MINISTRY OF DEFENCE
Manatū Kaupapa Waonga

New Zealand DEFENCE FORCE
Te Ope Kātua O Aotearoa

NAVY NZARMY AIR FORCE

Major Projects Report 2013

1 July 2012 – 30 June 2013

Volume 2: Part 3

Published December 2013

ISBN 978-0-478-27868-2 (Print)
ISBN 978-0-478-27869-9 (Online)

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PROJECT DATA SHEET: A109 TRAINING AND LIGHT UTILITY HELICOPTER (T/LUH)

PROJECT DESCRIPTION

This project is providing the NZDF with a training and light utility helicopter capability. Five A109LUH (NZ) helicopters and a flight training simulator have been acquired to replace the current training helicopters for the RNZAF. An additional (sixth) helicopter has been acquired and broken down to form the majority of the spares and logistics package.

Policy Value

The A109's training capability will provide the Government with:

- the helicopter pilot and crewmen training necessary to support the NZDF's NH90 and Seasprite helicopter fleets and operations.

The A109's light utility capability will enhance the Government's options for:

- defending New Zealand's sovereignty, its Exclusive Economic Zone and territorial waters;
- contributing to whole of government efforts at home in resource protection, disaster relief, and humanitarian assistance; and
- operating with the Australian Defence Force to discharge our obligations as an ally of Australia.

Government Approval Milestones[1]

Government Approval Milestones

Project Initiation: Occurs once a capability requirement has been identified by Defence and a broad assessment of the options for meeting the capability requirement has been authorised by the Chief Executives and noted by the Minister of Defence.

Approval to Initiate: Attained when Cabinet agrees to the project's inclusion on the capital acquisition plan and authorise Defence to engage with industry to refine its initial assessment with more accurate information.

Approval to Commence: Attained when Cabinet agrees to the refined capability requirement and authorises the Ministry of Defence to commence a formal tender and tender evaluation process.

Approval to Negotiate: Attained when Cabinet agrees to the preferred tender, specifies funding limits, and authorises the Ministry of Defence to enter into contract negotiations.

Approval to Commit: Attained when Cabinet agrees to the final contract and authorises the Ministry of Defence to sign the contract and commit funding.

[1] These are generic titles for Cabinet approval points in the capability definition process. Whilst the actual titles of Cabinet Papers have varied, the approvals and direction they were seeking from Cabinet have been broadly consistent with the definitions provided.

Date	Approved By	Nature of Approval
2 April 2001	Cabinet CAB Min (01) 10/10	**Project initiation.** The NZDF's Sustainable Capability Plan recommended a study be completed to identify options to replace the Sioux helicopter with a training capability that meets the NZDF's future needs.
3 December 2003	Cabinet ERD Min (03) 14/9	**Approval to Initiate.** The Ministry of Defence was authorised to engage with industry to identify potential suppliers for the NZDF's training and utility helicopter requirements.
4 September 2006	Cabinet CAB Min (06) 33/3A	**Approval to Commence.** The Ministry of Defence was authorised to issue a Request for Tender for a T/LUH fleet of up to six helicopters.
29 October 2007	Cabinet CAB Min (07) 39/4	**Approval to Negotiate and Commit.** The Ministry of Defence was authorised to carry out negotiations with AgustaWestland for five A109 LUH and a flight training device and was delegated authority to enter into a contract for an amount up to NZ$140 million. **Note:** This paper was titled **NZDF Training/Light Utility Helicopter Project: Approval to Negotiate a Contract**

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

In 2001, a joint Ministry of Defence, Headquarters NZDF, and RNZAF team identified and analysed the NZDF's utility helicopter requirements, including the requirements for training and light utility helicopter capabilities. A gap existed in regard to Defence's training capability, for which a set of interim solutions were considered. These interim solutions were then found, in 2003, to be non-viable, and overly expensive. Instead, analysis of longer-term training solutions was approved. Defence considered that expanding a training helicopter capability to also take in light utility tasks would be a more efficient use of the NZDF's helicopter capability.

In 2004, Defence identified the roles and tasks of a light utility helicopter that were required to achieve the Government's policy objectives. Cabinet agreed that the Ministry of Defence release to industry an Invitation to Register Interest, with the intent of determining the affordability of proceeding with a light utility role.

Subsequently, a counter terrorism role and the ability to support New Zealand Police operations were added as capability requirements. Five levels of capability were detailed and presented as options to the Government. In 2006, Cabinet agreed that the Ministry of Defence release a Request for Tender for a fleet of up to six aircraft. From the options presented, the selected fleet type was to meet a level four capability, and preferably also be able to deliver a level five capability.[2] The levels are tabled in section 1.2e.

How Defence analysed the requirements options in the Capability Definition phase

Early in the capability definition phase, Defence considered options for fulfilling the NZDF's basic helicopter training requirements. The options included:

- purchase of new training helicopters;
- short-term lease of suitable aircraft;
- contract out basic pilot training to civilian training industry; or
- contract out basic pilot training to the Australian Defence Force.

At that stage, none of the options were considered affordable or able to meet the NZDF's training requirements. Section 1.2a provides the options analysis completed at that time for the purchase of new aircraft as compared with leasing.

In 2003, Defence declined an offer to acquire nine second-hand, single-engine Fennec helicopters. After extensive review by the RNZAF, the New Zealand Government decided that the uncertainty and unknown risks of buying second-hand aircraft meant that it was not a cost-effective solution. Details of the analysis are in section 1.2b.

[2] See acquisition section concerning change in number of helicopters to be purchased.

In December 2003, Defence analysed which mixes of aircraft would provide an NZDF utility helicopter capability that could be employed with optimal efficiency. Analysis is shown in section 1.2.c. Defence also aligned fleet size with training requirements.

In 2006, Defence provided Cabinet with capability options across the training and light utility roles. In considering the options, Cabinet agreed that the selected fleet type must meet a level four capability, and preferably also be able to deliver a level five capability if possible. Refer section 1.2e.

How Defence considered interoperability

Throughout the analysis of capability and operational requirements, the ability of the helicopter capabilities to be utilised, where appropriate, by other government agencies, and in conjunction with the Australian Defence Force was considered, as was interoperability with other defence partners.

How Defence considered through-life costs and issues

In October 2003, Defence contracted the United Kingdom Ministry of Defence Price Forecasting Group to provide assistance in establishing the initial costing information for the project. While the cost model that the Price Forecasting Group used in their analysis was based on their databases and industry figures, it was noted that the figures were not fixed, and could fluctuate in relation to the various outcomes provided.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare, assess, and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best solution to acquire that will meet the capabilities required.

a. 2002 - Options for Meeting Training Gap for Helicopter Pilot Basic Training

Comparison of Options for Helicopter Training Capability Requirements				
Indicative Costs for New Aircraft				
Aircraft type	Agusta 119 Koala	Bell 407	Eurocopter AS350 Squirrel	Eurocopter EC-120B Colibri
Costs per unit (NZ$ million)	3.8	3.1	2.5	2.1
Indicative Costs for Lease of Four Eurocopter EC-120B Colibri Helicopters (NZ$ million)				
Lease Cost	2 per year			
Support Costs	1 per year			

Representative Aircraft for Training Requirements: A Capability Comparison				
	Hughes 500	Bell 206 JetRanger	Eurocopter AS350 Squirrel	Eurocopter EC-120B Colibri
Turbine engine, Light modern design.	Yes	No	Yes	Yes
Capable of carrying two pilots and two passengers (helicopter crewmen).	Marginal	Yes	Yes	Marginal
Cruise speed at least 100 knots.	Yes	Yes	Yes	Yes
Capable of multiple emergency training evolutions.	Marginal	Yes	Yes	Yes
Able to conduct under-slung load operations.	Yes	Yes	Yes	Yes
Equipped for single pilot night and infra-red operations.	Yes	Yes	Yes	Yes
Equipped for night vision training.	Yes	Yes	Yes	Yes

Capable of two back-to-back sorties, each of one hour with two pilots.	No	Yes	Yes	Yes
Equipped with an electrical winch suitable for helicopter crewmen training.	No	Yes	Yes	Proposed (but not yet available)
Capable of cruise speed of at least 120 knots.	Yes	No	Yes	Yes

b. Options Analysis of the Second-hand Fennec Aircraft

Options Analysis of the Second-hand Helicopters		
	4 Aircraft (NZ$ million)	**8 Aircraft (NZ$ million)**
Fennec	14.7 – 16.09	26.1 – 28.87
New Squirrel	17.2 – 19.5	33.2 – 37.0
Second-hand Squirrel	12 – 15	20 – 24
Lease new aircraft	24 (for 8 years)	Not provided
Lease second hand aircraft	16 (for 8 years)	Not provided
Assessment	Due to the high cost, leasing was considered a short-term option. The main decision at this stage was whether to purchase second-hand or new aircraft. If used aircraft were considered acceptable, then a further decision to be considered would have been whether the value of savings from acquiring used aircraft warranted the increased risks, cost of refurbishment, and reduced in-service life of those aircraft.	

c. 2003 - Fleet Mix Options for the NZDF's Utility Helicopter Capability for Training, Light and Medium Utility Tasks

Fleet Mix Options			
Options Considered	**Cost Estimate[3] (NZ$ million)**	**Advantages**	**Disadvantages**
Option 1 Like for Like	Not provided at that time	• Nil advantages.	• Limited payload capacity. • Inability to move an Army section in single move. • Unable to provide Special Forces with rapid tactical mobility for counter terrorism tasks.

[3] Note all costs throughout the options are rough order estimates.

Option 2 One type of aircraft	Not provided at that time	• All medium utility capability requirements met. • Reduced logistical burden.	• A medium utility helicopter presented an unacceptable risk of accidents for pilot training. • Inefficient use of capability for light tasks. • Little opportunity for rapid and/or short deployment, for example, civilian support tasks.
Option 3 Three types of aircraft	Not provided at that time	• Provides operational flexibility.	• Large logistic burden to support three different aircraft.
Option 4 11 medium utility aircraft 4 training aircraft	Capital 528-553 Whole of Life 1248-1374	• Meets all key operational requirements.	• Insufficient training helicopters for deployable light utility capability. • Medium utility helicopter inefficiently used for light tasks. • No allowance made for attrition.
Option 5A 15 medium utility aircraft 8 training and light utility aircraft	Capital 658-684 Whole of Life 1437-1469	• Meets all key operational requirements.	• Capital and whole-of-life costs high. • No allowance made for attrition.
Option 5B 9 medium utility aircraft 8 training and light utility aircraft	Capital 464-503 Whole of Life 1099-1168	• Meets all key operational requirements.	• Concurrent tasking may delay response for counter terrorism. • No allowance made for attrition.
Option 5C 10 medium utility aircraft 10 training and light utility aircraft	Capital 520-568 Whole of Life 1189-1263	• Optimum mix to meet all key operational requirements. • Effective mix for humanitarian aid and disaster relief operations. • Light utility suitable for intelligence, surveillance, target acquisition and reconnaissance roles.	• There were no disadvantages reported.

Assessment	Option 1 was discounted because it failed to meet operational requirements. Option 2 was discounted because it posed an unacceptable risk of accidents during pilot training. A large complicated helicopter is less responsive and harder to recover from adverse situations that could be experienced during pilot training. Option 3 provided the operational flexibility, but the costs for supporting three airframes were considered too high due to a large logistics burden. Option 4 was considered an inefficient use of a medium utility helicopter for light tasks, and the requirements for counter terrorist tasks were not met fully. Option 5A was considered too expensive, while Option 5B met all the operational requirements, but readiness could be compromised if concurrent tasks were required. Option 5C was preferred because it met all key operational requirements.

d. 2003 - Options used to assess the Training and Light Utility Requirements

Options for Training and Light Utility Helicopter Capability						
Role	**Capacity**	**No of Aircraft**	**Personnel**	**Hours per year**	**Operating Cost per year (NZ$ million)**	**Fleet Acquisition Cost (NZ$ million)**
Training	Aircrew training only	4	4 pilots dedicated to training (all qualified helicopter instructors). 2 helicopter crewmen. 17 maintenance personnel.	1800	2.1	17-24
Training and light utility	Training and limited deployments 4 training aircraft 2 deployable aircraft – no rotations	6	7 pilots (5 qualified helicopter instructors and 2 light utility helicopter pilots). 2 helicopter crewmen. 20 maintenance personnel.	2550	2.8	26-37
Training and light utility	Training and deployment 4 training aircraft 2 deployable aircraft – rotations possible	8	10 pilots (6 qualified helicopter instructor and 4 light utility helicopter pilots). 4 helicopter crewmen. 32 maintenance personnel.	3300	4.1	33-47
Training and light utility	Training and deployment 4 training aircraft 3 deployable aircraft – rotations possible	10	13 pilots (6 qualified helicopter instructor and 7 light utility helicopter pilots). 5 helicopter crewmen. 37 maintenance personnel.	4050	4.9	40-57
Assessment	Six to eight aircraft would enable aircrew training, provide limited capacity for deployments of short duration (in the Pacific), and enable a limited amount of tasking in support of the NZDF, the Government and other departments and agencies.					

e. 2006 - Options of Capability Levels and User Requirements

Capability Levels and User Requirements for Training and Light Utility Helicopter				
Level of Capability	**Costs (NZ$ mil)**	**Advantages**	**Disadvantages**	**User or Configuration Requirements**
Level one Like for like direct replacement of Sioux 4 aircraft	11	• Basic principles of helicopter flight. • General handling training.	• Fails to provide adequate training for NH90 and Seasprite helicopters. • Need to find additional training providers for twin engine aircraft and advanced flight instruments. • Ineffective training burden imposed on NH90 helicopter. • No capacity for light utility tasks.	• Basic single engine handling trainer aircraft.
Level two Lead-in training for NH90 helicopter 4 aircraft for basic pilot training	55	• Fleet of four commercial aircraft would meet the requirement. • Four aircraft meet basic pilot training needs.	• Four aircraft do not meet helicopter crewmen training requirements. • No capacity for light utility tasks if only four helicopters acquired.	• Twin engine aircraft. • Integrated glass cockpit, including: • Auto-pilot; • Multi-function displays; and • Electronic flight management system.
Level three Training and restricted light utility role 6 aircraft	81	• Allocating light utility role to training aircraft is more cost-effective use of NH90 and Seasprite. • Able to conduct short term deployments.	• Only able to operate light tasks in benign environment. • Precludes counter terrorism tasks and police operations support.	• Twin engine aircraft. • Integrated glass cockpit, including: • Auto-pilot; • Multi-function displays; • Electronic flight management system. • Ability to communicate with other government agencies. • Cabin space for instructor, crewmen and ‘stretcher patient’. • Lifting equipment, winch and cargo hook.

Level four Training and full light utility role 6 aircraft	110	• Allocating light utility role to training aircraft is more cost effective use of NH90 and Seasprite. • Able to support: • Police operations; • Counter terrorism tasks;and • Deployments. • Able to transfer sniping and command and control roles from NH90 to training and light utility helicopter.	• Skidded undercarriage is not suitable for ship operations and is not optimised for training transition to the wheeled NH90 and Seasprite helicopters.	• Twin engine aircraft. • Integrated glass cockpit. • Ability to communicate with other government agencies. • Cabin space for instructor, crewmen and 'stretcher patient'. • Lifting equipment, winch and cargo hook. • Integrated secure communications. • Self protection equipment.
Level five Training and full light utility with growth potential 6 aircraft	110	• Maximised training value – also training for ship operations in cheaper and easier to handle aircraft. • Cost effective use of NZDF helicopter capability. • Provide future growth potential. • Provide uniformity of lead-in training to NH90 and Seasprite helicopters. • Acquisition of level five capability is cost-effective.	• Level five capability is noted as a 'preference', there were no disadvantages listed.	• The same as level four but with a preference for a wheeled undercarriage.

1.3 Description of the Capability and Operational Requirements

Capability Requirements-The capability requirements necessary to support policy objectives include:

Pilot and Helicopter Crewmen Training Requirements:

- Training for helicopter pilots.
- Training for qualified helicopter instructors.
- Initial training for helicopter crewmen.
- Training for helicopter crewmen instructors.
- Conversion to aircraft types and consolidation flying for pilots destined for NH90 and Seasprite helicopters.
- Continuation training for helicopter pilots.

Light Utility Requirements:

- Air movement.
- Command, control and communications.
- Special operations – limited counter terrorism tasks.
- Search and rescue.
- Aero-medical evacuation.
- Aerial sustainment.
- Light observations tasks.
- Ferry.
- Maintenance test flying.

Operational Requirements- The operational requirements necessary to support the capability include:

- Cruise at 140 knots indicated air speed, at sea level, in normal conditions.
- Fly in instrument meteorological conditions.
- Carry four passengers/crew in the cabin.
- Conduct single or dual pilot operation with removable instructor controls.
- Accommodate the maximum size range of pilots while wearing night vision equipment.
- Operate with twin gas turbines.
- Conduct winch training.
- Conduct under-slung load training.
- Conduct (ship) deck operations.
- Operate using night vision instrument systems without distraction.
- Operate with a fully integrated digital cockpit.
- Operate with a four axis autopilot.
- Survive small arms fire.
- Be transported by C-130 Hercules aircraft with minimal disassembly.
- Conduct external secure communications.
- Mount a MAG-58 door gun.

NOTE: The operational and capability requirements listed here were those identified in the suite of requirement documents produced during the Capability Definition Phase. During the tender and contract negotiation process these requirements are converted into function and performance specifications (FPS) that become the contracted deliverables. During the contract negotiation process the operational requirements have to be balanced against cost or viability considerations.

1.4 Schedule of Capability Definition Phase

Dates	Duration	Explanation
2001 – 2006	6 years	• 2001-2004: Analysis of helicopter training requirements. • 2004: Assessment of an offer from the Republic of Singapore Air Force for nine Fennec helicopters. • 2003-2006: Analysis of light utility helicopter tasks. • Note that in 2004, the project moved into the capability acquisition phase when Cabinet agreed for the Ministry of Defence to release to industry an Invitation to Register interest.

1.5 Expenditure of Capability Definition Phase

	Expenditure (NZ$)	
Definition Phase	2003/04	213,676.50
	2004/05	53,805.60
	2005/06	185,621.64
	2006/07	155,049.52
	2007/08	40,000.24
	2008/09	NIL
	Total	648,153.50
Explanation	During the definition phase, the above costs were classified as pre-acquisition costs and were met from the NZDF's operating budget. Over the FY03/04 to FY05/06 period, costs for the utility helicopter project included both the training/light and medium capability definition studies. The figures for the FY06/07 to FY07/08 period are for the training/light utility helicopter project only.	

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2002 [4]	2003 [5]	2004 [6]	2006 [7]
Costs	NZ$11 M	NZ$11 M	NZ$400-550	NZ$110 M
Explanation of variance	In the early stages of the project, the 2002/2003 figures were based on only replacing the basic helicopter pilot training capability. Assessments between 2003/4 to 2006 investigated the affordability of the light utility role as well as the training role.			

1.7 Estimates of Acceptance Date made in the Capability Definition Phase

Estimates	Initial Estimate	Updated Estimate	30 June 2013 Estimate	Actual
Date	Not provided at that time	Early 2009	NA	All aircraft were delivered by late 2011
Explanation of variance	More information about the construction of the helicopters and development of their associated systems has become evident as the project has progressed, and this further understanding has led to changes to the estimates and, accordingly, the schedule.			

[4] This figure was for the replacement for the training role of the Sioux helicopters.
[5] This figure was for the replacement for the training role of the Sioux helicopters.
[6] This figure included replacement for the Iroquois and Sioux helicopters.
[7] This figure was for the replacement of the Sioux and to provide a training and light utility helicopter capability.

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of Acquisition Phase

Description of acquisition work

In December 2003, Cabinet agreed that the Ministry of Defence engage with industry to seek further information on the capability, availability, price and supply of helicopters to meet the NZDF's light utility and training requirements. An Invitation to Register Interest was issued in June 2005. Four companies responded with potential helicopters to fill the capability requirements. The requirements for training and light utility tasks, including counter-terrorism, were re-confirmed during the selection process for the medium utility helicopter, as any aircraft acquired would supplement the medium utility helicopter.

In 2006, Cabinet agreed that the Ministry of Defence issue a Request for Tender for up to six aircraft, within a funding limit of NZ$110 million. Evaluation of the responses to the tender judged that the A109 training and light utility helicopter, based on the version being produced by AgustaWestland for the Swedish Defence Force, would provide the best available training and light utility platform. The evaluation determined that six helicopters would cost NZ$154 million, in excess of the funding limit. Five A109 helicopters and a flight simulator would, for NZ$140 million, provide an affordable solution for training, light utility tasks and counter-terrorism support, as well as greater potential for maritime light utility tasks. Defence put this option to Cabinet in 2007, and Cabinet agreed to the purchase of a fleet of five A109s and a flight training simulator. In May 2008 a contract was signed with AgustaWestland for the aircraft at a cost of NZ$139.3 million. The project's budget allocated funding for spares was used in July 2008 to fund an additional helicopter to be broken down for spares.[8]

A Resident Project Team was based in Cascina Costa and then Vergiate, Italy to oversee the acquisition from June 2008 to December 2011. The team worked with the contractor to ensure the helicopters were provided within budget, to schedule, and to the contract's function and performance specifications. A key task for the project team was monitoring the quality of AgustaWestland's production line and product support programmes at its various European sites. The team has also worked closely with Sweden's Ministry of Defence, whose parallel acquisition of the A109LUH training and light utility helicopter is providing a valuable source of knowledge for resolving production line issues. For example, alongside the Swedish team, the project team were instrumental in establishing a 'user-group' to allow all A109LUH customers to share appropriate knowledge and experiences.

Following the delivery of the final helicopter and the simulator in late 2011, the Resident Project Team has returned to New Zealand and disbanded. In January 2012 the Acquisition Project Manager transitioned to a liaison role between the MoD and NZDF in order to oversee the closure of the remaining items of contractual work.

[8] Breaking down an aircraft for spares is an established and cost efficient way of obtaining a spares pool. This approach is adopted by other Defence partners.

How Defence decided to acquire the Capability Solution

Responses to the 2005 Registration of Interest		
	Aircraft	**Cost (NZ$ million)**
Single-engined aircraft	Eurocopter AS350B3 Squirrel	Capital 27.6 Whole of Life - Not assessed at that time.
	Bell 407	Capital 30.4 Whole of Life - Not assessed at that time.
Twin-engined aircraft	AgustaWestland A109E Power ***Preferred Tenderer***	Capital 38 to 40 Whole of Life $45.02 per year, based on a fleet of six aircraft.
	Boeing/MD 902 Explorer	Capital 40 Whole of Life $44.41 per year, based on a fleet of six aircraft.
	Eurocopter EC135 P2T2	Capital 44.7 Whole of Life $40.36 per year, based on a fleet of six aircraft.
Assessment	The four unsuccessful tenderers did not meet the training and light utility capability and operational requirements for a variety of reasons.	

Options to Acquire Training and Light Utility Helicopter[9]			
Option	**Benefits**	**Risks**	**Cost (NZ$ million)**
Option 1 A109 light utility helicopter 5 aircraft 1 flight training simulator ***Preferred Option***	• Meets level four and five capability requirements. • Provides growth potential for the maritime light utility role.	• No allowance for attrition. • Affordability of acquisition costs higher than the funding limit prescribed by Cabinet. • Higher operating costs.	Capital 140 Operating Costs per year 5.43
Option 2 EC 635 5 aircraft	• Meets all level four capability requirements. • Lower acquisition costs than A109.	• No allowance for attrition. • Does not meet level five capability requirements, and nor is there future growth potential for maritime duties.	Capital 126 Operating Costs per year 5.14

9 Two companies responded to the Request for Tender to supply six training and light utility helicopters.

1 flight training simulator	• Lower operating costs than A109.	• Difficult to deploy by C-130 Hercules.	
<u>Option 3</u> A109 light utility helicopter 4 aircraft in altered configuration 1 flight training simulator	• Provides an option that is close to the Cabinet funding limit.	• Does not meet level four capability requirements. • Provides inadequate counter terrorism capability – little capacity for other government agency support. • Higher operating costs per aircraft. • No specialist equipment. • No allowance for attrition.	Capital 114 Operating Costs per year 4.2
<u>Option 4</u> EC 635 5 aircraft in an altered configuration 1 flight training simulator	• Provides an option that is close to Cabinet funding limit. • Meets most level four capability requirements. • Lower acquisition costs than A109. • Lower operating costs than A109.	• No allowance for attrition. • Compromises some level four capability requirements. • Only able to operate in benign environments. • Does not meet level five capability requirements and nor is there future growth potential for maritime duties. • Limited specialist equipment.	Capital 110 Operating Costs per year 5.14

2.2 Project Budget

Budget variation

	Date Approved	Total (NZ$ million)
Original budget	29 April 2008	139.3
Current approved budget	27 April 2010	140.5
Variation on approved budget		1.2

Explanation of major budget variations

Date	Total	Explanation
27 April 2010	1.2	Funds to cover adverse foreign exchange movements

2.3 Financial Performance

Project expenditure to 30 June 2013

	Total (NZ$ million)
Life to date expenditure	123.6
Remaining balance of approved budget	16.9
Forecast commitments	8.8

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	140.5
Total forecast expenditure	132.4
Gross project variation (forecast)	8.1 under spend
Foreign exchange impact	(4.6)
Actual project variation (forecast)	3.5 under spend

Variance explanation

Nature of variation (forecast)	Total (NZ$ million)	Explanation
Actual project variation	1.6 favourable	**Prime Contract Under Spend on Spares.** The Project Team is forecasting an under spend of NZ$0.6M due to savings to be made by not taking up the full options of spares and radios. **Project management costs and ancillary contracts.** The latest forecasts include a NZ$0.3 Million over spend in ancillary contracts and a NZ$0.24 Million under spend on project management costs. Project Management and Ancillary expenses are not initially determined on a fixed milestone payment basis. They are forecasts that will change as the project progresses and as more reliable information becomes available on how these funds need to be allocated.
Foreign exchange impact	4.6	**Note.** Whilst these funds contribute to the total under spend, they cannot be used by the project team because the extra funds are not part of the approved budget.
Total	6.2	

Project contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency	6.2 (EUR 3 million) 1.7 7.9
Total contingency allocated	4.6 0.22 Foreign Exchange Impact
Remaining balance	3.3

Explanation of major contingency draw downs

Draw down	Total (NZ$ million)	Explanation
Technical and Engineering Support	0.89	This included: • improvement of the Flight Simulator; • restoration of communications equipment; • improvement of the Global Positioning System; and • an engineering review.
Cancellation of snow skis	(0.64)	Return of funds from cancellation of snow skis.
Qualification Test Guide for Flight Training Simulator	1.27	To simplify the certification and maintenance of the flight training simulator.
Global Positioning System hardware	(0.04)	Return of funds for Global Positioning System hardware.
Qualification Review Work – approved June 2010.	0.10	Engagement of the Italian Civil Aviation Authority to assist in the Qualification Review work.
Visual Database Generation Station Training – approved July 2010.	0.06	To provide pre-requisite training for the Visual Database Generation Station (to be operated in support of the flight training simulator).
Fly Away Kit – approved October 2010	0.72	For the provision of a Fly Away Kit - a set of spares held to specifically support deployed aircraft.

