



MARITIME PATROL REVIEW

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**Department of the Prime Minister and Cabinet
Wellington**

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THE REVIEW

Review Objectives

This report considers New Zealand's civil and military requirements for patrolling its ocean areas.

In particular it addresses the two critical issues defined by Cabinet in August 2000 following its decision not to proceed with the upgrade of the avionics for the RNZAF's long-range maritime patrol aircraft. Specifically, it:

1. examines New Zealand's civilian requirements for maritime patrol, and makes recommendations on how they can best be met (Cabinet referred particularly to eight areas: fisheries, resource management, conservation, pollution, immigration, customs, maritime safety, and search and rescue);
2. examines, in the light of the Defence Policy Framework, whether a military maritime patrol capability should be maintained.

Findings

The results of our review are set out in the Conclusions (page 33) and Recommendations (page 41), but on the two specific tasks set by Cabinet we found:

1. On meeting "*civilian requirements for maritime patrol*", New Zealand's rapidly increasing needs could be met most cost-effectively using commercial aerial surveillance services at short-medium distances, using a mix of civil and naval vessels for surveillance and response on the sea surface, and having tasking for both through a centralised Maritime Co-ordination Centre. There is also an on-going requirement for long-range maritime surveillance to meet civilian needs.
2. On the question of "*in the light of the Defence Policy Framework, whether a military maritime patrol capability should be maintained*", we concluded that it is hard to justify the retention of a comprehensive military maritime surveillance capability in New Zealand's sea areas. The review identified a number of reasons why it would be prudent for the RNZAF to retain some military capacity for detecting a military surface target. There was no compelling evidence that an anti-submarine capability is required for national security. If some of the Orions were to be retained they could perform the long distance civilian tasking with high quality commercial equipment matched to New Zealand's civilian needs. This would mean the RNZAF had an effective contingency capability against surface military targets in addition to being able to perform long-distance civilian tasking.

Process

In accordance with Cabinet's directive (CAB (00) M 28/9) the Department of the Prime Minister and Cabinet has convened a review process over the past six months involving individuals familiar with New Zealand's civil and military maritime patrol functions*. The individuals in this group brought together a range of specialist experience. They consulted widely and did sufficient work to be confident that the analysis set out here, and the recommendations for altering the way that New Zealand oversees its ocean spaces, are soundly based.

In approaching this task, we paid particular attention to examining New Zealand's requirements in the widest sense, and have endeavoured to arrive at a national solution that balances a range of needs. As directed, we have undertaken a fundamental 'zero-based' review, and have incorporated the other elements of guidance that Ministers provided. As far as we can ascertain, this is the first time in which there has been a comprehensive, 'whole-of-government' analysis of maritime patrol. New Zealand has spent several billion dollars in the last few decades on maritime patrol.

We aimed to produce a result that would:

- bring together the key concepts associated with New Zealand's civil and military maritime patrol in order to show the linkages to ocean security generally;
- define the requirements, determine the range of options for meeting them, and outline a scheme for co-ordinating the civil and military aspects within an integrated national framework; and
- set clear directions, parameters, and benchmarks for specialised follow-on work.

This report has been adopted by the group. Annexes have been attached to illuminate various issues. Annex I lists those consulted. Annex II, which was prepared by the Customs Department at the request of the group, was used to inform the thinking process and is attached to outline the concepts that have assisted the group in arriving at its conclusions. Annexes III to VII, prepared by the various departments involved, cover New Zealand's main maritime patrol requirements.

* The following departments were represented on the committee:
Department of the Prime Minister & Cabinet (Chair)
Maritime Safety Authority
Ministry of Defence
Ministry of Fisheries
Ministry of Foreign Affairs and Trade
New Zealand Customs Service
New Zealand Defence Force
Treasury

Approach

In view of Cabinet's direction to address both civil and military interests, a major theme in our work was to identify all national requirements and analyse them within the same framework in order to gain a clear perspective on their relative importance. From that basis we considered current capabilities and practices, then looked at both the capability and management options for meeting the additional needs.

It became apparent early in our research that little information was available on New Zealand's needs or experience in collated form. Individual agencies had considered their own interests, and some work is underway separately to examine long term possibilities for our ocean areas, but little was available on the practical question of exactly what was needed for effective surveillance and response at the national level. For that reason the results of our consultation with agencies and individuals on current requirements and trends forms the core of this report.

It also became clear, early in the review, that this was not a topic that readily lent itself to straightforward analysis through cost-benefit methods or simple economic techniques. Maritime patrol activities support a diverse range of national security objectives from customs surveillance and civilian law enforcement through to military challenges to sovereignty. These are inherently uncertain matters, involving some risks of which this country has had little direct experience.

Moreover, New Zealand has interests over enormous ocean areas with widely differing environments. The technologies involved in maritime surveillance these days, while improving rapidly, are reliant on complex remote sensing methods which can vary considerably under different weather and sea surface conditions. And, finally, maritime patrol necessarily involves complicated interactions between multiple surveillance and response mechanisms both on the sea and in the air.

With these high uncertainties, we concluded that no single line of inquiry was likely to yield a reliable assessment on its own. We, therefore, chose to consider the problem from several directions in the belief that independent approaches would yield a more meaningful outcome and help avoid problems of systemic bias. In particular, we:

- brought together a committee of individuals having different maritime specialities;
- consulted widely within New Zealand to try to identify all current and potential national requirements;
- examined records of New Zealand's experiences in maritime patrol to determine levels of activity and trends;
- consulted specialists in New Zealand in ocean surveillance and response;
- considered the methods used in other countries and their experiences;
- visited Australia to examine the Coastwatch system;
- reviewed surveillance trends especially in remote sensing methods;
- approached overseas experts for their views on the New Zealand situation;
- examined emerging technologies, and sought expert opinions;
- emphasised multi-layered techniques;
- considered the issues from a risk management perspective;
- considered both military and civil options and possible synergies between them.

On the basis of these complementary approaches, we believe that we gained a sufficient understanding for us to draw informed conclusions. No one of these approaches could have allowed us to arrive at a clear result, but in combination the uncertainties have been reduced to the point that we are confident about our conclusions and the realism of our recommendations.

Certain parts of our review involved technical considerations, such as the specifications of electronic equipment and aspects of aircraft capabilities, about which we had neither the time nor expertise to evaluate independently. On those matters we were guided by national and international experience. We were particularly fortunate to be able to draw on the experience of some overseas commercial aerial surveillance services, which gave us useful information on specifications, capabilities and order of costs. We sought this information and recorded it here partly because we could not have developed meaningful options and drawn conclusions with confidence without the quantitative elements, partly in order to give Ministers a sense of the likely requirements and typical funding levels, and partly to give guidance to those doing follow-up work.

Risk Management

In essence maritime patrol is a matter of risk management, and as such there are important compromises to be balanced. It concerns two key questions:

- what information does a government really need to know in order to stay informed about its day-to-day interests in its maritime areas; and
- what capabilities must it have to deal with issues that arise there.

In neither can there be complete certainty. New Zealand never has had comprehensive knowledge of its ocean areas, and even with much more of the best of technologies could not expect to have 100% knowledge all of the time. Our response capacity is also limited simply because our maritime surveillance zones are so large. (The eastern boundaries extend well beyond the range of the RNZAF's Orion aircraft, even though these are in the top class of the world's long-range maritime patrol aircraft.)

Maritime surveillance and response capabilities are also highly expensive, and therefore need to be selected on the basis of their most probable use. Covering the top end risks, or developing capacities to deal with rare or extraordinary circumstances, can add enormously to the costs. It is easy for unthinking 'worst-case' scenarios to distort assessments of this type and bias the results in favour of equipment-heavy outcomes.

In reality, most of the risks we face in New Zealand fall into the low-mid part of the risk spectrum: truly catastrophic events are rare; illegal activities, such as fishing poaching or customs problems, tend to be distributed spatially or temporally and can be managed in multiple ways; and direct challenges to sovereignty, such as military

invasion, would not happen easily given our isolation and difficult marine environment.

In analysing New Zealand's needs, therefore, we looked at the complete picture to think through classical risk management strategies of minimising, mitigating and managing the more serious risks. Those risks involve more than surveillance. They need to be considered in the context of comprehensive and integrated risk reduction:

- reducing the likelihood of the risks in the first place;
- reducing the potential consequences should those risks manifest;
- detering threats, infringements, or illegal activities;
- readiness and training to deal with possible events;
- having sufficient response capacity to undertake the tasks reliably; and
- having the capacity to recover from serious failures and to deal with the aftermath.

Organising Principles

In line with practices used elsewhere, we analysed our maritime patrol interests within five broad categories: Resources Management; Environmental Protection; Illegal Activity; Sovereignty; Marine Safety.

In order to avoid an excessive focus on equipment (the 'platform replacement syndrome'), we tried to take a comprehensive approach that looked at maritime patrol as a total management issue. We felt that it was important to consider all aspects of maritime patrol not just the operational activities, and so gave attention to matters such as information management, intelligence, deterrence, co-ordination, alternative sources and platforms, wider ocean area management and so forth.

Maritime Security

Maritime patrol is one element of the multi-layered approach to maritime security that coastal or island states employ to protect national interests. In practice elsewhere, maritime security has moved well beyond the traditional concepts of naval or military threat although, of course, the protection of sovereign interests against military force remains a fundamental issue for any government. Notwithstanding its image as a maritime nation, New Zealand is still at a very early stage in its comprehension of the linkages among maritime security, sovereignty and oceans management.

New Zealand, protected as it is by large ocean distances, enjoys a degree of isolation from many of the threats to maritime security that concern other countries. The Defence Policy Framework has reinforced other national strategic judgements that New Zealand is not directly threatened by any other country and is not likely to be involved in widespread-armed conflict. But a maritime nation can find its sovereign interests challenged indirectly in many ways such as:

- illegal resource exploitation;
- disregard of national or international law;
- illegal transportation of goods or people;
- creation of environmental hazards.

Addressing these varied challenges today requires a wider range of capabilities, processes and policies than those traditionally employed in maritime patrol for military security. While the basic principles have much in common, there is a much greater requirement for flexible and co-operative approaches to surveillance, monitoring and control in the civilian setting. Those terms have the following meaning:

- Surveillance: the detection of activities, events or changes in condition within an area of ocean jurisdiction;
- Monitoring: the systematic observation of specific activities, events, or conditions;
- Control: the execution and the rendering effective of international and national rules and regulations; or other responses as appropriate.

