the variability of complexity across oil and gas activities may prevent full cost recovery.

2.1.5 Integration of Environmental with Health and Safety Regulation

In all of the Review Countries, there is an authority (or combination of authorities) that regulate health and safety aspects of offshore oil and gas activities and a separate regulatory authority that considers environmental impacts. In the majority of regimes, this environmental regulator does not specifically administer offshore oil and gas activities, but has a broader remit across the environmental context. The current exception to this is the United Kingdom, in which the oil and gas division of the Department for Energy and Climate Change has a specific offshore environmental operations unit, although this unit is supported in its activities by the Department for the Environment, Food and Rural Affairs.

The absence of specific offshore oil and gas environmental regulators contrasts with the health and safety regulatory trends discussed in *Section 2.1.2* above. However, it is clear that the broader transferability of environmental regulation principles within the offshore environment beyond oil and gas activities (for example with offshore wind generation) may mean that any such specialisation has limited practical benefit.

However, it is clear that any regulatory oversight, environmental or otherwise, of complex technical installations such as those operating within the oil and gas industry, could be facilitated by a sound knowledge of the operational parameters of the installations and activities. As such an alternative to the creation of a specific offshore oil and gas environmental regulator is the integration of environmental regulation within the offshore health and safety regulator. This approach has been discussed within the Australian regime, with the National Offshore Petroleum Safety Authority taking on non-operational environmental responsibilities[9].

A further rationale for the integration of environment with health and safety regulation is that the major environmental impacts of offshore oil and gas activities (i.e. large volume oil spills) generally result from a process safety (and in particular a drilling) incident. As with the consolidation of regulatory responsibility across regional boundaries discussed in *Section 2.1.3*, the consolidation of these roles could also help to increase regulatory clarity.

2.1.6 Integration of Workplace Health and Safety with Process Safety

A further opportunity for increased regulatory clarity centres on the integration of workplace health and safety regulation with process safety (i.e. relating to oil and gas installation/activity functionality). Within the United Kingdom and Norwegian regimes, the regulator responsible for offshore process health and safety is also responsible for workplace health and safety on offshore installations, making for an administratively simpler regime.

By comparison, within the Irish regime, it is clearly stated that the Irish Health and Safety Authority remains the national body responsible for securing workplace health and safety, with the Irish Commission for Energy Regulation administering oil and gas process safety. Similarly, in Australia, the process safety regulator, the National Offshore Petroleum Safety Authority, is required to collaborate with State workplace safety regulators, such as WorkSafe Victoria. The Authority has in fact entered into MoUs with such State bodies to facilitate the collaborative process.

It should be noted that the delegation of workplace health and safety responsibility to the offshore oil and gas regulator in the Norwegian and United Kingdom regimes is to some extent facilitated by the parent bodies in both regimes, (the Norwegian Ministry of Labour and the United Kingdom Health and Safety Executive respectively), which have oversight of workplace HSE more generally.

2.2 HSE FRAMEWORKS

As with the administrative and institutional frameworks of the Review Countries, the HSE regulatory approaches exhibit a number of common characteristics and areas of divergence.

[9] www.miningweekly.com/article/ferguson-pushes-for-offshore-petroleum-regulator-2010-08-11

The common elements include:

- A risk based safety framework that requires employee involvement;
- An environmental framework based on EIA and public participation; and
- Requirement for insurance/liability protection.

The areas where there is more divergence, but which have a key influence on HSE regulation are:

- The integration of strategic environmental assessment within resource allocation;
- Requirements for HSE within licensee applications;
- Utilisation of a Safety Case;
- Acceptance of Safety Cases; and
- Enforcement mechanisms.

2.2.1 Risk Based Safety Framework with Employee Involvement

In all four health and safety regimes, there is a focus on the operator to identify and manage hazards and risks associated with offshore oil and gas health and safety. The Norwegian regime for example has few regulations stating what should be accounted for by the operator, describing instead the goals that should be aimed for, not how they should be achieved. There is a focus on management systems that probe and ensure compliance as a risk-based approach.

Similarly, the United Kingdom and Australian frameworks focus on a risk assessment, hazard risk identification and look to direct operators towards the broad safety goals to be achieved, with the operator developing the most appropriate methods of achieving them. The developing Irish regime is based on the same risk-based Safety Case approaches currently implemented in Australia and the United Kingdom.

2.2.1.1 Employee Involvement

Regardless of the framework being implemented, the involvement of employees with the development of safety management mechanisms is highlighted as an integral element. Within all three developed frameworks, there is recognition that the individuals who best understand the safety critical elements and the mechanisms, through which they can be managed and mitigated, are those persons who operate those facilities on a daily basis.

This employee involvement is further emphasised within the offshore oil and gas regimes through the concept of tripartite cooperation. Tripartite cooperation centres on the involvement of employers, employees (through unions) and government for the integrated management of HSE issues. The degree to which this concept is incorporated within the regulatory frameworks of the Review Countries varies.

Tripartite cooperation and collaboration is a core component of the Norwegian regulatory structures within and outside of the offshore context and is also realised within the United Kingdom offshore oil and gas industry through the Offshore Industry Advisory Committee[10]. In Australia, whilst the National Offshore Petroleum Safety Authority 2008-2009 Annual Report[11] lists the chairing of a tripartite working group comprising the National Offshore Petroleum Safety Authority, industry associations and relevant unions as a core activity, there does not appear to be a formal commitment to continue this group. The level to which tripartite collaboration will be integrated within the changing Irish regulatory framework is unclear at present.

2.2.2 *Environmental Framework based on EIA and Public Notification*

Environmental management of offshore oil and gas activities in the Review Countries centres on an EIA approach with opportunity for public participation.

Within the United Kingdom and Ireland, the foundation of the EIA regimes is the European Union Directives on EIA[12] which affects both countries. Impact assessment also forms a core component of Norway's required plans for the development of a petroleum deposit and for the installation and operation of facilities for transport and utilisation of petroleum. In Australia, EIAs are required under the *Environment Protection and Biodiversity Conservation Act 1999*.

The approaches to EIA in each regime are generally consistent and centre on the operator first making an assessment of the impact that the proposed activity would have on the environment, summarising and presenting the conclusions of this in some form of environmental statement, and then identifying mechanisms through which these impacts can be managed, mitigated, or avoided.

[10] www.hse.gov.uk/aboutus/meetings/iacs/oiac/

[11] www.nopsa.gov.au/document/NOPSA_Annual_Report_2008_09.pdf

[12] (85/337/EEC as amended by 97/11/EC and 2003/35/EC)

A difference between the regulatory regimes is however when an EIA is deemed necessary. Within the Irish, United Kingdom and Norwegian regimes, the basis for requiring an EIA is the nature of the activity being proposed. For example, in the United Kingdom regime, an EIA is required to undertake field development, to construct a pipeline, or to drill a well. In contrast, the Australian regime is impacts based, requiring EIAs where actions have or are likely to have a significant impact on a matter of national environmental significance. The Australian approach provides for streamlining of consenting approaches within the offshore regime where limited environmental impacts are considered likely. The robustness of this approach could be strengthened if combined with the strategic environmental assessment principles highlighted in *Section 2.2.4*.

2.2.2.1 Public Notification

As part of the EIA processes in all of the Review Countries, there is provision for notification of the information to the public. This notification, in general, centres on the release to the public of information relating to the development followed by a period in which written submissions can be tabled. These submissions are then considered by the Minister or designated regulatory authority when determining whether to allow the oil and gas activity to proceed.

In each of the frameworks reviewed, the notification process provides an opportunity for other regulatory agencies, corporations, non-governmental organisations, individuals and any other interested party to comment on the proposed oil and gas activities. Generally, the notification process involves written submission only, however, under unusual circumstances the relevant Minister may seek to hold submission hearings. The Minister or designated authority within each framework has no obligation to require the operator to address each concern raised - only those that the Minister considers to be relevant and significant.

In general, appealing the decision of the Minister or designated authority can only be initiated in cases where the general permitting/consenting processes, including the EIA and public consultation phases have not been adhered to (the equivalent of a judicial review action in New Zealand). There is no appeal on the merits.

2.2.3 Insurance and Liability Requirement

In all four of the Review Countries, operators involved in offshore oil and gas activities are required to have some form of liability cover for any pollution, damage or injury arising from their activities. No information was available as to whether there was a minimum level of insurances required for these countries and hence whether the level differed between countries.

Some differences in approach were apparent. For example in the Irish context, operators are required to take out insurance with a company approved by the relevant Minister, whilst there is no such requirement within the United Kingdom which has a more flexible approach centred on demonstration of financial capacity to meet expected commitments, liabilities and obligations (although this is currently under review[13]).

In Australia, operators are required to maintain insurance against expenses and liabilities arising in connection with carrying out of work under the permit, lease or license. Operators are also required to hold insurance against the cost of clean up or other remediation of oil spills.

The Norwegian *Petroleum Activities Act 1996* requires operators to have in place insurance that covers damage to facilities; pollution damage; and wreck removal and ensure that its contractors and employees are also sufficiently covered. However, in a similar approach to the United Kingdom, the relevant authority may consent to the licensee using another form of security arrangement.

The international legal framework for liability in relation to shipping has been considerably strengthened in recent years, through the imposition of strict liability for bunker oil pollution (through the *International Convention on Civil Liability for Bunker Oil Pollution Damage 2001* (**Bunkers Convention**)), the increase in liability limits for maritime claims (through the *Limitation of Liability for Maritime Claims Protocol* (**LLMC Protocol**)[14]), and the *Supplementary Fund Protocol 2003* which supplements the compensation available under the *1992 Civil Liability and Fund Conventions* to bring the total compensation available under these instruments to a combined total of approximately NZ$1.38 billion for any one oil tanker spill incident. All four of the review countries are signatories to the Bunkers Convention and the *Supplementary Fund Protocol 2003*. The United Kingdom, Norway and Australia are signatories to the LLMC Protocol. However, it is noted that the all of these instruments are related to vessels and do not apply to installations.

[13] www.decc.gov.uk/en/content/cms/news/pn10_067/pn10_067.aspx

[14] 1996 Protocol to the Convention on the Limitation of Liability for Maritime Claims of 1976.

2.2.4 *Strategic Environmental Assessment within Resource Allocation*

Within both the Irish[15] and United Kingdom[16] frameworks, there is a requirement under the European Union's *Strategic Environmental Assessment Directive (Directive 2001/42/EC)* for the governments to undertake a strategic environmental assessment (**SEA**) prior to the development/implementation of all Government programmes, such as the release of blocks in oil and gas licensing rounds. Similar provision for a SEA is provided within the Australian *Environment Protection and Biodiversity Conservation Act 1999*, although the Act does not contain any specific provisions relating to offshore oil and gas resource allocation.

The purpose of an SEA is to allow environmental protection and sustainable development to be considered and factored into national and local decisions regarding Government (and other agencies) plans and programmes. The process aims to help inform Ministerial decisions through consideration of the environmental implications of the proposed action. As such, an SEA allows the early identification of potentially environmentally sensitive areas within exploration areas prior to the release of these locations for exploration and potential production. Areas identified as particularly sensitive can therefore be kept separate from the licensing round in order to reduce the potential for damage or disturbance. The outcome of the SEA process can also help to determine the environmental sensitivity of neighbouring areas of allocated exploration or development and hence inform the activity permitting process.

Whilst not specifically determined as an SEA, the Norwegian regime requires an impact assessment to be undertaken by the Ministry of Petroleum and Energy prior to the opening of an area. Within the Norwegian regulations relating to conduct of petroleum activities there is also a requirement on the operators to undertake baseline environmental surveys prior to exploration and development drilling.

2.2.5 *HSE Requirements for Licensee Applications*

The requirements for license applications are a key point of difference between the four regulatory regimes. Whilst all four countries take into consideration aspects of the applicants' financial and technical capabilities and the proposed work programme when reviewing applications, the degree to which HSE management is incorporated within the assessment varies.

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15 www.dcenr.gov.ie/Natural/Petroleum+Affairs+Division/Irish+Offshore+Strategic+Environmental+Assessment+%28IOSEA+1%29/The+SEA+Process.htm

16 www.offshore-sea.org.uk/site/scripts/documents_info.php?categoryID=39&documentID=5

Under Irish licensing terms, the relevant authority is required to take into consideration the applicant's policy to HSE as well as previous performance by the applicant, although this is not explicitly referenced to HSE performance. Within the Australian regime, the applicant's past performance in other petroleum exploration areas in Australia, or globally (if relevant) is again considered, however there is no prescription for HSE performance. The United Kingdom context is similar to the Irish, with demonstration of environmental competence through review of the company's environmental management system a key component of the assessment process.

The Norwegian system differs from the United Kingdom, Irish and Australian systems as companies wishing to participate in oil and gas exploration and production processes need to go through a pre-qualification process. This process is used to assess the technical capabilities of companies involved in the sector as well as assessing aspects such as the company's HSE Framework (management system, policies, organisation, planning, monitoring performance, review and audit, etc). The central rationale behind the pre-qualification process is that the Norwegian government considers advanced technology and research and development to be critical to the continued development of oil and gas resources on the Norwegian continental shelf. The pre-qualification process therefore also takes into account how an applicant can make a contribution in this area. The pre-qualification process includes a series of evaluation meetings and a range of validation requirements.

2.2.6 Safety Case Approach

The approach to regulating health and safety within the offshore oil and gas sector of the Review Countries can generally be separated into two broad classes: regimes that require submission of a Safety Case and those that do not. The former category currently comprises Australia and the United Kingdom; however the recent modifications to the Irish regulatory regime indicate that the Ireland is also moving towards a Safety Case approach.

Norway is the only country included within the review that does not currently require submission of a Safety Case. Several rationales for this approach are put forward by the Petroleum Safety Authority:

- Proper processing of a Safety Case by the regulator is a resource intensive exercise, which the Petroleum Safety Authority does not believe enhances safety;

- Any requirement for regulatory acceptance of Safety Cases places the resources of the Petroleum Safety Authority under the effective control of the operators as the Petroleum Safety Authority must allocate its resources on the basis of the anticipated or actual numbers of Safety Cases submitted for review; and

- A regulator's acceptance of a Safety Case implicitly (if not in an actual legal sense) transfers parts of the operator's responsibility to ensure compliance with statutory requirements on to the regulator.

There is some discussion as to the robustness of the Norwegian approach and whilst Norway to date has one of the best safety records for offshore oil and gas exploration and development, should a major incident occur, this approach could be the focus of review. The Petroleum Safety Authority does require that operators undertake risk assessments and describe how they intend to control identified risks in the same way that they would in a Safety Case regime. Their documented assessments and calculations – or parts of them – must also be kept and handed over to the Petroleum Safety Authority should they require it.

Whilst Safety Case acceptance is a core requirement within the majority of the regimes studied, they are not infallible, as highlighted in a recent air safety incident involving a Royal Air Force Nimrod in Afghanistan despite a Nimrod Safety Case being in place since 2005[17]. The key limitations identified within the study were that the Safety Case missed key dangers and was fatally undermined by a widespread assumption by those involved in its development that the Nimrod was 'safe anyway' (because it had successfully flown for 30 years) and the tasks of drawing up the Safety Case became essentially a paperwork and 'tick-box' exercise.

It is evident from the Review that a Safety Case based regime is applied within most of the Review Countries and even within the alternative Norwegian regime; a similar risk management based approach is applied (see also *Section 2.2.1*). Regardless of the approach undertaken, it is clear that the rigorous application and administration of the process is required to minimise potential health and safety hazards and risks.

2.2.7 Regulator Review and Acceptance of Environmental and Safety Case

In the Australian and United Kingdom Safety Case regimes, regulatory review and approval of submitted Safety Cases is required prior to the commencement of operations. As highlighted in *Section 2.2.6* above, this regulatory approval is not required within the Norwegian regime; however the basis for this lack of approval appears to stem more from a question of perceived liability and procedural efficiency rather than for any technical benefit or improved safety outcome. It is anticipated that in following the Safety Case approach of Australia and the United Kingdom, the Irish regime will also require approval of submitted Safety Cases prior to commencement of activities.

[17] http://ircrisk.com/blognet/post/2010/06/30/The-Embattled-Safety-Case-of-the-RAF-Nimrod-XV230.aspx

In terms of environmental approvals, under the European Union Directives on EIA, which are applicable in both the United Kingdom and Ireland, the relevant Minister should not issue consent to the proposed activity until the Minister is satisfied that there will be no significant impact on the environment – for example through the mitigation methods proposed by the operator. Similarly within Australia, there is a requirement under the *Environmental Protection and Biodiversity Conservation Act 1999*, for the Minister to determine whether to approve the activity on the basis of the environmental assessment, incorporating specific provisions or constraints on the activity as necessary.

As discussed in *Section 2.2.2* above, impact assessment is a key component of Norway's plans for the development of a petroleum deposit and for the installation and operation of facilities for transport and utilisation of petroleum; both of which must be evaluated by relevant organisations and ultimately approved by the Ministry for Petroleum and Energy prior to commencement of activities.

2.2.7.1 Verification/Validation

Although regulatory approval of health and safety management systems varies between the Review Countries, a core construct of all three countries with established frameworks (excluding the developing Irish regime where the detail of the regulatory approach is still to be defined) is that of verification/validation. Verification/validation refers to the 'checking' of key elements of the arrangements or hardware put in place by the operator to manage health and safety by either an independent third party or by the regulatory authority.

Within the Australian framework, a Safety Case should not be submitted to the National Offshore Petroleum Safety Authority without prior discussion on the scope of validation. If validation is requested by the Authority, then it is a key criterion on which the decision to accept the Safety Case is made. Similar verification of safety critical elements is a central requirement within the United Kingdom Safety Case regime.

The importance of verifier/validator independence and technical competence are also highlighted within all three regimes. Identification of reporting lines and ensuring that the verifier and those overseeing the elements being verified are subject to different reporting frameworks are a key element in the consideration of independence.

Within the Norwegian regulations, verification can extend to the verification of models used to calculate risk. Verification can be undertaken by the Petroleum Safety Authority, by an independent organisation, or in-house.

2.2.8 Inspection and Notification based Enforcement Regime

Although there are a number of differences in the HSE regulatory frameworks and administrative approaches identified within the three developed regimes (i.e. the United Kingdom, Norway and Australia), the mechanisms employed to enforce the frameworks show some general consistency, particularly in relation to the types of enforcement mechanisms employed. Within each of the regulatory regimes, enforcement incorporates a mixture of validation/verification (see *Section 2.2.7.1* above), regular inspection and notifications, although the approach and scale of inspection programmes differs somewhat between regimes. These differences are to a certain extent influenced by practicalities such as the scale of resources available to the regulatory agencies.

2.2.8.1 Planned Inspections

Planned inspections to ensure conformity with safety management systems are embedded within all three regimes. Both the United Kingdom Health and Safety Executive and Australia's National Offshore Petroleum Safety Authority have commitments in which they aim to inspect every installation (in the Australian case, every manned installation) at least once a year where practicable. The Norwegian Petroleum Safety Authority similarly has an annual supervision plan, which describes all planned supervisory activities, including audits (systematic examinations of management and control systems) and verifications (measurements, testing and inspection). The resources available to each of these regulatory agencies to undertake these inspections is summarised in *Table 2.3 below*.

Table 2.3: Comparison of HSE Regulatory Authority Resources

	AUSTRALIA	*UK*	*NORWAY*	*IRELAND*
Size of Organisation (No. of People)	41	180	160 man-years	No Information Available
Number of Offshore Safety Inspectors	26	120	60 to 70	
Number of Installations	70 fixed plus 12 mobile	230	75 fixed plus various mobile units	
Installations per Inspector	About 3	Almost 2	About 1	

Whilst the focus of inspections for these regulators is the safety management systems, there are also arrangements within the frameworks for environmental inspection. The United Kingdom Department for Energy and Climate Change's oil and gas division for example have a specific offshore environmental inspectorate unit that uses inspection to obtain evidence and assurances that operators have been and are complying with the requirements, restrictions or prohibitions imposed upon them by relevant statutory provisions. In certain cases, there is also specific provision for collaboration between safety and environmental inspection, such as within the Norwegian context.

Planned inspections are distinguished from investigation activities, which focus on identifying the contributory factors that have led to an accident.

2.2.8.2 *Notifications*

Various different forms of notification mechanisms are applied within the regimes studied to ensure compliance with management systems and permit/consent conditions. For example, the Norwegian Petroleum Safety Authority's enforcement notice regime[18] centres on the submission of a notification order, which provides operators with advance written notice of the Petroleum Safety Authority's intention to issue a formal, legally binding order to rectify an identified non-conformance. The notification order affords the operator an opportunity to respond to the non-conformance before being required to address it.

In the Australian context, improvement notices and prohibition notices can be issued to operators, respectively stipulating required improvement actions and requirements to cease certain activities entirely. The United Kingdom Health and Safety Executive operate a similar improvement notice/prohibition notice framework.

[18] www.ptil.no/enforcement-notices/category158.html

3 ANALYSIS OF THE NEW ZEALAND APPROACH

3.1 INTRODUCTION

The international review undertaken tends to reinforce the concept that there is no single approach to HSE which has been universally adopted by countries with significant offshore petroleum resources. However, features of each of the Review Countries regulatory approaches are clearly instructive in identifying ways in which New Zealand practice might be strengthened or improved.

This Chapter commences by outlining New Zealand's current HSE approach before comparing that approach with the important characteristics of HSE Regulatory regimes identified in the Comparative Overview chapter. Gaps and areas of potential improvement are then identified with possible options for changes to the existing New Zealand regulatory regime outlined.

3.2 OVERVIEW OF THE NEW ZEALAND HSE APPROACH

New Zealand's current legislative structure, institutional capability and practices with regards to HSE arrangements for offshore oil and gas operations are outlined in the New Zealand Regulatory Report prepared by MED and attached to this Report as *Annex H.*

At present there are a number of agencies with responsibilities for regulating different parts of offshore petroleum operations. In summary these agencies include:

- MED (Crown Minerals), which grants licences for petroleum exploration and production within the territorial sea, EEZ and extended continental shelf but does not manage the HSE effects of these activities;

- DoL, which is responsible for administering and enforcing workplace and process health and safety within the territorial sea, EEZ and extended continental shelf on board: fixed installations[19]; permanently moored structures, including tankers converted into floating production storage and offloading units (**FPSOs**); and mobile offshore drilling units (**MODUs**) once the unit is moored and drilling commences[20]. MNZ is however the designated agency for the maritime sector for vessels and MODUs (when they are not drilling). In this context it is important to note that the bulk of major hazards that could lead to a major accident are associated with drilling and production operations.
- MoT, which is responsible for imposing safety zones around installations, the protection of subsea cables and pipelines from hazards, and for reviewing and recommending adoption of international maritime instruments. MoT also has a role in the development of *Marine Protection Rules* under the *Maritime Transport Act 1994*;
- MNZ, which in addition to the functions noted above, is also responsible for developing and administering *Marine Protection Rules* in relation to the protection of the marine environment from harmful substances, discharges and oil spills, and disposal of wastes (including approvals of discharge management plans for offshore installations) under the *Maritime Transport Act 1994*. Further, the Marine Pollution Response Service is an operational unit within MNZ, which provides a dedicated nationwide capability for dealing with marine oil pollution spills and administers the New Zealand Marine Oil Pollution Response Strategy;
- Regional Councils, which have responsibility for managing the environmental effects of activities within the territorial sea (but not the EEZ or extended continental shelf area), via Regional Coastal Plans and a consenting regime under the *Resource Management Act 1991* (**RMA**);
- The Department of Conservation, which is responsible for approving the parts of the Regional Coastal Plans that apply to the coastal marine area (the area from mean high water springs to the limit of the territorial sea)[21]; and

[19] The term "installation" is defined in the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999* as "a fixed or mobile structure or vessel used, or intended to be used, in any offshore petroleum operation; and includes all other works within 500m of any part of the structure or vessel used in conjunction with the petroleum operation". Note this definition differs from that set out in section 222 of the *Maritime Transport Act 1994* which defines an offshore installation and installation as including "any artificial structure (including a floating structure other than 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 but does not include a pipeline".

[20] It is noted that DoL also have responsibility for health and safety in relation to onshore petroleum activity along with geothermal extraction activities.

[21] Refer sections 2 and 64 of the RMA.

- Biosecurity New Zealand, which is a division of the Ministry of Agriculture and Forestry, and which has responsibility for protecting New Zealand from pests and diseases including from those arriving on ships and vessels. Biosecurity New Zealand has jurisdiction within the territorial sea but not within the EEZ or extended continental shelf area; although it is noted that currently there is a proposal to extend the jurisdiction of Biosecurity New Zealand to include the EEZ.

There are also currently a number of potential issues within the regulatory regime applying to offshore petroleum operations. These issues include:

- Health and Safety – There is a lack of clarity in the respective responsibilities under the relevant legislation, particularly around FPSOs and MODUs. There are no requirements in relation to pilotage, and no New Zealand industry standards in relation to the design, construction, operation and maintenance of FPSOs.
- Environmental – The lack of environmental assessment requirements or other environmental approval processes within the EEZ and extended continental shelf. The RMA, *Resource Management (Marine Pollution) Regulations 1998* and the *Biosecurity Act 1993* do not apply to the EEZ (or extended continental shelf) and there is no other equivalent legislation applying within those areas. There is also no general requirement to provide an EIA prior to carrying out petroleum activities within the EEZ or extended continental shelf. It is noted however, that under the *Marine Protection Rules 2010* (Part 200) an EIA (in relation to discharges of harmful substances) is required for new installations as their current Discharge Management Plans come up for renewal.
- Funding – DoL currently is not able to directly on-charge the costs of its health and safety regulatory role to offshore petroleum operators. DoL's activities are funded from a general employer levy which is based on the level of employment earnings in a sector. The use of such a levy to fund a specialist function such as offshore petroleum safety regulation poses challenges in that it does not take into account the specific characteristics of the industry including the highly technical expertise needed for offshore petroleum. In this context the clear risk is that the lead regulator of offshore petroleum safety is seriously underfunded (by comparison with other relevant nations). There are therefore serious risks that the existing regulatory regime may not function efficiently or effectively due to lack of funding and the resultant lack of resources and organisational capability.
- Insurance cover – Compulsory insurance cover for oil pollution damage from installations is relatively low.

3.3 COMPARISON WITH REVIEW COUNTRIES

In this section the New Zealand HSE approach is compared with the important characteristics of HSE regimes identified in the Review Countries and areas of alignment, divergence and any gaps are noted.

The comparison is undertaken with respect to administrative and institutional arrangements as well as HSE frameworks.

3.3.1 Administrative and Institutional Arrangements

3.3.1.1 Separation of Resource Allocation from HSE Regulation

New Zealand is consistent with all of the Review Countries in that the allocation of the resource and collection of royalties is separate from HSE regulation. MED (Crown Minerals) is responsible for the issuing of exploration, prospecting and mining permits and the collection of royalties; with DoL, MNZ and Regional Councils sharing responsibility for HSE Regulation. The importance of independence in HSE decision making from the body responsible for allocation is recognised in all the Review Countries.

3.3.1.2 Specialist Offshore Health and Safety Regulator

Unlike the majority of the Review Countries, in New Zealand there is no separate health and safety process regulator for offshore oil and gas activities. Indeed, in New Zealand, there are two separate agencies - DoL and MNZ – that are involved in regulating health and safety in the offshore oil and gas sector. In addition, the division of responsibility between these two agencies is not always clear, as it depends in part on the activity occurring – for example DoL has responsibility for MODUs when they are drilling whereas MNZ has designated health and safety responsibilities for such units when they are not drilling.

3.3.1.3 Frameworks for Regulatory Collaboration

Consistent with the Review Countries, New Zealand also recognises that comprehensive regulation and management of HSE issues within the offshore oil and gas industry requires collaboration between the relevant authorities. Such collaboration is provided for by regulation which assigns responsibilities between the agencies and in the past has been assisted by the use of MoUs. However, at present there is no MoU between the two main agencies responsible for health and safety issues, DoL and MNZ, and nor is there a current operational agreement defining their respective roles and responsibilities. It is understood that a replacement MoU is currently being negotiated.

3.3.1.4 Consolidation of Offshore Jurisdiction

New Zealand is consistent with the majority of the Review Countries in that there are no regional boundaries in terms of health and safety regulation of offshore oil and gas activities. The same agencies are involved whether the application is within the territorial sea, the EEZ or the extended continental shelf. However, the same is not true for environmental regulation, and New Zealand differs from the majority of the Review Countries in that different agencies have responsibilities depending on the distance from shore – Regional Councils within the territorial sea (12 nm offshore) and MNZ (on a more limited basis) outside of that area.

3.3.1.5 Provision for Regulatory Cost Recovery

New Zealand is consistent with the majority of the Review Countries in that cost recovery mechanisms are preferred, where legislatively available. By way of example:

- DoL does not currently recover any of the costs of health and safety inspections of offshore petroleum facilities or for Safety Case[22] reviews. These costs are met through government funding. As noted earlier, the DoL funding arrangement for health and safety is funded from employers under the Health and Safety in Employment levy. The levy is struck according to levels of employment earnings in each sector. Funding a specialist function such as offshore petroleum safety from a general funding pool would appear to pose considerable challenges.
- MNZ is able to cost recover on a time spent basis for certain activities – such as audits, discharge management plan approvals and modifications. However, there is no general power of cost recovery (such as payment for external peer reviews of applications) and the hourly rate is prescribed by regulation, meaning in practice, cost recovery is only partial; and
- Regional Councils are able to recover all actual and reasonable costs associated with processing and hearing an application for resource consent within the territorial sea. This includes external peer reviews where the applicant consents in advance to the commissioning of the reviews. Monitoring and enforcement costs can also be on-charged, but usually only amount to partial cost recovery.

[22] The term "Safety Case" is defined in regulation 4 of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999 as being the particulars and items referred to in Schedule 4, which essentially relate to how an operator is to identify and manage health and safety hazards, risks and issues.

3.3.1.6 Integration of Environmental with Health and Safety Regulation

Similar to the Review Countries, New Zealand generally separates environmental regulation from health and safety regulation with different agencies having responsibilities for each. However, there is a degree of integration outside the territorial sea as MNZ is involved in both environmental (marine pollution regulation and approval of discharge management plans) and health and safety regulation.

New Zealand differs from the Review Countries however in that, at least within the territorial sea, there appears to be a greater emphasis on environmental consent processes rather than health and safety aspects, given that a resource consent is normally required for the management of environmental effects. No such approval process is required for health and safety. Outside of the territorial sea, health and safety is potentially the greater focus given there is no environmental regulation (other than discharge management plans under Part 200 of the *Marine Protection Rules*) in that area.

3.3.1.7 Integration of Workplace Health and Safety with Process Safety

As noted in the previous chapter, there is a divergence of approaches in the Review Countries as to whether workplace health and safety is integrated within one agency or separated into two agencies such as a specialist offshore process safety regulator and a general workplace regulator. New Zealand is inconsistent with the majority of the Review countries in not having a specialist offshore process safety regulator, but is consistent with Norway and to a lesser extent the United Kingdom in integrating the regulation of workplace and process safety for offshore installations within one agency. . However, inspection and enforcement of health and safety practices is not entirely integrated within one agency as DoL is responsible for inspecting and enforcing health and safety on board fixed installations; permanently moored structures, including tankers converted into FPSOs and MODUs once the unit is moored and drilling commences; and MNZ is responsible for inspecting and enforcing health and safety on board ships, including MODUs (when they are not drilling).

3.3.2 HSE Frameworks

3.3.2.1 Risk Based Safety Framework with Employee Involvement

New Zealand, like the four Review Countries, has a risk based safety framework which places the onus on the operator to identify and propose measures to adequately manage health and safety hazards. Similarly, the New Zealand framework also includes a degree of tripartite collaboration between employers, employees and the regulating authority as employers are required to develop the framework, DoL is required to review (but not approve) the framework and employees are able to provide input into health and safety practices through health and safety committees and representatives.

Unlike Norway, and to a lesser extent Australia, there is no formal industry committee with representatives from these different groups.

3.3.2.2 Environmental Framework Based on EIA and Public Notification

Within the territorial sea, New Zealand's environmental framework includes EIAs and provision for public notification, but generally goes much further than the Review Countries in also requiring a resource consent and providing for public participation (at all levels) rather than notification. Indeed, unlike the four Review Countries, in New Zealand, any person can make a submission on the proposal, can require a hearing be held, can appear at the hearing as well as appeal any resultant decision on the merits to the Environment Court. All such participants also have the right to appeal the Environment Court's decision to the higher appellate courts (High Court, Court of Appeal and Supreme Court) on a point of law. These processes can clearly be time consuming and expensive and can potentially result in project approval delay beyond the time frames generally experienced in other countries.

Outside the 12 nm mile limit there is no such requirement for resource consent (or any equivalent approval) and environmental regulation is mostly limited to *Marine Protection Rules* administered by MNZ. Such regulation is limited to enforcement by MNZ of its marine rules but no equivalent of resource consents or EIAs are required.

The environmental consent regime within the 12 nm limit is not only significantly different to that outside of the 12 nm limit, it is also quite different to other regulatory regimes, where the process is much less procedurally complex and more streamlined. In particular, in the other Review Countries there are no equivalent resource consenting processes and no ability for appeals on the merits.

3.3.2.3 *Insurance and Liability Requirement*

New Zealand is consistent with the four Review Countries in that it imposes insurance and liability requirements. The *International Convention of Civil Liability for Oil Pollution Damage 1992* is incorporated into domestic law through Part 25 of the *Maritime Transport Act 1994*. Part 25 deals with both civil liability claim matters and the domestic law relating to marine structures and operations. Owners of ships and offshore installations have public liability insurance sufficient to meet their obligations under the *Maritime Transport Act 1994* in relation to pollution of the marine environment. This includes but is not limited to oil pollution. Other harmful discharges also come within the compulsory insurance provisions in that Act.

In terms of minimum levels of insurance, for ship owners this depends on the size of the ship, with the range extending from approximately NZ$6.43 million (for a ship up to 5,000 tonnes) to NZ$127.92 million (for the largest ship)[23]. In the case of offshore installations the minimum level of insurance is approximately NZ$30 million[24]. In addition, owners of offshore installations (being a subset of marine structures) have unlimited liability in relation to the Crown and marine agencies for the costs of cleaning up pollution[25].

Unlike all four of the Review Countries New Zealand is not yet a party to the Bunkers Convention, which imposes strict liability for bunker oil pollution from ships; or the *Supplementary Fund Protocol 2003* which supplements the compensation available under the *1992 Civil Liability and Fund Conventions* to bring the total compensation available under these instruments to a combined total of approximately NZ$1.38 billion for any one oil tanker spill incident[26]. New Zealand is also not a party to the LLMC Protocol which increases the liability limits for maritime claims in relation to vessels (but does not apply to offshore installations). Notably, the United Kingdom, Norway and Australia are all parties to the LLMC Protocol.

3.3.2.4 *Strategic Environmental Assessment within Resource Allocation*

Unlike Ireland and the United Kingdom, the resource allocator in New Zealand – MED (Crown Minerals) – does not carry out any SEA (such as to determine the general environmental significance or sensitivity of the marine area) prior to granting permits or opening blocks for offer.

Such assessments are not within the current legislative jurisdiction of MED (Crown Minerals) and accordingly, that agency has no legal ability or mandate to consider or require the provision of EIAs at the time it allocates permits.

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[23] Refer section 347(2) of the *Maritime Transport Act 1994* which indicates that the minimum levels are 3 and 59.7 million international monetary fund units respectively. Also refer to sections 363 and 364 which contain the requirements for owners to hold certificates of insurance.

[24] Refer Rule 102.8(2)(b) of Part 102 of the *Marine Protection Rules – Certificates of Insurance*.

[25] Refer sections 344, 345(2) and 355 of the *Maritime Transport Act 1994*.

[26] Being approximately 750 million units of account.

3.3.2.5 HSE Requirements for Licensee Applications

New Zealand is consistent with the four Review Countries in that it requires the provision of financial and technical expertise information for an applicant as part of the permit application process. However, unlike Ireland, the United Kingdom and Norway (which all require at least some form of HSE information to be provided prior to or with the petroleum permit application), in New Zealand the petroleum permit application does not require the provision of any HSE information. Notably, there is no current legislative ability to consider (even at the most general level) HSE information prior to the issue of petroleum (exploration, prospecting or mining) permits.

3.3.2.6 Safety Case Approach

New Zealand is consistent with the majority of the Review Countries in that health and safety in the offshore oil and gas sector is regulated through a Safety Case approach. The matters that Safety Case must include are prescribed by the *Health and Safety (Petroleum Exploration and Extraction) Regulations 1999*. These Regulations also set out the timing for submission, and processes for review of, Safety Cases.

3.3.2.7 Regulator Review and Acceptance of Environmental and Safety Case

Any comparison of New Zealand with the Review Countries, in terms of HSE regulatory approvals, requires separate comparison of the situation within and outside the territorial sea for environmental regulation, and health and safety regulation in both areas combined.

New Zealand is consistent with the United Kingdom and Ireland in that regulatory approvals in relation to environmental matters are required within the territorial sea. However, as noted above the RMA consent process for approval in New Zealand differs markedly from the more streamlined EIA processes occurring in those countries. Outside the territorial sea, New Zealand is inconsistent with these countries as no general environmental assessment, or other form of approval, is required (although various *Marine Protection Rules* apply).

For health and safety regulation, New Zealand is consistent with the United Kingdom and Australian regimes in that the Safety Case is required to be submitted to the regulator in advance of operations. However, a regulatory verification/acceptance of the Safety Case is not required in New Zealand.

3.3.2.8 Inspection and Notification Based Enforcement Regime

New Zealand is consistent with the United Kingdom, Norway and Australia in that it has an inspection and notification based enforcement regime which aims to inspect each installation and other structure used in offshore oil and gas activities at least once a year. While determining whether New Zealand is in fact meeting these targets is outside the scope of this report, it is noted that New Zealand falls behind the other countries in terms of the numbers of installations each inspector is required to inspect. As noted in *Table 2.3* above, Australia has a ratio of one inspector to three installations, while the United Kingdom has one inspector for each two installations and Norway has one inspector per installation. New Zealand has one inspector for all seven installations (and the same inspector is also responsible for onshore petroleum and geothermal extraction activities). Thus the New Zealand inspectorate appears significantly under-resourced with respect to regulatory review, monitoring, inspection and enforcement. This represents a serious risk to the adequacy of the existing regulatory regime to anticipate or prevent a major pollution incident from offshore petroleum operations.

New Zealand has a similar system of notification for inspections with follow up notices are given if remedial work is required.

The New Zealand inspection and notification regime also extends to environmental monitoring and enforcement of the conditions of any applicable resource consent by Regional Councils where the installation or structure is within the territorial sea. Further, environmental monitoring and reporting of discharges from controlled installations (outside the territorial sea) is provided for in Part 200 of the *Marine Protection Rules 2010*.

3.4 SUMMARY OF AREAS OF ALIGNMENT, DIVERGENCE AND GAPS

Table 3.1 below summarises the areas of alignment, the areas of divergence and the gaps in the New Zealand regime.

Table 3.1: Important Characteristics of HSE Regulatory Regimes

Characteristic	NZ Comparison	Comment
Administrative and Institutional Arrangements		
Separation of resource allocation from HSE regulation	Yes	Should be maintained
Specialist offshore health and safety regulator	No	A specialist offshore process safety unit should be considered
Consolidation of offshore jurisdiction	No	Would simplify arrangements but would require significant legislative change
Provision for regulatory cost-recovery	Partial	Greater cost recovery should be provided for but will require legislative change

Characteristic	NZ Comparison	Comment
Integration of environmental with health and safety regulation	Partial	Capacity and resourcing constraints mean some degree of integration should be retained
Integration of workplace health and safety from process safety	Partial	Full integration not necessarily required but further clarity around DoL and MNZ respective roles is needed
HSE Frameworks		
Risk based safety framework with employee involvement	Yes	Should be maintained
Environmental framework based on environmental impact assessment and public notification	Partial	Current consenting requirements are much stricter than other countries within the territorial sea but fall behind other countries within the EEZ
Insurance and liability requirement	Mostly	Insurance levels are low and liability regimes for shipping could be strengthened by ratifying the Bunkers Convention Supplementary Fund Protocol 2003 and the LLMC Protocol
Strategic environmental assessment within resource allocation	No	Enabling such an assessment should be provided for but would require legislative change
HSE requirements for licensee applications	No	Enabling HSE information to be supplied should be provided for but would require legislative change
Safety Case approach	Yes	Should be maintained
Regulator review and acceptance of environmental and Safety Case	Partial	Current gaps in not requiring environmental regulatory approvals outside the territorial sea and by not requiring acceptance of Safety Cases
Inspection and notification based enforcement regime	Yes	Should be maintained

3.5 OPTIONS FOR CHANGES TO EXISTING NEW ZEALAND HSE REGIME

In considering options for improving New Zealand's regulatory regime further more detailed work needs to be done in some areas – particularly in relation to technical and operational issues which were beyond the scope of this Review. Careful further evaluation also needs to be made of how to strike the best balance between encouraging new investment in New Zealand's offshore petroleum sector, (by avoiding unnecessary, duplicative or unduly costly over-regulation), and yet ensuring New Zealand has a comprehensive, robust and well resourced HSE regulatory regime.

The international HSE regulatory comparisons summarised in this Report and the MED overview of New Zealand's current regulatory framework indicate there are several key areas where New Zealand regulatory requirements could be improved – primarily in order to clarify or strengthen existing HSE administrative and legal structures or requirements. The urgent need for expanding the DoL inspectorate and provision of further resources and capability (including training) in relation to the review, monitoring and enforcement has been noted above. There also appears to be a need to improve the HSE information available to resource allocation decision makers and a need to strengthen the Safety Case regime. Finally, there is a major gap in the absence of a requirement for any form of environmental assessment in New Zealand's EEZ and extended continental shelf for petroleum activities (or for other similar activities such as seabed mining).

A final important aspect of strengthening New Zealand's regulatory regime is the recognition of the practical reality that, by comparison with leading petroleum producing nations, New Zealand has extremely limited resources, both in terms of technical expertise/experience and in terms of the financial resources available to regulators for activities such as Safety Case verification/acceptance, HSE monitoring and enforcement of compliance. The very large EEZ and extended continental shelf area underscores the practical importance of this issue. At this stage the scale of offshore development, compared to the overall size of New Zealand's offshore area is relatively small. As petroleum activities increase, particularly in the EEZ and extended continental shelf areas, the evaluation of the potential HSE risks and monitoring the performance of petroleum operators will become ever more demanding. Consequently, New Zealand will inevitably need to commit significantly greater resources to the task to ensure the existing regulatory framework and its associated standards are capably and efficiently applied. New Zealand may also need to explore co-operation arrangements with other countries with the requisite offshore petroleum experience and expertise (such as Australia).

With all of the above considerations in mind the following options for improvements are discussed as constructive suggestions for legislative change and regulatory strengthening or improvement of the existing New Zealand regulatory framework.

3.5.1 Resource Allocation

Currently, the MED (Crown Minerals) decision to allocate a permit for petroleum prospecting, exploration or mining does not, by law, require or enable any consideration of HSE issues prior to the grant of such permits.

In terms of early identification of potential health and safety (including process safety) or broad environmental protection implications there would appear to be considerable benefits in MED (Crown Minerals) having the necessary powers to require that applicants provide high level HSE information.

In this context it is relevant to note that the most likely environmental risk (e.g. an oil spill) is most likely to arise from a health and safety incident – particularly in relation to process safety (i.e. drilling and production operations). In addition, other forms of subsequent environmental risk are most likely to arise from the location of drilling activities within or close to important coastal or marine resources.

3.5.1.1 Health and Safety Information

With respect to health and safety (including process safety) this means that the permit is granted before any level of assessment is made of a permit holder's health and safety credentials, experience or potential performance in the event of major accidents or environmental pollution incidents. It would appear logical that this gap in information prior to the grant of a petroleum permit should be remedied.

The provision of such information would not be intended to replace or duplicate subsequent HSE approvals. Maintaining the independence of such regulatory approval from allocation decisions is of prime importance. Rather, it is intended to ensure that all parties would have available relevant information on HSE issues at an early stage and before allocation decisions were made. This would also ensure early involvement of regulatory authorities, and early identification of key issues of potential HSE concern for further evaluation (if necessary) in the detailed regulatory approvals process.

The extent of information required in relation to different types of petroleum permit will clearly vary with the nature of activity (e.g. there will be major differences between prospecting, exploration and mining activities) and the potential health and safety risks. It would, however, seem sensible for the MED (Crown Minerals) to at least have the legal ability to seek relevant information from an applicant and have such information independently evaluated by the relevant regulatory authority before final allocation decisions are made. This adds an extra layer of precaution at an early stage and needs to be designed, in a manner which does not impose excessive costs or delays for an applicant, except where this is clearly warranted by the level of potential risk. Further, because the applicant is likely to already have this information or will be required to provide it prior to commencing operations, it does not require any extra work on behalf of the applicant. It is only the timing of the supply of this information that is affected.

3.5.1.2 Environmental Information

Similar concepts should apply for EIA information. In the territorial sea there is already an environmental consent process which provides for environmental assessment and resource consent in appropriate cases. In the EEZ and extended continental shelf there is no broad environmental assessment obligation (other than assessments required for discharge management plans) and allocation permits are not subject to any level of environmental assessment at the permit granting stage. Again it is important that the mechanism for undertaking environmental assessment is designed to avoid unnecessary costs or delays for activities which pose little or no environmental threat or risk. But in appropriate cases the MED (Crown Minerals) ought to at least have the power to ask an applicant for relevant environmental information (including a full environmental assessment in proper cases) prior to determining whether to grant a permit. The issues related to the process for evaluating environmental assessments are discussed further below.

Such environmental assessment information would also form the basis of any other more detailed form of resource or marine environmental consent (whether by Regional Councils in the territorial sea or some other future environmental decision making authority in the EEZ and extended continental shelf area). Also as noted above in relation to the early provision of health and safety information, the applicant is likely to already have this information or will be required to provide it prior to commencing operations, and it therefore does not require any extra work on behalf of the applicant. It is only the timing of the supply of this information that is affected.

3.5.1.3 Process Improvements

Properly designed the provision of HSE information prior to the grant of petroleum permits should assist both the regulatory bodies and the applicant to identify any issues of potential concern at any early stage. This should also assist subsequent HSE regulatory approval processes.

One possible option might be to assess whether a "one stop shop" process would improve existing regulatory approval procedures. This might entail an applicant providing full HSE information with an application to MED (Crown Minerals) and the MED co-ordinating an independent review of this information by relevant regulatory authorities on an agreed timetable. Where HSE issues or risks of major concern are identified as a result of this process, petroleum permits might be delayed or made conditional upon detailed HSE regulatory concerns being addressed and specific consents being issued. This might simplify the overall approval process for an applicant without reducing the level of independent regulatory scrutiny of important HSE issues.

3.5.2 Health and Safety

There are three main areas in relation to health and safety where the existing regulatory regime might be strengthened or improved. These are:

- Safety Case acceptance;
- Agency responsibilities, resourcing and capacity; and
- Cost recovery.

3.5.2.1 Safety Case – Regulatory Acceptance Issues

Under the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999*, the operator of an offshore oil and gas facility or installation is currently required to provide DoL with a Safety Case which sets out identified hazards and issues and how the operator proposes to address those issues. The Safety Case, (along with any independent verification/validation of the Safety Case provided by the applicant), is currently reviewed but not actually formally accepted by the DoL.

The Safety Case approach relies on the regulatory principle that the operator/owner should take responsibility for risk management. In regulatory terms, this places considerable reliance and weight on the obvious self interest of an operator to ensure its operations are undertaken safely and responsibly without accident or mishap.

An alternative approach is to seek to prescribe minimum standards and actions for compliance. This prescriptive regulatory approach has been adopted, most notably, in the United States. The role of regulatory agencies under the prescriptive approach is to have far more responsibility for confirming compliance with the prescribed standards and rules. Since the recent Deepwater Horizon incident the reliance on such a prescriptive regulatory approach has come under considerable question and scrutiny. The Safety Case approach is seen as not only placing direct responsibility for proper risk assessment and management on the owner/operator but also providing greater regulatory flexibility in relation to changing technologies. It also give an emphasis to regulators concentrating on monitoring and inspection rather than evaluating compliance with a set of prescriptive rules which may or may not be sufficient to identify all the relevant or serious risks or which may divert regulatory resources away from the important task of monitoring and inspections.

From a regulatory perspective the performance based approach embodied in the Safety Case approach would appear to have a number of important advantages. However, the absence of any mandatory or prescribed standards may also be open to question as creating a potential lack of regulatory certainty or responsibility. Depending on the technical issues involved there may be some scope for limited regulatory prescription as a supplement to the Safety Case. The efficacy of the Safety Case approach clearly also depends on systematic monitoring and regulatory inspection for compliance. This in turn relies on the expertise, experience and other resources available to the regulator.

In New Zealand the regulatory inspectorate appears seriously under-resourced in relation to the number of permanent offshore installations present in New Zealand waters (currently seven).

In relation to international benchmarking (see *Table 2.3*), seven installations would suggest the need for at least three inspectors (at present there is one who also has responsibilities for onshore petroleum and geothermal extraction activities). This increase in inspectorate numbers would also require appropriately qualified and trained support staff to achieve a 'critical mass' that would provide some contingency in the event of a major accident.

A final consideration is whether or not some form of regulatory acceptance or alternatively, independent verification of a Safety Case should be provided when the Safety Case is submitted to DoL. Formal regulatory acceptance of the Safety Case would potentially be a resource intensive exercise which would absorb a considerable amount of inspectorate time. On the other hand, it would provide a level of detailed assurance in advance of operations that risk management issues had been covered – particularly in relation to drilling process issues the most likely cause of a major accident. Another approach would be to require independent verification of the Safety Case prior to submission to DoL. The judgment as to which approach would provide the greatest level of safety assurance depends on consideration of technical and operational issues beyond the scope of this Review. However, there would seem to be advantages particularly in respect of the riskiest aspects of process issues (where the potential for accidents leading to an oil spill may be greatest) to improve New Zealand's system by incorporating regulatory provision for a formal acceptance in certain cases or an independent verification by a suitably qualified third party which is provided to the regulator at the same time as the Safety Case is submitted.

Experience also suggests that accidents will happen no matter how experienced the operator may be. The role of HSE regulation is to help ensure that, to the extent practicable, relevant risks are thoroughly assessed in advance of approval and regularly monitored thereafter by both operator and regulator.

In this context the split of responsibilities between DoL and MNZ in relation to administration of health and safety for offshore oil and gas activities also requires consideration. While DoL is responsible for reviewing all Safety Cases, inspection and enforcement of health and safety is divided between DoL and MNZ. DoL is responsible for fixed installations; permanently moored structures, including tankers converted into FPSOs; and MODUs once the unit is moored and drilling commences. MNZ is responsible for inspecting and enforcing health and safety on board ships, including MODUs (when they are not drilling). As noted earlier, there is a lack of clarity at an operational level between the roles of these two agencies which might have potential HSE implications if matters fall into a grey area or there is any technical oversight or confusion in relation to overall responsibility for a particular issue. Further definition of the respective roles of these two agencies may assist in strengthening regulatory performance and ongoing inspection and monitoring processes. Also as noted earlier, the MoU previously existing between these two agencies has lapsed and has not yet been replaced. It is understood that a replacement MoU is currently under consideration.

The additional safeguard of requiring formal Safety Case acceptance for certain operations (on a case by case basis), would require legislative change as well as consideration of cost recovery mechanisms and there would be a need to source additional people and technical assistance from outside New Zealand. It would also require the respective roles of DoL and MNZ to be more clearly defined. Both the United Kingdom and Australia require regulatory acceptance of Safety Cases, although it is noted that both of these countries also have a greater level of resources – particularly in terms of trained and qualified people – to fulfil this additional regulatory function.

3.5.2.2 Agency Responsibilities, Resourcing and Capacity

A further option for consideration is whether regulatory responsibility and technical expertise in relation to process health and safety issues would be more logically contained in a specialist organisation. In New Zealand this would appear to pose challenges given the lack of availability of relevant technical expertise and resourcing.

However, establishing a specialist offshore petroleum unit within the DoL to deal with process safety may bring a greater focus to this area and enable specific funding to be directed to that area. It would also provide a single point of contact for operators.

3.5.2.3 Cost Recovery

To ensure that MNZ and DoL have sufficient funding, technical expertise, and organisational capability available to carry out their regulatory responsibilities, one option is to provide these agencies with greater powers of cost recovery. This is especially important if the responsibilities of these agencies expand and if the offshore petroleum sector activities significantly increase.

A degree of flexibility in the cost recovery mechanisms available to the agencies, (such as providing the agencies with the power to determine whether to impose levies or recover on a time cost basis or a combination of both) should also be considered.

It has also been noted that the HSE levy for funding DoL has distinct challenges when applied to a specialist function such as offshore petroleum safety and it would appear essential to examine other mechanisms for providing sufficient funding.

3.5.3 Environmental Regulation

3.5.3.1 EEZ and Extended Continental Shelf Regulatory Gap

Environmental regulation under the RMA of offshore petroleum activities is undertaken by Regional Councils to the outer limits of the territorial sea. Regional Councils also co-operate with MNZ in respect of marine pollution responsibilities within this area. Beyond this distance there is no authority administering comprehensive environmental regulations similar to those within the territorial sea (with the exception of discharge management plans which are subject to national standards). The main environmental legislation applying to the EEZ and extended continental shelf is marine pollution legislation deriving from international treaties and conventions. This is administered by MNZ on behalf of the MoT. This legislation was not designed to assess or regulate broader environmental implications of EEZ and extended continental shelf petroleum activities (or indeed any other form of development activity).

At one level, and consistent with the majority approach in the review countries, there would appear to be logical advantages in not dividing the administration of environmental regulation of offshore petroleum activities into two separate jurisdictions. However, Regional Councils (such as Taranaki) who have extensive experience of regulating offshore petroleum activities appear to have performed the role very effectively to date and demonstrated that it is both practical and possible for Regional Councils to perform such functions.

For Regional Councils who have no experience (yet) of offshore petroleum activities there may well be a steep learning curve and the need for national level (or other Regional Council) technical or financial assistance may well arise. Despite this possible shortfall in expertise or experience the regulatory framework of the RMA provides a reasonably comprehensive framework for environmental assessment and regulation including resource consent processes. However, for a variety of reasons, this is not suitable for extension to the EEZ and extended continental shelf. In particular, no other Review Country has an equivalent of the RMA for environmental consenting in their sovereign waters or in areas where they have sovereign rights. Appeal processes tend to be more streamlined and limited to procedural (rather than merit) issues. In addition, there are international maritime considerations discussed in more detail in the *Regulatory Agency Options* section below.

The main gap is therefore in relation to the broad assessment of environmental issues within the EEZ and extended continental shelf. There is, as noted, environmental assessment required for discharges of harmful substances under *Part 200 of the Marine Protection Rules 2010*. While the impacts of accidents leading to major oil pollution may occur at distances offshore where the effects on coastal resources may prove non-existent or minimal, there are clearly no guarantees. In addition, there may well be important maritime environmental impacts which need to be considered. The potential impact of such pollution on marine resources would also appear to warrant careful examination before major offshore petroleum mining activities are approved (including provision for removal of structures at the end of mining). Currently, there is no regulatory agency with this responsibility. This is clearly a major legislative and regulatory gap.