Flight Training Device Field Service Representative – approved November 2010	0.80	Funding for a Field Service Representative in support of the Flight Training Device.
Dehumidification Equipment for Aircraft – approved October 11	0.20	Funding to purchase dehumidification equipment for aircraft to prevent avionics unserviceability and corrosion (as general issues, not solely specific to A109).
Flight Planning System – support for conduct of FPS acceptance – approved June 2012	0.37	Funding to provide a specialist consultant to conduct evaluation and acceptance testing of the Flight Planning System.
Training Course – Maintenance of Emergency Floatation System – approved June 2012	0.09	Funding to provide for maintenance training on the Emergency Floatation System provided with the A109LUH (NZ).
Additional Spares & Protective Equipment – approved October 2012	0.27	Funding to purchase additional spares not on the attrition framework.
Additional Spares & Protective Equipment – approved October 2012	0.12	Funding to purchase additional ground support equipment.
Dehumidification Kits – approved May 2013	0.1	Funding to purchase Five Dehumidification Kits from Sweden.
Emergency Floatation System May 2013	0.08	Funding for the provision of Spares for the Emergency Floatation System.
Total	4.4	

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date

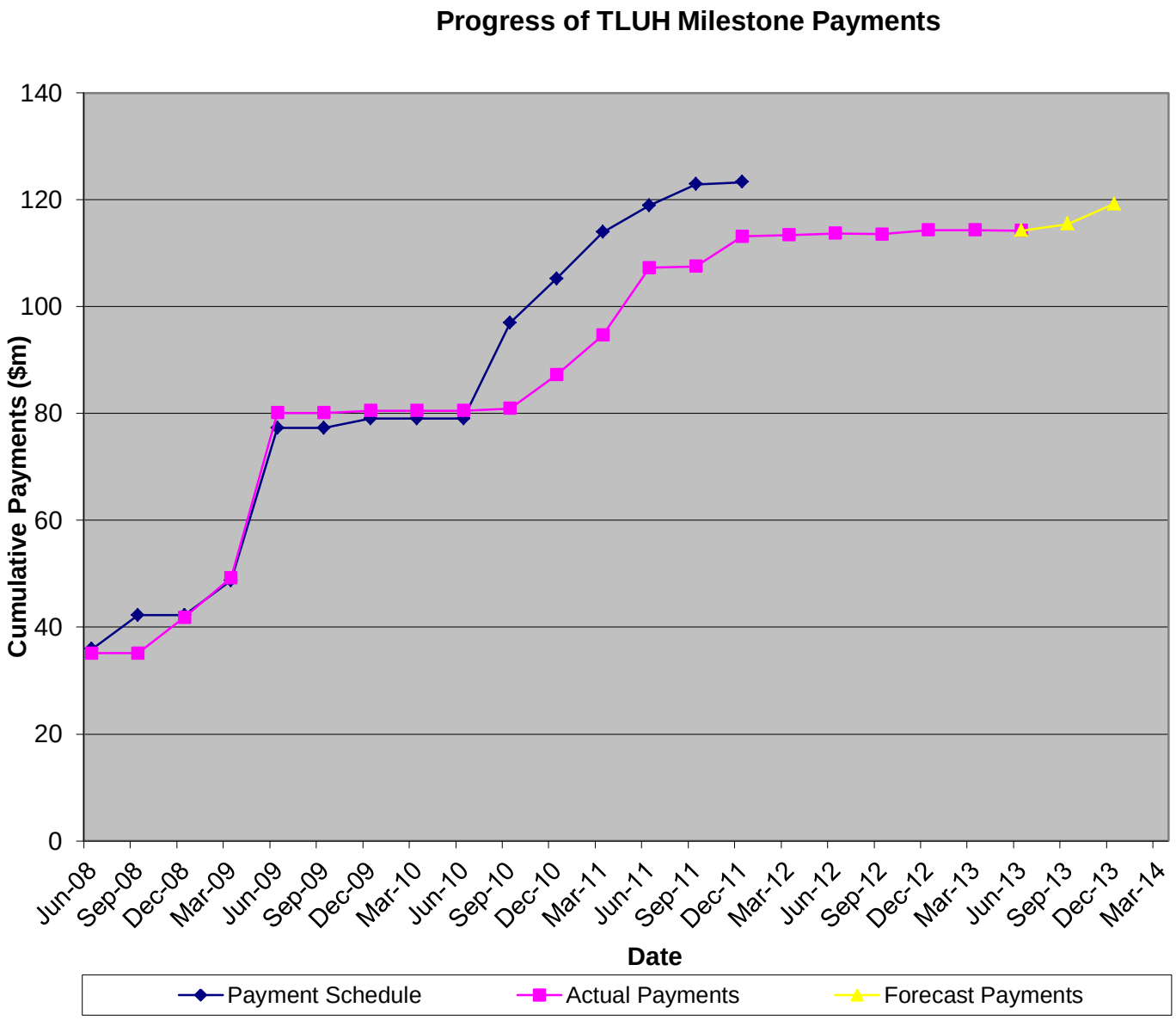
		Original forecast at Contract Signing	30 June 2013 forecast / achieved	Variation in Acquisition phase (months)
Acceptance Date	First Helicopter	September 2010	achieved: December 2010	3
	Fifth Helicopter	May 2011	achieved: September 2011	4
	Sixth Helicopter	N/A	achieved: November 2011	NIL

History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
June 2010	2	This delay has resulted from minor issues arising in the formal qualification testing of the A109s. There is a corresponding delay in reaching the Qualification Review. The delivery date of the last helicopter remains unchanged. **Note.** If the Qualification Review is not held in September, the delivery of the first two aircraft will not occur in 2010.
June 2011	3 – 4	Date for the conduct of Qualification Review 2 is rescheduled. The delivery of the final helicopter is tied to the successful outcome of this review.

Progress TLUH against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual milestone payments against the milestone payments schedule agreed to in the prime contract[10]. Milestone payments are made upon the contractor's provision of key deliverables and are therefore a good way to identify timing and size of schedule slippage.



[10] The milestone payments schedule has cumulative payments that are less than the total budget because it excludes the ancillary and discretionary costs of the project.

SECTION 3: INTRODUCTION INTO SERVICE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the operational test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service Phase

Description of Introduction into Service phase

The RNZAF stood up a Helicopter Introduction into Service Team in July 2006. The Introduction into Service Management Plan identifies the team's work streams for the introduction of both the medium utility (NH90) and the A109LUH (NZ) training/light utility helicopters. The work streams are structured around:

- management of personnel and training for the new aircraft types;
- research and development of the new systems;
- information management to and from the aircraft;
- concept of operations and doctrine for the new aircraft;
- infrastructure and organisation required to support the aircraft;
- equipment and/or platforms used to support the aircraft;
- issues relating to airworthiness of the aircraft; and
- finance related to operating the new aircraft types.

The plan includes an external communications strategy, which describes how consultation should be carried out with other government agencies, such as New Zealand Customs and the New Zealand Police. The plan also details the process of maintaining a risk register (now joint with MoD (Acquisitions)) and producing mitigation plans should they be needed, along with the reporting requirements to the Defence governance system. The main project dependencies detailed were:

- establishment of the Integrated Mission Support Squadron (now No 230 (Mission Support) Squadron);
- acquisition of the NH90 helicopters;
- interface with Project Protector vessels;
- infrastructure – the successful completion of Project Takitini; and
- provision of the flight training simulator.

The Introduction into Service Team is supported by an RNZAF Integrated Logistics Support Team. This latter team commenced work in 2004 to analyse the logistics support requirements of the new utility helicopter fleets. The logistics team work to an Integrated Logistics Support Plan that is a companion to the Introduction into Service Plan. The plan focuses on through-life support and life cycle costings and is supported by subordinate plans that cover the support requirements for:

- logistics;
- engineering;
- maintenance;
- supply;
- training; and
- computer and data management.

In 2006, the RNZAF established a 'Programme Management Office' to coordinate the helicopter projects (NH90 and A109LUH (NZ)), in conjunction with the three concurrent fixed-wing projects. In October 2010 this was subsumed into the HQ NZDF Capability Branch, Programme Delivery, as 'Air Introduction into Service'.

Status of Introduction into Service phase

The final phase of the Introduction into Service Plan is the merger of the NH90 and the A109LUH (NZ) helicopters into a single unit – No. 3 Squadron – which is currently operating the Iroquois helicopters at RNZAF Base Ohakea. To ensure this merger is seamless, a 'Helicopter Transition Unit' (HTU) has been established and a 'Helicopter Transition Management Plan' has been developed, which integrates the build up of the new helicopter capabilities with the drawdown of the legacy capabilities. A Joint Project Office (JPO) was set up within the HTU in 2011 to integrate all aspects of helicopter capability delivery including Trials and Development (T&D)[11], Operational Testing and Evaluation (OT&E), training, retrofit, regression testing and follow on Acceptance Testing and Evaluation (AT&E).

An initial A109 capability release has been achieved in this financial year which has allowed the conduct of New Zealand based non-tactical transport tasks with the helicopter. Capacity is, however, limited by available crews at this time. Training for the first cadre of previous Iroquois maintainers and aircrew has been conducted this will continue in order to grow qualified personnel capacity. This training also provides a basis for finalising basic helicopter aircrew training which will begin towards the end of 2013.

At the heart of the A109 training system is the Synthetic Training System. This consists of a simulator (Level 3 Flight Training Device, with motion and 220° visuals) and a Virtual Interactive Procedure Trainer, housed within a purpose built training centre, adjacent to the new helicopter squadron hangar complex. This equipment has been delivered by the MoD to the NZDF and has been accepted into service. The Synthetic Training System has been used to underpin the training of two Transition Courses, transitioning pilots and crews from the Iroquois to the A109. The ability to deliver training outputs and develop a light utility capability has been impacted by reduced staff numbers due to recent resignations, particularly of pilots.

3.2 Schedule of Introduction into Service

Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.

Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.

Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.

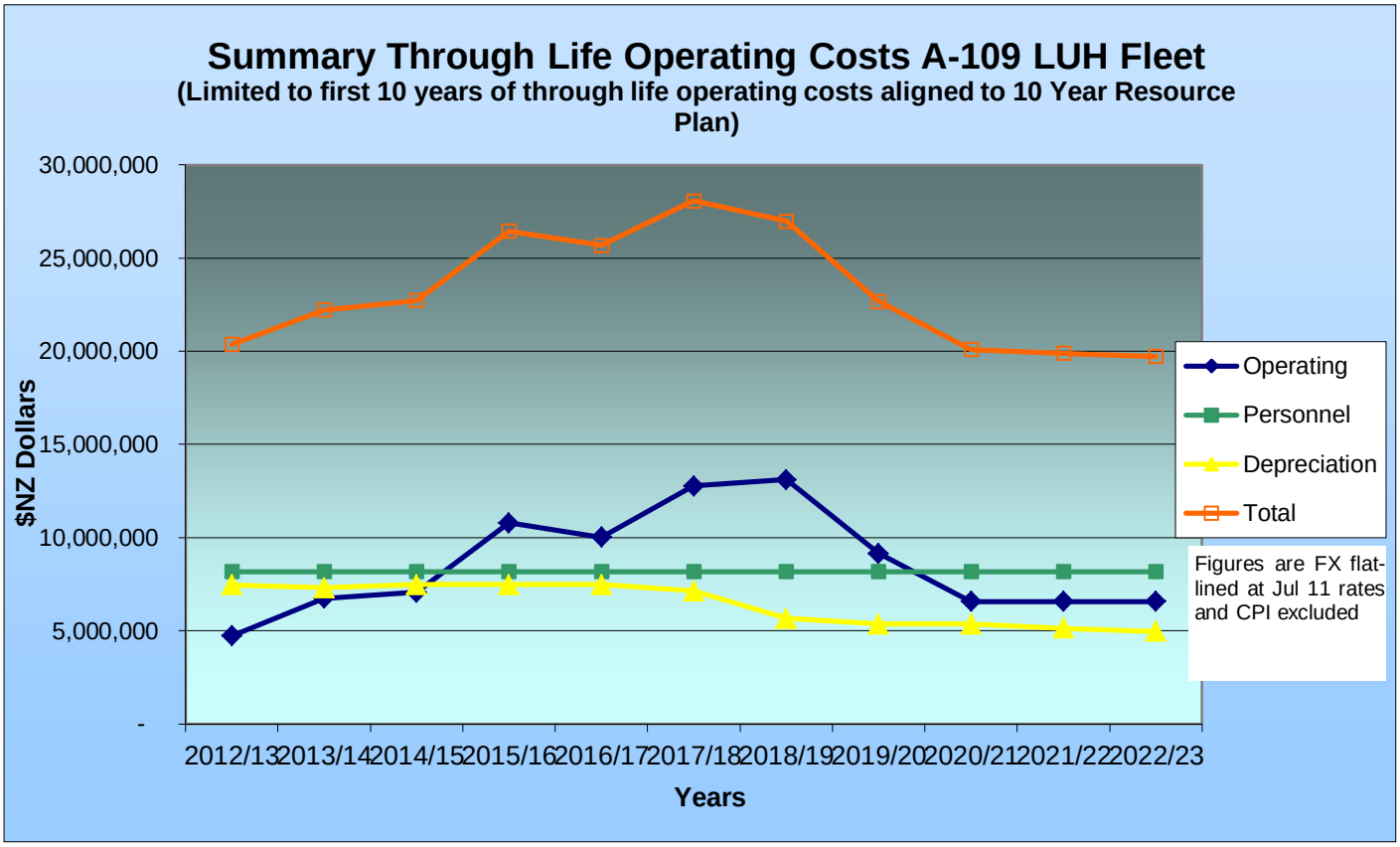
NZDF Output Plan, 2009, S1-12

[11] T&D is a component of IIS and is conducted by the user Unit. T&D is where the system is characterised, Standard Operating Procedures are developed and the user units develop their familiarity and proficiency with the system.

	Initial Estimate[12]	30 June 2013 Estimate	Actual	Variance (months)
Date platform accepted by Crown	September 2010	N/A	December 2010	3
Delivery of platform to New Zealand	Late 2010	N/A	March 2011	3
Commence operational test and evaluation	Not provided	N/A	April 2011	N/A
Finish operational test and evaluation	March 2011	July 2014	N/A	-
Achieve initial operating capability	December 2011	N/A	September 2011	-3
Establish operational level of capability[13]	December 2012	July 2014	N/A	-
Establish directed level of capability	Not known at time	July 2014[14]	N/A	-
Explanation	The A109 provides both a training and light utility role. The above capability milestones cover the development of both of these roles to a level of capability which will be developed in phases and in concert with the NH90. Completion of OT&E represents all aspects of required capabilities tested. The provision of initial operating capability represents basic NZ transport tasks only with limited qualified crews.			

[12] This date was chosen because it was when the A109LUH (NZ) helicopter was selected and concrete planning for the aircraft's Introduction into Service began.
[13] This is required for Employment Context 1D: Terrorist and Asymmetric Threats.
[14] The capability is achieved in combination with the development of the NH90.

Summary of Through Life Operating Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Operational Requirements

Progress as at 30 June 2013

The Explanations are Subject to Change as the Project Progresses and Solutions are Implemented

Operational Requirements	Delivery	Comment
Cruise at 140 knots indicated air speed, at sea level in normal conditions	Yes	
Fly in instrument meteorological conditions	Yes	
Carry four passengers/crew in the cabin	Yes	
Conduct single or dual pilot operation with removable instructor controls	Yes	Remains subject to further analysis and procedure development.
Accommodate the maximum size range of pilots while wearing night vision equipment	Yes	
Operate with twin gas turbines	Yes	
Conduct winch training	Yes	
Conduct under-slung load training	Yes	
Conduct (ship) deck operations	Not yet	While on paper the helicopter is capable of deck operations, a significant volume of work is required to achieve the capability. By the end of 2011 the ability to transport the A109 on HMNZS *Canterbury* had been investigated and an aircraft landed on board *Canterbury* to check interfaces. The results of this testing are being evaluated with work ongoing to mitigate the minor issues in compatibility identified. The ability to conduct embarked 'deck' operations is not scheduled until 2015 at the earliest due to resource limitations.
Operate using night vision instrument systems without distraction	Yes	
Operate with a fully integrated digital cockpit	Yes	
Operate with a four axis autopilot	Yes	
Survive small arms fire	Yes	The A109 LUH (NZ) will meet level five requirements for self-protection but meeting these requirements alone will not guarantee survival if the aircraft is engaged by small arms fire. This is the case for any helicopter that accords with these requirements.
Be transported by C-130 Hercules aircraft with minimal disassembly	Yes	The transportation equipment has been redesigned to meet operational requirements.
Conduct external secure communications	Yes	
Mount a MAG-58 door gun	Yes	

Assessment: Only one capability is yet to be delivered. Full capability is expected by 2015.

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years.

Active Risks at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	There may be a delay in achieving Qualification Review 2 (QR 2).	Acquisition / Introduction into Service	Low	Impact on conduct of Operational Test and Evaluation.	Likely	Early review of draft qualification documentation and schedule. QR2 and QR3 have been accomplished. QR4 is scheduled for September/October 2013.

5.2 Issues

	Issues	Phase	Severity	Impact	
1	The Flight Planning System has failed acceptance.	Acquisition /Introduction into Service	Medium / High	From an IIS perspective 'work around' solutions are being implemented to allow flying operations and operations testing and evaluation to proceed albeit with lower efficiency.	The acquisition team has worked hard with Industry to develop an initial solution with RNZAF Subject Matter Expert (SME) user feedback loops contributing to progressive improvement over an agreed period. Final acceptance testing is planned for July 2013.

2	Introduction into service personnel resources are limited. There are single points of failure. Recent pilot resignations have exacerbated the issue.	Introduction into service	Extreme	The conduct of IIS to originally planned milestones and achievement of planned flying rates has not been achieved because of the limited number of trained aircrew.	Constant management of tasks, priorities and available resources and expectation as to what can be achieved and by when. An organisational redesign process is underway.
3	There is an issue with the cabin roof restraint rings configuration.	Introduction into Service	Medium	Restricted movement and reduced outputs from A109 crewmen.	Work has been conducted to mitigate the issue. Further work is underway to provide an enduring solution.

PROJECT DATA SHEET: C-130H LIFE EXTENSION

PROJECT DESCRIPTION

This project is extending the life and availability of the five RNZAF C-130H Hercules aircraft for airlift and transport tasks through to at least 2020. This is being achieved by upgrading the avionics, flight deck communications, navigation, mechanical and self-protection systems as well as extensively refurbishing the airframe structure. The project is also procuring a part task trainer to assist pilot conversion training.

Policy Value

The C-130H provides essential air transport and airlift that enhances the Government's options for:

- defending New Zealand's sovereignty, its Exclusive Economic Zone and territorial waters;
- conducting operations to combat terrorism or acts of sabotage;
- operating with the Australian Defence Force to discharge our obligations as an ally of Australia;
- contributing to peace and stability operations in the South Pacific;
- contributing to whole of government efforts at home and abroad in resource protection, disaster relief, and humanitarian assistance; and
- participating in Five Power Defence Arrangements and other multilateral exercises or operations.

Government Approval Milestones[15]

Government Approval Milestones

Project Initiation: Occurs once a capability requirement has been identified by Defence and a broad assessment of the options for meeting the capability requirement has been authorised by the Chief Executives and noted by the Minister of Defence.

Approval to Initiate: Attained when Cabinet agrees to the project's inclusion on the capital acquisition plan and authorise Defence to engage with industry to refine its initial assessment with more accurate information.

Approval to Commence: Attained when Cabinet agrees to the refined capability requirement and authorises the Ministry of Defence to commence a formal tender and tender evaluation process.

Approval to Negotiate: Attained when Cabinet agrees to the preferred tender, specifies funding limits, and authorises the Ministry of Defence to enter into contract negotiations.

Approval to Commit: Attained when Cabinet agrees to the final contract and authorises the Ministry of Defence to sign the contract and commit funding.

[15] These are generic titles for Cabinet approval points in the capability definition process. Whilst the actual titles of Cabinet Papers have varied, the approvals and direction they were seeking from Cabinet has been broadly consistent with the definitions provided.

Date	Approved By	Approval
2 April 2001	Cabinet CAB Min (01) 10/10	**Project initiation.** The NZDF's Sustainable Capability Plan assessed the retention of a strategic and tactical airlift and air transport capability as a high priority. A Fixed Wing Transport Review was undertaken to identify options and a technical study was carried out to assess the feasibility of extending the life of the C-130H.
18 November 2002	Cabinet CAB Min (02) 31/6	**Approval to Initiate.** Cabinet approved the Review's recommendation to initiate a project based on a 15 year life extension of the C-130H. Cabinet authorised MoD to engage with industry.
6 October 2004	Cabinet CAB Min (04) 23/5	**Approval to Negotiate.** Defence was authorised to carry out negotiations with L3-Spar. Note: The Cabinet Paper was titled 'Approval to Proceed'
6 December 2004	Cabinet CAB Min (04) 40/11	**Approval to Commit.** Contract signed with L3 Spar Aerospace.
19 April 2007	Cabinet CAB Min (07) 12/7	**Approval of Contract Variation.** Cabinet approved a change to the contract to upgrade the C-130H's self-protection system (SPS).
28 July 2010	Cabinet EGI Min (10) 17/8	**Approval of Additional Funding.** Cabinet approved additional funding for the proposed solution for completion of the production phase.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

In 2000 Defence began formally considering options for maintaining its tactical air transport capability. An initial study was commenced in 2000 to examine the feasibility and likely costs of extending the life of the existing C-130H fleet. The feasibility study identified that an upgrade must address:

- the preservation of the airframe's structural airworthiness;
- the ongoing support of the mechanical and avionics systems; and
- the need to meet evolving communications and navigation requirements.

In March/April 2001, Cabinet agreed that the NZDF's airlift and air transport capabilities should be retained.

In November 2001, a contract was signed with Marshall Aerospace of the United Kingdom to carry out a Life of Type study for the C-130H. The study was designed to identify the extent of refurbishment and technical modifications that the C-130H fleet would need if its life was to be extended. In addition to the Life of Type study, several options for retaining the capability were assessed (see table 1.2a).

Following the Life of Type study a Policy and Capability Review of the Royal New Zealand Air Force Fixed Wing Transport Fleet confirmed the policy roles and operational tasks of the fleet. The review also analysed the option to purchase the C-130J Hercules as part of Australian Defence Force's purchase of the type, and compared this with the benefits of extending the life of the C-130H fleet.

The capability project team then prepared and released an Operational Concept Document in June 2003. This document identified the key operational requirements necessary to support defined tactical tasks such as in theatre transport of troops or emergency medical evacuation. The operational requirements included, among others, tactical airlift, modern avionics systems, and enhanced self-protection systems.

How Defence analysed the requirements options in the Capability Definition phase

It was determined that, aside from the C-130H and the C-130J, there were no other aircraft that could provide the specified operational requirements. The two principal options that were looked at included:

- purchasing up to eight C-130Js alongside the Australian Defence Force; or
- extending the life of the current C-130H fleet by significantly refurbishing and upgrading the fleet.

A 2002 Joint User Group identified many risks associated with the C-130J option. The risks included:

- operating issues with the airframe, and communication and navigation systems that were inhibiting its introduction into service in other air forces;
- a high acquisition cost (totalling $1-1.2 billion); and
- potentially high support costs when compared to the C-130H fleet.

The analysis concluded that it was feasible and economical to extend the life of the C-130H fleet out to 2017. This option also gave Defence more time to identify a suitable replacement aircraft. A November

2013 “Life of Type” Study has revised the life of the C-130H fleet to at least 2020. Cabinet agreed on 18 November 2002 that New Zealand would not purchase new C-130J aircraft and authorised the Minister of Defence to seek proposals to upgrade the C-130H aircraft.

How Defence considered interoperability

To achieve the Government’s policy objectives, the NZDF had to be able to operate with the Australian Defence Force and other key Defence partners. The NZDF also needed to be able to operate in coalition with other key defence partners across the Asia-Pacific region. Both options were expected to meet these requirements.

How Defence considered through-life costs and issues

In Defence’s view, the C-130H option offered lower risks in through-life support costs and potential issues related to the aircrafts’ operation. Planning for through-life costs and known issues could largely be carried over from the old fleet. Many of the operational and maintenance issues that the C-130J had been experiencing had yet to be resolved by those operating the aircraft (including issues involving flight noise/vibration and limited availability of spare parts).