CIVILIAN REQUIREMENTS

Maritime Setting

New Zealand is fortunate in possessing rights over an immense zone of ocean - an area that when fully defined could be as much as 2 million square nautical miles (20 - 24 times our land area). This makes us a large nation with rights over a large and prolific marine environment and a seafloor area that covers more than 1% of the earth's surface. Thanks to the fortunate configuration of our many small distant islands, each generating a 200nm circular area, our ocean area is the fourth largest in the world.

Under the United Nations Convention on the Law of the Sea (UNCLOS III), which the New Zealand Government ratified in July 1996, we formally acquired significant new rights over our 200 nautical mile Exclusive Economic Zone and continental shelf extensions. In the waters of the NZEEZ we have specific economic rights concerning the management of marine living resources, and throughout the continental shelf can exercise rights over non-living resources (i.e. minerals etc). UNCLOS III has confirmed New Zealand's sovereignty over our continental shelf, including the resources of the seabed and in the subsoil, even where it protrudes well beyond the 200nm boundary.

But with rights come responsibilities. In recognition of the fact that the oceans are a common asset of all humanity, UNCLOS III defines important obligations in respect of conservation and environmental matters. In ratifying the Convention the New Zealand has acknowledged new liabilities. For both national and international reasons our marine environment must be monitored and managed in ways that ensure that future generations will continue to benefit.

From the perspective of maritime patrol, however, that same configuration of distant small islands that sets the shape of New Zealand's ocean area also complicates the task of surveillance. Unlike the situation in Australia, for example, where much of its EEZ is delimited by a 200 nautical mile line that follows its extensive coastline, the outer regions of parts of the NZEEZ lie 500 nautical miles or more from the mainland, placing greater demands on aircraft used for surveillance. The area we cover for search and rescue purposes is 4.5 million square nautical miles, and we have international obligations to provide navigational warnings throughout an area of 16.5 million square nautical miles – nearly half-way to Chile. (See the report of the Maritime Safety Authority in Annex V.) In some sectors, particularly to the south, the sea conditions present significant challenges to vessels.

New Zealand has special responsibilities towards islands in the South Pacific and in the Ross Dependency sector of Antarctica that because of their distances from New Zealand also create difficult challenges for maritime patrol. (Those responsibilities are discussed more fully in the report of the Ministry of Foreign Affairs and Trade in Annex VI.)

NEW ZEALAND'S OCEAN AREAS

- New Zealand Exclusive Economic Zone area: 4,053,000 sq km
- New Zealand Territorial Sea area: 169,000 sq km
- Legal Continental Shelf extensions area 800,000 - 2,400,000 sq km
- New Zealand land area (for comparison): 270,500 sq km
- New Zealand's EEZ is the fourth largest in the world, with an area of about 15 times that of the land mass (5.7% of world's EEZ).
- With continental shelf extensions, our eventual area of jurisdiction over seabed resources around New Zealand will be 20-24 times the area of land (1.2% of the earth's surface).
- Water depth within NZEEZ: 5% shallower than 100 m; 72% deeper than 1000 m; base of continental shelf slope generally at 4000 – 5000 m.
- New Zealand also has rights and responsibilities in the Southern Ocean sector of the Ross Dependency in Antarctica. (Ross Dependency EEZ ~2.3 million sq km.)

Maritime Economy

New Zealand's maritime sector is important to the nation's economy and quality of life in a number of ways:

- approximately \$20 billion of shipping trade each year
- visits by 2430 international trading ships (excluding fishing) each year
- some 2560 coastal commercial vessels (charter, ferries etc)
- fishing vessels - 1400 New Zealand, and 230 foreign
- approximately 250,000 recreational vessels.

In terms of resources, the NZEEZ contributes at the moment mainly through fishing, aquaculture and hydrocarbon extraction. The fishing industry, our fourth largest export earner, makes a major contribution to the economy:

- harvest value of \$1.2 – 1.5 billion
- estimated contribution to the economy \$4.5 billion
- employs 10,250 people directly and 16,100 indirectly
- recreational fishing value estimated at \$220 million.

The importance of New Zealand's marine resources in the national economy will grow in coming years (although it may be several decades before extraction of the large deposits of minerals known to exist provides significant returns). The experiences of Australia, Canada and other maritime nations suggest that the part played by New Zealand's oceans in its social and economic life will increase rapidly in the years to come. Many countries these days are experiencing growth in their marine industries that is at least twice that of general national economic growth. Australia, for example, which is some years ahead of us in relative development of its marine industries, has experienced annual growth rates of about 8% in real terms for its marine sector over the past decade.

Current Maritime Patrol Coverage

There is a widely held impression among New Zealanders, reflecting perhaps the considerable public relations activities of the RNZAF, that military assets provide comprehensive coverage of our ocean areas. This is not the case at all. Most of the time there is no patrolling being undertaken of New Zealand's ocean areas by either military or civil organisations. In recent years, for example, the Orion's have undertaken surveillance of local waters for just 2-3 % of each year. Even then that coverage is usually targeted, so that some areas of our ocean are rarely overflown.

Although there is no co-ordinated national strategy to observe and patrol New Zealand's ocean areas, many agencies are involved in surveillance, response or related activities. Some of the most important contributions to oceans surveillance come from the civilian sector:

- The vessel monitoring system developed by Fisheries is the primary method of surveillance of foreign fishing vessels. Compliance is good, although not perfect, which is why patrolling is needed.
- Customs Service has a small patrol vessel and leases small commercial aircraft.
- Marine rescues are mostly (99%) carried out by civil aircraft and vessels organised by the Coastguard Federation and other local groups, most on a voluntary basis. (Of the more than 500 marine search and rescues that occur in this country each year, RNZAF Orions are typically involved in seven.)

No one agency in New Zealand has been given the responsibility for integrated management, and there is not a great deal of co-operation between agencies. Even within Defence the different arms operate independently and run their own maritime control centres. New Zealand seems to have 9 or 10 separate agencies monitoring ocean areas for their own purposes.

Moreover, there is little understanding of how well the job of maritime patrol is being done from a national perspective. There is a sense of a reasonable job at the tactical level but there is little assessment of strategic effectiveness. There is no question that we have skilled people, long experience, and good operational capabilities. But in the case of the NZDF it comes at a high cost: \$105 million annually for the Orions*, and at least a similar amount for the Navy. Moreover, partly because of financial restraints, the assets are only lightly utilised. Each aircraft flies on average just 5% of the year.

In the course of our review we became aware of a high level of dissatisfaction among civilian users over their inability to task the military assets for national civil purposes. Notwithstanding the frequent references in Defence public documents, Defence Assessments, and White Papers concerning support for civil needs, in reality limited Defence time has been allocated to the civilian agencies, and the absence of clear commitments and obligations has frustrated departments. On average, each Orion aircraft typically flies just 40 hours per year on civil patrol tasks in New Zealand

* This is the cost of the output class, which includes the cost of Defence Force overheads.

waters (including fisheries patrol, search and rescue etc). These are the dedicated hours available for tasking to meet civil requirements. This is well below the level required for effective surveillance and deterrence.

Civil uses of the Orion's around New Zealand account for about 9% of the total annual hours flown, much of this being for fisheries surveillance and search and rescue. Assistance provided to the South Pacific Islands for similar purposes accounts for a further 15-20% of the annual total – about twice the time allocated to the NZEEZ.

Fisheries surveillance of the NZEEZ accounts for about 6% of total activities, each aircraft conducting an average total of just 25 hours per year on active fisheries patrol. Search and rescue in the NZSAR area accounts for about 2.5% of total activities, each aircraft flying an average total of 11 hours per year for this purpose.

The Review found that there was little information available on New Zealand's needs or experience in collated form and that much maritime patrol is carried out in a fragmented and uncoordinated way. This results from the absence of an effective framework for coordination, tasking between departments, and integration of all maritime patrol activity to best meet national needs.

Future Civilian Requirements

In the course of our investigations into New Zealand's needs we have formed a clear impression of the most likely requirements over the next decade or two.

Assuming that there is no emergence of a military littoral threat, which according to most strategic analysis seems highly unlikely and was the basis of the Defence Policy Framework, the major demands will continue to be in the areas of fisheries, customs and marine safety (including environmental protection).

Fisheries patrol will remain the largest consumer of patrol time. We have tested and validated the Ministry of Fisheries' concerns that New Zealand's fishing grounds, especially those inshore, are receiving far less aerial coverage than needed. Notwithstanding the effectiveness of their Vessel Monitoring System, Fisheries estimate that currently inshore areas are receiving just 5% of the required level of surveillance, and that offshore areas have been receiving less than 20% of what they require.

Customs work is an area of sharply growing need, especially to the north of New Zealand. As noted below, a medium-range capability is required there, and better use of intelligence sources.

For marine safety, in areas such as search and rescue, there is a need to examine the vast volunteer arrangements around New Zealand. They do most of the marine rescues but are stretched by the reducing number of volunteers. New Zealand will continue to need a long-range capability, providing 24 hours/day coverage. (Technology in the form of cheap position indicators and other improvements is

rapidly reducing the search component and increasing the effectiveness, and will have a greater impact in future.)

Other civilian needs such as conservation, environmental management etc will continue to be relatively modest. In most cases they lie close to shore and can be addressed in a number of ways. One exception concerns the Department of Conservation's occasional need for transport to distant islands, something that would be facilitated if the RNZN were to acquire new offshore patrol vessels (OPVs).

The following sections set out in some detail New Zealand's major civilian needs for maritime patrol as identified in departmental reports:

I. FISHERIES

New Zealand's fisheries resources are its fourth largest export earner, delivering up to \$1.5 billion a year to the economy, yet they are spread over the world's fourth largest Exclusive Economic Zone. This creates a challenge for maritime surveillance. Given the value of the resource and its wide extent, effective maritime surveillance must be well planned, well executed and cost effective.

For this reason, aerial surveillance is one of a number of maritime surveillance tools used by the Ministry of Fisheries (MFish) in a co-ordinated, intelligence-driven fashion, aimed at maximising compliance with fisheries laws. Other tools complementing aerial surveillance include the satellite vessel monitoring system, scientific observers, surface patrols, land-based inspections and investigations, and satellite imagery.