3.5.3.2 Regulatory Agency Options for EEZ and Extended Continental Shelf

One regulatory option might be to extend the responsibility of Regional Councils to the EEZ and extended continental shelf. This would involve careful consideration of a range of factors including international law, as in this area, New Zealand generally exercises sovereign rights not sovereignty. Ensuring consistency and compliance with a range of international obligations suggests that giving legal responsibility to a national body of some kind (responsible to a Minister of the Crown) would be more appropriate than Regional Councils. However, there would clearly be an important role for Regional Councils to perform in any such framework.

The current regulatory administration responsible for existing maritime protection rules (including approval of discharge management plans) in the EEZ and extended continental shelf areas is MNZ. Consideration could be given to extending the role of MNZ to include responsibilities for environmental assessment, compliance and enforcement issues in these areas. This would logically sit alongside other maritime experience and responsibilities for HSE including the marine pollution issues. MNZ would need to draw on expertise and resources from the MfE and relevant Regional Councils, to assist with broader environmental assessment aspects of this role.

Another option would be to consider whether the newly established Environmental Protection Authority (**EPA**) might have the central environmental management role in relation to the EEZ and extended continental shelf. A drawback of this possibility may well be the newness of the organisation, its range of other onshore responsibilities and the lack of maritime HSE experience or capability within that organisation.

Also relevant to the choice of a preferred regulatory agency is the maritime boundary jurisdiction. A key issue is whether there would be any benefits should such an agency also take over the environmental regulatory role of Regional Council's in the territorial sea as well as administering the environmental regulatory regime in the EEZ and extended continental shelf. Such an approach would be consistent with the majority of the review countries, although in those countries while one agency has overall responsibility, other agencies still have involvement in the process where the activity is occurring within a certain distance of shore (Australia) or may have impacts on coastal land (Norway).

3.5.3.3 Type of Regulatory Process

Apart from the decision of which regulatory body should be given the task of EEZ and extended continental shelf environmental administration, there is also a clear need for legislation to provide an environmental regulatory assessment framework in the EEZ and extended continental shelf. This might take the form of a modified RMA consent process or a more simplified, stand alone environmental assessment and approval process. This latter approach is more consistent with Review Country practice. A maritime consent process of some kind would not just be for approval of petroleum activities it would presumably cover other future developments in the EEZ and extended continental shelf including seabed mining.

A final issue is what level of public participation should be required when a full EIA is required. All of the four countries have some form of public opportunity to make submissions on an EIA. In New Zealand, environmental laws generally recognise the importance of some level of public input and there are clearly benefits to be derived from having scope for public input prior to final allocation decisions being made or as part of an environmental consent process.

3.5.3.4 Funding Mechanisms

Whatever regulatory agency or process is adopted, consideration will also need to be given to the method by which such environmental regulatory processes are funded, including the important task of environmental monitoring and compliance over a potentially large geographical maritime area. This could be through greater levels of government funding, a legislative provision allowing partial or full cost recovery, or a combination of both.

3.5.4 Insurance and Liability

Recent events in the Gulf of Mexico have focused specific attention on liability and insurance issues in relation to offshore petroleum activities and accidents leading to serious oil pollution. Under New Zealand law operators of installations have no right to limit liability, so that those responsible will be liable for the actual clean up costs and damage caused.

A vital issue is whether New Zealand's insurance and regulatory regime adequately protects New Zealand in the event of a major accident or event such as an oil spill. While there was no information as to the levels of minimum insurance required in the Review Countries, current levels of compulsory insurance in New Zealand (approximately $30million) would be seriously inadequate in the event of an offshore petroleum accident resulting in a major oil spill which threatened the coastline or other marine resources.

As noted earlier, unlike all four of the Review Countries New Zealand is not yet a party to the Bunkers Convention, the Supplementary Fund Protocol 2003 or the LLMC Protocol which increase the liability and compensation levels for maritime claims in relation to vessels (but do not apply to offshore installations either fixed or floating). Ratification of these instruments would provide New Zealand with greater access to funds in the event of a spill from an oil tanker. While this may not be of immediate importance to improving the legal position for offshore petroleum installations, it highlights the need for New to ensure it utilises opportunities to become part of international conventions which address such issues in the future. If there are other relevant international instruments for installations, now or in the future, these too should be considered for ratification.

It was beyond the scope of this Review to evaluate detailed questions concerning liability and insurance but these are clearly very important issues in the event of a major accident or oil spill.

4 RECOMMENDATIONS

4.1 INTRODUCTION

The following recommendations are necessarily qualified or limited by the nature of the high level regulatory review which has been undertaken in this Report. It is also critically important that technical and operational issues arising from the existing, and any future, regulatory regimes are carefully assessed before final decisions on regulatory reform are made.

As noted earlier in this Report, given the potential growth of petroleum activity in New Zealand waters, especially the EEZ and extended continental shelf, it is very important that in any HSE regulatory reform a balance is struck between encouraging international interest in petroleum investment and ensuring credible and effective HSE safeguards which achieve high levels of HSE protection by comparison with relevant international standards.

Other relevant legislative and policy review activities will also have an important bearing on any future changes. A review of the *Crown Minerals Act 1991* has just been announced. In addition, MNZ recently sought proposals for a review of oil spill response preparedness and capabilities. MED has also released a discussion document on New Zealand Petroleum Reserves information. Finally, draft legislation providing for an environmental consent process within the EEZ is being developed by MfE.

The recommendations set out below relate to strengthening and improving those aspects of an efficient and effective regulatory regime which appears best suited to the New Zealand context, including:

(a) Strategic regulatory evaluation of HSE risks prior to resource allocation;

(b) Detailed risk assessment is primarily performance based (Safety Case) rather than prescriptive regulation;

(c) Regulatory roles and responsibilities for HSE are clearly defined and coordinated; and

(d) Independent, well resourced, monitoring and enforcement of HSE requirements.

From a practical perspective the majority of the hazards that could lead to a major accident (and associated oil spill) are associated with drilling and production operations. Thus one of the main emphases of public and regulatory policy in respect of New Zealand's offshore area should focus on anticipating, low probability, high consequence events i.e. ensuring the HSE regulatory regime has the right level of resources and capabilities to avoid and/or mitigate the risk of oil spills.

In this context the scale of existing and proposed offshore petroleum activity is reasonably small relative to the size of New Zealand's EEZ and extended continental shelf area. Nevertheless it is essential that the effectiveness of any regime is not hamstrung or unduly limited by a lack of resources, expertise or organisational capability.

4.1.1 Order of Priority

The recommendations are listed in order of priority with those for which most pressing action is required, listed first.

The first recommendation, which relates to resources and organisational capability, is given top priority. This reflects the importance of resources and organisational capability to the efficient and effective functioning of the regulatory framework.

The second recommendation which relates to the provision of high level HSE information (including through an SEA) at the resource allocation stage should assist in mitigating the risk and consequences of HSE incidents.

The third and fourth recommendations relate to strengthening the existing health and safety regime and are given priority over establishment of an environmental regime in the EEZ and extended continental shelf area as in general the major environmental effects which are of concern (such as an oil spill) generally result from a process health and safety (and in particular drilling and/or production) incident.

The fifth and sixth recommendations which relate to the establishment of an environmental permitting regime and administering body in the EEZ and extended continental shelf, follow the health and safety recommendations (for the reasons stated above) and also reflect the fact that currently there are relatively few offshore operations occurring in this area.

The seventh recommendation has been given less priority as there are already some insurance and liability requirements in place in the domestic legislation and implementation of the measures set out in the other recommendations (such as an SEA at the resource allocation stage) may assist in reducing the risk of incidents occurring.

The last recommendation is one which would require significant legislative and administrative restructuring and is therefore a matter that will require more detailed consideration.

4.2 RECOMMENDATIONS

4.2.1 *Investigate Funding Mechanisms and Resourcing Options*

Government to investigate, as a matter of priority, options for cost recovery and the provision of other additional sources of funding to ensure greater technical expertise, organisational capability (including training) and funding (including cost recovery mechanisms) are available to DoL and MNZ to fulfil their existing regulatory functions with respect to HSE approvals, monitoring and compliance.

At the same time, DoL and MNZ to identify expanded opportunities for interagency co-operation, co-ordination and sharing of expertise and resources, within and outside New Zealand including the National Offshore Petroleum Safety Authority in Australia.

Commissioning of these investigations will not require legislative change in New Zealand. However, implementing any amendments proposed as a result of the investigations may require amendment of the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999* and *Maritime Transport Act 1994.*

Cooperation with international agencies, such as the National Offshore Petroleum Safety Agency in Australia, may involve legislative changes to Australian legislation.

4.2.2 *Require HSE Consideration (including Strategic Environmental Assessment) at the Resource Allocation Stage*

Prior to decisions by MED (Crown Minerals) to allocate petroleum permits (prospecting, exploration and mining) there be a new legal requirement on an applicant to provide appropriate information on relevant HSE issues. The level of information required from an applicant by MED (Crown Minerals) will need to be defined by reference to the potential health and safety (particularly process safety) issues as well as specific environmental concerns and the nature and scale of the proposed permit activities (e.g. prospecting or mining). For environmental issues a Strategic Environmental Assessment should be able to be required or commissioned by MED (Crown Minerals) for review by relevant expert agencies such as MfE and MNZ. This change will require specific legislative amendment to the *Crown Minerals Act 1991.*

MED (Crown Minerals) be legally empowered to consider such information, following independent review and reporting by relevant regulatory agencies – in particular MNZ, DoL, Regional Councils and MfE, as part of the overall decision to grant/refuse a petroleum permit or as a basis for imposing conditions on the permit in relation to HSE issues. For example this may include a condition that a further more detailed HSE risk evaluation of specific high risk issues be undertaken or a more comprehensive EIA be provided.

4.2.3 *Co-ordination of Regulatory Responsibility and Organisational Capabilities for Health and Safety*

DoL to continue to have lead regulatory responsibility with respect to health and safety (including process safety) approvals, monitoring and enforcement. However, it is also recommended that an urgent interagency review be undertaken (led by DoL) of ways in which regulatory coordination and organisational capability to monitor and enforce health and safety can be further strengthened and improved. This includes consideration of interagency coordination, and funding issues noted in recommendation 4.2.1 above.

The review should consider the resource viability and risk management benefits that could be accrued through the creation of a specialised distinct unit within DoL, focussed on offshore oil and gas process heath and safety management. Such a unit would align with practices in the other regimes studied and allow for the development of specialist technical expertise which will be required to manage process health and safety for the offshore petroleum sector. The establishment of such a unit would require expansion of existing organisational capability and the inspectorate, as well as specific funding (for example through greater cost recovery or a targeted levy).

While the review itself will not require specific legislative change, the implementation of any amendments arising from that review may require a change to the relevant empowering legislation.

4.2.4 *Safety Case*

Maintain the current regulatory approach in relation to the Safety Case. However, in addition, DoL should investigate ways in which the regulatory consideration of individual Safety Cases might be enhanced or improved including:

(a) Requiring operators to provide independent third party verification of the Safety Case prior to submission of the Safety Case to DoL;

(b) Expanding DoL's existing review process to include an ability to require specific regulatory approvals (or verifications) of a Safety Case/ aspects of a Safety Case in appropriate circumstances;

(c) Improving coordination with other relevant agencies during Safety Case reviews, monitoring or inspection processes;

(d) Improving the existing Safety Case process by the provision of supplementary or additional prescriptive requirements in specific technical areas;

(e) Improving the monitoring and inspection regime to ensure operator compliance and performance.

The above will require specific consideration of the provisions of the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999*.

4.2.5 *Establish an Environmental Regulatory Framework in the EEZ and Extended Continental Shelf*

Establish a new regulatory framework for environmental assessment and approval of petroleum activities in the EEZ and extended continental shelf. This new process should not aim to replicate the complexity of the RMA processes and procedures within the EEZ and extended continental shelf for the reasons noted earlier. Initially, a process of EIA which includes opportunities for public comment and submissions in relation to major projects – especially mining – should be established. Responsibility for the administration of this new framework is discussed in the next recommendation. Implementing this recommendation would require the introduction of new legislation.

4.2.6 *Establish an Agency with Responsibility for Environmental Regulation in the EEZ and Extended Continental Shelf*

Establish a regulatory agency with central co-ordinating responsibility for environmental assessment, monitoring and enforcement within the EEZ and extended continental shelf. Given MNZ's existing maritime and marine pollution roles, the logical initial choice would appear to be MNZ. Clearly the final choice depends on other government decisions in respect of regulating other marine development activities (e.g. seabed mining, offshore aquaculture etc) and decisions as to the future role of the new EPA.

MNZ already performs an environmental management role in the EEZ and extended continental shelf area given its responsibilities for marine pollution, marine dumping and approval of marine discharge management plans from petroleum installations. It also has regulatory expertise and responsibilities in relation to shipping and a role in administering the New Zealand Oil Pollution Response Strategy.

To perform such an extended task, an extension of the current statutory role of MNZ would be required, and the need for additional expertise, resources and organisational capability would need to have been investigated as a matter of priority.

MNZ should be required to closely co-operate with relevant Regional Councils, MfE and the EPA to ensure the best use of available environmental expertise, and that sufficient expertise and resources are available for the broader environmental assessment and compliance monitoring role.

Implementing this recommendation would form part of the new legislation for environmental regulation of the EEZ and extended continental shelf.

4.2.7 *Consider Insurance and Liability Arrangements*

Government to investigate the adequacy of the current minimum insurance levels and determine whether these require adjustment.

Government also to investigate whether there are any existing international conventions which would strengthen insurance and liability arrangements in relation to offshore petroleum activities. In relation to ships, Government should consider ratifying the Bunkers Convention, Supplementary Fund Protocol 2003 and the LLMC Protocol.

Government should also consider giving priority to the review of new international instruments relating to marine pollution and liability issues. While giving priority to the review of such instruments is unlikely to require a legislative change, incorporating the provisions of any new ratified instruments into domestic legislation will.

4.2.8 Consider Future Consolidation of Offshore Environmental Jurisdiction

MfE to undertake a review of the regulatory advantages and disadvantages of combining jurisdiction for environmental regulation within the territorial sea and EEZ/extended continental shelf into a single regulatory agency. Such an agency would work closely with Regional Councils, HSE regulatory agencies and other bodies with marine pollution or environmental roles and responsibilities (such as Biosecurity New Zealand, the Oil Pollution Advisory Committee etc).

The review would not require legislative change. However giving effect to any consolidation proposal would require, at the minimum, amendment of the *Resource Management Act 1991* and any legislation introduced for the EEZ and extended continental shelf.

Annex A
List of Abbreviations

A LIST OF ABBREVIATIONS

Bunkers Convention	International Convention on Civil Liability for Bunker Oil Pollution Damage 2001
DoL	Department of Labour
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
FPSO	Floating Production Storage and Offloading Unit
HSE	Health, Safety and Environmental
LLMC Protocol	Limitation of Liability for Maritime Protocol
MED	Ministry of Economic Development
MfE	Ministry for the Environment
MODU	Mobile Offshore Drilling Unit
MoT	Ministry of Transport
MoU	Memorandum of Understanding
MNZ	Maritime New Zealand
nm	Nautical Miles
RMA	Resource Management Act 1991
SEA	Strategic Environmental Assessment

Annex B
Global Review

B THE GLOBAL REVIEW

B1 INITIAL SCAN MATRIX

Following discussion with the MED and the Other Government Agencies and taking into consideration the project budget, timescales and global capabilities of the Consultants, nine countries were selected for *The Global Review*. The countries selected and a summary of the key rationale for their inclusion in *The Global Review* is highlighted in *Table B1.*

Table B1: Global Review Countries and Inclusion Rationale

COUNTRY	*INITIAL SCAN INCLUSION RATIONALE*
Australia	Commonwealth nation with similar legislative structures to New Zealand. Established Safety Case based framework for offshore Oil and Gas (O&G) HSE regulation. Proximity to New Zealand and potential for sharing of technical resources provides basis for approach alignment.
Angola	Former Portuguese colony with legal system based on European continental law provides point of difference to New Zealand. Developing offshore O&G sector with limited technical resource, providing analogous context to New Zealand.
Brazil	Former Portuguese colony with legal system based on European continental law provides point of difference to New Zealand. Resource limitations provide analogous context to New Zealand.
Canada	Commonwealth nation with similar legislative structures to New Zealand.
Denmark	North Sea operating context with less resource than Norway or UK.
Ireland	Developing offshore O&G sector. Recent revisions to HSE framework would provide a good point of comparison to the New Zealand context.
Malaysia	Established Safety Case based framework for offshore O&G HSE regulation.
Norway	Well established framework for offshore O&G HSE regulation. High resource intensity approach.
UK	Commonwealth nation with similar legislative structures to New Zealand. Well established Safety Case based framework for offshore O&G HSE regulation.
USA	Established offshore O&G industry. Recent Gulf of Mexico (GOM) incident and likely resulting legislative changes.

Key characteristics of the nine *Global Review* countries were collated into a overview matrix for analysis by the MED and the Other Government Agencies. The *Global Review* matrix is set out in *Table B2* below.

Table B2: Global Review Matrix

Country		New Zealand	UK	Australia	Angola	Brazil	Canada
		Oil and Gas Characteristics					
Oil and Gas Characteristics	**General**	Majority of Oil and Gas occurs in the Taranaki Basin on the North Island, but the basins Great South and New Zealand Orogenic Belt also have potential. Current offshore activity in New Zealand takes place in the Taranaki Basin at water depths of approximately 200-300m and approximately 200-300m offshore. However, some exploration is currently taking place in more deepwater environments (1200-1500m), such as in the Deepwater Taranaki Basin and the Great South Basin.	Majority of oil and gas is found in the North Sea, although there are several discoveries also in the Irish Sea.	The most important regions for oil and gas occurrences in Australia are the Gippsland offshore basin, the Eromanaga and Surat basins in Queensland and the Northwest Shelf together with the Boaparte Basin in Western Australia.	Largest offshore reserves are located in Cabinda and in northwest Angola. The Cuanza Basin and the region around Soyo City are the most important onshore regions. The majority of the country's crude oil is produced offshore in Block Zero, located in the northern Cabinda province. Crude reserves also are located onshore around the city of Soyo, offshore in the Kwanza Basin north of Luanda, and offshore of the northern coast of Angola. Significant discoveries have been made in Blocks 14, 15, 17 and 18 since the mid 1990's. Companies are focusing on ways to reduce the costs and improve the cost-efficiency of producing from the high risk deep-water areas.	Campos and Santos basins in southeast Brazil are the most significant regions for offshore oil and gas potential. Water depths in the Campos basin range from 80m to more than 2,600m and Campos Basin is approximately 100-200km from the Brazilian coast. Oil in the Santos basin lies mostly at water depths of approximately 2000m, and 300km from Sao Paolo. Current offshore activity in Brazil take place in the coast from Rio de Janeiro (southeast) to Ceará state (northeast) at water depths of approximately 100-300m and approximately 200-300m offshore. However, exploration and production is currently taking place in more deepwater environments (1200-4000m), such as in the Deepwater Campso, Espirito Santo and Santos Basin. This includes pre-salt reserves.	Alberta and southern Ontario are the most important regions for hydrocarbon reserves. The Mackenzie Delta and the Sverdup Basin in the north and basins in the Atlantic coast (offshore) are also significant. Water depths of the oil bearing reservoirs offshore of New Foundland/Labrador range from 80m (Hibernia) to 550m (Hopedale). Wells drilled offshore of Nova Scotia range in water depth from 2-2,000m.
	Oil Production (m t, 1999)[1]	Total: 2	Total: 137.1	Total: 24.5	Total: 0.31	Total: 55.8	Total: 89.8
	Gas Production (bn m^3, 1999)[1]	Total: 5.8	Total: 98.7	Total: 31.7	Total: 0.03	Total: 6.7	Total: 176.2
	Oil Reserves (m t, 2001)[1]	Total: 14	Total: 665	Total: 445	Total: 25	Total: 1,172	Total: 779
	Gas Reserves (bn m^3, 2001)[1]	Total: 68	Total: 760	Total: 1,443	Total: 3.3	Total: 231	Total: 1,719
	Maturity	First Discovery: 1865; First Production Year: 1906. The first offshore Field was discovered in 1969 (the Maui Field). The first commercial production in New Zealand took place in 1906 (the Moturoa Field). Several onshore and offshore fields in the Taranaki Basin have started production since 1970.	First Discovery: 1919; First Production Year: 1919. First offshore discovery Leman Field in the North Sea, 1966, started production in 1968. Morecambe Field found in the Irish Sea in 1974.	First Discovery: 1901; First Production Year: 1906. The first offshore discoveries were made in 1965 in the Gippsland Basin (southeast of Melbourne). In 1990, over 90% of all hydrocarbon production came from offshore fields.	First Discovery: 1955; First Production Year: 1956. In Cabinda, exploration started in 1957 and in 1966 a giant offshore oil field, Malongo, was discovered. Several important offshore fields were discovered in the 1990s. First formal oil production took place in 1956 and in 1973 oil became the main export product. Since 1980 the output of crude oil has increased by almost 600% and in 2002 Angola was the second largest oil producer in the sub-Saharan Africa.	First Discovery: 1939; First Production Year: 1940. First offshore discovery was made in the Bahia Sul Basin in 1969. In the 1970s a number of offshore fields were discovered in the Campos Basin. In 1977 production started in the Campos Basin.	First Discovery: at least by 1857; First Production Year: 1857. Offshore exploration started in the early 1960s and one of the first fields discovered was the Drake Point Field around 1970. First offshore fields in the Atlantic coast were discovered in the 1970s. In the offshore fields in the Atlantic, first production occurred in 1992.

[1] www.prio.no/sptrans/-2009228485/Country%20Profiles%202007.pdf

Country		New Zealand	UK	Australia	Angola	Brazil	Canada
		Country Characteristics					
Country Characteristics	**Total GDP**	117,795	2,183,607	997,201	68,755	1,574,039	1,336,427
	Per Capita GDP	26,708	34,619	38,911	6,117	10,514	38,025
	Socio-Cultural Country Influencers		No specific concerns identified	No specific concerns identified	Regulatory framework limited due to lack of technical expertise and resource; HSE is instead more led by internal corporate requirements.	State run oil company Petrobras provides a focal point for the development of HSE frameworks and also has significant influence in the development of regulation being a state-owned enterprise.	No specific concerns identified
		Regulatory Frameworks					
Regulatory Frameworks	**Previous Incident Affecting Development?**	No	Yes - Piper Alpha	Not identified	Not identified	Yes - Guanabara Bay pipeline spill (January 18, 2000) and Parana inland spill (July 16, 2000).	Not identified
	General Information	**Characteristics**	*General Characteristics:* -Safety case based; -Pseudo-'as low as reasonably practicable' (ALARP) principles ('all practicable steps') -Common Law legal system *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises) *Offshore Boundaries:* -National and regional.	*General Characteristics:* -Safety case based; -ALARP principles; -Common Law legal system; -Reviewed and revised 2005. *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises). *Offshore Boundaries:* -National only.	*General Characteristics:* -Safety case based; -ALARP principles; -Common Law legal system; -Reviewed 2009. *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises). *Offshore Boundaries:* -National and regional/state.	*General Characteristics:* -Safety case required as best practice; -Former Portuguese colony; codified system of law following continental European legislative structure: potential difficulties in adaptation. *Market Characteristics:* -State owned operations (Sonangol); -Significant overseas investment: Chevron, Texaco, Exxon and Occidental (potential for socio-cultural impacts). *Offshore Boundaries:* -Not identified.	*General Characteristics:* -Safety case required as best practice; -The government defines technical regulation of the management safety on maritime installations for O&G drilling and production. The operator can select the codes, standards and good engineering practice that will be applied, as long as they comply with the general provisions of the regulations; -Several mandatory requirements for the design, construction and operation of industrial units and public or private facilities in Brazil also exist; -Likely to be based on European codified system of law: potential difficulties in adaptation. *Market Characteristics:* -State owned operations (Petrobras), part-privatisation introduced in 1990s. Mid-2007 first oil project without any Petrobras involvement. *Offshore Boundaries:* -National and regional. Regional related with royalties payments. Some changes being discussed by the government.	*General Characteristics:* -Safety case type legislation requiring submission of a safety plan; -ALARP principles; -Common Law legal system. *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises). *Offshore Boundaries:* -National and regional/state.

Country			New Zealand	UK	Australia	Angola	Brazil	Canada
Regulatory Frameworks (cont.)	General Information (cont.)	**Resource Use**	Limited size of country and O&G sector provides limited resource for regulation, limited expertise and limited incentive to attract overseas expertise.	No specific concerns identified	No specific concerns identified	Angolan Government has limited resources and expertise to develop and regulate offshore oil and gas exploration and production. A focus is placed on the organisations looking to operate within Angola as the systems in place often exceed the requirements of the existing legislation.	Petrobras has a state-of-the-art safety, environment and health program that includes ten 24-hour marine environment centres. It keeps three vessels on call permanently to deal with possible emergencies and has invested heavily to train its workforce in safety and environmental preservation. However, the spill contention technologies it employs are the same as counterparts in the Gulf of Mexico; like its peers, Petrobras will have to invest heavily in development of new contention technologies and methods, in addition to development and testing of an improved blow out preventer. Operating costs will escalate to unknown levels.	No specific concerns identified
	Safety Information (International Regulators' Forum for Global Offshore Safety, www.irfoffshoresafety.com)	**Regulatory Authority**	Department of Labour	Health and Safety Executive	National Offshore Petroleum Safety Authority	*No Information: Not part of the International Regulators' Forum for Global Offshore Safety.*	National Agency of Oil, Gas and Biofuels (ANP)	Canada-Newfoundland & Labrador Offshore Petroleum Board (C-NLOPB) and Canada-Nova Scotia Offshore Petroleum Board (CNSOPB)
		Regime Scope	Health and Safety regime applies onshore and offshore with specific regulations for the petroleum industry.	Health and safety regime applies onshore and offshore with specific legislation (alongside general) and regulators for the upstream oil and gas industry.	Health and safety of people engaged in offshore petroleum operations or greenhouse gas storage operations. Environmental regulation responsibilities – not in jurisdiction. Oil spill response – not in jurisdiction.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	Regulatory body for the activities related to the oil, gas and biofuels industry (upstream and downstream).	The CNSOPB and the C-NLOPB are responsible for the regulation of petroleum activities in the Nova Scotia, and Newfoundland and Labrador, offshore areas. The Boards' principal responsibilities include: - health and safety for offshore workers, - protection of the environment, - conservation of offshore petroleum resources, - compliance with legislative provisions regarding employment and industrial benefits, - issuance of licences for offshore exploration and development, and - resource evaluation, data collection, curation and distribution.

Country			New Zealand	UK	Australia	Angola	Brazil	Canada
Regulatory Frameworks (cont.)	**Safety Information (cont.)**	**Administering Agency/ Arrangements**	Department of Labour which is a government agency.	Government Agency	Established under statute i.e. Commonwealth (federal) government agency, a body corporate, CEO reports direct to Commonwealth Minister for Department of Resources, Energy and Tourism and to the State and Northern Territory Ministers via the Ministerial Council on Minerals, Petroleum and Resources, formal external review of operations every 3 years	*Not part of the International Regulators' Forum for Global Offshore Safety.*	ANP is linked to the Ministry of Mines and Energy, being the federal agency responsible for implementing the national policy for the energy sector, according to the Petroleum Law (Law No 9,478/1,997).	The CNSOPB is an independent joint agency of the Government of Canada and the Province of Nova Scotia. The C-NLOPB is an independent joint agency of the Government of Canada and the Province of Newfoundland and Labrador. Federally, the minister responsible is the Minister of Natural Resources, and provincially the ministers responsible are the Minister of Energy (Nova Scotia) and the Minister of Natural Resources (Newfoundland and Labrador).
		Legislation	National. Health and Safety Act plus regulations.	National. Act and Regulations. A combination of legislation applicable to all industries and specific regulations for the offshore oil and gas industries.	National, two acts and two sets of regulations for Commonwealth waters with 'mirror' legislation for State and Northern Territory (NT) waters.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	The ANP is led by a director board, composed by five directors (one general and four technical) with a four-year term each one. Deliberative sessions take place weekly in order to issue instructions, rules and resolutions to the industry and to solve conflicts between economic agents and consumers. Acts that may impact industry are submitted to public hearings.	The CNSOPB is established pursuant to the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act (federal version) and the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act (provincial version). The C-NLOPB is established pursuant to the Canada-Newfoundland Atlantic Accord Implementation Act (federal version) and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Newfoundland and Labrador Act (provincial version). Regulations made under these Acts include: - Geophysical Operation Regulations, - Certificate of Fitness Regulations, - Diving Regulations, - Production and Conservation Regulations, - Petroleum Drilling Regulations, - Petroleum Installations Regulations, - Oil and Gas Operations Regulations, - Oil and Gas Spills and Debris Liability Regulations.

Country			New Zealand	UK	Australia	Angola	Brazil	Canada
Regulatory Frameworks (cont.)	Safety Information (cont.)	**Extent of Government Approval**	Safety cases are not approved. Safety cases are reviewed but no approval is given.	Safety case must be accepted before offshore installation operates.	Acceptance of nomination of the operator of a facility, agreement to the scope of validation, acceptance of a safety case or diving safety management system.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	Promotion of geological and geophysical studies to identify potential basins for hydrocarbon production. ANP organizes and maintains the technical data on a database. ANP performs biddings rounds for exploration, development and production of hydrocarbon areas, signs the concession contracts on behalf of the Union and supervises the execution of the contracts. Calculations of the amount of royalties and other tributes owed to the States and the Union. Authorizations and supervisions of the activities of refining, processing, transportation and the import and export of oil and gas. Authorizations and supervisions of the activities of production, storage, import and export of biodiesel. Authorizations and supervisions.	Each work or activity proposed to be carried on in the offshore area related to the exploration or drilling for or the production, conservation, processing or transportation of petroleum requires the authorization of the responsible Board, and the person holding such authorization must be in possession of a valid operating license. There are additional work / activity specific approvals required from the responsible Board, or its Officers, as defined in the above referenced regulations.
		Nature of Duties Imposed	General duty to take all practicable steps to ensure safety at work. Primarily goal setting legislation. There are also some prescriptive requirements with respect to offshore installations.	Primarily goal setting legislation setting the required standards.	General OHS duties imposed on operators of facilities, people in control of particular work, employers and other duty-holders, mainly performance based (health and safety risks are reduced to a level that is as low as reasonably practicable) but some occupational health prescription. Regulations require a safety case accepted by NOPSA prior to commencing activities and require operators to operate in accordance with the accepted safety case for their facility/installation.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	Constitution of the Federative Republic of Brazil, Article 177: - Law 9,478/1,997, which instructs the national energy policy, activities related to the oil monopoly, creates the National Energy Policy Council (CNPE) and ANP; - 9,847/1,999 Law, which instructs the fiscalisation of the activities related to national fuel supply; - Decree No 2,455/1,998, which establishes the ANP; - Decree No 2,705/1,998, which defines criteria for calculation and collection of royalties and special shares; - Law 11,097/2,005, which introduces biodiesel in the national energy matrix; - Resolutions of the CNPE.	Primarily prescriptive regulations; however, the Chief Safety Officer and Chief Conservation Officer may, subject to certain criteria, authorize the use of equipment, methods, measures, or standards in lieu of any required by regulation, or grant an exemption from any regulatory requirement in respect of equipment, methods, measures, or standards.

Country			New Zealand	UK	Australia	Angola	Brazil	Canada
Regulatory Frameworks (cont.)	Safety Information (cont.)	**Physical Objects in the Regime**	Currently 3 fixed offshore installations. 3 additional fields are planned which will be developed using various combinations of fixed platforms, FPSOs and subsea wellheads. 2 MODUs are currently offshore New Zealand and a third MODU is expected in the near future.	Offshore specific legislation applies to Installations as defined in the regulations. These include production platforms, FPSOs, MODUs and flotels. Other legislation is applied offshore on an activity basis.	Approximately 75 attended, 30 unattended and 70 pipeline facilities comprised of platforms, drilling rigs, FPSOs, FSOs, accommodation vessels, pipelay vessels, erection / dismantling / decommissioning vessels, pipelines. Entry into regime is decided on the basis of the activity performed by the facility.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	- Oil, gas, fuels and biofuels pipelines: around 16,000km; - Refineries: 14 facilities; - Onshore and offshore fields: 131 units; - Onshore and offshore drilling facilities: 65 units; - Biodiesel plants: 64 units; - Lubricants producers, collectors, re-refiners and importers: 400 companies; - Oil and derivatives import and export traders: 222 companies; - Aviation kerosene distributors and resellers: 81 companies; - Asphalt distributors: 27 companies; - Fuel, biofuel, solvent and LPG distribution bases: 319 facilities; - Fuel and biofuel transporting, distribution and retail facilities: 460 units; and - Fuel and LPG resale stores: over 72,000 units.	Drilling of exploratory and production wells is carried out using jack-up or semi-submersible drilling units, or drill ships. Numbers of MODUs vary; currently there are three. In addition, the Boards regulate construction vessels, diving vessels and seismic vessels involved with oil and gas exploration and exploitation. Offshore Nova Scotia: One operational natural gas project comprising: five (5) production platforms (2 human resourced, 3 automatic), and one 26" pipeline (approximately 225 kilometres in length) to bring gas to shore. One additional natural gas project is proposed for start of operations in 2010. This project would have one production platform, and up to 6 to 9 sub-sea tie-backs. An additional pipeline may be constructed to bring gas ashore if the above referenced pipeline is not utilised. Offshore Newfoundland and Labrador: Three oil producing projects comprising: one GBS integrated drilling (2 rigs) production accommodation installation, and two FPSOs. All oil is shipped by shuttle tankers which are outside of the Board's regulatory responsibility.
		Assurance Mechanisms	Government inspectorate. Installations are also required to have a Certificate of Fitness from a Certifying Authority, or an employer may seek approval to operate a Verification Scheme.	Government Inspectorate.	Inspections of facilities by NOPSA OHS inspectors, Validation in certain circumstances by 3rd party (employed by operator). Enforcement through notices issued by OHS inspectors.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	Government inspectorate. Audits, inspections, monitoring and fiscalisation: - Offices located in Rio de Janeiro (central office), São Paulo (2 units), Salvador (1 unit) and Brasilia (headquarter); - Agreement with the Brazilian Navy for joint operation on safety issues; - Agreement with State Fire Brigades and Finance Secretaries to support downstream fiscalisation; and - Contracts with Federal Universities and other research institutes to support fuels and biofuels quality analysis.	Certificate of Fitness from a recognized certifying authority required for installations (drilling, accommodation, diving, and production installations); Board inspection, audit and investigation programmes; Industry self inspections and audits; and Joint Occupational Health & Safety Committee requirement.

Country			New Zealand	UK	Australia	Angola	Brazil	Canada
Regulatory Frameworks (cont.)	Safety Information (cont.)	**Financial Basis**	Fully government funded. There is no cost recovery from industry.	75% cost recovery for upstream oil and gas industry by charging an hourly rate for certain work.	Full cost recovery through prescribed levies and cost based levy on major investigations.	*Not part of the International Regulators' Forum for Global Offshore Safety.*	Funds in the Union Budget, dependent of the approval of Congress; Concession Contract Signing Bonuses (paid by companies that obtain concession areas) and revenue taxes, Resources from agreements and donations; Fees and fines; Trading of geological and geophysical data from the National Database of Exploration and Production (BDEP); and Occupation/retention of areas tax.	Initially the CNSOPB budget is jointly funded by the Government of Canada and the Province of Nova Scotia. Likewise, the C-NLOPB budget is jointly funded by the Government of Canada and the Province of Newfoundland and Labrador. However, the governments have established a fee based cost recovery program to partially offset funding requirements.
		Profile Date	13 July 2010	05 February 2007	6 August 2010	*Not part of the International Regulators' Forum for Global Offshore Safety.*	26 February 2009	01 February 2007
Additional References							www.forbes.com/2010/07/01/brazil-bp-offshore-business-oxford-analytica.html www.oilandgasforum.net/management/ems/brazil/Brazil_petrobas.htm	www.cnlopb.nl.ca/pdfs/gas_prop.pdf www.cnlopb.nl.ca/pdfs/oil_prop.pdf www.cnsopb.ns.ca/directory_of_wells.php

Country		New Zealand	Denmark	Ireland	Malaysia	Norway	USA
		Oil and Gas Characteristics					
Oil and Gas Characteristics	**General**	Majority of Oil and Gas occurs in the Taranaki Basin on the North Island, but the basins Great South and New Zealand Orogenic Belt also have potential. Current offshore activity in New Zealand takes place in the Taranaki Basin at water depths of approximately 200-300m approximately 200-300m offshore. However, some exploration is currently taking place in more deepwater environments (1200-1500m), such as in the Deepwater Taranaki Basin and the Great South Basin	All fields are located offshore in the North Sea. Two Jurassic wells drilled in the North Sea in 2009, heightening expectations for the presence and possible exploitation of deeper oil and gas resources. Further detailed information in "Denmark's Oil and Gas Production and Subsoil Use (June 2010). Water depths of Denmark's currently producing fields are relatively shallow (<100m).	The most important areas for oil and gas potential in Ireland are the offshore regions north and south of the island. The Corrib field is located 80km off the Irish mainland in water depths of 355m. The Connemara field is approximately 170km offshore in water depths of 70m. If the new Atlantic Ridge reserves can be developed in a timely, cost-effective and streamlined manner, significant scope exists to transform the Irish energy sector and create a massive injection to the Irish economy. Extensive areas offshore Ireland remain unexplored or under-investigated, while there is much acreage which warrants further investigation on the basis of advances in investigative techniques or new plays.	Oil and gas reserves are found in the Sarawak and Sabah basins, both located on the north Borneo, and in the Malay Basin east of the Malay Peninsula. Malaysia has both shallow and deepwater offshore oil and gas fields at depths between approximately <200 m to 2,000m. Distances from shore range from about <50 km to <370 km from the coast.	All Oil and Gas reserves are located offshore in the North Sea and the Barents Sea. Norway has experience of drilling in a range of situations, from shallow water to over 1,000m in depth.	The significant offshore areas are located in the Beaufort Sea (Alaska) and in the Gulf of Mexico. Drilling and production in the Gulf of Mexico has over time increasingly extended further from shore into deeper waters. Production from water depths greater than 300m began in 1979. Currently, around 70% of oil production in federal waters of the Gulf of Mexico comes from wells drilled in water depths of 300m or greater. Sixty-five discoveries have been made in water depths greater than 1525m.
	Oil Production (m t, 1999)	Total: 2	Total: 14.7	---	Total: 35.7	Total: 148.7	Total: 353.8
	Gas Production (bn m3, 1999)	Total: 5.8	Total: 8.3	Total: 0.8	Total: 41.1	Total: 51.6	Total: 527.3
	Oil Reserves (m t, 2001)	Total: 14	Total: 122	---	Total: 513	Total: 1,510	Total: 3,278
	Gas Reserves (bn m3, 2001)	Total: 68	Total: 82	Total: 9	Total: 2,313	Total: 1,245	Total: 4,740
	Maturity	First Discovery: 1865; First Production Year: 1906 The first offshore Field was discovered in 1969 (the Maui Field). The first commercial production in New Zealand took place in 1906 (the Moturoa Field). Several onshore and offshore fields in the Taranaki Basin have started production since 1970	First Discovery: 1966; First Production Year: 1972. Although exploration in Denmark started in 1935, the first discovery was made in 1966 when the offshore field Kraka was found in the North Sea Graben. In the following decades several discoveries were made in the same area. First formal production took place in 1972. Several fields followed in the 1980s and 1990s.	First Discovery:1971; First Production Year: 1978. The search for oil and gas in Ireland began in the 1950s and in 1971 the offshore Kinsale Head field was found south of Cork. The offshore field Corrib north of Ireland was discovered in 1996 and the Connemara offshore field (north-west of Ireland) a year later.	First Discovery: 1910; First Production Year: 1913. In 1954, offshore exploration started and the first discovery in the Baram Delta was made in 1963. First discovery in the Malay Basin was made in 1971. Since then several offshore discoveries have been made. The date of first offshore production is not clear, however in Sarawak and Sabah there has been production at least since 1988.	First Discovery: 1969; First Production Year: 1971. Exploration in Norway started in 1965 in the North Sea. Fields Cod and Ekofisk were discovered in 1969 in the North Sea Graben. They were followed by several discoveries in the same basin during the next years. In 1982, discoveries were made in Vestford-Helgeland, where also the giant Ormen Lange Field (1997) is located. The search for oil and gas in the Barents Sea resulted in the discovery of the Askeladd Field in 1981.	First Discovery: 1859; First Production Year: 1859. Exploration succeeded in the Gulf of Mexico in 1901 (the Spindeltop Field) and in Alaska, the first oil was found in 1946 (the Umiat Field). There is no exact information about the first offshore production, but several fields in southern Alaska came on stream in 1967.

Country		New Zealand	Denmark	Ireland	Malaysia	Norway	USA
Oil and Gas Characteristics	**Maturity (Cont.)**			Ireland's first indigenous gas reserves were discovered off the southwest coast in 1971 as a by-product of a search for oil. Currently, the majority of Ireland's indigenous gas production activity takes place off of the Kinsale Head area. Smaller levels of production are sourced from the Seven Heads area, although this development has been significantly impacted by technical problems leading to a rapid decline in output. In Ireland, gas production started in 1978 (the Kinsale Head Field). Consents for the Corrib Field are currently being considered.		The first commercial oil production took place in 1971 when the Ekofisk Field was put into production. Several fields in the same area commenced production in the 1970s and 1980s. In 1993, the Draugen Field in Vestford-Helgeland came on stream and three years later the Yme, Yme Gamma, Beta East and Beta West in the Horda-Norweigian-Danish Basin went online.	
		Country Characteristics					
Country Characteristics	**Total GDP**	117,795	309,252	227,781	191,463	382,983	14,256,275
	Per Capita GDP	26,708	35,757	39,468	13,769	52,561	46,381
	Socio-Cultural Country Influencers		No specific concerns identified	No specific concerns identified	Drivers from State-owned Petronas involvement in the industry. Former UK colony provides for interesting comparability with the NZ context, given a mixture of British colonial culture and indigenous constructs.	Significant effort and available resource has been applied to the development of a good "HSE culture" within the oil and gas industry, reflective of the overall ethic of the Norwegian socio-political frameworks and assisted by the presence of the state-run Statoil.	No specific concerns identified
		Regulatory Frameworks					
Regulatory Frameworks	**Previous Incident Affecting Development?**	No	Fatality in 2009 highlighted in the June 2010 review of Danish Oil and Gas Production	None	No known incident	Not identified	Yes - Exxon Valdez (24 March 2009) and Deepwater Horizon (20 April 2010)
General Information	**Characteristics**	*General Characteristics*: -Safety case based; -Pseudo-ALARP principles ('all practicable steps') -Common Law legal system *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises) *Offshore Boundaries:* -National and regional	*General Characteristics:* -Safety case based; -ALARP principles; -Nordic Law with close ties to continental European Law and some Common Law elements, but not Common Law country; -Reviewed and revised 2005. *Market Characteristics:* -State owned operations (Danish North Sea Partner).	*General Characteristics:* -ALARP legally required under Petroleum (Exploration and Extraction) Safety Act 2010; -Common Law legal system. *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises). *Offshore Boundaries:* - National.	*General Characteristics:* -Most of the O&G operators in Malaysia will practice their own safety requirements based on international or company standards. The Department of Occupational Safety and Health (DOSH) of Malaysia has the intention to impose the requirements on safety case submission but it is yet to be practiced. However, most of the operators have started preparing themselves.	*General Characteristics:* -Safety case/acknowledgement of compliance required by regulation -Nordic Law with close ties to continental European Law and some Common Law elements, but not Common Law country *Market Characteristics:* -State owned operations (Statoil Hydro) controls over 60%	*General Characteristics:* -Prescriptive framework; -Common Law legal system. *Market Characteristics:* -Free market (no requirement/ preference for state-owned enterprises). *Offshore Boundaries:* -National and regional/state.

Country			New Zealand	Denmark	Ireland	Malaysia	Norway	USA
Regulatory Frameworks (cont.)	General Information	**Characteristics (cont.)**				In general, the Malaysian government tends to follow the UK's requirements on this aspect. Current mandatory requirements are about noise and health risk exposure; -Common Law System, but Constitution also allows for incorporation of Sharia Law. *Market Characteristics:* -State owned operations (Petronas) have exclusive rights of ownership, exploration and production. *Offshore Boundaries:* -National only.		
		Resource Use	Limited size of country and O&G sector provides limited resource for regulation, limited expertise and limited incentive to attract overseas expertise	No specific concerns identified	No specific concerns identified	The Malaysian Government has limited resources to implement the HSE legislation in Malaysia especially offshore.	Framework does not appear to involve significantly more oversight than UK and Australia.	No specific concerns identified
	Safety Information (From International Regulators' Forum for Global Offshore Safety.)	**Regulatory Authority**	Department of Labour	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	The Petroleum Safety Authority Norway (PSA)	Minerals Management Service
		Regime Scope	Health & Safety. Health and Safety regime applies onshore and offshore with specific regulations for the petroleum industry.	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	The PSA is the relevant agency responsible for safety, emergency preparedness and the working environment in the petroleum industry. The regime applies to offshore installations and operations, as well as to some associated onshore processing plants/refineries.	Federal government: the Minerals Management Service is a bureau within the US Department of the Interior.
		Administering Agency/ Arrangements	Department of Labour which is a government agency.	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	The PSA is an independent government agency, which reports to and gives advice to the Ministry of Labour and Social Inclusion.	The OCS Lands Act (OCSLA-1953) is the primary statute governing offshore oil and gas, and marine mineral activities. The Energy Policy Act of 2005 amended OCSLA to add new authority for alternative energy projects in Federal offshore waters. Regulations governing OCS oil and gas, mineral, and alternative energy activities can be found in Title 30 of the Code of Federal Regulations.
Regulatory Frameworks (cont.)	Safety Information (cont.)	**Legislation**	National. Health and Safety Act plus regulations	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	Acts, Royal Decrees and Regulations. These formulate requirements in a goal setting fashion. The requirements are extensively substantiated by referencing recognised national and international standards.	Permits for geological and geophysical operations on unleased lands. - Lease issuance, exploration and development/production plan approvals, well and structural Permits, pipeline rights-of-way, decommissioning plans.

Country	New Zealand	Denmark	Ireland	Malaysia	Norway	USA
Extent of Government Approval	Safety cases are not approved. Safety cases are reviewed but no approval is given	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	The PSA does not approve any plans or applications as such, but requires duty holders to apply for its consent to commence/carry out various petroleum industrial activities/operations (specified by requirements of the regulations).	Permits for geological and geophysical operations on unleased lands. - Lease issuance, exploration and development/production plan approvals, well and structural permits, pipeline rights-of-way, decommissioning plans.
Nature of Duties Imposed	General duty to take all practicable steps to ensure safety at work. Primarily goal setting legislation. There are also some prescriptive requirements with respect to offshore installations.	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	All companies have a general duty to ensure compliance with statutory rules and regulations as well as their own, set requirements for their activities. The supervisory activities of the PSA do not exempt the duty holders of this duty.	Hybrid regulatory approach; prescriptive regulations including 96 industry standards; performance objectives can be achieved by alternate means with MMS approval.
Physical Objects in the Regime	Currently 3 fixed offshore installations. 3 additional fields are planned which will be developed using various combinations of fixed platforms, FPSOs and subsea wellheads. 2 MODUs are currently offshore New Zealand and a third MODU is expected in the near future.	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	Offshore and onshore installations. These include production installations, FPSOs, MODUs, flotels, sub sea arrangements, pipelines and processing plants. Also, the main function of pipe laying barges, lifting barges, diving and other support vessels are regulated by the regime.	Oil and gas exploration and production in the Gulf of Mexico (4000 platforms, 120 MODUs, 33,000 miles of pipeline, subsea production systems, wide range of support equipment), offshore California (23 production platforms, 188 miles of pipeline, exploration from existing facilities, record extended reach wells), and the Beaufort Sea (production from artificial island, second production plan under review, ongoing exploration). Planning for oil and gas exploration in the Chukchi Sea is underway. - 2 offshore wind farm proposals (Nantucket Sound and offshore Long Island) are under review. - MMS assists the US Coast Guard on the review of offshore LNG gasification ports. 15 applications have been received and 2 have been approved. One facility is now operating. -MMS authorizes the use of offshore sand for beach nourishment and coastal protection projects.

Country			New Zealand	Denmark	Ireland	Malaysia	Norway	USA
Regulatory Frameworks (cont.)	Safety Information (cont.)	**Assurance Mechanisms**	Government Inspectorate.	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	Government inspectorate.	MMS inspectors and investigators are based in 7 district offices (5 in the GOM, 1 in California, 1 in Alaska), and fly offshore regularly. - Industry self-inspections and records are required by regulation. - Drills (spill response, BOPE, H2S, evacuation, etc) are required and may be initiated by MMS without notice. - Third party reviews (design, fabrication, and installation) are required for deepwater or novel structures.
		Financial Basis	75% cost recovery for upstream oil and gas industry by charging an hourly rate for certain work.	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	Government general budget allocation. Expenses related to regulatory supervision, such as working hours and travel expenses, are refunded by the duty holders. They are being paid into the Treasury. Typically, this amounts to about 40% of the total operational budget.	Approximately 50% of the funding for MMS's offshore program are from rental fees on OCS leases and cost recovery assessments. The remainder of the funding is from annual congressional appropriations.
		Profile Date	05 February 2007	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	*Not part of the International Regulators' Forum for Global Offshore Safety*	07 February 2007	13 January 2007
Additional References				www.ens.dk/EN-US/OILANDGAS/REPORTOILGAS/Sider/Forside.aspx www.ens.dk/en-US/OilAndGas/Health_and_Safety/Regulationsoffshore/Sider/Forside.aspx		http://info.ogp.org.uk/standards/09Malaysia/Presentations/13ManagingHSEStandardsInPETRONASCarigali.pdf www.oilandgasforum.net/management/regula/nationalprofiles.htm#malaysia	www.ptil.no/news/launching-theme-pamphlet-on-hse-culture-article1184-79.html www.ptil.no/getfile.php/z%20Konvertert/Products%20and%20services/Publications/Dokumenter/hesculturenу.pdf www.eubusiness.com/europe/norway	www.gomr.mms.gov/homepg/whatsnew/newsreal/2008/080505.pdf www.epa.gov/oem/docs/oil/fss/fss02/taampaper.pdf

Annex C
International Comparison

C THE INTERNATIONAL COMPARISON

C.1 CONTENTS

C.2 INTRODUCTION

This Annex presents a comparison of offshore Oil and Gas (O&G) health, safety and environment (HSE) regulatory practices in four global O&G producing nations, the United Kingdom (UK), Australia, Ireland and Norway (the 'Review Countries'). The rationale for the focus on these countries is presented in *Section C.2.1* below.

The comparison is based on a high-level review of HSE legislative frameworks currently established within the four countries. This Annex highlights the common characteristics and key points of difference between the HSE legislative frameworks, including aspects such as administrative and institutional arrangements and cost recovery mechanisms, for the four review countries.

C.2.1 The Review Countries

On the basis of the *Global Review* results (see *Annex B*), the UK; Australia; Ireland and Norway were selected for further analysis of HSE regulatory frameworks with a view to informing the international comparison.

These four countries were selected in order to provide a spread of legislative approaches, including:

- Safety Case (UK, Australia and Ireland) and non-Safety Case (Norway) based management of health and safety;
- Developed (UK, Australia and Norway) and developing (Ireland) offshore regulatory frameworks; and
- Multiple (Australia) and single (UK, Ireland and Norway) sector offshore administration.

The selection also incorporated three of the most developed and well-respected offshore regulatory regimes (UK, Australia and Norway). The inclusion of Ireland stemmed from recognition of its similarity to New Zealand in terms of offshore O&G development stage and level of technical resource available. The current revision of Ireland's offshore O&G regulatory regime was also considered to provide a valuable comparative criterion within the context of the high-level review.

Further information on the four Review Countries is provided in *Annex D* (the UK), *Annex E* (Australia), *Annex F* (Ireland) and *Annex G* (Norway).

C.3 COMMON CHARACTERISTICS AND POINTS OF DIFFERENCE

There are a number of common characteristics and points of difference in the HSE legislative frameworks, administrative and institutional arrangements, and cost recovery mechanisms in the four Review Countries.

These will be discussed by topic, encompassing:

- HSE Legislative Frameworks, focussing on:
  - Resource Allocation;
  - Health and Safety;
  - Environment; and
  - Decommissioning.
- Administrative and Institutional Arrangements, including discussion of:
  - Roles and Responsibilities;
  - Resource/Capacity; and
  - Cost Recovery Mechanisms.

C.3.1 Resource Allocation

Resource allocation relates to the mechanisms and processes through which the review countries assign licences and permits to operating companies in order to initially undertake exploration activities and the subsequent follow on towards production activities.

Table C1 highlights some general characteristics of the approaches in the four regimes.

Table C1: Comparison of Resource Allocation Approaches

	AUSTRALIA	*UK*	*NORWAY*	*IRELAND*
RESOURCE ALLOCATION LAW				
Single licence covering exploration and production	×	✓	×	✓
Prequalification of applicants	×	×	✓	×
Licence applicants required to demonstrate HSE capabilities	✓	×	✓	✓
Licence applicants required to demonstrate financial and technical capabilities	✓	✓	✓	✓
Agreed programme of work requirement for exploration licence	✓	✓	✓	✓
Acreage relinquishment requirements through exploration timeline	✓	✓	✓	✓
Limited exclusivity provisions for discoveries not currently commercially viable	✓	×	×	✓

	AUSTRALIA	*UK*	*NORWAY*	*IRELAND*
RESOURCE ALLOCATION LAW				
Requirement for an approved management plan/plan of development prior to production phase	✓	✓	✓	✓
Requirement for insurance/liability provision	✓	✓	✓	✓

C.3.1.1 Common Characteristics of Resource Allocation

The general approaches to resource allocation within the four review countries are mostly consistent. All four countries for example provide initial exploration licences or permits in which agreed programmes of work followed must be established. Acreage release at key points within the development process to ensure maximum opportunity for resource exploitation is also a common provision, as is the requirement for an approved production management plan to support production licence applications (or in the case of Ireland, within one year of licensing).

C.3.1.2 Key Differences within Resource Allocation

Some key differences between the regimes include the presence of a retention lease or lease undertaking in Australia and Ireland respectively. These leases are intended to provide operators with limited exclusivity on discoveries that are not immediately commercially viable. There is no such requirement in the UK and Norway. The selection requirements for licence applicants also vary between regimes, as do the insurance and liability regimes, as discussed below.

Licence Applicant Requirements

The requirements for licence applicants are a key point of difference between the four regulatory regimes. Whilst all four countries take into consideration aspects of the applicants' financial and technical capabilities in addition to the proposed work programme when reviewing applications, the degree to which HSE management is incorporated within the assessment varies.

Under Irish licensing terms, the Department for Communications, Energy and Natural Resources (DCENR, www.dcenr.gov.ie) is required to take into consideration the applicant's policy to HSE as well as previous performance by the applicant within relevant authorisations. Within the Australian regime, the applicant's past performance in other petroleum exploration areas in Australia, or globally (if relevant) is again considered, however there is no prescription for HSE performance. The UK context is similar to the Irish terms, with demonstration of environmental competence through review of the company's environmental management system a key component of the assessment process.