The Operational Support Document identified what the ongoing and new support requirements of the C-130H would be after the upgrade. New support requirements included reduced maintenance burden due to an increased time between component failures, and an increased need for software support.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare, assess, and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

a. Options assessed for delivering the C-130H LEP capability and operational requirements

Option	Cost estimates (NZ$ million)	Advantages	Disadvantages
Extend the life of the C-130H	252	• Achievable at economic cost. • Best balance between return on investment and the risks involved with extending aircraft life further than 2017. • Provides time for Defence to identify a suitable replacement aircraft.	• Decreased aircraft availability during upgrade. • Life extended only to 2017.
Purchase new fleet of C-130J aircraft	Between 1000 and 1200	• New aircraft has a longer service life. • More efficient propulsion system.	• High cost. • High support costs due to software-intensive systems. • No certification for tactical operations at time of analysis. • Current non-compliance with changing regulations for air traffic management.
Lease new fleet of C-130J aircraft	Unknown	• As above.	• Given the potential life of 40 years, a lease was expected to be the most expensive option.
Purchase used C-130s	Unknown	• Operating and maintenance history is likely to be similar to that of the current fleet.	• Used aircraft could have been in similar or worse condition than current fleet. • Fatigue in aircraft would be difficult to predict.
Purchase another type, Antonov AN70 or the then yet to be built Airbus A400M	Unknown	• Unknown.	• Lack of maintenance and operations support available for the AN70. • A400M was not available immediately.

1.3 Description of the Capability and Operational Requirements

Capability Requirements-The capability requirements necessary to support policy objectives include:

The key capability requirements:

- Provide tactical airlift operations (inter-theatre air transport) in moderate threat environments in support of NZDF deployments.
- Conduct airlift operations as part of coalition task force in support of our Defence partners.
- Conduct strategic airlift operations between New Zealand, the South Pacific, and the Asia Pacific.
- Assist in delivery of vital civil military tasks.

Operational Requirements- The operational requirements necessary to support the capability include:

- Tactical airlift to allow flying operations or missions within a 'theatre of operations'. This requires the ability to fly covertly, reach low-altitude drop zones and land on short prepared and unprepared airfields.
- Strategic airlift to allow flying missions between New Zealand and a theatre of operations. This requires the capacity to travel medium to long distances at medium to high altitudes into prepared airfields using civilian air traffic regulations.
- A pre-mission planning system that can be used to prepare detailed flight plans that can be electronically transferred to an aircraft's mission system.
- Communications systems that comply with international air traffic regulations. They must also be able to stay connected to NZDF's Joint Force headquarters and operate securely alongside New Zealand's defence partners.
- Navigation systems designed to carry out tactical operations. This requires a high-resolution system allowing flying in high or low altitudes, in poor weather, and an ability to locate obscure airfields and drop zones. The navigation system also needs to comply with international air traffic regulations.
- Aircraft identification technology that distinguish the C-130H as a "friend" during in-theatre operations and prevent the C-130H from being targeted by friendly air and ground forces.
- A Self Protection System that allows can reduce the risk of being shot down by man portable air defence systems and allows operations in hostile environments.
- Search and Rescue only if other assets (such as P-3K Orion) were unavailable.

NOTE: The operational and capability requirements listed here were those identified in the suite of requirement documents produced during the Capability Definition Phase. During the tender and contract negotiation process these requirements are converted into function and performance specifications (FPS) that become the contracted deliverables. During the contract negotiation process the operational requirements have to be balanced against cost or viability considerations.

1.4 Schedule of Capability Definition Phase

Dates	Duration	Note
2 April 2001 to 6 December 2004	3.5 years before signing the contract	Definition work on the self-protection system continued after the contract was signed. Key RNZAF personnel were seconded to the Ministry of Defence's Acquisition Division to help with aligning operational requirements with the contractor's delivery of function and performance specifications.

1.5 Expenditure of Capability Definition Phase

	Expenditure (NZ$)
Life of Type Study	2.5 million
Definition phase	2002/03 2,768.51 2003/04 177,002.66 2004/05 24,275.12 2006/07 3,137.66*
Explanation	During the definition phase, the above costs were classified as pre-acquisition costs and were met from the NZDF's operating budget. *This cost was shared with the P-3 Orion Upgrade project and was used for definition of the self-protection system upgrades.

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2002	2003	2004	Contract Signing - December 2004
Costs (NZ$ million)	100-170 320	100-170 100-150	100-170 100-150	233.7
Explanation of variance	Between July and December of 2004 cost estimates were refined because Defence had approached the market with requests for tenders and was under contract negotiations with L-3 Communications Spar Aerospace of Canada (L3-Spar).			

1.7 Estimates of Acceptance Date made in the Capability Definition Phase

Estimates	Initial	Estimate at Contract Signing	30 June 2012 Estimate / Actual
First aircraft delivery	2nd Quarter 2007	2007	Provisional acceptance of the prototype aircraft occurred in September 2010
Last aircraft delivery	3rd Quarter 2009	2010	August 2014
Explanation of variance	The first schedule was a low-confidence estimate published in the June 2003 Defence Long-Term Development Plan. It forecast aircraft acceptance to occur between 2006 and 2008.		

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of acquisition phase

Description of acquisition work

Based on the Operational Requirements Document, the acquisition project team commenced a tender process in July 2003, and issued five requests for tender to short-listed companies. Four 'Best and Final Offers' were assessed and L3-Spar was selected as the preferred contractor in May 2004. Defence considered that L3-Spar offered the best value for money while presenting the most acceptable level of risk. The contract was signed on 14 December 2004 to cover the upgrade of New Zealand's five C-130H aircraft.

Throughout 2006 and 2007, the acquisition project team prepared a contract variation to enhance the C-130H's self-protection system. On 1 May 2007, the procurement of a modern missile approach warning system was confirmed.

The closure of L3-Spar and its Edmonton facility was announced on 22 January 2009 following the loss of its Canadian Defence contract. Prior to this closure, L3-Spar had completed the majority of the prototype aircraft's refurbishment work and its initial flight test programme. Defence implemented a transition plan to ensure that parent company, L-3 Communications, fulfilled the remaining contractual obligations from its facility in Waco, Texas.

L-3 Integrated Systems took over the programme, with key personnel, equipment and data transferred to Waco by 31 July 2009. The first and second aircraft to be upgraded were re-located to Waco in July and August 2009 respectively. The first of these aircraft was Provisionally Accepted in October 2010 and the second in November 2010.

The ongoing delay in delivery of the prototype aircraft by L-3 Communications Integrated Systems resulted in sub-contractor, SAFE Air Limited, terminating its sub-contract in late March 2010. This left L-3 without a sub-contractor to complete the modification of the three remaining C-130H aircraft in the 'production phase' of the project.

A solution to complete the C-130H LEP production phase was agreed to by the Crown, SAFE Air/Air New Zealand and L-3 on 16 July 2010. Under the agreed solution the Crown assumed responsibility for the C-130H LEP production phase, with SAFE Air providing support by way of specialist labour and material supplies.

A MoD project management team is established on site at RNZAF Base Woodbourne. The MoD has sub-leased a hangar and a work-force has been engaged (Aviation Labour Group). Safe Air continues to provide support services and key personnel under a MoD/Safe Air agreement.

A contract was signed with CAE of Canada to further develop the capabilities of the Part Task Trainer.

How Defence decided to acquire the Capability Solution

The prime contract was signed in December 2004 with L-3 Communications Spar Aerospace Limited of Canada (L3 Spar) and it was intended to induct the first aircraft (the prototype) at L3 Spar's facility in Edmonton, Canada. Upon acceptance of this aircraft, the remaining four aircraft were to be upgraded by SAFE Air in Blenheim. This was termed the 'production phase'. In 2007 a second aircraft was introduced into the upgrade in Canada as a 'proof' aircraft to confirm the production process and reduce the risk.

Parent company	L-3 Communications Holdings Incorporated
Prime contractor at contract signing	L-3 Communications Spar Aerospace of Canada
Current prime contractor	L-3 Communications Integrated Systems of USA

2.2 Project Budget

Budget variation

	Date Approved	Total (NZ$ million)
Original budget at Approval to Commit	6 December 2004	233.7
Current approved budget	2 August 2010	264.8
Variation on original approved budget		+ 31.1 (see explanation below)

Explanation of major budget variations

Date of individual variation	Total (NZ$ million)	Factor	Explanation
1 May 2007	21.2	Scope / contract variation	Contract variation was made to upgrade the fleet's self-protection system with a modern missile approach warning system and counter-measures dispensing system.
28 July 2010	Up to 9.85	Sub-contract termination	The Crown is to pay SAFE Air Ltd a maximum NZ$ 7.85 million as a part contribution to cover any shortfall in the production phase costs. This total was listed as provisional in the 2012 MPR because the production phase costs were then yet to be finalised. After the upgrade of the first production phase aircraft was completed in early 2013, an assessment was made of the costs involved in the upgrade and as a result no additional funding was sought.

2.3 Financial Performance

Project expenditure to 30 June 2013

	Total (NZ$ million)
Life to date expenditure (cumulative)	246.5
Remaining balance of approved budget	18.3
Forecast commitments	15

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	264.8
Total forecast expenditure	261.5
Gross project variation (forecast)	3.3
Foreign exchange impact	(3.3)
Actual project variation (forecast)	0.0

Variance explanation

Nature of variation (forecast)	Total ($million)	Explanation
Actual project variation-	Nil	N/A
Foreign exchange impact	3.3	
Total	3.3	

Project contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	10.0
Total contingency expended	7.6
Remaining balance	2.4

Explanation of major contingency draw downs

Drawdown	Total (NZ$ million)	Explanation
Environmental Control System (ECS) approved on 9 October 2006	2.1	This draw down has been used to upgrade the old Environmental Control System. The upgrade will allow the C-130H to operate in very hot and very cold climates.
Part Task Trainer (PTT) approved between October 2006 and May 2007	1.0	This is the cumulative cost of upgrading the PTT's intercom system, relocating the PTT to Edmonton, Canada for aircrew training and the purchase of spare parts.

Engineering work, spare parts, support equipment approved between October 2006 and February 2007	0.9	The remaining drawdown approvals were used for unanticipated engineering work (bulkhead fatigue improvements, manifold air pressure gauge) and additional spare parts or support equipment (propeller beta lights, central wing rib caps).
Engineering work – approved April 2010	0.2	To cover the costs of two mandatory engineering change proposals to satisfy independent consultants HMI.
Production Phase costs – approved January 2011	2.3	Contribution to cover the new local production phase costs as part of the revised project budget.
Self Protection System Upgrade, DATAMARS and data loading software development – approved March 2011	0.7	This included: • Upgrade to the Self Protection System ($649k). • The DATAMARS 1553 recording device ($29k). • Scope out the cost of developing a data loading tool ($38k).
Realignment of Production Phase – approved August 2012	0.4	
Total	7.6	

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date.

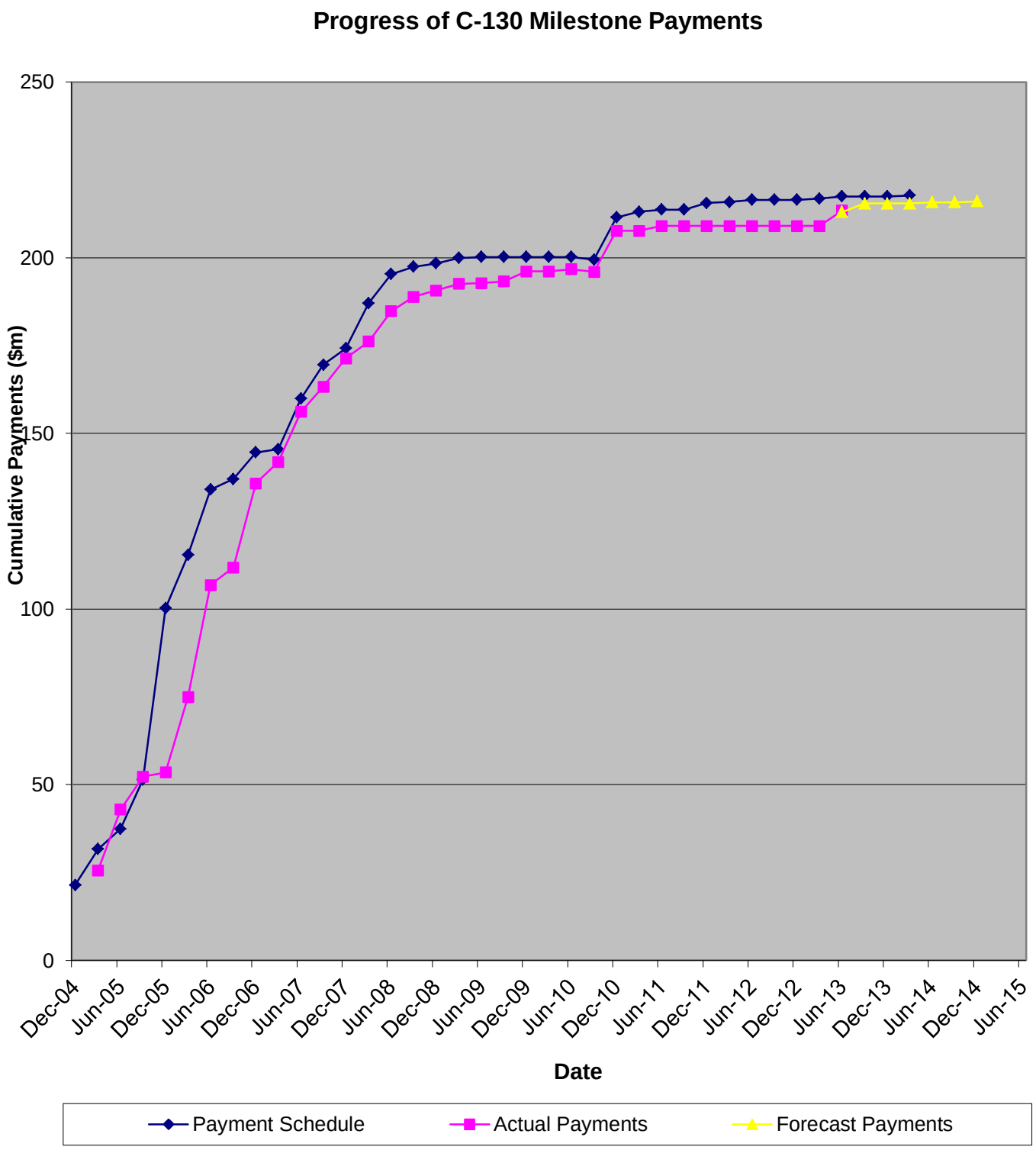
		Original forecast at Approval to Commit	30 June 2013 forecast / achieved	Variation in acquisition phase (months)
Acceptance Date	First Aircraft	Mid 2007	October 2010 achieved (provisional acceptance)	+40
	Last Aircraft	Mid 2010	December 2014 forecast	+54
Comment		New forecast schedule developed post implementation of the revised contractual arrangements.		

History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
21 May 2007	+4	The project's schedule could only be confirmed after the 'strip out and rebuild' work of the first aircraft was completed. This work revealed some unexpected repairs, design challenges and equipment demands.
January 2009	+2	The acquisition phase was delayed slightly because of a downturn in L3-Spar's productivity at the Edmonton facility.
July 2010	+35 to +38	A new schedule was developed for the revised contractual arrangements to complete the production phase.
June 2012	+50	Production Phase re-schedule following experience with the upgrade of the first production aircraft.

Progress of C-130H LEP against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual milestone payments against the milestone payments schedule agreed to in the prime contract[16]. Milestone payments are made upon the contractor's provision of key deliverables and are therefore a good way to identify timing and size of schedule slippage.



[16] The milestone payments schedule has cumulative payments that are less than the total budget because it excludes the ancillary and discretionary costs of the project.

SECTION 3: INTRODUCTION INTO SERVICE

3.1 Summary of Introduction into Service Phase

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

Description of Introduction into Service phase

In 2006, the RNZAF established a C-130 LEP Introduction into Service team. The team was responsible for co-ordinating and implementing all additional components required for the aircraft to carry out the desired operational tasks and missions. The team prepared a transition plan that is designed to deliver the integrated components of the capability. For the C-130 LEP, the most important aspects of the transition plan include:

- Operational Test & Evaluation (OT&E)
- Training of all aircrew, technicians and support personnel
- Personnel forecasting, availability, skilling and delivery
- Certifying the aircraft
- Developing supporting infrastructure
- Integrating communications into the NZDF and allied infrastructure
- Managing and organising the fleet during the upgrade work
- Building and delivery of the information, command and control systems, as well as the external communication and CIS systems
- Preparing and supporting communication plans for engagement with external agencies, including public relations
- Logistical support
- Developing the concept of operations
- Developing and validating the self-protection system capability
- Profiling the through-life operating costs
- Setting up, testing and introducing training systems

Since January 2008, the team has supported the acquisition project team by providing the aircrew and support personnel necessary to operate the aircraft during the acceptance test and evaluation of the first and second aircraft.

In 2006 the RNZAF established a Programme Management Office to co-ordinate the C-130 LEP in conjunction with the other upgrade and acquisition projects. In October 2010 this was subsumed into the HQ NZDF Capability Branch, Programme Delivery, as ‘Air Introduction into Service’.

A Joint Project Office (JPO) was set up at Base Auckland in October 2010 to integrate all aspects of fixed wing capability delivery including Trials & Development (T & D), OT&E, training, retrofit, regression testing and follow on AT&E.

Status of the introduction into service plan

All additional components of the introduction into service phase are in place and OT&E has been completed for the following roles:

- Phase 1, Air Logistics Support (ALS);

- Phase 3, Search and Rescue (SAR);
- Phase 4, Aircraft Self Protection System (SPS);
- Phase 5, High Latitude Operations;

OT&E has yet to be completed for the following roles/phases:

- Phase 2, Airborne Operations, are currently in progress and is scheduled for completion by August 2013, and
- Phase 6, Night Vision Capability is scheduled for completion by early 2014 (This is not strictly part of the LEP project, but rather an exploitation of the Night Vision compatible flight deck).

The C-130 legacy fleet has been withdrawn from service with crews transitioning to upgraded aircraft through transition courses. In addition, several crew conversion courses have been run and numerous personnel qualified.

The principal challenges for IIS have been ongoing issues with the Avionics Mission System (AMS) software and delays of production aircraft. While the software has been improved in content and stability since initial delivery, it has not yet been deemed operationally acceptable from an airworthiness or capability perspective. Software version (V118) has been delivered and accepted by the RNZAF as the baseline software load. In August 2012, acceptance and release of capability into service was completed for Air Logistic Support, Search and Rescue, Self Protection System and High Latitude Operations. Full capability release is planned to be achieved by early 2014 subject to the delivery and acceptance of the V119 and V120 software loads and subsequent software certification. Delivery of this software is critical to full acceptance of the aircraft and associated systems.

In summary, while the project is carrying risks and managing issues on the path to achieving full capability release, these risks and issues are being managed in an integrated and coordinated way.

3.2 Schedule of Introduction into Service

Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.

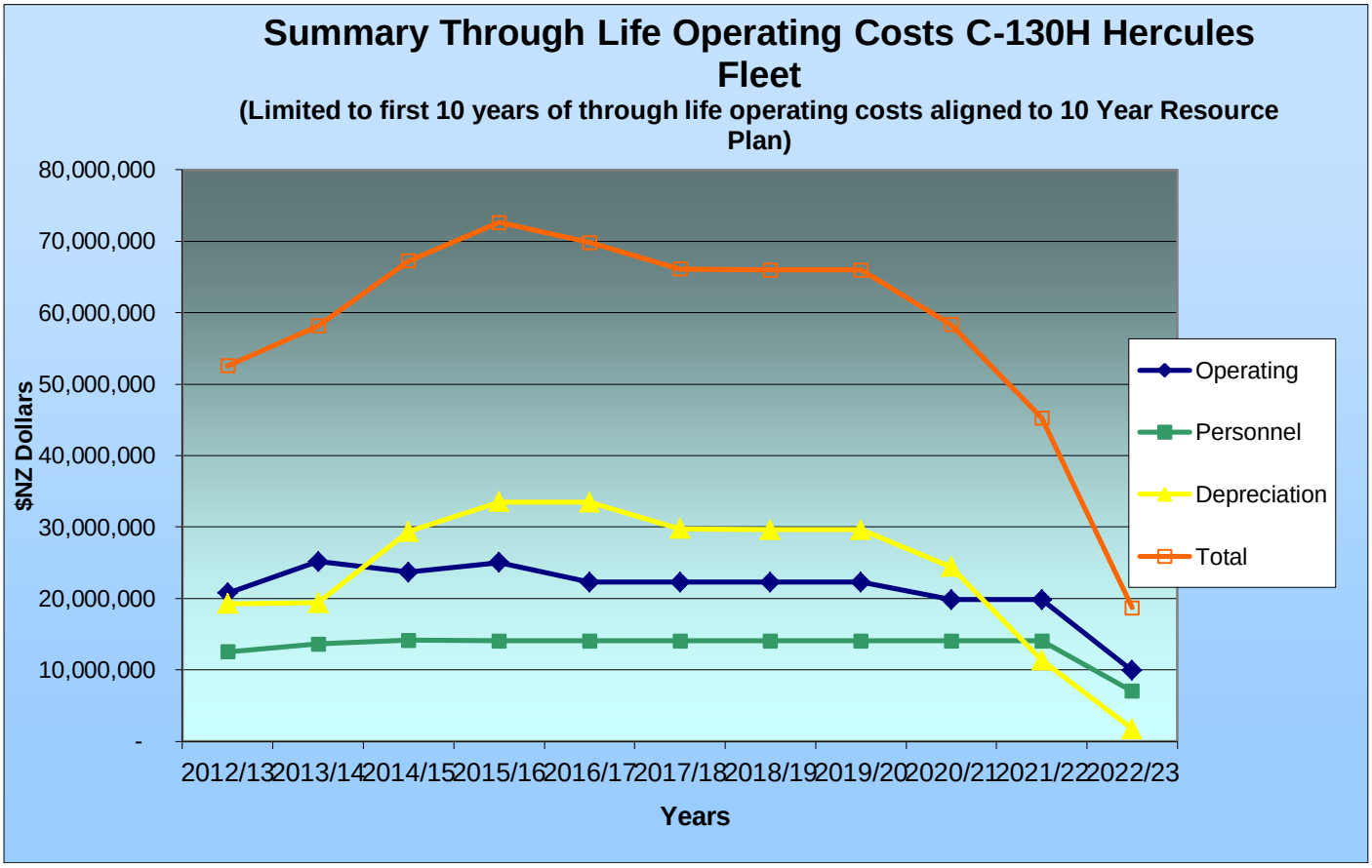
Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.

Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.

NZDF Output Plan, 2009, S1-12

	Initial Estimate	30 June 2013 Estimate	30 June 2013 Actual	Variance (months)
Date platform accepted by Crown	Mid 2007	N/A	October 2010	40
Commence operational test and evaluation	November 2007	N/A	October 2010	35
Finish operational test and evaluation	May 2008	September 2013	N/A	-
Achieve initial operating capability	August 2008	August 2012	August 2012	48
Establish directed level of capability	October 2010	November 2014	N/A	-
Explanation	Variations to the project's forecast timelines, including OT&E completion dates and directed level of capability, have primarily been driven by software integration and significant production delays, in addition to aircraft availability issues. While a directed level of capability is scheduled to be established by November 2014 with some aircraft upgraded and crews trained, the project is continuing through to early 2015 to upgrade all five aircraft.			

Summary of Through Life Operating Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Operational Requirements

Operational Requirements	Delivery	Comment
Tactical airlift	Yes	The requirement will be declared through completing the Operational Test and Evaluation (OT&E) phase.
Strategic airlift	Yes	The requirement will be declared through OT&E.
Pre-mission planning system	Yes	The pre-mission planning system depends on the contractor integrating the aircraft's software systems. Although the integration of the software has been delayed, Defence considers that the requirements of the pre-mission planning system will be met.
Communications	Yes	The requirement will be declared through OT&E.
Navigation	Yes	The contract's original navigation database did not adequately cover all of the C130H's desired areas of operation. Defence has now implemented a solution (at a cost to be absorbed within the contingency) to resolve this requirement shortfall.
Surveillance	Yes	The requirement will be declared through OT&E.
Maritime Search and Rescue	Yes	The requirement will be declared through OT&E.
Self-protection system	Yes	The system New Zealand purchased was never intended to offer certainty of protection against small arms or rocket propelled grenades. The system has now been validated, and provides protection against man portable air defence systems. Assessment of the system performance is ongoing and the maintenance of protection levels will be a continual through life process as threats evolve and operating areas change.
Assessment: All requirements will be met.		

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year
Likely	Likely to occur about once per year
Possible	Possible, likely to occur at least once over a ten-year period
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years

Active Risks at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Software**. Future software builds may not meet the required standards. Although this risk is reducing it still requires attention.	Acquisition / Introduction into Service	Medium	Possibility of delays in the conduct of OT&E and IIS.	Possible	Software will be reviewed prior to acceptance. In addition, software testing will take place in the Systems Integration Laboratory prior to sign off. Test flights will be undertaken to test for system stability/fixes/regression prior to acceptance.
2	**Cruise Performance Tables.** These tables may not be integrated into the FMS software.	Acquisition / Introduction into Service	Medium	A lack of integrated performance tables would reduce the efficiency of the aircraft and crew.	Possible	Software tables integration is complete and has been delivered with software version 119. To be tested July 2013.
3	**Production Phase.** Labour costs may exceed approved budget.	Acquisition / Introduction into Service	High	Possible need to seek additional government funding.	Possible	Close monitoring of the project budget and further review post completion of the second production aircraft.