Fisheries Aerial Surveillance

Aerial surveillance coverage of New Zealand's fisheries has been carried out predominantly by Royal New Zealand Air Force (RNZAF) Orions, and by small commercial aircraft on an ad hoc basis. MFish requires patrols to have sophisticated surveillance systems to collect, store, analyse and transmit data in a way that allows the information to be used in a timely manner and to an evidential standard when required.

The Review attached at Annex III prioritises inshore, deepwater and international fisheries and forecasts how range, distribution and seasonal variations in these fisheries will affect surveillance requirements.

Analysis conducted for this Review shows most catch is taken relatively close to land, given the extreme ranges of New Zealand's Exclusive Economic Zone. It found that the inshore fisheries receive only 5.6 per cent of their required aerial surveillance effort, and that is by civil aircraft which possess, at best, only rudimentary surveillance systems. The deepwater fisheries do not fare much better receiving only 17.6 per cent of their required surveillance hours.

The analysis contained in this Review demonstrates that while a long-range capability is still required, a much shorter-range aircraft could patrol the majority of our fisheries.

A gap analysis reveals that in terms of the current surveillance effort:

- There is a substantial gap between the aerial surveillance hours required by MFish and what it currently receives from both the RNZAF and ad hoc civilian service providers.
- The gap identified in MFish's surveillance requirements is not spread uniformly, but has the greatest impact in the fisheries that occur close to land (that is, within 90 nm).

Further details on fisheries issues can be found at Annex III.

Fisheries Surface Surveillance

Analysis of the MFish surface surveillance requirements is provided in Annex III. The analysis within this supplementary report shows strong similarities with both aerial and surface fisheries surveillance, particularly in the shortfall of available resources.

Range Analysis

An analysis of MFish's surface surveillance requirements over the range bands set out in the report demonstrates that while a long-range capability is still essential, an additional shorter-range capability could patrol the majority of our fisheries.

The need for long-range and extreme range patrols remains high and looks likely to increase as the new high seas fishing legislation is implemented. These patrols are likely to be few in number but would be disproportionately high in priority. A dedicated fisheries patrol vessel capable of working at these longer ranges would be prohibitively expensive to purchase and operate. There appears to be no current practical alternative to the use of RNZN frigates to fulfil these roles. This assumes that the RNZN is able and willing to take on the task of providing occasional long range fisheries patrols and retains a capacity to respond to cases of EEZ intrusion, hot pursuit and high seas incidents.

An analysis of MFish's needs reveals that 80 per cent of the surface surveillance requirements fall within the short and medium range bands. A patrol vessel or vessels with the capability of operating out to 90 nm and in high sea states would appear to be the most effective means of delivering the identified surveillance requirements. Since inshore work requires a much smaller type of vessel, this patrol vessel would need to either carry a tender vessel or operate in conjunction with smaller craft.

Gap Analysis

As identified in the section entitled “Surface Surveillance Background” (Annex III), current patrolling efforts in the deepwater are so sporadic and uncoordinated that it is not possible to develop any meaningful figures for the extent of the current effort. It is safe to say, however, that very few (likely to be less than 1%) of MFish’s programmed deepwater surface surveillance requirements are currently being met.

In the inshore fisheries there is some effort exerted by MFish district offices. However, these efforts are variable and the effort level depends to a significant degree on the availability of suitable vessels and favourable weather conditions. Only 17.7 per cent of MFish’s inshore surveillance requirements are currently being met.

This analysis leads to the conclusion that there is a substantial gap between the programmed surface surveillance sea days required by MFish and those that it is currently receiving from MFish’s own inshore patrol vessels, the RNZN and ad hoc charter vessels.

With 17.7 per cent of the inshore fisheries (which constitute approximately 20 per cent of the overall fishery) being covered, and assuming 1 per cent of the deepwater fisheries are covered, then only 5 per cent of MFish’s total programmed surface surveillance requirements are being met.

The situation regarding response patrols fares better than that of programmed patrols, due to the need for fewer sea days. As the number of response patrols varies widely from year to year it is difficult to quantify the requirement and any gap in meeting it. However, the RNZN has always shown a willingness to respond where it is in their ability. There have been no major incidents in which a response has not been mounted; however, in some cases aerial surveillance was used instead of surface surveillance, which has limited further options. It is fair to say, however, that New Zealand still remains untested in an extreme range response situation.

II. CUSTOMS AND BORDER CONTROL

Context: The New Zealand Customs Service and the Border Environment

The New Zealand Customs Service (Customs) has a particular role in protecting New Zealand’s sovereign interest at the border. This involves carrying out enforcement and facilitation actions that cover the interests of over 20 government agencies and 44 Government outcomes. These interests cover sovereignty, economic, social and community protection, environmental and heritage and international areas.

Customs needs to be able to operate effectively in a dynamic environment, subject to increasing volumes of trade and travel, and to the resourcefulness of criminals who use the latest technologies and ever-changing strategies to evade detection. Customs’ assessment of emerging trends indicates increased risk in the maritime area.

Customs has, by the powers vested in the Customs and Excise Act 1996, a set of effective enforcement tools that it can use as far out as the contiguous zone (24 nm from the coast). These tools need to be operated by skilled and trained staff to be effective. Customs manages the risks to the border in an integrated way, basing interventions on intelligence and risk management principles. This enables information from any area of the organisation to be used in multiple ways for multiple risks.

There are costs to Government of not managing the risks that present at the border. Areas of particular relevance to the maritime environment are drug trafficking, smuggling in of other contraband, such as tobacco, pornography and firearms, smuggling in of people such as terrorists and illegal immigrants, and illegal exports.

The Defence Strategy Framework implies that civilian agencies play a role in New Zealand's defence. Specifically, management of economic, criminal (including terrorist) and environmental threats to New Zealand are the domain of a range of civilian agencies. The relationships that these agencies have with other countries are therefore as strategic to New Zealand's security interests as military ones. Accordingly, the solutions put forward in this paper reflect the importance of both civilian and military inter-operability with other countries. Enhancement of the Trans-Tasman relationship for Customs and Police law enforcement activities is becoming vitally important as the balance shifts from military threats to civilian threats.

Managing Trans-Tasman and regional border protection to mutually agreed standards and the adoption of a collaborative approach is an important element of continuing progress toward reducing Trans-Tasman barriers to trade and travel. Decisions on organisational structure and resources therefore must provide for law enforcement interoperability, both for Trans-Tasman needs and regional security from illegal activity.

Sufficiency of Maritime Controls

Customs has assessed its controls in the maritime area and has identified that:

- there is a range of proactive and reactive controls in place
- there is a high degree of reliance on voluntary compliance
- most information collected is for commercial craft
- Customs has a limited response capability.

In terms of sea-borne illegal activity, Customs needs to have information before vessels reach land so that it has time to organise an effective and appropriate response. Existing controls:

- fail to provide enough information prior to vessels arriving in New Zealand to enable an appropriate response;

- fail to provide Customs with enough information to determine New Zealand's levels of exposure to risk;
- fail to provide adequate response coverage over New Zealand.

Customs Needs: *Strategic Context*

The key strategic elements Customs considers are needed for an effective whole of government approach are an overarching maritime patrol policy or statement and related strategy resulting in appropriate operations and asset management. This is particularly important for Customs given the “whole of government” work coming out of the Border Control Review recommendations and the development of an Oceans Policy.

Customs Needs: *Specific context*

Customs' surveillance needs can be met almost entirely by regular aerial surveillance. However, Customs' surface requirements are for monitoring and response rather than surveillance.

Customs' current surface capability is the “Hawk” launch and the pursuit boat “Kairapu”. The “Hawk” is too small to carry the “Kairapu” which must therefore be deployed by road. Even without this limitation, Customs is still only able to adequately patrol one of the two key areas of interest.

The following issues are unique to Customs:

- Customs' sea-borne interest is primarily within the contiguous zone and in the sea/land interface
- Customs' primary craft of interest are small craft rather than commercial craft, because of the difficulty in obtaining accurate information about small craft movements
- Customs undertakes daily operational marine activity as all small craft are required to pass through Customs for clearance
- the aerial surveillance capability needs to be matched to the surface response
- any surface response capability needs to be sufficient to enable a response to identified craft of interest within a reasonable timeframe
- Customs' response capability depends on there being trained, skilled staff on board at the time of interception for successful enforcement action to be able to be undertaken.

It is anticipated that an effective maritime aerial surveillance program will greatly increase the number of small craft of interest to Customs being identified. Customs is required to interact with all craft and travellers arriving in or leaving New Zealand. It will therefore need to be able to interdict all such craft and be in a position to carry out its full range of law enforcement functions at the first point of contact.

There are two geographically separate areas with a sufficient level of international small craft activity to warrant a dedicated Customs waterborne asset: Auckland/Northland and Kapiti Coast/Wellington/Marlborough/Tasman. The remainder of the New Zealand coastline is largely inhospitable to small craft. Customs interdiction needs outside the two high-risk areas could be largely met by access to an OPV on an as required basis.

Customs' asset requirements are therefore:

- Two Customs-controlled 30-40 metre vessels
- Access to two off-shore patrol craft with pursuit capability
- Access to a range of aerial surveillance from light aircraft for littoral areas, required for regular and ad hoc tasks and available on-demand
- Access to a medium sized aircraft for coastal surveillance, for regular and ad hoc tasks and available on demand
- Access to a long-range aircraft with a 20-200 nm range for large area search, on an ad hoc basis, available on demand ("subject to availability" acceptable if mid-range craft can be accessed on demand as a substitute).

Further details on Customs issues can be found at Annex IV.

III. MARITIME SAFETY

While safety and marine environment protection standards on most commercial ships operating within New Zealand are relatively high by world standards, all forms of maritime activity pose an element of risk to people, property and the environment. In particular, the unpredictability of weather and sea conditions, the hazards of submerged containers, collisions with poorly operated ships, and the large numbers of recreational vessels create realistic risks that occur on a regular basis.

Approximately 160 oil spills are reported a year in New Zealand waters, and of these approximately 35 are identified through aerial detection and monitoring. Also, approximately 540 maritime search and rescues, associated with approximately 30 deaths, occur each year in New Zealand waters. Of the 538 search and rescues in 1999, there were 438 coastal (12 nautical miles) aerial searches involving small fixed-wing and helicopter aircraft, and 13 medium-to-long range search and rescues involving six by small fixed-wing or helicopters and seven by Air Force Orions.