The Norwegian system differs from the UK, Irish and Australian systems as companies wishing to participate in the O&G exploration and production processes need to go through a pre-qualification process. This process is used to assess the technical capabilities of companies involved in the sector as well as assessing aspects such as the company's HSE framework (management system, policies, organisation, planning, monitoring performance, review and audit, etc). The central rationale behind the pre-assessment process is that the Norwegian government considers advanced technology and research and development to be critical to the continued development of O&G resources on the Norwegian Continental Shelf. The pre-qualification assessment process therefore also takes into account how an applicant can make a contribution in this area. The pre-qualification process includes a series of evaluation meetings and a range of validation requirements.

Insurance and Liability

Both the UK and Ireland have transferred the requirements of the European Union (EU)'s *Directive on Environmental Liability 2004/35/EC (2009)* into their legislative context. The core of the directive is the polluter pays principle and its objective is that "wherever possible, in accordance with the polluter pays principle, the operator, who has caused the environmental damage or who is faced with an imminent threat of such damage occurring, must ultimately bear the cost associated with those measures".

However, whilst in the Irish context, operators are required to take out insurance with a company approved by the Minister for Communications, Energy and Natural Resources, there is no such requirement within the UK context, although Department for Energy and Climate Change (DECC, www.decc.gov.uk) is reviewing the indemnity and insurance requirements for operating in the UK Continental Shelf[1].

Currently, within the UK, there is no fixed, defined requirement for any bonds or insurance from an environmental point of view. Instead, DECC takes a more flexible approach, giving general guidance to operators of the need to see demonstrated their financial capacity to meet its expected commitments, liabilities and obligations. The insurance requirement within the Irish framework is that it should effectually indemnify against any claim, demand or damage whatsoever in respect of its operations under the authorisation or for injury or damage to any person or property or for nuisance or in any way arising out of or attributed to the exercise or purported exercise of any of the rights and privileges conferred by the authorisation.

Under Australian Legislation (the *Offshore Petroleum and Greenhouse Gas Storage Act (2006), AUS OPGGSA)*, operators are required to maintain insurance against expenses and liabilities arising in connection with carrying out of work under the permit, lease or licence. Operators are also required to hold insurance against the cost of clean up or other remediation of oil spills.

[1] www.decc.gov.uk/en/content/cms/news/pn10_067/pn10_067.aspx

The Norwegian *Petroleum Activities Act (1998)* requires operators to have in place insurance that covers damage to facilities; pollution damage; and wreck removal and ensure that its contractors and employees are also sufficiently covered. However, the Ministry of Petroleum and Energy (MPE, www.regjeringen.no/en/dep/oed.html) may consent to the licencee using another form of security arrangement. At the end of each calendar year, the licencee is required to inform the MPE about existing insurance agreements, with an indication of the main terms. The MPE may require further insurance to be taken out.

The international legal framework for liability and compensation for damage caused by oil pollution from ships has been considerably strengthened in recent years, through the imposition of strict liability for some oil pollution, new limits for compensation and the establishment of international funds for oil spills where the costs exceed the insured amount[2].

Table C2: International Conventions Relating to Oil Spill Compensation

	UK	AUSTRALIA	IRELAND	NORWAY
International Convention on Civil Liability for Oil Pollution Damage www.imo.org/conventions/contents.asp?doc_id=660&topic_id=256#5	✓	✓	✓	✓
International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (the Fund Convention); and *International Supplementary Fund for Compensation for Oil Pollution Damage 2003 (the Supplementary Fund Convention)* www.imo.org/conventions/mainframe.asp?topic_id=256&doc_id=661	✓	✓	✓	✓
International Convention on Civil Liability for Bunker Oil Pollution Damage www.imo.org/Conventions/contents.asp?topic_id=256&doc_id=666	✓	✓	✓	✓
Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (the HNS Convention) www.imo.org/Conventions/contents.asp?topic_id=256&doc_id=665	×	×	×	×

C.3.2 Health and Safety

Key elements of the offshore O&G health and safety frameworks of the four review countries are highlighted in *Table C3*. As the Irish regime is currently going through a transition period, details regarding this regime are limited.

[2] Refer to the Bunkers Convention, the Limited Liability for Maritime Claims Protocol and the International Monetary Fund 92 Convention.

Table C3: Comparison of Health and Safety Approaches

	AUSTRALIA	*UK*	*NORWAY*	*IRELAND*
HEALTH AND SAFETY				
Safety Case Approach	✓	✓	×	✓
Onus on operator to define risks and management processes	✓	✓	✓	? Framework in development
ALARP principles	✓	✓	×	
Acceptance of Safety Case by Regulator	✓	✓	×	
Validation/ Verification	✓	✓	✓	
Requirement for workforce involvement	✓	✓	✓	
ENFORCEMENT				
Annual inspections to determine compliance with Safety Case	✓	✓	✓	? Framework in development
Investigation of incidents	✓	✓	✓	
Notification Regime	✓	✓	✓	

C.3.2.1 Common Characteristics of Health and Safety Regulation

Verification/Validation

A core construct of the health and safety regimes in the three countries with established frameworks is that of verification/validation. Verification/ validation refers to the 'checking' of key elements of the arrangements or hardware put in place by the operator to manage health and safety by either an independent third party or by the regulating authority.

Within the Australian framework, a Safety Case should not be submitted to Australia's National Offshore Petroleum Safety Authority (NOPSA, www.nopsa.gov.au) without prior discussion on the scope of validation. If validation is requested by NOPSA, then it is a key criterion on which the decision to accept the Safety Case is made. Similar verification of safety critical elements is a central requirement within the UK Safety Case regime.

The importance of verifier/validator independence and technical competence are also highlighted within all three regimes. Identification of reporting lines and ensuring that the verifier and those overseeing the elements being verified are subject to different reporting frameworks are a key element in the consideration of independence.

Within the Norwegian regulations, verification can extend to the verification of models used to calculate risk. Verification can be undertaken by the Norwegian Petroleum Safety Authority (PSA, www.ptil.no/main-page/category9.html), by an independent organisation, or in-house.

Risk-Based Operator Focus

In all three developed health and safety frameworks, there is a focus on the operator to identify and manage hazards and risks associated with offshore O&G health and safety. The statutory requirements of the Norwegian regime for example have a few regulations stating what should be accounted for by the operator, describing instead the goals that should be aimed for, not how they should be achieved. There is a focus on management systems that probe and ensure compliance as a risk-based approach.

Similarly, the UK and Australian frameworks focus on a risk assessment and hazard risk identification approach, which seeks to direct operators towards the broad safety goals to be achieved, with the operator developing the most appropriate methods of achieving them. The Irish development of a Safety Case approach to health and safety management also mirrors this trend.

Requirement for Employee Involvement

Regardless of the framework being implemented, the involvement of employees within the development of safety management mechanisms is highlighted as an integral element. Within all three developed frameworks, there is the recognition that the individuals who best understand the safety critical elements and the mechanisms through which they can be managed and mitigated are those persons who operate those facilities on a daily basis.

C.3.2.2 Key Differences between Health and Safety Regimes

Safety Case and Non-Safety Case Approach

The approach to regulating offshore O&G health and safety within the four countries studied can generally be separated into two broad classes: regimes that require submission of a Safety Case and those that do not. The former category currently comprises Australia and the UK, however, the recent modifications to the Irish regulatory regime highlighted above indicate that the Irish regime is also moving towards a Safety Case approach.

A number of factors have led to the Norwegian regulatory position on Safety Case submission, in particular recognition that:

- Proper processing of a Safety Case by the regulator is a resource intensive exercise, which PSA does not believe enhances safety.
- Any requirement for regulatory acceptance of Safety Cases places the resources of the PSA under the effective control of the operators as the PSA must allocate its resources on the basis of the anticipated or actual numbers of Safety Cases submitted for review.
- A regulator's acceptance of a Safety Case implicitly (if not in an actual legal sense) transfers parts of the operator's responsibility to ensure compliance with statutory requirements on to the regulator.

Whilst Norway to date has one of the best safety records for offshore O&G exploration and development, the absence of any formal approval of safety frameworks could be the focus of review should a major incident occur. That said, the PSA do require that operators undertake risk assessments and describe how they intend to control identified risks in the same way that they would in a Safety Case regime. Their documented assessments and calculations – or parts of them – must also be kept and handed over to the PSA should they require it.

Instead of a Safety Case approach, the PSA have systematically worked on revising its detailed regulatory specifications, introducing a new form of regulatory portfolio with just a few regulations that mainly state what should be accounted for by the duty holders. As highlighted previously, the PSA's statutory requirements today describe the goals that should be strived for, not how to achieve them. Only where the PSA find it essential will they specify detailed measures that need to be adhered to by duty holders.

To provide predictability, PSA's formal regulations are supported by guidelines that also make reference to industry standards. These standards have been developed by the O&G industry based on best practice. PSA oversee the development of these standards, and if they determine that a new industry standard is fully acceptable, recommend it as a good tool for the industry to comply with its functional-oriented requirements.

PSA's approach to enforcing the regulatory requirements allows companies to select a solution as long as they can demonstrate its compliance with the goals of the regulations. This has saved PSA a lot of resources in developing specific rules and regulations, and also provided for better predictability for all duty holders.

Whilst Safety Case acceptance is a core requirement within the majority of the regimes studied, they are not infallible, as highlighted in a recent air safety incident involving a Royal Air Force Nimrod in Afghanistan despite a Nimrod Safety Case being in place since 2005[3]. The key limitations identified within the study were that the Safety Case missed key dangers and was fatally undermined by a widespread assumption by those involved in its development that the Nimrod was 'safe anyway' (because it had successfully flown for 30 years) and the tasks of drawing up the Safety Case became essentially a paperwork and 'tick-box' exercise.

Enforcement of Health and Safety

Although there are a number of differences in the HSE regulatory frameworks and administrative approaches identified within the three developed regimes (i.e. the UK, Norway and Australia), the mechanisms employed to enforce the frameworks show some general consistency, particularly in relation to the types of enforcement mechanisms employed. Within each of the regulatory regimes, enforcement incorporates a mixture of validation/verification (see *Section C.3.2.1* above), regular inspection and notifications, although the approach and scale of inspection programmes does differ somewhat between regimes. These differences are to a certain extent influenced by practicalities such as the scale of resources available to the regulatory organisations.

Planned Inspections

Planned inspections to ensure conformity with safety management systems are embedded within all three regimes. Both the UK Health and Safety Executive (UK HSE, www.hse.gov.uk) and NOPSA in Australia have commitments in which they aim to inspect every installation (in the Australian case, every human resourced installation) at least once a year where practicable. The PSA similarly have an annual supervision plan, which describes all planned supervisory activities, including audits (systematic examinations of management and control systems) and verifications (measurements, testing and inspection).

Whilst the focus of inspections for these regulators is the safety management systems, there are also arrangements within the frameworks for environmental inspection. DECC's O&G division for example have a specific offshore environmental inspectorate unit that uses inspection to obtain evidence and assurance that operators have been and are complying with the requirements, restrictions or prohibitions imposed upon them by relevant statutory provisions. In certain cases, there is also specific provision for collaboration between safety and environmental inspection, such as within the Norwegian context.

Planned inspections are distinguished from investigation activities, which focus on identifying the contributory factors that have led to an accident.

[3] http://ircrisk.com/blognet/post/2010/06/30/The-Embattled-Safety-Case-of-the-RAF-Nimrod-XV230.aspx

Notifications

Various different forms of notification mechanisms are applied within the regimes studied to ensure compliance with management systems and permit/consent conditions. For example, the PSA enforcement notice regime[4] centres on the submission of a notification of order, which provides operators with advance written notice of the PSA's intention to issue a formal, legally binding order to rectify an identified non-conformance. The notification of order affords the operator an opportunity to respond to the non-conformance before being required to address it.

In the Australian context, improvement notices and prohibition notices can be issued to operators, respectively stipulating required improvement actions and requirements to cease certain activities entirely. The UK HSE operate a similar improvement notice/prohibition notice framework.

C.3.3 Environment

Key elements of the offshore O&G environmental frameworks of the four review countries are highlighted in *Table C4*.

Table C4: Comparison of Environmental Approaches

	AUSTRALIA	UK	NORWAY	IRELAND
ENVIRONMENT				
Specific O&G Environmental Regulation	×	×	✓	×
Requirement for Impact Assessment	✓	✓	✓	✓
Activity based requirements for EIA	×	✓	✓	✓
Public Consultation	✓	✓	✓	✓
Public Hearings on Applications	Only on Legal Issues	Only on Legal Issues	Only on Legal Issues	Only on Legal Issues

C.3.3.1 Common Characteristics of Environmental Regimes

Environmental Impact Assessment

Approaches to environmental management of offshore oil and gas activities in all four Review Countries centre on an environmental impact assessment approach, which also provides an opportunity for public participation.

[4] www.ptil.no/enforcement-notices/category158.html

Within the UK and Ireland, the foundation of the environmental impact assessment regimes is the European Union's *Directives on Environmental Impact Assessment (85/337/EEC as amended by 97/11/EC and 2003/35/EC)* which affect both countries. Impact assessment also forms a core component of the Norway's required Plans for the Development of a Petroleum Deposit (PDO) and for the Installation and Operation of Facilities for Transport and Utilisation of Petroleum (PIO). In Australia, environmental impact assessments are required under the *Environment Protection and Biodiversity Conservation Act (1999)*.

The approaches to impact assessment in each regime are generally consistent and centre on the operator first making an assessment of the impact that the proposed activity would have on the environment, summarising and presenting the conclusions of this in some form of environmental statement and then identifying mechanisms through which these impacts can be managed, mitigated, or avoided.

Public Notification

As part of the environmental impact assessment processes in all of the Review Countries, there is provision for public notification. This notification in general centres on the release to the public of information relating to the development followed by a period in which written submissions can be tabled. These submissions are then considered by the Minister or designated regulatory authority when making the decision to allow the oil and gas activity to proceed.

In each of the frameworks reviewed, the notification process provides an opportunity for other regulatory agencies, corporations, non-governmental organisations, individuals and any other interested party to comment on the proposed oil and gas activities. There is however no consultation provision beyond a written submission and the relevant Minister or designated authority within each framework has no obligation to require the operator to address each concern raised, only those that they consider to be relevant and significant.

Appealing the decision of the relevant Minister or designated authority can only be initiated in cases where the general permitting/consenting processes, including the environmental impact assessment and public consultation phases have not been adhered to.

C.3.3.2 Key Differences between Environmental Regimes

Required Activities

A key differentiator between the regulatory regimes is the rationale behind which an environmental impact assessment is deemed necessary. Within the Irish, UK and Norwegian regimes, the basis for requiring an environmental impact assessment is the nature of the activity being proposed. For example, in the UK regime, an environmental impact assessment is required to undertake field development, to construct a pipeline, or to drill a well. In contrast, the Australian regime is impacts based, requiring environmental impact assessments where actions have or are likely to have a significant impact on a matter of national environmental significance. The Australian approach provides for streamlining of consenting approaches within the offshore regime where limited environmental impacts are considered likely.

C.3.4 Decommissioning

In the regimes reviewed, decommissioning is largely considered to be a separate activity within the O&G development lifecycle, requiring similar Safety Case, environmental impact assessment and HSE management frameworks as exploration and production. Specific decommissioning plans are required to be submitted within the UK and Norwegian contexts in advance of the commencement of decommissioning activities. Within the Irish context, an application for consent to cease operations is required 12 months prior to the proposed date for cessation of activities. Reference to the OSPAR decisions related to the decommissioning of offshore installations, such as *Decision 98/3 on the Disposal of Disused Offshore Installations* and *Decision 2006/5 on a Management Regime for Offshore Cuttings Piles* was made in each of the regimes studies.

In terms of financial provisions relating to decommissioning, the clearest indicator of approach was identified within the UK regime. The UK Government has actively sought to ensure that the taxpayer is not exposed to an unacceptable risk of default in meeting the costs associated with decommissioning by developing a policy to ensure that adequate security for decommissioning costs is maintained on a field-by-field basis. Within the Irish regime, an analysis of the economic limit of the oil and gas reserve is a requirement of the application for consent to cease operations, although this is likely to be focussed on production revenues rather than contingency for decommissioning liability cover.

C.3.5 Regulatory Authorities

Various models through which HSE regulating authorities interact and administer offshore O&G health, safety and environmental risks and impacts are apparent within the four regimes studied, (see *Annexes D to G*). *Table C5* below provides a general comparison of the regulatory authorities in the review countries.

Table C5: Comparison of HSE Regulatory Authorities

	AUSTRALIA	*UK*	*NORWAY*	*IRELAND*
REGULATING AUTHORITIES				
Regulator independent of resource allocation	✓	✓	✓	✓
Separate maritime safety regulator	✓	✓	✓	✓
Separate environmental and health and safety regulator	✓	✓	✓	✓
Regulator specific to Offshore O&G	✓	× (But specific offshore division)	✓	×
Offshore safety regulator designated authority to manage workplace health and safety	×	✓	✓	×
Frameworks for regulatory collaboration	✓	✓	✓	✓
Frameworks for tripartite collaboration	Partial recognition	✓	✓	?
Full cost recovery	✓ (for NOPSA via levies)	✓ (for UK HSE , with some exclusions)	✓ (partial for PSA)	×

C.3.5.1 Common Characteristics of Administrative and Institutional Arrangements

Separation of HSE Regulation from Resource Allocation

The rationale for this separation in all cases stems from recognition that maintaining both functions within one authority can open potential conflicts of interest between management of HSE and accruing revenue from the O&G resource. In light of the Deepwater Horizon incident, this functional separation has also recently been implemented in the United States.

Separation of General Maritime HSE and O&G HSE regulation

In all cases, maritime regulators (such as the Australian Maritime Safety Authority in Australia and the Maritime and Coastguard Agency in the UK) maintain jurisdiction over HSE issues onboard vessels, including supply vessels for O&G facilities, whilst HSE regulation for O&G activities falls to a separate regulator. The separation of responsibility in all four cases arises where a vessel is no longer classified as such and instead is defined as an O&G installation or facility (see the Annexes for definitions in each regime).

Separation of Health and Safety from Environmental Regulation for Offshore O&G Activities

In all four countries studied, there is an authority (or combination of authorities) that regulates health and safety aspects of offshore O&G activities and a separate regulatory authority that considers environmental impacts. There also appears to be greater focus placed on the health and safety component of offshore O&G activities as opposed to the environmental aspects, although this could be related to the wider perception that the major environmental impacts of offshore O&G activities (i.e. large volume oil spills) generally result from a health and safety incident.

Frameworks for Regulatory Collaboration

Whilst a range of regulating authorities are present within all four regimes studied, there is a universal recognition that comprehensive regulation and management of HSE issues within the offshore O&G industry requires collaboration between these authorities. The frameworks implemented to ensure this collaboration, range from specific responsibilities for collaboration handed down from Government (as in the case of the PSA) through to Memoranda of Understanding (MoUs) between regulatory authorities (for example between NOPSA and other Designated Authorities (DA) in Australia; and the UK HSE and marine authorities in the UK).

C.3.5.2 Key Differences between Administrative and Institutional Arrangements

Key differences within the regulatory structures implemented in the four review countries, include the allocation of responsibility across regional boundaries, tripartite collaboration, funding mechanisms, and the delegation of workplace health and safety responsibilities.

Regional Boundaries

One of the key differences in the four regimes studied lies in the allocation of responsibility across regional boundaries. In general, these differences have been derived from historical and/or political developments within the review country rather than for any technical/process rationale. For example, in the Australian context, there is a separation between state and commonwealth jurisdiction at 3 nm offshore resulting in the implementation of a Joint Authority (JA)/DA regime, whilst in the UK context, the involvement of the Scottish Government Environment Directorate stems from devolutionary activities.

Neither Ireland, nor Norway have these regional boundaries, and there is also significant desire in Australia to integrate state and commonwealth regulation, as highlighted in recent reviews of the offshore regulatory regime (see *Annex E*) and recent press coverage[5].

[5] www.petroleumnews.net/storyview.asp?storyid=1138856&sectionsource=s0

In terms of environmental protection, there is also some overlap of jurisdiction within coastal reaches in Ireland (between DCENR and Department for the Environment, Heritage and Local Government (DEHLG, www.environ.ie) and Norway (between the Climate and Pollution Agency (CPA, www.klif.no/english) and the Ministry of Fisheries and Coastal Affairs (MFCA, www.regjeringen.no/en/dep/fkd.html?id=257)) to cover pollution impacts of land based activities on the marine environment and vice versa. These overlaps are overcome in Australia and the UK by the presence of a single department with environmental responsibilities (the Department for the Environment, Water, Heritage and the Arts (DEWHA, www.environment.gov.au) and the Department for the Environment, Food and Rural Affairs (DEFRA, www.defra.gov.uk) respectively).

Whilst structures such as the Australian JA/DA model and MoUs between regulatory agencies can be used to define responsibility between parties, it is clear that the removal of offshore boundaries would add clarity and consistency to the regulation of offshore O&G HSE both from an operator and a regulator perspective.

Tripartite Collaboration

The principle of tripartite cooperation within the offshore O&G context centres on the involvement of employers, employees (through unions) and government for the integrated management of, and progress in, HSE issues. The degree to which this concept is incorporated within the regulatory frameworks of the review countries varies.

Tripartite cooperation and collaboration is a core component of the Norwegian regulatory structures within and outside of the offshore context and is also realised within the UK offshore O&G industry through the Offshore Industry Advisory Committee[6]. In Australia, the *AUS OPGGSA* places a duty on management to consult with the workforce over operational health and safety issues and employee involvement is an aspect of the Australian Safety Case regime. However, whilst the NOPSA 2008-2009 Annual Report[7] lists the chairing of a tripartite working group comprising NOPSA, industry associations and relevant unions, there does not appear to be a formal commitment to continue this group.

The level to which tripartite collaboration will be integrated within the changing Irish regulatory framework is unclear at present.

[6] www.hse.gov.uk/aboutus/meetings/iacs/oiac/

[7] www.nopsa.gov.au/document/NOPSA_Annual_Report_2008_09.pdf

Resourcing

Table C6 below summarises information obtained through the NZ DoL's benchmarking of regulating authorities

Table C6: Comparison of HSE Regulatory Authorities

	AUSTRALIA	*UK*	*NORWAY*	*IRELAND*
Size of Organisation (No. of People)	41	180	160 man-years	No Information Available
Number of Offshore Safety Inspectors	26	120	60 to 70	
Number of Installations	70 fixed plus 12 mobile	230	75 fixed plus various mobile units	
Installations per Inspector	About 3	Almost 2	About 1	

Delegation of Workplace Health and Safety

Within the UK and Norwegian regimes, the regulator responsible for offshore health and safety is also responsible for workplace health and safety on offshore installations. By comparison, within the Irish regime, it is clearly stated that the Irish HSA remains the national body in Ireland responsible for securing health and safety at work. Similarly, in Australia, NOPSA enters into MoUs with relevant state workplace health and safety regulators such as WorkSafe Victoria (www.worksafe.vic.gov.au).

This delegation of responsibility is to some extent facilitated by the parent bodies of the PSA in Norway and the UK HSE OSD (the Ministry of Labour and the UK HSE respectively), who both have oversight of workplace HSE more generally.

Funding Mechanisms

NOPSA in Australia operates a cost recovery mechanism that is accomplished through a system of levies placed on operators[8]. The scale of the levies is reviewed every three years in line with Commonwealth cost recovery guidelines and is set at levels intended to recover all costs associated with NOPSA's activities. The UK HSE OSD similarly recovers all costs associated with their activities, but does this on an 'actual time spent' basis, charging an hourly rate for its staff[9]. Regulatory financing in Ireland currently comes directly from the Government although there is currently some cost recovery in terms of the licensing fees. Within the Norwegian context, there is a Government budget allocation for the PSA, although expenses related to regulatory supervision, such as working hours and travel expenses, are refunded by the duty holders. They are paid into the Treasury and typically, amounts to about 40% of the total operational budget.

[8] www.nopsa.gov.au/cost_recovery.asp

[9] www.hse.gov.uk/charging/offshore/chgoffsh.htm

Annex D
United Kingdom

D UNITED KINGDOM

D.1 CONTENTS

D.2 COUNTRY OVERVIEW

The United Kingdom (UK) is the largest producer of petroleum in the European Union (EU) and second largest producer of natural gas behind the Netherlands, although Norway's production of both petroleum and natural gas is the highest in Europe[1].

The UK Continental Shelf (UKCS), located in the North Sea off the eastern coast of the UK, contains the bulk of the country's oil reserves, although there are several discoveries in the Irish Sea. Most of the UK crude oil grades are light and sweet (30° to 40° American Petroleum Institute (API) Specific Gravity), which generally makes them attractive to foreign buyers. The UK has been a net exporter of crude oil since 1981, however production from UK oil and natural gas fields peaked in the late 1990s and has declined steadily over the past several years, as the discovery of new reserves has not kept pace with the maturation of existing fields. *Table D1* summarises the oil and gas (O&G) reserve and production data for the UK.

Table D1: UK Oil and Gas Reserve and Production Data[2]

	UNITS	END 1989	END 1999	END 2008	END 2009
PROVED OIL RESERVES	TOTAL (BILLION BARRELS)	3.8	5.0	3.1	3.1
	% OF WORLD RESERVES				0.2
PROVED NATURAL GAS RESERVES	TOTAL (TRILLION m^3)	0.56	1.27	0.29	0.29
	% OF WORLD RESERVES	-	-	-	0.2
		2006	**2007**	**2008**	**2009**
OIL PRODUCTION	TOTAL (THOUSAND BARRELS)	1636	1638	1526	1448
	% OF WORLD TOTAL				1.8
NATURAL GAS PRODUCTION	TOTAL (BILLION m^3)	80.0	72.1	69.6	59.6
	% OF WORLD TOTAL	-	-	-	2.0
REFINERY CAPACITY	TOTAL (THOUSAND BARRELS/DAY)	1836	1819	1827	1713
	% OF WORLD TOTAL	-	-	-	1.9

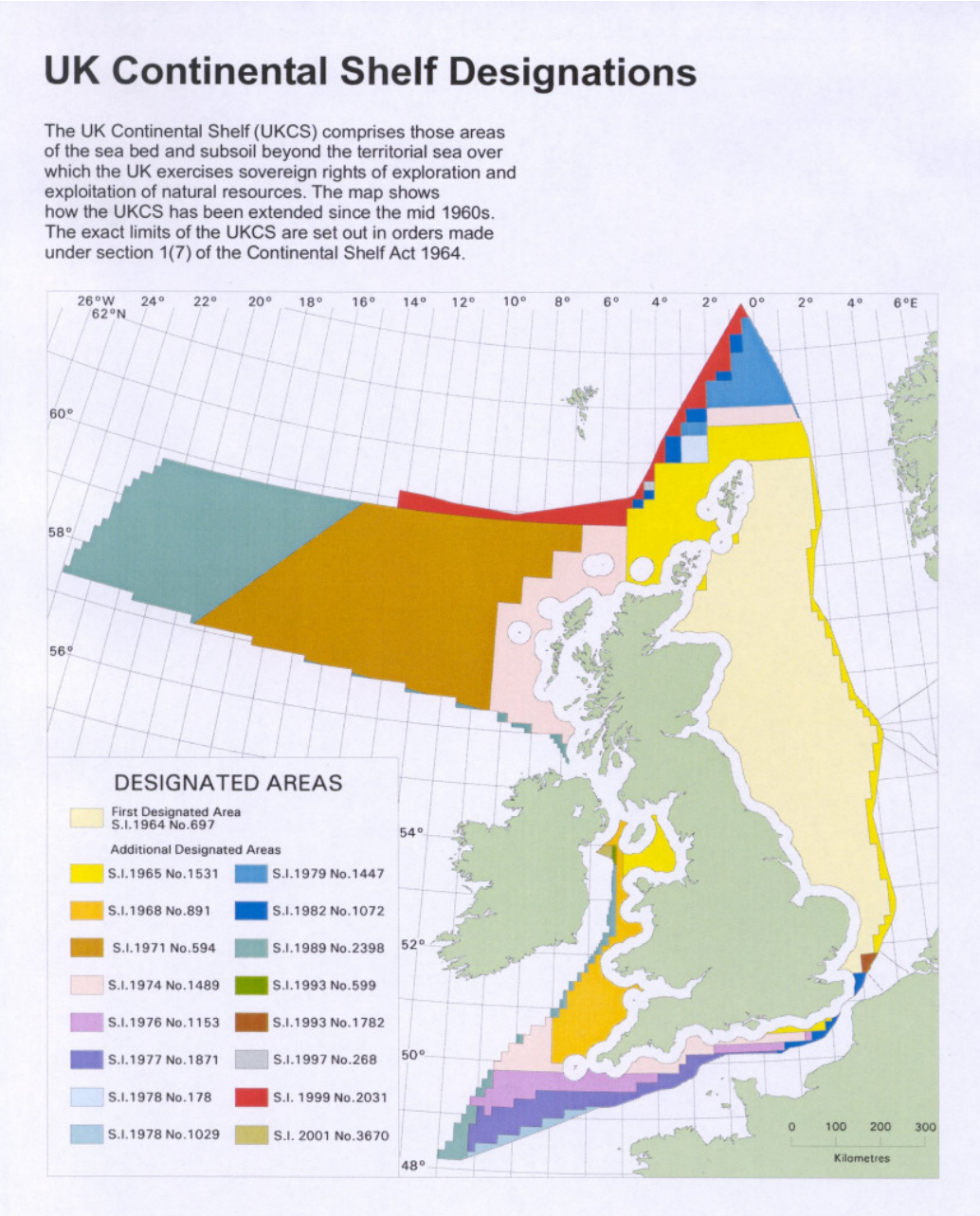
D.3 OVERVIEW OF LEGISLATIVE FRAMEWORK

D.3.1 Administrative/Regulatory Authorities

The Department of Energy and Climate Change (DECC, www.decc.gov.uk) is responsible for the licensing, exploration and regulation of O&G developments on the UKCS (see *Figure D1*).

[1] BP Statistic Review of World Energy 2010 www.bp.com/productlanding.do?categoryId=6929&contentId=7044622
[2] BP Statistic Review of World Energy 2010 www.bp.com/productlanding.do?categoryId=6929&contentId=7044622

Figure D1: UK Continental Shelf [3]



The UK's Health and Safety Executive (UK HSE, www.hse.gov.uk) has overall responsibility for enforcing health and safety legislation in the UK. UK HSE's Offshore Division (OSD, www.hse.gov.uk/offshore) is responsible for regulating the risks to health and safety arising from work activity in the offshore O&G industry on the UKCS.

Maritime safety is managed by the Maritime and Coastguard Agency (MCA, www.mcga.gov.uk), who are responsible for implementing the UK Government's maritime safety policy. This includes checking ships meet UK and international safety rules and co-ordinating search and rescue at sea through Her Majesty's Coastguard.

[3] www.og.decc.gov.uk/information/bb_updates/maps/Designations.jpg

A Memorandum of Understanding (MoU) exists between the UK HSE, the MCA and the Marine Accident Investigation Branch (MAIB, www.maib.gov.uk) who are responsible for investigating all types of marine accident to, or on board, UK vessels worldwide and other vessels within UK territorial waters. The MoU puts in place the frameworks for the three organisations to "cooperate effectively where their duties for health and safety enforcement and accident investigation overlap at the water margin, offshore and on inland waterways"[4].

In considering the environmental impacts of offshore O&G activities, DECC are supported by the Department of Environment Food and Rural Affairs (DEFRA, www.defra.gov.uk) (in England and Wales), and the Scottish Government Environment Directorate (SGED, www.scotland.gov.uk/Topics/Environment) in Scotland. Supporting agencies, such as the Joint Nature Conservation Committee (JNCC, www.jncc.gov.uk) also play a key role in the provision of offshore environmental advice to DECC.

D.3.1.1 Department of Energy and Climate Change (DECC)

DECC's O&G responsibilities are undertaken by three units within the Department: Licensing, Exploration and Development; Environment and Decommissioning and Information Technology Support[5].

The Licensing, Exploration and Development branch is the focal point for new entrants to the UKCS and is responsible for exploration and development related activities such as the identification of investment opportunities, license administration (including technical evaluation of development plans), and approval of new operators.

The Environment and Decommissioning branch comprises three sections that cover: Environmental Policy and Regulation; Operations and Enforcement; and Decommissioning. The Environment and Decommissioning branch has general responsibility for dealing with pollution prevention and detection and emergency response in the event of a potential offshore pollution incident. The majority of policy activity is conducted under international agreements arising from the *Convention for the Protection of the Marine Environment of the north east Atlantic* (*the OSPAR Convention*) and the EU. The Environment and Decommissioning branch is also responsible for the development, implementation and enforcement of environmental legislation such that UK O&G activity is able to proceed cost effectively and in an environmentally sound manner in the context of sustainability.

D.3.1.2 Department for Environment Food and Rural Affairs (DEFRA)

DEFRA (for England and Wales) has responsibility for implementation of Government programmes for the protection of the environment. In Scotland, this role is undertaken by the SGED. This includes drafting and implementation of statutory instruments and the production of Guidance Notes and Codes of Practice.

[4] www.hse.gov.uk/aboutus/howwework/framework/mou/mcamou.pdf
[5] www.og.decc.gov.uk

DEFRA and its advisory agencies (see below) provide advice to other Government Departments (including DECC) and Agencies (including the Environment Agency and Scottish Environmental Protection Agency) on a range of offshore subjects, such as: the interaction between fisheries and offshore operations; rig location; seismic surveys; pipeline laying and seabed mining; dumping at sea (including decommissioning); marine pollution (including dispersant and chemical use); and pipeline discharges.

In practice, many advisory responsibilities to the offshore O&G industry are delegated to the Centre for Environment, Fisheries and Aquaculture Science (CEFAS) (in England and Wales) and Marine Scotland (in Scotland) who act in an advisory role to DEFRA, and are also statutory stakeholders, meaning they must be consulted on Environmental Statements (ES) and advise DEFRA. CEFAS also has a particular role in the licensing of chemicals for offshore use.

The main operational functions of DEFRA/CEFAS/Marine Scotland directly affecting environmental controls of offshore activity include:

- Offshore drilling, production and utility chemicals including: testing and classification of chemicals, consultation over large-scale use, advice to DECC on the Offshore Chemical Notification Scheme;
- Licensing, testing and permission to use dispersants;
- Consultee and advisor to DECC on development of oil spill plans in order to discharge their responsibility for marine environmental protection;
- Consultee and advisor to DECC on submitted ES; and
- Licensing of dumping at sea including pipelines and decommissioning.

D.3.1.3 Health and Safety Executive Offshore Division (OSD)

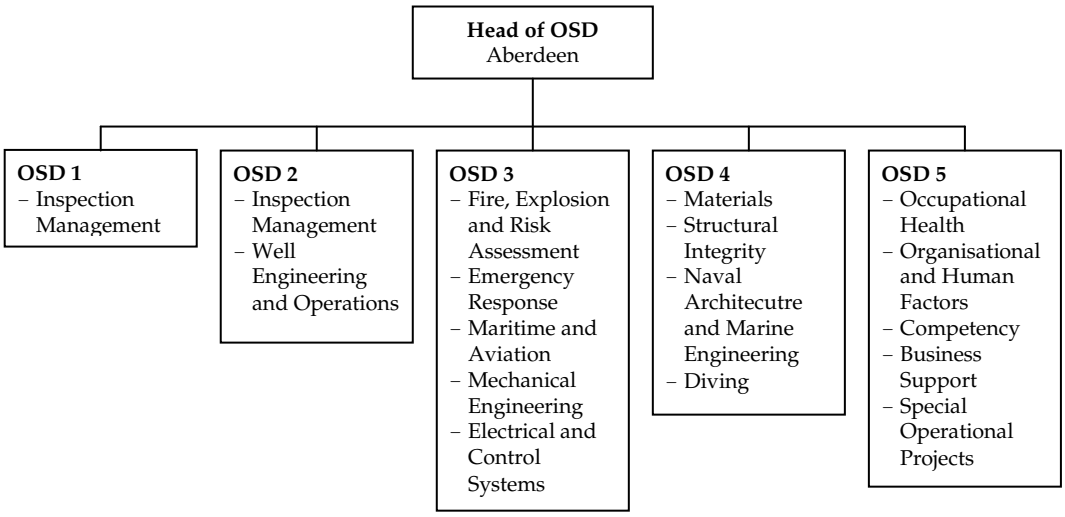
The OSD is responsible for regulating the risks to health and safety arising from work activity in the offshore O&G industry on the UKCS.

To ensure workplace risks are properly controlled offshore, the OSD:

- Inspect;
- Investigate accidents and incidents;
- Assess Safety Cases;
- Enforce;
- Advise, guide and inform;
- Research and develop;
- Influence technical standards; and
- Develop policy.

The OSD comprises five divisions, each responsible for various aspects of O&G health and safety (see *Figure D2*).

Figure D2: Structure of OSD



Within the MoU between MCA, UK HSE and MAIB, the UK HSE has the power of entry to all work places (including docks and offshore installations) to inspect health and safety conditions and also to investigate accidents to dock workers or other individuals working in a port or while loading or unloading a ship. They can similarly investigate accidents occurring to a ship's crew. They may issue improvement or prohibition notices, or can prosecute those responsible for offences under the *Health and Safety at Work Act (1974) (UK HSWA)* and the relevant statutory provisions. Offshore, UK HSE inspectors also have powers to require transport to, and accommodation on, offshore installations.

D.3.1.4 Maritime and Coastguard Agency (MCA)

The MCA was established on 1 April 1998 as an Executive Agency created by the merger of the Coastguard Agency and the Marine Safety Agency. Its main functions are to develop, promote and enforce high standards of marine safety, to minimise loss of life amongst seafarers and coastal users, and to minimise pollution from ships of the sea and coastline.

The MCA's statutory powers and responsibilities derive primarily from the *Coastguard Act 1925*, the *Merchant Shipping Act (1995)(UK MSA)* and the *Merchant Shipping and Maritime Security Act (1997)* and associated secondary legislation. MCA is an agency of the Department for Transport (DfT).

MCA's interest is in the seaworthiness of the vessel as well as the safety and competence of the crew. MCA surveyors may detain unsafe ships and departmental inspectors investigate incidents with a view to prosecution. Under the *Merchant Shipping (Port State Control) Regulations (1995)* as amended, MCA's powers of inspection are also extended to:

- Any vessel (including non-UK vessels) visiting an offshore installation;
- Any vessel (including non-UK vessels) anchored off such an installation in UK or designated waters; and
- A mobile offshore installation[6] whilst on station or stacked (in Merchant Shipping law, a stacked installation is regarded as a ship).

The MCA has regulatory authority over those aspects of the offshore O&G industry that fall under the *MARPOL Convention*, including machinery space discharge, sewage discharges and garbage at sea.

The MCA is also the UK national competent authority for oil spill response and planning, although it has granted to DECC, on an agency basis, its oil spill planning regulatory function for offshore O&G installations. MCA have retained this role for all ships (including tankers), ports, harbours and coastal terminals. The Secretary of States Representative (representing the DfT and DECC) has the power of intervention for large scale oil spill incidents from ships and offshore installations[7].

D.3.1.5 Marine Accident Investigation Branch (MAIB)

The MAIB was set up in 1989 with responsibility for investigating accidents to determine their circumstances and causes with the sole objective of avoiding similar accidents in the future. It is not the purpose of an MAIB investigation to determine liability nor, except in so far as is necessary to achieve its objective, to apportion blame. MAIB is in the International Networks and Environment Group of the DfT for administrative purposes.

D.3.1.6 Joint Nature Conservation Committee (JNCC)

The JNCC is the UK's government body with responsibility for promoting nature conservation within the UK and internationally. The JNCC is the co-ordinating body for the National Nature Conservation Councils (Countryside Council for Wales, Natural England and Scottish Natural Heritage).

[6] Defined in the Regulations as: *a fixed or floating platform operating in any area for the time being designated under section 1(7) of the Continental Shelf Act 1964.*

[7] www.mcga.gov.uk/c4mca/mcga-environmental/mcga-dops_cp_sosrep_role.htm

The JNCC is the main government and oil industry advisor on offshore sensitivities with respect to seabirds and cetaceans. Their key functions include:

- Advice to government on licensing areas;
- Government consultee on a wide range of issues including development plans, pipeline authorisations, decommissioning plans and environmental impact assessments;
- Consultee for the O&G industry on offshore acreage environmental sensitivity, seismic/drilling/production plans, oil spill plans, environmental assessments, decommissioning plans;
- Research into offshore seabirds and cetaceans; and
- Advice on best practice in offshore seismic operations (including requirements for Marine Mammal Observers (MMOs)).

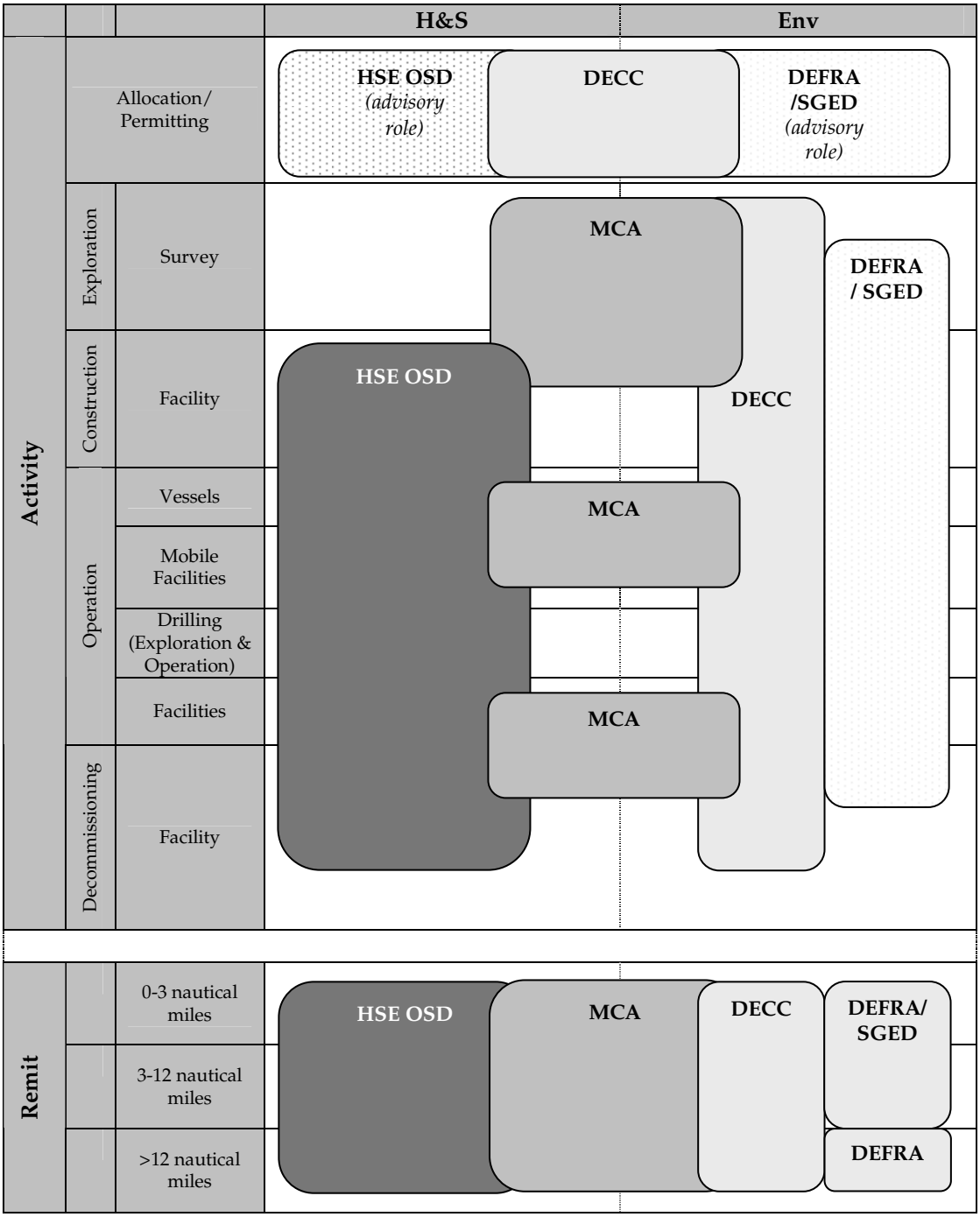
D.3.1.7 Tripartite Co-operation

The UK also has an Offshore Industry Advisory Committee (OIAC)[8] that operates as a tripartite committee. OIAC includes members representing employers, employees, unions, trade associations and other government departments. Although, no longer an official Health and Safety Commission (HSC) advisory committee it continues to provide an important forum for the discussion of health and safety matters in the offshore industry.

In addition, PILOT (www.pilottaskforce.co.uk) is a joint programme involving the Government and the UK's O&G Industry Operators, Contractors, Suppliers, Trade Unions and other Small and Medium Sized Enterprises (SMEs) aiming to secure the long-term future of the industry in the UK. It is the successor to the O&G Industry Task Force which was established in 1998 in recognition of the dramatic fall in oil prices, the maturing of the UKCS, and the urgent need to reduce the cost base of activity in the basin.

[8] www.hse.gov.uk/aboutus/meetings/iacs/oiac/

Table D2: Regulatory Authorities and Responsibilities



Note: This table is intended to provide an indicative overview of the relative responsibilities and remit of the authorities involved in offshore O&G HSE regulation only. The activity boundaries are based on the O&G exploration and production process rather than any regulatory requirement on the part of the authorities.

D.3.2 General Approach

D.3.2.1 Health and Safety

The current UK approach to offshore O&G Health and Safety regulation centres on regulations introduced in response to the Cullen Report on the Piper Alpha disaster[9]. The HSC decided to bring existing offshore safety legislation within the framework of the *UK HSWA*. This was achieved by the *Offshore Safety Act (1992)*, which extended the scope of the *UK HSWA* to cover offshore installations in UK territorial waters. The primary aim was to reduce risks to the health and safety of the work force employed on offshore installations or in connected activities.

These changes heralded a fundamental shift of approach to regulating safety on the UKCS based on the view that those who create and manage major accident hazards must be responsible for controlling the risks, not the regulator. The focus of UK legislation turned to a Safety Case approach, with 'goal setting' rather than prescriptive legislation. The legislation sets out the objectives that must be achieved, allowing for some flexibility in the choice of methods or equipment that may be used by companies to meet their statutory obligations. The onus is on the duty holder to demonstrate 'as low as reasonably practicable' (ALARP) principles stemming from the *UK HSWA*, risk awareness and control, effective management systems and employee engagements.

The concept of ALARP places a legal duty on the duty holder to demonstrate that the cost (time, effort, money) of further reduction is grossly disproportionate to the benefit gained. ALARP arguments can be based around the use of industry-accepted standards as well as cost benefit of quantified risks.

A major change in the UK also pre- and post-Safety Case was the role of regulator. Prior to Safety Cases being introduced, the Department of Energy was responsible for both revenue collection and enforcement of safety. Post Piper Alpha, the UK HSE took over responsibility for enforcing safety regulation offshore.

D.3.2.2 Environment

The *Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations (1999)* as amended in 2007 (*UK OPPP(AEE)R)* form the cornerstone of the environmental regulation of the UK's offshore O&G industry as they implement the EU's *Directives on Environmental Impact Assessment (85/337/EEC as amended by 97/11/EC and 2003/35/EC)*.

Under these Directives and their associated regulations, environmental impact assessments (EIA) must be undertaken for certain types of offshore O&G activities throughout the EU.

[9] The Public Inquiry into the Piper Alpha Disaster, Cullen, The Honourable Lord, HM Stationery Office, 1990.

The relevant activities for *UK OPPP(AEE)R* are the granting and renewal of production consents for field developments, the drilling of wells (deep boring) and the construction and installation of production facilities and pipelines in the UK territorial sea and on the UKCS. Seismic surveys are not covered by the *UK OPP(AEE)R* but are regulated under the *Offshore Petroleum Activities (Conservation of Habitats) Regulations (2001)* as amended in 2007 *(UK OPPP(CoH)R)*.

The purpose of the *UK OPPP(AEE)R* is to require the Secretary of State for Energy and Climate Change to take into consideration environmental information before making decisions on whether or not to consent to certain offshore activities. The *UK OPPP(AEE)R* require that any operator who wishes to carry out those activities must first make an assessment of the impact that the activity would have on the environment (i.e. an EIA and then summarise and present the conclusions of this in an ES). The operator must then submit the ES to DECC in support of the application for consent under the *Petroleum Act (1998) (UK PA)* for the offshore activity. This consent will not be given until the Secretary of State is satisfied with the information provided and that there will be no significant impact on the environment.

D.3.3 Key Instruments

D.3.3.1 Regulations and Guidelines

Oversight of the UK's O&G industry in relation to aspects such as the vesting of ownership of O&G within Great Britain and its territorial sea in the Crown, the granting of oil licences and rules relating to submarine pipelines and the decommissioning of offshore installations is provided within the *UK PA*.

The key regulatory instrument relating to offshore health and safety is the *UK HSWA*. The *Health and Safety at Work etc Act (1974) (Application outside Great Britain) Order (2001) (UK HSWAO)* applies the *UK HSWA* to:

- Any offshore installation (see below) and any activity on it;
- Any activity, including diving operations, in connection with an offshore installation, or any activity which is immediately preparatory thereto, whether carried on from the installation itself, on or from a vessel or in any other manner, other than transporting, towing or navigating the installation and activities on or from standby vessels;
- Diving operations involving survey and seabed preparation for an offshore installation;
- Wells and any connected activity, including diving operations and keeping a vessel on station for well service or workover, but not navigational activities;
- Any pipeline and any pipeline works (as defined in the *UK HSWAO*), including diving operations;

- The following activities in connection with pipeline works:
  - The loading, unloading, fuelling or provisioning of a vessel engaged in pipeline works; and
  - The loading, unloading, fuelling, repair and maintenance of an aircraft on a vessel engaged in pipeline works; and
- Certain other activities within the territorial sea, including the construction, maintenance etc. of energy structures - fixed or floating structures, other than a vessel, for producing energy from wind or water.

The *UK HSWA* applies irrespective of the nationality of the structures or vessels involved. The *UK HSWA* also applies to these structures and activities within the British baseline and to a number of additional activities within the territorial sea only, including diving operations.

The UK offshore Safety Case regime is underpinned by more detailed regulations including:

- *The Offshore Installations (Safety Representatives and Safety Committees) Regulations (1989) (UK SRSC);*
- *The Offshore Installations and Pipelines Works (Management and Administration) Regulations (1995);*
- *The Offshore Installations (Prevention of Fire and Explosion, and Emergency Response) Regulations (1995) (UK PFEER);*
- *The Offshore Installations and Wells (Design and Construction, etc.) Regulations (1996) (UK DCR); and*
- *The Offshore Installations (Safety Case) Regulations (2005) (UK SCR).*

Other regulatory instruments relevant to O&G health and safety include:

- *The Electricity at Work Regulations (1989);*
- *The Pipelines Safety Regulations (1996) (UK PSR);*
- *The Diving at Work Regulations (1997);*
- *The Lifting Operations and Lifting Equipment Regulations (1998);*
- *The Provision and Use of Work Equipment Regulations (1998);*
- *The Ionizing Radiations Regulations (1999);*
- *The Control of Substances Hazardous to Health Regulations (2002);*
- *The Control of Noise at Work Regulations (2005); and*
- *The Control of Asbestos Regulations (2006).*

In addition to the *UK OPPP(AEE)R* and the *UK OPPP(CoH)R*, regulatory instruments relevant to the management of environmental impacts of offshore O&G exploration and production include:

- *Coast Protection Act (1949) (UK CPA);*
- *Food and Environmental Protection Act (1985), Part II Deposits in the Sea;*

- *The Merchant Shipping (Oil Pollution Preparedness, Response Co-operation Convention) Regulations (1998) (UK OPPRCC);*
- *The Offshore Installations (Emergency Pollution Control) Regulations (2002) (UK EPC);*
- *The Offshore Chemicals Regulations (2002);*
- *The European Union Emissions Trading Scheme Regulations (2003);*
- *The Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations (2005) (UK OPPC);*
- *The Offshore Combustion Installations (Prevention and Control of Pollution) Regulations (2007);*
- *The REACH Enforcement Regulations (2008); and*
- *The Environmental Protection (Controls on Ozone-Depleting Substances) (Amendment) Regulations (2008).*

Definition of Vessels and Facilities/Installations

The *UK HSWAO* defines an offshore installation as six fixed structures in place at the enactment of the *UK HSWAO* and:

> *…a structure which is, or is to be, or has been, used while standing or stationed in water, or on the foreshore or other land intermittently covered with water -*
>
> *(i) for the exploitation, or exploration with a view to exploitation, of mineral resources by means of a well;*
> *(ii) for the storage of gas in or under the shore or bed of any water or the recovery of gas so stored;*
> *(iii) for the conveyance of things by means of a pipe; or*
> *(iv) mainly for the provision of accommodation for persons who work on or from a structure falling within any of the provisions of this sub-paragraph,*
>
> *together with any supplementary unit which is ordinarily connected to it, and all the connections.* [*UK HSWAO*, article 4.2(b)]

Excluded from this definition are:

> *(a) a structure which is connected with dry land by a permanent structure providing access at all times and for all purposes;*
> *(b) a well;*
> *(c) a structure which has ceased to be used for any of the purposes specified in paragraph (2)(b) of this article and has since been used for a purpose not so specified;*
> *(d) a mobile structure which has been taken out of use and is not yet being moved with a view to its being used for any of the purposes specified in paragraph (2)(b) of this article; and*
> *(e) any part of a pipeline.* [*UK HSWAO*, article 4.3]

D.3.3.2 UK Safety Case Regime (SCR)

Under the requirements of the *UK SCR*, operators (duty holders) of every fixed and mobile installation operating in UK waters are required to prepare, submit to the UK HSE for review, and ensure operation in accordance with a Safety Case. Safety Cases are subject to formal review and acceptance by the regulatory authority, the UK HSE.

The *UK SCR* were revised in 2005 in light of 13 years of experience. The objective of the revisions was to improve the effectiveness of the regulations whilst at the same time reducing the burden of three yearly resubmissions of a full Safety Case to the UK HSE.

The *UK SCR* requires operators to give full details of the arrangements for managing health and safety and controlling major accident hazards on the installation, and includes provisions (among other things) that:

- All hazards with the potential to cause a major accident have been identified;
- The management system is adequate to ensure compliance with statutory health and safety requirements and for management of arrangements with contractors and sub-contractors;
- Adequate arrangements have been made for audit and for audit reporting;
- All major accident risks have been evaluated (see *D.7* below); and
- Measures have been, or will be, taken to control the major accident risks to ALARP and to ensure compliance with the relevant statutory provisions (i.e. *UK PFEER* and *UK DCR*).

The Safety Case must demonstrate that the company has safety management systems in place, has identified risks and reduced them to ALARP, has introduced management controls, provided a temporary safe refuge on the installations and has made provision for safe evacuations and rescue. The duty holder must review and renew the Safety Case throughout the lifecycle of an installation.

Safety Case Guidance

A range of guidance documents[10] are provided by the UK HSE to facilitate operators' production of Safety Cases and overarching systems for the management of offshore health and safety. These documents include general principles through which the UK HSE seek demonstration of ALARP[11], through to detailing of industry standards through which specific aspects of health and safety can be met, for example isolation of potable water systems on installations[12] and provision of active fire protection on offshore installations[13].