4	**Production Phase.** A combination of work arising, increased production scope and parts lead-time may result in the further delay for the completion of the first production aircraft.	Introduction into Service	High	Furthers delays may lead to increased project costs and/or a temporarily reduced operational capability.	Possible	Close monitoring and periodic review to pro-actively reduce delays.
5	**Production phase.** A delay in the refurbishment of the Centre Wing Box in the USA may impact upon the production schedule.	Introduction into Service	High	Further delays may lead to increased project costs and/or a temporarily reduced operational capability.	Possible	Close monitoring of the Centre Wing Box status including weekly communication with contractor.

5.2 Issues

	Issues	Phase	Severity	Impact	Treatment
1	Production delays continue to affect project timelines and aircraft release dates. First production aircraft has been delivered. Significant delays being experienced with second and third production aircraft.	Introduction into Service	High	Delays in achieving upgrade milestones impact upon a range of operational, training and personnel activities.	NZDF and MoD are actively managing the Transition Plan with on-going internal stakeholder engagement through the Joint Project Office.
2	C-130 LEP navigation database does not support all required airfields or airways.	Introduction into Service	Medium	Reduced operational capability which may require higher workloads for aircrew.	A contract (with through-life support) is in place to transition data to a replacement Jeppesen navigation database scheduled for implementation in late 2013.
3	Multiple system Processor Reset/Swaps.	Introduction into Service	High	Operational capability could be significantly affected.	Targeted to be treated in software version V119. Standard Operating Procedures/checklists have been put in place to mitigate effects.
4	Qualified Flying instructor (QFI)/Qualified Aircrew Instructor (QAI) manning remains critical.	Introduction into Service	High	Insufficient QFI and QAI on RNZAF No.40 Squadron to meet required personnel levels.	Qualified aircrew that have been posted to staff appointments are being used temporarily to bridge the gap until sufficient personnel are qualified.
5	Reduced flying hours are impacting throughput of crew members and constraining the training and advancement of personnel.	Introduction into Service	High	Increased training burden on RNZAF No40 Squadron and advancement of crewmembers – Co-Pilot to Captain.	Addressed through the reduction in ab-initio aircrew to RNZAF No40 Squadron. The reduction of operational tasking will enable more crew to be trained.
6	Aircraft delivery delays are causing a lack of currency, continuity and training. Note: This is related to issue 5, but is more about the impact of delays on the ability to deliver operational outputs.	Introduction into Service	High	The ability to maintain operational outputs is at risk. Limited training hours are disrupting the transition period and could prevent the RNZAF from reaching the required level of capability within the agreed timeframe. This would lead to a temporarily reduced operational capability.	Individual flying currencies and continuation are being managed carefully. Conversion courses are being tailored to allow for essential personnel only.

PROJECT DATA SHEET: NH90 MEDIUM UTILITY HELICOPTER (MUH)

PROJECT DESCRIPTION

This project is providing the NZDF with a medium utility helicopter capability for the next 30 years. Eight NH90 helicopters with associated deliverables are being acquired from NH Industries to replace the Royal New Zealand Air Force Iroquois fleet. An additional (ninth) helicopter is being acquired and broken down to form the majority of the spares and logistics package.

Policy Value

The MUH provides rotary wing airlift that enhances the Government's options for:

- defending New Zealand's sovereignty;
- conducting operations to combat terrorism or acts of sabotage;
- operating with the Australian Defence Force to discharge our obligations as an ally of Australia;
- contributing to peace and stability operations in the South Pacific;
- contributing to whole of government efforts at home and abroad in resource protection, disaster relief, and humanitarian assistance; and
- participating in Five Power Defence Arrangements and other multilateral operations.

Government Approval Milestones[17]

Government Approval Milestones

Project Initiation: Occurs once a capability requirement has been identified by Defence and a broad assessment of the options for meeting the capability requirement has been authorised by the Chief Executives and noted by the Minister of Defence.

Approval to Initiate: Attained when Cabinet agrees to the project's inclusion on the capital acquisition plan and authorise Defence to engage with industry to refine its initial assessment with more accurate information.

Approval to Commence: Attained when Cabinet agrees to the refined capability requirement and authorises the Ministry of Defence to commence a formal tender and tender evaluation process.

Approval to Negotiate: Attained when Cabinet agrees to the preferred tender, specifies funding limits, and authorises the Ministry of Defence to enter into contract negotiations.

Approval to Commit: Attained when Cabinet agrees to the final contract and authorises the Ministry of Defence to sign the contract and commit funding.

[17] These are generic titles for Cabinet approval points in the capability definition process. Whilst the actual titles of Cabinet Papers have varied, the approvals and direction they were seeking from Cabinet have been broadly consistent with the definitions provided.

Date	Approved By	Approval
2 April 2001	Cabinet CAB Min (01) 10/10	**Project initiation.** The NZDF's Sustainable Capability Plan recommended a study be completed to identify options for upgrading or replacing the Iroquois to provide a utility helicopter.
3 December 2003	Cabinet ERD Min (03) 14/9	**Approval to Initiate.** Cabinet agreed to a helicopter capability with a fleet mix of training and light utility helicopter and medium utility helicopter and authorised Ministry of Defence to engage with industry.
13 October 2004	Cabinet ERD Min (04) 11/3	**Approval to Commence.** Ministry of Defence authorised to conduct a due diligence process followed by the release of tender documentation to three short listed suppliers.
3 April 2006	Cabinet CAB Min (06) 11/2C	**Approval to Negotiate.** Ministry of Defence authorised to carry out negotiations with NH Industries.
17 July 2006	Cabinet CAB Min (06) 26/1A	**Approval to Commit.** Ministry of Defence authorised to enter into a contract with NH Industries for eight NH90 medium utility helicopters.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

In 2001, a Defence team identified and analysed the capability and operational requirements for the NZDF's utility helicopter capability. The requirements to support other government agencies were included and the team aligned the identified requirements with government policy.

The definition phase included the requirements for training, light and medium utility helicopter tasks and roles. In the acquisition phase the project separated into two projects: one to purchase the medium utility helicopters and the other to purchase the training and light utility helicopters.

How Defence analysed the options

In 2003, the capability and operational requirements were assessed against two sets of potential options. The first set of options (Section 1.2, Table 1 refers) focussed on a mixed fleet of aircraft types and the second set of options (Section 1.2, Table 2 refers) considered a range of aircraft that were representative of the capabilities required. In December 2003, Cabinet noted that Defence had completed an initial analysis of helicopter capability requirements and agreed that the Ministry of Defence identify potential suppliers and seek further information on the capability, availability, price and supply of helicopters to meet those requirements.

The analysis of capability and operational requirements was agreed by the Single Services, HQ NZDF and the Ministry of Defence, and captured in a suite of capability requirement documents.

In October 2004 as part of Closer Defence Relations, New Zealand and Australian Defence Ministers agreed to discuss the practicalities of both countries acquiring the same brand of helicopter. In March 2005, Australia decided to acquire a variant of the NH90 helicopter (MRH90). Defence concluded it was beneficial for New Zealand to acquire a similar helicopter for cooperation on through-life support and training but that a joint purchase would not be financially advantageous for New Zealand.

How Defence considered interoperability

Throughout the analysis of capability and operational requirements, the ability to operate with the Australian Defence Force was considered, as was compatibility with other Defence partners.

How Defence considered through-life costs and issues

In October 2003, Defence employed the United Kingdom Ministry of Defence's Price Forecasting Group to assess the initial costing information. The cost model used included whole of life costs that were made up of all acquisition, entry into service and operational costs for the life of the aircraft. While the cost model was based on the Price Forecasting Group databases and industry figures, it was noted that the costs were 'dynamic and could fluctuate in the model outcomes'.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare assess and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

Table One: Fleet Mix Options

Options Considered	Advantages	Disadvantages	Cost Estimate[18] (NZ$ million)
Option 1 Like for Like	• Nil advantages	• Limited payload capacity. • Inability to move an Army section in single move. • Unable to provide Special Forces with rapid tactical mobility for counter terrorism.	Not provided at that time
Option 2 One type of aircraft	• All capability requirements met • Reduced logistical burden	• A medium utility helicopter presents an unacceptable risk of accidents for pilot training. • Inefficient use of capability for light tasks. • Little opportunity for rapid and/or short deployment, for example, civilian support tasks.	Not provided at that time
Option 3 Three types of aircraft	• Provides operational flexibility	• Large logistic burden to support three different aircraft.	Not provided at that time
Option 4 11 medium utility aircraft 4 Training aircraft	• Meets all key operational requirements	• Insufficient training helicopters for deployable light utility capability and will create risk to concurrent tasks such as sniper use or troop transport. • Medium utility helicopter inefficiently used for light tasks. • No allowance made for attrition.	Capital 528-553
Option 5A 15 medium utility aircraft 8 training & light utility aircraft	• Meets all key operational requirements	• Does not meet essential affordability or supportability requirements. • Capital and whole of life costs high. • No allowance made for attrition. • Personnel requirements exceed current establishment and would be difficult to generate.	Capital 658-684

[18] Note all costs throughout the options are rough order estimates.

Option 5B 9 medium utility aircraft 8 training & light utility aircraft	• Meets all key operational requirements	• Risk to concurrent tasking and aircraft availability. • No allowance made for attrition.	Capital 464-503
Option 5C 10 medium utility aircraft 10 training & light utility aircraft	• Optimum mix to meet all key operational requirements • Better concurrent tasking for contingencies such as disaster relief operations	• No disadvantages noted. • No allowance made for attrition.	Capital 520-568

ASSESSMENT	Option 1 was discounted because it failed to meet operational requirements. Option 2 was discounted because it posed an unacceptable risk of accidents during pilot training. A large complicated helicopter is less responsive and harder to recover from adverse situations experienced during pilot training. Option 3 provided the operational flexibility but the costs for supporting three aircraft were considered too high due to a large logistics burden. Option 4 was considered an inefficient use of a medium utility helicopter for light tasks and the requirements for counter terrorist tasks were not met fully. Option 5A was considered too expensive. Option 5B was considered an acceptable solution because it met all the operational requirements, but it was noted that readiness could be compromised if concurrent tasks were required. Option 5C was considered the optimum solution because it met all key operational requirements.

Table Two: Aircraft Options

Aircraft Considered	Advantage	Disadvantage	Cost (NZ$ million)
Bell 412-EP	• Nil advantages	• Failed to provide payload requirements.	Not assessed at that time
Agusta-Bell AB-139	• Nil advantages	• Failed to provide payload requirements.	Not assessed at that time
Sikorsky UH-60 Blackhawk 15 aircraft	• Nil advantages	• Require 15 aircraft to deliver payload requirements. • High operating costs.	Capital 606.2
Agusta-Westland EH-101 9 aircraft	• Exceeds all key operational requirements with the exception of the max external load capacity.	• Failed to meet the required external load capacity. • High acquisition and operating costs.	Capital 662
NH90 9 aircraft	• Meets all key operational requirements • Operating costs less than S/H-92	• Acquisition costs higher than S/H-92.	Capital 426

NH90 10 aircraft	• Meets all key operational requirements • Operating costs less than S/H-92 • Optimum numbers for concurrent tasks	• Acquisition costs higher than S/H-92.	Capital 471
Sikorsky S/H-92 9 aircraft	• Meets all key operational requirements • Lift capacity is greater than the NH90	• Military variant likely to be more expensive. • Cabin design caused tactical concerns.	Capital 412
Sikorsky S/H-92 10 aircraft	• Meets all key operational requirements • Lift capacity is greater than the NH90 • Optimum numbers for concurrent tasks	• Military variant likely to be more expensive. • Cabin design caused tactical concerns.	Capital 456

ASSESSMENT	The NH90 and S/H-92 helicopters met all operational requirements and were considered comparable options in the project definition phase.

1.3 Description of the Capability and Operational Requirements

Air Assault: Assault forces employ the helicopter in the battlespace to contain and engage enemy forces.
Air Movement: Repositioning of personnel, supplies, equipment. Includes airdrops and air landings.
Air Sustainment: Movement of personnel, equipment and supplies in support of a current and/or future operation.
Combat Mission: The conduct of forces engaged in the battlespace. Helicopters are active in the combat zone during actual combat.
Combat Mission Support: Provision of support to a combat mission. Tasks are usually removed from the active combat zone.
Taken from the doctrine used in the 2003 Review of the Defence Policy Requirements for the NZDF Helicopter Capability

Capability Requirements	Operational Requirements - Description and Explanation
Air Movement, Aerial Sustainment	Movement of an Army section – a minimum of eight fully equipped land force soldiers – to enable the smallest combat entity to conduct its tasks for success, safety and survivability.
Air Movement, Aerial Sustainment	Movement of an Army platoon – minimum of 27 soldiers and equipment – in a single wave to ensure synchronised arrival of combat elements.
Air Movement, Aerial Sustainment, Special Operations	Movement of a minimum of six fully equipped special forces soldiers in a single helicopter.
Aero-medical Evacuation	Movement of up to six stretcher casualties, plus medical staff, in a single helicopter.
Air Movement, Aerial Sustainment	Capacity to move specialist equipment, such as the Direct Fire Support Weapon.
Air Movement, Aerial Sustainment	Lift a light gun or light operational vehicle.
Air Assault, Combat Mission, Special Operations	Meet sovereignty requirements in EEZ, including maritime counter terrorism, and reach significant outlying islands in the South Pacific.
Aerial Sustainment	Quickly deployable by either C-130 Hercules aircraft or self-deploying to Australia or South Pacific.
Air Movement, Aerial Sustainment	Operate from the multi-role vessel to support the delivery of personnel and equipment to and from land.
Air Assault, Air Movement, Aerial Sustainment, Combat Mission, Special Operations	Operate day and night, in inclement weather and in a range of climatic, geographical and threat environments.
NOTE: The operational and capability requirements listed here were those identified in the suite of requirement documents produced during the Capability Definition Phase. During the tender and contract negotiation process these requirements are converted into function and performance specifications (FPS) that become the contracted deliverables. During the contract negotiation process the operational requirements have to be balanced against cost or viability considerations.	

1.4 Schedule of Capability Definition Phase

Dates	Duration	Explanation
September 2001 to December 2003	27 months	See Narrative in section 1.1

1.5 Expenditure in Capability Definition Phase

	Expenditure (NZ$)
Definition Phase	2003/04 213,676.50 2004/05 53,805.60 2005/06 185,621.62 2006/07 82,526.18 2007/08 NIL - project in acquisition phase
Explanation	In the capability definition phase, the above costs are classified as pre-acquisition costs and have been met from the NZDF's operating budget. During the FY03/04 to FY05/06 period, the costs were for training, light and medium utility capability definitions studies. The FY06/07 figure is for the medium utility helicopter project only.

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2002	2003	2004	2005
Costs (NZ$ million)	400-500	400-550	400-550	480
Explanation of Variance	During the Capability Definition phase (2001-2003), the costs were estimates provided by the United Kingdom Ministry of Defence Price Forecasting Group. In 2005, it was believed that the preliminary cost information provided from industry indicated that options would be close to the 2005 amount shown above. However at that time, it was also noted that the solution may exceed that amount.			

1.7 Estimates of Acceptance Date made in the Capability Definition Phase

Estimates	Initial Estimate	2010 Updated Estimate	Actual
Date	First aircraft 2009	First aircraft early 2010	The first two (of eight) aircraft were delivered to New Zealand in December 2011
Explanation of Variance	Changes in the estimates during the Capability Definition phase are a normal part of a project's progress.		

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of acquisition phase

Description of acquisition work

The acquisition phase of the medium utility project included engagement with industry, a tender and contract negotiation process, and ongoing management of the contract deliverables. This phase will be concluded following the delivery of the eight operational NH90 helicopters, the spares package (the ninth helicopter), publications, support equipment and the initial training requirements to the RNZAF.

Cabinet approved engagement with industry in December 2003 to identify potential suppliers and seek further information on the capability. The approved acquisition strategy included an Invitation to Register followed by a Request for Proposals.

Six companies responded to the Invitation to Register. The respondents are tabled in section 2.1b. The NH90 helicopter from NH Industries and the S-70M helicopter from Sikorsky were considered to meet the capability and operational requirements. At the time, however, the S-70M helicopter was not in production and the prototype was still under development. Therefore, it was decided that the bid from NH Industries for the NH90 helicopter was the preferred option. As a result, the Request for Proposals was not required and a 'sole source' Best and Final Offer was issued to NH Industries in order to determine program deliverables and costs.

Following a review of the Best and Final Offer response and further contract negotiations, the NH90 Acquisition Contract between the Crown and NH Industries was signed on 31 July 2006. The total cost of the NH90 helicopter exceeded forecasts made during the Capability Definition Phase and resulted in a decision to reduce the total fleet size from ten, as outlined in the 2003 Key Findings Report, to eight operational NH90s.

Prior to contract signing Joint Ministers agreed that a ninth helicopter be acquired as part of the negotiated spares and logistics package rather than as an operating helicopter. This decision resulted in approximately NZ$10 million savings in the cost of the spares component of the project. The NH90 helicopter is being developed, assembled, test flown and prepared for Crown acceptance at the Eurocopter assembly line in Marignane, France.

The eight operational helicopters were to be delivered over a 47 month period from 31 July 2006. The Project Team (based in New Zealand and France) is working with the contractor to ensure the helicopters are provided within budget, to the contract's function and performance specifications and as close to the original schedule as possible. This has included a Preliminary Design Review in March 2007 followed by a Critical Design Review in November 2007. These two reviews assisted decisions on the final configuration of the NH90 helicopter, the most notable of which was the fitting of a fifth multifunction display screen in the cockpit of the helicopter. This will provide more safety by improving situational awareness for the pilots.

In order to protect the Crown's and RNZAF's interests, regular Risk Review Board reports have been conducted and a detailed design, test and qualification process for the NH90 helicopter's specific capability characteristics will be undertaken. A summary of the current risks and issues is provided in section 5.

In November 2011 the Crown accepted two aircraft in France. In December 2011 these aircraft arrived in New Zealand and they have subsequently entered the Introduction Into Service (IIS) phase. Two further aircraft had arrived by June 2013.

How Defence decided to acquire the Capability Solution

Responses to the 2004 Registration of Interest	
Company	Aircraft
Bell Helicopters Textron Ltd – USA	UH-1Y
Hindustan Aerospace – India	Advanced Light Helicopter (DHRUV)
Kamov – Russia	Ka 29
Bell Agusta – USA	AB 139
Sikorsky – USA	S-70M
NH Industries – France ***Preferred Supplier***	NH 90
Assessment	The five unsuccessful tenders did not meet the capability and operational requirements for a variety of reasons. These included payload, stowed aircraft limits, stretcher limits and commercial production of the aircraft.

2.2 Project Budget

Budget variation

	Date Approved	Total (NZ$ million)
Original budget at Approval to Commit	27 July 2006	771.7
Current approved budget	27 July 2006	771.7
Variation on approved budget		NIL

Explanation of major budget variations

Date of Individual Variation	Total ($m)	Explanation
N/A	N/A	N/A

2.3 Financial Performance

Project expenditure to date (as at 30 June 2013)

	Total (NZ$ million)
Life to date expenditure (cumulative)	600.8
Remaining balance of approved budget	170.9
Forecast commitments	80.7

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	771.7
Total forecast expenditure	681.5
Gross project variation (forecast)	90.2 under spend
Foreign exchange impact	(90.1)
Actual project variation (forecast)	0.1
Explanation	NOTE: The impact of a foreign exchange rate at any point of time in a project is constantly subject to change as the project progresses. These fluctuations are expected and mitigated by forward cover. Actual expenditure can only be measured once the project is complete and any variations resulting from foreign exchange differences are managed through forward cover.

Project contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	15.0
Total contingency expended	11.2
Remaining balance	3.8

Explanation of major contingency draw downs

Draw down	Total (NZ$ million)	Explanation
5th Multifunctional Display Screen	7.3	The multifunctional display screen will provide more safety by improving situational awareness for the pilots.
Support for the Project Management Team in France and New Zealand	3.9	Additional support to the project management team by way of four extra resident project team members and an external consultant.
• **Total**	11.2	

Major reallocations of funds within the approved budget

Date of individual variation	Total ($m)	Explanation
N/A	N/A	N/A

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date

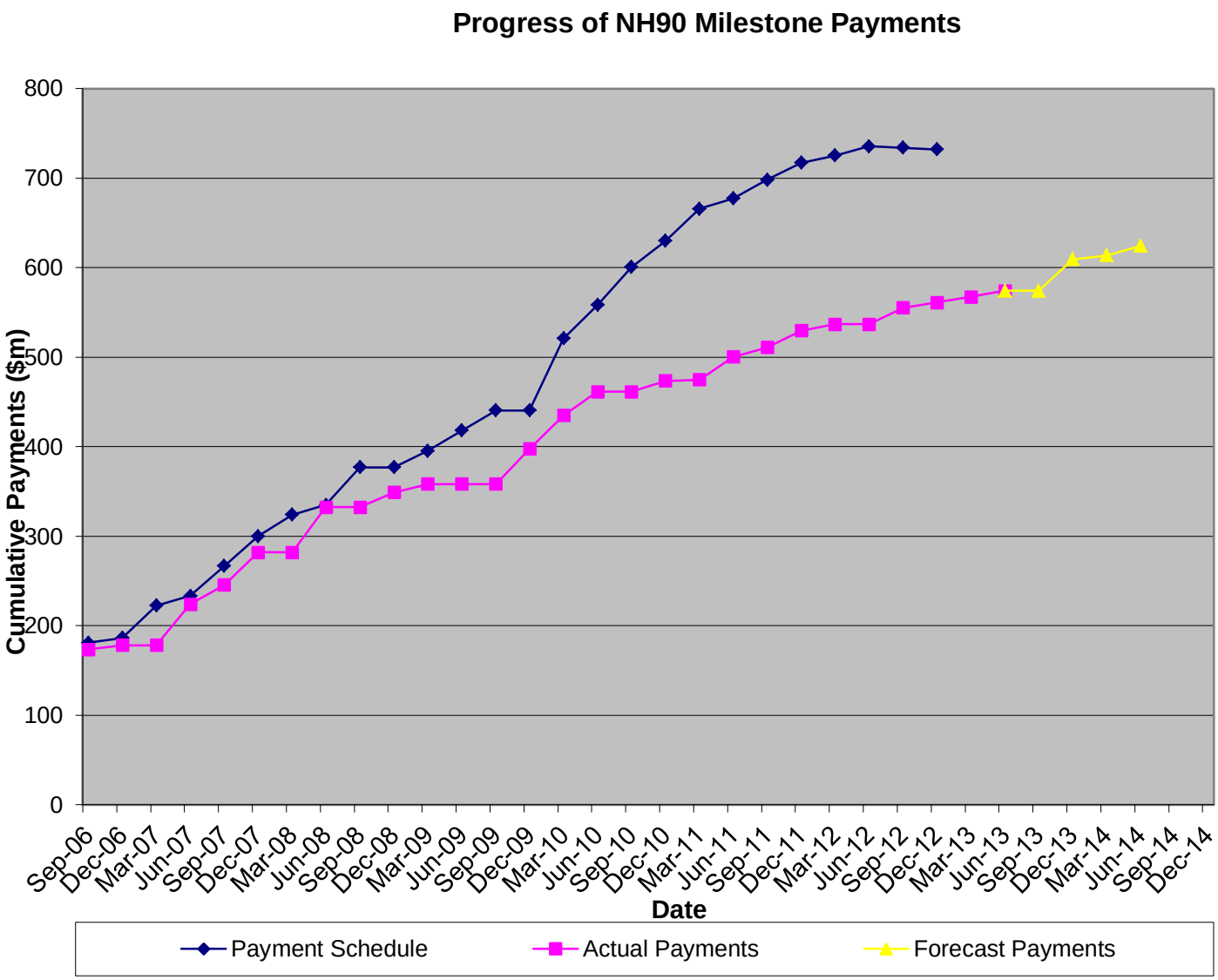
		Original forecast at Contract Signing	30 June 2013 forecast / achieved	Variation in Acquisition phase (months)
Acceptance Date	First platform	November 2009	December 2011 achieved	25 months
	Last platform	June 2011	September 2013 forecast	27 months

History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
2009	13 months	The forecast acceptance of the first aircraft is based on the date of acceptance in France and not its delivery to New Zealand. The schedule slipped by 13 months due to a delay in the Qualification and Design Acceptance Process for the New Zealand variant of the NH90 because of the delays in the certification of other countries' variants of the NH90. This delay adversely affected the obligations of NATO Helicopter Industries to provide the necessary training for RNZAF personnel – engineers for example – to complete the acceptance of the first helicopter.
August 2010	TBC	The current estimate of December 2010 is under review and will be updated after consultation with NH Industries.
16 June 2011	27 months	Continued delays in the qualification of aspects of the helicopters and the role equipment together with the attachments and spares and a comprehensive set of maintenance data.

Progress of MUH against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual milestone payments against the milestone payments schedule agreed to in the prime contract.[19] Milestone payments are made by the Crown upon the contractor's provision of key deliverables and are therefore a good way to identify the timing and size of schedule slippage.



[19] The milestone payments schedule has cumulative payments that are less than the total budget because it excludes the ancillary and discretionary costs of the project.

SECTION 3: INTRODUCTION INTO SERVICE PHASE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the operational test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service phase

Description of Introduction into Service phase

The RNZAF established the Utility Helicopter Introduction into Service team in July 2006. The Introduction into Service management plan included the medium utility (NH90) and the training/light utility (A109) helicopters. The work streams were structured around:

- management of personnel and training for the new aircraft types;
- research and development of the new systems;
- information management to and from the aircraft;
- concept of operations and doctrine for the new aircraft;
- infrastructure and organisation required to support the aircraft;
- equipment and/or platforms used to support the aircraft;
- issues related to airworthiness of the aircraft; and
- finance related to operating the new aircraft types.