The prevention, detection and monitoring of oil spills and assistance with maritime search and rescue presently require, and receive, extensive aerial surveillance support from both civil and military aircraft. The management and deployment of resources for the oil spill scenario is already fully catered for and co-ordinated by the Marine Oil Spill Response Strategy managed and operated by the Maritime Safety Authority (MSA) of New Zealand in conjunction with Regional Government and a Defence Force service contract.

The management and deployment of resources for the search and rescue scenario is, however, another matter as no similar response strategy exists. At present maritime search and rescue is fragmented amongst too many organisations (Police, Civil Aviation Authority, MSA, Coastguard Federation, Voluntary Coastguard, RNZAF) to be effectively managed, and the ability to achieve a timely response is increasingly a challenge. This fragmentation means that there is no overall strategic framework to give direction, leadership and fiscal responsibility. It is for these reasons that maritime search and rescue in New Zealand is undergoing review within the Maritime Safety Authority and the present Maritime Patrol Review coincides with that review. The MSA review, however, is still in its early days and no conclusions or recommendations have yet been drawn.

Nevertheless many aspects have been considered, albeit it in conceptual form, and the following recommendations were put forward within the framework of the Maritime Patrol Review official's group for discussion.

- Create a coordinated national maritime search and rescue service.
- Give a single Crown Agency the responsibility for all maritime search and rescue.
- Create a National 24 hour Maritime Search and Rescue Centre with the amalgamation of Marine Duty Officers, Maritime Operations Centre, National Rescue Co-ordination Centre and NZ Police (maritime SAR) functions.
- Create a Ship Reporting System and Automatic (Vessel) Identification System (AIS) to International Maritime Organisation requirements.
- Contract Royal New Zealand Coastguard Federation to provide regional and local search and rescue resources and infrastructure.
- Extend emergency telephone number 111 to "Maritime Rescue".

Further details on Maritime Safety issues can be found at Annex V.

IV. FOREIGN POLICY CONTEXT

New Zealand's maritime patrol activities contribute substantively to the government's foreign and security policy objectives. Many of the civilian maritime patrol activities described in this report also have a foreign policy context.

In New Zealand's EEZ and on its continental shelf, the maritime patrol capability is important in enabling New Zealand to protect its sovereign interests by giving effect to the rights and obligations accorded to it by the UN Convention on the Law of the Sea in respect of resources occurring in its EEZ. It also enables New Zealand to detect and monitor vessels involved in illegal activities such as drug trafficking and seaborne illegal migration, as well as reconnoitering and monitoring environmental disasters and shipments of hazardous waste in areas of interest to us.

New Zealand has obligations under various international agreements to which it is party, which require it to have the capability to mount Search and Rescue operations. A robust maritime patrol aircraft with high endurance and long reach is required to

enable New Zealand to do this in the far reaches of its SAR region. New Zealand also has an agreement with the government of Fiji to carry out SAR in the Nadi SAR area. The current maritime patrol capability gives New Zealand the capacity to carry out SAR operations in the particularly difficult conditions of the Southern Ocean and Antarctica.

A robust maritime patrol capability assists the government to implement the key goals of New Zealand's policy towards Antarctica and Southern Ocean, which are conservation of the environment and keeping Antarctica demilitarised and non-nuclear. The legal underpinning for these actions comes from the Antarctic Treaty System that provides, through the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), for monitoring and inspection of the fishing activities. New Zealand provides the single deterrent, through its maritime patrol activities, to illegal exploitation of resources in the Ross Sea.

In the South Pacific, New Zealand military assets, including the P-3 Orions, assist the New Zealand government in supporting economic and social development in the region, with the objective of maintaining a stable, prosperous and secure South Pacific. Maritime patrol provides support for disaster relief efforts and protection and control of natural resources, especially marine resources. It complements and supports the New Zealand Official Development Assistance effort to develop and protect regional fisheries. New Zealand and Australia provide the bulk of surveillance and patrol activities for their Forum Fisheries Agency and their contribution is highly valued by regional governments. New Zealand has special responsibilities towards the Cook Islands, Niue and Tokelau. Maritime patrol provides surveillance and assists with enforcement consistent with New Zealand's obligations under the UN Fish Stocks Agreement and the Convention on Highly Migratory Species in the Central and Western Pacific.

Further details on foreign policy issues can be found in Annex VI.

MILITARY CAPABILITY

The Need for Military Maritime Patrol Capabilities

Cabinet directed the review committee to “examine, in the light of the DPF (Defence Policy Framework), whether a military maritime patrol capability should be maintained”.

The Defence Policy Framework sets out Government’s goals and priorities for Defence, and provides a framework for future decisions about military capabilities, resources and funding. It states that New Zealand’s primary defence interests are protecting New Zealand’s territorial sovereignty, meeting shared alliance commitments to Australia and fulfilling obligations and responsibilities in the South Pacific. The wider Asia-Pacific strategic environment, of which we are a part, is also relevant. New Zealand is not directly threatened by any other country and is not likely to be involved in widespread armed conflict. The Government believes that New Zealand can best contribute to regional stability and global peace by promoting a comprehensive approach to security through a range of initiatives including diplomacy, arms control and disarmament, addressing global environmental concerns, providing development assistance, and building trade and cultural links.

The following paragraphs highlight each of the relevant ‘Key Elements of Government’s Approach to Defence’ and ‘Policy Objectives’ set out in the DPF, and provide comment in respect of the Orion’s military capabilities.

New Zealand

“13. The primary reason for maintaining a defence force is to secure New Zealand against external threat, to protect our sovereign interests, including the Exclusive Economic Zone (EEZ)...”

In the absence of a direct military threat to New Zealand the roles and tasks assigned to the NZDF by the Government are to ensure the sovereignty of our EEZ and territorial waters, protect our interests in the Southern Ocean and Ross Dependency, counter any threat posed by terrorism or acts of sabotage and provide support in civil defence and other emergencies. Sovereign interests can be threatened in a variety of ways. It is the function of government agencies such as Fisheries, Customs, Police and other agencies to take primary responsibility for ameliorating civil threats, and of the NZDF to deal with military threats. While formal Defence Assessments and White Papers in the last decade have placed emphasis on the role of defence in dealing with non-military security challenges, it is the view of the committee that this has not been reflected in the actual tasking and use of NZDF resources. There has been and continues to be an imbalance in favour of military activities further afield that is considered to be inconsistent with the priorities set out in the Defence Policy Framework.

“19. (objective bullet 1) to defend New Zealand and to protect its people, land, territorial waters, EEZ, natural resources and critical infrastructure.”

These objectives require New Zealand to have effective maritime patrol capabilities, but not necessarily military maritime capabilities. The current challenges in those areas, and those that are foreseeable, are likely to come from civil sources, and be relatively subtle. As was noted in the introduction to the Defence Policy Framework, “New Zealand is not directly threatened by any other country, and is not likely to be involved in widespread armed conflict.” That conclusion was based on assessments of the strategic setting derived from intelligence, expert views, diplomatic traffic, military input, capability analysis and long term trend analysis.

It is the view of Defence and MFAT that we need to have a military option within our EEZ. It is required to provide a force capable of giving full coverage to the New Zealand zone in the extremes of weather and sea states; to act as a deterrent to breaches of sovereignty and to indicate preparedness to use force in defence of our sovereignty; to allow cooperation with military forces from other countries in combating transnational crime activities and to provide force protection in the evacuation of New Zealanders in emergencies.

The risk of military threat to New Zealand is not zero. There will always be a small, finite chance that a military challenge could develop. Strategic logic suggests that a significant challenge would take some time to develop and would be well signalled. But, a low-level military challenge of some sort, while still unlikely, could emerge more quickly. For that reason, it would be prudent for the RNZAF to have some military capacity for detecting and monitoring a military surface target. This would not necessarily have to be a comprehensive military capability. Equipment of the type that we recommend elsewhere for civil surveillance should be more than adequate for detecting military surface targets. Some modernisation of the military communication equipment will be required if the Orions are to retain a military role.

Australia

“14. The Government recognises the need to work collaboratively with like-minded partners. In this context, there is no strategic partnership closer than that with Australia.”

“19. (objective bullet 2) to meet our alliance commitments to Australia by maintaining a close partnership in pursuit of common security interests;”

The Australian Defence White Paper includes a strong commitment to maritime patrol. It states that, “...the ability to operate freely in our surrounding oceans, and to deny them to others, is critical to the defence of Australia, and to our capacity to contribute to the security of our immediate neighbourhood. Capable maritime forces also provide important options for contributing to regional coalitions in support of our wider strategic interests and objectives.” In the context of New Zealand’s review of its defence capabilities the Australians have made it known that they consider that

our military maritime capability provides a force multiplier for the protection of the sovereignty and territorial integrity of Australia and New Zealand, and the north-eastern approaches in particular. In their view it allows New Zealand to maintain its input into the shared range of maritime patrol activities undertaken by both countries in the South Pacific and Southern Ocean. It also allows New Zealand to continue contributing to the maintenance of peace and stability in the South West Pacific and parts of South East Asia.

However, New Zealand engages with Australia in a multitude of ways in all three services, and with the new capabilities now being acquired by the NZ Army has potential to increase interaction still further. In assessing the importance of the Orions in that context, the key consideration is where to strike the balance between the major investment required to maintain a comprehensive military maritime patrol capability to undertake a full range of maritime surveillance tasks (such as antisubmarine warfare exercises) and the potential benefits of investment in other forms of Trans-Tasman military interaction.

We sought first-hand views from Australian officials on how they viewed the role of the RNZAF Orions. The Australian interests centre on the capability that the RNZAF can potentially bring to supplement the RAAF's military long-range maritime patrol resources should their own 19 aircraft be fully committed.

South Pacific

“15. New Zealand has special obligations to Pacific neighbours to assist in maintaining peace, preserving the environment, promoting good governance and helping achieve economic well being.”

“19. (objective bullet 3) to assist in the maintenance of security in the South Pacific and to provide assistance to our Pacific neighbours;”

In this area of vast ocean distances, long-range maritime patrol aircraft are a valuable resource. The primary targets for surveillance among our South Pacific neighbours are civil vessels undertaking illegal activities, not military ships or submarines, and so surveillance platforms that were equipped with high quality commercial surveillance equipment would be adequate for the task. The internal instability that we have seen recently in some island states has not had a maritime dimension, and is unlikely to raise the need for aerial military surveillance.