[10] www.hse.gov.uk/offshore/infosheets/is_index.htm
[11] www.hse.gov.uk/offshore/is2-2006.pdf
[12] www.hse.gov.uk/offshore/infosheets/is4-2010.htm
[13] www.hse.gov.uk/offshore/infosheets/is5-2009.htm

Safety Case Assessment

The principles against which the UK HSE assesses Safety Cases is set out in the OSD's *Assessment Principles for Offshore Safety Cases* (UK APOSC[14]). These principles are outlined in *Table C2* below and incorporate changes to the approach that resulted from the 2005 revisions to the *UK SCR*, which include:

- The replacement of the requirement for a design Safety Case with the new requirement for an (earlier) design notification. Design notifications will be considered by the UK HSE, but not formally assessed; the UK HSE acceptance is not required;
- The requirement for combined operations Safety Cases has been replaced as the *UK SCR* requires the operational Safety Case for each installation to include generic information and safety analysis about the combined operations with which it will be involved. Advance notification of more detailed information is required for each combined operation;
- Decommissioning operations and final dismantlement are now considered as stages in the evolution of an operational Safety Case;
- Demonstration that risks to people from major accident hazards have been reduced to the lowest level that is reasonably practicable is no longer required. This has been replaced by a requirement to demonstrate compliance with the relevant statutory provisions for the control of all major accident risks. The term 'relevant statutory provisions' is defined in the *UK HSWA* Section 53 as meaning the provisions of *UK HSWA*, any health and safety regulations and existing statutory provisions;
- The specific requirements for quantitative risk assessment (QRA) have been removed; and
- There is a duty on the installation operator or owner to consult safety representatives on the preparation, review or revision of Safety Cases. The Safety Case should show how this was done.

The amendments noted in the fourth and fifth bullet points above continue to require the need for application of appropriate risk assessment techniques and risk reduction measures. The risk assessment techniques may well include QRA in appropriate circumstances; however, UK APOSC now reinforces the need for a judgement as to what is needed in terms of risk assessment.

[14] www.hse.gov.uk/offshore/aposc190306.pdf

Table D3: UK HSE Principles for Assessment of Safety Cases

Principle	Description
Principle 1: Factual Information	The factual information should provide sufficient detail to support the arguments made in the case. The factual information which should be provided for all Safety Cases includes information about the installation, the plant and systems, the location and external environment and the activities to be carried out on or in connection with the installation. These particulars are linked to hazards with the potential to cause a major accident.
Principle 2: Management of Health and Safety	The Safety Case should demonstrate that the management system is adequate to ensure compliance with the relevant statutory provisions and that there are satisfactory arrangements for the management of contractors and sub-contractors. The required demonstration of the adequacy of the management systems is not restricted to the management of major accident hazards. A management system should contain the following elements: – Policy setting and corporate acceptance of responsibility; – Organisation: structure, accountability and safety culture, involvement of the workforce and risk assessment systems; – Planning and standards: including standards and procedures for controlling risks, including workload and working hours; permits to work, training and competence, planning and control for emergencies; – Performance measurement: recording and investigation of incidents; and – Audit and review: review and application of lessons learned.
Principle 3: The management system should show an appropriate level of control during each phase of the installation life system, including design, construction, commissioning, operation, decommissioning and dismantlement.	Control of Major Accident Hazards – a key part of the Safety Case is a demonstration that all hazards with the potential to cause a major accident have been identified, the risk evaluated and that measures have been or will be taken to control those risks to ensure that the relevant statutory provisions will be complied with. An acceptable Safety Case will demonstrate that a structured approach has been taken which: – Identifies all major accident hazards; – Evaluates the risks from these hazards; – Describes how an appropriate approach to risk assessment has been adopted, and how uncertainties in risk assessment have been taken into account; – Identifies and considers a range of potential measures for further risk reduction; – Presents systematic analysis of each of the identified measures and views formed on the safety benefit associated with each of them; – Presents an evaluation of the reasonable practicability of the identified measures; – Explains the implementation (or planned implementation) of the identified reasonably practicable measures; – Describes how major accident hazards are managed; – Describes the emergency response arrangements; and – Describes how the safety representatives were consulted on the preparation, review or revision of the Safety Case.
Principle 4: A systematic process should be used to identify all reasonably foreseeable major accident hazards that apply to the installation together with potential initiating events of sequences of events.	
Principle 5: The methodology and evaluation criteria adopted for major accident risk assessment should be clear. The Safety Case should summarise the duty holders approach to risk assessment including the methods and criteria used to demonstrate that risks from major accidents are controlled to ensure compliance with the relevant statutory provisions. Typically it describes the risk assessment methodology and the risk evaluation criteria.	

Principle	Description
Principle 6: Any criteria to eliminate the less significant risks from detailed consideration in the major accident risk evaluation should be explained.	
Principle 7: The assessment should take account of people exposed to exceptional risks – i.e. type of work carried out, location, ability to reach temporary refuge.	
Principle 8: The major accident risk evaluation should take account of human factors.	The risk evaluation should consider people as both a key element in safety operation and as a potential cause of major accidents and their escalation. Safety critical tasks should be analysed to demonstrate that task performance could be delivered to the specified performance standard when required. Human Performance factors should be systematically evaluated.
Principle 9: Conclusions reached in risk assessment processes should take uncertainty into account.	
Principle 10: The identification of risk reduction measures should be systematic and take into account new knowledge.	
Principle 11: The reasoning behind the choice of risk reduction measures to be implemented should be described. Decisions on implementation should take reasonable practicability into account.	
Principle 12: Risk reduction measures identified, as part of the risk assessment, should be implemented if they are reasonably practicable.	
Principle 13: In deciding what is reasonably practicable the Safety Case should show how relevant good practise and judgement based on sound engineering, management and human factors principles have been taken into account.	
Principle 14: Where remedial measures are proposed to reduce risk, the timescale for implementing them should take account of the extent of such risks and any practical issues involved.	
Principle 15: Measures taken to manage major accident hazards should be described.	– Elimination and minimisation of hazards by design (inherently safer design); – Prevention (reduction of likelihood); – Detection (transmission of information to control point); – Control (limitation of scale, intensity and duration); and – Mitigation of consequences (protection from effects).
Principle 16 : The Safety Case should explain how inherently safety design concepts have been applied in the design decisions taken.	
Principle 17: The measures for preventing major accident hazards should take account of the various activities undertaken during the installations current phase of operation.	
Principle18: Appropriate detection measures should be provided for any reasonably foreseeable event requiring an emergency response.	
Principle 19: Appropriate control and mitigation measures should be provided to protect personnel from the consequences of a major accident.	Examples include: – Ballast/elevation control systems; – Operating and maintenance philosophy; – Minimisation of hazardous inventories; – Emergency shutdown systems; – Fire, gas and ventilation control systems; – Arrangements for evacuation and rescue; – System diversity and redundancy; – Mooring line emergency release; and – Well control equipment and systems.

Principle	Description
Principle 20: Arrangements for controlling an emergency should take account of likely conditions during emergency scenarios.	
Principle 21: The measures and arrangements for the management of an emergency should be identified.	Requires a demonstration that the management system is adequate to ensure that there are appropriate arrangements to protect people from specified hazards and to enable their evacuation. The Safety Case should describe how the duty holder has ensured there are, or will be, appropriate measures in place for securing effective emergency response.
Principle 22: The temporary refuge should provide sufficient protection to enable people to muster safety, to permit the emergency to be assessed and to allow the emergency response plan to be executed.	
Principle 23: Criteria should exist that describe the temporary refuge integrity and the time over which Temporary Refuge Integrity needed to be maintained against all hazards identified in the risk assessment.	The Safety Case should demonstrate that these criteria are met i.e. that Temporary Refuge Integrity would be maintained for the necessary time
Principle 24: Evacuation and escape arrangements should be integrated in a logical and systematic manner, taking account of the environment in which they may need to function.	
Principle 25: Effective rescue and recovery arrangement should be provided to cope with major accidents.	

Safety Case Verification

Verification of safety critical elements (SCE, see *Section D.7.1*) of the installation is a critical component of the UK safety case regime. The overall objective of a verification scheme is to establish a system of independent and competent scrutiny of safety-critical elements throughout the lifecycle of an installation and to obtain assurance that satisfactory standards will be achieved and maintained. Verification requirements apply to new and existing installations, both production and non-production, including those that have been designed and built abroad for use on the UKCS.

Verification should be undertaken by 'independent and competent' persons and should be subject to continual monitoring and review throughout the installation's life cycle. Any development which could alter the list of SCE, or affect the verification arrangements appropriate to them, should be fed into the review process and, where necessary, into the revision of the verification scheme. This cyclical process, which builds on the review process, should be carried out with the help of appropriately independent and competent people.

Safety Representative Training

The *UK SCR* requires the operator to pay for the training of safety representatives and ensure the workforce is involved in developing the Safety Case for installations. The regulations require the operator both to demonstrate they have consulted with the workforce when preparing the Safety Case and to make copies of the accepted Safety Case available to the workforce.

D.3.3.3 Environmental Impact Assessment

As highlighted in *Section D.3.2.2*, EIA and ES required under the *UK OPPP(AEE)R* form the central component in the environmental regulation of the UK offshore O&G industry. Under the *UK OPP(AEE)R*, an application for consent to undertake field development, to construct a pipeline, or drill a well must be accompanied by an ES. Other criteria for activities requiring an ES are detailed in *Table D4*.

Environmental Statement Scope

The operator may ask DECC for a formal opinion on the scope of the information to be provided within the ES prior to submission/development of the ES. DECC also strongly recommend operators consult with other environmental authorities, such as the Environment Agency, Natural England and the Scottish Environmental Protection Agency as well as relevant interest groups prior to submission of an ES.

As the written record of an EIA, the ES should clearly detail where development decisions have taken into account the potential environmental impacts of the proposed activities and should seek to demonstrate that environmental considerations have formed an essential and continuous part in the evolution and design of the development concept.

Consultation

In addition to the informal consultation that is recommended during the scoping of the ES, formal consultation must be entered into with the environmental authorities. Within Scotland, these authorities are the JNCC and the SGED/Marine Scotland, where the proposed project is in English/Welsh Waters, the relevant authorities are DEFRA and CEFAS. If the activity which is the subject of the ES is within 40 kilometres of the coast, the ES will also be required to be sent to the relevant authorities as appropriate, depending on location of the proposed activity:

- Countryside Council for Wales;
- Natural England;
- Scottish Natural Heritage;
- Environment Agency;
- Relevant Sea Fisheries Committee;
- Scottish Environment Protection Agency;

- Department of Agriculture for Northern Ireland; and/or
- Water Quality Unit for Northern.

Formal consultation must also be entered into with the public through public notices in national and local press. The notice must contain details of the location and a brief general description of the activity covered by the consent application and also indicate that the ES is available, stating where copies may be obtained or viewed. The notice must also state the date until which the application for consent and ES is available to be viewed, which must be at least 28 days after the last day of publication; and confirm the date until which representations may be made to the Secretary of State. The requirement is on the operator to ensure these notices are published and provide DECC with hard copies of the relevant newspapers. The application for consent and the ES that accompanies it must be advertised in the press indicating that copies will be made available at a maximum cost of £2.

Environmental Statement Review

Following the expiry of the Public Notice and subsequent to DECC's technical assessment, DECC will advise the operator of any comments arising from this assessment and those received from the environmental authorities and the public. All comments, where appropriate, will be collated into one communication issued by DECC. However under certain circumstances representations received may be copied direct to operators and/or environmental authorities for their consideration and comment.

The letter from the DECC will clearly indicate whether the issues raised are advisory or that the further information required is such that no further progress can be made in the ES approval process until the applicant's response to these comments has been received and judged as satisfactorily answering the questions raised. A copy of this letter requesting additional information will also be forwarded to those environmental authorities who raised queries in relation to the ES.

Assuming all issues raised at the consultation phase have been resolved and the Secretary of State is content that the project is unlikely to have a significant impact on the receiving environment, including any protected sites, then a letter will be sent advising the operator that DECC is content with the information received and that, from an environmental viewpoint, there is no objection to consent being given for the activity.

Appeal

Any person who objects to the issue of a consent, on the grounds that the requirements of the Regulations have not been met, may apply to the Courts for the decision to be overturned, but must do so within six weeks of the decision being published.

Table D4: Criteria for Activities Requiring an Environmental Statement (ES)

ES Requirement	Criteria
Mandatory ES	Developments which will produce 500 tonnes (approx. 3,750 barrels) or more per day of oil or 500,000 m^3 or more per day of gas (not including well testing).
	Pipelines of 800mm diameter and 40 kilometres or more in length.
	Where an existing development or pipeline is extended to such an extent that the extension would itself satisfy the thresholds for developments and pipelines set out in the previous two criteria.
ES may be required	The drilling of all wells.
	Developments, either stand-alone or incremental, producing less than 500 tonnes of oil per day or 500,000 cubic metres of gas per day.
	Construction of pipelines of less than 800mm diameter and 40 kilometres in length.
ES would normally be required, although all distances are guidelines and each well will be considered on a case by case basis	Distance to coast less than 40 kilometres, where there is a relevant sensitivity which may be significantly impacted by the proposed activity e.g. a coastal SAC, SPA, or SSSI.
	Presence within 10 kilometres of an offshore SAC or SPA in locations where the Department does not already have sufficient information on the likely impacts or where there is likely to be a significant impact from the proposed activity for which consent is sought.
	Presence of known archaeological features; designated under the *Protection of Wrecks Act 1973*, *The Protection of Military Remains Act 1986* or the *Ancient Monument and Archaeological Areas Act 1979*; or other heritage features potentially subject to damage or physical disturbance by the proposed drilling operations.
	Seasonal sensitivity may also influence the Department's decision to request an ES, e.g. seasonal sensitivity at proposed time of drilling; this may include the presence within 20 kilometres of concentrations of seabirds or mammals, fish spawning in the water column or fish nursery areas.
	Operations that may significantly affect herring or sand-eel spawning grounds.
	Operations that may significantly affect important fisheries (including shell fisheries such as Nephrops).
	Operations that may significantly affect navigational interests.
	The presence of large or long-lived biological features within 10 kilometres which may be significantly affected by the proposed operations.
	International boundary within 10 kilometres where there is likely to be a significant impact or where another member state has requested to participate in the procedure.

D.3.3.4 Petroleum Operations Notices (PONs)

Rather than requiring operators to deal with a large range of permits and licences for each of the relevant operations which they wish to carry out, the UK has produced a series of guidance notes, pro-forma notifications and application forms for key areas of operations. Governance of offshore hydrocarbon operations is therefore managed to a considerable degree on a day-to-day basis by the use of a series of PONs which cover a wide range of topics including:

- Reporting of spill/discharge incidents;
- Reporting the loss/dumping of synthetic materials or other wastes;
- Reporting damage to submarine cables or infrastructure;

- Application to drill exploration, appraisal and development wells;
- Application to abandon wells;
- Measuring discovered petroleum reserves;
- Reporting petroleum production;
- Application to complete/work-over wells;
- Recording and sampling requirements for wells;
- The UK's well numbering system;
- Application to carry out surveys and shallow drilling and notification of completion;
- Seeking Government direction on whether an Environmental Statement is required for a proposed development, pipeline or discharge; and
- Application for permit for use or discharge of chemicals during decommissioning or well work-over.

The PON system is administered by DECC and seeks to provide operators with a consolidated methodology and point of regulatory contact for the most common requirements.

D.3.4 Reporting, Inspection and Compliance

D.3.4.1 Environment

Environmental reporting requirements vary between licensees and depend on factors such as the nature of the licensed operations. For example seismic survey has quite tightly defined reporting requirements for marine mammal sightings, whilst a production platform licence is more likely to focus on water sampling requirements, and the environmental sensitivity of the area concerned. The monitoring and reporting conditions specific and appropriate to each licence will be included as conditions of the grant of the licence[15].

DECC's Offshore Inspectorate Unit use inspection, within a legal framework of duties, jurisdiction and inspectors' powers, to obtain evidence and assurance that permit holders/operators have been and are complying with the requirements, restrictions or prohibitions imposed upon them by relevant statutory provisions.

In conducting an inspection, an inspector will organise visits to either the relevant offshore installation and/or the onshore offices of the permit holders/operators to assess documents, records and management systems; interview relevant personnel; observe conditions, standards and practices; form an opinion on legislative compliance and give advice or undertake any enforcement, as is necessary, in line with the Enforcement Policy to secure legal compliance.

[15] The Oil & Gas UK Legislation website (www.ukooaenvironmentallegislation.co.uk) provides a comprehensive review of environmental reporting requirements through the exploration and production process in the UK.

Permit holders/operators are notified of the date of inspections in advance so that travel arrangements can be organised. However, inspectors reserve the right to exercise their powers and make unannounced or short notice visits at any reasonable time or, at any time in a situation, which in the inspectors opinion may give rise to significant pollution as a result of the discharge of oil.

No independent/third party validators are permitted within this context of inspection. All validation inspections are conducted directly by DECC.

In addition, the UK carries out surveillance flights over offshore installations in accordance with the *Bonn Agreement for Co-operation in Dealing with Pollution of North Sea Oil and Other Harmful Substances (1983)*. DECC and the MCA operate a contract which ensures an annual minimum of 300 hours of dedicated aerial surveillance is carried out over offshore installations. DECC may request certain areas are surveyed when specific activities are being carried out. In addition, Marine Scotland, DEFRA and the MCA undertake their own routine overflights of UK waters. DECC works closely with these bodies to ensure that any pollution detected from an offshore installation is reported so the effective level of surveillance is significantly greater than the 300 funded hours.

D.3.4.2 Health and Safety

The OSD employs a team of inspectors who are responsible for enforcing both the offshore specific regulations and the general safety legislation common to all industries under the *UK HSWA*. Their work includes regular inspection visits to offshore installations. They will investigate safety incidents and prosecute if necessary. The regulators can also issue an improvement notice that sets a specific action for the duty holder within a set time frame to amend or address an issue of concern to the UK HSE or to issue a prohibition notice that demands the cessation of operations until remedied appropriately.

D.3.5 Funding and Liabilities

D.3.5.1 Funding

In addition to government funding arising from tax and rental revenue, the OSD operate a cost-recovery policy for various activities that it undertakes in relation to the regulation of offshore O&G health and safety[16].

[16] www.hse.gov.uk/charging/offshore/chgoffsh.htm

OSD will recover the cost of work associated with assessment of Safety Cases under the *UK SCR* and for enforcement of the relevant statutory provisions, i.e. those health and safety provisions which apply to offshore installations or to activities on, or in connection with, them. Specifically, costs are incurred in relation to:

- Assessment of safety cases and design notifications submitted under any of the provisions of *UK SCR*;
- Inspection work associated with offshore installations and with activities on or in connection with such installations;
- Investigation of incidents; and
- Enforcement.

The fees payable by the operator are calculated on an actual cost, recovering the full costs of the time spent by UK HSE inspectors in carrying out a relevant activity for a particular installation on any particular occasion or occasions. For activities involving a visit to an offshore installation, the time spent includes the time from initial check-in to landing back on the beach. Any other travelling time is not included in activity time. As of 6 April 2010 the cost recovery rate was charged at £257 per inspector hour.

The fee rate is calculated in accordance with *HM Treasury's Managing Public Money Guidelines*[17] and includes the full cost of all the resources used in carrying out and supporting that cost recoverable activity, such as:

- Gross salaries of direct staff;
- Gross salaries of Operational Management and Strategy;
- General Administrative Expenditure, e.g. accommodation costs, use of information technology, travel and subsistence, corporate services, e.g. finance and planning, human resources, senior management and business services;
- Capital charges; and
- Common good costs e.g. developing and maintaining guidance to duty holders internal guidance to inspectors (e.g. to achieve consistency of regulation).

D.3.5.2 Liabilities

There is no fixed, defined requirement for any bonds or insurance from an environmental point of view, although DECC is reviewing the indemnity and insurance requirements for operating in the UKCS[18] in light of the Gulf of Mexico incident.

[17] www.hm-treasury.gov.uk/psr_mpm_index.htm

[18] www.decc.gov.uk/en/content/cms/news/pn10_067/pn10_067.aspx

At present, DECC must be satisfied that no licensee will fail to exploit any licence awarded to them because of a lack of financial capacity. The underlying concept is that the financial capacity which must be demonstrated is the ability to meet in timely fashion the actual costs that may reasonably be expected to arise from operating any awarded licence. Therefore the definition of appropriate 'financial capacity' will vary depending on the proposed nature of the licence (i.e. a small seismic area is very different from constructing a large production platform).

However, the 'polluter pays' principle is applied under UK legislation to determine the costs of any damage to the environment from any given operation, and imposes these costs on those that create the problem. Since assigning an economic value to an environmental asset or condition is complex, controversial and arguably subjective, in practice the principle is applied in two main ways to avoid this issue:

- By charging operators for restoration, remediation or prevention costs (e.g. following a pollution incident), which are easier to estimate, rather than attempt to put a value on the damage caused; and
- By the imposition of fees and licence costs on routine discharges or waste generation (which also serves to discourage the activity in the first place by making it economically unattractive).

The *EU Directive on Environmental Liability 2004/35/EC (2009)*, has the polluter pays principle at its core and its objective is that "wherever possible, in accordance with the polluter pays principle, the operator, who has caused the environmental damage or who is faced with an imminent threat of such damage occurring, must ultimately bear the cost associated with those measures".

D.4 ALLOCATION

The *UK PA* vests all rights to the UK's petroleum resources in the Crown. However, the Secretary of State for Energy and Climate Change can grant licences that confer exclusive rights to "search and bore for and get" petroleum. Each of these licences confers such rights over a limited area and for a limited period.

There are two broad classes of licence, Seaward Production Licences, which cover offshore O&G opportunities and Petroleum Exploration and Development Licences, which cover landward O&G exploration and production. Most licences follow a standard format, but DECC is flexible in this and ready to consider adapting new licences to suit special scenarios. The Secretary of State has discretion in the granting of licences, which s/he exercises to ensure maximum exploitation of this valuable national resource, but there are other considerations that s/he must also take into account, e.g. protection of the environment and the interests of other users of the sea.

DECC expects companies to work their licences. In recent years, the amount of acreage that has been left untouched, and those exclusive rights unexploited, has become a matter of concern and has led PILOT to instigate the Fallow Initiative[19]. This initiative reclassifies blocks and discoveries as 'Fallow B' after three years if the current licensees are unable to progress towards activity due to misalignment within the partnership, a failure to meet economic criteria, other commercial barriers, or a combination of these factors. Fallow B discoveries that have been listed on the web site for two years or Fallow B Blocks that have been listed on the website for one year will be relinquished if there are no agreed plans for significant activity.

D.4.1 Terms (Periods)

Seaward Production Licences are valid for a sequence of periods, called Terms. These Terms are designed to follow the typical lifecycle of a field: exploration, appraisal and production. Each licence expires automatically at the end of each Term, unless the Licensee has made enough progress to earn the chance to move into the next Term.

The Initial Term is usually an exploration period. For Seaward Production Licences it is normally set at four years, although it can be longer for 'frontier' licences. The Initial Term carries a Work Programme of exploration activity that DECC and the licensee will have agreed as part of the application process. The licence expires at the end of the Initial Term unless the licensee has completed the Work Programme by then. At that time the licensee must also relinquish a fixed amount of acreage (usually 50%), which is another attempt to ensure that the licensee has explored the whole acreage by then.

The Second Term is intended for appraisal and development. It lasts for four years for Seaward Production Licences. The licence expires at the end of the Second Term unless the Secretary of State has approved a Development Plan by then.

The Third Term is intended for production. It lasts for 18 years for Seaward Production Licences. The Secretary of State has the discretion to extend it if production is continuing, but DECC reserves the right to reconsider the provisions of the licence before doing so, especially the acreage and rentals.

The qualifying criteria to continue into the next Term are minima. DECC sets no maximum rate of progress, and all other things being equal would be more than happy to see a licensee progress through exploration and appraisal to production before the end of the Initial Term, if it were possible. It would not shorten the licence's overall life.

[19] https://www.og.decc.gov.uk/UKpromote/fallow/fallow_assets.htm

D.4.2 Relinquishments/Surrenders

Licensees are entitled to 'determine' (i.e. surrender) a licence, or part of the acreage covered by it, at any time (unless the licence is still in its Initial Term and the Work Programme has not been completed). DECC positively encourages the surrender of acreage unless the licensee actually intends to work it, and a minimum relinquishment of acreage at the end of the Initial Term is actually a condition of most licences.

Partial surrenders are subject to restrictions on the complexity of the area relinquished, because DECC do not wish to create unlicensed areas so irregular in shape that they would be unattractive to other companies.

D.4.3 Seaward Exploration Licences

A company that does not need rights to drill or produce can apply for a Seaward Exploration Licence. This is cheaper than a Production Licence and it covers all acreage outside those areas covered at any given moment by Production Licences. It is particularly aimed at seismic contractors who wish to gather data to sell it, rather than to exploit geological resources themselves.

An Exploration Licence covers non-intrusive exploration whether it is carried out for the sake of hydrocarbon production, gas storage or Carbon Capture and Sequestration, or for any combination of them.

If the holder of an Exploration Licence wants to explore acreage covered by a Petroleum Licence, it will need the agreement of the holder of the Production Licence.

D.4.4 Suitability of New Entrants

Companies who wish to acquire or join a licence and who are new to the UK need to provide information relating to residence status, finance and technical capability and environmental competence. Detailed discussion of each element is provided in Appendix 8 of DECC's Guidance Notes on the practice application of license model clauses[20], however the following elements highlight the key requirements in this regard:

- Environmental Management: Demonstration that environmental management systems are compatible with all UKCS requirements and an independently verified environmental management system (EMS) that meets the requirements of *OSPAR Recommendation 2003/5 to Promote the Use and Implementation of EMS by the Offshore Industry*. Companies will also be required to submit an Environmental Statement in relation to field developments and certain drilling activities. DECC look for a proven track record of environmental awareness.
- Management System: Description of how the new operator will manage the field in practice, clearly describing the division of responsibility between the company's own staff and contractors if the latter are employed.

[20] https://www.og.decc.gov.uk/regulation/guidance/reg_offshore/reg_offshore_guide.doc

Prospective operators will need to demonstrate how they will ensure that any contractors employed have and will maintain appropriate levels of competence and standards and how the operator will manage communications and delegation of responsibility. These procedures should look to recognised management and auditing standards. The arrangements for handling emergency situations should be clearly explained.

- Financial Resources: For take-overs of existing fields, prospective operators should provide sufficient information to demonstrate the financial robustness to continue the authorised Field Development Plan and cover their share of the eventual decommissioning costs. For fields without authorised Field Development Plans, companies will need to explain how they plan to fund a development in due course.
- Operating Experience: Companies without substantial UKCS operating experience should draw on their operating experience overseas to demonstrate a track record of effective field management. Companies with no previous operating experience will be subject to particular scrutiny and the timetable and logic of the proposed transition to operatorship needs to be described in detail in such cases.
- Field Management Resources: Detailed information regarding the technical resources available to the prospective operator. The applicants own analysis of the potential of the field should also be explained. Potential for additional recovery for fields in production should be clearly identified.
- Training Policy: Any formal training standards that the applicant has adopted (e.g. "Investors in People" standard) should be noted as well as the way in which the applicant will establish such standards in subcontractors.
- Reserves and Economics: The methodology adopted by the company for reserve estimation should be outlined. This information will allow DECC to place any reserves or production estimates supplied by the new operator in the correct context.

D.5 EXPLORATION AND PRODUCTION ACTIVITIES

D.5.1 Exploration Surveying

There are no specific O&G provisions relating to exploration surveying activities. Instead the regulation of safety onboard the vessels or aircraft that are undertaking the surveying activities is undertaken by the MCA or Civil Aviation Authority (for airborne surveys) respectively.

In terms of environmental impacts, offshore seismic or geological survey is regulated primarily by two key pieces of legislation: the *UK OPA(CoH)R*. Consent is required from the Secretary of State (administered via DECC) for seismic or geological survey in all UK waters (prior to the 2007 amendments, consent had not been required for territorial waters inside 12 nm from shore). Applications are made by means of the PON system described above. If the type of survey intended requires any item to be placed on the seabed, even temporarily (e.g. bottom cables for a 4D seismic survey) then a separate licence is required under the *Food and Environment Protection Act (1985)* Part II.

Under *The Offshore Marine Conservation (Natural Habitats &c.) Regulations (2007*) and *The Conservation of Species and Habitats Regulations (2010)*, it is an offence to deliberately disturb wild animals of a European Protected Species in such a way as to significantly affect either the ability of any significant group of animals to survive or breed, or the local distribution or abundance of that species. The regulations also include detailed provisions for the surveillance of natural habitats and species of European Community interest, and the monitoring of incidental capture and killing of European protected species.

An EIA will be required for seismic survey under the *UK OPPP(AEE)R* if the survey is likely to occur in an area sensitive to cetaceans or other European Protected Species. The JNCC has drawn up maps of areas on the UKCS which it considers to be likely to contain cetaceans and other protected species, and it is likely that these areas will become protected sites in the future when enabling legislation comes into force.

Guidance notes on conducting offshore seismic surveys have been produced by JNCC. These guidelines are aimed at minimising acoustic disturbance to marine mammals from seismic surveys and other operations where acoustic energy is released. It is a legally binding requirement of the consent issued by DECC that the JNCC Seismic Guidelines must be followed, and the elements of the guidelines that are relevant to a particular survey are incorporated into the legally-binding conditions of consent. The guidelines apply to all marine mammals, including seals, whales, dolphins and porpoises. All surveys using higher energy seismic sources (including site surveys as well as large scale seismic surveys) must comply with these guidelines or risk prosecution.

JNCC requires that operators should plan surveys so that their timing will reduce the likelihood of encounters with marine mammals, and should also seek to reduce and/or baffle unnecessary high frequency noise produced by air guns or other acoustic energy sources. In areas that are important for marine mammals (as indicated JNCC maps and reports) operators are required to provide MMOs on board the seismic survey vessel, who should as a minimum have attended an appropriate training course and ideally should be experienced marine biologists. A further duty is to ensure that the JNCC reporting forms are completed for inclusion in the MMO report. In addition to the visual mitigation provided by MMOs, if seismic surveys are planned to start during hours of darkness or low visibility it is considered best practice to deploy Passive Acoustic monitoring (PAM).

In addition to considering potential impacts to European Protected Species, operators should establish whether their survey area is in a sensitive commercial fishery area by consulting Fishery Sensitivities Maps produced by CEFAS and Marine Scotland and consult with the relevant fishermen's organisation to avoid serious disruption to either the survey or fisheries activities.

D.5.2 Exploration Drilling

As highlighted within *Section D.3.3*, the definition of installation within the *UK HSWAO* includes structures which have, are, or are intended to be used for the "exploration with a view to exploitation of mineral resources by means of a well". Thus facilities used for the purposes of exploration drilling must comply with the same safety provisions as for production drilling as detailed below.

In terms of environmental protection, each application to drill is considered with regard to the specific licence obligations for the area and the impact on the environment and other users of the sea e.g. shipping. Applications are made via the PON system described above. Drilling and petroleum developments offshore are subject to the requirements of the *UK OPPP(AEE)R*. A full Environmental Statement may be required for wells which are determined to potentially have significant effect on the environment by virtue of their nature, size or location.

D.5.3 Production Activities

As highlighted previously, the *UK SCR* requires operators of every fixed and mobile installation operating in UK waters to prepare, submit to the UK HSE for review, and ensure operation in accordance with a Safety Case. Safety Cases are subject to formal review and acceptance by the UK HSE.

The *UK SCR* also requires the duty holder to take a life cycle approach to the integrity of installations, from design through to dismantling. A general duty is placed on duty holders to ensure that an installation "at all times possesses such integrity as is reasonably practicable". This same approach and duty also applies to wells that are considered to be an integral part of the offshore installation. *Figure D3* highlights the various amendments to Safety Cases required through this lifecycle approach.

UK Regulators also see Safety Management Systems as crucial mechanisms in the delivery of safety. There is a requirement for a management system to be established throughout each phase of O&G activities. These are required to be updated in line with robust risk and hazard assessments. Usual hazard identification studies or hazard and operability studies are the mechanism by which operators assess hazards – at the design phase and throughout operations.

The arrangements of a management system are described in Safety Case documentation, however, the key elements include:

- Work control, i.e. permits to work that formal system stating exactly what work is to be done and when, and which parts are safe[21];
- Supervisory arrangements and functions that are clearly defined and appropriately allocated[22] ;
- Competence assurance that is linked to key responsibilities, activities and tasks identified in risk assessments[23] ; and
- Effective safety leadership.

The same principles apply as for exploration drilling. EIA is mandatory for any development that is expected to produce more than 500 tonnes of oil per day or more than 500,000 cubic metres of gas per day. For other developments, there is an initial presumption in favour of an EIA being required, which must be disproved if requested by the prospective operator completing the relevant PON form and submitting to DECC, setting out why they believe an EIA is not required. In general, all projects in near shore or sensitive areas will be expected to provide an EIA.

In order to obtain permission to place any object in the sea which has the potential to obstruct or endanger navigation safety for other sea users, consent must be obtained under the *UK CPA* (as extended to cover the UKCS by the *Continental Shelf Act (1964)*). Applications are made to DECC for one of the different types of *UK CPA* consents covering a range of activities including:

- Drilling;
- Permanent structures;
- Pipeline works;
- Cables; and
- Decommissioning.

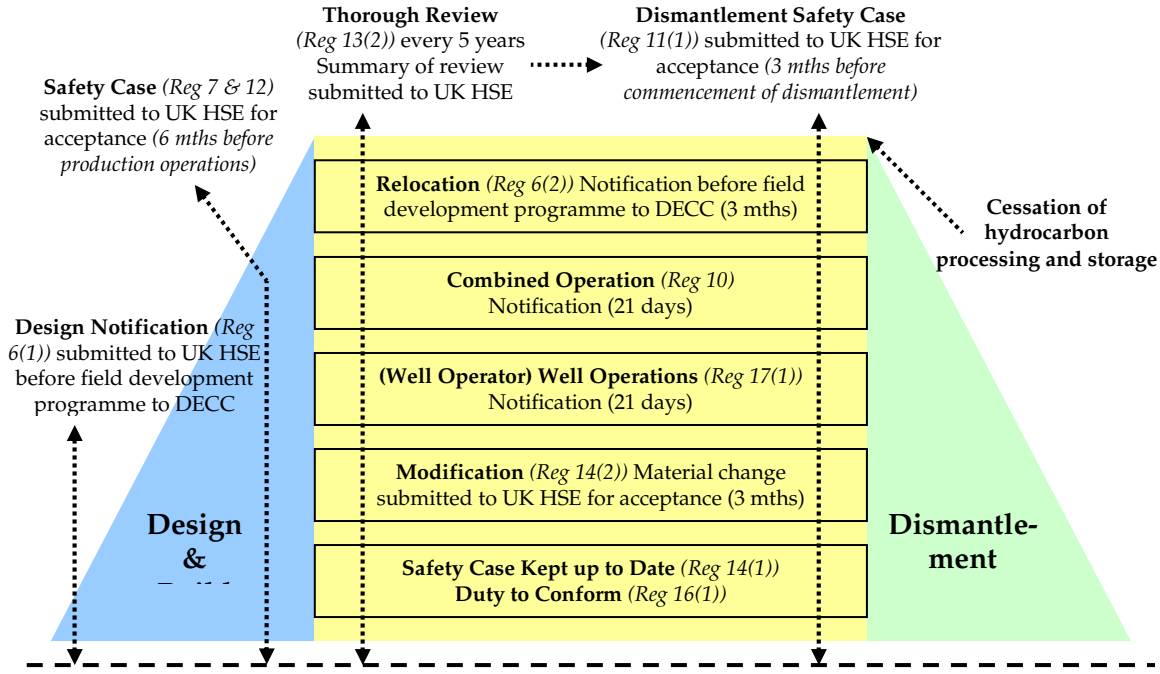
It is preferred and less problematic to operators and DECC if applications for new developments address all the facilities to be placed rather than a series of piecemeal applications. Consent can then be given to cover the whole operation e.g. template, drilling, jacket, topsides, pipelines etc. A limited consent e.g. for exploratory drilling only, does not imply that consent will necessarily be given for other operations at the same site.

[21] www.hse.gov.uk/humanfactors/topics/ptw.htm

[22] www.hse.gov.uk/humanfactors/topics/supervision.htm

[23] www.hse.gov.uk/humanfactors/topics/competence.htm

Figure D3: Safety Cases in the Lifecycle of a Production Installation[24]



D.5.4 Mobile Facilities

The *UK SCR* requires owners of mobile installations in the UKCS to submit a Safety Case for each installation. The case must include particulars of (a) the limit of the environmental conditions beyond which the installation cannot be safety stationed or operated and (b) the properties of the seabed and subsoil which are necessary for the safe stationing and operation of the installations. A mobile installation Safety Case must be submitted at least three months before the vessel operates in UK waters.

Maritime integrity of mobile and floating installations is a central area of interest for the OSD[25] and the subject of a five year OSD strategy since 2008[26]. Key topics covered within the strategy include:

- Assurance of the integrity of mooring systems for production installations;
- Management of offloading operations to shuttle tanker, including inert gas and hydrocarbon blanket gas systems;
- Suitable inspection and repair programs to ensure continued watertight integrity;
- Arrangements to ensure the provision of competent, experienced personnel, both offshore and onshore;
- Supervision and control of dynamic positioning operations of the installation, and of vessels in close attendance, including gangway management; and
- Control and management of work activities inside ballast and cargo tanks.

[24] Sourced from: www.hse.gov.uk/offshore/november-2009-1.pdf

[25] www.hse.gov.uk/offshore/maritimeintegrity.htm

[26] www.hse.gov.uk/offshore/integrity-strategy.pdf

Various safety notices, information sheets and circulars have been issued as a result of this strategy that highlight factors that duty holders/operators should integrate into operations or risk assessments to better manage the key topic areas highlighted above.

The five year strategy also documents specific intervention measures for various installation types, as highlighted in *Table D5* below.

Table D5: OSD Integrity Intervention Strategies for Mobile Installations

Installation Type	Intervention Strategy
Monohull installations	OSD will raise specific concerns with each duty holder during the safety case assessment. Where further questions are raised, one or more post assessment inspection topics will be created and followed up by inspection. Each of the 20 or so floating production, storage and offloading facilities (FPSOs) and floating storage unit (FSU) installations will be inspected both on and offshore by the maritime integrity team at least once every three years unless circumstances require a more rigorous regime. Each inspection will take into account all the maritime integrity concerns of mooring, stability, watertight integrity, competence, the maintenance of safety critical elements and shuttle tanker intervention. Particular interest will be shown in new and innovative designs such as the Sevan drum type design of FPSO. In addition to the above, the joint initiative set up between the UK HSE and O&G UK in 2007 will be followed up by an onshore and an offshore inspection of each FPSO and FSU duty holder. The purpose of the inspections will be to ensure that each duty holder has put in place adequate mitigating measures to reduce the risks of tank entry to a minimum. A team of inspectors from a range of topics, including maritime integrity, will be put in place and one of the team will undertake the inspections with an incident management team inspector.
Semi submersible installations	Assessment of Safety Cases as per monohull installations. Each semi submersible installation owner will be inspected both on and offshore by the maritime integrity team at least once every three years unless circumstances require a more rigorous regime, particular interest will be shown to accommodation units and units that have been outside the UKCS for some time. Each inspection will take into account all the maritime integrity concerns, typically mooring, stability, watertight integrity, competence and the maintenance of safety critical elements.
Jack up installations	Assessment of Safety Cases as per monohull installations. Each jack up installation owner will be inspected both on and offshore by the maritime integrity team at least once every three years (unless circumstances require a more rigorous regime). Each inspection will take into account the maritime integrity concerns, typically transit arrangements, mooring and unmooring, stability, watertight integrity, pre loading procedures, competence the maintenance of safety critical elements. and the procedures for combined operation approach.

Installation Type	Intervention Strategy
Other installation types	The maritime integrity of floating assets is best managed by interrogating the duty Holders Written Scheme of Verification (WSV). The duty holders understanding of major maritime hazards and the associated safety critical elements, performance standards and assurance activities will be clearly reflected in the WSV. Onshore inspection of selected parts of the verification scheme combined with an offshore maritime inspection of the installation and verification scheme will highlight any shortcomings. The competence of on and offshore maritime staff is demonstrated by personal discussion with individuals and an inspection of the training matrix, roles and job descriptions. A comparison of what experience and qualifications the individual is expected to possess with the actual experience and qualifications possessed is an effective method of inspection.
Other installation types (cont.)	The UKCS has a robust accident and incident reporting regime, OSD receives in the order of 500 incident reports per annum. In order to enable the offshore industry to make good use of this information it is necessary to ensure that it is provided in a format which allows simple interrogation by search and sort tools and that it is regularly updated. The Green Seas initiative, a weather related HSE initiative, was put in place some time ago. Essentially the duty holders of FPSO and FSU installations were required to ensure that no safety critical equipment could be damaged by foreseeable weather criteria. A number of duty holders had to make modifications to their vessels in order to comply. A similar initiative related to the approach and positioning of shuttle tankers to a FPSO and took into account environmental forces.

No special environmental permissions are required for drilling or production from mobile platforms in addition to those for fixed installations (i.e. requirement to undertake an EIA). *UK CPA* consents will not be required for activities involving the use of vessels maintained on station using dynamic positioning, where the vessel would be able to move off station in the event of a navigational emergency, and where the proposals will not involve any deposit or removal of materials from the seabed that would constitute a cause for application of the *UK CPA*. Use of a drillship would therefore require consent, as there would be relevant deposits, and it would not be able to move quickly off station, but most well maintained operations involving the use of a vessel would probably not require consent.

D.5.5 Pipelines

Pipeline safety in the UK is covered by the *UK PSR*. *UK PSR* applies to pipelines in Great Britain and to those in territorial waters and the UK Continental Shelf. Guidance on the application of the *UK PSR* is provided by the UK HSE[27].

[27] www.hse.gov.uk/pubns/priced/l82.pdf

D.5.5.1 Major Accident Hazard Pipelines (MAHPs)

Oil transportation pipelines are classed as Major Accident Hazard Pipelines (MAHPs), along with high pressure natural gas supply transmission and distribution network and pipeline systems transporting chemicals and other gases, e.g. ammonia and ethylene.

Special requirements apply to MAHPs, including:

- Emergency shut-down valves;
- Notifications regime;
- Major accident prevention document; and
- Arrangements for emergency plans.

D.5.5.2 Emergency Shut-down Valves

Under Regulation 19 of the *UK PSR*, emergency shut-down valves are required to be fitted to all risers of major accident hazard pipelines of 40 mm or more in diameter at offshore installations. The duty holder in relation to an offshore installation is also required to provide the operator of the pipeline with such facilities as the operator requires to fulfil its duties as set out in Schedule 3 of the *UK PSR*.

Notifications[28]

The *UK PSR* place a duty on operators of MAHP to provide certain information to the UK HSE at various stages in the lifecycle of a MAHP. These duties are covered in the following Regulations:

- *Regulation 20*: Notification before construction;
- *Regulation 21*: Notification before use; and
- *Regulation 22*: Notification in other cases (e.g. change of pipeline operator or major modifications to existing pipelines).

D.5.5.3 Major Accident Prevention Document

Regulation 23 of the *UK PSR* relates to the preparation of major accident prevention documentation. The documentation is required to demonstrate hazards relating to the pipeline with the potential to cause a major accident and the associated risks, as well as the safety management system and arrangements for auditing and reporting on the systems.

[28] www.hse.gov.uk/pipelines/notification.htm

The major accident prevention document can comprise a number of documents to cover these requirements. In addition, the document should include a safety management system detailing arrangements such as training procedures, management responsibilities and auditing arrangements which set down how that operator's policy to control major accident hazards will be put into action.

Regulation 23 also requires that arrangements are in place for audits to be made of the safety management system which address its adequacy in achieving the safety of the pipeline. This requires a demonstration that there are clearly defined systems for audit of the quality of the design, construction, operation, maintenance and finally decommissioning of the pipeline. As for other aspects of the safety management system, performance standards for the audit and review process should be set and monitored. The persons carrying out the audits should be sufficiently independent to ensure that such an audit is objective.

D.5.5.4 Emergency Procedures and Plans

Regulation 24 of the *UK PSR* requires that adequate emergency procedures are prepared for dealing with the consequences of a major accident involving a pipeline. The detail and scope of a major accident will vary according to the pipeline, its location and the fluid conveyed and the operator will need to consider these aspects when drawing up the emergency procedures.

The emergency procedures for an offshore pipeline should cover the pipeline, as an entity, as well as the interface with offshore and onshore installations. The plan should cover the procedures needed to respond to all foreseeable major accidents involving a pipeline, i.e. it should set out who does what, when and how and to what effect, in the event of an emergency. It should describe arrangements at the interfaces with onshore and offshore installations to ensure that they dovetail.

Regulation 25 centres on the requirements of local authorities to prepare an emergency plan for each MAHP passing though their area as notified by the UK HSE. The pipeline operator is required to provide information on the type and consequences of possible major accidents to facilitate the development of this plan.

D.5.5.5 Environmental Considerations

An EIA is mandatory for installation of a pipeline that is greater than 40 km in length and 800 mm in diameter. Many smaller pipelines may form part of a wider field or platform development where an EIA will be required and in this case the pipelines will be included in the wider development ES. Most consents required for pipelines are consolidated within a Pipeline Works Authorisation, such as Deposit of Materials Consent, which is required for deposit of materials e.g. rock dumping or mattresses to stabilise the pipe, and the Consent to Locate (under the *UK CPA*), so in most cases there is no need for multiple applications.

D.6 DECOMMISSIONING ACTIVITIES

Decommissioning of offshore O&G installations and pipelines is regulated by DECC utilising the legislation under the *UK PA*. Under Section 29 of the *UK PA* the Secretary of State is empowered to serve notice on a wide range of persons which either specify the date by which a decommissioning programme for each installation or pipeline is to be submitted or, as is more usual, provide for it to be submitted on or before such date as the Secretary of State may direct.

A decommissioning programme sets out the measures proposed to be taken in connection with the decommissioning of disused installations and/or pipelines and will describe, in detail, the methods employed to undertake the work. In some cases this process can cover a wide range of activities, such as radioactive material handling, removal of debris from the seabed and environmental monitoring of the area after removal of the installation. It is DECC's aim that decommissioning programmes are considered in a transparent manner. As a result, other Government Departments/Agencies, Non-Governmental Organisations, members of the public and other bodies are given the opportunity to comment on the proposals set out in a programme.

Further details on the decommissioning process, including the role and content of a decommissioning programme, are available in the *Guidance Notes for Industry on the Decommissioning of Offshore Installations and Pipelines under the Petroleum Act 1998*[29]. The guidelines make reference to relevant OSPAR decisions related to the decommissioning of offshore installations, such as *Decisions 98/3* and *2006/5*.

In recent years there has been a significant and increasing number of UKCS license assignments from large companies to smaller ones. The introduction of innovative Licensing schemes has also brought a number of new companies to the UKCS. Ministers have agreed that such activity should be encouraged and as well as new developments there should be a free trade in mature offshore O&G assets so as to extend field life and maximise economic recovery. At the same time the Government has a duty to ensure that the taxpayer is not exposed to an unacceptable risk of default in meeting the costs associated with decommissioning. To enable these two goals to be achieved, the Government has developed a policy to ensure that adequate security for decommissioning costs is maintained on a field-by-field basis. The details of this policy, including the circumstances in which the Government may require the owners of offshore installations and pipelines to provide security or enter into a Decommissioning Security Agreement are set out in Annexes F and G of the department's decommissioning guidance notes referred to above.

Although there is no statutory requirement to undertake an EIA at the decommissioning stage, a costed Decommissioning Programme will nevertheless need to be support by an EIA. The ES submitted for development consent (at the time of applying for a Production Licence) under the EIA regulations requires the applicant to consider the long term impacts of the development, including decommissioning. However, in light of the lengthy period of time between the project sanction and decommissioning, the requirement for a detailed assessment is deferred until closer to the time of actual decommissioning and is submitted as part of the Decommissioning Programme.

[29] https://www.og.decc.gov.uk/regulation/guidance/decommission.htm

If an operator is considering applying for permission to not remove the installation, it will be necessary to address through the EIA the environmental impacts of alternative disposal options as part of the Comparative Assessment (required for the Decommissioning Programme). However in the majority of cases where total removal applies and a Comparative Assessment is not required it will only be necessary for the EIA to address the impacts of the proposed decommissioning activity on the environment. The EIA should consider the impacts associated with all activities offshore, inshore and onshore (dismantling and disposal sites), the impact on climate change and an assessment of energy and resource consumption.

Separate permits or consultation with regulators are required for:

- The use or discharge of chemicals during decommissioning;
- Discharge or re-injection of materials contaminated with reservoir hydrocarbons;
- Deposits of any new materials on the seabed e.g. rock deposits or grout bags;
- Removal to shore of any equipment containing any species protected under CITES (particularly a problem in the UK with the cold water coral *Lophelia pertusa* forming on subsea equipment);
- Handling or disposal of hazardous or radioactive wastes; and
- Preventing obstruction or danger to navigation as directed by the Secretary of State if a facility 'falls into disuse'.

D.7 MAJOR ACCIDENTS

The term major accident is defined in the *UK SCR* as:

- A fire, explosion or the release of a dangerous substance involving death or serious personal injury to persons on the installation or engaged in an activity on or in connection with it;
- An event involving major damage to the structure of the installation or plant affixed thereto or any loss in the stability of the installation;
- The collision of a helicopter with the installation;
- The failure of life support systems for diving operations in connection with the installation, the detachment of a diving bell used for such operations or the trapping of a diver in a diving bell or other subsea chamber used for such operations; or
- Any other event arising from a work activity involving death or serious personal injury to five or more persons on the installation or engaged in an activity in connection with it.

The *UK PFEER* places a general duty on duty holders to protect people on their installations from all fires and explosions, and to provide effective emergency response. The *UK PFEER* require the application of a risk based approach to the analysis of major accident events on offshore installations, specifically in reference to fire, explosion and emergency response as well as the adequate provision of measures to detect, mitigate and control those events.

The *UK PFEER* requires that Written Schemes of Examination (WSE) be developed for those critical systems which are placed to manage major accidents relating to fire, explosion, including evacuation, escape and rescue facilities. The WSE of plant involves *"careful and critical scrutiny"* and may be above and beyond checks typically carried out as part of routine maintenance and testing programmes. WSE are based on specific performance standards that define the role and function of the critical system as they relate to management of major hazards.

The duty holder is the responsible for the preparation and operation of the scheme, ensuring that a competent and independent person carries out systematic verification.

D.7.1 Safety Critical Elements (SCE)

The *UK SCR* also requires that SCE are identified and that verification schemes be in place for SCE. An independent competent person performs the verification activities.

SCE are defined as:

- Such parts of an installation and such of its plant (including computer programmes), or any part thereof;
- The failure of which could cause or contribute substantially to; or
- A purpose of which is to prevent, or limit the effect of a major accident.

D.7.2 Environmental Aspects

The *UK OPPRCC* and *UK EPC* give the Government power to intervene in the event of an incident involving an offshore installation where there is or there may be a risk of significant pollution, or where an operator has failed to implement proper control and preventative measures. These Regulations apply to chemical and oil spills.

Under the *UK OPPC*, it is an offence to make an unlawful discharge of oil, i.e. a discharge of oil other than in accordance with the permit granted under these Regulations for oily discharges (e.g. produced water etc). However, it is a defence to prove that the contravention arose because of something that could not have been reasonably prevented, or that it was due to something done as a matter of urgency for the purposes of securing the safety of any person.

The *UK MSA* implements in the UK the *International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC Convention)*. The aim of the *OPRC Convention* is to increase the level of effective response to oil pollution incidents and to promote international co-operation. The Convention applies to ships and offshore installations and requires operators to have in place Oil Pollution Emergency Plans (OPEP), which are approved by the body that is the National Competent Authority for the Convention (in the UK's case, this is the MCA). The *UK OPPRCC* introduced into UK law the oil spill planning requirements and legal oil spill reporting requirements of the *OPRC Convention*.

All new OPEP are subject to a five yearly review, and any updates made to existing OPEPs must be written in accordance with DECC's Oil Pollution Emergency Plans Guidance Note[30]. All new offshore installations including exploration and appraisal wells are required to have submitted an OPEP for formal approval at least two months before activities on the offshore installation commence. In some cases drilling may be covered by a platform OPEP.

D.8 IMPLEMENTATION ISSUES AND EMERGING DEVELOPMENTS

D.8.1 General Observations

D.8.1.1 Capacity of Regulatory Organisations

Early on in the development of North Sea's O&G reserves, experience and capability was an issue within regulatory authorities. The UK HSE had limited offshore experience as its main background was related to activities onshore and in facilities such as nuclear plants. In addition, the regulator could not initially match the salaries offered by operators in order to draw the required technical expertise into the regulator. Eventually, in recognition of the need to draw appropriately skilled individuals to the regulatory community, salaries were raised to attract people from operators.

As it has developed, the UK regulatory regime has become more focused on interventions to verify the Safety Case claims. To compensate for the higher frequency of inspections that results from this, the UK HSE has implemented a charging regime[31]. Fees are charged to assess safety cases under the *UK SCR* and to enforce relevant statutory provisions at an hourly fee rate (from 6 April 2010, this rate is stated as £257 per inspector hour). This combination of tax revenues and other fees/licence rentals to fund the regulatory scheme seems to work well and is an accepted approach from the operator perspective.

Also, as the UK offshore sector is relatively mature, there is no great 'flood' of applications being experienced as there may be in other countries, so the regulatory organisations seem to have sufficient capacity for the workload placed upon them. Recent experience in applying for some of the licences mentioned, indicates that the government often processes applications quicker than the advertised period stated.

[30] www.og.decc.gov.uk/environment/OPEP_Guidance.doc

[31] www.hse.gov.uk/charging/offshore/chgoffsh.htm

D.8.1.2 Clarity of Regulation

Whilst the *UK SCR* and associated regulations are themselves written in a legal format, the presence of comprehensive and easily understood guidance documents prepared by the regulator makes the implementation of the provisions relatively easy to undertake for operators. The legal obligations for operators are generally perceived to be clear and transparent. UK HSE also has a broad 'open door policy' through which advice can be provided to a point. The UK's goal based regime rather than prescriptive approach allows for this open communication between agencies and regulators. Similarly DECC are also flexible in their requirements and take a pragmatic approach to regulation. The PON system also works well in drawing together many of the most common environmental regulations into one application and notification system to avoid confusion.

To a certain extent, the clarity and understanding between regulator and operator can be associated with the maturing of the regime. The core requirements of the regime are well-known and embedded within the practices of operators. The focus for the UK HSE can instead be on regular 'campaigns' targeted at particular areas of the Safety Case regime, for example the reduction of leaks from small bore connections, aging asset integrity and leadership. This again adds to the body of guidance available to operators.

Jurisdiction can be complex to understand due to devolved administrations (mainly Scotland) having powers of some aspects of marine operations within certain distances from shore, but there is little if any actual overlap. On the UKCS, O&G activity is not affected by devolution and the overall central UK government retains control. DECC has produced a Guidance Note on dealing with fields that border Norwegian territory in the North Sea.

D.8.2 Emerging Developments

The OSD has set a number of priority areas that focus on critical areas of performance where further improvement is required. These areas include: asset integrity, leadership and safety culture/workforce involvement[32].

D.8.2.1 Leadership

Leadership has been identified as a key issue for all of the UK's major hazard industries and continues to be given particular emphasis by OSD. It is a priority for the regulator and their objective is to see industry leaders demonstrate their commitment to health and safety and ensure the effective management and understanding of major accident risk and their controls.