The plan includes an external communications strategy, which describes:

- how consultation should be carried out with other government agencies, such as New Zealand Customs and Police;
- the Implementation Arrangement with the Australian Defence Force MRH90 helicopter Introduction into Service team for cooperative activities; and
- Cooperation with other militaries such as the German Defence Force, the Royal Air Force and others.

The plan also details the process of maintaining a risk register (now joint with MoD (Acquisitions)) and producing mitigation plans should they be needed, along with the reporting requirements to the Defence governance system. The main project dependencies detailed were:

- establishment of the Integrated Mission Support Squadron (now RNZAF No. 230 [Mission Support Squadron]);
- acquisition of the A109 helicopters;
- interface with Project Protector vessels;
- infrastructure – the successful completion of Project Takitini; and
- provision of the flight training device.

The Introduction into Service Team is supported by an RNZAF Integrated Logistics Support Team from the RNZAF's Directorate of Project Engineering and Certification. This latter team commenced work in 2004 to analyse the logistics support requirements of the new utility helicopter fleets. The logistics team work to an Integrated Logistics Support Plan that is a companion of the Introduction into Service Plan. The plan focuses on through-life support and life cycle costings and is supported by subordinate plans that cover the support requirements for:

- Logistics;
- Engineering;
- Maintenance;

- Supply;
- Training; and
- Computer and Data Management.

In 2006 the RNZAF established a Programme Management Office to coordinate the helicopter projects (NH90 and A109), in conjunction with the three concurrent fixed-wing projects. In October 2010 this was subsumed into the HQ NZDF Capability Branch, Programme Delivery, as 'Air Introduction into Service'.

Status of Introduction into Service phase

The Introduction into Service plan has served its initial purpose of preparing the RNZAF for the arrival of the medium utility helicopter. The final phase in the plan is the merger of the NH90 helicopters and the training/light utility helicopters (A109) within a single unit – No. 3 Squadron – which is currently operating the Iroquois helicopters at RNZAF Base Ohakea. To ensure this merger proceeds smoothly, a Helicopter Transition Unit (HTU) was established and Helicopter Transition Management Plan has been developed which integrates the build up of the new helicopter capabilities with the drawdown of the legacy capabilities. A Joint Project Office (JPO) was set up within the HTU in 2011 to integrate all aspects of helicopter capability delivery including Trials & Development, Operational Testing & Evaluation (OT & E), training, retrofit, regression testing and follow on AT&E.

While a JPO would have been set up regardless, there is no doubt that the overheads of Provisional Acceptance (A109) and Interim Configurations (NH90) have added to IIS workloads and the complexity of synchronising ongoing Acquisition work with IIS. However, this has been the reality of Western military aerospace projects since the 1980s, particularly with increasingly software driven systems delivering updates incrementally. It is likely that in the future blending of Acquisition and IIS phases will become deeper and integration will occur earlier. Notions of distinctive phases and neat handover gates between the two will sit uncomfortably with the realities of military aerospace capability delivery.

The first four NH90 aircraft have now been delivered to the NZDF and RNZAF managed flying operations have been underway since February 2012, albeit with this small fleet. Flying activities have proceeded as scheduled thus far with planned training and capability development achieved. An initial NH90 capability release was achieved in February 2013 which has allowed the conduct of New Zealand based non-tactical transport tasks with the helicopter. The pre-delivery expectations (based on global user experience) that effective flying rates would be difficult to sustain have not been borne out by initial flying operations thus far. The flying rate achieved by the RNZAF exceeds the average NH90 fleet rate, as does airframe availability (NHI Half Yearly Progress Meeting June 2013).

The major equipment risk to the MUH IIS is that the NH90 will now be delivered in three configurations: Interim, Final and Final Plus. This adds complexity and overheads, while reducing aircraft availability as they are taken off line, updated to the latest standard and then acceptance tested. OT & E effort is also increased. The Crown is working closely with NH Industries to mitigate this configuration risk. Nevertheless, for a significant part of the Interim to Final configuration retrofit period (September 2013 to September 2014) the RNZAF will only have three aircraft to progress the Transition Plan.

The other major MUH IIS risk pertains to personnel resource availability to achieve tasks within projected timelines. The requirement to sustain legacy (UH1) operations concurrently with IIS within existing RNZAF personnel baselines is stretching personnel resources, with the consequence that tasks may take longer to achieve, may not be done properly or may not be done at all. Recent resignations, particularly of pilots, makes this a challenging issue.

3.2 Schedule of Introduction into Service

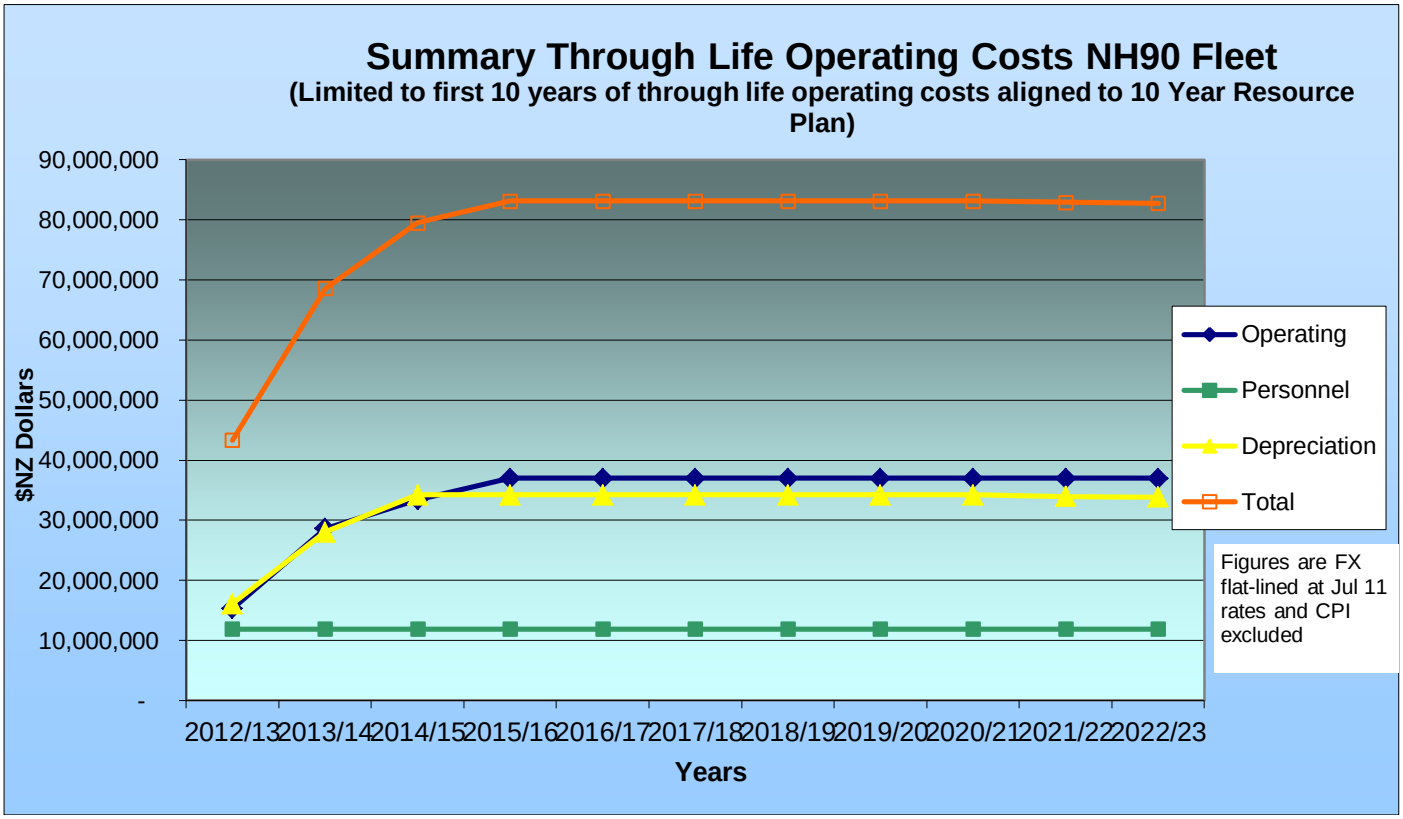
Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements. Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications. Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.

NZDF Output Plan, 2009, S1-12

	Initial Estimate	30 June 2013 Estimate	Actual	Variance
Date platform accepted by Crown	November 2009	N/A	November 2011	24
Delivery of platform to New Zealand	Early 2010	N/A	December 2011	22
Commence operational test and evaluation	Early 2010	N/A	April 2012	24
Finish operational test and evaluation	December 2010	N/A	N/A	-
Achieve initial operating capability	April 2012	N/A	February 2013	10
Establish operational level of capability	December 2012	July 2014	N/A	-
Establish directed level of capability	March 2013	N/A	N/A	N/A
Explanation	When the Introduction into Service team was established in 2006, it made initial estimates concerning the schedule to introduce the medium utility helicopter into service. As more information became available, in 2008 the team refined the schedule of estimates for the establishment of the operational and directed levels of capability. This was particularly relevant for reaching the directed level of capability. Milestone changes reflect both delays in the delivery of NH90s as well as a maturation of IIS plans which have shown that initial estimates were overly ambitious and not achievable with available resources. Note: Initial Operating Capability: This includes transporting NZ based passengers and cargo transport which is non-tactical. Operational Level of Capability: This includes the NH90 being capable of delivering EC1D outputs. This is required in order to provide the capability's ability to operate according to NZDF's Employment Contexts 1D, which deals with terrorist and asymmetric threats. Directed Level of Capability: Attainment of the level of capability is primarily governed by aircrew generation.			

3.3 Summary of Through-life Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Capability and Operational Requirements

Progress as at June 2013 The Explanations are Subject to Change as the Project Progresses and Solutions are Implemented		
Operational Requirement	**Requirement Likely to be met**	**Explanation**
Movement of an Army section, a minimum of eight fully equipped land force soldiers to enable the smallest combat entity to conduct its tasks for success, safety and survivability.	Yes	Current analysis suggests one NH90 will be able to move up to 12 laden combat troops.
Movement of an Army platoon, minimum of 27 soldiers and equipment in a single wave to ensure synchronised arrival of combat elements.	Yes	It is expected that three NH90 helicopters will be required to complete this task, but this depends on the volume of equipment to be moved.
Movement of a minimum of six fully equipped special forces soldiers in a single helicopter.	Yes	
Movement of up to six stretcher casualties, plus medical staff, in a single helicopter.	Yes	
Capacity to move specialist equipment, such as the Direct Fire Support Weapon.	Yes	
Lift a light gun or light operational vehicle.	Yes	The NH90 can lift the light gun and the NZ variant of the light operational vehicle but the range is limited.
Meet sovereignty requirements in EEZ, including maritime counter terrorism and reach significant outlying islands in the South Pacific.	Yes	The NH90 can meet sovereignty and maritime counter terrorism requirements. It can reach outlying islands in the South Pacific but needs support, such as: • Refuelling en-route may be required, • Maintenance equipment and support equipment and personnel will need to be deployed separately, and • Combat elements will need to be deployed separately

Quickly deployable by either C-130 Hercules or self deploying to Australia or the South Pacific.	Partial	The early focus has been on self-ferry, HMNZS *Canterbury,* allied strategic airlift (eg ADF C-17), civil airlift charter eg Antonov. To date: • The NH90 can be deployed on the Antonov or the C-17 (though deployment on the C-17 is subject to further work). • The NH90 could be deployed by C-130, but this is not pragmatic as it would probably require a minimum of two loads and the break down and tie down schemes would have to be developed. • The NH90 can be transported by HMNZS Canterbury (depending on sea state and positioning on the ship).
Operate from the multi-role vessel to support the delivery of personnel and equipment to and from land.	To be confirmed	Confirmation of the ship-borne capability requirement was sought from the Minister in early 2010. The main capability targets were identified as: • Transportation of at least 4 x NH90 as cargo on HMNZS Canterbury (alternative transportation arrangements for the Seasprite); and • Flying operations of the NH90 on HMNZS Canterbury to the top of Sea State 2. The status of this capability is improving. Ongoing work streams are progressively identifying and resolving issues. A series of interface and flight trials commenced in May 2012 and will continue to approximately the end of 2013. The NH90 will shortly be able to be 'embarked' on HMNZS Canterbury after the results of the First of Class Flight Trials are translated to a clearance. However, this does not mean that crews are trained and ready to undertake this role.
Operate day and night, in inclement weather and in a range of climatic, geographical and threat environments.	Yes	
Assessment: Deployment of NH90 by Antonov, C-17 or *HMNZS Canterbur*y more practical than C130 Hercules. Requirement is therefore only partially met. Capabilities relating to the conduct of support operations from *HMNZS Canterbury* are still being developed.		

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years.

Active Risks at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Delivery of Spares and Support Equipment.** There is a chance that contracted support equipment may not be delivered in accordance with the delivery schedule.	Acquisition and Introduction into Service	Low	**Operational Outputs.** The RNZAF may have to reduce the planned number of initial flying hours with consequent impacts on introduction into service progress.	Possible	The Project Team has worked closely with NH Industries to ensure that spares and support equipment are available to support flying operations. As of June 2013, almost all (97%) of spares consignments had been delivered to New Zealand. The remaining spares are expected in New Zealand by December 2013. As a result this risk is considered to have a low likelihood of occurring.
2	**Engine Issues.** The NH90 engine may suffer damage or failure as a result of foreign object damage (FOD) and/or thermal imbalance.	Acquisition and Introduction into service	Medium	Until the FOD **screen is supplied** NZ flying operations may damage engines with consequent repair costs and reduced flying rate. The originally supplied FOD screen was not cleared for use in snow conditions limiting the effectiveness and flexibility of NH90 operations. The temporary 'fix' for the thermal imbalance is labour intensive and inefficient.	Likely	Qualified FOD screens, cleared for use in snow conditions, have been delivered to the RNZAF. Temporary operational procedures are in place to minimise the chance of thermal imbalance. NH Industries is providing contractual undertakings to resolve engine thermal imbalance issues and is liaising with the Project Team to provide a permanent solution as soon as possible.
3	**Software Development may not meet Contract Specification.**	Acquisition and Introduction into Service	Medium	**Operational Outputs.** The delay in final configuration provision may prolong the time taken for the NH90 to reach its directed level of capability.	Possible	Close monitoring of progress in any delay of Final Configuration and Final Configuration+ software releases.

4	**Transportation and Operation with the multi-role vessel.** As the ability to transport the NH90 as cargo on *HMNZS Canterbury* and to land on and fly off the ship deck under certain sea conditions has yet to be fully determined, there may be limitations to achieving this.	In Service	Medium	**Operational Outputs.** The ability to transport and operate the NH90 as a ship-borne capability on *HMNZS Canterbury* may not be possible in very high sea state conditions.	Possible	An assessment of the ship-borne capabilities of the NH90 helicopter for transport and flight operations from *HMNZS Canterbury* is underway. The Helicopter - Ship Integration and Trials project is aware of the issues and is dealing with them as part that project.
5	**Operating Costs of Capability.** As the costing models initially supplied in the contract are incomplete, they may not take into account all the tasks to be undertaken by the NH90 as identified in the NZDF Statement of Operating Intent.	In Service	Medium	**Operating Budget.** The through-life costs of the medium utility helicopter are likely to increase.	Likely	The RNZAF requested more information from NH Industries to enable the development of a mitigation strategy. In the meantime, the known financial impact for the Introduction into Service is being incorporated into the NZDF Five Year Resource Plan.
6	**Life of the NH90 Airframe.** The fatigue life modelling utilised by NH Industries may not be accurate and may not take the NZDF Statement of Operating Intent into consideration.	In Service	Medium	**Operational Outputs.** The life of the airframe or the annual available flying hours may be reduced.	Possible	An independent assessment of the fatigue life modelling has been conducted and issues /gaps identified for ongoing management and analysis.
7	**Personnel resources.** As introduction into service personnel resources are limited they may create a single point of failure.	Introduction into Service	High	May slow down the development and provision of capability.	Likely	Constant management of tasks, priorities and available resources and management expectation as to what can be achieved and by when.
8	**Delivery of Final NH90 Configuration.** As the NH90 is being delivered in three configurations representing progressive product improvements to ultimately achieve the contracted state, there may be a risk that the delivery of the final configuration of the NH90 will be delayed.	Acquisition and Introduction into Service	Medium	**Full capability release** may not be achieved on schedule.	Possible	The project team will manage this in conjunction with NH Industries. The RNZAF will monitor and consider alternative options for provision of shortfalls that may eventuate.
9	**Retrofit Activity.** As retrofit activity is planned to upgrade the existing fleet from September 13 to September 14, there may be risks for IIS as during most of this period only 3 aircraft will be available to conduct IIS activities and progress the Transition Plan.	Acquisition and Introduction into Service.	High	Delivery of the Transition Plan and DLOC may be delayed.	Likely	Constant management of tasks, priorities and available resources and management expectation as to what can be achieved and by when. Close coordination is planned between the Crown and NHI to minimise risk.

	Readiness of Role Equipment. There is a chance that some role equipment including External and Internal Auxiliary Fuel Tanks, Chaff and Flare Dispenser, Cargo Rolling Device, Ballistic Protection, Bottom Life Raft, Fast Roping and Rappelling Device, Pintle Machine-Gun Mount may not be ready prior to acceptance.	Acquisition and Introduction into Service	High	**Operational Outputs.** The delay in provision of this role equipment will prolong the time taken for the NH90 to reach its directed level of capability.	Likely	The Project Team is working alongside NH Industries to qualify and deliver most of the role equipment in the agreed timeframe. With regard to the Fast Roping and Rappelling Device, and Pintle Machine-Gun Mount the RNZAF are developing solutions in concert with local industry (Rappelling) and Australia (Pintle Machine-Gun Mount).

5.2 Issues

	Issues	Phase	Severity	Impact	Treatment Actions
1	**Qualification and Design Acceptance Process.** Delays in the certification of other countries' variants of the NH90 helicopter have delayed the Qualification and Design Acceptance Process for the New Zealand variant.	Acquisition	Medium	**Schedule.** The qualification of the Final Configuration design may be delayed which will impact on the schedule of the remaining helicopters.	The Introduction into Service team has evolving plans to mitigate the consequential impacts of the delays to certification for other nation's aircraft.
2	**Synthetic Training.** An NH90 simulator was not acquired as part of the project.	Introduction into Service and In Service	High	**Crew Currency and Availability.** Crews have to deploy to Europe for up to a month twice a year to satisfy emergency training and currency requirements. During this time the Transition Plan is disrupted.	ADF simulator training in Australia will ease the time lost to travel. The preferred solution would be to use a certifiable NZ based synthetic training system.
3	**Personnel.** Personnel have been and continue to be lost from the IIS project due to posting and/or resignation.	Introduction into Service	High	**Personnel Availability**. Trained personnel continue to be lost from the project, with aircrew resignations hitting particularly hard.	Defence Personnel Executive is aware and examining mitigation strategies.
4	**Air Transportation**. The NH90 has been delivered without qualification for air transport.	Acquisition.	High	**Air Transportation**. The ADF has withdrawn its clearance for NH90 to be transported by C-17. Any deployment by air will require OEM support and may have to be taken at risk of impacting fatigue life.	MoD is working with NHI to acquire air transportation scheme for NH90 which can be trialled in late 2013.

PROJECT DATA SHEET: P-3K ORION MISSION SYSTEMS UPGRADE

PROJECT DESCRIPTION

This project is upgrading the mission management, sensors, communications, and navigation systems for the six RNZAF P-3K Orion surveillance and reconnaissance aircraft. Also being acquired is a flight deck trainer. The prime contractor undertaking the upgrade is L-3 Communications Integrated Systems.

Policy Value

The surveillance and reconnaissance capability of the P-3K Orion enhances the Government's options for:

- defending New Zealand's sovereignty, its Exclusive Economic Zone and territorial waters;
- protecting New Zealand's interests in the Southern Ocean and Ross Dependency;
- operating with the Australian Defence Force to discharge our obligations as an ally of Australia;
- contributing to peace and stability operations in the South Pacific;
- contributing to whole of government efforts at home and abroad in resource protection, disaster relief, and humanitarian assistance; and
- participating in Five Power Defence Arrangements and other multilateral exercises or operations.

Government Approval Milestones[20]

Government Approval Milestones

Project Initiation: Occurs once a capability requirement has been identified by Defence and a broad assessment of the options for meeting the capability requirement has been authorised by the Chief Executives and noted by the Minister of Defence.

Approval to Initiate: Attained when Cabinet agrees to the project's inclusion on the capital acquisition plan and authorise Defence to engage with industry to refine its initial assessment with more accurate information.

Approval to Commence: Attained when Cabinet agrees to the refined capability requirement and authorises the Ministry of Defence to commence a formal tender and tender evaluation process.

Approval to Negotiate: Attained when Cabinet agrees to the preferred tender, specifies funding limits, and authorises the Ministry of Defence to enter into contract negotiations.

Approval to Commit: Attained when Cabinet agrees to the final contract and authorises the Ministry of Defence to sign the contract and commit funding.

[20] These are generic titles for Cabinet approval points in the capability definition process. Whilst the actual titles of Cabinet Papers have varied, the approvals and direction they were seeking from Cabinet has been broadly consistent with the definitions provided

Date	Approved By	Nature of Approval
2 April 2001	Cabinet CAB Min (01) 10/10	**Approval to Initiate.** Cabinet agreed to the recommendation in the Maritime Patrol Review that the Orion fleet be retained to provide a surveillance and reconnaissance capability.
4 December 2002	Cabinet External Relations and Defence Committee ERD Min (02) 8/4	**Approval to Commence.** The Ministry of Defence was authorised to seek tenders for the P-3K Orion Mission Systems Upgrade Project and the P-3K Communications and Navigation Systems Upgrade project.
9 February 2004	Cabinet CAB Min (04) 4/8	**Approval to Negotiate.** The Ministry of Defence was authorised to carry out final negotiations with L-3 Communications Integrated Systems of the USA. **NOTE.** The title of this Cabinet minute was P-3K Orion Systems Upgrade: Tender Evaluation.
9 August 2004	Cabinet CAB Min (04) 26/3	**Approval to Commit.** The Ministry of Defence was authorised to enter into a contract with L-3 Communications Integrated Systems.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

In 2001, Cabinet agreed that a surveillance and reconnaissance capability was required to provide support to civilian agencies as a first priority, then to provide a military capacity against maritime surface targets, and to contribute to foreign and security policies in the South Pacific and Asia-Pacific regions. Cabinet agreed that a limited upgrade of the P-3K Orion fleet be progressively implemented, with priority given to those upgrades that would provide an appropriate and affordable suite of sensors.

In the 2001 Maritime Patrol Review, civilian requirements from eight areas were examined: fisheries, resource management, conservation, pollution, immigration, customs, maritime safety, and search and rescue. The review included consultation with eight core departments, 14 government agencies, 20 other organisations and 15 overseas agencies including the Royal Australian Air Force and the Australian Department of Defence.

In May 2001, Defence provided a brief to the Cabinet Policy Committee on options for upgrading the P-3K Orion aircraft. The requirements included upgrades to the sensor, mission management, communication, and navigation systems. Options for upgrade included:

- An upgrade that would replace essential sensors to meet most civilian requirements and some foreign policy needs (radar and electro-optics with limited integration);
- An upgrade that would fully meet civilian requirements (radar and electro-optics and some electronic surveillance); or
- An upgrade that would meet all civilian requirements and the Government's defence policy objectives.

In November 2002, Cabinet authorised Defence to seek proposals from industry to cover all three options for the P-3K Orion Mission Systems upgrade and the P-3K Communications and Navigation Systems upgrade.

How Defence analysed the requirements options in the Capability Definition phase

The Maritime Patrol Review provided analysis of whole-of-government strategic goals and interests for maritime surveillance and interdiction. Options related to categories of aerial surveillance and how the aircraft could operate were identified and subsequently aligned with options for aircraft ownership.

How Defence considered interoperability

In alignment with the 2001 Maritime Patrol Review, the 2002 P-3K Operational Concept Document re-affirmed the need to work with Australia in pursuit of shared security interests. Additionally, it noted the requirement to contribute to the maintenance of security in the Asia-Pacific region, including through participation in Five Power Defence Arrangements activities.