A military maritime patrol capability enables New Zealand to assist Pacific Island governments counter non-traditional threats to their security over the long distances and adverse conditions that prevail in the South Pacific. It also permits New Zealand to demonstrate its preparedness to assist with protection of sovereignty and resources, and to maintain the ability to conduct military operations in the South Pacific, independently if necessary.

The Defence Policy Framework makes specific reference to maritime surveillance capabilities when it specifies priorities, noting as priority three:

“32. The greatest needs are:

- . . . Army. . .*
- . . . air and naval transport. . .*
- to maintain effective maritime surveillance capabilities of the Air Force and Navy within the New Zealand EEZ and the EEZs of Pacific Island States.”*

There are a number of ways in which the RNZAF and the RNZN can maintain effective surveillance capabilities for these areas, and this review offers some practical options in its Conclusions. In respect of the South Pacific, most of the surveillance that has been undertaken in recent years has been that by the Air Force, which makes monthly visits to the area. Naval visits occur rarely. There are several ways in which our contribution to the South Pacific could be made more effective. The NZDF could return to the practice of temporarily basing some naval and air assets in the area. This has worked well in the past. Periodic basing of both naval and air platforms in the islands area, perhaps for extended periods or during specific seasons, would reduce the very large transit factor, and improve the efficiency of the surveillance services that New Zealand provides to the islands. Such basing would improve responsiveness, enhance the deterrent value of our efforts, and have foreign policy benefits.

Five Power Defence Arrangements

“19. (objective bullet 4) to play an appropriate role in the maintenance of security in the Asia-Pacific region, including meeting our obligations as a member of the FPDA;”

“14. New Zealand will continue to meet its obligations as a member of the Five Power Defence Arrangements (FPDA).”

The FPDA and the bilateral and multinational military activities that occur in the Asia-Pacific region are confidence building measures which are part of the security architecture which underpins stability in the region. The FPDA in particular remains important to both Singapore and Malaysia and they both express openly their wish for the arrangements to continue with the full participation of the other members – Australia, New Zealand and the UK. New Zealand’s participation in FPDA activities and bilateral exercises in the region are undertaken primarily by our naval vessels, the air combat force and the Orions. Within that Arrangement there is no obligation on us to provide long-range maritime patrol aircraft in particular, but this is one area where our contribution is particularly appreciated.

“12. New Zealand’s defence and security policies will be based on New Zealand’s own assessment of the security environment.”

These conclusions on the necessity or otherwise of military maritime patrol capabilities based on the Defence Policy Framework can also be substantiated in

other ways, and we comment here on the need for anti-submarine warfare capabilities as an element of military maritime patrol capability.

There is no universal standard of what constitutes a military maritime patrol capability. The reviews of the maritime patrol capability that have taken place since 1991 have identified a surface surveillance capability as the most important requirement. It was also considered prudent to maintain a modest sub-surface capability in order to retain these skills and for New Zealand to play a useful role in maritime surveillance in the Asia-Pacific region.

With the convergence that has occurred between civilian and military sensor capabilities in recent years in radar and other imaging systems, the anti-submarine technology has also become the main feature differentiating civil and military surveillance.

Given the explicit intention in the Defence Policy Framework that New Zealand's primary defence interests lie in and close to New Zealand, there would appear to be little reason for the RNZAF to maintain the ASW capability except as a risk management measure should there be a serious deterioration in the security situation; and to permit the NZDF to undertake maritime surveillance tasks in the Asia-Pacific where the growing number of submarines are increasingly becoming a factor. The mid-latitude South Pacific is not a region of high priority for submarines. If they do visit this region, and that point has not been proven, it is something that must occur only rarely. In several decades of searching for them around New Zealand and in the South Pacific, neither the RNZAF nor the RNZN have had any confirmed sightings of hostile submarines.

This absence of local submarine activity is simply a manifestation of the fact that there are no strategic reasons for them to operate in this part of the world. New Zealand lies far away from areas of greater strategic concern for the countries that maintain expensive blue water submarines. (The "blue water" capability is an important distinction. A number of countries have "brown water" submarines, which are capable only of operating close to home. They provide their owners with a very effective deterrent against naval threats, but cannot readily travel across broad ocean areas to threaten other countries.)

While the Orions have provided military benefits in training and exercises in the 35 years that the RNZAF has operated them, the reality is that on no occasions have they been used in combat or peacekeeping duties despite a willingness and capability to use them.

It is the view of the committee that New Zealand does not need to maintain a maritime patrol force that includes an anti-submarine capability. In neither the arguments we heard in the course of our review, nor in past experience, have we found compelling evidence that such a capability is essential for national security.

Further details on defence issues can be found in Annex VII.

OPTIONS

The analysis of possible ways in which New Zealand's national requirements could be met was largely shaped by two overarching conclusions that had emerged from the examination of national requirements, namely:

- That better co-ordination and tasking arrangements would offer major improvements for operational effectiveness, and a better match to national needs;
- That significantly higher levels of surveillance were required both from air-borne and sea surface platforms.

Management Issues

Different agencies in New Zealand have access to different streams of information on our maritime areas, but there are currently no mechanisms for sharing this information for integrated analysis. A sense had been developing for some time that better synthesis of the available information and intelligence would yield a much improved picture of activities and needs throughout our maritime area. To those ends the intelligence community had already started considering the creation of a maritime intelligence co-ordination centre.

The experience of other countries was also persuasive. Most maritime nations have patrol services, and so there was a wide range of experience to draw upon: from the United States and Britain, which have large multi-layered coastguard arrangements, to countries like Australia, Canada and Ireland which operate at a scale more appropriate for New Zealand.

Australia's experience is particularly relevant. It has a contiguous ocean area not dissimilar in size to ours; and it also has to undertake patrols at a distance (in the Australian Antarctic EEZ, and in the South Pacific). Like New Zealand, it has no overarching mechanism or specific agency of government having the core role of, and legislative authority for, overall law enforcement in the nation's maritime jurisdictions. In 1988 Australia created a centralised Coastwatch agency to monitor information and to co-ordinate its coastal activities using a system of commercial and military platforms for both air and sea surveillance.

Our enquiries with Coastwatch confirmed that in many respects it provided a useful model for New Zealand. Moreover, with 12 years of experience behind it, and having been subject to several reviews over that time (including a current parliamentary review), there was a wealth of critical comment to draw upon.

In looking for solutions for New Zealand, we placed considerable emphasis on systems and management that were appropriate for a small country wanting to take a practical and integrated approach to managing massive ocean areas. The framework for our analysis, the assumptions made, the options considered, and the various arguments put forward for this part of the project are set out in Annex II. This

document also sets out the basis on which we analysed the options for both the air and the sea platforms.

We concluded from this process that New Zealand's management of maritime information and tasking of patrols for surveillance would be greatly improved by having a single, centralised, independent, national Maritime Co-ordination Centre (MCC) that would combine information management and operational activities in respect of the civil security of New Zealand's maritime areas. The case for having a much more strategic approach to the management of New Zealand's maritime patrol activities is set out in Annex II, but essentially we were persuaded that we needed surveillance that was more user driven and clearly directed by national strategies. Surveillance is never an end in itself, and it is usually linked to a response (although often the boundary between surveillance and response is blurred). It requires national oversight to ensure an appropriate balance among competing priorities in the use of increasingly expensive technologies.

The experience of other nations, especially Australia, pointed to the importance of having clear oversight. The three most obvious options were for the MCC to be established and operated as a stand-alone agency reporting to a minister, or within an existing government agency under formal agreements, or as a joint venture arrangement between the principal agencies. We favour the stand-alone option. While there would be some benefits in having the MCC located with a Crown agency such as the NZDF (as the major asset holders), other nations, including the Australians, have firmly rejected that option because of the potential problems of capture. Whatever the outcome of that debate, which will have to involve people experienced in machinery of government issues, we concluded that it was important that the MCC have oversight from a high-level interdepartmental committee, and have recommended that such a committee be established under the mechanism of the Officials' Domestic and External Security Committee (ODESC).

Further information on the proposal for a Maritime Co-ordination Centre and its role and operational responsibilities is set out in the Conclusions.

Capabilities

On the second theme, of addressing New Zealand's need for more surveillance services in the air and on the sea, there is a wide range of international experience to draw upon. In the countries that we considered, most of the national surveillance, especially air, is undertaken by commercial services. They have proved to be far more cost-effective than similar military assets, more flexible, and relatively uncomplicated.

In our recommendations on surveillance and response capabilities we sought practical compromises in the sensor technologies, platforms, and levels of response capacity, in the belief that a variety of good general-purpose assets, well managed, would give New Zealand an 80:20 capacity to deal with most situations, and would contribute usefully to military and diplomatic objectives if necessary.

In view of the short time available to the officials' committee, we were not able to do a comprehensive technical analysis of the options. In any case that would not have been appropriate until the overall concept is approved. In our investigations, however, we were able to draw on high quality commercial information that has given us good benchmarks about the standards and costs of equipment. Our examination of other countries' practices demonstrated unequivocally that standard commercial aircraft and ships, fitted with standard commercial (non-military) sensors and equipment can perform the full range of tasks needed in national civil maritime patrol. In the case of civilian aircraft, much of that equipment, such as radar, electro-optical systems, navigational aids and some communications systems, is equivalent to that used in military aircraft these days.

In considering options it became clear, therefore, that if government wished to retain the Orion long range maritime patrol aircraft against remote military contingencies in New Zealand's ocean areas, or it wanted to be able to offer military surveillance services to South Pacific countries, the Orions fitted with good quality commercial surveillance systems matched to civil needs, and modest military communications, would very adequately meet those requirements. Moreover, we believe that Australia would find them a valuable supplement.

Such equipment does not come cheaply. For the wide range of tasks that maritime patrol aircraft have to undertake, and for the extreme conditions in which they have to operate, high quality equipment is essential. Experience overseas, and in the RNZAF, demonstrates that compromising on performance can, in the end, be a false economy.

There has been a convergence between military and civil digital sensor equipment in recent years, to the point where most of the differences lie in the software and in the way that the signals are processed. A top quality modern commercial digital radar with an inverse synthetic aperture mode (such as the Australians are fitting to their new Dash-8 aircraft) could cost up to NZ\$4 million. In addition, surveillance can be enhanced with high quality electro-optical systems, which are also expensive (typically NZ\$1 million). Installation costs, we were told, can be up to several million dollars depending on the type of aircraft. The costs of these two main sensors and installation, therefore, could be in the order of NZ\$10 million. Those items however are the most expensive. Good quality commercial communication systems and navigational aids are considerably less costly. The overall impression formed is that high quality commercial systems can be bought and installed for total costs of NZ \$10-12 million per aircraft. These figures are indicative only; more accurate figures would require a full commercial and technical analysis. Commercial companies overseas have been willing to invest those sums to provide high quality surveillance services.