[32] www.hse.gov.uk/offshore/priorities.htm

The UK industry launched the Step Change in Safety initiative in September 1997. This campaign was to refocus the safety effort and set an ambitious target for delivering a 50% improvement in the whole industry's safety performance. More recently the OSD is focussing effort on Safety Culture/Workforce Involvement which forms a key element of the legal framework for UK offshore industry. The objective is to seek workforce involvement as a driving force in developing a safety culture where individual offshore workers and offshore companies work together to do the right things to improve health and safety. During 2010/11 the OSD will carry out a coordinated project linked to the requirements of the *UK SRSCR*. This project will: assess compliance with regulations; ensure that employees and workers understand the legal requirements to inform and consult workers; ensure that employers are providing adequate systems to establish effective worker involvement and consultation and gather examples of good practise to share across the offshore industry.

D.8.2.2 Asset Integrity

As highlighted previously, OSD has a five year strategy in place to ensure that the maritime integrity of assets is sufficient to control risks. Ensuring operator compliance with design performance standards and implementation of appropriate management systems to effectively support those standards are key criteria within this strategy.

As part of this strategy, OSD will start a 3-year Ageing and Life Extension Programme to address these ageing asset integrity issues through 2010/2011, focused on:

- Identifying duty holder's approach to the management of risks associated with asset ageing and life extension;
- Raising awareness of the need for specific consideration of asset ageing issues;
- Identifying shortcomings in individual duty holder approaches and enforcing a programme of remedial works; and
- Working with the offshore industry to establish a common culture on the management of ageing installations.

D.8.2.3 Safety Culture/Workforce Involvement

OSD see safety culture as a core component of effective management of all offshore risks, including major accident hazard risks. OSD are therefore focused on the development of a culture that encourages offshore workers to become involved in managing their own health and safety and have emphasised this strongly to the relevant trades unions.

During 2010/11, OSD will carry out a coordinated project linked to the requirements of the *UK SRSCR*. This project will:

- Assess compliance with the regulations;
- Ensure that employers and workers understand the legal requirements to inform and consult workers;
- Ensure that employers are providing adequate systems to establish effective worker involvement and worker consultation; and
- Gather examples of good practice to share across the offshore industry.

Annex E
Australia

E AUSTRALIA

E.1 CONTENTS

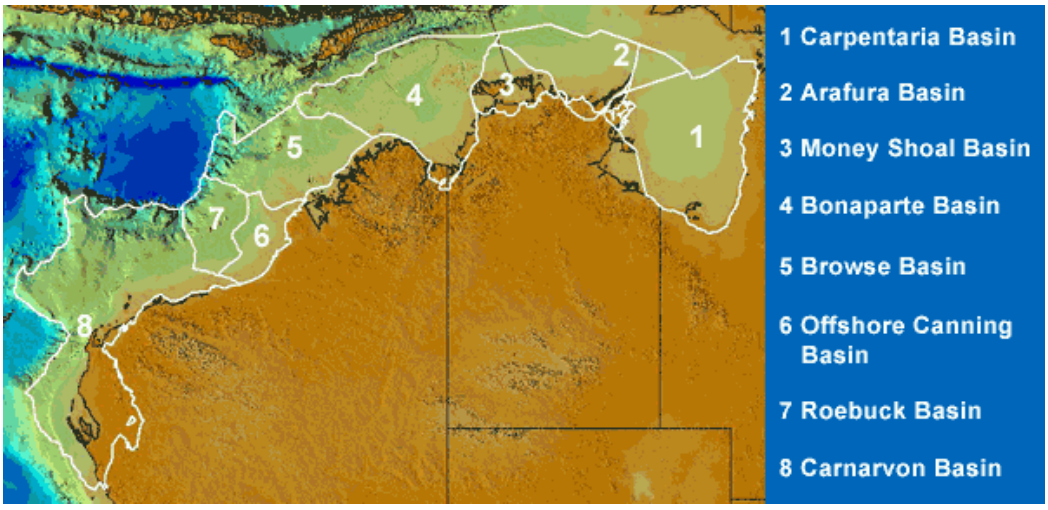
E.2 COUNTRY OVERVIEW

The majority of Australia's oil and gas (O&G) reserves are located in three offshore regions: off Australia's northwest coast; in the Timor Sea and in the Bass Strait of Southern Australia (see *Figure E1* below). *Table E1* summarises the O&G reserves and production data for Australia.

Table E1: Australian Oil and Gas Reserves and Production Data[1]

	UNITS	*END 1989*	*END 1999*	*END 2008*	*END 2009*
PROVED OIL RESERVES	*TOTAL (BILLION BARRELS)*	3.1	4.7	4.2	4.2
	% OF WORLD RESERVES				0.3
PROVED NATURAL GAS RESERVES	*TOTAL (TRILLION M^3)*	0.96	1.99	3.08	3.08
	% OF WORLD RESERVES	-	-	-	1.6
		2006	***2007***	***2008***	***2009***
OIL PRODUCTION	*TOTAL (THOUSAND BARRELS)*	554	567	556	559
	% OF WORLD TOTAL	-	-	-	0.6
NATURAL GAS PRODUCTION	*TOTAL (BILLION M^3)*	38.9	40.0	38.3	42.3
	% OF WORLD TOTAL	-	-	-	1.4
REFINERY CAPACITY	*TOTAL (THOUSAND BARRELS/DAY)*	694	733	734	734
	% OF WORLD TOTAL	-	-	-	0.8

Figure E1: Major Australian Offshore Oil and Gas Basins[2]



[1] BP Statistic Review of World Energy 2010 www.bp.com/productlanding.do?categoryId=6929&contentId=7044622

[2] www.ga.gov.au/oceans/og_RegPetGeol.jsp

E.3 OVERVIEW OF LEGISLATIVE FRAMEWORK /APPROACHES

E.3.1 Administrative/Regulatory Authorities

Australia is a Federal system of Government consisting of a Commonwealth, six States and three self-governing Territories (Australian Capital Territory, Northern Territory and Norfolk Island). Under the *Offshore Constitutional Settlement of 1980 (AUS OCS)* between the Australian Government and its States, it was agreed that the States would have jurisdiction over coastal waters that extend from the land to 3 nautical miles (nm) from the territorial sea baseline (low or high water mark). This arrangement also generally extends to the Northern Territory. Commonwealth waters extend from the 3nm limit to the edge of the continental shelf.

The key Commonwealth department is the Department of Resources, Energy and Tourism (DRET, www.ret.gov.au), who provide the Australian Government with upstream petroleum-related policy advice and, in cooperation with the Australian States and Territories, is the central regulator of offshore petroleum activities. The Department of Environment, Water, Heritage and the Arts (DEWHA, www.environment.gov.au) provide oversight of marine protection and pollution.

Like the UK, and after approximately 10 years of joint administration with minerals management, the Australian Commonwealth set up an independent regulator to enforce offshore O&G safety requirements, the National Offshore Petroleum Safety Authority (NOPSA, www.nopsa.gov.au). Supporting Commonwealth agencies include the Australian Maritime Safety Authority (AMSA, www.amsa.gov.au).

The State and Territorial authorities involved in the regulation of offshore O&G HSE within the 3nm zone include:

- Western Australia (WA)
  - Department of Mines and Petroleum (www.dmp.wa.gov.au)
  - Office of the Environmental Protection Authority (www.epa.wa.gov.au)
  - Department of Environment and Conservation (www.dec.wa.gov.au)
  - Department of Industry and Resources (www.doir.wa.gov.au)
- Victoria (VIC)
  - Department of Primary Industries (www.dpi.vic.gov.au)
  - Department of Sustainability and Environment (www.dse.vic.gov.au)

- Northern Territories (NT)
  - Department of Natural Resources, Environment, the Arts and Sport (www.nt.gov.au/nreta)
  - Department of Resources (www.minerals.nt.gov.au)
  - Department of Lands and Planning (www.dpi.nt.gov.au)
- South Australia (SA)
  - Department of Natural Resources, Environment, the Arts and Sport (www.nt.gov.au/nreta)
  - Department of Primary Industries and Resources (www.pir.sa.gov.au)
  - Department of Environment and Natural Resources (www.environment.sa.gov.au)

Whilst the *AUS OCS* means that State and Territory petroleum legislation applies in coastal waters and is administered by State and Territory authorities, close collaboration between the State/Territorial and Commonwealth regulators is provided for through the Principle of Joint Regulatory Authority, which takes place in Commonwealth waters (outside of the 3nm limit).

E.3.1.1 Joint Regulatory Authority

Whilst Commonwealth legislation alone applies in Commonwealth waters, the *Offshore Petroleum and Greenhouse Gas Storage Act (2006) (AUS OPGGSA)* provides for the Australian Government to share joint regulatory authority with the relevant State or Territory in the adjacent areas of Commonwealth waters.

The Joint Regulatory Authority for each adjacent area consists of a Designated Authority (DA) and a Joint Authority (JA). The DA is the relevant State or Territory Minister and the JA comprises the State or Territory Minister and the responsible Commonwealth Minister. In practice, the terms can also describe the government officials who assist the DAs and the JAs.

As agreed in the *AUS OCS*, the DA is responsible for the day-to-day administration of petroleum activities, while the JA is concerned with major matters arising under the legislation.

Examples of major matters are:

- Determining areas to be open for applications for permits;
- Granting and renewing exploration permits and production licences;
- Approving instruments that create interests in permits or licences; and
- Determining permit or licence conditions governing the level of work or expenditure.

There is however significant drive to align State and Commonwealth regulations as well as the offshore and onshore contexts, as highlighted in recent reviews of the offshore regulatory regime (see *Section E.9*) and recent press coverage[3]. The roles of the various State and Territorial Authorities highlighted above are also presented in *Section E.9*.

[3] www.petroleumnews.net/storyview.asp?storyid=1138856&sectionsource=s0

E.3.1.2 National Offshore Petroleum Safety Authority (NOPSA)

NOPSA is a Statutory Agency regulating Commonwealth, State and Territory coastal waters with accountability to the relevant Ministers. The Authority has its headquarters in Perth and commenced operations on 1 January 2005.

The role of NOPSA is to administer offshore petroleum safety legislation. The organisation's primary objectives include:

- Improving health and safety outcomes across the offshore petroleum industry;
- Ensuring health and safety regulation of the offshore petroleum industry is provided to standards that are equal to the best in the world; and
- Reducing the regulatory burden on the offshore petroleum industry, which operates across multiple jurisdictions, by delivering a consistent and comprehensive health and safety regime.

NOPSA's most recent publically available Annual Operating Plan (2009-2010)[4] highlights an expected average staffing level of 55 in 2009-10, with the majority of staff located in NOPSA's Perth Head Office and five staff in Melbourne.

Memoranda of Understanding (MoUs)

A key recommendation of the Independent Review Team that informed the recommendation to establish NOPSA was the need to reduce the confusing and overlapping legislation that applied to offshore facilities, particular given the wide range of issues, including HSE, marine issues, security and air and water transport that affect offshore petroleum operations. As such NOPSA, are required to cooperate with:

- Other Commonwealth agencies having functions relating to offshore petroleum operations;
- State or Northern Territory agencies having functions relating to offshore petroleum operations; and
- The DAs of the States and the Northern Territory.

As part of these requirements, NOPSA have drawn together MoUs with a range of Commonwealth and State agencies, including the DAs, to facilitate this cooperation[5].

[4] www.nopsa.gov.au/corporate/Plan%20-%20NOPSA%20Annual%20Operating%20Plan%202009-2010.pdf

[5] www.nopsa.gov.au/mous.asp

E.3.1.3 Australian Maritime Safety Authority (AMSA)

The AMSA is the national safety agency responsible for maritime safety, protection of the marine environment and aviation and marine search and rescue. It commenced operations on 1 January 1991 as a statutory authority established under the *Australian Maritime Safety Authority Act (1990)*[6].

AMSA's services are mainly provided on a cost recovery basis from fee and levy revenue sources. It also receives Community Service Obligation funding from the Commonwealth Government specifically relating to aviation and maritime search and rescue operations and boating safety education.

AMSA's Maritime Standards Division is responsible for providing strategic advice and operational oversight on maritime safety matters and associated environmental and navigational issues, which involves:

- Representing Australia in the International Maritime Organization (IMO);
- Developing Australia's maritime regulatory framework based upon international standards and contemporary safety management systems primarily through the making of subordinate legislation, Marine Orders, under the *Commonwealth Navigation Act (1912)*[7], and *Protection of the Sea (Prevention of Pollution from Ships) Act (1983)*[8];
- Promulgating policy and guidelines for the discharge of the range of powers and functions allocated to AMSA under relevant Commonwealth legislation;
- Contributing to environment protection initiatives and education and information sharing on marine pollution prevention;
- Providing the national network of integrated aids to navigation and coastal traffic management measures that meet the requirements of commercial shipping for safe and efficient coastal navigation; and
- Managing the National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances to provide oil and chemical pollution preparedness and response services in consultation with relevant parties.

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6 www.comlaw.gov.au/ComLaw/Legislation/ActCompilation1.nsf/current/bytitle/CBAA1923658F0F83CA256FBF001BCCE5?OpenDocument&mostrecent=1

7 www.comlaw.gov.au/ComLaw/Legislation/ActCompilation1.nsf/current/bytitle/A8E34C5706ECF5A0CA256FE700042DE7?OpenDocument&mostrecent=1

8 www.comlaw.gov.au/ComLaw/Legislation/ActCompilation1.nsf/current/bytitle/A2481423864CEE06CA256F71004CEE16?OpenDocument&mostrecent=1

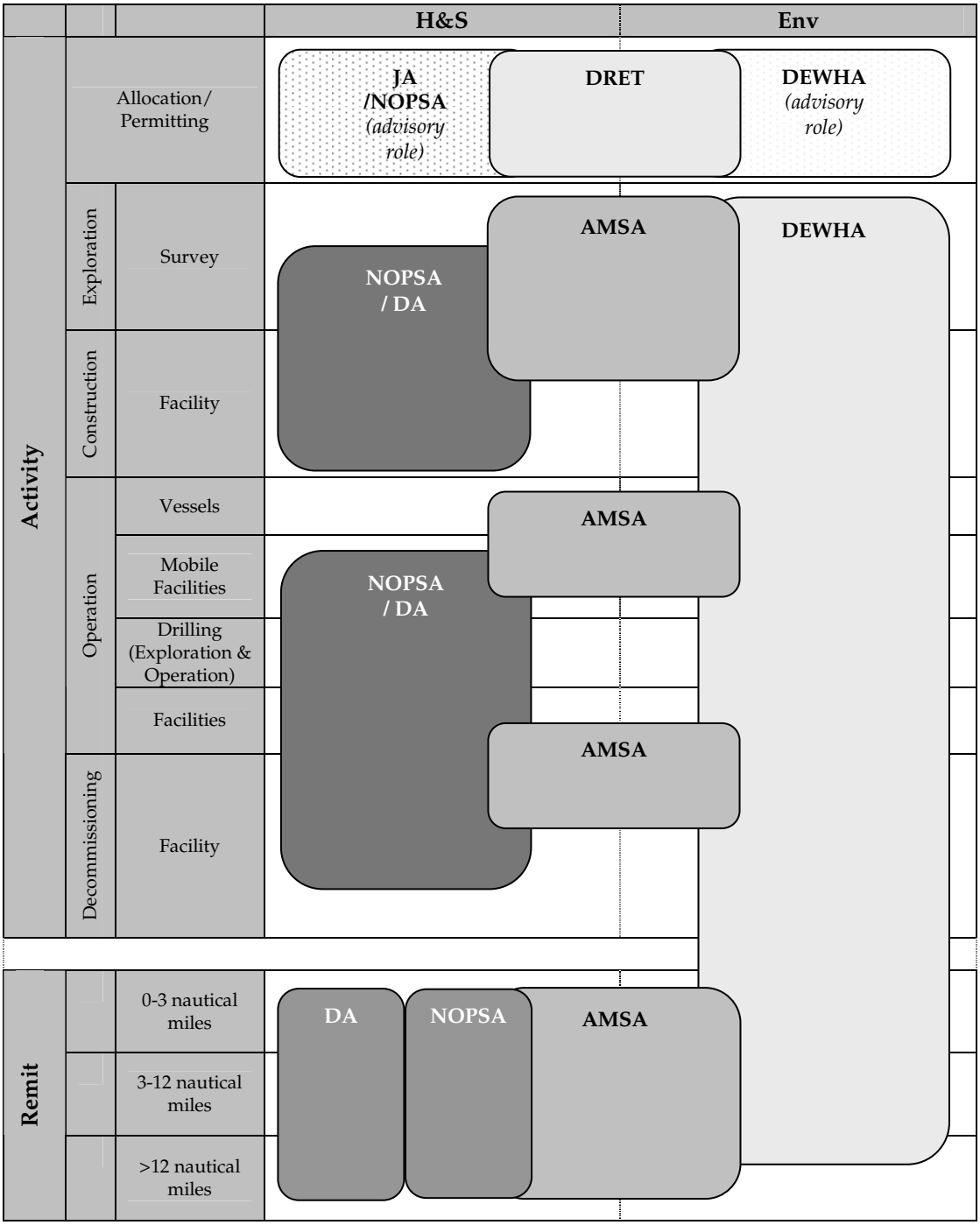
E.3.1.4 Department of Environment, Water, Heritage and the Arts (DEWHA)

DEWHA develops and implements national policy and programs. It is also responsible for the administration of various Commonwealth legislation to protect and conserve Australia's environment and heritage. In addition to this, DEWHA also promotes Australian arts and culture through various programs, sponsorships and forums. DEWHA is the Commonwealth Department responsible for developing and implementing Australian Government initiatives and programs to protect and conserve Australia's oceans and DEWHA works in partnership with the relevant state and territory governments to protect the coasts. DEWHA's main responsibilities are[9]:

- Development of marine bioregional plans for Commonwealth marine areas;
- Management of Commonwealth marine reserves;
- Marine and migratory species protection;
- Marine pest management;
- International marine conservation initiatives;
- Fisheries policy and assessments;
- Marine science and information management;
- Progressing the government's anti-whaling agenda;
- Integrated coastal zone management;
- The Reef Water Quality Protection Plan;
- Policy and governance framework for the Great Barrier Reef;
- Administration of the Great Barrier Reef Structural Adjustment Package;
- The Australian Government's Caring for our Country Reef Rescue initiative; and
- Community Coastcare.

[9] www.environment.gov.au/about/publications/annual-report/08-09/outcome1-coasts.html

Table E2: Regulatory Authorities and Responsibilities



Note: This table is intended to provide an indicative overview of the relative responsibilities and remit of the authorities involved in offshore O&G HSE regulation only. The activity boundaries are based on the O&G exploration and production process rather than any regulatory requirement on the part of the authorities.

E.3.2 General Approach

E.3.2.1 Health and Safety

Australia has adopted an offshore O&G exploration and production HSE permissioning regime that mirrors UK developments and involved the implementation of a Safety Case regime in the early 1990's. Various changes in the Australian regulatory structure and oversight have however occurred since first implementation and the offshore requirements have been somewhat complicated by the constitutional structure and the presence of different legislation and responsibilities for state and federal waters.

As per the UK, the concept of 'as low as reasonably practicable' (ALARP) places a legal duty on the operator to demonstrate that the cost (time, effort, money) of further reduction is grossly disproportionate to the benefit gained. ALARP arguments can be based around the use of industry-accepted standards as well as cost benefit of quantified risks.

E.3.2.2 Environment

Both State and Commonwealth legislation may require environment impact assessments (EIAs) for projects deemed to have the potential for significant environmental impacts. The process of determining whether a project will have significant environmental impacts involves an initial assessment from the operators of whether the project needs to be referred to DEWHA (or relevant state authority). DEWHA/the state authority will then determine whether a formal impact assessment is required. The key questions relating to whether an action should be referred under the *Environment Protection and Biodiversity Conservation Act (1999) (AUS EPBC)* are:

- Is the proposed action likely to have a significant impact on a matter of national environmental significance?
- Is the proposed action likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land)?

It is important to note the relevant State and Territory legislation have different criteria. In most cases there are guidelines available on what constitutes a significant act.

If an EIA is required, the assessment is required to identify potential risks to environmental values and propose management measures and monitoring requirements. The assessment undertaken by the regulatory authority will provide conditions for the project/action to proceed. These conditions may establish management and monitoring requirements, audit requirements, and more recently acceptable outcomes.

When both the State and Commonwealth legislation is triggered there is the potential for applicant to duplicate their efforts. Typically offshore petroleum projects with an onshore component (or within 3nm of the coast) will trigger both State and Commonwealth environmental legislation.

To avoid this type of duplication, the Commonwealth Government has established bilateral agreements under Section 45 of the *AUS EPBC* with all Australian States and Territories. This agreement provides for the State environmental assessment process, which is typically the more detailed assessment, to consider matters of national environmental significance (NES) and therefore fulfil the assessment requirements under Commonwealth legislation. It should be noted there are strict conditions as to when the bilateral agreement can be used and it is not always possible to rely on this agreement.

Typically, in Australia, the outcome of an EIA is governed by various State and Commonwealth guidelines which provide an outline of the acceptable level of impact and offer recommendations for management and monitoring of these impacts. In most States it is common practice to include an Environmental Management Framework and relevant management plans as a function of the EIA process.

Additional conditions unique to the offshore petroleum industry require the submission and approval of an Environment Plan before the commencement of each new stage or activity of a development (such as an exploration drilling campaign, or construction, commissioning, operation, and decommissioning of production and processing facilities). This Environmental Plan must also be consistent with the principles of ecologically sustainable development. Environment Plans are required by the *Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations (2009) (AUS OPGGS(E)R).*

E.3.3 Key Instruments

E.3.3.1 Regulations and Guidelines

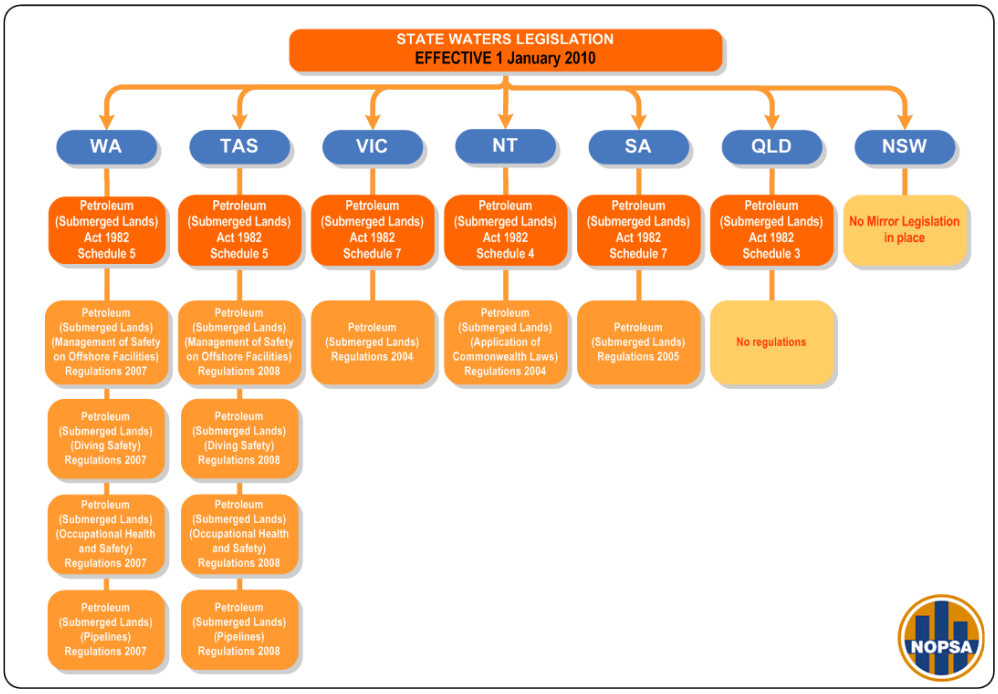
Recent changes have led to *AUS OPGGSA* being the primary piece of legislation through which offshore O&G safety requirements are mandated in Australia. Under the *AUS OPGGSA*, *The Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009 (AUS OPGGS(S)R)* provides specific requirements as they relate to the Safety Case.

As highlighted previously, both State/Territorial and Commonwealth legislation apply in the offshore environment. The various State/Territorial instruments that are in place to manage offshore O&G HSE are presented in *Figure E2*. *Table E4* provides a more detailed overview of the key instruments.

Guidance notes are issued by NOPSA to advise industry on policy and procedure, and to assist inspectors in carrying out their duties.

Management of environmental impacts falls within the *AUS EPBC* which applies to seven matters of NES (see *Section E.3.3.3* below). Additional conditions unique to the petroleum industry through the *AUS OPGGS(E)R* require each stage of development of the O&G operation to submit an environmental plan to supplement the existing environmental management plans.

Figure E2: Structure of Australian Health and Safety Legislation[10]



Note: Since the creation of this diagram New South Wales has aligned their *Petroleum (Offshore) Act 1982* in accordance with the other states.

Offshore Petroleum and Greenhouse Gas Storage Act 2006

The *AUS OPGGSA* is the primary legislation relating to petroleum exploration and recovery, and the injection and storage of greenhouse gas substances, in offshore areas, and for other purposes. The *AUS OPGGSA* ensures that petroleum activities in Commonwealth waters are carried out in an ecologically sustainable manner and as directed in the applicant's Environment Plan.

Approvals are required under *AUS OPGGSA* from the DA and JA to construct, operate and decommission a petroleum facility. The *AUS OPGGSA* came into effect on 1 July 2008, updating and replacing the *Petroleum (Submerged Lands) Act (1967)* in its entirety.

[10] www.nopsa.gov.au/regs.asp

Approvals required under the *AUS OPGGSA* and regulations include the following:

- Exploration permit to explore for and recover petroleum;
- Retention lease to retain an interest for a five year term where the petroleum discovery is not currently commercially viable;
- Production licence to recover petroleum in the licence area and to carry on operations to carry out that purpose;
- Pipeline licence;
- Infrastructure licence;
- Access authorities;
- Approval and registration of a transfer of title or a "dealing";
- Safety Case assessment and acceptance; and
- Environment Plan assessment and acceptance.

Definition of Vessels and Facilities/Installations

Clause 4 of Schedule 3 to the *AUS OPGGSA* defines a facility as a vessel or structure that:

> *(1)(a) is located at a site in Commonwealth waters; and*
> *(b) is being used, or prepared for use, at that site:*
> *(i) for the recovery of petroleum, for the processing of petroleum, or for the storage and offloading of petroleum, or for any combination of those activities; or*
> *(ii) for the provision of accommodation for persons working on another facility, whether connected by a walkway to that other facility or not; or*
> *(iii) for drilling or servicing a well for petroleum or doing work associated with the drilling or servicing process; or*
> *(iv) for laying pipes for petroleum, including any manufacturing of such pipes, or for doing work on an existing pipe; or*
> *(v) for the erection, dismantling or decommissioning of a vessel or structure referred to in a previous subparagraph of this paragraph; or*
> *(vi) for any other purpose related to offshore petroleum operations that is prescribed for the purposes of this subparagraph.*
>
> *(2) Subclause (1) applies to a vessel or structure:*
> *(a) whether it is floating or fixed; and*
> *(b) whether or not it is capable of independent navigation.*

Clause 4(6) of Schedule 3 further identifies the following as not being facilities:

> *(a) an offtake tanker; or*
> *(b) a tug or anchor handler; or*
> *(c) a vessel or structure used for supplying a facility or otherwise travelling between a facility and the shore.*

E.3.3.2 Australian Safety Case Approach

Under the requirements of the *AUS OPGGS(S)R*, operators of offshore installations are required to prepare, submit for review, and ensure operation in accordance with a Safety Case. Safety Cases are subject to formal review and acceptance by NOPSA.

NOPSA describes a Safety Case as a document produced by the operator of a facility which:

- Identifies the hazards and risks;
- Describes how the risks are controlled; and
- Describes the safety management system in place to ensure the controls are effectively and consistently applied.

The core principle of the Australian Safety Case regime is aligned to that of the UK in which those who create the risk must manage it. It is therefore the operators' job to assess their processes, procedures and systems to identify and evaluate risks and implement the appropriate controls, because the operator has the greatest in-depth knowledge of their installation.

NOPSA also requires that the workforce are involved in the development of a Safety Case, so they know what happens in practice and why. This approach is intended to increase the likelihood that employees do the right thing because they are aware of the reasons for a practice, rather than relying on a 'rules-based' culture.

NOPSA assesses Safety Cases and 'accepts' a Safety Case if it is satisfied that the arrangements set out in the document demonstrate that the risks are reduced to as low as is reasonably practicable. Once 'accepted' NOPSA visits facilities to monitor the application of the Safety Cases in practice.

The *AUS OPGGS(S)R* requires (among other things) that the Safety Case for a facility:

- Must contain a description of the facility;
- Must also contain a detailed description of the formal safety assessment for the facility and identify the technical and other control measures that are necessary to reduce that risk to a level that is ALARP; and
- Must also contain a detailed description of the safety management system.

Various guidance notes have been published by NOPSA to aid the preparation of Safety Cases, including guidance on:

- Safety Case content and level of detail[11];
- Safety Case lifecycle management (highlighting when Safety Cases should be submitted and when revisions are required to the Safety Case)[12]; and
- Control measures and performance standards[13].

[11] www.nopsa.gov.au/document/N-04300-GN0106%20-%20Safety%20Case%20Content%20and%20Level%20of%20Detail.pdf

[12] www.nopsa.gov.au/document/N-04300-GN0087%20-%20Safety%20Case%20Lifecycle%20Management.pdf

[13] www.nopsa.gov.au/document/Guidance%20Note%20-%20Control%20Measures%20and%20Performance%20Standards.pdf

E.3.3.3 Environmental Assessment and Approvals

As highlighted in *Section E.3.2.2* above, actions that have, or are likely to have, a significant impact on a matter of NES require approval from the Australian Government Minister for the Environment, Heritage and the Arts who will decide whether assessment and approval is required under the *AUS EPBC*. The eight matters of national environmental significance protected under the *AUS EPBC* are:

- Listed threatened species and ecological communities;
- Migratory species protected under international agreements;
- Ramsar wetlands of international importance;
- The Commonwealth marine environment;
- World Heritage properties;
- National Heritage places;
- Great Barrier Reef Marine Park; and
- Nuclear actions.

Other Matters protected include:

- The environment, where actions proposed are on, or will affect Commonwealth land and the environment; and
- The environment, where Commonwealth agencies are proposing to take an action.

Referral

If the proposed action is likely to have a significant impact on a matter of NES, or is likely to have a significant impact on the environment in general, then a referral must be made to the Minister for the Environment, Heritage and the Arts.

The purpose of the referral is to determine whether a formal environmental assessment is required. The referral takes the form of a standard pro-forma document[14] incorporating discussion of the location of the proposed action, details of the proposed action, description of the environment and likely impacts, measures to avoid or reduce impacts and a conclusion on the likelihood of significant impacts.

[14] www.environment.gov.au/epbc/assessments/pubs/referral-form.doc

The Minister for the Environment, Heritage and the Arts has 20 business days to decide if the proposed action requires a formal assessment and approval. As part of the 20 business days, the *AUS EPBC* provides a public comment period of 10 business days (with no extensions). This provides an opportunity for relevant Australian, State and Territory government ministers and members of the public to comment on the proposed action. During the decision process, the Minister for the Environment, Heritage and the Arts may make one of three decisions:

- *Not controlled action*. If the proposed action is not likely to be significant, approval is not required if the action is taken in accordance with the referral. Consequently, the action can proceed (subject to any state or local government requirements).
- *Not controlled action — 'particular manner'.* If the proposed action is not likely to be significant if undertaken in a particular manner, approval is not required.
- *Controlled action.* If the proposed action is likely to be significant, it is called a 'controlled action'. The matters which the proposed action may have a significant impact on (e.g. Ramsar wetlands or threatened species) are known as the controlling provisions.

Consequently, the proposed action will require approval and is subject to the formal assessment and approval process. The type of assessment (approach) will be decided at the same time.

Assessment

If a proposed action is considered a controlled action the method of assessment will need to be ascertained. The assessment approach will depend on a range of considerations, including the complexity of the proposed action. Actions can be assessed using one of the following approaches:

- Accredited assessment;
- Assessment on referral information (assessment undertaken solely on the information provided in the referral form);
- Assessment on preliminary documentation (referral form and any other relevant material identified by the Minister for the Environment, Heritage and the Arts as being necessary to adequately assess a proposed action);
- Assessment by Environmental Impact Statement (EIS) or Public Environment Report; or
- Assessment by public inquiry.

Compliance and Enforcement

The *AUS EPBC* establishes a strong framework for protection of the environment and the conservation of biodiversity. It includes a broad range of enforcement mechanisms for managing suspected or identified instances of non-compliance and for reviewing the compliance of referred projects. The Australian Government's approach to environmental compliance with the *AUS EPBC* is outlined in the DEWHA *Compliance and Enforcement Policy*[15]. DEWHA investigates all allegations of non compliance and has a range of enforcement mechanisms available to it.

These mechanisms include:

- That the Minister for the Environment, Heritage and the Arts may direct that an environmental audit be carried out if he or she has reasonable grounds to believe that a person has contravened or is likely to contravene an environmental approval or permit issued under the *AUS EPBC*;
- Civil or criminal penalties that can apply to individuals and corporations that contravene the requirements for environmental approvals under the *AUS EPBC*, including the provision of false or misleading information to obtain approval;
- Remediation orders and determinations to repair or mitigate environmental damage resulting from a contravention of the *AUS EPBC*; and
- Enforceable undertakings to negotiate civil penalties and provide for future compliance.

The *AUS OPGGSA* and the associated *AUS OPGGS(E)R* describe the requirements that must be included in Environment Plans that relate to reporting and monitoring. Definitions are provided for what constitutes recordable and reportable incidents and there are mechanisms for notifications to be made to relevant authorities when such incidents occur. Environment Plans also include details regarding what records will be maintained during the course of the activity to assist in demonstrating compliance with the commitments made in the Environment Plan.

The DA can perform audits either during or after an activity to evaluate whether the activity is/was performed in accordance with the requirements in the Environment Plan.

E.3.4 Reporting and Inspection

E.3.4.1 Monitoring

Overall monitoring of safety management system effectiveness should address both systems and compliance, ascertaining whether the operator has the right systems (policies, procedures, standards) in place, whether the operator is complying with them and whether the total system is delivering what is expected. It is a requirement for the operator to perform this monitoring at an appropriate frequency, which may vary across the elements of the management system.

[15] www.environment.gov.au/about/publications/pubs/compliance-enforcement-policy.pdf

In addition, and as soon as practicable, but not later than 15 days after the end of each month, the operator of a facility must submit, to the Safety Authority, a written report, for the month, summarising:

- The number of deaths of persons at the facility; and
- The number and types of injuries to persons at the facility, other than minor injuries not requiring treatment or requiring treatment only in the nature of first aid.

In addition person-hours worked must be provided to allow calculation of key performance indicators for the industry in terms of "per million person-hours worked".

E.3.4.2 Validation

As with the UK Safety Case regime, validation is a key component of the Australian Safety Case model. Within the Australian model, there is a provision requiring operators to agree with NOPSA the scope of the validation prior to submission of the Safety Case. As with the UK model, the validation should focus on those elements, a failure of which, would pose a high risk to personnel at that stage in the life of the facility (i.e. result in a Major Accident Event (MAE)).

Validators must be sufficiently impartial, competent and able, and have had sufficient access to the necessary information to formulate a decision. There is a requirement that the operator submit information about the validator to NOPSA. Whilst this information can be provided as part of the validation report, it is recommended that submission of information about the validator is undertaken prior to submission of the validation report.

In some circumstances, marine classifications or aspects thereof can be used to address verification requirements. This is dependent on the validator of the marine class meeting the competence, access to data and ability to form an independent opinion requirements of the *AUS OPGGS(S)R.*

E.3.4.3 Inspections

Planned inspections by NOPSA are a critical examination of aspects of a facility - systems and operations described in the Safety Case, pipeline safety management etc. Information will also be taken from other sources such as incident notifications and investigations, past inspections and audits.

Occupational Health and Safety (OHS) inspectors may conduct inspections and audits of facilities. Inspections and audits are used to monitor compliance with the legislation and ongoing implementation and compliance with Safety Cases, pipeline safety management plans and diving safety management systems including diving project plans.

Planned inspections focus on facilities (including pipelines). The subject of planned inspections will include both control and management of MAE and OHS. There will be at least one inspection per year for each human resourced installation, where practicable.

During the inspections and audits, OHS inspectors will communicate with all levels of the workforce including Health and Safety Representatives. Inspections and audits may take several days and incorporate overnight stays on facilities.

The controls and safety management system elements inspected will be reviewed as far as practicable in line with a range of factors:

- Are the controls implemented?
- Are the controls functional?
- Are the controls maintained?
- Are the controls audited?
- Is the workforce competent?

Each planned inspection will focus on:

- Verification of operator commitments regarding the recommendations from previous inspections and audits and incident investigations;
- For offshore facilities: controls and/or management system elements taken from a control measure related to at least one of each of the following:
  - a major accident event;
  - an occupational health and safety hazard;
- For pipelines: controls and/or management system elements from the Pipeline Safety Management Plan, of which at least one has a Significant Pipeline Accident Event focus and at least one has an OHS focus; and
- For diving operations: controls and/or management system elements from the Diving Safety Management System/Diving Project Plan.

Inspections of Floating Production Storage and Offloading facilities (FPSOs) and Floating Storage and Offloading facilities (FSOs) will employ a checklist focused on sail away preparedness. Further information on NOPSA's inspection regime is contained within its *Planned Inspection Policy*[16].

E.3.4.4 Enforcement

Although the Safety Case regime places the duty of ensuring a facility is safe and without risk to the health of any person at or near the facility on the operator, NOPSA has a responsibility to provide assurance to the Australian community, and particularly to stakeholders, that operators are meeting mandated requirements and comply with the relevant legislation.

NOPSA undertakes various types of activities to increase compliance, including the promotion of compliance and enforcement. This is administered through NOPSA's Compliance and Enforcement policy[17], the central principles of which and the methods through which NOPSA achieves them are presented in *Table E3* below.

[16] www.nopsa.gov.au/document/N-02000-PL0025%20-%20Inspection.pdf

[17] www.nopsa.gov.au/document/N-05000-PL0067%20-%20Compliance%20and%20Enforcement.pdf

Table E3: NOPSA Enforcement Approach and Process

NOPSA Enforcement Approach	Process
Outcome Focused	Enforcement action will primarily target the achievement of a clear safety outcome. Some enforcement action may also be directed towards securing regulatory compliance for other reasons (e.g. reporting of accidents, which is required in order that NOPSA can investigate).
Proportional and Responsive	Once non-compliance is found, the decision to act is made quickly and the response implemented immediately. An Enforcement Management Model ensures enforcement action is proportionate to the risk posed by the non-compliance by considering: • the risks to health and safety inherent in any incident or offence that may have been committed; • the gravity of any incident or offence that may have been committed; and • previous enforcement and the compliance history of the operator. A proportionate response minimises: • the amount of regulatory intervention needed to effectively mitigate the risks; and • the costs of regulatory action to NOPSA (enforcement costs) and to the operator (business costs).
Informed	NOPSA's enforcement action will be informed by: • assessment; • planned inspections and audits; • investigations of accidents and dangerous occurrences; • investigations of complaints; • operator compliance history and previous enforcement actions; • national programmes; and • industry trends.
Transparency	Transparency is important in maintaining stakeholder confidence and helping operators to understand what is expected of them. Compliance and enforcement measures are to maintain transparency so that operators understand what compliance and enforcement action is likely to be taken. This means that the OHS inspector should lead the responsible party, and relevant stakeholders, through compliance and enforcement decision-making where appropriate.
Consistent	Consistency in enforcement decision making is promoted by: • embedding quality assurance practices in the enforcement decision making process such as subjecting the decision to peer review (comparing the decision with similar decisions, and ensuring that established processes have been followed); • the use of an enforcement management tool that reduces the scope for subjectivity; • agreement and development of a standard process for compliance and enforcement action; • the use of a review process for significant enforcement decisions prior to their finalisation; • a set of enforcement measures provided by the legislation (with the choice of which to deploy, guided by the Enforcement Management Model); and • consistent training for all OHS inspectors.

NOPSA Enforcement Approach	Process
Targeted	Where non-compliant activity is identified, relevant responsible parties will be considered for enforcement action. Regulatory effort will be directed primarily towards: • operators undertaking activities that generate high levels of risk; • operators with hazards that are not well managed; and • repeat offenders.
Aligned with the Principles of Due Process and Natural Justice	Enforcement action must be carried out within the powers and processes of the applicable legislation, using principles of due process and natural justice (also referred to as procedural fairness). This means that enforcement action must: • be based on logical proof or evidentiary material; • provide an opportunity for the operator to respond to the OHS issue or incident (including appeals); and • be taken without bias.
Subject to Probity	The concept of probity implies diligence and integrity in the way enforcement action is taken, and how OHS inspectors and NOPSA conduct themselves. It includes: • independence of inspectors from outside influence; and • checks and reviews of decision making.

Compliance and Enforcement Tools

NOPSA's *Enforcement Management Model*[18] is a tool which provides guidance on determining what compliance or enforcement action needs to be taken when NOPSA identifies the need for potential improvements in operators' health and safety management systems or detects non-compliance with obligations imposed by the *AUS OPGGSA* and associated regulations.

The tools available to NOPSA in taking compliance and enforcement action include:

- Promotion of Compliance; and
- Enforcement action.

The compliance and enforcement tools include a range of graduated actions that allow OHS inspectors to determine an initial enforcement expectation in each case and escalate the action if required, based on a range of factors.

All allegations of non-compliance are checked to determine whether a contravention of the legislation has occurred. NOPSA has the discretion to investigate an allegation. NOPSA may opt to terminate an investigation once commenced if, for example, the identity of the alleged offender cannot be ascertained or there is insufficient evidence to establish any non-compliance.

[18] www.nopsa.gov.au/document/N-05000-SOP0147%20-%20Enforcement%20Management%20Model.pdf

Improvement Notices

AUS OPGGSA allows an OHS inspector to issue an improvement notice if the OHS inspector believes on reasonable grounds that a person is contravening, or has contravened, a provision of Schedule 3 of the *AUS OPGGSA*. Details of the due process for issuing an improvement notice, the format (single issue, with stipulation of action to be taken and the time period in which the action should be taken), as well as provisions for extension of the notice are provided in NOPSA's policy Compliance and Enforcement policy document[19].

On non-compliance with an improvement notice, it is NOPSA policy to pursue prosecution against the defaulting party, wherever possible. In the first instance, prosecution action should be considered in relation to the failure to comply with the notice rather than the material non-compliance which was the subject of the improvement notice.

Prohibition Notices

AUS OPGGSA allows an OHS inspector to issue a prohibition notice if the OHS inspector is satisfied on reasonable grounds that it is necessary for the operator of a facility to remove an immediate threat to the health or safety of any person.

Prosecution

AUS OPGGSA allows for prosecution to be commenced following a non-compliance of the applicable legislation. Depending on the circumstances, prosecution may be commenced by either:

- NOPSA; or
- An OHS inspector.

Due to potential liability issues, prosecutions are generally instituted by NOPSA.

A Health and Safety Representative or a workforce representative may also request that NOPSA institute prosecution in certain circumstances.

NOPSA will consider prosecution in circumstances where there is a serious or ongoing alleged non-compliance with the applicable legislation. A decision to prosecute is based on an assessment of the nature of the non-compliance and the responsible party's performance.

[19] www.nopsa.gov.au/document/N-05000-PL0067%20-%20Compliance%20and%20Enforcement.pdf

Appeals

Several appeal mechanisms are possible. The right to appeal notices is detailed in notes included on the back of notices issued by inspectors. Depending on the circumstances issues may be:

- Considered by the reviewing authority (Fair Work Australia); and/or
- Externally reviewed (in some cases) under the *Administrative Appeals Tribunal Act (1967)*.

All decisions made by NOPSA may be subject to review by the Federal Court.

Working with other Agencies

Enforcement is carried out within the context of wider Government policy and other statutory requirements. NOPSA employees should, at all times, be mindful of:

- Interagency relationships (including the Commonwealth Director of Public Prosecutions, Australian Federal Police and DAs); and
- Media co-operation and communication.

NOPSA will notify other agencies and authorities as provided for in the relevant MoU or Service Level Agreement.

Working with other Stakeholders

In addition to the government agencies described above, NOPSA may also come into contact with other interested parties including:

- State and Territory Police;
- Coroners;
- Health and safety/workforce representatives;
- Injured persons; and
- Families or representatives of injured or deceased persons.

NOPSA aims to maintain appropriate levels of transparency with regard to any and all stakeholders and other interested parties in relation to proceeding with investigations and enforcement action.

Review

Enforcement actions taken are to be reviewed against procedures and expected outcomes by the NOPSA Senior Management Team on a continual basis. This should be seen as an opportunity for recognising best practice, as well as areas for improvement that lead to internal corrective actions and/or internal procedural revision.

E.3.5 Funding and Liabilities

E.3.5.1 Funding

The NOPSA Cost Recovery Impact Statement (the CRIS) was developed so that NOPSA would be fully funded by an industry safety fee. The fees and statement have been developed in line with the Government's cost recovery guidelines for regulatory agencies[20] with charges set accordingly.

Cost recovery is accomplished through an annual Safety Case levy imposed for a calendar year or part calendar year on operators as set out the *Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Act (2003)* and calculated through a levies flow chart[21]. The levy comprises two components:

- A Facility amount, based on the size and complexity of the facility; and
- A Safety Management System (SMS) amount.

The facility amount is calculated from a facility rating (on a scale of 1 (monopod) to 12 (large platform) multiplied by a unit value currently set at AU$26,000. For mobile facilities, the SMS amount is set at AU$80,000, whilst if the operator has at least one facility that is not mobile, the SMS amount is AU$125,000.

E.3.5.2 Liabilities

Section 571 of the *AUS OPGGSA* states that registered holders of petroleum exploration permits, retention leases, and production, infrastructure or pipeline licenses must:

> *…maintain insurance against:*
> *(f) expenses; or*
> *(g) liabilities; or*
> *(h) specified things;*
> *arising in connection with, or as a result of:*
> *(i) the carrying out of work under the permit, lease or licence; or*
> *(j) the doing of any other thing under the permit, lease or licence;*
>
> *including insurance against expenses of complying with directions relating to the clean-up or other remediation of the effects of the escape of petroleum.*

[20] www.finance.gov.au/publications/finance-circulars/2005/09.html#FMG_4

[21] www.nopsa.gov.au/document/Safety%20Case%20Levies%20Flow%20Chart.pdf

E.4 ALLOCATION

E.4.1 Offshore Petroleum Titles

The *AUS OPGGSA* makes provision for five types of petroleum titles to be granted to companies:

- Exploration permits which provide exclusive rights to undertake seismic surveys and drilling in a defined area;
- Retention leases granted to the holder of an exploration permit, where a discovery is not currently commercial but is expected to become so within 15 years;
- Production licences granted to the holder of an exploration permit or retention lease, for the recovery of petroleum following a commercial discovery;
- Infrastructure licences granted to enable the construction of offshore facilities for the storage and processing of petroleum; and for the construction of facilities for the recovery of petroleum in areas outside a production licence; and
- Pipeline licences granted for the construction and operation of a petroleum transport pipeline.

Titles are awarded over areas comprising one or more (or parts thereof) graticular blocks of 5 minute longitude and 5 minutes latitude.

In areas not covered by titles, companies may apply for a special prospecting authority (SPA) to undertake seismic or other geophysical or geochemical survey work (but not to drill a well) over a period of up to 180 days. An SPA provides a non-exclusive right to examine an area prior to any potential invitation for applications for an exploration permit. It does not provide any rights in relation to the award of a future exploration permit. All petroleum operations require specific approval before the activity commences.

E.4.1.1 Exploration Permits

Prospective offshore areas released each year are made available for bidding under a work program system.

Applicants are required to propose a six year exploration program. The first three years of the program is the "minimum guaranteed work program", and all program components in this period must be completed to avoid cancellation of the permit. The "secondary" work program covers the final three years of the permit. This secondary work is guaranteed on a yearly basis, providing a greater degree of flexibility for the title holder.

Following the completion of the minimum guaranteed work program, title holders can assess prospects in a permit to determine if it is in their interest to continue with the secondary work program or to surrender the permit in good standing. Once a year is entered in the secondary term, however, the work outlined in the initial bid for that year must be undertaken.

Exploration permits are issued for an initial six year term, and in most circumstances may be renewed for a further two terms each of five years. At each renewal 50 percent of the permit area must be relinquished. Special provisions apply to permits with six or fewer graticular blocks and permits of only one block cannot be renewed. If a location block is successfully declared over a petroleum discovery, then blocks which the discovery covers will be exempt from the 50 percent relinquishment requirement.

E.4.1.2 Retention Leases and Production, Infrastructure and Pipeline Licences

On making a petroleum discovery, a title holder must notify the DA of the respective jurisdiction giving details of the discovery including the location blocks. If the discovery is considered by the title holder to be commercial, they may apply for a production licence. The title holder has two years after the declaration of a location (or a possible further two years in special circumstances) in which to apply for a production licence, and provide details of development proposals for the area. Production licences are issued for the duration of production plus a period of five years.

If a title holder makes a non-commercial discovery that is likely to become commercially viable within the next 15 years, an application may be made for a retention lease rather than a production licence. As with a production licence, the title holder has two years (or a possible further two years in special circumstances) after declaration of the location in which to apply for a retention lease, and provide an assessment of the commercial prospects of development.

Retention leases are issued for five years, with renewal periods of five years. At the time of application for a grant and at each renewal of a retention lease, the lessee must demonstrate that the discovery is not currently commercially viable, but is likely to become commercially viable within the next 15 years.

Where a location is not revoked and if the title holder does not apply for a production licence or a retention lease within the specified time, the exploration permit in respect of the blocks covered by the location will be terminated.

Where production facilities require a pipeline to transport petroleum to shore or other facilities, a pipeline licence will be granted indefinitely. But it may be terminated if no construction occurs or it is not used for a continuous period of at least five years.

An infrastructure licence enables a company to carry out certain petroleum activities, such as conversion of gas to liquefied natural gas or methanol, or to store and process petroleum. It also allows a company to utilize infrastructure which lies outside the licence area.

E.4.1.3 Process for Assessing Applications

An application will be assessed against the selection criteria, by technical experts nominated by the JA to prepare a report containing recommendations as to the winning bid.

Applications will be assessed on the basis of the information contained in the written applications together with any additional information requested by the DA, which should also be submitted in writing. Applicants may also be invited to attend an interview with the assessment panel.

In the event that a winning applicant cannot be chosen on the basis of the written application or interview, the parties may be invited to submit supplementary written bids as a basis for the selection of a successful applicant.

Consideration of Past Performance

The JA may also take into consideration the applicant's past performance in other petroleum exploration areas in Australia or, if relevant, elsewhere. This may occur even where the applicant's proposed work program is the highest submitted. This would particularly apply if one or more of the applicants were participants in previous permits that had been cancelled because of default in meeting work program commitments and where there was no agreement to maintain good standing.

E.4.1.4 Assessment criteria

All exploration applications are assessed by a panel of officials representing the relevant JA. In assessing a bid the panel take into consideration the technical merit of the proposed exploration work program, along with the technical and financial competence of the applicant to undertake the proposed work.

The basic objective in awarding any exploration permit is to select the work program bid most likely to achieve the fullest assessment of the petroleum potential within the permit area in the minimum guaranteed period, recognising the essential role of wells in the discovery of petroleum.

Work program bids will be assessed against the criteria listed below:

- The number and timing of exploration wells to be drilled, provided there is an adequate supporting program of geological and geophysical work;
- The amount, type and timing of seismic surveying to be carried out;
- Other new surveying, data acquisition and reprocessing to be carried out;
- The amount, type and timing of any purchasing or licensing of existing data;
- Pre-purchase of existing non-exclusive data cannot form part of the work program but any interpretation of that data will be taken into account in assessing the relative merits of the work program proposed;
- Existing non-exclusive data proposed to be purchased after the award of a permit may form part of the work program provided that this does not disadvantage a competitor who purchased the data prior to bidding;
- Significant appraisal work over any previous petroleum discoveries within the area; and
- The extent to which the applicant's technical assessment supports the amount of seismic surveying and the number and conceptual targets of wells proposed in the application.

In the event that a winning applicant cannot be chosen on the basis of the minimum guaranteed work program, the amount and timing of work proposed under the secondary work program will be assessed against the above criteria.

The Government is currently reviewing policy and administration pertaining to retention leases and is consulting with industry on proposed changes. Revised Guidelines are expected to be available to industry in late 2010.

E.5 EXPLORATION AND PRODUCTION ACTIVITIES

E.5.1 Exploration Surveying

As highlighted previously, the operation of offshore support vessels such as marine seismic vessels fall under the jurisdiction of AMSA and in particular the requirements of *Marine Order 50: Special Purpose Ships* and *Marine Order 59: Offshore Support Vessel Operations*.

In terms of environmental protection, *AUS EPBC* referral submissions to DEWHA for marine seismic surveys have in most cases been determined to be a "Not Controlled Action", requiring no further assessment under *AUS EPBC*. The only exceptions have been those seismic surveys in close proximity to sensitive receptors such as whale calving or migration paths. Environmental plans are subsequently prepared as required under the *AUS OPGGSA*.

In some cases, DEWHA determine that a seismic survey is "not a controlled action if undertaken in a particular manner". In such cases DEWHA typically stipulate that the survey should be undertaken in accordance with the *AUS EPBC Policy Statement 2.1 – Interaction between offshore seismic exploration and whales*[22].

Other specific conditions, in addition to the measures included in the policy statement may also be stipulated. Such measures can include the prohibition of seismic activity before or after certain dates of the year, stipulated distances to be maintained between the seismic vessel and sensitive environments (eg. reefs or whale calving areas), reduction of light sources or the involvement of Marine Mammal Observers.

An Environment Plan under the *AUS OPGGSA* is required to be prepared, submitted and approved by the DA prior to the commencement of any seismic survey.

E.5.2 Exploration Drilling

Details of the exploration wells to be drilled form a key component of the initial exploration permit application.

Operators typically complete an internal evaluation of their exploration well campaigns before deciding whether to submit an *AUS EPBC* referral for exploration wells. A significant shift in regulator sensitivity to exploration drilling and potential oil spill risks occurred as a result of the Montara well head platform hydrocarbon release in August 2009. Since that time, more comprehensive environmental assessments, hydrocarbon spill modelling and spill response capacities have been required by regulators in their evaluation of exploration drilling campaigns. The BP Gulf of Mexico spill is similarly impacting national regulator sentiment to exploration drilling in Australian waters.

Most proponents do prepare and submit an *AUS EPBC r*eferral for exploration well drilling. Included in the referrals are all the key impacts associated with drilling and the relevant mitigation measures.

An Environment Plan under the *AUS OPGGSA* is required to be prepared, submitted and approved by the DA prior to the commencement of any exploration drilling.

E.5.3 Production Activities

Detailed guidance relating to the required content and level of detail of the Safety Cases that are intended to address HSE management onboard installations is provided by NOPSA[23].