How Defence considered through-life costs and issues

The services of the UK Ministry of Defence's Procurement Agency Price Forecasting Group were contracted to undertake an independent assessment of the likely cost to upgrade the P-3K Orion fleet.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare assess and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

2001 – Whole-of-Government Strategic Goals and Interests for Maritime Patrol

Whole of Government - Strategic Goals and Interests for Maritime Patrol		
Agency	Role	Maritime Patrol Need
Customs	Border management	Aerial Detect, Surveil, Identify, Deter out to extremes of aircraft capability Surface Detect, Identify, Surveil, Interdict, Patrol, Deter in areas where NZ has jurisdiction
Fisheries	Resource management	Aerial Detect, Surveil, Identify, Deter out to extremes of aircraft capability Surface Detect, Identify, Surveil, Interdict, Patrol, Deter with jurisdiction within contiguous EEZ
Maritime Safety Authority	Provide safe maritime environment	Aerial Detect, Surveil, Identify, Deter out to extremes of aircraft capability Surface Detect, Identify, Surveil, Interdict, Patrol, Deter with jurisdiction within contiguous Navigation Area XIV (New Zealand's area of responsibility)
Ministry of Foreign Affairs and Trade	Policy advice to government on international affairs and trade matters	Aerial Presence in Southern Oceans and Pacific Islands Surface Presence in Southern Oceans and Pacific Islands
Ministry of Defence	Policy advice to government on international and national security matters	(Note: this section was left blank)
New Zealand Defence Force	Protects New Zealand physical sovereignty	Aerial Detect, Surveil, Identify, Deter out to extremes of aircraft capability Surface Deter through presence
Ministry of Agriculture and Forestry, Department of Conversation, Ministry of Health plus others	Interest in maritime surveillance	(Note: this section was left blank)

Police	International obligation to prevent terrorist activity…..in this role Police would need access to full aerial and sea surface response	(Note: this section was left blank)

Options for Operation of the Patrol Aircraft and Options for Ownership

Options for Operation of the Patrol Aircraft	
Aerial Surveillance Categories and Aircraft Type	**Options for Ownership**
Long range sustained surveillance: • Specific targeted operations including support to search and rescue operations • Cover both the New Zealand and Nadi search and rescue regions • Access to aircraft on an ad hoc basis • Acceptable only if dedicated mid-range sustained aircraft available as cover • Meet national interest obligations in Southern Ocean and islands	Defence owned and operated Dedicated aircraft contracted on a long term basis Aircraft contracted on an as required basis
Mid-range sustained and coastal surveillance: • Support to search and rescue operations • Regular patrol – movement monitoring • Surface surveillance coordination • Deterrent factor • Required as dedicated resource • Coordinated pre-bid tasking to meet operational needs	Defence owned and operated Dedicated aircraft contracted on a long term basis Aircraft contracted on as required basis
Coastline short –duration surveillance: • Specific targeted operations including support to search and rescue operations • Regular patrol – arrival/departure monitoring • Surface/land-based interception coordination • Ad hoc access to aircraft • Availability as required • Variety of aircraft choice necessary	Defence owned and operated Dedicated aircraft contracted on hourly basis Aircraft contracted on an as required basis
ASSESSMENT: These ownership and/or operation options were presented by Customs at the request of the other stakeholders. Customs asserted that a combination of suppliers who could have been able to provide in depth support for each type (option) should be considered.	

1.3 Description of the Capability and Operational Requirements

Capability Requirements-The capability requirements necessary to support policy objectives include:

Support to civilian agencies

- Fisheries protection – Conduct programmed and response patrols throughout the New Zealand EEZ and surrounding waters;
- Border protection – Conduct programmed and response patrols throughout the New Zealand EEZ and surrounding waters;
- Oil spill and navigation hazard response – Conduct response patrols throughout the New Zealand Maritime Safety Area;
- Conservation support – Conduct programmed and response patrols throughout the New Zealand EEZ;
- Search and rescue – Conduct aerial search and rescue operations in the New Zealand Search and Rescue Regions as required; and
- Support to police activities – Conduct response patrols throughout New Zealand and the surrounding waters.

Support to Defence and Foreign Policy

- Air operations – conduct air operations within New Zealand's area of interest;
- Support to Land Forces – support land operations within New Zealand's area of interest;
- Support to Special Forces – support special operations within New Zealand's area of interest; and
- Support to Maritime Forces – support maritime forces within New Zealand's areas of interest.

Operational Requirements- The operational requirements necessary to support the capability include:

- Gathering and disseminating of information – active and passive sensors.
- Application of force – weapons with precision guidance ability.
- Interoperability – secure systems to share reconnaissance and intelligence information.
- Access to airspace – compliant communications and navigation systems.
- Self-protection – sensors.

NOTE: The operational and capability requirements listed here were those identified in the suite of requirement documents produced during the Capability Definition Phase. During the tender and contract negotiation process these requirements are converted into function and performance specifications (FPS) that become the contracted deliverables. During the contract negotiation process the operational requirements have to be balanced against cost or viability considerations.

1.4 Schedule of Capability Definition Phase

Dates	Duration	Explanation
2001 – 2002	2 years	The Maritime Patrol Review gathered and analysed civilian and military requirements. Options for upgrading the P-3K Orion aircraft were presented to Cabinet.

1.5 Expenditure of Capability Definition Phase

	Expenditure (NZ$)
Definition Phase	2002/03 38,736.69 2003/04 248,972.34 2004/05 55,911.70 2005/06 34,273.13 2006/07 3,137.66*
Explanation	In the definition phase, the above costs were classified as pre-acquisition costs and were met from the NZDF's operating budget. *This figure was shared with the C-130 upgrade project

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2002	2003	2006	2008
Costs (NZ$ million)	150-220[21] 320[22]	150-220[23] 60-100[24]	373[25]	373[26]
Explanation of variance	N/A			

1.7 Estimates of Acceptance Date Made in the Capability Definition Phase

Estimates	Initial Estimate	30 June 2013 Estimate	Actual
Date	End of 2010	N/A	April 2011
Explanation of variance	N/A		

[21] This was the expected cost depending on the extent of the upgrade for the Mission systems only. The options had not been submitted to government at that stage.
[22] This was for the communications and navigation systems upgrade for both the P-3K Orions and the C-130 Hercules.
[23] This was the expected cost depending on the extent of the upgrade for the Mission systems only.
[24] This was for the communications and navigation systems of the P-3K Orions.
[25] This was for the mission management, communications, and navigation systems upgrades.
[26] This was for the mission management, communications, and navigation systems upgrades.

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of Acquisition Phase

Description of acquisition work

The acquisition phase of the P-3K Systems Upgrade commenced following Cabinet's authorisation to seek proposals from industry in December 2002. The acquisition project team released an Invitation to Register Interest in February 2003 with the corresponding Request for Tender closing in October 2003.

On 5 October 2004, a fixed price contract was signed with L-3 Communications Integrated Systems to undertake the P-3K Systems Upgrade Project, at a cost of NZ$373.1 M. The approval included the Mission Systems Upgrade, the digitised Communications and Navigation Systems Upgrade, and a flight deck trainer.

In August 2005, three aircraft received an immediate enhancement of their electro-optical sensors. This was to provide an early, yet partial, increase in the capability to cover core surveillance requirements during the acquisition phase. This upgrade was conducted by L-3 Communications Integrated Systems through a sub-contractor, SAFE Air Ltd, in Blenheim.

The first aircraft to undertake the upgrade was delivered to the L-3 Communications Integrated Systems facility in Greenville, Texas in September 2005. This aircraft was the prototype for the design and development of the upgrade project and progressed through an acceptance testing and evaluation programme, returning to New Zealand following Provisional Acceptance in April 2011. This process was supported on-site by Defence's Resident Project Team. The remaining aircraft, including the three with enhanced electro-optical equipment, are being fully upgraded in Blenheim by SAFE Air Ltd. These aircraft are known as "production airframes". The first production aircraft was inducted into SAFE Air Ltd's Blenheim facility in August 2010 and provisionally accepted in March 2012. The second Production aircraft was inducted for upgrade in March 2012 and provisionally accepted on 27 September 2012, and the third production aircraft was inducted into upgrade in September 2012 and provisionally accepted on 30 April 2013. A separate project team is overseeing the production upgrades at SAFE Air Ltd.

The acquisition phase has involved extensive project planning, contract management and administration, a series of system and critical design reviews and approvals, and the ongoing monitoring and inspection of contract deliverables. The main contract management task has been the supervision of 22 contract variations, made primarily to ensure the contractor meets the functional and performance requirements of the mission systems software, and to accommodate frequent advances in technology.

The ability to accommodate regular technology updates has been an important aspect of delivering the P-3K2 Orion capability and has required an innovative acquisition strategy. This has included integrating New Zealand contractors Beca Applied Technologies Ltd. into the software development team so that ongoing in-country software support is available after acceptance.

How Defence decided to acquire the Capability Solution

Tender Companies	
EADS CASA (Spain)	
Lockheed Martin Tactical Systems (USA)	
L-3 Communications Integrated Systems (USA) ***Preferred Tender***	
Assessment	L-3 proposal was judged to provide the best capability with lowest risk, the lowest price, the strongest technical support and the most acceptable programme management arrangements.

2.2 Project Budget

Budget variation

	Date Approved	Total (NZ$ million)
Original budget at Approval to Commit	October 2005	373.1
Current approved budget	March 2012	377.3
Variation on originally approved budget		4.2

Explanation of major budget variations

Date of Individual Variation	Total	Explanation
March 2012	$4.2 million	An additional NZ$4.2M has been required for a range of project management and ancillary costs and a realignment of the induction schedule in order to cover operational requirements. This has been funded through a fiscally neutral transfer between the Boeing 757 Modification Project and the P-3 Mission System Upgrade Project.

2.3 Financial Performance

Project expenditure to 30 June 2013

	Total
Life to date expenditure (cumulative)	316.7
Remaining balance of approved budget	60.6
Remaining balance already committed	15.9

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	377.3
Total forecast expenditure	332.6
Gross project variation (forecast)	44.7
Foreign exchange impact	(44)
Actual project variation (forecast)	0.7

Variance explanation

Nature of variation (forecast)	Total ($million)	Explanation
Actual project variation	0.7	**Forecast Project management costs and ancillary contracts.** The two expenses are not initially determined on a fixed milestone payment basis. They are forecasts that will change as the project progresses and as more reliable information becomes available on how these funds need to be allocated. .
Foreign exchange impact	44 favourable	**Note.** Whilst these funds contribute to the total under spend they cannot be used by the project team because the extra funds are not part of the approved budget.
Total	44.7	

Project Contingency (as at 30 June 2013)

Total (NZ$ million)	
Contingency built into the budget	15.2
Total contingency expended	18.7
Additional funding	4.2
Remaining balance	0.7

Explanation of major contingency draw downs

Draw down	Total (NZ$ million)	Explanation
Spare electro-optical turret, additional spare parts, and staff costs	6.1	Purchase of a third spare electro-optical turret after it was determined that the turrets reliability presented an in-service support and operational risk. An increase in the project's spares list was required to cover new or updated communications equipment not originally covered in the contract. Extension of two NZDF secondees based in Texas.
Government Furnished Material budget, Flight Deck Trainer features, Tempest radar warranty and software changes	1.8	Project management - costs of trainees and flight test crew. Government furnished materiel budget. Additional features in the Flight Deck Trainer. Warranty on radar emissions test. Changes to the data management system software.
Engineering and communications equipment	0.6	Re-design of the digital display of information for the navigation system. Radar gas maintenance system. Engineering changes and weight reduction.

Engineering and communications equipment	3.5	Radar maintenance capability. Additional spares.
Cost recovery for additional aircraft spares	(0.2)	Cost of additional aircraft spares recovered from the NZDF.
Engineering Support and Communications Equipment	2.1	Contractor Engineering Liaison support. High Frequency radio link automation.
Supplier Fuel	0.2	Reimbursement of fuel used by supplier
Project Management	0.6	Additional Salary extension for Project Manager
Project Management	0.6	Additional funding for costs of extension of Project Managers
Testing	0.1	Military Satellite Communication System Testing
Contractor Funding	1.1	Contractor overhead funding
Engineering Liaison	0.6	Extension of Engineering Liaison Services
Engineering Liaison	0.1	Extension of Engineering Liaison Services
Contract Extension	1.1	Extension of Engineering Technical Services
Contract Extension	0.4	Extension of Engineering Liaison Services
Total	**18.7**	

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date

		Original forecast at Approval to Commit	30 June 2013 forecast / achieved	Variation in Acquisition phase
Acceptance Date	First aircraft	May 2008	April 2011 (achieved)	35 months
	Last aircraft	September 2010	February 2014 (forecast)	41 months

History of variations to schedule (Prototype Aircraft)

Date of individual variation	Variation length (months)	Explanation
Between January 2007 and June 2009	17	The size of the software integration task, in particular the development of the data management system that integrates the information being received from multiple sensors and other equipment, has been greater than the contractor anticipated. The contractor's overrun in this area is in the order of 200,000 man-hours at the contractor's expense.
24 April 2007	1	The Crown agreed to a request for a one month contract change due to a delay in the delivery by sub-contractor of the P-3K2's radar. This had a corresponding impact on other project deliverables.
23 January 2008	5	The Crown agreed to a five-month schedule relief aimed at obtaining a realistic work schedule. The contractor's original work schedule contained errors of logic, implied resource bottlenecks, and made unrealistic projections.
December 2009- July 2010	7	Test flights were delayed while a serviceability issue with the prototype aircraft was resolved. The aircraft had loose fasteners on its wing straps. The flight tests were also delayed due to engine servicing and replacement issues and two aerodynamic problems: an airspeed indication problem caused changes in stall performance and take-off distances, and a periodic yaw problem caused by the dome antenna aft of the wing.

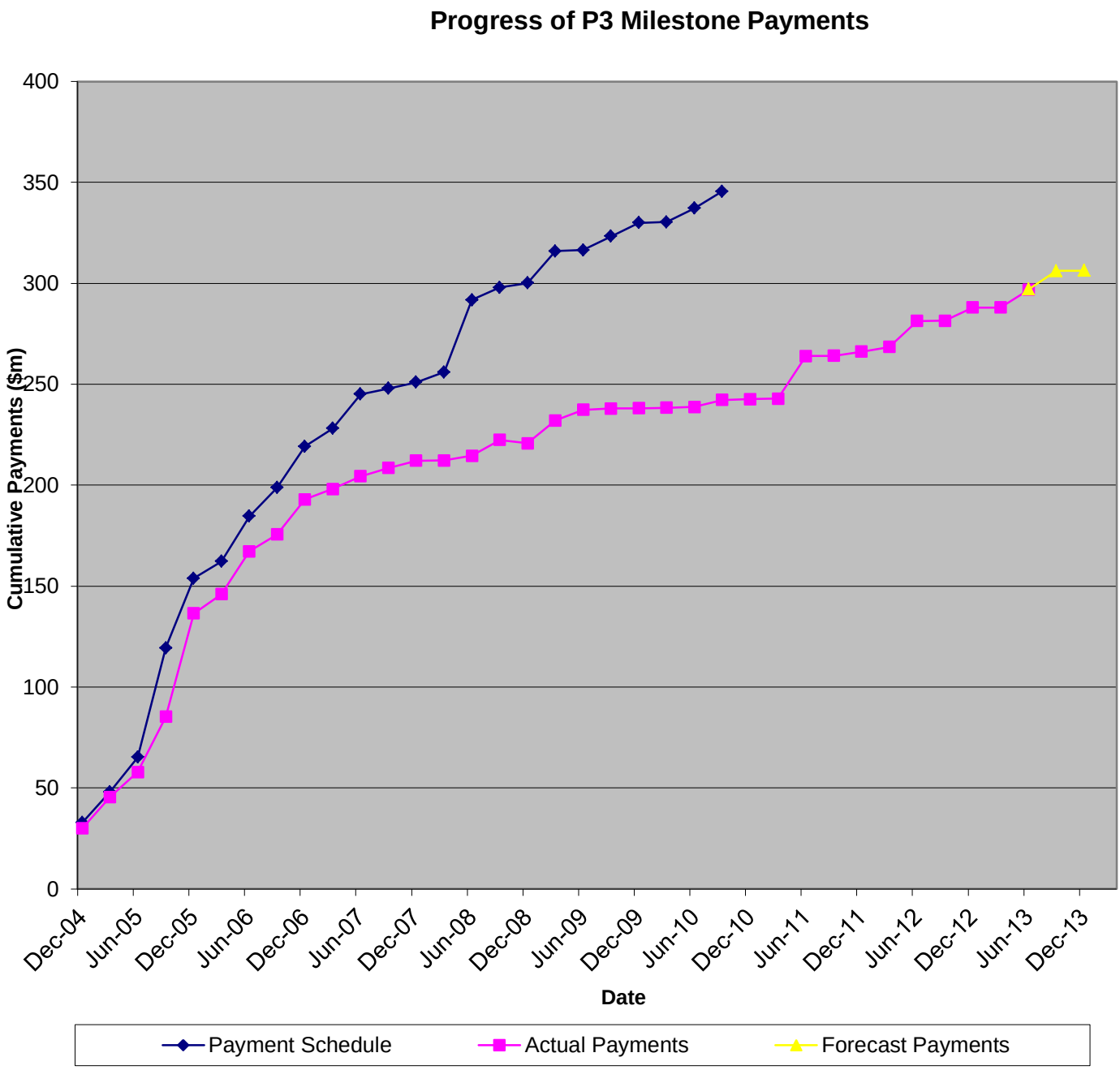
July 2010 – Apr 2011	8	Test flights were delayed due to a combination of aircraft “unserviceabilities”, resolution of non compliant issues and the ability of the prime contractor to achieve their testing schedule and contract specifications.

History of variations to schedule (Production Aircraft)

Date of individual variation	Variation length (months)	Explanation
April 2011 – Ongoing	+35 forecast	Post the provisional acceptance of the prototype aircraft a revised schedule was agreed that balanced competing demands for training, test and evaluation and remedial work being conducted by the contractor. As part of this re-establishment of the schedule, Defence negotiated a six month extension to the upgrade of the last two aircraft to enable the Orion fleet to maintain capability until the upgraded aircraft can be introduced into service.

Progress of P-3 Orion Upgrade against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual milestone payments against the milestone payments schedule agreed to in the prime contract[27]. Milestone payments are made upon the contractor's provision of key deliverables and are therefore a good way to identify timing and size of schedule slippage.



[27] The milestone payments schedule has cumulative payments that are less than the total budget because it excludes the ancillary and discretionary costs of the project.

SECTION 3: INTRODUCTION INTO SERVICE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the operational test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service Phase

Description of Introduction into Service phase

In April 2005, the RNZAF stood up the P-3K2 Introduction into Service Team and drafted the Introduction into Service tasks and requirements. A Transition Plan was developed in August 2006, which described the transition schedule of the P-3K Orion into the P-3K2 and the merger into No 5 Squadron.

In November 2006 the RNZAF established a Programme Management Office to coordinate the P-3K2 upgrade project in conjunction with the other fixed and rotary wing projects. In October 2010 this was subsumed into the HQ NZDF Capability Branch, Programme Delivery, as 'Air Introduction into Service'.

In November 2007, the Introduction into Service plan was developed and included the core planning and coordination of tasks to prepare for, receive and employ the P-3K2 aircraft. It included issues concerning:

- Personnel and training;
- Research and development;
- Information;
- Concept of operations and doctrine;
- Infrastructure and organisation;
- Equipment and/or platforms;
- Airworthiness; and
- Finance.

The Introduction into Service Team is supported by an Integrated Logistics Support Team provided by the RNZAF Directorate of Project Engineering and Certification. Logistic support concepts and analysis have been completed and a variety of other plans listed below are in progress.

A Joint Project Office (JPO) was established at RNZAF Base Whenuapai in October 2010 to integrate all aspects of fixed wing capability including Trials and Development (T & D), Operational Test and Evaluation (OT & E), training, retrofit, regression testing and follow on Acceptance, Test and Evaluation (AT&E).

Status of Introduction into Service phase

The Introduction into Service Team has developed the following:

- life-cycle management plans;
- OT&E plans;
- personnel and training plans;
- security certification and accreditation review; and
- transition course and operational conversion course.

The first four aircraft (prototype and three production aircraft) have been Provisionally Accepted and have conducted considerable AT&E, T&D and OT&E. The NZDF has delivered a self generated ground training system including networked classrooms and a radar trainer. The MoD has delivered the Systems Integration and Testing Laboratory, which is being used for rear crew training. The Flight Deck Trainer was accepted early and brought up to a standard capable of delivering transition training, by RNZAF No.230 (MS) SQN, with contractor support. With this package, the planned conversion training of P-3K crews from RNZAF No.5 SQN commenced on 24 April 2012. The second of the two transition courses graduated in

June 2013. The two transition courses delivered four trained P-3K2 crews. The first P-3K2 Operational Conversion Course to train ab-initio P-3K2 crews is planned to commence in August 2013.

Initial capability outputs for Search and Rescue and transit was achieved under an Interim Supplemental Type Certificate in March 2013. The phased release of capabilities will continue through until mid 2014.

3.2 Schedule of Introduction into Service

Levels of Capability

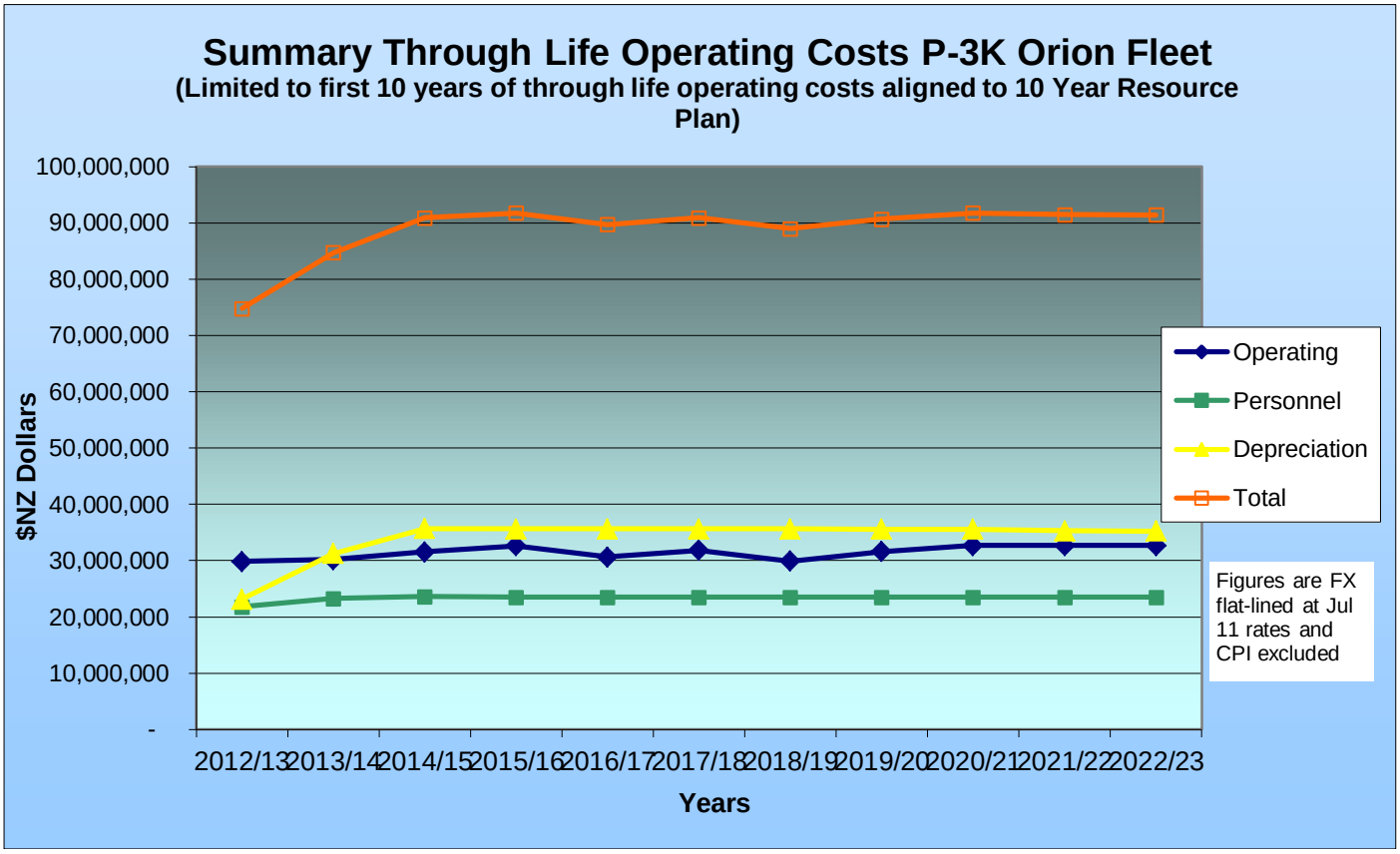
Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.
Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.
Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.

NZDF Output Plan, 2009, S1-12

	Initial Estimate	30 June 2013 Estimate	Actual	Variance (months)
Date prototype accepted by Crown	May 2008	N/A	April 2011	35
Commence operational test and evaluation	May 2008	October 2012	October 2012	0
Finish operational test and evaluation	December 2008	October 2014	N/A	-
Achieve initial operating capability	May 2009	December 2012	March 2013	3
Establish operational level of capability[28]	Not provided	N/A	N/A	N/A
Establish directed level of capability	April 2011	November 2014	N/A	-
Explanation	The milestones for introduction into service are uncertain due to their dependence on the final production aircraft acceptance date, as well as the ability to transition line crews and ensure task supporting systems for P-3K2 operations are in place and working.			
	The originally planned schedule for the P-3K's test and evaluation over the maritime and land environments was realigned to accommodate prototype delays and to maintain directed operational outputs. The operational capability of the P-3K2 will be released in three phases, with initial operational capability achieved in March 2013 with P-3K2 aircraft available, P-3K2 crews trained and task supporting systems in place.			

[28] This is required for Employment Context 1D: Terrorist and Asymmetric Threats.

3.3 Forecast of Annual P-3K Through Life Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Operational Requirements

Operational Requirements	Delivery	Comment
Gathering and dissemination of information – active and passive sensors.	Yes	Initial capability achieved for Search and Rescue and domestic surveillance.
Application of force – weapons with precision guidance ability.	Partial	The requirement was identified but no new or upgraded capability was included in the scope of this project. The legacy torpedo capability has been retained. A project to deliver air-to-surface weapons capability for the P-3K2 Orion fleet may be considered in the future.
Interoperability – secure systems to share reconnaissance and intelligence information.	Yes	
Access to airspace – compliant communications and navigation systems.	Yes	Delivered aircraft have achieved project Performance Based Navigation standards.
Self protection – sensors.	Partial	The sensors will provide situational awareness. They are not a self-protection system. A project that would equip the P-3K2 Orion fleet with a self-protection capability has been considered.
Assessment: Most requirements will be met.		

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years.