Consideration of the sensor suite and other electronic systems will necessarily require a full technical analysis, as will the choice of platforms. As a guide to that process, and drawing on Canadian, Australian, and British experience, we have set out below, and in fuller form in Annexes II and III, an outline of the main considerations.

The choice of platform is the most important decision for two reasons:

- the costs of aircraft and ships can be high and seem to rise exponentially for assets that have high endurance or operate at long distances
- platforms need to be matched closely with the tasks to be undertaken. (Extra capacity comes at a high price.)

Aircraft Options

Overseas experience, and economic logic, shows that a layered system delivers greatest efficiency. As explained in Annex II we considered three zones:

1. *coastal* - along the coastline and Territorial Sea, which is currently covered by small fixed-wing aircraft and helicopters, where the need is usually for short duration coverage
2. *mid-range* - throughout much of the NZEEZ out to about 100 nm, an area accessible to medium-range commercial aircraft
3. *long distance* – further out, especially over the outer fringes of the NZEEZ and beyond, where usually there is a requirement for sustained operations.

Within this structure there are a number of possible alternatives for meeting New Zealand's aerial maritime patrol needs.

Coastal: Coverage of the littoral areas could continue to be done by the wide range of commercial service providers currently operating there or it could be done with new military assets. We concluded that the continued use of commercial services offered the greatest flexibility, efficiency, and responsiveness. But there are problems looming within the informal coastguard mechanisms that New Zealand has which will have to be addressed by central government shortly.

Mid-range: In the mid-range regions there are similar choices of using commercial or military services. Few small commercial air operators are comfortable with flying much beyond 25-35 nm over sea, although such capabilities exist and are increasing in New Zealand. In commercial provision, therefore, we have workable choices between New Zealand and overseas service providers, or a hybrid arrangement involving both. (In Australia, the company contracted to do national ocean surveillance meets 98% of Coastwatch's needs.)

As a further alternative, the RNZAF could be tasked with providing the mid-range service. This would be best done with medium-sized aircraft, as an Australian Audit Office Performance Audit published last year has shown that using Orions for such surveillance at A\$44,000 per hour costs about 8 - 10 times as much as more suitable aircraft. In New Zealand our best comparable estimate is NZ\$40,000 (including capital charge). One option, should government want the RNZAF to develop a more comprehensive maritime patrol capability, would be to install suitable sensor suites on the three Beech King Air training aircraft they currently lease from a Hamilton company. The Canadians have three such aircraft to do their EEZ surveillance, and

with them achieve about 3000 hours flying per year – similar to the level that we assess New Zealand requires. There would be useful overlaps with the RNZAF pilot training programme, although a further aircraft or two could be required to cover training needs. As noted earlier, the cost of equipping such aircraft could be in the order of \$10 million per airframe. Further technical analysis would be required to confirm the appropriateness of the Beech King aircraft for this application but the concept is sound. If the government were to choose that option, more care would be required to understand the costs and to maintain parity with commercial prices since, notwithstanding the training synergies, there would be no military need for such a capability.

Long distance: At longer distances, beyond the EEZ and away from New Zealand where sustained operations are required, there are fewer options. Hitherto those distances have been a challenge for commercial services, although the aviation industry is now offering new possibilities for long-range aircraft with extended capabilities. National Jet Systems in Australia, for example, is proposing to equip two new Dash-8 aircraft for undertaking surveillance at extreme ranges that they say will have capabilities approaching that of the Orions at about 13% of the operating cost, and a much lower capital cost. (That comparison has to be offset by the fact that the Orions can fly faster and can provide a wider range of services if necessary.)

Australia is also experimenting with putting long-range fuel tanks into a C-130 transport aircraft to enable it to cover the Southern Ocean and other distant areas. The C-130 can be used for the maritime patrol role having the same engines as the Orions, similar flying range, excellent low altitude capabilities, and a rear door for dropping large life rafts and other equipment. The US Coastguard uses C-130s for its maritime patrol needs. The options, therefore, for covering long distance needs are to either employ commercial services or to use RNZAF assets – either the Orions or C-130s modified for ocean surveillance. The elimination of the Orions from the RNZAF has the potential of savings in the order of \$40m - \$60m annually (including capital charge), but could require the acquisition of further C-130 capacity to do the long-range patrol work, given current uses of the C-130s.

New Zealand's long range requirements could be met with any of the three options outlined. The choice will necessarily have to be informed by other decisions being made in the NZDF. If anti-submarine warfare is no longer a priority, it could be argued that there is less case for keeping the Orions because ASW is the main thing they did markedly better than the alternatives. We already own the Orions, however, and the Air Force has accumulated considerable expertise in their use. If the government wanted to retain them for their long distance and long endurance capabilities, our assessment is that they could be upgraded to do local tasks, civilian and military, perfectly well at a modest cost per aircraft.

Vessel Options

The analysis of national requirements had particularly highlighted the fact that New Zealand at present lacks capabilities to meet its full range of sea surface needs. The main enforcement agencies – Customs, Fisheries, and Police – each have some

small coastal platforms, but there are significant gaps in capability outside the Territorial Sea.

The options for sea surface platforms are not as wide because the interdiction and enforcement roles that vessels are required to undertake, in addition to carrying out surveillance, rules out purely commercial providers. In most cases New Zealand legislation requires that face-to-face contact with crews on infringing vessels has to be undertaken with government employees with the appropriate training, delegations, and authorities. The use of Defence staff to undertake activities against New Zealand nationals or New Zealand craft is limited by legislation to very specific circumstances. To overcome this limitation, Defence vessels can carry appropriately authorised Customs, Fisheries or Police representatives when interdiction is required.

As with the aerial analysis, and for essentially the same reasons, we considered the sea surface requirements across three zones:

1. *coastal* - along the coastline and Territorial Sea, this being the area in which the small vessels belonging to Customs, Fisheries, and Police operate now
2. *mid-range* - throughout much of the NZEEZ out to about 100 nm, which requires longer vessels with much better sea-keeping to undertake coastal patrol duties
3. *long distance* – further out, especially over the outer fringes of the NZEEZ and beyond, where vessels need to be able to cope with severe sea conditions.

The analysis of platforms for the sea surveillance capability, therefore, came down to technical choices for the sea conditions, ranges and endurance needed. The basis of our analysis is set out in Annex III, and we drew on opinion from naval and maritime specialists in New Zealand and Australia.

Much more technical work will be required to develop options for government, but we were persuaded that a significant enhancement of national capabilities could be achieved with the following arrangements.

Coastal: Continuation and enhancement of current arrangements whereby the main enforcement agencies continue to own and operate their own small vessels. Customs in particular have pressing needs for two inshore vessels that are fully equipped for Customs activities, are suitable for operating in confined coastal or harbour areas, and carry small pursuit craft.

Mid-range: Acquisition by the RNZN of 3 or 4 medium-sized patrol vessels operated by the RNZN but manned also by specialists from Customs, Fisheries and other agencies as appropriate. Those vessels should be of a size no greater than needed to patrol in New Zealand's contiguous waters. At the lower limit they might be similar in size and shape to the larger fishing vessels in the NZEEZ (eg 50-70 metres), or they could be built to the standard of small offshore patrol craft such as Australia is considering at the moment.

Long distance: In the distant reaches of the NZEEZ, and for operations further afield such as in the South Pacific and Antarctica, undertaking the range of activities set down in the Defence Policy Framework and in the civil functions defined by Cabinet

would require a multi-role vessel of length somewhat over 100 metres and displacement of about 5000 tonnes. Such a vessel, perhaps a small cargo ship or logistics support ship, built to commercial standards and having surveillance equipment and light armament, would be a very suitable platform for a wide range of national civil and military activities.

These suggestions are no more than an outline of possibilities to illustrate the total concept, but we have been persuaded that a distributed 'presence' around NZ would strengthen enforcement and have other significant national and regional benefits. There would be synergistic advantages of training, command, and sea experience in having the major capital vessels located with the RNZN but under guaranteed operational tasking of the Maritime Co-ordination Centre. The acquisition by the RNZN of the modest mid and long-range platforms suggested would give New Zealand good capabilities for meeting domestic needs, and could open up strong new options for wider defence and foreign policy tasks.

In particular, the multi-role logistics/training/support vessel, if equipped with high quality commercial communications and surveillance systems, would allow New Zealand to undertake the following national tasks:

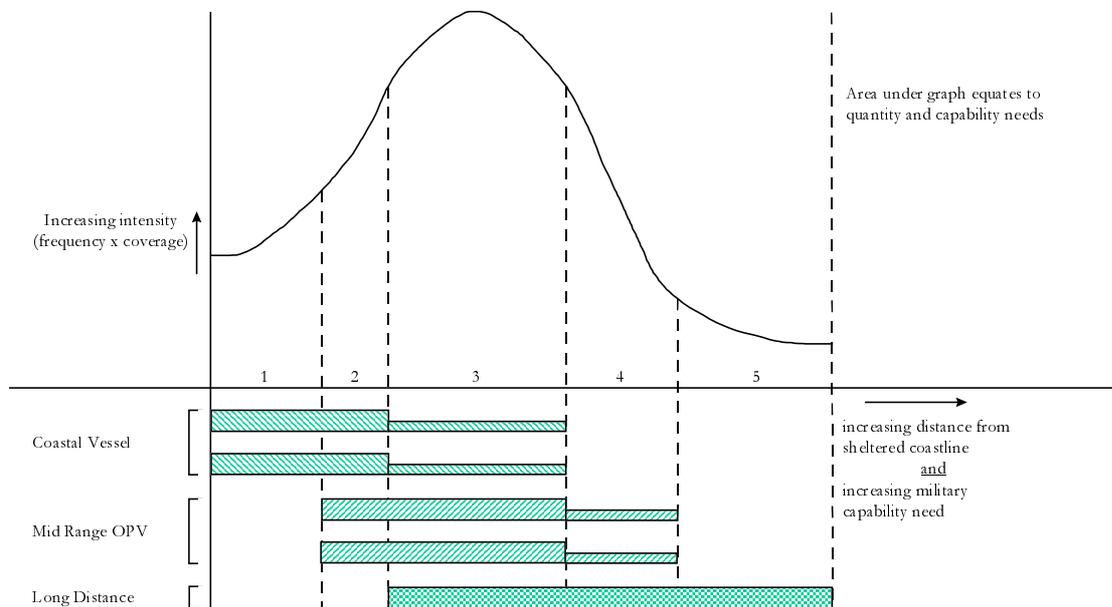
- It could be used in the South Pacific to create a higher profile there.
- If bought or built with good carrying capacity (eg, 2000 tonnes) it could undertake the functions of a logistics support ship (LSS) but at a scale more appropriate for New Zealand's needs, and could be used in ports where a large LSS could not (a very important consideration in both New Zealand and the South Pacific for disaster relief).
- If it were to be ice strengthened (a cost increment of about 1.5% if done at the construction stage), it could serve to do Southern Ocean work and cargo supply for Scott Base and McMurdo.