[22] www.environment.gov.au/epbc/publications/pubs/seismic-whales.pdf

[23] www.nopsa.gov.au/document/N-04300-GN0106%20-%20Safety%20Case%20Content%20and%20Level%20of%20Detail.pdf

For example, NOPSA guidance states that:

> *The Safety Case for a facility must contain a description of the facility that gives details of:*
>
> *(a) the layout of the facility;*
> *(b) the technical and other control measures identified as a result of the formal safety assessment; and*
> *(c) the activities that will, or are likely to, take place at, or in connection with, the facility; and*
> *(d) for a facility that is a pipeline:*
> > *(i) the route corridor of the pipeline and the pipeline's interface start and end positions; and*
> > *(ii) the compositions of petroleum that are to be conveyed through the pipeline when it is operating; and*
> > *(iii) the safe operating limits for conveying those compositions through the pipeline; and*
> *(e) any other relevant matters.*

The Safety Case for a facility must specify all Australian and international standards that have been applied, or will be applied, in relation to the facility or plant used on or in connection with the facility for the relevant stage or stages in the life of the facility for which the case is submitted.

For some facilities, compliance with industry standards (including Australian and international standards, codes of practice, etc.) may play an important role in providing evidence that necessary and appropriate control measures have been identified. In principle, such standards may be Australian Standards, equivalents from overseas organisations, international industry practices such as those from the American Petroleum Institute, or company-specific standards. However, whichever standards are being used, the standards, and the control measures that they apply, should all be shown to be suitable and appropriate to the specific facility, taking account of its type, scale, activities, location, etc.

It is common for an operator to adopt a suite of standards, perhaps taken from a number of different organisations. In such cases, significant effort may be necessary to show that this overall suite of standards is suitable and appropriate, as well as the individual parts. Operators should also be mindful of the potential complications that use of multiple standards can cause. For example, there are a number of different standards available for hazardous area electrical equipment, however if different standards are used for different parts of a facility, this can create different ongoing maintenance and inspection regimes for similar equipment on the same facility.

NOPSA's Safety Case guidance provides a summary of the types of information required for different operations, but does not specify the manner in which these requirements should be met, which is accordance with the Safety Case approach. In the case of drilling and production platforms, operations covered within the guidance which could be applicable include:

- Construction and installation;
- Machinery and equipment;
- Production operations;
- Marine operations; and
- Drilling and well intervention operations.

As described previously, environmental assessments for full field developments are required under *AUS EPBC* whenever there is the potential for a significant impact on any one or more of the eight matters of national environmental significance.

Subsequent to approval being granted for full field developments under the *AUS EPBC*, Environment Plans under the *AUS OPGGSA* are then required to be prepared, submitted and approved by the DA prior to each new phase/activity. Separate Environment Plans are typically prepared for:

- Construction and installation;
- Operations; and
- Decommissioning.

Depending upon the sequence and timing of activities, Environment Plans can be developed for specific components of the overall development such as just for the pipeline installation or platform installation.

E.5.4 Mobile Facilities

A number of specific provisions for mobile facilities are provided in the NOPSA Guidance:

- Technical and Other Control Measures (Activities, machinery and equipment):

  Mobile facilities like drilling rigs and construction vessels must consider carefully what activities need to be included in the Safety Case. These facilities are essentially designed to perform specific tasks, but the locations and circumstances of each job will be different. The operators of these facilities therefore need to think carefully about how to identify and describe these activities so that they are applicable to each new job the facility undertakes.

- Technical and Other Control Measures (General Provisions):

  Mobile facilities must also specify the systems in place for shut down and disconnect, where relevant, in the event of an emergency within the facility description. It should also describe the systems for providing audible and visible warnings on shutting down or disconnect.

- Technical and Other Control Measures (Command Structure)

  For self propelled mobile facilities such as some FPSOs and MODUs consideration needs to be given to the transition from facility to vessel / vessel to facility, and a discussion in the facility description of the command structures that apply, supported by applicable processes described in the SMS.

  In addition to these elements, *AUS OPGGSA* (*Reg 2.20(6))* specifically requires that:

  The Safety Case for a mobile facility must also specify systems that:

  (a) in the event of emergency, are adequate to shut down or disconnect all operations on the facility that could adversely affect the health or safety of persons at or near the facility; and
  (b) are adequate to give appropriate audible and visible warnings of the shutting down or disconnecting of those operations.

E.5.5 Pipelines

From 1 January 2010, under the *AUS OPGGS(S)R*, licensed pipelines were reclassified as facilities requiring a Safety Case. In addition to the requirements of a Safety Case previously discussed, pipeline Safety Cases require definition of the compositions of petroleum conveyed in the pipeline. When this composition changes, a revision to the Safety Case is also required.

Other requirements of pipeline Safety Cases include a description of the interfaces between the pipeline, the facilities connected to it, and the hazards posed by one facility on the other. A frequency of periodic inspection and testing of pipe emergency shut-down valves should also be included. Pipes not requiring a license must be addressed in the Safety Case for the facility.

The environmental assessment of pipelines is incorporated into the overall *AUS EPBC* impact assessment for the full field development.

As mentioned previously, an Environment Plan addressing the pipeline installation is required prior to pipeline installation. The Environment Plan is required to be aligned with the original *AUS EPBC* impact assessment and any approval conditions that were stipulated as Ministerial Conditions in the project's *AUS EPBC* approval. Similarly, pipeline operations also need to be addressed in an Environment Plan prior to commencing operations of the pipeline.

E.6 DECOMMISSIONING ACTIVITIES

Under *AUS OPGGS(S)A*, the activity of decommissioning of offshore facilities requires the production of a Safety Case prior to the commencement of the activity. In addition, as with construction and installation activities, decommissioning will usually include involvement of one or more other facilities which will also need to have a Safety Case in force prior to commencement of decommissioning activities.

Specific guidelines for decommissioning under *AUS OPGGS(S)A* regime have not been issued, however guidelines for the decommissioning of offshore O&G facilities were issued by DRET in 2002[24], outlining the process of seeking approval for decommissioning O&G facilities in Australia's offshore waters remain available. A subsequent discussion paper issued highlighting inadequacies of this approach was also issued by DRET in 2008[25].

Decommissioning is discussed in the environmental assessment of the full field development under the *AUS EPBC*. Design and mitigation measures included in the original EIA typically do become commitments that need to be complied with during the final decommissioning of facilities. However, given the length of time that will typically transpire between the original EIA and decommissioning, the environmental impact of decommissioning facilities is revisited again closer to the time of decommissioning. Prior to decommissioning taking place, an Environment Plan is required under the *AUS OPGGSA*.

E.7 MAJOR ACCIDENTS

The term major accident event is defined in *AUS OPGGS(S)R* as:

> *An event connected with a facility, including a natural event, having the potential to cause multiple fatalities of persons at or near the facility.*

The formal safety assessment (FSA) component of a Safety Case is focused on major accident events. Providing a well considered, detailed description of a suitable and sufficient formal safety assessment within the Safety Case will enable operators to provide evidence of:

- An understanding of the factors that influence risk and the controls that are critical to managing risk;
- The magnitude and severity of the consequences arising from major accident events for the range of possible outcomes;
- The likelihood of potential major accident events;
- Clear linkages between hazards, the major accident events, control measures and the associated consequences and risk; and
- A prioritised list of actions that reduce risks to a level that is ALARP.

The steps for developing a Safety Case are integrally linked. For this reason the process is not a strictly linear one, and some steps can overlap. Identifying and assessing control measures, for instance, cuts across all areas of the FSA process as shown in *Figure E3*.

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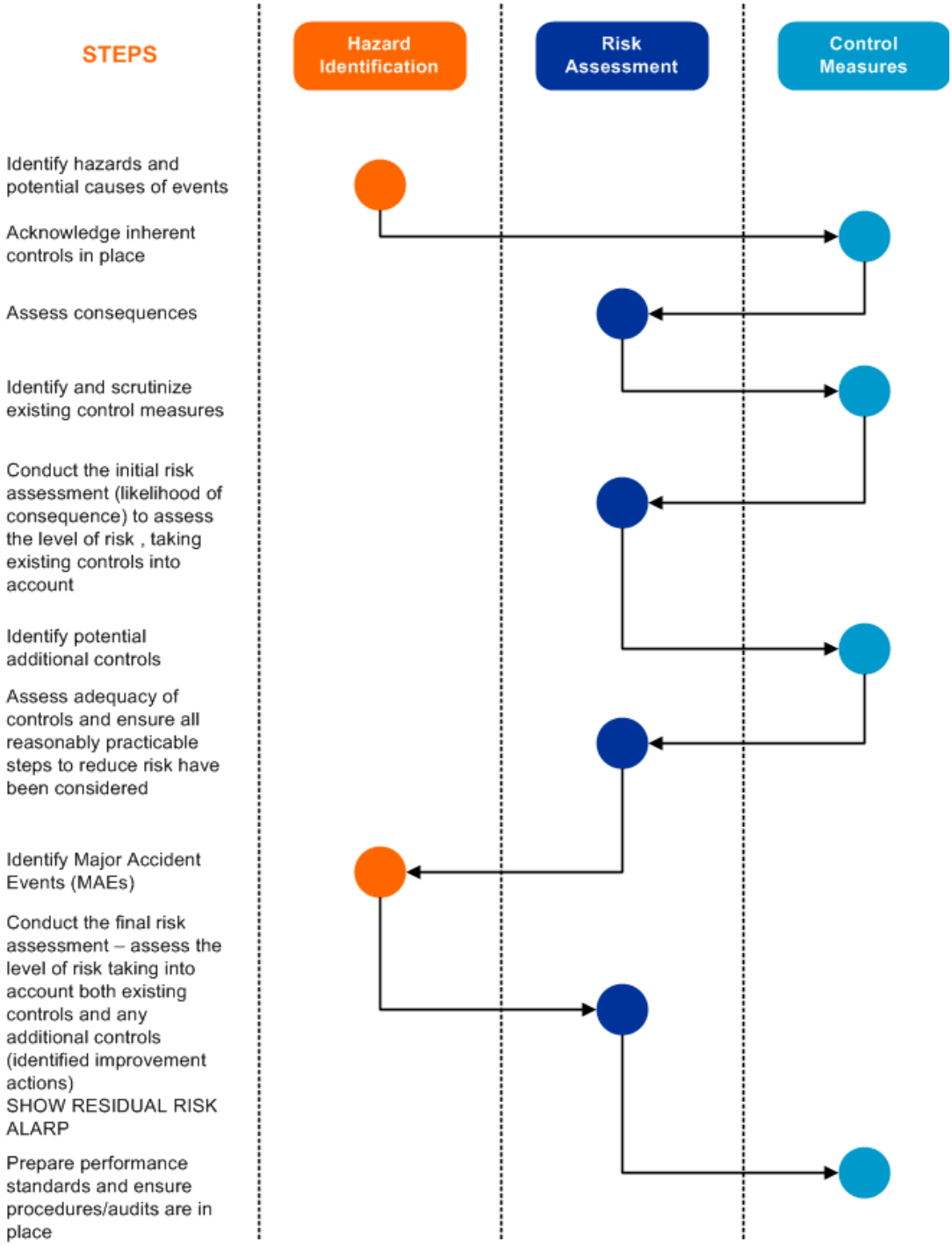
[24] www.ret.gov.au/resources/Documents/Upstream%20Petroleum/Guidelines_for_the_Decommissioning_Australia%27s_Offshore_Oil_and_Gas_Facilities.pdf

[25] www.ret.gov.au/resources/Documents/Offshore%20Petroleum%20Environment/Decommissioning_Australia%27s_Offshore_Oil_and_Gas_Facilities_-_Discussion_Paper_2008.pdf

Because of this overlap, it is particularly important to organise and construct linkages through the process. This is best done at the hazard identification phase, as this phase sets the scene for the later steps of formal safety assessment development. The Safety Case should have a consistent, integrated overall structure: there should be logical flow to the assessment process to create strong links between the causes and consequences of major accident events, their associated risks, the selection of strategies and measures to control the risks, and the performance required from specific measures to maintain risk levels to ALARP. The intent here is to emphasise that the FSA must be a coherent, integrated assessment of major accident events. Spending time getting the structure right will greatly enhance an operator's ability to present evidence in a robust way that others can follow and understand. The FSA description in the Safety Case then is a description of the methodologies employed and a summary of the results: this would be a list of the MAEs and their controls. The actual description of the controls must then be described in be in the facility description (for technical controls) or the SMS description (for procedural based controls), as applicable.

Figure E3: The Formal Safety Assessment Process



E.8 IMPLEMENTATION ISSUES AND EMERGING DEVELOPMENTS

E.8.1 Regulatory Review

The Australian upstream/offshore O&G regulatory regime has been the subject of two recent studies:

- Review of Regulatory Burden on the Upstream Petroleum (Oil and Gas) Sector (published April 2009)[26]; and
- Offshore Petroleum Safety Regulation Better practice and the effectiveness of the National Offshore Petroleum Safety Authority (published June 2009)[27].

A key conclusion of both reviews centred on the need to streamline processes within the Australian context. Many offshore O&G projects cross a number of jurisdictions where the resource is located in commonwealth land and brought onshore for processing. Every step in the exploration, development and production of petroleum is regulated by various agencies with their own, often duplicated, requirements. Outcomes from the regulatory burden review have seen a number of changes, including refinement in scope for Safety Cases, necessary documentation, penalty units and the operator's responsibilities. Language has also been clarified within the regulations and words such as pipelines have been changed to pipes to more clearly reflect the intent.

E.8.2 General Observations

E.8.2.1 Environmental

A number of more general observations regarding the environmental aspects of implementing offshore O&G regulations can also be made:

- *Capacity within the Regulators:* Case loads for State Government and Commonwealth Government assessing officers in the mining and oil and gas sectors are all stretched. Legislated timeframes are used where available, however, each EIA process has one or two timeframes that are not regulated and when departmental staff are under pressure, often take longer than anticipated by the operator.
- *Variations between jurisdictions:* EIAs are addressed State by State and typically there are subtle differences between them. In particular, Victoria applies a broad brush approach to EIA which is costly to the proponent and not particularly focused (or targeted) to the key issues of the proposed development. Western Australia, however, tend to focus on the key impacts and target their assessments accordingly. Interestingly, the broad brush approach to impact assessment typically can shorten timeframes for submission and assessment to major approvals than the targeted ones.

[26] www.pc.gov.au/projects/study/upstreampetroleum/report

[27] www.ret.gov.au/resources/Documents/Offshore%20Petroleum%20Safety/NOPSA%20Safety%20Authority_Web.pdf

- *State and Commonwealth alignment of regulator expectations:* The level of communication and cooperation between State/Territory governments and the Commonwealth typically varies from project to project and over time. Where both State/Territory and Commonwealth governments are involved in the evaluation of a formal environmental assessment document (typically an EIS at Commonwealth level) there is collaboration, however, each jurisdiction can only assess the submitted documentation against their own legislative requirements. Therefore, each jurisdiction must still complete their own evaluation and determine their own decision on the Project's approval and setting of approval conditions. In cases where a bilateral agreement is in place, typically, the relevant State government leads the assessment and the Commonwealth follows the State's process, however, given that the Commonwealth Minister still needs to make a determination, the Commonwealth regulators nonetheless need to complete their own assessment report and advice to the Minister for consideration before the Minister makes any final determination.

E.8.3 Emerging Developments

A number of emerging developments are also apparent within the Australian context:

- *Petroleum and Greenhouse Gas regulation:* Recent amendments made to the *Offshore Petroleum (Safety) Regulations (2009)* primarily to enable NOPSA to provide occupational health and safety regulatory services in relation to greenhouse gas storage facilities and activities (i.e. thereby making them dual-purpose for petroleum and greenhouse gases) and to provide for early engagement with an operator in the Safety Case development process for projects employing new technologies for a facility;
- *Application of new technological solutions:* Changes have also been made to the offshore *Petroleum and Greenhouse Gas (Safety Levies) Regulations (2004)* to allow NOPSA to work with an operator that is planning to use new technology in a new project from the beginning of the design process of the facility. This voluntary early engagement for new technology projects will allow companies to begin regulatory approval processes earlier, while still maintaining the integrity of the overarching 'Safety Case' regime under the *Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Act (2003)*. The amendments allow NOPSA to recoup the additional costs of engaging in this longer drawn-out process of assessment;
- *Environmental assessment of seismic surveys:* Whilst generally speaking marine seismic survey has been determined to be a Not Controlled Action, requiring no further assessment under the *AUS EPBC*, underwater noise is an emerging issue of interest to regulators – not only noise emissions that arise during seismic surveys but also noise from other installation and operational sources such as vessels movements and activities such as dredging;

- *Environmental assessment of exploration well drilling:* A significant shift in regulator sensitivity to exploration drilling and potential oil spill risks occurred as a result of the Montara well head platform hydrocarbon release in August 2009. Since that time, more comprehensive environmental assessments, hydrocarbon spill modelling and spill response capacities have been required by regulators in their evaluation of exploration drilling campaigns. The BP Gulf of Mexico spill is similarly impacting national regulator sentiment to exploration drilling in Australian waters;
- *Developments in Western Australia:* There are a number of major O&G developments in Western Australia currently pursuing environmental approval under the Commonwealth *AUS EPBC* and respective WA and NT legislation. Woodside is currently developing an EIS for the Upstream components of the Browse LNG Development, with a corresponding process for the onshore Browse LNG precinct being led by the WA Department of State Development (DSD). The DSD-led Strategic Assessment process for the Browse LNG Precinct is relatively new and unique in Australia, and in some aspects the process is evolving in real time as both industry and the government continue to progress the development; and
- *Commercial Vessel Safety:* As highlighted previously, the regulatory context for commercial vessels is currently under review, with the focus on establishing a single national maritime safety regulatory system. In addition, engagement of the offshore industry has been a recent focus for the AMSA. AMSA has been dealing with companies that operate standby vessels, supply vessels, seismic vessels and some ships that are not primarily for the offshore industry but are still operated by an offshore company. Engagement has been via presentations to the operators either through industry forums or direct contact such as the Safe Marine for Offshore Conference. AMSA has made presentations widely available to the industry and have spoken directly to a company regarding this type of information. The discussions have centred around the requirements of *the Navigation Act*, *the OHS(MI) Act*, reporting of incidents, *Marine Order 50: Special Purpose Ships* and *Marine Order 59: Offshore Support Vessel Operations*.

E.9 ADDITIONAL INFORMATION

Table E4: Australian Regulation and Administering Bodies

Full title	Administrating body	Overview
Commonwealth		
Offshore Petroleum and Greenhouse Gas Storage Act 2006	Department of Resources, Energy and Tourism (DRET), JA & NOPSA	See *E.3.3*
Petroleum (Submerged Lands) Act 1967 and amendments	DRET, JA & NOPSA	See *E.3.3*
Environment Protection and Biodiversity Conservation Act 1999	Department of Environment, Water, Heritage and the Arts (DEWHA)	An Act relating to the protection of the environment and the conservation of biodiversity.
Environment Protection and Biodiversity Conservation Act 1999 *Policy Statement 2.1 – Interaction between offshore seismic exploration and whales*	DEWHA	The aim of this Policy Statement is to: • provide practical standards to minimise the risk of acoustic injury to whales in the vicinity of seismic survey operations; • provide a framework that minimises the risk of biological consequences from acoustic disturbance from seismic survey sources to whales in biologically important habitat areas or during critical behaviours; and • provide guidance to both proponents of seismic surveys and operators conducting seismic surveys about their legal responsibilities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). This Policy Statement updates and replaces the previous Guidelines (May 2007). This Policy Statement should be read in conjunction with the associated Background Paper.
Environment Protection (Sea Dumping) Act 1981	DEWHA	This Act regulates permitted sea dumping and under the *1996 Protocol to the London Convention* Australia is required to minimise its waste disposal into the marine environment.

Full title	Administrating body	Overview
Petroleum (Submerged Lands) (Pipelines) Regulations 2001	DRET, JA & NOPSA	The Regulations ensure, over the operating life of offshore pipelines that are for use in conveying petroleum, that licensees for the pipelines use systems, work practices and procedures that will ensure that: (a) pipelines are designed, constructed, operated and modified in ways that are suitable for the purposes for which the pipelines are to be used; (b) proposals for decommissioning pipelines are suitable for the purposes for which they are made; and (c) the risks of significant pipeline accident events, and the risks to the integrity of the pipelines, are reduced to levels as low as reasonably practicable.
Petroleum (Submerged Lands)(Management of Well Operations) Regulations 2004	DRET, JA & NOPSA	To ensure that, for petroleum exploration, appraisal and production in adjacent area: the design of downhole activities is in accordance with good oil-field practice, downhole activities are carried on in accordance with an accepted well operations management plan, risks are identified and managed in accordance with sound engineering practices, and good oil field practice.
Offshore Petroleum Greenhouse Gas Storage Regulations 1985	DRET & JA	The regulations provide for the conditions of discovery of oil and necessary reporting.
Offshore Petroleum and Greenhouse Gas Storage (Safety) Regulations 2009	DRET, JA & NOPSA	An object of these Regulations is to ensure that facilities are designed, constructed, installed, operated, modified and decommissioned in Commonwealth waters only in accordance with Safety Cases that have been accepted by the Safety Authority. Also to ensure that Safety Cases for facilities make provision for matters in relation to the health and safety of persons at or near the facilities.
Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009	DRET, JA & DEWHA	The main objectives are to ensure that offshore petroleum activities are carried out in a manner that is consistent with the principles of ecologically sustainable development and in accordance with an environmental plan that contains performance objectives and standards and criteria for measuring performance against the objectives and standards. Petroleum activities must comply with an accepted environmental plan. The Environmental Regulations set out what an environmental plan must contain.
Offshore Petroleum and Greenhouse Gas Storage (Management of Greenhouse Gas Well Operations) Regulations 2010	DRET, JA & NOPSA	These Regulations develop an objective based system of all down-hole drilling activities associated with greenhouse gas wells and well control equipment, including testing and monitoring equipment.
Offshore Petroleum Greenhouse Gas Storage (Greenhouse Gas Datum) Regulations 2010	DRET & JA	These Regulations prescribe the Geocentric Datum of Australia (GDA) as the current Datum.

Full title	Administrating body	Overview
Offshore Petroleum Greenhouse Gas Storage (Annual Fees) Act 2006 *Offshore Petroleum Greenhouse Gas Storage (Annual Fees) Regulations 1994*	DRET & JA	An Act to provide for the payment of annual fees for certain permits, leases and licences under the *Offshore Petroleum and Greenhouse Gas Storage Act 2006*, and for related purposes.
Offshore Petroleum and Greenhouse Gas Storage (Registration Fees) Act 2006 *Offshore Petroleum and Greenhouse Gas Storage (Registration Fees) Regulations 1990*	DRET, JA & NOPSA	An Act to impose, as taxes, fees for the registration under *the Offshore Petroleum and Greenhouse Gas Storage Act 2006* of transfers of titles and approvals of dealings.
Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Act 2003 *Offshore Petroleum and Greenhouse Gas Storage (Safety Levies) Regulations 2004*	DRET, JA & NOPSA	An Act to impose a safety investigation levy and Safety Case levy, in relation to offshore petroleum and greenhouse gas facilities.
Navigation Act 1912	Australian Maritime Safety Authority (AMSA)	An Act relating to navigation and shipping that provides the legislative basis for many of the Commonwealth's responsibilities for maritime matters including ship safety, the coasting trade, employment of seafarers and shipboard aspects of the protection of the marine environment. It also regulates wrecks and salvage operations, passengers, tonnage measurement of ships and a range of administrative measures relating to ships and seafarers.
Other Relevant Legislation	*Protection of the Sea (Prevention of Pollution from ships) Act 1983* *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006*	
Western Australia (WA)		
Petroleum (Submerged Lands) Act 1982	Department of Mines and Petroleum (DMP WA) & NOPSA	This act provides for the generation of a permit, lease, licence, pipeline licence, special prospecting authority or access authority.

Full title	Administrating body	Overview
Petroleum (Submerged Lands) (Management of Safety on Offshore Facilities) Regulations 2007	DMP WA & NOPSA	The object of these regulations is to ensure that, in relation to petroleum wells in the adjacent area: (a) well activities are carried out in accordance with good oil-field practice and an accepted well operations management plan; and (b) well integrity hazards that may affect those wells are identified and managed, in accordance with good oil-field practice and an accepted well operations management plan.
Environmental Protection Act 1986	Office of the Environmental Protection Authority (OEPA WA) & Department of Environment and Conservation (DEC WA)	An Act to provide for an Environmental Protection Authority, for the prevention, control and abatement of pollution and environmental harm, for the conservation, preservation, protection, enhancement and management of the environment.
Petroleum Pipelines Act 1969	Department of Industry and Resources (DIR WA)	This Act controls the construction, operation and maintenance of pipelines used to carry petroleum.
Other Relevant Legislation	*Petroleum (Submerged Lands) (Pipelines) Regulations 2007* *West Australian Marine (Sea Dumping) Act 1981* *Pollution of Waters by Oil and Noxious Substances Act 1987*	
Northern Territories (NT)		
Petroleum (Submerged Lands) Act 1982	Department of Natural Resources, Environment, the Arts and Sport (DNREAS NT), Department of Resources (DoR NT) & NOPSA	An Act to make provision with respect to the exploration for and the exploitation of the petroleum resources, and certain other resources, of certain submerged lands adjacent to the coasts of the Northern Territory and for other purposes.
Energy Pipelines Act	DoR NT	An Act to make provision for the construction, operation, maintenance and cessation of use or abandonment of pipelines for the conveyance of energy-producing hydro-carbons, and for related purposes.

Full title	Administrating body	Overview
Environment Assessment Act 1994	DNREAS NT	An Act to provide for the assessment of the environmental effects of development proposals and for the protection of the environment.
Other Relevant Legislation	*Energy Pipelines Regulations* *Petroleum (Submerged Lands) (Application of Commonwealth Laws) Regulations 2004* *Waste Management and Pollution control Act*	
Victoria (VIC)		
Pipelines Act 2005	DPI VIC	The main purpose of this Act is to re-enact with amendments the laws relating to the construction and operation of pipelines in Victoria.
Pollution of Waters by Oil and Noxious Substances Act 1986	DPI VIC & NOPSA	The purpose of this Act is to make certain provisions for the protection of the sea and certain waters from pollution by oil and other noxious substances and to implement the Marpol Convention.
Environmental Effects Act 1978	Department of Sustainability and Environment (DSE VIC)	An Act to require the environmental effects of certain works to be assessed.
Other Relevant Legislation	*Petroleum (Submerged Lands) Act 1982* *Petroleum (Submerged Lands) Regulations 2004* *Petroleum (Submerged Lands) (Pipelines) Regulations 2001*	
South Australia (SA)A		
Environment Protection Act 1993.	Department of Environment and Natural Resources (DENR SA)	An Act to provide for the protection of the environment; to establish the Environment Protection Authority.
Other Relevant Legislation	*Petroleum (Submerged Lands) Act 1982* *Petroleum (Submerged Lands) Regulations 2005* *Environment Protection (Sea Dumping) Act 1984*	

Annex F
Ireland

F IRELAND

F.1 CONTENTS

F.2 COUNTRY OVERVIEW

Whilst the Irish oil and gas (O&G) industry has to date been relatively unexplored, current estimates are that potential reserves of 10 billion barrels of oil equivalent (oil or gas) exist in the Irish Atlantic Margin[1]. Ireland's proximity to the United Kingdom (UK) and mature production areas such as the North Sea also means that there is significant scope for these reserves to be exported.

The most important areas for O&G potential in Ireland are the offshore regions to the north and south of the island, including fields such as the Corrib field, located approximately 80km off the northwest coast of Ireland in water depths of 355m.

F.3 OVERVIEW OF LEGISLATIVE FRAMEWORK /APPROACHES

F.3.1 Administrative/Regulatory Authorities

The management of offshore Health and Safety has recently been revised through the *Petroleum (Exploration and Extraction) Safety Act 2010 (IRE PEESA)*. One of the key provisions within the *IRE PEESA* is the transfer of the regulatory function for safety in the case of upstream petroleum activities and the associated infrastructure from the Department of Communications, Energy and Natural Resources (DCENR, www.dcenr.gov.ie) to the Commission for Energy Regulation (CER, www.cer.ie). Prior to the enactment of the *IRE PEESA*, DCNER was responsible for both licensing petroleum exploration and extraction activities and regulating them from a safety perspective. The approach of separating these functions is consistent with other international regimes such as the UK, Australia and Norway.

Whilst the CER have taken on DCNER's responsibilities with regard to upstream petroleum safety, it is emphasised that the CER's role will be to regulate with respect to public safety. The Health and Safety Authority (HSA, www.hsa.ie) remains the national body in Ireland with responsibility for securing health and safety at work. The functions and responsibilities of the HSA remain unaffected by the provisions of the *IRE PEESA* and the CER and the HSA will undertake their respective statutory obligations in parallel.

Maritime Safety in Ireland is regulated by the Department of Transport's Maritime Safety Directorate (MSD, www.transport.ie/maritime/overview.aspx).

In addition to the DCENR, environmental authorities involved in aspects of O&G activities include the Department of Environment, Heritage and Local Government (DEHLG, www.environ.ie/en/).

[1] www.dcenr.gov.ie/Natural/Petroleum+Affairs+Division/2011+Atlantic+Margin+Licensing+Round.htm

F.3.1.1 Commission for Energy Regulation (CER)

The enhanced role for the CER includes a key objective of the commission to *foster and encourage safety with regard to the carrying on of petroleum activities*. The key function of the CER is to establish and implement the safety framework. Other specific functions place obligations on the CER to investigate and report on petroleum incidents, to monitor and enforce compliance with the requirements of the framework and to grant safety permits where it is satisfied with the safety management system proposed by the petroleum operator. The matters to be considered by the CER in carrying out its functions are also set out in the *IRE PEESA*. They include minimising the potential for overlap or duplication of effort. This will be achieved by the CER having regard to where similar functions are already performed by other bodies and by co-operating and consulting with the bodies specified in the Act.

F.3.1.2 The Health and Safety Authority (HSA)

The HSA is the national body in Ireland with responsibility for securing health and safety at work. It is a state-sponsored body, and reports to the Minister for Enterprise, Trade and Innovation. HSA's responsibilities cover every type of workplace and every kind of work in the public and private sectors.

F.3.1.3 Department of Transport Maritime Safety Directorate (MSD)

MSD has oversight of safety relating to merchant ships, passenger vessels, fishing vessels and leisure craft sectors and comprises two arms:

- The Maritime Safety Policy Division, responsible for maritime safety, security policy and legislation (including leisure safety), aids to navigation and corporate governance of the Commissioners of Irish Lights and marine environment protection issues; and
- The Marine Survey Office which deals with the inspection, survey, certification and licensing of vessels and vessels radio equipment; the examination and certification of seafarers competencies; enforcement of standards by way of audits on organisation and facilities and prosecutions for breaches of regulations. The Marine Environmental Division falls under the Marine Survey Office and is the principle marine agency responsible for preserving and protecting the quality of the marine environment through the prevention of marine pollution from vessels.

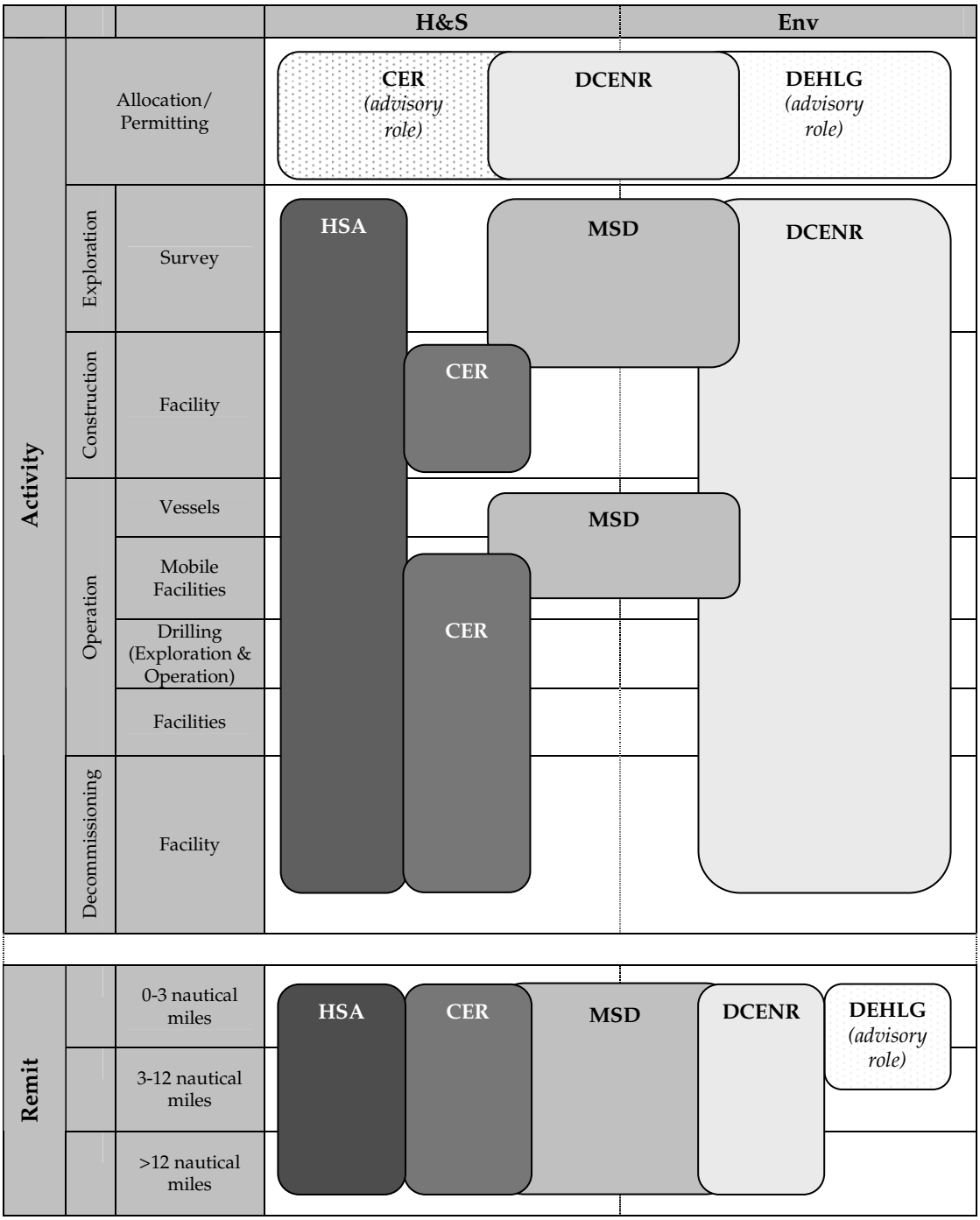
The key objectives for MSD in relation to marine safety are:

- To put in place appropriate organisational structures and arrangements to deliver co-ordinated and cost effective maritime safety;
- To continuously improve marine safety culture awareness and training; and
- To develop and implement international and domestic safety standards for vessels.

F.3.1.4 Department of Environment, Heritage and Local Government (DEHLG)

The DEHLG has a broad remit within Irish regulation to pursue sustainable development, which is carried out through six Divisions – Environment; Water & Natural Heritage; Built Heritage & Planning; Local Government; Housing and Corporate Services. In addition, Met Éireann (the Irish Meteorological Service) and the Local Government Audit Service also form part of the Department.

Table F1: Regulatory Authorities and Responsibilities



Note: This table is intended to provide an indicative overview of the relative responsibilities and remit of the authorities involved in offshore O&G HSE regulation only. The activity boundaries are based on the O&G exploration and production process rather than any regulatory requirement on the part of the authorities.

F.3.2 General Approach

F.3.2.1 Health and Safety

A key provision within *IRE PEESA* is a move to a risk assessment based safety framework with respect to regulation of all upstream petroleum activities generally, aligned with international Safety Case best practice.

The safety framework which is not yet in place, is envisaged to be a manual setting out the nature and scope of the petroleum activities and associated infrastructure that will be designated and subsequently regulated by the CER. The framework will include the systems and procedures to be operated by the CER in designating and regulating such activities and associated infrastructure, including an ongoing system for audit and inspection. It is envisaged that the framework will cover a wide range of activities including the construction, operation, maintenance, modification and decommissioning of petroleum infrastructure.

The safety framework document envisaged within the *IRE PEESA* shall contain information in respect of the following: the nature and scope of the petroleum activities to be regulated; the systems and procedures to be operated by the CER; a list of designated petroleum activities and associated infrastructure and the appropriate code or standard with regard to safety relevant to each; the procedures for assessment by the CER of a Safety Case application; and a system for the ongoing monitoring of compliance of petroleum operations through audits and inspections. In deciding what other matters may feature in the framework, the CER may consider issues such as technological developments, industry best practice, reviews of safety codes and standards, and submissions or recommendations made by interested parties. In the interests of transparency, the commission is also required to report annually to the Minister for Communications, Marine and Natural Resources as regards the functioning of the safety framework.

The implementation of the framework will mean in practical terms that within a specified statutory period, a petroleum operator will be required to submit a Safety Case application to the CER with respect to any designated petroleum activity it is carrying on or it proposes to carry on subsequent to the enactment of the *IRE PEESA*. This section addresses the fact that the new regime will apply to both existing and to new licensees.

IRE PEESA makes it illegal for petroleum operators to carry on any designated activity without having been issued with a safety permit by the CER. It also ensures that it will be a condition of all licences issued that such operators hold a safety permit. This will ensure compliance by all petroleum operators, whether they are existing or new licensees, with the requirements of the safety framework, within the statutory timeframes proposed by the *IRE PEESA*.

Regulatory Impact Assessment

In developing *IRE PEESA*, a Regulatory Impact Assessment (RIA) was undertaken[2]. The four options considered through the RIA were:

- Alternative 1: Assign responsibility for public safety of upstream petroleum to the Health and Safety Authority (HSA).

  The HSA is responsible for the safety of employees, rather than the public at large. There is an argument for allocating the responsibility for upstream safety in its entirety to the HSA, however this would take a significant period of time to negotiate and organise administratively. In addition, the HSA have no experience in this field. The task of building up a working knowledge of pipeline safety, including recruiting technical staff would take a considerable amount of time. The question would remain as to the logic behind having two separate safety regulators for upstream and downstream gas activity.

- Alternative 2: No policy change.

  This would entail a continuation of the Technical Advisory Group (TAG)'s current role on a permanent basis. TAG, however, is a group comprised of individual experts within the Department and does not have any legislative authority or legal powers of enforcement. The upstream/downstream fragmentation of responsibility would continue under this scenario.

- Alternative 3: Create a new body to take responsibility for upstream safety.

  While this proposal has some merit, there is already in existence a recognised body (CER) which has begun working up a programme for downstream gas safety and is therefore better placed to assume the upstream safety function.

- Alternative 4. Allocate responsibility for upstream safety to the existing body which holds responsibility for downstream safety.

As highlighted above, Alternative 4 was the policy option chosen, with the function being conferred onto CER, providing a unified safety authority for both upstream and downstream gas activity, to be implemented by an established state body.

One of the central rationale for this decision related to CER's responsibilities under the *Energy (Miscellaneous Provisions) Act (2006)* to regulate the safety of downstream (processed) gas activity in the Ireland. As part of these responsibilities, CER had already begun to work up a safety programme thus the opportunity for CER to further develop this expertise in relation to upstream was a key benefit to the policy option. Economies of scale and the pooling of professional knowledge, including access to services, were thought to make this the most viable option in the long term.

[2] www.dcenr.gov.ie/NR/rdonlyres/6801D475-483C-42D3-B2FC-5B9DF24CF9A7/32177/PDFVersionofRIA5.pdf

F.3.2.2 Environment

Under the DCENR's Licensing Terms, the holder of a petroleum lease is required to submit a detailed plan of development to the Minister for Communications, Marine and Natural Resources for approval for a commercial discovery of petroleum before development can begin. The plan of development must be accompanied by a statement on the likely effects on the environment known as an Environmental Impact Statement (EIS). The Minister for Communications, Marine and Natural Resources may require an applicant who has submitted an EIS to provide such further information as the Minister may specify in relation to the effects on the environment of the proposed project. Where an EIS has been submitted to the Minister for Communications, Marine and Natural Resources, the Minister shall have regard to the statement, to any submission or observations made during the prescribed period in relation to the effect on the environment of the proposed working of petroleum.

Further details on the EIS are provided in *Section F.3.3* below.

F.3.3 Key Instruments

F.3.3.1 Regulations and Guidelines

As highlighted above, the *IRE PEESA* is the key piece of legislation under which the CER have assumed responsibility for offshore safety and through which a Safety Case based regime will be developed. *IRE PEESA* does not however affect the HSA's statutory functions, obligations and responsibilities, which are to be undertaken in parallel. The legislative framework under which the HSA has responsibility for offshore health and safety is the *Safety, Health and Welfare (Offshore Installations) Act (1987) (IRE SHW(OI))* and the *Safety, Health and Welfare at Work Act (1989)*. In addition to this legislation, regulations were made under these Acts:

- *Safety, Health and Welfare (Offshore Installations) (Installation Managers) Regulations (1991)*;
- *Safety, Health and Welfare (Offshore Installations) (Emergency Procedures) Regulations (1991)*;
- *Safety, Health and Welfare (Offshore Installations) (Life Saving Appliances) Regulations (1991)*;
- *Safety, Health and Welfare (Offshore Installations) (Operations) Regulations (1991)*;
- *Safety, Health and Welfare at work (General Application) Regulations (1993)*; and
- *Safety Health and Welfare at Work (Extractive Industries) Regulations (1997)*.

Definition of Vessels and Facilities/Installations

The regulations highlighted above apply to "*offshore installations*", which are any installation which is or has been maintained, or is intended to be established, for the exploration for or exploitation of minerals and includes any installation providing accommodation for persons who work on or from any such offshore installation so engaged in exploration or exploitation of minerals.

"*Installations*" are defined as including *"any floating structure or device maintained on a station by whatever means"*.

The legislation associated with Environmental Control of Petroleum Activities is set out in the following instruments[3]:

- *Petroleum and Other Minerals Development Act, 1960 as amended by:*
  - *Petroleum and Other Minerals Development Act, 1960 (Section 13a) Regulations (1990, IRE POMDAR)*;
  - *Energy (Miscellaneous Provisions) Act (1995)*;
  - *Gas (Interim) (Regulation) Act (2002)*; and
  - *The Regulations pertaining to the EU's Directives on Environmental Impact Assessment (85/337/EEC as amended by 97/11/EC and 2003/35/EC) (EU EIA(R)).*

F.3.3.2 Environmental Impact Statements

As highlighted above, EIS are a key requirement of the DCENR's Licensing Terms. The key requirements for an EIS are outlined in the Second Schedule of the *EU EIA(R)* and presented in *Box F1*. The *EU EIA(R)* along with the *EU EIA(R)* also provide the provisions allowing the Minister for Communications, Marine and Natural Resources to request further information and have regard to the EIS.

[3] www.dcenr.gov.ie/Natural/Petroleum+Affairs+Division/Health+and+Safety+and+Environment/Provision+Relating+to+the+Environment.htm

Box F1: Information to be contained in an Environmental Impact Statement

1. *(a) A description of the proposed development comprising information on the site, design and size of the proposed development.*
   (b) A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects.
   (c) The data required to identify and assess the main effects which the proposed development is likely to have on the environment.
   (d) An outline of the main alternatives studied by the developer and an indication of the main reasons for the choice, taking into account the environmental effects.
2. *Further information, by way of explanation or amplification of the information referred to in paragraph 1, on the following matters*
   (a) (i) a description of the physical characteristics of the whole proposed development and the land-use requirements during the construction and operational phases;
   (ii) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;
   (iii) an estimate, by type and quantity, of expected residues and emissions (including water, air and soil pollution, noise, vibration, light, heat and radiation) resulting from the operation of the proposed development;
   (b) a description of the aspects of the environment likely to be significantly affected by the proposed development, including in particular:
   —human beings, fauna and flora,
   —soil, water, air, climatic factors and the landscape,
   —material assets, including the architectural and archaeological heritage, and the cultural heritage,
   —the inter-relationship between the above factors;
   (c) a description of the likely significant effects (including direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative) of the proposed development on the environment resulting from:
   —the existence of the proposed development,
   —the use of natural resources,
   —the emission of pollutants, the creation of nuisances and the elimination of waste,
   and a description of the forecasting methods used to assess the effects on the environment;
   (d) an indication of any difficulties (technical deficiencies or lack of know-how) encountered by the developer in compiling the required information.

EU EIA(R) (1999) Second Schedule

Petroleum Developments Requiring EIS

In accordance with the *EU EIA(R)*, the following developments require an EIS to be submitted with a Plan of Development:

- Gas Extraction
  - All onshore extraction of natural gas.
  - Offshore extraction of natural gas within 10 km of shoreline.
  - Extraction of natural gas for commercial purposes where the amount exceeds 500,000m^3 per day.

- Oil Extraction
  - All extractions.

- Pipelines (Upstream)
  - Pipelines for the transport of gas, oil, chemical with a diameter of more than 800mm and a length of more than 40 km.
  - Oil pipelines and associated installations other than those above where the length of new pipeline would exceed 40 km.
  - Gas pipelines and associated installations other than those above where the design pressure would exceed 16 bar and the length of new pipelines would exceed 40 km.

EIS Scoping

A central component in the preparation of an EIS is determining the appropriate scope of the study. Under the provisions of *EU EIA(R),* a person who is required to submit an EIS in respect of a proposed development is entitled to require the competent authority (in this case, the Minister for Communications, Marine and Natural Resources) to provide an opinion on the information to be contained in the statement. The giving of a written opinion does not however prejudice the exercise by the Minister for Communications, Marine and Natural Resources of his or her powers to require the person who made the request to furnish further information.

EIS Publication

Where an EIS has been submitted to the Minister for Communications, Marine and Natural Resources, the applicant shall, as soon as practicable, publish a notice in at least one daily newspaper, published in the State a notice in accordance with the *EU EIA(R)* and make copies of the EIS available for purchase by interested persons for a fee not exceeding the reasonable cost of making a copy.

In addition, an applicant shall provide copies of the statement to the prescribed bodies, and indicate that submissions or observations may be made to the Minister for Communications, Marine and Natural Resources during the prescribed period in relation to the effects on the environment of the proposed working of petroleum.

In accordance with *IRE POMDAR*, the prescribed bodies are:

- All local authorities contiguous to whose functional area it is proposed to extract petroleum;
- The Department of the Environment, Heritage and Local Government, Heritage & Planning Division (formerly known under Dúchas identity); and
- An Taisce (the National Trust for Ireland).

Furthermore, the Prescribed Periods for responses to the EIS provided for in *IRE POMDAR* are:

- In the case of prescribed bodies, one month from the date of issue of a copy of the environmental impact statement to that body; and
- In the case of interested persons, one month from the date of publication in newspapers of a notice giving details of the application and the place where a copy of the environmental impact statement may be inspected or purchased.

Under the *EU EIA(R),* where the Minister for Communications, Marine and Natural Resources makes a decision on a proposed working of petroleum the Minister shall arrange to make the decision available for inspection by members of the public.

EIS Assessment

The EIS will be assessed by the Minister for Communications, Marine and Natural Resources and will be referred it to the prescribed bodies as outlined in *IRE POMDAR*. Following this consultation process the Minister for Communications, Marine and Natural Resources will make a decision to refuse or grant permission or seek additional information have regarding to the information contained in the EIS.

When a decision is made by the Minister for Communications, Marine and Natural Resources on an application in respect of which an EIS has been submitted the Minister shall:

- Publish notice of the decision in the Iris Oifigiuil, the Irish State Gazette and in at least one daily newspaper published in the State; and
- Make arrangements to have the statement and information on the decision available for inspection by members of the public during the period to be specified by the Minister.

F.3.4 Reporting, Inspection and Compliance

Operators of oil and gas fields, pipelines and terminals are required to keep DCENR informed of:

- Development and operations activity; and
- Oil and gas production from their facilities.

The principal instruments for doing this are the Monthly Production report, Monthly Project Progress Report and Quarterly Authorisation Report. However, important or urgent matters should be brought to the attention of DCENR without delay.

F.3.4.1 Supervision

The Minister for Communications, Marine and Natural Resources may appoint any person to be an authorised officer to: oversee exploration for and exploitation of petroleum; and to ensure these operations are carried out in conformity with good oilfield practice, with the provisions of the appropriate Rules and Procedures Manual, with any statute or statutory instrument, with any authorisation issued by the Minister for Communications, Marine and Natural Resources, and/or with any requirements which the Minister for Communications, Marine and Natural Resources is entitled to impose.

Apart from authorised officers appointed by the Minister for Communications, Marine and Natural Resources, inspectors may be appointed by other Ministers and national or local competent authorities in relation to matters within their area of responsibility.

F.3.4.2 Verification

All production facilities are required to be designed, constructed, installed, commissioned, operated and maintained safely at all times and in accordance with good industry practice. To support this and in relation to the specific mater of design, construction, installations, commissioning and maintenance, the operator is required to have in place and operate systems involving:

- Independent, competent verification body(ies); and
- Verification procedures whereby the independent, competent certification bodies assess and approve the operator's proposals.

DCENR will audit the operator to ensure that such systems are in place and are complied with before giving approval for oil or gas operations to commence. DCENR will conduct audits in accordance with written audit procedures, which will be made available to operators on request. DCENR will usually appoint a third party to apply its prescriptive procedures for verification/validation of operator's reports.

Well Management Audit Scheme

The Well Management Audit Scheme (WMAS)[4] is an example of an independent auditing scheme that can be used to support offshore O&G HSE management. Through the WMAS, an Auditor conducts audits on the operator's drilling procedures, including testing and completion. Following a satisfactory Well Management Audit, the Auditor will issue closeout reports to DCENR.

The WMAS examines the management of the operator's drilling procedures, including testing and completion. The WMAS should:

- Review design control of wells, covering the control of design parameters such as sub-surface conditions, e.g. pore pressure, fracture pressure, temperature, formation problems, and reservoir fluids. Comparison will be made with available offset data, to ensure that assessed conditions are compatible and take account of worst conditions in the area;
- Examine procedures controlling the construction and completion of wells according to design. Should any construction deviation be necessary, the WMAS will need to identify controls to track deviation from the original programme; and
- Examine maintenance of constructed wells and the equipment comprising such wells, including wellheads, down hole safety valves and other pressure containment components.

[4] www.koil.ie/KOIL-WMAS.pdf

The WMAS also identifies the roles and positions of the Well Examiner (independent auditor, in-house or external), Custodian (Manager of the drilling programme) and User (Designer and Constructor of the programme). These responsibilities will be determined, in the first instance, through completion of pro forma WMAS Questionnaires. Compliance audits, post-spud and daily during the drilling of wells, also address the following items:

- Operator Independent Assessment;
- Operation of Control System; and
- Operator Documentation and Statements.

F.3.5 Funding and Liabilities

F.3.5.1 Funding

It is understood that DCENR/CER are currently financed directly from the Irish Exchequer. As with other frameworks studied within this Review, the mechanisms for revenue generation to the Exchequer centre on tax revenues and rental fees for licenses. Limited fees are also charged in relation to the submission of licence applications but as highlighted in *Table F2*.

Table F2: Licence Fees

E&P Stage	License Type	Fee Schedule
Fees to be paid on submission of an application	Petroleum Prospecting Licence	€1,520
	Licensing Option	€1,520
	Exploration Licence Reserved Area Licence Petroleum Lease	€9,122
	Lease Undertaking	€3,040
Annual Rental Fees to be paid on issue of an authorisation and thereafter on the anniversary date of the issue of the authorisation	Petroleum Prospecting Licence	€7,601
	Licensing Option	Calculated on the basis of €29/km^2.
	Standard Exploration Licence	For the first three years of the licence fee is calculated on the basis of €182/km^2, increasing to €365/km^2 thereafter.
	Deepwater Exploration Licence	a) For the first three years of the licence, fee is calculated on the basis of €91/km^2. b) In years 4, 5 and 6 of the licence, fee is calculated on the basis of €182 /km^2. c) Fee is calculated on the basis of €365/km^2 for the remainder of the licence.
	Frontier Exploration Licence	a) For the first phase of the licence, fee is calculated on the basis of €29/km^2. b) In the second phase of the licence, fee is calculated on the basis of €60/km^2. c) Fee is calculated on the basis of €121/km^2 for the remainder of the licence.
	Lease Undertaking	For the first year, fee is calculated on the basis of €1,216/km^2 increasing by €152/km^2 in each subsequent year.
	Petroleum Lease	Calculated on the basis of €2,643/km^2 until the date of first production. From the date of first production fee is calculated on the basis of €4,133/km^2.
Fees payable for an assignment or transfer of interest		An application fee of €1,520 plus an administration fee of €3,040 are payable on application.

F.3.5.2 Liabilities

The authorisation holder is required to take out a policy of insurance on terms, and with a company, approved by the Minister for Communications, Marine and Natural Resources. The insurance must indemnify the authorisation holder against all claims by employees of the authorisation holder for employee compensation, damages at common law or otherwise. The authorisation holder must maintain this policy so long as the operations of the authorisation continue, must pay all premiums thereunder and must on demand produce the policy and receipts for the premium to the Minister for Communications, Marine and Natural Resources or any person authorised by the Minister.

The authorisation holder shall at all times keep the Minister for Communications, Marine and Natural Resources effectually indemnified against any claim, demand or damage whatsoever in respect of its operations (including any nuisance, damage or injury to person or property) under the authorisation.

As with the UK context, responsibility for clean-up costs associated with environmental pollution, including provision of equipment, rests with the Operator under the framework of the *EU Directive on Environmental Liability 2004/35/EC (2009)*.

F.4 ALLOCATION

Various authorisations are issued by the Minister for Communications, Energy and Natural Resources under *IRE POMDAR*:

- *Petroleum Prospecting Licence.* This is a non exclusive licence giving the holder the right to search for petroleum in any part of the Irish Offshore which is not subject of a Petroleum Exploration Licence, Reserved Area Licence or Petroleum Lease granted to another party;
- *Licensing Option.* This is a non exclusive licence giving the holder the first right, exercisable at any time during the period of the Option, to an Exploration Licence over all or part of the area covered by the Option;
- *Exploration Licence.* There are three categories of Exploration: a Standard Exploration Licence for water depths up to 200m; a Deepwater Exploration Licence for water depths exceeding 200m and a Frontier Exploration Licence for areas specified by the Minister for Communications, Marine and Natural Resources. For Standard and Deepwater Explorations Licences the holder is obliged to carry out a work programme which must include the drilling of a least one exploration well in the first phase. For a Frontier Exploration Licence the holder must commit to at least one exploration well in order to proceed to the second phase. The area of an Exploration Licence shall be expressed in terms of blocks and/or part blocks of the Williams Grid.

  The holders of Frontier Exploration Licences are also required to pay annual contributions to petroleum research programmes as directed by the Minister for Communications, Marine and Natural Resources to support the funding of research and applied research projects that have the aim of developing knowledge of the Irish offshore with a view to assisting in promoting exploration and development activity. These contributions shall include both an annual contribution per licence and a single annual contribution per company;
- *Lease undertaking.* When a discovery is made in a licensed area and the licensee is not in a position to declare the discovery commercial during the period of the licence but expects to be able to do so in the foreseeable future, the licensee may apply for a Lease Undertaking. This is an undertaking by the Minister for Communications, Marine and Natural Resources, subject to certain conditions, to grant a Petroleum Lease at a stated future date. The holder of a Lease Undertaking is required to hold a Petroleum Prospecting Licence which will govern activities under the Lease Undertaking;

- *Petroleum Lease.* When a commercial discovery has been established it will be the duty of the authorisation holder to notify the Minister for Communications, Marine and Natural Resources and apply for a Petroleum Lease with a view to its development; and
- *Reserved Area Licence.* A Petroleum Lease holder may apply for a reserved area licence in respect of an area adjacent to or surrounding the leased area and which is not subject of an authorisation other than a Petroleum Prospecting Licence.