Active Risks as at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	Application of resourcing by the sub-contractor to the production phase may be an issue. While essentially this is mainly a risk for the prime contractor, this has the potential to also adversely affect other NZDF contracts.	Acquisition/ Introduction into Service	Medium	Further schedule delays are possible.	Likely	Monitoring of manpower assigned to the project. In communication with the contractors, seeking additional manpower resources if required.
2	Serviceability problems with legacy aircraft systems (especially engines and propellers) may cause delays in Production Phase testing.	Acquisition/ Introduction into Service	High	Further schedule delays could be possible.	Likely	NZDF has mitigated the impact of this risk by providing ground support personnel at Blenheim to maintain the legacy systems and improving the logistics processes to deliver replacement equipment.
3	There may be temporary or permanent loss of project personnel (illness, resignation, career postings, etc).	Acquisition/ Introduction into Service	Medium	Delays in the conduct of project activities.	Possible	Training additional P-3K2 air and ground crew, and mission support staff.

5.2 Issues

	Issues	Phase	Severity	Impact	Treatment Actions
1	**Competing demands on aircrew**. The crew that have been trained on the upgraded P-3 systems are a resource on the critical path for most activities, including training further crews, remedial upgrade testing, production phase testing and NZDF Test and Evaluation while maintaining initial operational outputs.	Acquisition / Introduction into Service	High	Complications in any of these activities will inevitably create further resource conflicts and require further schedule compromises.	The JPO is closely monitoring the personnel situation and managing any potential conflicting activities. This sometimes requires schedule amendments.
2	**Competing Demands on NZDF Resources.** There are competing demands on finite resources for operational outputs as well as training and upgrade testing activities.	Acquisition / Introduction into Service	Extreme	Delays in achieving upgrade and IIS activities (with resulting delays in delivering upgraded aircraft and progressing the Transition Plan).	Resource allocation is being managed, by necessity, on a daily basis by the JPO. Defence negotiated with the Contractor to defer the upgrade of the last two aircraft to maintain legacy fleet capability in the interim.
3	**Work required after aircraft acceptance.** The first four upgraded P-3K2 aircraft were 'provisionally' accepted. As a result, work is required on these aircraft to complete them after delivery.	Acquisition / Introduction into Service	High	Providing access for the Contractor makes the aircraft unavailable for other tasks and further diverts resources.	JPO planning includes provision for remedial work which will be addressed on a case by case basis in conjunction with other priorities. The late delivery of software updates by the contractor forces continual revision of these plans.
4	The **Contractor's turn-around time** to repair failed equipment will delay aircraft delivery (particularly for the latter aircraft to be delivered).	Acquisition / Introduction into Service	High	The final two aircraft are likely to encounter delivery delays if upgrade equipment fails prior to delivery. This is because the contractor will not have any replacement equipment (all other equipment having been previously delivered and being required for NZDF operations).	Loan previously delivered equipment (if available) back for contractor's use to enable testing to proceed in the interim. Defer delivery of affected aircraft until all allocated equipment can be delivered in a serviceable condition, or accept incremental delivery of aircraft on a system by system approach without all equipment (depending on the nature of the compromise).
5	**Full supply and repair support contracts** are not in place leading to equipment shortages and affecting aircraft availability.	Introduction into Service	Extreme	Aircraft unavailable to conduct IIS activities and operational outputs.	Establish a Basic Ordering Agreement with the prime contractor, then establish supply and repair contracts. Purchase spare equipment directly from the manufacturer.

PROJECT DATA SHEET: ANZAC FRIGATE PLATFORM SYSTEMS UPGRADE

PROJECT DESCRIPTION

The Platform Systems Upgrade (PSU) is addressing equipment obsolescence, performance degradation, operational limitations and compliance issues with the platform systems of the ANZAC class Frigates. These platform systems are distinct from combat capabilities and enable the frigates to move, float, generate power and recover from damage.

Policy Value

The PSU will maintain the operational effectiveness and efficiency of the ANZAC frigates, HMNZ Ships *Te Kaha* and *Te Mana,* over their remaining lives. It will thereby sustain and enhance the Naval Combat Force's contribution toward government options for:

- defending New Zealand's sovereignty, its Exclusive Economic Zone and territorial waters;
- operating with the Australian Defence Force to discharge our obligations as an ally of Australia;
- contributing to peace and stability operations in the South Pacific;
- contributing to whole of government efforts at home in resource protection;
- participating in Five Power Defence Arrangements and other multilateral exercises or operations;
- protecting New Zealand's interests in the Southern Ocean and Ross Dependency; and
- providing a physical demonstration of New Zealand's commitment to regional and global security.

Government Approval Milestones

Government Approval Milestones

Project Initiation: Occurs once a capability requirement has been identified by Defence and a broad assessment of the options for meeting the capability requirement has been authorised by the Chief Executives and noted by the Minister of Defence.

Approval to Initiate: Attained when Cabinet agrees to the project's inclusion on the capital acquisition plan and authorise Defence to engage with industry to refine its initial assessment with more accurate information.

Approval to Commence: Attained when Cabinet agrees to the refined capability requirement and authorises the Ministry of Defence to commence a formal tender and tender evaluation process.

Approval to Negotiate: Attained when Cabinet agrees to the preferred tender, specifies funding limits, and authorises the Ministry of Defence to enter into contract negotiations.

Approval to Commit: Attained when Cabinet agrees to the final contract and authorises the Ministry of Defence to sign the contract and commit funding.

Date	Approved By	Approval
11 September 2006	Cabinet CAB Min (06) 34/2	**Approval to Initiate.** Cabinet agreed to include the ANZAC PSU as a new project in the revised 2006 Defence Long Term Development Plan (LTDP) and authorised Defence to commence definition and options analysis.
19 November 2007	Cabinet CAB Min (07) 42/3	**Approval to Commence.**[29] The Ministry of Defence was authorised to release the tender documentation for the PSU. Defence was also authorised to seek approval from Joint Ministers (Minister of Finance and Minister of Defence) to enter into a contract not to exceed NZ$57.6 million once the tender evaluation process had been completed.
19 May 2008	Joint Ministers	**Approval of Revised Acquisition Strategy**. Joint Ministers approved a revised acquisition strategy to break the project down into four elements (See section 2.1) and authorised the Ministry of Defence to procure long lead items and commit initial funding for project start up costs.
23 October 2008	Joint Ministers	**Approval to Commit.** Joint Ministers approved funds for the power upgrade and stability enhancement and compartment changes elements of the project.
22 December 2010	Joint Ministers	**Approval to commit.** Joint Ministers approved funds for the Integrated Platform Management System (IPMS) and Heating, Ventilation and Air Conditioning (HVAC) elements of the project.

[29] This Government Approval Milestone was labelled 'Approval to Proceed' in the Cabinet paper.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

The PSU Project was initiated following a reprioritisation of Defence's Long-Term Development Plan in September 2005, in which the PSU Project was identified as a priority. In May 2006, the NZDF's Assistant Chief of Development assembled a joint MoD and NZDF team to conduct planning for the Project. The issue that the Project sought to address was the obsolescence and wearing out of the Platform Systems on the ANZAC class frigates. The Platform Systems that the upgrade would upgrade included the propulsion systems, electrical power generation and distribution, auxiliaries, damage control and platform management. In August 2006 a project charter and management plan were developed, and in November 2006 Cabinet agreed to include the project in the Defence Long-Term Development Plan.

Following this approval, the project team carried out an analysis to identify the technical requirements for the PSU. Operational deficiencies, maintenance requirements, and manning constraints drove the initial requirements. These requirements were subsequently analysed against policy objectives, the identified risks, and the potential risk mitigation measures. The findings of this process were presented to Defence's Integrated Capability Management Committee in the form of an internal initial gate document in May 2007.

Following the initial work, an analysis of options for the upgrade was undertaken, the findings of which were worked into a Comprehensive Capability Investment Proposal in October 2007. The Comprehensive Capability Investment Proposal formed the basis for a Cabinet paper that then sought government approval to proceed. Cabinet approved this paper, and the proposed upgrades for the ANZAC class Frigates in November 2007.

The upgrade was planned to coincide with a major scheduled overhaul of the frigates' diesel engines, which was a parallel project to be funded using NZDF operating capital and to occur in conjunction with the PSU. The engine upgrade integrated new engines because this was judged to be less expensive than refurbishing the old engines.

How Defence analysed the options

The Project Team carried out analysis of various options for the project throughout 2007. The principal parameter on which these options were based was cost. These cost-based options were then assessed according to criteria that covered key areas of risk and capability associated with the upgrade project. The criteria included:

- Operating profile;
- Environmental envelope;
- Training impact;
- Manpower reduction;
- Environmental compliance;

- Future capability;
- Supportability;
- Reliability; and
- Affordability.

The Project Team presented the findings of the options analysis to the Defence Executive Capability Board in July 2007. The Executive Capability Board accepted the proposed options and recommended they be further developed in the Comprehensive Capability Investment Proposal that was produced in 2007. Three options were examined in detail in the Comprehensive Capability Investment Proposal, and then presented in the November 2007 Cabinet paper seeking approval to proceed. These options are detailed in the table in section 1.2.

How Defence considered interoperability

Interoperability has been a key consideration for the PSU project because the ANZAC frigates are part of a joint capability programme between New Zealand and Australia. As a result, the frigates comprise New Zealand's main contribution toward naval combat force ANZAC operations and exercises.

Under the original ANZAC acquisition programme, New Zealand and Australia laid the foundations for joint management and support of the ships throughout their lives. This was formalised through the signing, in 1991, of an Implementing Arrangement for the Management of Assets and the In Service Support of the ANZAC class Frigates and shore facilities.

These arrangements, coordinated through the Australian Defence Material Organisation of the Australian Defence Force and the RNZN, provide insurance for the fleet, as well as a pool of rotables and spares for maintaining the ships.

How Defence considered 'through-life' costs and issues

The RNZN ascertained estimated 'through life' costs from a range of sources (but not from industry as consultation with industry prior to 'main gate' was not permitted). From this broad base of information a range of costs was assembled that covered the best and worse case scenarios for the upgrade. Within these costs, the most significant through-life components per ship were depreciation, fuel and personnel costs.

From this information, the net present values were calculated for the worst case scenario. This information was compared through the use of a cost benefit analysis against each of the options to be included in the Comprehensive Capability Investment Proposal. It was estimated that option three would realise an operational expenditure savings of NZ$27.0 million.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare assess and evaluate capability and operational requirements.
Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

Table One: Options for Upgrading the Platform Systems on the ANZAC Frigates		
Options Considered	**Capability option**	**Description**
Option 1	Undertake the minimum amount of work required to maintain the current availability of the ANZAC frigates.	This option would include: • Maintenance of the ships' 3600t displacement; • Maximum power output from the Propulsion Diesel Engines limited to 3.2MW; • Maintaining of the original Heating, Ventilation, Air Conditioning system, but replacement of the type of gas (R22) used in this system; • Control and monitoring system replaced by an Integrated Platform Management System with simulator function.
Option 2	Undertake the level of work required to maintain availability of the ANZAC frigates and improve their ability to deploy, in support of government policy, in all operating environments.	This option would include: • An increase of the ships' displacement to 3700t; • Maximum power output from the Propulsion Diesel Engines increased to 3.6MW; • Upgrade of the Heating, Ventilation, Air Conditioning system, and replacement of the type of gas (R22) used in this system; • Control and monitoring system replaced by an Integrated Platform Management System with simulator function.
Option 3 – **the recommended option**	Undertake work to provide the ANZAC frigates with the equivalent capability as Option 2, but incorporating improved overall operational efficiency and cost-effectiveness.	This option would include: • An increase of the ships' displacement to 3700t; • Maximum power output from the Propulsion Diesel Engines increased to 4.4MW (with new TB93 engines); • Upgrade of the Heating, Ventilation, Air Conditioning system, and replacement of the type of gas (R22) used in this system; • Enhanced Integrated Platform Management System with integrated bridge system, onboard operational trainer, remote monitoring capability, and battle damage control system.
ASSESSMENT	The third option was considered affordable at the time. It addressed equipment obsolescence, environmental compliance issues, overcame all identified operational constraints and provided a future growth margin. It also provided the ANZAC frigates with the ability to fill their operational profile efficiently and within the manpower constraints.	

1.3 Description of the Capability and Operational Requirements

Capability Requirement	Operational Requirements - Description and Explanation
Stability of frigates after incurring damage and their reserve buoyancy	• A minimum weight growth margin of 100 tonne. • Conformance to the requirements of DEF AUST 500, Australian Defence Force Maritime Materiel Rule Set, Vol. 3, Hull System Requirements, Part 2 Stability of Surface Ships and Boats.
ANZAC Operational Profile – the propulsion configuration system	• Propulsion systems where the diesel engines shall, in combination, provide sufficient power to drive the ship not less than 20 knots under the specified design environmental conditions at a maximum displacement of 3700 tonnes.
High Temperature Operating	• Adopt the ISO 7547-2002 standard for heating, ventilation and air conditioning. • An environmental control system which is capable of controlling the ship's internal air temperatures. • A chilled water cooling capacity of not less than 986 kW.
Control and Monitoring System that delivers automated functions across all platform systems	• Integrated platform management systems. • Simplified propulsion control. • Gas turbine engine control module. • Integrated bridge system. • Onboard operational trainer. • Enhanced battle damage control system. • Remote monitoring capability.

1.4 Schedule of Capability Definition Phase

Dates	Duration	Explanation
September 2005 – October 2007	25 months	During this period Defence analysed the requirements, identified options and received approval to upgrade the platform systems on the ANZAC frigates.

1.5 Expenditure in Capability Definition Phase

	Expenditure (NZ$)
Definition Phase	2003/04 24,155.41* 2004/05 49,145.86* 2005/06 171 336.52* 2006/07 136,855.58* 2007/08 650,652.71+ 2008/09 (7,725.83)+
Explanation	In the definition phase, the above costs are classified as pre-acquisition costs and have been met from the NZDF's operating budget. *During the period FY03/04 to FY06/07, these figures included costs from the ANZAC PSU and the ANZAC Self Defence Upgrade. + During the period FY07/08 to FY08/09 these figures were for PSU costs only.

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2006 (NZ$ million)	2007 (NZ$ million)
Costs	50-60	49.5 - 55.7
Explanation of Variance	N/A	

1.7 Estimates of Proposed Schedule in the Capability Definition Phase

Original Estimate		30 June 2013 Estimate		Actual	
HMNZS *Te Kaha*		**HMNZS *Te Kaha***		**HMNZS *Te Kaha***	
Start of Upgrade (part one)	Jan 2009	Part One Implementation	N/A	Part One Implementation	February 2010
Start of Upgrade (part two)	Aug 2009	Part Two Implementation	N/A	Part Two Implementation	January 2013
Upgrade complete	Not provided	Upgrade complete	December 2013	Upgrade complete	N/A
HMNZS *Te Mana*		**HMNZS *Te Mana***		**HMNZS *Te Mana***	
Start of Upgrade (part one)	Mid 2009	Part One Implementation	N/A	Part One Implementation	December 2010
Start of Upgrade (part two)	Mid 2010	Part Two Implementation	June 2014	Part Two Implementation	N/A
Upgrade complete	Not provided	Upgrade complete	May 2015	Upgrade complete	N/A
Explanation	In May 2008 Defence sought Joint Ministers (Defence and Finance) authorisation to adopt a revised acquisition strategy to allow the propulsion systems component of the PSU to be undertaken in conjunction with the engine replacements planned for during the frigates' extended maintenance periods in 2009 and 2010. However, the tight timeframe prevented the other elements of the PSU project from being ready at that time and were, therefore, rescheduled for implementation during subsequent maintenance periods. The 2nd phase of the upgrade (Part Two) was delayed 12 months by the December 2011 meeting of the Defence Capability Management Board. This meeting decided that *Te Kaha* would be the lead ship for the installation of PSU Phase 2 in 2013 and that *Te Mana* would follow in 2014. The delay was to enable the technical solution to be further developed and proven before implementation.					

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of acquisition phase

Description of acquisition work

In November 2007 Cabinet approved Defence's Main Gate investment case for the project and authorised the commencement of the acquisition phase (Approval to Proceed). The budget was not to exceed NZ$57.6 million. Cabinet authorised Joint Ministers (Defence and Finance) to approve the final costs. The Secretary of Defence was delegated authority to enter into contractual arrangements for the project.

The preferred acquisition strategy was to appoint Thyssen Krupp Marine Systems Australia (TKMSA) to be the project design authority, and to tender a prime contract on the international market. The November 2007 Cabinet paper also noted that Defence had a strong preference for the work to be undertaken at the Devonport Naval Base.

Revised Acquisition strategy

In May 2008 Defence sought Joint Ministers' (Defence and Finance) authorisation to adopt a revised acquisition strategy. The propulsion systems component of the PSU had been envisaged from the start of the project as taking place in conjunction with the replacement of the ANZAC frigates' engines in order to avoid duplication of work and significant extra cost. It became apparent after the Main Gate approval, however, that the engine replacements had to be done within a tight timeframe during the frigates' extended maintenance periods in 2009 and 2010. It would not have been feasible to ready the entire PSU work package under a prime contract in time for these maintenance periods.

Defence proposed, consequently, that four separate contracts be tendered, covering:

- the power upgrade;
- stability enhancement and compartment changes;
- IPMS replacement; and
- HVAC upgrade.

The power upgrade contract would be initiated in time for work to be carried out in conjunction with the engine replacement.

Joint Ministers authorised the revised acquisition strategy, as well as the commitment of NZ$4.5 million for the purchase of long lead items, and the commitment of $4.75 million as project start up costs. The Ministers noted that the heating, ventilation and air condition systems and the integrated platform management system replacement would go through an international tender process.

Phase One

Following approval of the revised strategy, work proceeded on a first phase, which took in the power upgrade, as well as the stability enhancement and compartment changes. The project team appointed TKMSA as the design authority and awarded MTU Detroit Diesel Australia Pty Ltd (and partners, VT Fitzroy and Australian Marine Technologies) a contract to conduct a Preliminary Design Study on the power upgrade element in order to firm up costs and clarify the design.

On 23 October 2008 Joint Ministers delegated authority to the Secretary of Defence to enter into contractual arrangements for the power upgrade. The Phase One budget was finalised through two

separate approvals. The first approval covered the long lead items and project start up costs totalling NZ$9.25 million. The second approval covered NZ$7.5 million to achieve the power upgrade element and NZ$7.5 million to achieve the stability enhancement and compartment changes.

Contractor	Contract
ThyssenKrupp Marine Systems Australia	Design Authority Services
Australian Marine Technologies	Stability Enhancement and Compartment Changes
MTU Detroit Diesel Australia Pty Ltd	Preliminary Design Study – power upgrade Long Lead Items – power upgrade Power Upgrade system design solution

HMNZS *Te Kaha* and HMNZS *Te Mana* have completed their power upgrade and stability enhancement upgrades during their extended maintenance periods

Phase Two

On 22 December 2010 Joint Ministers delegated authority to the Secretary of Defence to enter into contractual arrangements for the Integration Platform Management System (IPMS) and Heating, Ventilation and Air conditioning (HVAC) elements of the project.

The project team undertook Phase Two on the basis of using individual contracts for each element. Accordingly, the contractors listed in the below table were engaged:

Contractor	Contract
ThyssenKrupp Marine Systems Australia	Provision of Design Authority Services
Australian Marine Technologies	Provision of Design Integration Services
Noske Kaeser NZ	Provision of the HVAC element and the MCR and Bridge Consoles.
Siemens NZ	Provision of the IPMS element including the Integrated Bridge System (IBS)
MTU Detroit Diesel Australia Pty Ltd	Provision of the Propulsion Diesel Control System (PDCS) interface between the Siemens S7 software and the MTU diesel engines.
L-3 Communications MAPPS Inc, Canada	Replace existing Gas Turbine Advanced Engine Control Module (GT-ECM), which is obsolete.
Babcock Fitzroy	Installation work at Devonport Naval Base under the existing dockyard management contract

The HVAC, IPMS (including IBS), GT-ECM and PDCS projects have all passed Factory Acceptance Trials and are currently being installed in *Te Kaha*.

On Board Operator Training (OBOT)

Agreement on the scope of the OBOT deliverables was reached and as such, a project team to deliver the OBOT requirements established. In response to the Request for Tender for the OBOT requirement, the evaluation team reported that neither respondent was capable of delivering a compliant solution. The project team is currently reviewing the requirements to ascertain where possible changes can be made so that the OBOT capability can be delivered.

Resources

The NZDF seconded PSU Engineering Manager has been promoted and posted, with an internal promotion within the project filling the gap. This has resulted in the project reducing to one Technical Officer instead of the two employed previously.

Funding

There has been a NZ$1.8 million increase in the March baseline figures for the project. This increase is to cover project management costs and installation costs and to provide a project contingency.

2.2 Project Budget

Budget variation

	Date Approved	Approved Amount (NZ$ million)
Original budget at Approval to Commit- Total (Phases 1 & 2)	19 November 2007	57.6[30]
Approved budget- Phase 1 (see Note 1)	29 May 2008 31 October 2008 21 January 2011	9.3 15.0 (1.3)
Total – Phase 1		23.0
Budget – Phase 2 (see Note 2)	22 December 2010 21 January 2011 March 2012	33.3 1.3 1.8
Total-Phase 2		36.4
Remaining budget for Phase 2		59.4

Note 1	The Phase 1 budget was finalised through two separate approvals. • The first approval covered Long Lead Items (NZ$4.5 million), Design Authority (NZ$4.0 million), Project management (NZ$0.5 million), Preliminary Design Study (NZ$0.25 million). • The second approval covered NZ$7.5 million to achieve the power upgrade element and NZ$7.5 million to achieve the stability enhancement and compartment changes. • The second approval also accepted that the original estimate has been exceeded by NZ$3.6 million and this will impact the total project contingency. • The under spend within Phase 1 (NZ$ 1.3 million) has been transferred to the Phase 2 budget.
Note 2	• Phase 2 budget will cover the heating, ventilation and air conditioning upgrade and the integrated platform management systems upgrade. Cabinet approval of the Phase 2 budget was be sought in the last quarter of 2010. • This will include all under spends within Phase I to ensure the project is maintained within the NZ$57.6 million, however the project is unlikely to have any remaining contingency and this matter will need to be addressed as a risk to the project. • A baseline increase to the overall project budget of NZ$1.8M was approved to cover off forecasted additional costs in relation to project management and installation costs and provide additional contingency cover. • Information to hand by 30 June 2013 indicated that in order to complete the Platform Systems Upgrade to the specified capability requirements, additional funding will be required in the coming year.

[30] Budget limit set but no contract had been negotiated or signed.

2.3 Financial Performance

Project expenditure to date (30 June 2013)

	Total (NZ$ million)
Life to date expenditure (cumulative)	46.9
Remaining balance of approved budget- Phase 1	12.5
Forecast commitments	11.7

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	59.4
Total forecast expenditure	58.7
Gross project variation (forecast)	0.7 under spend
Foreign exchange impact	(0.7)
Actual project variation (forecast)	0
Explanation	30 June 2013 forecast results in a negligible project variation.

Project Contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	1.2
Total contingency expended	0.9
Previous Balance	0.3
Funding to provide additional contingency cover (March 2012)	0.7
Remaining balance	1.0
Note: The original assessment of the allocated contingency was based on the prime contract outlined in the 2007 Comprehensive Capability Investment Proposal. The contingency allocated in the budget for phase two needed to be updated due to the project's change in strategy and the additional project definition work that has been completed.	

Explanation of major contingency draw downs

Draw down	Total (NZ$ million)	Explanation
1. Gas Turbine Engine Control Module (GT-ECM)	0.9	The draw down covered the cost of the GT-ECM. At the time of seeking Cabinet approval the requirements had not been defined in sufficient detail to allow tenders to be called. As a result accurate costing could not be included as a specific line item.
2. Transfer	+0.7	Additional contingency cover as part of the fiscally neutral transfer from the ANZAC Frigate CIWS project approved March 2012.

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date.

	Initial Estimate	30 June 2013 Forecast / Achieved	Variation in Acquisition phase (months)
Acceptance Date Phase 1 (power upgrade, stability enhancement) Coordinated with *Te Kaha* and *Te Mana*'s planned extended maintenance period	*Te Kaha* December 2009	8 February 2010 (achieved)	2
	Te Mana Late 2010 (scheduled maintenance period)	3 December 2010 (achieved)	0
Acceptance Date Phase 2- (heating, ventilation, air conditioning and the integrated platform management systems) Co-ordinated with *Te Kaha* and *Te Mana's* planned extended maintenance period.	*Te Kaha* December 2012	December 2013 (forecast)	12
	Te Mana December 2012	May 2015 (forecast)	29

History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
April 2009	2	The RNZN deferred the start of *Te Kaha*'s maintenance period by two months to ensure that the power upgrade work could be undertaken in conjunction with the engine replacement.
December 2011	24 (forecast)	The decision was confirmed by the December 2011 meeting of the Defence Capability Management Board that *Te Kaha* would be the lead ship for the installation of PSU Phase 2 in 2013 and that *Te Mana* would follow in 2014. This action means a delay to the project schedule and comes with attendant costs but less risk.
June 2013	5	*Te Mana* will most likely not be available to commence PSU until mid 2014, once she returns from an operational deployment in early 2014, and *Te Kaha* has achieved a suitable level of operational capability post her upgrade.

SECTION 3: INTRODUCTION INTO SERVICE PHASE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service phase

Description of Introduction into Service phase

The Configuration Management Plan developed by the ANZAC Ship Design Authority describes the procedures for accepting and introducing the Platform Systems Upgrade into service. Included in the plan is an Integrated Logistics Support Impact Statement, which details the methods for supporting the upgraded systems throughout their lives.

As noted in the Project Management Plan for PSU, the upgrades are to be verified through analysis, inspection, demonstration and test activities. Verification will span from the design stage until the end of contractor Category 5 sea trials and will include:

- Category 0 design verification through reviews;
- Category 3 to test ship fit;
- Category 4 Harbour Acceptance Trials; and
- Category 5 Sea Acceptance Trials.

Category 4 and 5 trials will be conducted by the Crown with contractor assistance and RNZN crewing, and successful completion will be documented through a certificate of conformance and an acceptance certificate, respectively.