As with the situation for aerial patrol, and for essentially the same reasons, these vessels would not require full military patrol capabilities. Modestly sized vessels which were closely matched to the local tasks defined in the Defence Policy Framework, constructed to commercial standards and lightly armed, would give New Zealand an effective balance of capabilities well suited to both maritime patrol and the other civil and military security needs defined by government. Studies conducted by NZDF last year on ship availability, showed that the capabilities suggested above could offer significant new options for the RNZN and offset much of the need for a third frigate at about one-fifth of the cost.

An important point, made to us on numerous occasions, is that it would be a mistake for New Zealand to repeat errors made in the past by purchasing vessels too small for the task. New Zealand waters can be difficult, especially in the southern zones, and there is a great deal of national experience to suggest that any new acquisitions would need to be of the lengths and displacements noted above to ensure the safety and comfort of crews. These vessels will be expected to spend a great deal of time at sea in order to maximise their deterrent value, so there will be difficult compromises to be made between capital and operating costs.

Figure 1 is a conceptual diagram that demonstrates the coverage this type of capability would give the government. Note that the overlapping capacity of each type of vessel gives government the most capability in the greatest area of need from a whole of government point of view, providing both flexibility and cost effectiveness.

Figure 1 Coverage provided by a range of surface vessels



Key to Figure 1

: Vessel range and related efficacy
 Capability increments (horizontal axis)

1.	<ul style="list-style-type: none"> • on-shore surveillance support • constricted waterway operations • high intensity civil operations (continuous Customs high level; other border agencies) • full range of law enforcement capability on board • sheltered inshore areas to outer edge of contiguous zone • full New Zealand law enforcement and border agency interoperability • Australian Customs Service interoperability
2.	<ul style="list-style-type: none"> • sheltered inshore areas to outer edge of contiguous zone • full law enforcement capability deployed as required • partial law enforcement capability ongoing • can be deployed in situations of armed resistance (using police specialist squads)
3.	<ul style="list-style-type: none"> • whole of New Zealand 's contiguous zone, most weather conditions • EEZ, most weather conditions • military-capable deck mounted weapon • projection of force on non-compliant vessels, eg terrorists • full military interoperability • partial law enforcement capability
4.	<ul style="list-style-type: none"> • South Pacific Islands (Foreign Affairs, Fisheries, Customs interests) • peacekeeping in the South Pacific Region • beyond EEZ, most conditions • military support, South Pacific region
5.	<ul style="list-style-type: none"> • Southern Ocean and Antarctica • Logistics support to military operations • Aerial surveillance capability (helicopter)

Funding the Options

This has not been a detailed funding exercise. The officials' group acknowledges that the Maritime Patrol Review has been conducted against a background of financial stringency across all departments. The Review proposes an indicative direction for the Government to work towards; building up the assets recommended in the Review will take several years.

In the meantime, resources needed to meet civilian maritime surveillance requirements should be found from within the appropriate current Defence Force output classes, and from within the baselines of user departments. Resourcing for the development of new capabilities will need to be more fully analysed in terms of costs and benefits, and be considered alongside the Government's other budget priorities at appropriate times in future years.

CONCLUSIONS

MARITIME CO-ORDINATION CENTRE

We have identified the need for New Zealand to have a single, independent, national Maritime Co-ordination Centre (MCC) that combines information management and operational activities in respect of the civil security of New Zealand's maritime areas.

The MCC would be responsible for providing a centralised maritime patrol capability to meet all civil interests, involving both surveillance and response, in the following geographic areas:

- New Zealand's oceanic areas, including littoral waters, the NZEEZ, the legal continental shelf extension, and the New Zealand Search and Rescue Area
- those areas of the South Pacific over which we have constitutional responsibilities or other arrangements
- the Ross Dependency, and that sector of the Southern Ocean
- some ocean areas beyond those (in order to cover Customs and Police needs).

Strategic direction and high level governance would come from a new interdepartmental committee within the ODESC system including chief executives of Customs, DPMC (Chair), Fisheries, Foreign Affairs, Maritime Safety, NZDF, MOD and Police which would seek input, when appropriate, from representatives of the Coastguard Federation and other agencies. ODESC(M) would be tasked with ensuring that New Zealand's civil and military maritime security interests are co-ordinated in the collective national interest, and with no duplication between sectors of their assets, capabilities and activities. It would annually review a National Maritime Patrol Strategy to provide a framework within which agencies could operate with confidence, and periodically consider forward plans.

Although the MCC would not own patrol resources, contracts and service level agreements would be established to give it primary and guaranteed call on designated maritime patrol assets operated by the RNZAF, the RNZN, and contracted companies. It would also have indirect access to other Crown vessels.

INFORMATION MANAGEMENT

In respect of information management, the MCC would:

- collate maritime information to add value, by drawing together all information streams available in NZ including intelligence, routine marine data, and other information relevant to maritime security;
- develop and maintain a data co-ordination centre for all information concerning surveillance of New Zealand's maritime areas;

- disseminate compiled information and assessments to NZ agencies, including NZDF;
- undertake all-source assessment using experienced professional analysts;
- consolidate relevant functions of existing maritime centres (to rationalise the overlapping capacities currently in Customs, MSA, MOF, NRCC, Police, RNZN and RNZAF);
- communicate and co-ordinate between users and service providers;
- provide high quality operational and management reporting to ODESC(M) .

As a critical step in planning, the MCC would also consolidate all routine and special national requirements for maritime patrol from government agencies in order to develop a co-ordinated national operational plan. Specifically, it would:

- co-ordinate the patrol and surveillance requirements of all agencies;
- plan the delivery of services to meet the identified requirements.

OPERATIONAL RESPONSIBILITIES

The MCC would oversee comprehensive and integrated management across all areas of maritime patrol to enhance all elements of maritime patrol: monitoring, patrol, detection, identification, surveillance, interception, enforcement, control, and response co-ordination in both the air and sea space of coastal and off-shore areas. To these ends it would:

- undertake operational tasking and the deployment of resources;
- manage contracts and service level agreements.

In co-operation with other relevant agencies, the MCC would assist as appropriate with the management of risks, problems or threats in the areas of:

- resources management;
- environmental protection;
- maritime sovereignty;
- illegal activity;
- marine safety.

The MCC would be responsible for integrating the maritime elements of strategies developed by specialist agencies to ensure that New Zealand has in place comprehensive national management strategies for managing maritime risks by:

- deterring infringements, threats or illegal activities;
- reducing both the likelihood and potential consequences of maritime risks;
- improving readiness to deal with risks in each of our maritime areas;
- enhancing national response and control capacities;
- monitoring national capacity to recover from serious failures and take appropriate action.

The MCC would monitor all elements of maritime security in New Zealand waters and other areas of national interest, and would have responsibility for co-ordinating civil maritime patrol capabilities in areas such as:

- fisheries and marine resources management;
- customs, immigration, and illegal activities;
- marine safety, and search and rescue;
- services provided to other countries (including those for military or foreign policy reasons);
- conservation, pollution monitoring, and dealing with environmental contingencies.

As long term goals, the MCC would aim to diversify the range of source information:

- move towards a multi-layer information gathering system to improve balance and complementarity in the nature of knowledge of NZ's oceanic areas;
- set long-term direction to improve broad ocean strategic surveillance;
- monitoring research into evolving technologies (satellites, UAVs, OTH radar, acoustic methods, VMS, EPIRBs etc) and assessing possible new options.

The MCC would be responsible for monitoring national capacity for civilian patrol tasks within New Zealand's maritime security environment to ensure that New Zealand maintains effective capabilities for surveillance and response, and has in place the other elements of risk management to deal with national needs in the sea and air spaces defined above. It would maintain close links with other relevant agencies and in conjunction with them would contribute to policy development and advice for government.

The new Maritime Co-ordination Centre would liaise directly with the proposed National Maritime Search and Rescue Centre (discussed on page 18). Information and intelligence would flow freely between the two centres. The chain of command between the Maritime Co-ordination Centre (controlling funding) and the maritime Crown agencies would need to be more fully analysed after this study. In Australia, for instance, the control of funds by Coastwatch and the Australian maritime Crown agencies is still being debated 12 years after the formation of Coastwatch.

AERIAL PATROL

In respect of aerial patrol we have found that the current civil operations work adequately for search and rescue, but in respect of other major functions such as customs and fisheries are patchy, poorly co-ordinated, and occurring too infrequently to contribute effectively to either surveillance or deterrence.

New Zealand at present does not have the necessary air surveillance capabilities to meet the full range of civilian needs. The RNZAF Orions are good platforms for undertaking the very long range and long endurance elements of ocean surveillance,

but their systems are not well matched to fulfil all the civil requirements. Those long-range requirements are mainly the irregular aerial contributions to the most distant Class III search and rescue activities, occasional fisheries over-flights near the edges of the NZEEZ, and surveillance flights in the South Pacific and southern ocean. Different capabilities are needed for waters closer to New Zealand.

We therefore recommend a major shift in focus, and a re-balancing in the allocation of resources currently directed at the civil and military aspects of New Zealand's maritime security. Having considered the military requirements in the light of government's Defence Policy Framework, we are not persuaded that a comprehensive military aerial maritime patrol capability incorporating ASW equipment and large data-handling/communications capabilities should be maintained. In neither the arguments we heard in the course of our review, nor in past experience, have we found compelling evidence that such a capability is essential for national security. While the Orions have provided military benefits in training and exercises in the 35 years that the RNZAF has operated them, on no occasions have they been used in combat or peacekeeping despite a willingness and capability to so use them. In the light of the guidance in the Defence Policy Framework, we conclude that it is hard to justify the retention of a full military capability, including anti-submarine capacity.