Terms and conditions, including environmental provisions, are attached to the authorisations. These licensing terms are set out in the DCENR's *Licensing Terms for Offshore Oil And Gas Exploration, Development & Production 2007* [5].

F.4.1 Surrender of Acreage

Acreage surrender at key points within the O&G exploration process is embedded with the Irish resource allocation framework. The amount and timing of acreage surrender is dependent on the type of exploration permit held by the operator (see *Table F3*).

Table F3: Exploration License Acreage Surrender Requirements

Exploration License	Acreage Surrender
Standard Exploration License	At the end of the first phase (3 years into a 6 year term) of the licence the licensee shall surrender 50% of the licensed area.
Deepwater Exploration Licence	At the end of the first phase of a licence (3 years into a 9 year term), the licensee shall surrender 50% of the licensed area. At the end of the second phase of a licence (6 years into a 9 year term), the licensee shall surrender 50% of the then licensed area. At the end of the second phase of a licence, the licence shall be surrendered if a second exploration well has not been commenced by that date.
Frontier Exploration License	At the end of the first phase of a licence*, the licensee shall surrender 25% of the acreage then held. At the end of the second phase of a licence, the licensee shall surrender 50% of the then licensed area. *for a Frontier Exploration License, the duration is a period of not less than twelve years comprising a maximum of four phases.

[5] www.dcenr.gov.ie/NR/rdonlyres/9DA12EC6-C3E5-4DC3-AA45-7CCB3620364A/0/LicensingTerms2007web.pdf

F.4.2 Criteria for Considering Applications

Under DCENR's licensing terms, the Minister for Communications, Marine and Natural Resources will take the following criteria into account having regard to the authorisation applied for:

- The work programme proposed by the applicant;
- The technical competence and offshore experience of the applicant;
- The financial resources available to the applicant;
- The applicant's policy to health, safety and the environment; and
- Where relevant, previous performance by the applicant under any authorisations to which the applicant has been a party.

To support these requirements, the applicant should submit, amongst other things:

- Annual reports for the previous two years together with copies of annual accounts including balance sheets and the profit and loss accounts for the same period;
- Information as to the manner in which exploration and development activities are to be financed and performance guaranteed;
- In the case of an application for an Exploration Licence, Reserved Area Licence or Petroleum Lease, confirmation that the applicant is chargeable, in accordance with the laws of Ireland, to tax in respect of profits and gains arising from, or connected with, exploration or exploitation activities carried out in a designated area or from exploration or exploitation rights;
- Information concerning the applicant's previous experience in exploration for and exploitation of petroleum;
- Information concerning any authorisation previously issued by the Minister for Communications, Marine and Natural Resources to the applicant or to which the applicant was a party;
- A statement detailing the applicant's policy towards health and safety; and
- A statement detailing the applicant's policy towards the environment.

F.4.3 Production License

As highlighted above, operators are required to hold a current Petroleum Lease which includes that area in order to undertake O&G production activities.

If a licensee discovers petroleum during the exploration process and if it appears to the licensee that such discovery may be commercial, the licensee is required to notify the Minister for Communications, Marine and Natural Resources within six months of completion of the drilling operations on the exploration well which made the discovery.

A commercial discovery is described as a discovery of oil or gas of such quantity the proceeds from which could be expected to be sufficient to cover all costs and expenses of the drilling, producing, treating, transporting, delivery and sale of production, plus a reasonable profit, having regard to such other reserves and facilities as may be available. Reserves may be considered commercial when the reserves in themselves are not considered commercial, but in conjunction with other reserves would be.

Applications for Petroleum Leases are required to include the outline development and financial and marketing plans for the exploitation of the discovery based on the applicant's considered likely production profile. An outline statement of the likely effects of the proposed development on the environment is also required. An application for a Petroleum lease should also include all technical, economic and financial information, to enable the Minister for Communications, Marine and Natural Resources to evaluate the proposals fully and to assess their economic, social, safety and environmental implications.

F.4.3.1 Plan of Development

Within one year of the date of issue of a Petroleum Lease the lessee is required to submit a detailed plan of development, in a format specified by the Minister for Communications, Marine and Natural Resources. The plan should comprise a detailed production profile for the life of the field including information on the design, siting, construction, establishment, operation, abandonment and removal of any facilities for the production, processing, storage or shipment (by tanker or pipeline or otherwise) of petroleum produced under the Petroleum Lease. An EIS of the likely effects of the development on the environment is also required.

Operations within a leased area are not permissible unless the Minister for Communications, Marine and Natural Resources has granted prior written approval of the plan and during the period of a Petroleum Lease, no material deviation from the approved plan of development shall take place without the Minister for Communications, Marine and Natural Resources' prior approval to a revised plan of development.

Throughout the term of a lease, the Minister for Communications, Marine and Natural Resources is to be kept informed, in a timely fashion, of the progress of all significant activities under the Overall Work Programme and every Plan of Development, and specifically of all hydrocarbons produced.

The Minister for Communications, Marine and Natural Resources will want to be assured that the full hydrocarbon potential of the Leasehold area is being addressed effectively and that any field will be developed and managed so that economic recovery of oil and gas will be maximized over the term of the lease, while ensuring that the implications for other developments in the area are accounted for and it is done with due regard to health and safety and the environment.

F.5 EXPLORATION AND PRODUCTION ACTIVITIES

As the safety framework under which exploration and production activities will be administered by CER has yet to be developed, there is limited information on the specific safety provisions that will relate to exploration and production activities. However, operating guidelines have been provided for the O&G industry in the form of two manuals, updated in 2005:

- Rules & Procedures Manual for Offshore Petroleum Exploration and Appraisal Operations; and
- Rules & Procedures Manual for Offshore Petroleum Production Operations.

To provide some context on the Irish regulatory framework as it currently functions, the following sections have derived information from these manuals.

F.5.1 Exploration Surveying

The operator is required to submit an Application for Approval to DCENR to conduct any geophysical or other Exploration Survey, Site Survey or Route Survey at least 21 days prior to the planned commencement of the survey. The survey should have been the subject of detailed technical discussions with DCENR prior to submission of the Application for Approval.

The application should include a range of information including the type of survey and details of work to be undertaken, the location of the survey, the type of energy sources to be used during seismic operations, length and configuration of seismic cables, specific impact mitigation and monitoring practices and in the case of shallow boreholes or seabed sampling, the water depth and location, and geological objectives. Details on all vessels must be furnished to DCENR and details of all aircraft also provided to the Irish Aviation Authority.

The various government departments and agencies to be notified of intended survey activities include:

- Petroleum Affairs Division (DCENR);
- The Irish Coast Guard – Department of Transport;
- Marine Rescue Co-Ordination Centre (MRCC) of the Irish Coast Guard – Department of Transport;
- Marine Radio Affairs Unit of the Marine Safety Directorate – Department of Transport;
- Sea Fisheries Protection Authority;
- Sea Fisheries Policy Division – Department of Agriculture, Fisheries and Food;
- Marine Survey Office (MSO) of the marine Safety Directorate – Department of Transport;

- Maritime Safety Policy Division of the Maritime Safety Directorate – Department of Transport;
- Marine Institute; and
- Department of Defence.

F.5.2 Exploration Drilling

As highlighted previously, the work programmes for Standard and Deepwater Explorations Licences must include the drilling of a least one exploration well in the first phase and for a Frontier Exploration Licence the holder must commit to at least one exploration well in order to proceed to the second phase.

With regards to all three types of Exploration Licences, where the Minister for Communications, Marine and Natural Resources is satisfied that it would be in the public interest to do so, the Minister may accept the drilling of an appraisal well as meeting an obligation under these terms to drill an exploration well.

When agreeing a work programme for the second phase or any subsequent phase of an Exploration Licence, the Minister for Communications, Marine and Natural Resources may give credit for work already performed by the licensee that went beyond the agreed work programme for the Licence, including giving credit for an exploration well drilled earlier than required by these licensing terms. Further information on the well drilling is provided in *Section F.5.3.2* below.

F.5.3 Production Activities

F.5.3.1 General Requirements

The operator is responsible at all times for ensuring that:

- All drilling operations are conducted safely; and
- All production facilities are to be designed, constructed, installed, commissioned, operated and maintained safely in accordance with current good industry practice.

The operator is also required to ensure that an Independent Examination Scheme will be in place in relation to the following specific matters:

- Drilling unit fitness for purpose;
- Well design and construction;
- Well maintenance;
- Production facility design and construction;
- Production facility installation and commissioning; and
- Production facility maintenance.

In addition, the operator is required to have in place and operate systems involving:

- Independent, competent examiner(s) verification body(ies); and
- Verification/examination processes whereby the independent, competent examiner(s) verification body(ies) assess and approve the operators' proposals.

Operators are also required to have in place Environmental Management Systems (EMS) that are in accordance with the principles of internationally recognised standards, in line with *OSPAR Recommendation 2003/5 to Promote the Use and Implementation of EMS by the Offshore Industry*. Verification of this should be carried out by bodies possessing recognised competence in the area and not connected with the Operator.

Operators must report on compliance with legislation, progress made in achieving environmental goals and continual improvements in environmental performance.

Operators must provide an Oil Spill Contingency plan approved by the Irish Coast Guard, which should include:

- Plans in the event of an oil spill;
- Report formats for oil spills; and
- Pollution alert procedures.

The operator shall take all possible steps to prevent the introduction of substances or energy into the marine environment that are likely to result in hazards to human health, harm to living resources and marine ecosystems, damage to amenities, or interference with other legitimate users of the sea. To this end the operator shall apply, where appropriate:

- Best available technology;
- Best environmental practice; and
- Clean technology.

These objectives and principles apply to the operator and equally to contractors and subcontractors working on the operator's behalf. The operator is responsible for the entire operation. This includes ensuring that contractors carry out their work in accordance with good industry practice, and the operations are carried out in accordance with national Legislation and the provisions of *the Convention for the Protection of the Marine Environment of the North east Atlantic* (the *OSPAR Convention*).

F.5.3.2 Well Drilling

Before commencing drilling operations on any exploration, appraisal or development well a Letter of Approval to Drill is required from DCENR. DCENR will issue such a letter when satisfied that its own requirements and those of other relevant Departments and Agencies have been met.

An Application for Approval to drill a well will be made to DCENR in two stages:

- A generic well proposal at least 90 days before commencement of operations; and
- A final well proposal at least 30 days before commencement of operations.

These applications should include general information, details of subsurface, drilling and evaluation programmes. In terms of safety and technical integrity of installations and wells, the application should also specify that the operator is responsible at all times for ensuring that all drilling activities are conducted safely and in accordance with current good practice.

An audit will be carried out by an auditor acting on behalf of DCENR on the drilling unit's suitability and fitness for purpose. This will involve an assessment of the unit's Safety Case, written verification scheme, riser integrity and mooring analysis, facilities relating to helicopter operations, navigation aids, and marine radio systems. Upon satisfactory audit, the Auditor will issue a Letter of Acceptance for the unit.

Where a drilling operation takes place within 55 km of the Irish coast, "At Sea" response equipment shall be held either ashore at the nearest port to the site area or onboard a support vessel at the drilling location. Where the drilling operation takes place beyond 55 km from the coast, reliance on outside equipment is acceptable provided that the time taken to have the counter-pollution "At Sea" equipment on site should not exceed half the estimated time needed for the spill to reach the nearest shore-line allowing for the prevailing currents plus three percent.

F.5.4 Pipelines

Any upstream petroleum pipeline, flowline, control line or umbilical (an 'Upstream Line') already approved by the Minister for Communications, Marine and Natural Resources through the plan of development or redevelopment processes must also be re-consented by the Minister prior to construction, installation and commissioning.

Applications are to cover the entire length of a proposed Upstream Line, including offshore, foreshore and onshore sections. Unless otherwise agreed, all correspondence regarding an application should be addressed to DCENR, who will distribute copies to such other Departments and Agencies as the Minister for Communications, Marine and Natural Resources deems to have an interest.

The RIA undertaken during the development of the *IRE PEESA*, also reviewed pipeline safety within an international context, and came to the following conclusion:

> *…it is clear that there are a number of common approaches available to dealing with the allocation of responsibility for pipeline safety. The UK has chosen to empower the general employment health and safety authority (HSE) with specific powers in relation to pipeline safety. The USA, Norway and Australia each have a dedicated organisation to handle at least one aspect of the petroleum industry, the first two having bodies established specifically to deal with the safety of the petroleum industry, including pipelines. Denmark has taken an individual route, using its Energy Authority to regulate all aspects of the energy sector within its territory.*

In ways, the current proposal is analogous to that in Denmark. However, the international comparison that lies closest to the nascent Irish one is that of Australia. In that case, there is an independent body charged with the policing of Health and Safety of the entire of the upstream element of projects.

F.6 DECOMMISSIONING ACTIVITIES

DCENR should be kept informed of progress with planning for cessation of operations and decommissioning of a field, pipeline or terminal, including consideration of options to extend its life, through successive Annual Lease Returns. Provided this process has been pursued adequately and DCENR is satisfied that options to extend the life of the field, pipeline or terminal have been properly considered and discussed, an application for approval to cease operations in a field, pipeline or terminal will be the final step in the process and need include only a summary of the results of work reported in previous Annual Lease Returns.

For fields, pipeline or terminals with a limited life, where it is not possible to address proposals for cessation of operations through successive Annual Lease Returns, or if the issues have not been adequately addressed in Annual Lease Returns, full details will be required in the application for approval to cease operations.

Applications for consent to cease operations in a field, pipeline or terminal must be submitted at least 12 months prior to the proposed date for the cessation of operations and include:

- An executive summary;
- An analysis of the economic limit criteria, including the operator's definition of economic limit, how the economic limit will be determined, cash flow forecasts up to the economic limit and 2-3 years beyond, any factors which might advance or postpone the economic limit and the costs and revenues associated with the decommissioning process;
- A discussion of the options evaluated for the possible extension of the life of the field, pipeline or terminal, together with their economic analyses;
- A summary of the current status of the facilities and details of their status following decommissioning, including proposals for any facilities to be left in place to process and/or transport third party production; and
- An outline of plans and timing for decommissioning of the facilities (full details of the methods, timing and costs of decommissioning will be included in a separate Facilities Decommissioning Plan).

F.7 MAJOR ACCIDENTS

For every offshore installation a manual, known as an "emergency procedures manual" is required that specifies the action to be taken in the event of an emergency on, in at or about an installation or involving persons working from an installation.

The emergency procedures manual or an alternative manual should specify the procedures to be followed in an emergency situation and should also contain the details of the survival craft, the procedures for testing and maintaining such craft, for launching the craft in an emergency, etc. The manual should also contain the names and addresses of national and local authorities to be contacted in an emergency and to whom the emergency should be reported. The DCENR is to be provided with a copy of the manual and the manual should be developed for both exploration and exploitation activities.

F.7.1 Oil Spills

In the event of significant oil spills that require clean up, the operator is required to continuously make available details of the oil spill and progress of the clean-up operations to the Irish Coast Guard. As clean-up operations proceed, any step, method or course of action in the clean-up operation must also be subject to the prior approval of the Irish Coast Guard.

Oil spill chemical dispersant cannot be used without the authorisation of the Irish Coast guard unless it is deemed that the immediate situation requires its use to prevent or substantially reduce hazards to human life or limb or to substantially reduce explosion or fire hazards to property. Where any dispersant is used DCENR and the Irish Coast Guard must be notified immediately.

F.8 IMPLEMENTATION ISSUES AND EMERGING DEVELOPMENTS

There is limited information on issues arising from the implementation of the previous offshore O&G HSE regulatory framework in Ireland, reflective of the limited scale of offshore O&G activities in the region. However, it is recognised that significant delays associated with the development of the Corrib Gas Field off the west coast of Ireland and the associated cost to the operator were central drivers of the recent regulatory revisions.

Given that the current regulatory frameworks through which CER have assumed responsibility for upstream O&G safety are yet to be developed, implementation issues associated with this regime have not been identified.

F.8.1 Safety Framework

As discussed previously, the CER are yet to publish any information or guidance on their approach to dealing with upstream O&G safety. It is however apparent that CER will be relying heavily on work undertaken by consultants having tendered for a number of studies in early 2010. The focus of these studies centred on:

- Training;
- Status analysis and review of the existing regulatory system in Ireland;
- Review of International Regulatory Regimes;
- Development of an Implementation Plan; and
- Support for the Establishment of the Petroleum Safety Framework.

Annex G
Norway

G NORWAY

G.1 CONTENTS

G.2 COUNTRY OVERVIEW

The petroleum industry is Norway's largest industry and has contributed over 4,000 billion Norwegian Kroner (NOK) to the country in current terms and net revenues to the state in the order of NOK 2,000 billion. The country has considerable oil reserves and currently ranks as the world's fifth largest oil exporter and the eleventh largest oil producer. All of Norway's oil reserves are located offshore on the Norwegian Continental Shelf (NCS).

The Norwegian government plays an important role in the oil sector. Statoil, which is 71% owned by the government, controls over 60% of Norway's oil and gas (O&G) production.

Table G1: Norway Oil and Gas Reserve and Production Data[1]

	UNITS	END 1989	END 1999	END 2008	END 2009
PROVED OIL RESERVES	TOTAL (BILLION BARRELS)	8.4	10.9	7.5	7.1
	% OF WORLD RESERVES	-	-	-	0.5
PROVED NATURAL GAS RESERVES	TOTAL (TRILLION M^3)	1.73	1.25	2.22	2.05
	% OF WORLD RESERVES	-	-	-	1.1
		2006	**2007**	**2008**	**2009**
OIL PRODUCTION	TOTAL (THOUSAND BARRELS)	2779	2550	2451	2342
	% OF WORLD TOTAL	-	-	-	2.8
NATURAL GAS PRODUCTION	TOTAL (BILLION M^3)	87.6	89.7	99.2	103.5
	% OF WORLD TOTAL	-	-	-	3.5
REFINERY CAPACITY	TOTAL (THOUSAND BARRELS/DAY)	310	310	310	310
	% OF WORLD TOTAL	-	-	-	0.3

G.3 OVERVIEW OF LEGISLATIVE FRAMEWORK /APPROACHES

G.3.1 Administrative/Regulatory Authorities

General oversight of Norway's energy policy, which includes aspects of O&G production lies within the remit of the Norwegian Ministry of Petroleum and Energy (MPE, www.regjeringen.no/en/dep/oed.html?id=750). The key advisor to the MPE in this regard is the Norwegian Petroleum Directorate (NPD, www.npd.no/en).

[1] BP Statistic Review of World Energy 2010 www.bp.com/productlanding.do?categoryId=6929&contentId=7044622

The regulation of HSE requirements for offshore O&G exploration and production activities in Norway falls under the jurisdiction of three further Ministries:

- The Ministry of Labour (as the Petroleum Safety Authority (PSA) www.ptil.no);
- The Ministry for the Environment (as the Climate and Pollution Agency (CPA) www.klif.no/english/, formerly the Norwegian Pollution Control Authority (SFT)); and
- The Ministry of Health and Care Services (www.regjeringen.no/en/dep/hod) through various directorates).

Regulation of HSE in relation to marine vessels falls under the jurisdiction of the Norwegian Maritime Directorate (NMD), whilst the Ministry of Fisheries and Coastal Affairs (MFCA) has responsibility for maintaining adequate contingency measures against acute pollution in Norwegian waters and the Norwegian Coastal Administration (NCA) has responsibility for national oil spill contingency measures[2].

Co-ordination and Collaboration

The PSA is the regulatory authority for technical and operational safety, emergency preparedness and the working environment in all phases of petroleum activities (see below). However the Norwegian government has also specified that the PSA should coordinate closely with both the CPA and the relevant agencies within the Ministry of Health and Care Services to supervise/audit the fulfilment of Norway's HSE regulations in their respective spheres. This coordinator role relates to the development of regulations and to monitoring that the regulations are being observed. It also involves extending, further developing and expanding the key principles of the regulatory regime established in 1985. Appropriate collaborative relations must also be established with local authorities and county councils.

The requirement for coordination involves no changes to the formal authority of the various agencies to take decisions pursuant to prevailing legislation and delegated powers.

Tripartite cooperation and contribution is also a key component of the Norwegian O&G regulatory context and relates to collaboration between employers, unions and government. The concept is not only enshrined in Norwegian petroleum policy, but is also essential for integrated management and progress in HSE related issues across Norway's economy. Norway's *Working Environment Act (2005)* contains a number of provisions on the rights and duties of workers to participate in ensuring a fully acceptable working environment in an enterprise.

[2] www.npd.no/en/Publications/Facts/Facts-2010/

Employee participation is a requirement in all phases of the petroleum sector for every issue which relates to safety and the working environment. This aims to ensure that the knowledge and experience of ordinary workers are fully utilised. Democratic rights such as employee involvement and influence over their own workplace also play a key role in securing proprietary attitudes and responsibility. The Safety and Regulatory Forums are key arenas where the three sides meet to exchange information, debate and develop strategies on HSE-related issues.

The same requirements for participation also apply when government agencies develop risk-based regulations and regulatory regimes based to a large extent on functional specifications. Applying this functional approach means that the players themselves can decide to a large extent how the regulations are to be applied in practice. The industry accordingly has more freedom to choose between alternative solutions than would be the case with detailed regulations. This freedom of action imposes demands on the quality of decisions and decision-making processes – including the ability to ensure that workers have the necessary level of involvement before solutions are chosen.

G.3.1.1 The Norwegian Petroleum Directorate (NPD)

The NPD was established in 1972 as a government specialist directorate and administrative body. It is headquartered in Stavanger with an additional office in Harstad and has staff of a little over 200 people.

The paramount objective of the NPD is to contribute to creating the greatest possible values for society from the oil and gas activities by means of prudent resource management based on safety, emergency preparedness and safeguarding of the external environment. To do this, the NPD performs four key functions:

- The NPD is to be an adviser to the MPE through its professional integrity and interdisciplinary expertise;
- The NPD has a national responsibility for data from the Norwegian continental shelf. The NPD's data, overview and analyses constitute a crucial factual basis on which the activities are founded;
- The NPD aims to be a driving force for realising the resource potential by emphasising long-term solutions, upside opportunities, economies of scale and joint operations, as well as ensuring that time-critical resources are not lost; and
- In cooperation with other authorities, the NPD is to ensure comprehensive follow-up of the petroleum activities.

The NPD sets frameworks, stipulates regulations and makes decisions in areas where it has been delegated authority.

The NPD is responsible for conducting metering audits and collecting fees from the petroleum industry. Together with the MPE, the NPD is responsible for the security of supplies.

In addition, the NPD contributes administrative competence, mapping of resources and petroleum data administration for the development aid programme "Oil for Development".

G.3.1.2 The Petroleum Safety Authority (PSA)

The PSA was created as an independent government regulator on 1 January 2004 when Norway separated its safety and resource management functions which had previously both been held within NPD. The PSA is headquartered in Stavanger and has just over 210 employees. Ten of whom are located in Harstad.

The PSA has regulatory responsibility for technical and operational safety, emergency preparedness and the working environment in petroleum-related plants and associated pipeline systems at Melkøya, Tjeldbergodden, Nyhamna, Kollsnes, Mongstad, Stura, Kårstø and Slagentangen. Possible future integrated petroleum facilities will also be the PSA's responsibility. The PSA covers all phases of the petroleum activity - such as planning, design, construction, use and possible later removal.

Authority has been delegated to the PSA by the Ministry of Labour to issue more detailed regulations for safety and the working environment in the industry, and to take specific decisions in the form of permits and consents, orders, enforcement fines, halting operations, prohibitions, dispensations and so forth.

The government has given the PSA the following duties:

- Through its own audits and in cooperation with other regulatory authorities in the HSE area, the PSA will ensure that the petroleum activity and activities relating to it are supervised in a unified manner;
- The PSA will also provide information and advice to the players in the industry, establish appropriate collaborative relationships with other HSE regulators nationally and internationally, and contribute actively to a transfer of knowledge from the HSE area to society in general; and
- The PSA will provide input to the supervising ministry on issues being dealt with by that ministry, and support the ministry on issues as requested.

In order to discharge these duties, the Ministry of Labour has provided the following guidelines:

- Audits should be system-oriented and risk-based;
- Audits should be a supplement to and not a replacement for internal control by the industry;
- The PSA must strike a balance between its role as high-risk/technology regulator and a labour inspection authority; and
- Contributing to and collaborating with companies and unions represents a crucial requirement for and principle of the PSA's operations.

The PSA supplements its own expertise by drawing on support from other government agencies, institutions and companies with specialist expertise, on the basis of existing collaboration agreements.

G.3.1.3 The Climate and Pollution Agency (CPA)

The CPA has 325 employees mainly based in Oslo and a principal remit of implementing government policy on pollution. The CPA's fields of work include climate change, chemicals, water and the marine environment, waste management, air quality and noise. The CPA's key functions and role are:

- Management and enforcement of the *Pollution Control Act (1981, as amended) (NOR PCA)*, the *Product Control Act (1976, as amended)* and the *Greenhouse Gas Emission Trading Act (2004, as amended)*. The CPA grant permits, establish requirements and set emission limits, and carry out inspections to ensure compliance;
- Monitoring the state of the environment and its development;
- Provision of instruction and guidance to the County Governors' environmental departments;
- Provision of expert advice and promotion of key environmental initiatives; and
- Participation in international environmental and development cooperation.

In terms of relevance to offshore O&G activities, the CPA's key activities lie in its enforcement of the *NOR PCA*[3]. In this role, the CPA:

- Processes documents dealing with regulatory requirements related to the external environment, including emission permits and the companies' analyses of environmental risk and emergency preparedness/oil spill preparedness in connection with an exploration activity;
- Sends out environmental documentation for consultation with a deadline for comments of approximately eight weeks; and
- Issues permits and licences relating to discharges to the environment, and for disposal of waste materials.

G.3.1.4 The Ministry of Health and Care Services

The Ministry of Health and Care Services is responsible for providing health and care services for the population of Norway. The Ministry directs these services by means of comprehensive legislation, annual budgetary allocations (approximately 110 billion Norwegian Kroner (NOK) in 2007), and through various governmental institutions.

The Ministry of Health and Care Services consists of seven different departments:

- Public Health;
- Municipal Health Services;
- Specialist Health Services;
- Hospital Ownership;
- Health Legislation;

[3] www.regjeringen.no/en/doc/Laws/Acts/Pollution-Control-Act.html?id=171893

- Administration; and
- Budget and Financial Affairs.

The key supporting institution relevant to the offshore O&G HSE management is the Norwegian Directorate of Health (NDoH).

The Directorate of Health

The Directorate of Health (www.helsedirektoratet.no) is a specialist body both in the area of public health and living conditions and in the area of health services. This entails:

- Being responsible for monitoring the conditions that affect public health and living conditions and monitoring the trends in the health and care services. On this basis, the directorate offers advice and guidance about strategies and measures aimed at central government authorities, regional and local authorities, the health enterprises, voluntary organisations, the private sector and the population;
- Comparing knowledge and experience in professional matters and setting national standards of behaviour in certain areas; and
- Being an organisation that provides expertise to the authorities, various sectors, the service providers, interest organisations, research and development circles and the media.

G.3.1.5 The Norwegian Maritime Directorate

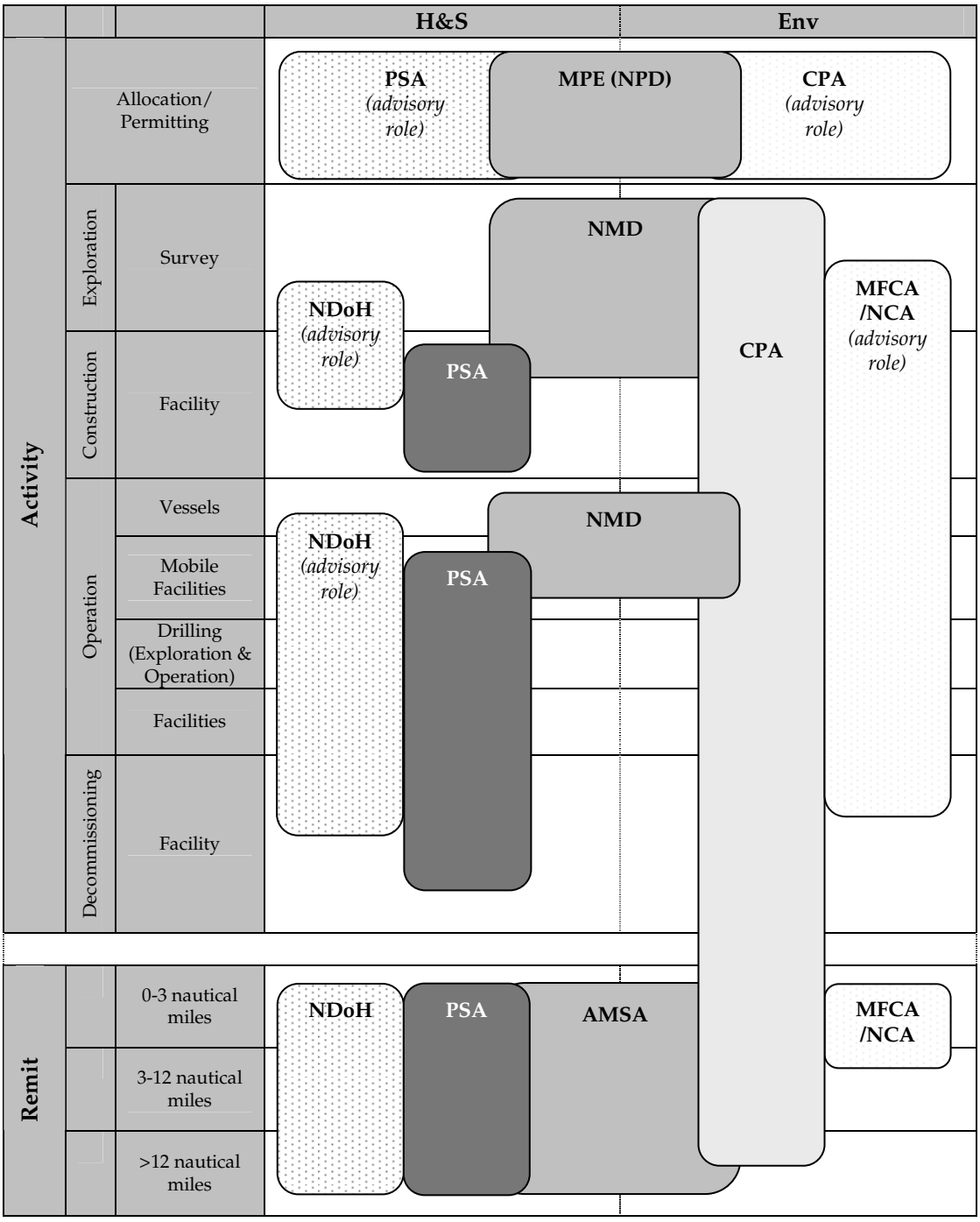
The NMD is a government body sub-ordinate to the Ministry of Trade and Industry and the Ministry of Environment. The directorate has jurisdiction over ships registered in Norway and foreign ships arriving in Norwegian ports. The directorate's main goals are to prevent accidents and to achieve a high level of safety for lives, health, vessels and the environment.

Cases concerning environmental issues that are connected to a specific ship, and/or the protection of the marine environment, are delegated to the Ministry of Environment. The NMD also assists the PSA in implementing the petroleum legislation on the Norwegian shelf, and is also responsible for the supervision of leisure boats.

The NMD has three key tasks:

- To ensure and contribute to Norwegian ships maintain the highest level of safety and environmental standards;
- To ensure and contribute to sailors on board Norwegian ships having good qualifications and good working and living standards; and
- To ensure that foreign vessels in Norwegian waters and ports comply with national and international laws and regulations.

Table G2: Regulatory Authorities and Responsibilities



Note: This table is intended to provide an indicative overview of the relative responsibilities and remit of the authorities involved in offshore O&G HSE regulation only. The activity boundaries are based on the O&G exploration and production process rather than any regulatory requirement on the part of the authorities.

G.3.2 General Approaches

G.3.2.1 Health and Safety

The PSA's regulatory philosophy is based on the legislated expectation that those who conduct petroleum activities are responsible for complying with the requirements of Norwegian acts and regulations. Furthermore, the Norwegian regulations require that operators employ a management system that systematically probes and ensures such compliance at all times. The approach to achieving this is risk-based. So, ensuring compliance with rules and regulations is the operator's job – not the regulators[4].

This approach is founded on the PSA's experience that the production and maintenance of detailed regulatory requirements on how to construct safe installations or operate them properly is resource intensive, and that any such requirements would sooner or later lag behind best industry practices. Such detailed requirements are also seen to potentially hamper technological development.

The PSA does not however require the acceptance of a Safety Case. The PSA provide a number of reasons for this approach:

- The proper processing of a Safety Case by the regulator is a resource-intensive exercise that does not add to safety;
- Depending on the volume of offshore development activities, a regulator may also find itself with a high Safety Case processing workload, which means that industry activities are dictating regulator resource, which is not the PSA's preferred modus operandi; and
- The PSA believe that a regulator's acceptance of a Safety Case inevitably transfers parts of the operator's responsibility to ensure compliance with statutory requirements onto the regulator.

There are some concerns as to the robustness of this approach and whilst Norway to date has one of the best safety records for offshore O&G exploration and development, should a major incident occur, this approach would be the focus of review. The PSA do however require that operators undertake the same risk assessments and describe how they intend to control identified risks in the same way that they would in a Safety Case regime. Their documented assessments and calculations – or parts of them – must be kept and handed over to the PSA should they require it.

Since 1985, the PSA have systematically worked on revising its detailed regulatory specifications, introducing a new form of regulatory portfolio with just a few regulations that mainly state what should be accounted for by the duty holders. Today, the PSA's statutory requirements describe the goals that should be strived for, not how to achieve them. Only where the PSA consider it essential will they specify detailed measures that need to be adhered to by duty holders.

[4] http://budsoffshoreenergy.wordpress.com/interviews/magne-ognedal/

To provide predictability, PSA's formal regulations are supported by guidelines that also make reference to industry standards. These standards have been developed by the O&G industry based on best practice. PSA oversee the development of these standards, and if they determine that a new industry standard is fully acceptable, recommend it as a good tool for the industry to comply with its functional-oriented requirements.

PSA's approach to enforcing the regulatory requirements allows companies to select a solution as long as they can demonstrate its compliance with the goals of the regulations. This has saved PSA a lot of resources in developing specific rules and regulations, and has also provided for better predictability for all duty holders.

G.3.2.2 Environment

Management of the environmental effects of O&G activities is undertaken through the preparation of detailed impact assessments and identification of mitigation measures. In Norway, the scope of these impact assessments extends beyond the immediate environment and include other important interests, such as fisheries. Impact assessments are required at three distinct stages of developments on the NCS:

- Before the opening of an area (responsibility of the MPE);
- Before the development of a specific field and (performed by operator); and
- Before the cessation of activities (performed by operator).

In addition, regulatory agencies also carry out regional impact studies to provide an overall picture of the impacts of NCS development activities.

The process of undertaking an impact assessment is further detailed below in *Section G.3.3.6* below.

G.3.3 Key Instruments

G.3.3.1 Regulations and Guidelines

Offshore O&G activities in Norway are governed by the *Petroleum Activities Act (1996) (NOR PAA)* [5] and associated regulations such as the *Regulations Relating to Resource Management in the Petroleum Activities (Resource Management Regulations) (2001) (NOR RMR).* The *NOR PAA* contains provisions relating to the allocation of exploration and production activities as well as the management of health, safety and environmental considerations.

[5] Available from: www.ptil.no/getfile.php/Regelverket/Petroleumsloven_e.pdf

In terms of HSE, a set of five regulations that are common to each of the regulatory authorities described in *Section G.3.1* above were developed. The aim of introducing a common set of regulations was to secure a regime of regulation and supervision of HSE that allowed the three Ministries to work in a coherent and co-ordinated manner. The five regulations are:

- *Regulations Relating to Health, Environment and Safety in the Petroleum Activities (The Framework Regulations) (2002) (NOR FR)*;
- *Regulations Relating to Material and Information in the Petroleum Activities (The Information Duty Regulations) (2002) (NOR IDR)*;
- *Regulations Relating to Conduct of Activities in the Petroleum Activities (The Activities Regulations) (2002) (NOR AR)*;
- *Regulations Relating to Design and Outfitting of Facilities etc in the Petroleum Activities (The Facilities Regulations) (2002) (NOR FaR)*; and
- *Regulations Relating to Management in the Petroleum Activities (The Management Regulations) (2002) (NOR MR)*.

The HSE regulations are risk-based and must be interpreted in relation to the specific risks faced by the individual operator. They also assume that the petroleum activities are prudent with respect to health, safety and the environment. They have been developed to serve as a good tool for the industry and for the authorities, and to facilitate good collaboration between the parties. To this end, the regulations largely set functional requirements, with standards and norms expanding on the matters covered in the regulations.

According to the regulations, "the party responsible" is the operator or other parties participating in the petroleum activities. Where requirements are specifically directed at a certain party (e.g. the operator), this is made clear in the provision in question. In sections where no obligated party is stated, the requirement is directed at the party responsible.

Recent Updates

It should be noted that a number of amendments to these regulations have recently been enacted.

On 26 June 2009, a number of amendments to the *NOR FR* were enacted that came into force on 1 July 2009. These amendments concern regulations 47-53A and in the main, clarify when night work is allowed and adapt provisions relating to ordinary working hours and off-duty periods to align with the *EU Working Time Directive (2003/88/EF)* to the extent necessary.

These amended regulations have not yet been translated from Norwegian into English and therefore given the time constraints of this Review, have not been analysed within this report. Similarly, on 29 April 2010 new regulations relating to health, safety and the environment in the petroleum activities on offshore and onshore facilities were stipulated. These regulations will come into force on 1 January 2011 and again have not yet been translated into English.

Correspondence with PSA has indicated that the new regulations are focused on creating a common framework for operations offshore and at land based plants in a number of important areas. The changes made in this revision, are mainly the ones deemed necessary for incorporating the onshore industry into the joint regulations. The result is intended to give the PSA a stronger basis for the development of common regulations that cover the whole industry, which currently consists of the following regulations:

- *Joint framework regulations at sea and on land (the Petroleum Safety Authority, the Climate and Pollution Agency, the health authorities) (2010)*;
- *Joint management and information duty regulations at sea and on land (the Petroleum Safety Authority, the Climate and Pollution Agency, the health authorities) (2010)*;
- *The activities regulations at sea (the Petroleum Safety Authority, the Climate and Pollution Agency, the health authorities) (2010)*;
- *The facilities regulations at sea (the Petroleum Safety Authority, the Climate and Pollution Agency, the health authorities) (2010)*; and
- *The technical and operational regulations on land (the Petroleum Safety Authority, the health authorities) (2010)*.

Guidelines and Interpretations

The five current regulations highlighted at the start of this section are supported by a set of guidelines[6] and interpretations[7]. As discussed previously, the guidelines recommend solutions, including industry standards as a means of fulfilling the requirements contained in the regulations. If a recommended solution is opted for, the requirement is considered to be fulfilled. If an alternative (recognised) solution is chosen, the responsible party must be able to document that the proposed approach is equally as good as or better than the recommended approach.

Interpretations deal generally with how to meet provisions in the regulations, including non-conformities and handling of non-conformities and possible applications for exemption. "Non-conformities" indicate a discrepancy between the chosen solution and existing regulation requirements. "Exemptions" indicate the authorities' decision to accept a discrepancy from a provision. If there are specific terms in a regulation that a company doesn't want to adhere to, or can't adhere to, the company must apply to the appropriate authority/ies for an exemption along with reasons why the exemption is necessary.

In terms of requirements directed at the management of impacts to the external environment, no recommended standards or other recognised norms are given. Instead, it is the task of the party responsible to ascertain how mandatory environmental requirements can best be fulfilled and to initiate measures to fulfil these requirements. The guidelines are meant to help in understanding the requirements, including suggestions of possible fulfilment. This does not prevent standards or other recognised norms from being applied where relevant in order to fulfil a requirement.

[6] www.ptil.no/guidelines/category218.html
[7] www.ptil.no/interpretations/category220.html

Definition of Vessels and Facilities/Installations

Facilities are defined in the Norwegian legislation as:

> *Installation, plant and other equipment for petroleum activities, however not supply and support vessels or ships that transport petroleum in bulk. Facility also comprises pipeline and cable unless otherwise provided* [*NOR PAA*, Section 1-6(d)].

Thus a distinction is made to exclude supply and support vessels from the term facility and hence the overarching HSE requirements for facilities. Further clarification is provide in guidelines to the *NOR FR*, which state:

> *The legislative history to the Petroleum Act further specifies what type of vessel can be regarded as a supply or support vessel, cf. Proposition to the Odelsting No. 43 (1995-96) page 27 and 28. The term includes – besides vessels that transport personnel and equipment – crane barges and other service vessels, vessels used to perform manned subsea operations, pipe-laying vessels, vessels carrying out seismic surveys, etc. On the other hand, mobile drilling rigs, drilling or production vessels, flotels etc., will clearly come under the term facility. However, as is evident from subsection 1 litera d second indent, certain limitations are made to the substantive scope of application in relation to the Petroleum Act which entail that the Working Environment Act to some extent has a more limited application where vessel function is concerned.*

Section 3 of the *NOR FR* centres on the use of maritime legislation in the petroleum sector and gives the force of law to principles established by practice, and previously expressed in the NPD letter of 1 June 1999 to the industry. The section establishes the general rule that maritime rules can provide an alternative basis to the petroleum rules for mobile facilities that are registered in a national register of shipping, but is confined to mobile facilities that follow a maritime operating concept, and are thus not permanently installed on the shelf.

The section may therefore be applicable to mobile drilling facilities, well intervention facilities, multi-use facilities and some types of mobile production facilities. It does not apply to facilities fixed to the seabed, floating production facilities that are permanently deployed, storage vessels and the like, in other words, facilities designed to operate in a field throughout the field's lifetime when not following a maritime operating and maintenance philosophy.

In the case of some types of mobile facilities the question of whether or not they are covered by this section will be a matter of judgement. In such cases the supervisory authority must be contacted at an early stage in order to get this clarified. The section includes maritime areas such as hull, stability, anchoring, marine systems, etc.

Mobile offshore facilities are also subject to the following NMD regulations:

- *Regulations 17 December 1986 No. 2318 concerning the construction and outfitting of the living quarter on mobile offshore units, last amended 14 March 2008;*
- *Regulations 10 February 1994 No. 123 for mobile offshore units with production plants and equipment, last amended 14 March 2008;*
- *Regulations 16 October 1991 No. 853 concerning standby vessels, last amended 29 June 2007;*
- *Regulations 4 September 1987 No. 856 concerning the construction of mobile offshore units, last amended 14 March 2008;*
- *Regulations of 10 July 2009 No. 998 relating to positioning and anchoring systems on mobile offshore units (the anchoring regulations 09);*
- *Regulations 20 December 1991 No. 878 concerning stability, watertight subdivision and watertight/weather tight closing means on mobile offshore units, last amended 14 March 2008;*
- *Regulations December 1991 No. 879 concerning ballast systems on mobile offshore units, last amended 14 March 2008;*
- *Regulations 4 September 1987 No. 860 concerning potable water system and potable water supply on mobile offshore units, last amended 14 March 2008; and*
- *Regulations 9 May 2003 No. 687 concerning qualification requirements and certification rights for personnel on Norwegian ships, fishing and catching boats and mobile facilities.*

G.3.3.2 Standards

As highlighted previously, standards form a core component of Norwegian O&G HSE regulatory guidance. International (ISO) and European standards (CEN) standards are key sources for this guidance, however where the Norwegian safety framework and climatic conditions may require specific standards, or additions and supplements to the international standards, NORSOK standards have been developed to fulfil these needs.

The NORSOK standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding and cost effectiveness for existing and future petroleum industry developments in Norway. Furthermore, NORSOK standards are intended to replace oil company specifications and serve as references in the authorities regulations (to the extend possible). The preparation and publication of the NORSOK standards is supported by the Norwegian Oil Industry Association (OLF, www.olf.no) and the Federation of Norwegian Industries (www.norskindustri.no/english). NORSOK standards are managed and issued by Standards Norway (www.standard.no/sn).

The overarching objective, however, is to provide international standardisation work with Norwegian knowledge in order to improve international standards and reduce the need for NORSOK standards[8].

G.3.3.3 Consents

Operators must obtain the consent of the authorities in connection with important milestones in order to be able to continue their activities. The system has been established to ensure that:

- Appropriate status points are established in the operator's activities; and
- The authorities control central decision points in the operator's activities.

The key O&G consented activities are outlined in the *NOR IDR* which require consents:

- Prior to implementation of exploration activities which entail drilling to a depth exceeding 200 metres below the sea bed;
- Prior to implementation of exploration drilling;
- Prior to implementation of human resourced underwater operations;
- Prior to putting into service a facility or parts thereof;
- Prior to carrying out major rebuilding or changes in the purpose of the use;
- Prior to use of a facility exceeding the life span;
- Prior to disposal/removal/change of a facility; and
- Prior to removal or change of use of a vessel that has a significant safety related function.

Depending on their content, applications for consent will be processed by the PSA, the CPA and the NDoH. In each case, the authorities will determine the level of detail required in the processing, based in part on:

- Experience with the specific operator;
- Experience with the contractors expected to be involved in the activity;
- Experience with the relevant project/installation/vessel;
- Special safety and working environment challenges linked to the activities covered under the application for consent, including the environmental vulnerability of the area; and
- The timing for implementing the activity.

The authorities may conduct verifications after a consent has been granted in order to confirm that the activity is being carried out in accordance with the current regulations and the obligations in the application for consent.

[8] www.standard.no/en/Sectors/Petroleum/About-petroleum/

G.3.3.4 Acknowledgements of Compliance

An Acknowledgement of Compliance (AoC) is an acknowledgement from the PSA to the effect that a mobile facility's technical condition and the applicant's organisation and management system are assessed to be in conformity with relevant requirements of the Norwegian shelf rules.

An AoC will be given on the basis of the authority's assessment of the condition of the facility, measured against the rules applying to the use of mobile facilities on the NCS at the time of the AoC[9].

Securing an AoC is essential if a mobile drilling rig is to work in the petroleum activity on the NCS, and is mandatory for the following units which are registered in a national register of shipping:

- Drilling rigs;
- Accommodation units (flotels);
- Floating production, storage and offloading units;
- Floating drilling, production, storage and offloading units; and
- Well intervention vessels which are to conduct petroleum operations on the NCS.

An applicant may be the owner of a mobile facility or another party who is in charge of day-to-day operation of such a facility when the latter participates in petroleum activities within the NCS. An AoC in itself confers no right to initiate activities on the NCS. The AoC may, however, form part of the documentation comprised in the application for consent to petroleum activity on the NCS.

An AoC encompasses technical conditions, relevant parts of the applicant's management system, analyses performed, maintenance programmes and upgrading plans. If the AoC is applied for in connection with a concrete application for consent for petroleum activities, it may then also comprise factors specific to locality and activity. The statement will be given based on the authority's interactions with the applicant and the information that the applicant has provided about the facility and the organisational set-up.

Use of such a statement in connection with a subsequent application for consent for use must be considered within the context of any changes in the legislation, the facility's technical condition, and the applicant's organisation and management system since the statement was given.

[9] www.olf.no/hms/sut/

G.3.3.5 Plans for Development and Operation of Petroleum Deposits (PDO) and Installation and Operation (PIO)

Management of HSE requirements of installations fall within the requirements outlined in the *NOR FR*, and as further detailed in the *NOR AR*. Before the licensees in a production licence can develop a discovery, the MPE must approve a plan for development and operation of the petroleum deposit (PDO). The PDO must contain information on how the licensees plan to develop and operate the field. When considering the PDO, the MPE will determine which parts of the development solution are to be handled by the licensees under the existing production licence, and which parts are to be developed and operated pursuant to a special permit for installation and operation (PIO).

The decisive factor here will be whether parts of the development solution will, from the beginning or subsequently, be handled by a different entity than the licensees under the production licence, whether they will be subject to a different licence period, or whether different conditions should be set for the permit. Special permission for installation and operation of facilities will be necessary when the right to conduct installation and operation, does not follow from an approved plan for development and operation. Companies that are granted a PIO constitute a separate group of licensees and a PIO may have its own distinct licence period.

The PDO/PIO system has been developed on the basis of suggestions from the OLF, and it facilitates coordination between licensees and the authorities in the planning and decision processes.

PDOs and PIOs comprise two sections: a development or installation section; and an impact assessment section. Detailed commentary on the expected content of each section is provided in the MPE *Guidelines for PDOs and PIOs*[10]. However, the central aspects directly relevant to HSE management on installations are:

- Description of Facilities and Concept Evaluation;
- Technical Description of Facilities;
- Special information about load-bearing structures, deck arrangement and subsea facilities;
- Special information about process and support facilities;
- Special information about accommodations capacity;
- Special information about transport systems;
- Special information about metering systems;
- Main Plan for Drilling and Well Activity;
- Operations and Maintenance; and
- Disposal of Facilities.

[10] www.npd.no/Global/Engelsk/5%20-%20Rules%20and%20regulations/Guidelines/PDO-PIO-guidelines_2010.pdf

In addition, the development/installation section of the PDO/PIO is expected to cover the following elements:

- Objectives for health, environment, safety and risk acceptance criteria;
- How the operator handles interfaces between the participants in the development, coordination and follow-up of activities;
- For the shelf-based part of the activities: plans for health services, including preventive health services and curative services, hygiene and health-related preparedness;
- A plan for execution and follow-up analyses;
- An overview of discipline or area-specific documents that can expand on the description given in the plans;
- An overview of standards and specifications that will apply to the development; and
- Other factors of significance for health, environment and safety.

PDO/PIO Processing

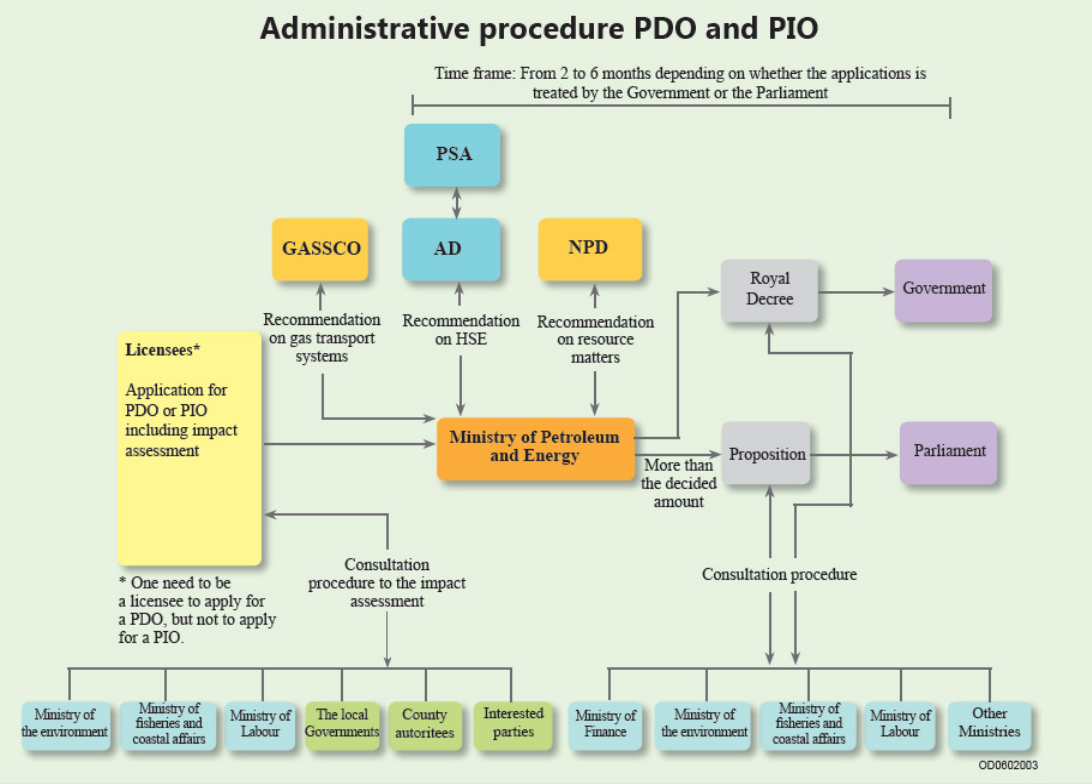
The development or installation sections of the PDO/PIO are submitted to the MPE and the Ministry of Labour, with copies to the NPD and the PSA. The MPE coordinates the consideration process and receives evaluations from the NPD and the Ministry of Labour. In parallel, the licensee sends the impact assessment to various bodies for consultation – such as relevant ministries, county authorities, municipalities and professional bodies (see *Figure G1*).

Based on the impact assessment, development and/or installation section, and the consultation submissions, the MPE prepares a draft Storting proposition or a Royal Decree, which is submitted to the relevant ministries for consultation. Developments with an investment framework in excess of a total fixed amount (currently NOK 10 billion), must be approved by the Storting (Norwegian Parliament).

The MPE *Guidelines for PDOs and PIOs* recommend that the processes surrounding the impact assessment start several months before submission due, to the consultation requirement for both the study program and the impact assessment itself. In many cases, work on the impact assessments starts when drilling, testing and, if applicable, delineation wells, have led the licensee to determine that development of the deposit is commercially interesting. At this time, the guidelines also recommend that the licensee's representatives should contact the MPE to discuss the impact assessment for the deposit in question, so that the subsequent work can be organised in the best possible way. In such a meeting developers are encouraged to present the preliminary development plans and look to clarify the schedule for the impact assessment process, consultation deadlines and the need for additional meetings.

The MPE must be informed about, and approve, significant deviations or changes in the preconditions for submitted or approved plans. The MPE can demand that a new or amended plan be submitted if there are significant deviations or changes in the preconditions. Among the things the MPE will emphasise in its evaluation is whether the change will entail a substantial increase in investments on the field. As regards production from a new deposit, the general rule is that the licensees must submit a new PDO.

Figure G1: Administrative Procedures of PDO and PIO



G.3.3.6 Impact Assessment

The purpose of the impact assessment is to clarify the effects of a development or a facility, and the operation of the development, on the environment, including cultural monuments and cultural milieus, natural resources and society. Impact Assessments are prepared to ensure that these effects are taken into consideration in the planning of a development or an installation, and when decisions are made regarding whether or not a PDO or PIO is approved and, if so, on what conditions. Impact assessments ensure that the authorities have a good basis on which to make their decision.

The impact assessment process is an open process. This is to ensure that people who have an opinion on the development and/or installation have the right and the opportunity to express their opinion. The process ensures that the general public is made aware of potential consequences and possible alternatives other than those put forward by the developer. This applies both as regards viewpoints on the consequences of the measure, as well as what remedial measures would need to be implemented. Prior to the preparation of an impact assessment, a brief study programme should be prepared and submitted to the MPE for comment.

The consultation process for the impact assessments is also an important part of the overall PDO/PIO process, because it contributes to the evaluation of solutions with different environmental and social consequences. The consultation bodies must have an opportunity to evaluate the licensees' description of the effects that the development and/or the installation might have. Therefore, the impact assessment shall, together with any relevant regional assessments:

- Describe the plans for the field development and/or installation and the effects they could have on the environment, natural resources and society;
- Discuss the significant positive and negative consequences that presumably could arise; and
- Discuss remedial measures, as well as propose any necessary follow-up studies and monitoring programmes.

At an early stage, licensees should identify any existing impact assessments that may satisfy the study obligation, in whole or in part. If a licensee is considering applying for an exemption from the impact assessment, it should clarify whether or not there is a valid basis for this at an early stage. If the development entails a development on land and/or connection to the power system on land, it is important to be aware that these measures can trigger independent reporting obligations and mandatory impact assessments under the rules of the *Planning and Building Act (1985, as amended)*.

The impact assessment process is intended to emphasise the regional consequences of a development. Therefore, both field-specific (FIA) and regional studies (RIA) can be required. The impact assessment study programme and detailed information on the required content of the FIA and RIA are provided in the MPE *Guidelines for PDOs and PIOs*. The suggested table of contents for an FIA study programme and final report is provided in *Table G3.*

Table G3: Requirement of FIA Study Programme and Report

Study Programme	Report
0. Summary 1. Introduction 2. Plans for development and operation 3. Environmental consequences and remedial measures 4. Consequences for the fisheries and other maritime industries 5. Social consequences 6. Planned studies	0. Summary 1. Introduction 2. Plans for development, installation and operation 3. Summary of consultation statements received 4. Environmental consequences and remedial measures 5. Consequences for the fisheries and other maritime industries 6. Social consequences 7. Summary of remedial measures and follow-up studies and monitoring 8. Emergency preparedness

In addition to identifying potential impacts, preventive and remedial measures are also required. An account should consider, amongst other things:

- Discharges to sea and soil, emissions to air;
- Any material assets, including natural resources and cultural monuments, that may be affected as a consequence of the development;
- The consequences of the technical solutions that have been selected; and
- How environmental criteria and consequences have been used as a basis for the technical solutions selected.

An account must be provided of how best available technologies requirements will be safeguarded in the planned development. An overview must also be provided of planned preventive measures to limit emissions to air and discharges to sea, along with a preliminary assessment of these measures. The licensees are required to submit an overview of the volume of energy required and the costs associated with supplying the facility with power from land rather than using offshore gas turbines, and the costs of possibly re-injecting CO_2 from produced gas, turbines and other facilities. Potential NOx reduction measures must also be considered.

G.3.4 Reporting, Inspection and Compliance

G.3.4.1 Reporting

The regulatory reporting requirements for offshore O&G operators in Norway are provided in *Table G4*.

Table G4: Norwegian O&G Reporting Requirements

Reporting Requirement	Legal basis
• Reporting of working hours • Well program in the event of collective dismissals • Program for plug back of the relevant wells • Plans for exploration wells to be temporarily plug backed beyond three years • Plans for finished wells which are not completed as originally planned • Pre-plans for drilling and well activities – monthly overview • Confirmation of notification and announcement to the supervisory authorities of hazardous and accident situations • Notification of possible work-related illness • Notification of accident which has caused death or personnel injury • Reporting of damage to loadbearing structures and pipeline systems • Reporting of human resourced sub-sea operations from facilities or vessels • Final report HSE drilling	*NOR IDR*

Reporting Requirement	Legal basis
• Documentation of the measuring system in use • Information – fiscal measurements • Application for consent - measuring system • Semi-annual CO_2 reporting in connection with CO_2 fee	Regulation relating to measurement of petroleum
• Application for test production • Extension of Production Licence - Extension of initial period -Transition to the extension period • Application for production licence • Information regarding plans, budget, etc. • Information relating to future deliveries of rich gas and dry gas • Statement that production will not be commenced • Application relating to production permit, including flaring and cold venting • Application for exploration permit • Proposal for study program for impact analysis in Plan for Development and Operations	*NOR PAA*
• Cessation plan • Plan for installation and operation of facilities for transportation and exploitation of petroleum • Plan for development and operation of petroleum deposits • Documentation in a preliminary stage relating to safety	*NOR PAA* *NOR FR*
• Application for consent to conduct certain petroleum activities	*NOR PAA* *NOR IDR*
• Assessment of a petroleum deposit • Annual status report for fields in production • Information relating to sale of petroleum, quarterly • Exploration activity. Information no later than five weeks prior to start-up of the exploration activity • Exploration activity – weekly information as long as the exploration activity is ongoing • Exploration activity – notification of change • Track surveys and other soil surveys	*NOR PAA* *NOR RMR*
• Drilling and well activity – classification and reclassification of wells; Registration of wells and wellbores – registration of shallow boreholes • Reporting during drilling and well activity – special reporting for development wells • Final reporting of geo-technical and reservoir-technical well data • Application for consent to name the field • Status report at start-up of production • Daily information in the production phase • Information relating to produced petroleum, etc. – monthly reporting of production data • Material and information from survey activity • Log book for fisheries expert	*NOR RMR*
• Drilling program • Main plan for drilling and well activities • Reporting of drilling and well activities – daily	*NOR RMR* *NOR IDR*

Reporting Requirement	Legal basis
• Drilling and well activity. Information relating to formation test, permanent plugback	*NOR RMR* *NOR IDR* *NOR PAA*
• Offshore periods – application for extension • Notification relating to intrusion in safety zones	*NOR FR*
• The Petroleum Register	Petroleum Register

G.3.4.2 PSA Supervision Plan

Each year, the PSA prepares a supervision plan which describes all planned supervisory activities, including audits and verifications. The supervision plan is exempt from public disclosure and neither the operators nor the general public have access to this plan.

The supervision plan is based on:

- Priorities established by the ministry for the year (e.g. lifting operations, gas leaks);
- The operating company's own activity plans and their own planned audits;
- Input from the CPA, the NDoH and other agencies that the PSA cooperates with observed trends;
- The Ministry of Labour's experience with the players' activities;
- Accidents and incidents; and
- Consequences of new or revised regulations.

Audits and Verifications

Through audits (systematic examination of management and control systems) the PSA carries out supervision of the established systems. With the aid of verifications (measurements, testing, inspection) the PSA checks to ensure that the actual circumstances conform with regulatory and management system requirements. This often takes place in cooperation with the CPA and the NDoH, or other agencies who are delegated authority by PSA.

Investigation

Investigation forms an important part of PSA's audit activities, with the most serious incidents investigated by the PSA (approximately 6-9 incidents per year).

Depending on the seriousness, the PSA follows up hazard and accident situations within its area of authority through:

- PSA's own independent investigation. This is often carried out in parallel with the Prosecuting Authority's investigation, where the PSA provides expert assistance;
- Follow-up of the operator's system to follow up incidents; and/or
- Case handling of the operating companies' investigation reports, submitted upon request from the PSA.

Incidents which typically qualify for an independent investigation by the PSA are:

- Major accidents and situations which could have led to a major accident;
- Deaths in connection with work accidents;
- Serious personal injury with lethal potential; and
- Serious weakening or discontinuance of safety functions and barriers which put the facility's integrity at risk.

If there is a need to involve other supervisory authorities, the investigation may be conducted in cooperation with the other supervisory authorities.

The purpose of the investigation is to collect facts, uncover causal relationships and consider measures vis-à-vis the responsible party. A focus on mapping underlying causes is often used. On the basis of what is learnt during the investigation, PSA consider what measures must be employed to bring the activities into compliance with the regulations and to prevent similar incidents.

The PSA prepares its own investigation report which is published in its entirety on its website. The analysis is often presented in an 'MTO' (man, technology, organisation) diagram.

Follow-up of incidents is also part of the audit concept, and is included as an important part of PSA's supervision duties.

Experiences from this part of the audit activities can be used to:

- Prioritise audit activities;
- Inform/orient the industry, (lessons learned);
- Evaluate need for regulatory development and further development of the audit concept; and
- Raise internal competence.

The PSA also has an important role in informing the HSE authorities of other countries about incidents on the Norwegian shelf which may be relevant to them.

Orders

An order is a preventive policy instrument which has a binding legal impact on the recipient. The policy of the PSA is that orders are not to be used as a reaction to all violations of regulations.

At the same time, an order is a moderate sanction in the hierarchy of statutory policy instruments. Stronger sanctions include stopping operations, compulsory fines, penalties and special compulsory measures.

When PSA identify non-conformities with regulatory requirements, it can issue an order to emphasise that:

- The regulatory violation is regarded as being serious with regard to health, safety and emergency preparedness; and/or
- A strict reaction is necessary in relation to less serious regulatory violations because the company has shown a lack of ability or willingness to rectify the same or similar regulatory violations when the PSA has employed non-statutory instruments.

Since PSA has a functional set of regulations, it does not normally order implementation of specific changes or technical solutions. Normally, this is only done in those cases where the regulations stipulate specific solutions. If concrete deficiencies are to be rectified, PSA issue orders requiring that the deficiencies be rectified, without specifying how this is to be accomplished.

If PSA uncover extensive and fundamental deficiencies in the system for managing HSE, it normally issues orders to ensure a review and change of the management system.

Notification of Order

A notification of order is neither a policy instrument nor a warning of sanctions, but rather a step in a process conforming to given rules.

The notification is merely a first step before making an individual decision. While there are some limited circumstances in which the PSA can omit the advance notification, there are few cases in which this would be relevant.

Pursuant to Section 16 of the *Public Administration Act (1967, as amended*), notification must be given of an individual decision so that the addressee is given an opportunity to respond before a decision is made.

The notification letter contains an exact rendition of the planned individual decision. A deadline is set for the addressee to respond to the notified individual decision. The deadline should be long enough to allow the addressee a reasonable opportunity to make a statement on the notification. Consideration must also be given to the urgency of implementing the notified individual decision, and the deadlines to be contained in the order.

From time to time, notified orders are not issued, or PSA may change the wording in an order. This may be relevant if[11]:

> *The planned individual decision is based on erroneous assumptions, e.g. in that information provided by the addressee convinces us* [the PSA] *that we have used an incorrect basis in our notification, and that these factors have considerable bearing on the individual decision, or that we must conduct more detailed investigations.*
>
> *The addressee has already implemented the actions that we* [the PSA] *planned to demand by means of the individual decision. We do not consider that a company has complied with a notification of order merely by drawing up plans for the required work to be contained in the individual decision, except in those cases where the individual decision requires only the preparation of such plans.*

G.3.5 Funding and Liabilities

G.3.5.1 Funding

Within the Norwegian context, there is a Government budget allocation for the PSA, although expenses related to regulatory supervision, such as working hours and travel expenses, are refunded by the duty holders. They are paid into the Treasury and typically amount to about 40% of the total operational budget. The PSA's 2009 Annual report highlights that refunded supervisory activities outweighed the supervision costs by three times in 2009[12].

G.3.5.2 Liability

Section 73 of the *NOR PAA* relates to the provision of insurance and states that the activities conducted by licensees should be insured at all times. The specific requirements are for insurance to at least cover:

- Damage to facilities;
- Pollution damage and other liability towards third parties;
- Wreck removal and cleanup as a result of accidents; and
- Insurance of the licensee's own employees who are engaged in the activities.

The licensee is also required to ensure that contractors and subcontractors engaged in the activities take out insurance for their employees to the same extent as the operator insures his own employees.

When taking out insurance, the licensee is required to provide reasonable insurance cover, taking into consideration risk exposure and premium costs.

The MPE may consent to the licensee using another form of security arrangement.

[11] www.ptil.no/enforcement-notices/category158.html

[12] www.ptil.no/news/the-petroleum-safety-authority-norway-s-annual-report-2009-facts-section-article6840-79.html

At the end of each calendar year, the licensee is required to inform the MPE about existing insurance agreements, with an indication of the main terms. The MPE may require further insurance to be taken out.

G.4 ALLOCATION

Rights for both exploration and production are controlled by a single licence, the production licence. The production licence is an exclusive right to carry out surveys, exploration drilling and production of oil and gas within the defined geographical area. The document supplements the requirements of the *NOR PAA*, and establishes the detailed terms and conditions for each individual licence.

There are two systems for awarding licenses on the NCS. In 2003, the Government introduced the annual system of Awards in Predefined Areas (APA) in mature parts of the NCS. This system replaced the annual North Sea Awards.

The APA system ensures that very large areas close to existing and planned infrastructure are available for the industry. The APA area will be expanded as new areas mature, but the area is not to be reduced.

In addition to the APA-system, there is a system of ordinary concession rounds held normally every second year. These rounds focus on frontier areas on the shelf where the potential for petroleum is less explored and where fewer infrastructure is built.

G.4.1 Selection of New Exploration Areas

Prior to the opening of new areas to exploration, an evaluation shall be undertaken of the various interests involved in the relevant area. In this evaluation, an assessment shall be made of the impact of the petroleum activities on trade, industry and the environment, and of possible risks of pollution, as well as the economic and social effects that may result from the petroleum activities.

The opening of new areas is a matter which shall be put before local public authorities, central trade and industry associations and other organisations which may be presumed to have a particular interest in the matter.

G.4.2 Pre-qualification

The Norwegian system differs from systems in the other countries reviewed in this report in that companies wishing to participate in the O&G exploration and production processes need to go through a pre-qualification process. This process is used to assess the technical capabilities of companies involved in the sector. A key idea behind the pre-assessment process is that the Norwegian government considers that advanced technology and research and development are critical to the continued development of oil and gas resources on the Norwegian continental shelf. The pre-qualification assessment process takes into account how companies applying can make a contribution in this area.

The documented process for pre-qualification of new companies as at 10 October 2006[13], is described below:

1. The applicant contacts the Exploration Section of the MPE and confirms a wish to become a licensee or operator;
2. The MPE initiates the evaluation process. The NPD is formally instructed by the MPE and the PSA is formally instructed by the Ministry of Labour to start the process for the company in question. The Player Qualification Team is the correct point of contact in the NPD and the PSA;
3. The applicant and the NPD/PSA agree on a date for a kick-off meeting in the NPD's and PSA's offices;

   The applicant is required to give a brief presentation of its activities, expertise and plans for the Norwegian shelf in the kick-off meeting. The NPD/PSA will provide detailed information on the evaluation process, and the parties will together agree on the continued process (schedule, meeting times and locations);
4. Evaluation meeting(s) in the applicant's offices with presentations by the applicant and verifications of the applicant's systems and capacities. Normal duration of such meetings is 1-2 days;
5. If the applicant is seeking qualification as an operator, a verification on one of the company's facilities will be required. Normal duration of such a verification is one day. If this is not possible, alternatives will be clarified in connection with the kick-off meeting;
6. The NPD and the PSA will each carry out an evaluation of the applicant and report separately to the MPE and the Ministry of Labour respectively;
7. The NPD and the PSA will use a standard evaluation form when evaluating new applicants[14]; then
8. The MPE will give a joint response to the applicant based on the Ministry of Labour's recommendations/conclusions as regards HSE and the NPD's recommendations as regards resource management. The MPE itself will conduct an assessment of the applicant's financial position.

In certain cases, consideration may be given to pre-qualifying applicants based on a mandatory plan for improvement. In such cases, the companies must document within a specified deadline that the requirements stipulated for improvements will be met before final pre-qualification can take place.

This scheme will only apply in those cases where the applicant largely meets the expertise, capacity and financial requirements, but has certain areas where it is assumed that the applicant will be able to meet the authorities requirements shortly. Shortly normally means approximately six months.

Consents, permits, etc. pursuant to applicable regulations are required in order to commence activity on the Norwegian shelf. Pre-qualification as a licensee/operator does not automatically entail such consents/permits.

[13] www.npd.no/en/Topics/Production-licences/Theme-articles/Pre-qualification/The-work-process/

[14] www.npd.no/Global/Norsk/2%20-%20Tema/Utvinningstillatelser/Prekvalifisering/Evalueringsskjema.doc

Table G5: Required documentation for licensee evaluation

New Companies – Licensees	New Companies - Operators
A description of what the applicant sees as the principal challenges of operating in the North Sea. A listing of current licence interests should be provided: - What are the company's aims for the Norwegian shelf ? - What competitive edge will the company bring to the Norwegian shelf ?	
	Companies with no previous operator experience should explain the reasons why they are seeking an operatorship at this time.
The company's Health, Safety and Environmental Framework (Management System, Policies, Organization, Planning, Monitoring Performance, Review and Audit, etc).	
Management summary extract from the annual reports for the last three years.	
	A list of oil or gas fields worldwide which have been or are currently being operated. For each of the fields a review of the measures the company has taken to optimise recovery and a brief explanation of how these fields have performed against original expectation.
The company's employment strategy (organisational chart(s), number of employees, own staff versus consultants, outsourcing, competence requirements etc.).	
A description of the company's in-house capabilities in the area of O&G, reservoir, facilities management and field development technology. If these are not self-sufficient, what external resources are available to supplement these capabilities. An indication of company policy with regard to employing new or advanced technology and company track record in introducing technology to operations.	
The company's policy towards the training of its technical staff, including formal internal or outside training programmes and other ways of ensuring that staff are kept up to date in their specialist subject(s).	
A description of the company's efforts on Innovation and Research over the past five years.	

G.5 EXPLORATION AND PRODUCTION ACTIVITIES

G.5.1 Exploration Surveying

HSE management of offshore O&G exploration surveying activities are not explicitly covered within the Petroleum Activities Regulations and are instead, subject to management by supporting agencies, e.g. the NMD. For example, as highlighted in *Section G.3.3* above, marine seismic vessels are not regarded as petroleum facilities. Furthermore, the guidelines to the *NOR FR* state that:

> *…anchor-handling services by vessels, seismic or geological surveys by vessels, and other comparable activity, is regarded as shipping. The Working Environment Act and these regulations with supplementary regulations are not applicable to vessels mentioned performing such activities….*

There are however a number of regulations administered directly by the NPD as part of its overall resource management responsibilities that provide some oversight of the environmental implications of exploration surveying.

Chapter 2 of the *NOR RMR*[15] focuses on exploration activities and details information requirements prior to and during survey activities, requirements for the marine seismic vessel and requirements for notification of other vessels in the region.

These are also regulations in place to guide the reporting of exploration data collected through the survey process[16].

G.5.2 Exploration Drilling

As highlighted in *Section G.3.3.3* and as per the requirements of the *NOR IDR*, operators must obtain consent prior to conducting exploration drilling. However, the HSE requirements of exploration drilling are generally consistent with those of production drilling.

G.5.3 Production Activities

G.5.3.1 Design and Construction

Specific guidance in the form of international and Norwegian standards are provided for within the guidelines to the *NOR FaR* for the construction and design of plants, systems and equipment, including mobile facilities; requirements for loads and materials; design of work areas; electricity systems and drilling and well systems amongst other things.

For example, in terms of plants, system and equipment design, the following statement is issued:

> *With regard to the design of plants, systems and equipment, the following standards should be used in the area of health, working environment and safety:*
>
> *a) NORSOK D-001 and D-002 for facilities for drilling and well activities,*
> *b) NORSOK L-001 and L-002 for pipes and valves;*
> *c) NORSOK P-001 revision 5 and P-100 for process plants;*
> *d) NORSOK R-001 and R-100 for mechanical equipment;*
> *e) NORSOK S-005 for machines;*
> *f) NORSOK Z-015N for temporary equipment;*
> *g) NORSOK U-100 revision 3 and U-101 for diving systems and breathing equipment;*
> *h) NORSOK U-001 and ISO 13628 for sub sea installations;*
> *i) IMCA/AODC 035 for electrical installations for use under water;*
> *j) IEC 61892 for electrical installations and electrical equipment; and*
> *k) NS-EN ISO 11064 with regard to human error.*
>
> *For the design of facilities, systems and equipment with regard to regularity and reliability, the NORSOK Z-016 standard may be used.*

[15] www.npd.no/Global/Engelsk/5%20-%20Rules%20and%20regulations/NPD%20regulations/Ressursforskriften_e.pdf

[16] www.npd.no/Global/Norsk/5%20-%20Regelverk/Tematiske%20veiledninger/Undersokelsesaktivitet_e.pdf

In relation to the design and construction of drilling and well systems specifically, guidance in relation to the design of the following elements is also provided:

- Well barriers;
- Well control equipment;
- Compensator and disconnection systems;
- Drilling fluid systems;
- Cementing unit;
- Casings and anchoring of wells;
- Equipment for completion and controlled well flow;
- Christmas tree[17] and well head; and
- Remote operation of pipes and workstrings.

G.5.3.2 Operation

Similar guidance is presented within the guidelines to the *NOR AR* including requirements relating to:

- The Working Environment Act;
- Health services;
- Pre-surveys and installation;
- Transport and stay;
- Operational prerequisites (including: prerequisites for startup; competence; procedures; and prerequisites for use);
- Planning and conduct of activities;
- Working environment factors;
- Maintenance;
- Monitoring of the external environment (including emission and discharge to the external environment; and waste);
- Emergency preparedness (including actions in situations of hazard and accident and against acute pollution;
- Communication;
- Drilling and well activities;
- Marine operations;
- Electrical installations;
- Lifting operations; and
- Human resourced underwater operations.

[17] A Christmas tree is an assembly of valves, spools, and fittings used for an oil well, gas well, water injection well, water disposal well, gas injection well, condensate well and other types of wells.

Drilling and well activities are for example generally required to comply with *NORSOK D-010* as a minimum, such as in the fulfilment of monitoring of well which requires the use of:

> *…NORSOK D-010 standard revision 3 Chapter 4.7.2, 5.7.3 and 5.7.4.2 should be used with the following addition:*
>
> *when testing the formation's fracture strength, pressure testing to the maximum anticipated pressure for the well section should be carried out.*

Environmental monitoring provisions included within the regulations include:

- Remote measurement of acute pollution (Regulation 50);
- Baseline surveys (Regulation 51);
- Environmental monitoring of sea bed habitats (Regulation 52a);
- Environmental monitoring of the water column (Regulation 52b);
- Reporting of monitoring results (Regulation 52c);
- Remote measurement of acute pollution (Regulation 52d);
- Environmental surveys in case of acute pollution (Regulation 52 e);
- Follow-up surveys (Regulation 53);
- Characterisation of oil and chemicals (Regulation 54);
- Discharge of oil-contaminated water (Regulation 55a);
- Emission to air (Regulation 55b);
- Ecotoxicological testing of chemicals (Regulation 56a);
- Categorization of chemicals (Regulation 56b);
- Environmental assessments (Regulation 56c);
- Choice of chemicals (Regulation 56d);
- Use and discharge of chemicals (Regulation 57);
- Chemicals for emergency preparedness (Regulation 58);
- Discharge of cuttings, sand and solid particles (Regulation 59);
- Discharge from formation testing and cleanup of wells (Regulation 60);
- Measuring the quantity of discharged oil, other substances and water (Regulation 61);
- Measuring associated fluids discharged with solids (Regulation 62); and
- Waste (Regulation 63).

G.5.4 Pipelines

The *NOR AR* have provisions relating to pipeline activities and structures and are applicable to all pipelines connected with petroleum activities, even if the pipeline crosses land and re-enters the sea one or more times before reaching the mainland.

On land, supervisory responsibility for technical safety of pipelines rests with the Directorate for Fire and Explosion Prevention (DFEP), and their regulations apply. The DFEP's regulations also apply after the point where a pipeline first crosses the steep bottom rise even if it then re-enters the sea. Hence after the first land crossing there is some overlap with the petroleum rules.

Against this background an agreement has been entered into by the NPD and DFEP about which body of regulations apply and which authority is to perform supervision in cases where the petroleum rules and the DFEP rules overlap. Under the agreement the DFEP rules take over - and the DFEP performs supervision - from the point at which the pipeline first reaches land. The DFEP rules are accordingly applied, and the DFEP also supervises that part of the pipeline that re-enters the sea once the pipeline first crosses an island (or the like) and subsequently enters the sea before finally reaching the mainland.

G.6 DECOMMISSIONING ACTIVITIES

The Norwegian government looks to both national and international regulations when assessing the disposal of an installation. Disposal or decommissioning of facilities is regulated by the *NOR PAA*. In addition, Norway's obligations under the *OSPAR Convention Decision 98/3 on the Disposal of Disused Offshore Installations* also apply.

The guidelines laid down in Storting White Paper No. 47 (1999–2000) "Decommissioning of Redundant Pipelines and Cables" apply to pipelines and cables. As a general rule, pipelines and cables may be left in place when they do not obstruct or present a safety risk for bottom fishing, with costs of burial, covering or removal taken into consideration.

G.6.1.1 Decommissioning Plans

The *NOR PAA* places a requirement on the licensee to submit a decommissioning plan to the MPE before a license expires or is surrendered, or the use of a facility is terminated permanently. As a general rule, the *NOR PAA* requires submission of a decommissioning plan two to five years prior to expiration or relinquishment of a production license, or the use of a facility is terminated permanently.

The decommissioning plan must consist of two main parts, a disposal plan and an impact assessment. The impact assessment provides an overview of the expected consequences of the disposal, such as environmental consequences. The disposal plan is assessed by the MPE and the Ministry of Labour (as the PSA) to consider safety aspects. A discharge permit, granted by the CPA, may also be relevant in some cases.

The MPE coordinates the public hearing of the impact assessment and prepares a draft Royal Decree, which is submitted to the government, based on the impact assessment and feedback from the public hearing, as well as on the disposal plan and its assessment. Applications for derogation from the OSPAR decision concerning disposal on land must be presented to the Storting.

G.7 MAJOR ACCIDENTS

The management of major accidents fall within the *NOR MR*, placing requirements on the operator to set acceptance criteria for major accident risk and environmental risk (Section 6), as well as indicators to monitor changes and trends in major accident risk (Section 7). The regulations also require quantitative risk analyses and other necessary analyses to be carried out (Section 14) in order to identify contributors to major accident risk, including:

- The risk connected with planned drilling and well activities, including showing the effect these activities have on the total risk for the facility;
- The effect of modifications and the carrying out of modifications on the total risk; and
- The risk connected with transportation of personnel between the continental shelf and shore and between facilities.

The analyses should also be used to set conditions for operation and to classify areas, systems and equipment with respect to risk.

Management and major accident risk forms one of the PSA's priority areas for 2010. Through this focus, it is intended that management at all levels of the industry will work to reduce major accident risk, and ensure that this work is pursued in an integrated manner. Initiatives and decisions taken by management significantly affect the framing of conditions for such events.

Over the last two years, the PSA has conducted an audit of how the management in 11 different companies maintains an overview of and works to reduce the risk of major accidents. The findings from this audit activity have now been summarised in a report[18].

G.8 IMPLEMENTATION ISSUES AND EMERGING DEVELOPMENTS

G.8.1 Review of Deepwater Horizon Incident

The PSA has now established a framework for reviewing US government findings on the Deepwater Horizon accident with an eye to possible consequences for Norway.

This follows the publication on 15 June 2010 of the PSA's preliminary conclusions on the report from the US secretary of the interior, into the incident in the Gulf of Mexico[19].

[18] www.ptil.no/getfile.php/PDF/REB-TX-17303-tilsyn%20styring%20storulykkesrisiko%20samlerapport-eng%20%28endelig%20versjon%29.pdf

[19] www.ptil.no/getfile.php/PDF/salazar-rapporten.pdf

Comparisons covering the report's 21 recommendations showed that almost all of them are already met by Norway's regulations. But the PSA decided to take a closer look at four to five of the points. These have now been fully specified, and the PSA has resolved to initiate analyses of the following areas relating to Norway's oil sector:

- Well integrity, including:
  - organisational factors, such as education, training and qualifications of personnel performing critical functions in planning and executing well operations.
  - operational and technical management systems for well control.
  - operational and maintenance requirements for blowout preventers (BOPs), and existing systems for setting BOP certification requirements.
- Well design and construction. Part of this work will be conducted in cooperation with the Well Integrity Forum (WIF), which was established on the PSA's initiative in 2006. Subordinated to the OLF, this forum has already worked on the number of the issues outlined above[20].
- Emergency preparedness and response principles relevant to halting a possible subsea blowout in Norway[21].

G.8.2 PSA 2010 Priorities

The PSA has adopted a set of main priorities for 2010 where action will have the biggest impact and which call for special attention. These focus on management, technical and operational barriers, preventing environmental harm and groups particularly exposed to risk.

These areas have been selected as the most pressing of many important tasks on the basis of the PSA's knowledge of and experience with the Norwegian petroleum industry. As a result of these choices, the authority will devote particular attention during the present year to the following issues:

- **Management and major accident risk**: Management at all levels of the industry will work to reduce major accident risk, and ensure that this work is pursued in an integrated manner;
- **Technical and operational barriers**: Technical and operational barriers will be maintained in a unified and consistent manner to keep the risk of major accidents as low as possible;
- **Preventing acute pollution and reducing pollution safely**: The industry will work purposefully to prevent undesirable incidents which could cause acute emissions/discharges, and ensure that reductions in greenhouse gas emissions are achieved in an acceptable manner; and
- **Groups exposed to risk**: The risk of injury or illness for particularly exposed groups will be reduced.

These four priorities all represent an extension of the main commitments made by the PSA in 2009, but with some shifts in focus tailored to the challenges it sees today.

[20] www.ptil.no/news/well-done-article4216-79.html

[21] www.ptil.no/news/industry-asked-to-assess-emergency-preparedness-article6997-79.html

Annex H
Ministry of Economic Development's New Zealand Regulatory Review

New Zealand's Health, Safety and Environmental Arrangements for the Offshore Petroleum Sector

September 2010

INTRODUCTION

Background

The Government is undertaking a review of New Zealand's health, safety and environmental arrangements in relation to offshore petroleum operations. The Ministry of Economic Development (MED) is the lead agency for this project, which is being conducted in consultation with Ministry for the Environment, Ministry of Transport, Maritime New Zealand and Department of Labour.

The aim of the review is to ensure that the legislative structure, institutional capabilities and practices in New Zealand are fit for purpose and compare favourably to international best practice in this respect. MED is engaging independent consultants to undertake a review of international best practice with regards to health, safety and environmental arrangements. Based on arrangements in other relevant jurisdictions, the consultants will make recommendations on how to improve current practice in New Zealand.

The purpose of this paper is to outline New Zealand's current legislative framework with regard to health, safety and environmental arrangements for offshore petroleum operations.

Definitions

1) Territorial Sea: 0-12 nautical miles offshore
2) Exclusive Economic Zone (EEZ): 12-200 nautical miles offshore
3) Extended Continental Shelf: the continental shelf beyond the outer limits of the EEZ
4) Installation: means a fixed or mobile structure or vessel used, or intended to be used, in any offshore petroleum operation; and includes all other works within 500m of any part of the structure or vessel used in conjunction with the petroleum operation.[1]
5) Offshore installation: includes 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; a pipeline permanently attached to an offshore installation for the purpose of discharge management plans and reporting of spills and events.[2]

[1] *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999*

[2] *Part 200 – Offshore Installations – Discharges*

Agency responsibilities

The agencies involved in the offshore exploration and production of petroleum resources include the following:

- Crown Minerals grants licences for petroleum exploration and production under the Crown Minerals Act 1991, but does not manage the environmental effects of these activities.
- Most environmental effects within the territorial sea are regulated by regional coastal plans under the Resource Management Act 1991. These plans are administered by regional councils.
- The Department of Conservation also has a statutory role in coastal management – for example the Minister of Conservation approves all regional coastal plans.
- The Resource Management (Marine Pollution) Regulations 1998 cover some discharges to the marine environment – e.g. oily waste. These regulations are the responsibility of the Ministry for the Environment.
- Ballast water discharges are managed under the Biosecurity Act 1993 by Biosecurity NZ.
- Maritime NZ works with the *Maritime Transport Act 1994*, which governs navigational safety and assigns responsibility for search and rescue coordination, both within and outside the territorial sea. It is also the main piece of legislation in relation to environmental protection outside the territorial sea. Marine protection rules made under the *Maritime Transport Act* cover some aspects of petroleum operations, such as protection of the marine environment from harmful substances, discharges and oil spills, and disposal of wastes, including waste associated with decommissioning. Ship and mobile offshore drilling unit (MODU) requirements for pollution prevention overseen by Maritime New Zealand cover the territorial sea, EEZ and extended continental shelf. Maritime NZ inspects and audits installations for compliance with marine protection rules *Part 200 – Offshore Installations – Discharges*, which incorporates *MARPOL* requirements. Maritime NZ is designated to administer the *Health and Safety in Employment Act 1992* for work on board ships – including MODUs (when they are not drilling).
- The Department of Labour is responsible for administering and enforcing the *Health and Safety in Employment Act 1992* and the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999* — within the territorial sea, EEZ and continental shelf — on board: fixed installations; permanently moored structures, including tankers converted into floating production storage and offloading facilities (FPSOs); and MODUs once the unit is moored and the drilling operation commences.

LEGISLATIVE FRAMEWORK FOR ALLOCATION

Permits

Under the *Crown Minerals Act 1991 (*and via section 4 of the *Continental Shelf Act 1964* outside the territorial sea*)*, the Minister of Energy and Resources grants permits (administered by Crown Minerals) for prospecting, exploration and mining of petroleum on such conditions as considered necessary. Applications may be declined on grounds such as an inadequate work programme, but there are no specific environmental obligations in the Act. A standard condition is to comply with "good oil field practice", but this is not defined to any extent.

Petroleum prospecting permits are granted for the purpose of conducting reconnaissance surveys and general investigations with the purpose of providing information for further petroleum exploration.

Petroleum exploration permits are granted for the purpose of undertaking work to identify petroleum deposits, and evaluating the feasibility of mining any discoveries made. Staged work programme bidding is the primary form of allocation for exploration permits. The permit is exclusive and also carries the exclusive right to a mining permit over any discovery made within the area of the exploration permit.

Mining permits are granted to enable the development of a petroleum field with the purpose of extracting and producing petroleum. An application for a mining permit is most commonly made by an exploration permit holder who has discovered a petroleum field within the exploration permit area. Before a mining permit can be granted there must be an approved work programme.

ENVIRONMENTAL LEGISLATION

Protection from installations' harmful substances

Territorial sea

Under the *Resource Management Act 1991*, offshore installations within the territorial sea must undergo comprehensive environmental effects assessment. Petroleum exploration and production activities will require approval from the relevant regional councils, which may include the need for a resource consent.

There are national standards covering oil, garbage and sewage discharges from installations set out in the Resource Management (Marine Pollution) Regulations 1998. These regulations are also administered by regional councils.

Discharge management plans for installations within the 12 mile limit are also required to meet Maritime NZ-administered Part 200 marine oil spill contingency plan requirements.

EEZ and the extended continental shelf

In the EEZ and extended continental shelf, under the Maritime Transport Act 1994, there is no permitting regime per se for offshore installations as in the territorial sea. The applicable environmental requirements are set out in *Part 200 – Offshore Installations – Discharges*, which is administered by Maritime New Zealand. The Ministry for the Environment has been leading work on new environmental effects legislation for the EEZ and extended continental shelf. At the time of this paper the detail and timing of the legislation is yet to be confirmed by the Government.

Operators in this zone are required to hold a discharge management plan approved by the Director of Maritime New Zealand, setting out the measures to be used to manage discharges of harmful substances. In approving a plan, the Director must be satisfied that the operator has the systems, procedures and equipment in place to meet prescribed standards for harmful substance discharge, measure the impact of operations on the environment, and contingency planning for response to emergencies, such as oil spills.

Maritime New Zealand carries out regular inspections and audits of installations to ensure compliance with Part 200 requirements.

Protection from unwanted organisms

The *Biosecurity Act 1993* contains measures and powers to prevent the arrival of harmful organisms. At present, the Biosecurity Act is only applicable within the territorial limits of New Zealand. A review of the Act is underway (as at the date of Maritime NZ's information sheet) that is proposing to extend its application to include activities that explore and exploit the resources of the EEZ. Amendments to this legislation are expected to be introduced to Parliament in 2010.

Any ballast water loaded on board a ship, MODU, or a floating production storage and offloading facility or FPSO on its initial positioning voyage within the territorial waters of a country other than New Zealand and intended for discharge in New Zealand waters is required to be exchanged in mid-ocean to meet an import health standard under the Biosecurity Act.

The Government has made a decision that New Zealand is to become party to the International Convention for the Control and Management of Ships' Ballast Water and Sediments 2004. Empowering provisions for the making of marine protection rules under the Maritime Transport Act 1994 for this purpose is to be introduced to Parliament in 2010. The administering agency for ballast water controls will be Maritime New Zealand.

Cleaning of the exterior of the hull (including floating pontoons) below the waterline can generate significant quantities of waste which may contain contaminants or create biosecurity risks. Disposal of such wastes anywhere in New Zealand marine waters requires a permit from the relevant regional authority.

Biofouling on vessels arriving in New Zealand is a major source of harmful organisms. An import health standard under the Biosecurity Act is being developed to manage this biosecurity risk.

Part 180 – Dumping of Waste or Other Matter of the marine protection rules apply where there is dumping of hull fouling from cleaning activities in the Exclusive Economic Zone. Within the territorial sea, the Resource Management (Marine Pollution) Regulations 1998 apply to dumping of hull fouling.

Prevention of pollution by the dumping of installations

Any disused and abandoned offshore installations within waters under New Zealand jurisdiction may only be dumped into the sea under the authority of a permit from the relevant authority. Within the territorial sea, the authority is the local regional council. Any grant of a permit is made under the Resource Management Act 1991 and the Resource Management (Marine Pollution) Regulations 1998.

Outside the territorial sea, the authority is Maritime New Zealand. Any grant of a permit is made under the Maritime Transport Act 1994 and marine protection rules *Part 180 - Dumping of Waste or Other Matter.*

The base case scenario for assessing decommissioning applications in New Zealand marine waters is to achieve a clean seafloor, with a preference for recovery, reuse or recycling. Other proposals will be judged on a case-by-case basis, with an assessment of preferred and alternative decommissioning options.

Flaring and venting

Flaring and venting can only be undertaken with the appropriate consent, granted under the Crown Minerals (Petroleum) Regulations 2007. Operators need to review all reasonable and economical alternatives to flaring and venting. However, flaring is seen primarily as a resource management issue and not as an environmental issue.

HEALTH AND SAFETY LEGISLATION

Offshore safety onboard installations

The Department of Labour administers and enforces the health and safety regulatory regime (including process safety) on board: fixed installations; permanently moored structures, including FPSO's; and MODU's once the unit is moored and the drilling operation commences.

Maritime NZ administers and enforces the health and safety regulatory regime for ships, including MODUs (when they are not drilling).

The applicable legislation is the *Health and Safety in Employment Act 1992* and the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999*. The legislation concerns health and safety issues in the operation of installations for petroleum exploration and production, both onshore and offshore.

The *Health and Safety in Employment (Pipelines) Regulations 1999* also apply to gas and condensate pipelines not contained within any installation. These regulations concern matters relating to health and safety in the operations of pipelines and typically apply to pipelines carrying gas or oil from production facilities to distribution points.

The policy, as in many other jurisdictions, is based on a safety case approach - that is, the operator prepares a comprehensive assessment of risks, identifies control measures and develops appropriate processes and procedures. A safety case is required for the design and construction, operation, or abandonment of any installation. The Department of Labour reviews the safety cases for all installation types and exercises ongoing supervision through certification and/or verification schemes. Maritime NZ is not involved in the review of safety cases.

Under the *Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999* well-drilling operations are required to be notified but not authorised. The operator is required to keep daily records of the well-drilling operation.

Navigational safety

The Maritime Transport Act 1994 governs navigational safety, and search and rescue, both within and outside the territorial sea.

A precautionary area off the west coast of the North Island has been designated by the International Maritime Organization, covering the seven fixed installations currently operating in the Taranaki offshore basin. All ships are advised to navigate with particular caution in order to reduce the risk of a maritime casualty and resulting marine pollution in the precautionary area.

The area is marked on relevant nautical charts and the coordinates are available from the Maritime NZ website www.maritimenz.govt.nz and in the Annual Notice to Mariners Number 16 in the *New Zealand Nautical Almanac.* All permanent installations have safety zones of 500 metres breadth. Transiting ships and fishing operations are excluded from the safety zones.

The zones are created in regulations made under the Continental Shelf Act 1964. The administering agency is the Ministry of Transport. Any proposal to establish a safety zone for a new permanent installation should be directed to the Ministry.

Offshore container safety

Part 24E – Carriage of Cargoes – Offshore Containers of the maritime rules made under the Maritime Transport Act 1994 regulate the life cycle of offshore containers, based on IMO recommended standards. The rules are administered by Maritime New Zealand.

DG containers are covered by the IMDG code administered by Maritime NZ.

Maritime security

Installations in New Zealand internal waters, territorial sea, EEZ and extended continental shelf that have a port facility (such as an FPSO) used by ships engaged in international trade, are subject to the provisions of the *Maritime Security Act 200*4. Maritime NZ is a designated authority under this Act, which gives effect to the *International Code for the Security of Ships and of Port Facilities*, 2002, under SOLAS.

PROPERTY PROTECTION

Submarine cables

The protection of subsea cables and pipelines from hazards presented by ships' anchors and fishing operations is dealt with in regulations made under the *Submarine Cables and Pipelines Protection Act 1996*. Any proposals to establish new protected areas should be directed to the Ministry of Transport. Maritime New Zealand has some delegations in respect of issuing exemptions for ships anchoring in protected areas, and the approval of surveillance equipment.

Liability insurance

Operators of offshore installations in New Zealand continental waters must hold public liability insurance warranting cover of not less than 14 million International Monetary Fund units (**SDR**) of account (approximately NZ$30 million) for third party pollution damage.[3] The requirements are set out in the *Maritime Transport (Certificates of Insurance) Regulations 2005* (made under the Maritime Transport Act) and marine protection rules *Part 102 – Certificates of Insurance*.

[3] Liability for pollution damage is in addition to liability under the Maritime Transport Act 1994 to pay the Crown and marine agencies for the costs of cleaning up pollution.

There is no limitation of liability available to operators for oil pollution damage or clean up costs under the Maritime Transport Act. The liability is strict, not based on fault or neglect. However to seek restitution or compensation from the polluter, the New Zealand Government would need to take its claims for compensation from the offending party to court for resolution.

Oil Pollution from oil tankers

New Zealand is signatory to the IMO Fund 92 Convention which provides an international fund that can be accessed in the event of a major oil spill whose response costs exceed the limited liability of the ship-owner. Under the Fund 92 Convention, funds up to 203 million SDR units or NZ$446 million may be available.

An additional oil pollution fund, the Supplementary Fund, has up to 750 million SDR units or NZ$1650 million that may be accessed in the event of a major oil spill. New Zealand is not party to this IMO Convention.

The New Zealand Oil Pollution Fund

Currently the New Zealand Oil Pollution Fund has about $4 million in reserves available for immediate use to respond in the event of a significant oil spill. The long term reserves ('emergency contingency reserves') have recently been set at $2 million.

Appendix 1. Environmental legislation

Activity	Territorial sea	EEZ	Extended continental shelf	International law
The taking of samples	May be regulated by regional coastal plan			
Marine seismic surveys	*Department of Conservation voluntary non-statutory guidelines*	*Department of Conservation voluntary non-statutory guidelines*	*Department of Conservation voluntary non-statutory guidelines*	
Contamination through drilling mud	Regional councils Regional coastal plans	Maritime NZ Part 200 marine protection rules (Note that there are restrictions on the types and use of drilling fluids under the rules in the case of controlled installations)	Maritime NZ Part 200 marine protection rules (with restrictions on the types and use of drilling fluids under the rules in the case of controlled installations)	
Oil spills and waste discharges from drilling	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	MARPOL Annex I and Annex V
Disturbance of sediments, marine life and habitats from drilling	Regional councils Regional coastal plans			
Death to marine life from drilling	Regional councils Regional coastal plans			
Discharges to air	Regional councils Resource Management Act plans and coastal permits Crown Minerals Flaring consent under Crown Minerals Petroleum Regulations 2007	Maritime NZ *Guidelines for offshore petroleum industry* Crown Minerals Flaring consent under Crown Minerals Petroleum Regulations 2007	Maritime NZ *Guidelines for offshore petroleum industry* Crown Minerals Flaring consent under Crown Minerals Petroleum Regulations 2007	MARPOL Annex VI, (only diesel engine emissions not directly involved in exploration, production and processing). NZ is not currently party to Annex VI
Discharges of oily wastes from machinery spaces	Ministry for the Environment/Regional councils Resource Management (Marine Pollution) Regulations 1998	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	MARPOL Annex I

Activity	Territorial sea	EEZ	Extended continental shelf	International law
Certification of arrangements for discharge of machinery space oily wastes	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	MARPOL Annex I
Discharge of ballast water	Biosecurity NZ Import health standard under the Biosecurity Act			General duty to protect the marine environment non-indigenous species under UNCLOS, as well as International Maritime Organization Guidelines for the Control and Management of Ships' Ballast Water to minimize the transfer of harmful aquatic organisms and pathogens [Resolution A.868(20)].
Dumping of hull fouling	Ministry for the Environment/Regional councils Resource Management (Marine Pollution) Regulations 1998	Maritime NZ Part 180 marine protection rules	Maritime NZ Part 180 marine protection rules	General duty to protect the marine environment non-indigenous species under UNCLOS, as well as International Maritime Organization Guidelines for the Control and Management of Ships' Ballast Water to minimize the transfer of harmful aquatic organisms and pathogens [Resolution A.868(20)].
Management of hull fouling	*Biosecurity NZ voluntary guidelines*	*Biosecurity NZ voluntary guidelines*	*Biosecurity NZ voluntary guidelines*	International Maritime Organization Guidelines for the Control and Management of Ships' Biofouling to minimize the transfer of invasive aquatic species [under development].

Activity	Territorial sea	EEZ	Extended continental shelf	International law
Emergency response plans for marine oil spills	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	MARPOL Annex I, OPRC (Preparedness, Response and Cooperation to Pollution Incidents by Oil). NZ is party to both instruments
Emergency response plans for harmful substances other than oil spills		Maritime NZ Part 200 marine protection rules	Maritime NZ Part 200 marine protection rules	OPRC-HNS Protocol (Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances 2000). NZ is not party to this protocol.
Intervention powers in relation to hazardous installations	Maritime NZ Maritime Transport Act 1994	Maritime NZ Maritime Transport Act 1994	Maritime NZ Maritime Transport Act 1994	
Dumping of installations, pipelines, and other offshore equipment	Local regional council Permit required under the RMA and the Resource Management (Marine Pollution) Regulations 1998	Maritime NZ Permit under the MTA and marine protection rules Part 180 - Dumping of Waste or Other Matter	Maritime NZ Permit under the MTA and marine protection rules Part 180 - Dumping of Waste or Other Matter	1996 Protocol to the Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter, 1972 (London Convention)
Status/condition/administration of the well drilling facilities	Department of Labour Health and Safety (Petroleum Exploration and Extraction) Regulations 1999			
FPSO off-take operations		Maritime NZ Part 200 marine protection rules (No MTA rules cover pilotage of tankers off loading from FPSOs)	Maritime NZ Part 200 marine protection rules (No MTA rules cover pilotage of tankers off loading from FPSOs)	
Ongoing operational activities (including waste management) to manage the off-take, and maintain the facilities		Maritime NZ Part 200 marine protection rules (Covers only matters related to DMP and applicable MARPOL requirements)	Maritime NZ Part 200 marine protection rules (Covers only matters related to DMP and applicable MARPOL requirements)	

Activity	Territorial sea	EEZ	Extended continental shelf	International law
Transporting the produced fluids to further processing facilities either on shore or at a central offshore facility	Department of Labour Health and Safety in Employment (Pipelines) Regulations 1999	Department of Labour Health and Safety in Employment (Pipelines) Regulations 1999	Department of Labour Health and Safety in Employment (Pipelines) Regulations 1999	

Appendix 2. Health and safety legislation

Activity	Territorial sea	EEZ	Extended continental shelf	International duty
Submission of safety cases (identification and management of hazards and risks)	Department of Labour Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999	Department of Labour Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999	Department of Labour Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999	Within the competence of the coastal state to regulate (UNCLOS articles 2, 60 and 80 in respect of the territorial sea, EEZ and continental shelf respectively. No international standards, but the industry norm is for a safety case approach
Revision of a safety case after 5 years				Conducted in other jurisdictions but not covered by New Zealand legislation
Where a standard is applied within a safety case, the operator should be aware of, and act on, any changes to the standard. This may include reviewing the control measures to ensure that the minimum requirements continue to be met.				Recommendation from review of Australian regulator (NOPSA). Not covered by New Zealand legislation
Technical safety systems (including testing of equipment and minimum standards of equipment)	Testing of control measures is covered by schedule 4, part 1 (7) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. There is currently no requirement in the legislation to specify, in the safety case, the New Zealand or international standards that have been applied to the control measures.	Testing of control measures is covered by schedule 4, part 1 (7) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. There is currently no requirement in the legislation to specify, in the safety case, the New Zealand or international standards that have been applied to the control measures.	Testing of control measures is covered by schedule 4, part 1 (7) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. There is currently no requirement in the legislation to specify, in the safety case, the New Zealand or international standards that	

Activity	Territorial sea	EEZ	Extended continental shelf	International duty
			have been applied to the control measures.	
Occupational health and safety hazards	Sections 7 – 10 of the *Health and Safety in Employment Act 1992* describe the duties that are placed on employers in relation to hazard management. A description of the safety management system for an installation is covered by schedule 4, part 1 (2) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. The safety management system should provide for the continual and systematic identification of hazards to the health and safety of persons at or near the facility. However, this is not made explicit at schedule 4, part 1 (2).	Sections 7 – 10 of the *Health and Safety in Employment Act 1992* Schedule 4, part 1 (2) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999.	Sections 7 – 10 of the *Health and Safety in Employment Act 1992* Schedule 4, part 1 (2) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999.	
Major accident events (including rescue)	Details of significant hazards (which could contribute to a Major Accident Event) is covered by schedule 4, part 1 (3) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. Details of evacuation, escape and rescue is covered by schedule 4, part 1 (16) – (19) of the Health and Safety in	Schedule 4, part 1 (3) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. Schedule 4, part 1 (16) – (19) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999.	Schedule 4, part 1 (3) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999. Schedule 4, part 1 (16) – (19) of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999.	

Activity	Territorial sea	EEZ	Extended continental shelf	International duty
	Employment (Petroleum Exploration and Extraction) Regulations 1999.			
Reporting and investigation of accidents and dangerous occurrences (and distribution of learnings)				Conducted in other jurisdictions but not covered by New Zealand legislation
Involvement of recognised organisations in inspection, survey and certification of installations and their equipment	Sections 24 – 27 of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999 describe the involvement of recognised organisations in the inspection and certification of installations and their equipment. Section 10 of the Health and Safety in Employment (Pipelines) Regulations 1999 describe the involvement of inspection bodies in the inspection and certification of pipelines.	Sections 24 – 27 of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999 Section 10 of the Health and Safety in Employment (Pipelines) Regulations 1999	Sections 24 – 27 of the Health and Safety in Employment (Petroleum Exploration and Extraction) Regulations 1999 Section 10 of the Health and Safety in Employment (Pipelines) Regulations 1999	
Description of pipeline management system to be provided to Department of Labour before construction or operation of pipeline.	Schedule 2 of the Health and Safety in Employment (Pipelines) Regulations 1999. describes the particulars to be notified to the Department of Labour before construction or operation of a pipeline. (This schedule could be amended to include a	Schedule 2 of the Health and Safety in Employment (Pipelines) Regulations 1999.	Schedule 2 of the Health and Safety in Employment (Pipelines) Regulations 1999.	

Activity	Territorial sea	EEZ	Extended continental shelf	International duty
	description of arrangements for reporting to the Department and a comprehensive description of the pipeline management system. The description of the pipeline management system might include a comprehensive assessment of the risk of significant pipeline accident events and other risks to the integrity of the pipeline and should demonstrate: the effectiveness of the control measures; the systems used to identify, evaluate and manage the risks and control measures; and the arrangements for monitoring, auditing and reviewing those systems.)			
Safety management systems for self-propelled mobile offshore drilling units	Maritime NZ Part 21 maritime rules	Maritime NZ Part 21 maritime rules	Maritime NZ Part 21 maritime rules	SOLAS chapter 9
Design, construction, certification and maintenance of offshore containers	Maritime NZ Part 24E maritime rules	Maritime NZ Part 24E maritime rules	Maritime NZ Part 24E maritime rules	IMO recommendation (MSC/Circ.860)

Activity	Territorial sea	EEZ	Extended continental shelf	International duty
Lighting arrangements for installation and radio safety messages notifying hazards to mariners	Maritime NZ New Zealand's system of buoys and beacons. Maritime Transport Act 1994	Maritime NZ New Zealand's system of buoys and beacons. Maritime Transport Act 1994	Maritime NZ New Zealand's system of buoys and beacons. Maritime Transport Act 1994	IALA recommendation. SOLAS chapter V, regulation 13
Rescue coordination - in the event of installation abandonment	Maritime NZ / RCCNZ Maritime Transport Act 1994	Maritime NZ / RCCNZ Maritime Transport Act 1994	Maritime NZ / RCCNZ Maritime Transport Act 1994 + Area of New Zealand Search and Rescue responsibility	SOLAS chapter V. Search and Rescue Convention 1979
Exclusion zones around offshore installations	Ministry of Transport Regulations made under the Continental Shelf Act 1964	Ministry of Transport Regulations made under the Continental Shelf Act 1964	Ministry of Transport Regulations made under the Continental Shelf Act 1964	UNCLOS articles 2, 60 and 80 in respect of the territorial sea, EEZ and continental shelf respectively. IMO Assembly resolution A.671(16)
Ships' routeing measures	Maritime NZ Precautionary area offshore Taranaki	Maritime NZ Precautionary area offshore Taranaki		SOLAS chapter V, regulation 10
Marking installations on navigational charts and notifying hazards to mariners	Land Information New Zealand	Land Information New Zealand	Land Information New Zealand	UNCLOS articles 60 and 80 in respect of EEZ and continental shelf respectively. SOLAS chapter V, regulation 9
Reappraisal of ageing offshore infrastructure (integrity)				Conducted in other jurisdictions but not covered by New Zealand legislation
Assessing safety culture, leadership, and operator past history in both safety case approval and audit processes				Recommendation from review of Australian regulator (NOPSA). Not covered by New Zealand legislation

Appendix 3. Property protection – Inventory of measures

Activity	Territorial sea	EEZ	Extended continental shelf	International duty
Protection of submarine cables and pipelines	Ministry of Transport Submarine Cables and Pipelines Protection Act 1996	Ministry of Transport Submarine Cables and Pipelines Protection Act 1996		Convention for the Protection of Submarine Cables, 1884. New Zealand is party
Compulsory insurance of liability for loss or damage to property and economic loss arising from discharge of harmful substances	Maritime NZ Maritime Transport (Certificates of Insurance) Regulations 2005 Part 102 marine protection rules	Maritime NZ Maritime Transport (Certificates of Insurance) Regulations 2005 Part 102 marine protection rules	Maritime NZ Maritime Transport (Certificates of Insurance) Regulations 2005 Part 102 marine protection rules	Within the competence of the coastal state to regulate but no specific internationally agreed rules
Liability convention that would increase the liability limit covered by the LLMC Convention				LLMC Protocol. NZ not party.
Liability convention that ascribes strict liability (to the limits in the LLMC or LLMC Protocol) for spills from bunker fuel oil				Bunkers Convention. NZ is not party.
International fund to compensate from spills from oil tankers	Fund 92	Fund 92	Fund 92	IMO Fund 92 Convention (NZ is party)
International fund to compensate from spills from oil tankers				Supplementary fund. NZ is not party.

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