We note, however, that were the Orions (or C-130s, see below) to be equipped with the high quality commercial sensors needed for the civil work, they would be particularly effective in meeting New Zealand's security needs as set out in the Defence Policy Framework, and would possess most elements of good quality military platforms. They would not be equipped to engage in major coalition warfare with advanced military nations, but with small additional expenditure to provide modern military communications, those aircraft could form a useful adjunct for Australian needs. They would not require submarine detection equipment.

For the enhanced civil tasks, further technical work will need to be done to establish the optimum levels and types of aerial patrol. Our review has highlighted major deficiencies in the largest portion of the national aerial surveillance requirement, namely the need for cost-effective coverage of the coastline and NZEEZ. In particular, we conclude that New Zealand needs:

- a ten-fold increase in civil surveillance and deterrence effort, particularly for the most pressing needs in the two key areas of fisheries and customs identified in the departmental reports attached, to give those sectors a combined total of 2000 – 3000 hours per year;
- improvement in government's contingency capacity for addressing quickly some infrequent but potentially significant risks in marine safety, law enforcement and environmental protection.

In respect of requirements further afield, we recommend an examination of aerial surveillance provided to South Pacific countries (assistance within the Nandi search and rescue area, fisheries patrol for the Forum Fisheries Agency, and other surveillance flights in the area) in order to establish the optimum levels of assistance.

This examination should be informed by the reviews of Pacific policy and Overseas Development Assistance which are presently underway.

Surveillance would most efficiently be undertaken by a variety of aircraft. Our investigations, and practices elsewhere, suggest that the optimum mix of capabilities would be:

- in littoral areas (the land-sea interface), continuation of current practices using commercial helicopters and small aircraft;
- in the zone between coastal waters and the nearest sectors of the NZEEZ boundary, use of medium-sized civil aircraft fitted with high quality surveillance equipment, operated by either commercial organisations or by the RNZAF;
- in the distant reaches of the NZEEZ and the New Zealand Search and Rescue Region, use of long range aircraft, with long endurance, fitted with similar high quality surveillance equipment.

There are two sets of options around the platforms:

1. For the medium-long range aircraft there are several options, notably:

- to use commercial services (which could be provided by New Zealand companies);
- to use RNZAF Beech King Air training aircraft (or similar aircraft) for a surveillance role in conjunction with RNZAF pilot training.

2. For the long distance platforms, the possibilities are:

- retain some Orions as the long range aircraft for SAR and distant surveillance purposes; or
- utilise C-130s which have comparable capabilities (in range etc) by fitting new sensors to some or all five aircraft in the RNZAF. This could require the purchase of additional C-130 capacity, depending on whether government wants to increase its South Pacific operations.

Regardless of which options are eventually chosen, we are clear that they must be fitted with high quality commercial radar and electro-optical systems. We have been fully persuaded by our consultations with technical experts in New Zealand and overseas that it is false economy to compromise in this area especially in long-range aircraft.

SEA PATROL

In respect of sea patrol we have found that there is very little routine surveillance undertaken around New Zealand, and with the current structure of the RNZN there are no vessels appropriately configured for this work. Using frigates for local tasks of this nature is not an appropriate use of such a valuable resource.

In the light of the objectives set out in Defence Policy Framework, and on the basis of our investigations, we think that there is a strong case for New Zealand having an enhanced military maritime patrol capability on the sea surface. At a relatively modest cost the options set out below would give us a more appropriate local maritime presence, would enhance our ability to undertake local civil and military patrol work, and would allow us to raise our profile throughout our distant marine areas and those of our Pacific neighbours.

Unlike the situation with air surveillance, we believe that only government vessels can undertake the sea surface role because of the ever-present need for interdiction and enforcement of NZ laws. As with the situation for aerial patrol, and for essentially the same reasons, these vessels would not require full military patrol capabilities. Modestly sized vessels which were closely matched to the local tasks defined in the Defence Policy Framework, constructed to commercial standards and lightly armed, would give us a range of capabilities well suited to both maritime patrol and the other civil and military security needs defined by government. Studies commenced by MoD in 1999 show that the capabilities suggested below could offer significant new options for the RNZN and offset much of the need for a third frigate.

Of the various possibilities within government (eg, location within Customs, Fisheries, Defence) we are generally of the view that there are synergistic advantages of training, command, and sea experience in having the major capital vessels located with the RNZN but under guaranteed operational control of the MCC. Larger countries, sensitive to possible conflicts of role, have created para-military services such as coastguards to undertake these roles but, with suitable controls in place, we believe that New Zealand can find a practical solution in the framework that we have outlined in the previous pages.

Assuming that the need for using government vessels is agreed, and subject to further technical/economic analysis, we suggest that New Zealand moves towards developing a set of sea surface maritime patrol capabilities along the following lines:

- In littoral areas, continuation of current practices of having small craft owned and operated by agencies such as Customs, Fisheries, Police, DOC etc. Some enhancement may be required as there are emerging problems that are stretching their capabilities. These acquisitions, and operation of the vessels, would continue as departmental responsibilities.

- In the zone between coastal waters and the nearest sectors of the NZEEZ boundary, there is a requirement for 3 or 4 medium-sized, lightly armed, patrol vessels operated by the RNZN but manned also by specialists from Customs, Fisheries and other agencies as appropriate. Those vessels should be of a size no greater than needed to patrol in New Zealand's contiguous waters. At the lower limit they might be similar in size and shape to the larger fishing vessels in the NZEEZ (eg 50-70 metres), or they could be built to the standard of small offshore patrol craft such as Australia is considering at the moment.
- In the distant reaches of the NZEEZ, and for operations further afield such as in the South Pacific and Antarctica, undertaking the range of activities set down in the Defence Policy Framework and in the civil functions defined by Cabinet would require a multi-role vessel of length somewhat over 100 metres and displacement of about 5000 tonnes. Such a vessel, perhaps a small cargo ship or logistics support ship, built to commercial standards and having surveillance equipment and light armament, could be a very suitable platform for a wide range of national civil and military activities.

A multi-role vessel as outlined, if equipped with good commercial communications and surveillance systems, could give New Zealand strong new options for wider national tasks. For example:

- If bought or built with good carrying capacity (eg, 2000 tonnes) it could undertake the functions of an LSS but at a scale more appropriate for New Zealand's needs, and could be used in ports where a large LSS could not (a very important consideration in both NZ and the South Pacific for disaster relief).
- If it were to be ice strengthened (a cost increment of about 1.5% if done at the construction stage), it could serve to do Southern Ocean work and cargo supply for Scott Base and McMurdo.

These functions are not mutually exclusive, and given the discretion usually around their use for these tasks there is no good reason for not making this mix of capabilities, including the new multi-role capacity, work well for New Zealand. The capital costs of this full set of options might be in the order of \$100 – 150 million providing the specifications were held within practical bounds. The financial risks associated with the design of a multi-role vessel would need to be carefully managed.

MARITIME SAFETY

In the course of the review we became aware of the major role of the voluntary sector and the high dependence in New Zealand on this system for nearly all maritime rescues. The Royal New Zealand Coastguard Federation and its affiliates are facing serious difficulties that are beginning to impact on their ability to continue with the provision of national services. They are entering a difficult and transitional period, and see the need to restructure to achieve the professional standards they need to attain. We believe that the following steps should be taken soon:

- that the MSA undertake a review of all maritime search and rescue in New Zealand;
- that consideration be given to forming a single maritime search and rescue Crown agency;
- that the Crown agency be given the authority to let service contracts for maritime search and rescue services;
- that consideration be given to awarding the Coastguard Federation a service contract for all coastal maritime search and rescue.

In view of the advantages for safety that we noted in Australia, we recommend that as an early priority the MSA examine the requirement for a national ship reporting system throughout the New Zealand Search and Rescue Area, referred to as NAVAREA XIV.

KEY RECOMMENDATIONS

1. That a Maritime Co-ordination Centre, under the oversight of ODESC(M), be set up to collect information and manage tasking for all forms of military and civilian maritime surveillance to meet civilian needs in:
 - New Zealand oceanic areas, including littoral waters, the NZEEZ, the legal continental shelf extension, and the New Zealand Search and Rescue Area;
 - those areas of the South Pacific over which we have constitutional responsibilities or other arrangements;
 - the Ross Dependency, and that sector of the Southern Ocean; and
 - some ocean areas beyond those (to cover Customs and Police needs).
2. The MCC should also be responsible for developing means to enhance all elements of maritime patrol, including developing a ship reporting system for New Zealand waters.
3. That the Defence Force purchase agreement specifically identify resources to be available for air and sea capabilities to undertake civilian maritime surveillance and interdiction, under tasking from the Maritime Co-ordination Centre.
4. That a capacity for long-range air maritime patrol be maintained, with high quality commercial surveillance equipment, to be used for civilian purposes (under tasking of the Maritime Co-ordination Centre). A small additional expenditure on military communications would enable use for some military tasks.
5. That medium and short-range air patrol be provided either by RNZAF aircraft under tasking of the Maritime Co-ordination Centre, or by civilian aircraft on contract to the Maritime Co-ordination Centre.
6. That a capacity for sea surface maritime patrol be developed, including provision for:
 - a coastal capability
 - vessels with mid-range offshore capabilities
 - a multi-role vessel with long distance and Southern Ocean capabilities
 and that the latter two be considered in the context of the review of the future composition of the naval fleet, including the replacement of the HMNZS Canterbury.
7. That the Maritime Safety Authority work with the Coastguard Federation to review the pressures on coastguard activities in New Zealand and to identify appropriate improvements.
8. That the resourcing for the new civilian maritime surveillance requirements should be found from within the appropriate current Defence Force output classes, and from within the baselines of user departments. Future resourcing for the development of further capabilities will need to be more fully analysed in terms of costs and benefits, and be considered alongside the Government's other budget priorities at appropriate times in future years.

MARITIME PATROL REVIEW

ANNEXES

ANNEX I Consultation

ANNEX II Maritime Patrol Options Analysis

ANNEX III Fisheries

ANNEX IV Customs

ANNEX V Maritime Safety

ANNEX VI Foreign Affairs

ANNEX VII Defence