There will be Category 6 and 7 trials for each of the two phases: Phase 1 consisting of the propulsion power upgrade and stability enhancement and Phase 2 consisting of upgrades to the heating, ventilation and air conditioning systems and the procurement of an Integrated Platform Management System.

Phase I

After completion of the contractor test phase, the ships will enter into Naval Test, Evaluation and Acceptance programme under the responsibility of the RNZN. Category 6 ship qualification trials will focus on performance and functional aspects of the implemented solutions under seagoing and operational conditions. Category 7 (First of Class) trials will be conducted to establish and record the performance envelopes of the implemented solutions, and to establish the baseline against which future performance can be compared.

Phase 2

A detailed Operational Release Programme and Naval Test Plans for Category 6 and 7 trials are yet to commence. During the Operational Test and Evaluation phase the Category 6 and 7 trials will focus on operational effectiveness, suitability, operational setting and scenario based assessments of capability. The aim of these plans is to ensure the ANZAC Frigate's progress toward operational service in a detailed, controlled and safe approach with the key objectives of the trials being:

a. to prove the material readiness of the machinery and mission systems prior to work-up;

b. collect baseline data for ongoing performance measurement and management of the ships' machinery and mission systems;

c. ensure Ship's Company are adequately trained to fully utilise and support all machinery and mission systems;

d. identify system problems and deficiencies and collect the technical information required for corrective action to be initiated;

e. review training requirements and the provision of training effectiveness data for feedback to training establishments; and

f. assess the utility of the mission systems.

Status of Introduction into Service phase

Phase 1

Most of the Introduction into Service components for the first phase have been managed to date through the Platform Systems Upgrade Project Team, on behalf of the RNZN. The Project Team has worked to ensure that documentation required to support and manage the capability in-service has been delivered in the required RNZN format and that the necessary spares are delivered to the Naval Supply Depot for issue. In addition, the Introduction into Service Navy Orders and publications have been drafted on behalf of the RNZN. The manufacturer's equipment training has been delivered along with the necessary material and resources to enable the RNZN to develop and deliver their training in the future.

The Introduction into Service process for the first phase is ongoing. Deliverables for in-service use of ships, which include such items as reference material, spares, and training packages, were delivered for HMNZS *Te Kaha* by December 2009, as implementation work was being completed on the ship. In February 2010, Category 5 sea acceptance trials, which were part of the acceptance from the contractor, were carried out on *Te Kaha*, and demonstrated the successful integration and performance of the propulsion engines. Following these, the Project Team recommended that the RNZN conduct Category 6 and 7 trials over the proceeding months.

As at June 2013, a number of Category 6 trials remain outstanding for *Te Kaha* and HMNZS *Te Mana*. It is anticipated that these and the Category 7 trials will be completed during the Operational Test and Evaluation phases for PSU Phase 2 before Operational Release is achieved.

In relation to the completed stability work, there is a need to carry out 'inclining' testing of *Te Kaha*, as she is yet to be inclined following extensive modification. This is an important activity that will show whether the stability characteristics of the modified vessel are consistent with the allowable tolerances that were modelled for the upgrades during the design phase.

A post-PSU Inclining Experiment was conducted for *Te Mana* and the Interim Trim and Stability Book does have the ship modifications conducted as part of the Stability Enhancement and Compartment Changes element of the Platform Systems Upgrade. The major stability impacts for the changes are:

- partial plating in of the Quarterdeck to provide additional buoyancy;
- the addition of 27.4 tonnes of solid ballast; and
- increasing the maximum Full Load Displacement to 3,720 tonnes.

The stated aims of the Stability Enhancement have been met and the Lightship values will be reflected in the actual displacement and a Final Trim and the Stability Book will be issued accordingly. A post PSU Inclining Experiment is still to be programmed for *Te Kaha.*

Phase 2

The Introduction into Service plan is yet to commence. Planning is underway, however.

3.2 Schedule of Introduction into Service

In May 2008 Defence sought Joint Ministers (Defence and Finance) authorisation to adopt a revised acquisition strategy to allow the propulsion systems component of the PSU to be undertaken in conjunction with the engine replacements planned for during the frigates' extended maintenance periods in 2009 and 2010. However, the tight timeframe prevented the other elements of the Platform Systems Upgrade project from being ready at that time and were, therefore, rescheduled for implementation during subsequent maintenance periods. In November 2011 the Capability Management Board directed that the project implementation phase be delayed until January 2013 to allow additional time to:

- address issues with individual and unit training, and to explore early delivery of simulation enablers;
- complete the design and testing of equipment;
- determine the impact of the project on shore based training infrastructure;
- review and develop doctrine and concept changes brought about by the extensive changes;
- review and accept integrated logistic support products, including the consideration increased maintenance periods if issues with the OBOT are unresolved; and
- develop IIS planning.

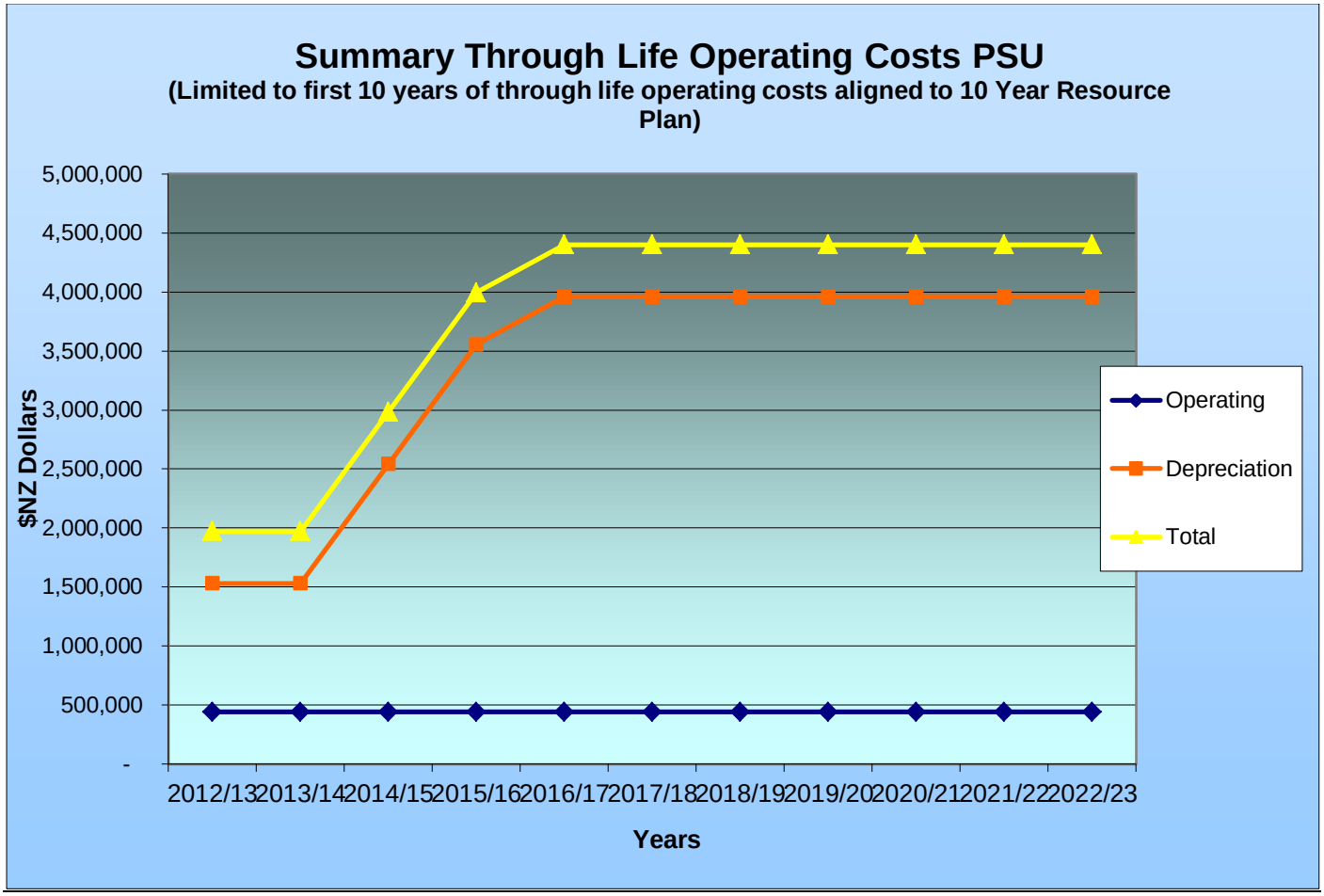
In addition, the project is being monitored closely to ensure adequate staffing and resource levels.

The schedule of introduction into service, taking the revised upgrade schedule into consideration, is detailed in the below table:

Ship	Implementation	Initial Operational Release	Category 6 Trials Complete	Category 7 Trials Complete	Full Operational Release
HMNZS *TE KAHA* – Phase I	April – December 2009	13 February 2010	To be confirmed	To coincide with Phase II	To coincide with Phase II
HMNZS *TE MANA* – Phase I	April – October 2010	07 December 2010	To be confirmed	To coincide with Phase II	To coincide with Phase II
HMNZS *TE MANA* – Phase 2	June 2014 – May 2015	To be confirmed	To be confirmed	To be confirmed	To be confirmed
HMNZS *TE KAHA* – Phase 2	January 2013 - TBA	To be confirmed	To be confirmed	To be confirmed	To be confirmed

Work is currently underway to define the various IIS elements for Phase 2 of the project, as well as to determine and develop a prioritised action plan.

3.3 Summary of Through-life Cost Estimates for ANZAC Frigates[31]



[31] Through life costs are calculated for the capabilities as a whole, in this case the ANZAC frigates.

SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Capability and Operational Requirements

Capability Requirement	Operational Requirement	Requirements Likely to be met	Explanation
Damage Stability and Reserve Buoyancy	• A minimum weight growth margin of 100 tonne. • Conformance to the requirements of DEF AUST 500, Australian Defence Force Maritime Materiel Rule Set, Volume 3, Hull System Requirements, Part 2 Stability of Surface Ships and Boats.	Achieved	Implementation on HMNZS *Te Kaha* and *Te Mana* was successful with some phases of operational testing complete. Full operational release will coincide with completion of Phase II.
ANZAC Operational Profile – the propulsion configuration system	• With respect to the propulsion systems, the diesel engines shall, in combination, provide sufficient power to drive the ship not less than 20 knots under the specified design environmental conditions at a maximum displacement of 3700 tonnes.	Likely	
High Temperature Operating	• Adopt the ISO 7547-2002 standard for heating, ventilation and air conditioning. • An environmental control system which is capable of controlling the ship's internal air temperatures. • A chilled water cooling capacity of not less than 986 kw.	To be confirmed	The contract processes for the HVAC and the IPMS elements have been completed and the systems will be implemented in 2013 and 2014/15.
Control and Monitoring System that delivers automated functions across all platform systems	• Integrated platform management systems. • Simplified propulsion control. • Gas turbine engine control module. • Integrated bridge system. • Onboard operational trainer. • Enhanced battle damage control system. • Remote monitoring capability.	To be confirmed	
Assessment: An assessment will be made once there is clarity on the 3rd and 4th requirement.			

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risk

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.

Active Risks as at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Unexpected Costs:** If there are further costs associated with the project that could not have been anticipated and were, therefore, not included in the original estimates, there may not be enough funding to complete the project.	Acquisition	Extreme	Extra funding may be necessary to cover the unforeseen cost increases.	Almost certain	Monitor all project costs to make sure that the project outcomes are not compromised. Manage contracting to ensure solutions align with estimates.
2	**Resources:** If project staffing is inadequate this may impact on completion of the upgrades of the frigates.	Acquisition	High	This could result in a delayed return of the frigates and therefore availability for operational tasking.	Possible	MoD Project Director and the NZDF Capability Branch to manage requirements, including additional funding.

Issues

	Issue	Phase	Severity	Impact	Treatment Actions
1	**Schedule:** Because timing of work is being synchronised with the Navy's operational requirements schedule forecasts can change.	Acquisition/IIS	High	This could result in the second frigate entering Phase 2 later than expected, in addition to any delays in completing the first frigate.	Work with the Navy on achieving optimum entry of the second frigate.

PROJECT DATA SHEET: MARITIME HELICOPTER CAPABILITY PROJECT (MHCP)

PROJECT DESCRIPTION

This project is providing an upgraded fleet of naval helicopters for the Royal New Zealand Navy. Eight SH2G (I) Super Seasprite helicopters are being acquired from Kaman Aerospace with associated spares, training aids and a full-motion flight training simulator. Two additional helicopters are part of the package. These will be stored for use as attrition airframes and for spare parts. The Project will also include acquisition of Penguin missiles to replace the current stock of Mavericks.

The existing SH2G (NZ) Super Seasprite fleet was scheduled for a major upgrade of avionics and mission systems by 2015 to address system obsolescence. The offer of a fleet of SH2G (I) Super Seasprites with these systems already upgraded was assessed to provide greater value for money and at lower project risk.

The helicopters are currently stored at Kaman's facility in Connecticut, USA. A Defence Project Team has been located there to oversee the regeneration of the aircraft from storage; finalise design, installation and testing of the modifications required; and undertake provisional airworthiness certification. Once delivered to New Zealand the helicopters will be offered for acceptance by the NZDF and undergo a period of Operational testing and Evaluation before being brought into service.

Policy Value

The Naval helicopters are a component of the Naval Combat Force and provide rotary wing surveillance, warfare and airlift that enhance the Government's options for utilising the NZDF for the principal tasks set out in the Defence White Paper 2010, in particular:

- to defend New Zealand's sovereignty;
- to discharge our obligations as an ally of Australia;
- to contribute to and, where necessary, lead peace and security operations in the South Pacific;
- to contribute to whole-of-government efforts at home and abroad in resource protection, disaster relief, and humanitarian assistance; and
- to make a credible contribution in support of peace and security in the Asia-Pacific region.

Better Business Case Milestones[32]

Better Business Case Milestones

Project Charter: Defence project initiation is guided by the Defence White Paper 2010 and the 2011 Defence Capability Plan. Projects commence following notification to the Minister of Defence and approval of a project charter by the Capability Management Board.

Approval of Indicative Business Case (IBC): Attained when Cabinet agrees to the strategic context for an investment and agrees to progress a shortlist of capability options to the Detailed Business Case stage. May also authorise Defence to engage with industry for more detailed information (e.g. a Request for Information).

Approval of Detailed Business Case (DBC): Attained when Cabinet agrees to a refined capability requirement and authorises Defence to commence formal engagement with industry (through a request for proposal or request for tender) on a preferred capability option.

Approval of Project Implementation Business Case (PIBC): Attained when Cabinet agrees that Defence can conclude a contract based on the preferred supplier, the negotiated services, the maximum funding level and the arrangements to manage the project and the ongoing delivery of services.

Date	Approved By	Approval
07 April 2010	Minister of Defence	**Project initiation.** The Minister of Defence recommended a "no obligations" due diligence study on the unsolicited Kaman Aerospace offer.
26 September 2011	Cabinet CAB Min (11) 35/1	**Approval of Indicative Business Case.** Cabinet directed Defence officials to report on the conclusions of the due diligence process with a detailed business case comparing the Kaman offer with an appropriate upgrade to the existing Seasprite fleet.
26 March 2012	Cabinet CAB Min (12) 10/2	**Approval of Detailed Business Case.** Cabinet authorised Defence officials to enter into contract negotiations with Kaman Aerospace.
15 April 2013	Cabinet CAB Min (13) 12/12	**Approval of Project Implementation Business Case.** Cabinet authorised Defence officials to sign contracts with Kaman Aerospace and other suppliers.

[32] See Part One for a comparison of these steps with the Government Approval Milestones used to track earlier projects.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

The 2002 Maritime Forces Review affirmed the value of a maritime helicopter capability embarked on the frigates (*Te Mana* and *Te Kaha*), the multi-role vessel (*Canterbury*) and the offshore patrol vessels (*Wellington* and *Otago*). The report noted that this role would be met by the Seasprite maritime helicopters.

Following on from the Maritime Forces Review, the Future Maritime Helicopter Review of 2010 noted six requirements:

(i) Conduct military and civil surveillance;

(ii) Embark and operate from all RNZN aviation-capable units;

(iii) Detect threats in a hostile environment;

(iv) Conduct maritime search and rescue;

(v) Prosecute surface and sub-surface targets;

(vi) Utility lift.

These were reaffirmed in the Defence White Paper 2010: *"Naval helicopters will continue to provide extended reach, surveillance, and air delivered weapon capabilities (air-to-surface missile and anti-submarine torpedo) for the frigates."*

The current fleet of five Seasprite helicopters were contracted for in 1994 and entered service in 2001. An upgrade to the avionics and mission systems was anticipated at that time to be required before 2015. By 2005 the Air Force and Navy were recording significant deficiencies and growing obsolescence in the Seasprite mission systems. Maintenance costs and down-time were increasing, and Output Plan requirements were not being met. These issues were examined in a Ministry of Defence Evaluation Report (Report 9/2011) concluding that maintenance practices, long lead times on critical parts and the small fleet size (5 aircraft) were contributing factors.

Their involvement with the Evaluation Report and subsequent enquiries about upgrade options and costs alerted Kaman Aerospace to these issues. Following the cancellation of Kaman's contract to supply 11 Seasprites to the Australian Navy, in July 2009 Kaman made an unsolicited offer of this fleet to New Zealand, as a cost-effective alternative to upgrading the current New Zealand fleet.

In April 2010 the Minister of Defence, having been advised of the issues attached to the ex-Australian fleet, recommended that Defence undertake a "no obligations" due diligence of the offer. A project team was established, producing the Future Maritime Helicopter Review paper in December 2010. This analysis compared the Kaman offer to a range of options from "do nothing" through to the purchase of a fleet of new maritime helicopters. As part of this study the Defence Technology Agency examined the helicopter fleet size required to deliver the expected outputs (DTA Report 327).

In February 2011 the Minister of Defence was advised of the key findings of that Future Maritime Helicopter Review. The Minister directed that the Kaman offer should be subject to independent review. In August 2011 the Minister approved the engagement of an independent consultant and for Defence to engage with

Kaman, prior to reporting to Cabinet. Marinvent Corporation of Canada undertook an initial airworthiness review of the ex-Australian fleet.

An Initial Business Case was developed and consulted with other agencies. In September 2011 Cabinet agreed that the Kaman offer should be pursued and authorised Defence officials to undertake further engagement with Kaman to report back with a Detailed Business Case (DBC). The DBC recommended that the Kaman offer be accepted and in March 2012 Cabinet agreed to contract negotiations with Kaman. The outcome was reported to Cabinet in April 2013 and following approval a contract with Kaman was signed in May 2013.

How Defence analysed the options

The Future Maritime Helicopter Review examined the capability and operational requirements for naval aviation. Eight options were developed and assessed against these requirements and estimated costs. The report recommended the purchase of the ex-Australian fleet.

How Defence considered interoperability[33]

Interoperability of the maritime helicopter is an important consideration. The helicopter is expected to be able to operate from the deck of New Zealand and Australian ANZAC frigates and other aviation-capable naval vessels. They should also be able to operate with most coalition partners.

How Defence considered 'through-life' costs and issues

Through life costs were derived from the historic costs of operating the existing fleet of five Seasprites, adjusted for changes in fleet size and maintenance regimes with added costs for indigenous software and flight simulator support.

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[33] NATO broadly defines interoperability as: "the ability to act together coherently, effectively and efficiently to achieve tactical, operational and strategic objectives".

Specifically, Military interoperability is defined as: "The ability of military forces to train, exercise and operate effectively together in the execution of assigned missions and tasks."

There are three key dimensions to interoperability: technical, procedural and human.

Technical interoperability consists of hardware and systems. It is the ability of systems to provide information and services to, and accept information and services from, other systems, and to use the information and services so exchanged.

Procedural and doctrinal interoperability is the ability of joint and combined forces to work together on military operations toward the achievement of common objectives. Both are enabled through the formulation of appropriate doctrine, procedures and the undertaking of the necessary training.

Human interoperability is using a common language, understanding different cultures and training together. To achieve this form of interoperability is one of the key reasons military forces train with friendly military forces. It generates professional trust and confidence.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare assess and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

Options Considered	Cost Estimate[34] (NZ$ million)	Advantages	Disadvantages
Status quo	Nil	• Nil advantages	• Platform becoming unsustainable • Insufficient aircraft for requirements • Lack of training simulator increases training risks • Continued poor availability • Increasing capability degradation of mission and critical systems • Increased operating costs
Mid-Life Upgrade	175	• One-off project minimises disruption • Some decrease in operating costs • No changes required in establishment, infrastructure or IT	• Insufficient aircraft for requirements • Critical systems may become unavailable before upgrade completed • Lack of training simulator increases training risks • Unlikely to address spare parts shortfall
Mid-Life Upgrade and purchase of additional aircraft	330	• One-off project minimises disruption • Some decrease in operating costs per flying hour • Addresses availability shortfall • No changes required in establishment, infrastructure or IT	• Increase in overall operating costs due to larger fleet • Critical systems may become unavailable before upgrade completed • Lack of training simulator increases training risks • Unlikely to address spare parts shortfall
Acquire fleet of ex-Australian Seasprites	175	• Meets most operational requirements • Addresses availability shortfall • Provides updated mission and navigation systems • Addresses impending obsolescence issues • Includes flight training simulator • Aircraft package available, minimising delivery time • Minimal changes required in establishment, infrastructure or IT	• The aircraft have not been through full airworthiness certification or introduction into service processes • Unknown risks associated with modification of the software • Increase in establishment and operating costs

[34] Note all costs throughout the options are rough order estimates.

Purchase of 8x AW159 Wildcat	665	• New aircraft design • Meets or exceeds all user and operational requirements • A fully integrated avionics system • Expected to be cheaper to maintain than the Seasprite	• May not be cheaper to operate than Seasprite • Aircraft is still under development • Would require full certification and introduction processes • Expensive but costs not well known at this stage
Purchase of 8x AW109	245	• Light utility helicopter • Widely used in light utility and training role • Compatible with all existing Navy aviation-capable vessels • Reduced capital and operating costs • Commonality with the recently introduced training helicopter	• Significantly reduced capability over the Seasprite • Meets few of the user and operational requirement • Unable to carry the required surveillance equipment • Not used in this role by other navies • Would require full certification and introduction processes in this role • Not designed to operate in the maritime environment for long periods
Purchase 4x NATO Frigate Helicopters (NFH)	770	• Would meet all user and operational requirements for operations off the frigates and larger vessels • A modern aircraft design using composite materials • Designed for operations from frigates and similar vessels • Would be a significant enhancement over the Seasprite • A fully integrated avionics system • High commonality with the NH90 in training and maintenance	• Capabilities in excess of requirements • Capital cost not well known but based on the NH90 will be expensive compared to other options • Unable to operate from OPVs • Operating costs not well known but will be higher than Seasprite • Still under development and with significant schedule delays • Significant infrastructure upgrade requirements
Purchase 4x NFH and 4x AW109	890	• Eight helicopters will cover all NZDF vessels • Would meet all user and operational requirements • High commonality with the NH90 and AW109 in training and maintenance	• Expensive • Two additional aircraft types (which will entail a greater infrastructure and support burden) • Operating costs not well known but will be higher than Seasprite • Still under development and with significant schedule delays • Significant infrastructure upgrade requirements

ASSESSMENT	Option 0 was discounted because it failed to meet operational requirements. Option 1 was considered possible but has high risks associated with a bespoke upgrade path. Option 2 was considered possible but has high risks associated with a bespoke upgrade path and the requirement to locate and upgrade four additional aircraft frames. Option 3 was recommended as the preferred option. It would meet nearly all requirements, has low risk and is considered to be affordable. Option 4 was worthy of further consideration but is unlikely to be affordable. Option 5 was not recommended. It could not meet most user requirements. Option 6 was not recommended. Although it met or exceeded most user requirements it was a large helicopter that could only operate from the frigates. It is in the early stages of entering service, with significant development and delivery delays. Option 7 was not recommended. Although it met or exceeded most user requirements it was expensive and would require significant infrastructure development.

1.3 Description of the Capability and Operational Requirements

Surveillance and reconnaissance: Maintain situational awareness in the maritime domain, provide continuous surveillance of an area or provide advance warning of a threat.
Offensive action: Conduct offensive surface and subsurface warfare.
Utility Lift: Conduct replenishment and transport including under-slung loads.

Capability Requirements	Operational Requirements - Description and Explanation
Surveillance and reconnaissance, offensive action, utility Lift	Conduct military and civil surveillance in all weather conditions, day and night up to and including SS 5 and in a range of climatic, geographical and threat environments.
Surveillance and reconnaissance, offensive action, utility Lift	Embark and operate from all RNZN aviation capable units up to the top of SS 5 and from appropriately equipped coalition ships.
Surveillance and reconnaissance, offensive action	Prosecute anti-surface and anti-submarine targets, acting autonomously or in a co-ordinated force with a variety of weapon payloads and targeting systems.
Surveillance and reconnaissance, offensive action	Detect threats in a hostile environment and be able to automatically deploy the appropriate countermeasures.
Surveillance and reconnaissance, utility Lift	Conduct boarding operations. by landing, fast roping (with at least two ropes), and winching.
Surveillance and reconnaissance, utility Lift	Conduct maritime SAR and be able to hoist personnel and equipment including a rescue swimmer, medical staff and an injured person.
Utility Lift	Transport personnel to and from other naval units or small, unprepared landing sites.
UStility Lift	Transfer equipment and supplies between ships whilst underway or at anchor and between ship and shore.
Surveillance and reconnaissance, offensive action, utility Lift	Be interoperable with other NZDF units, relevant government agencies and likely coalition partners through communications and data exchange.
NOTE: The operational and capability requirements listed here were those identified in the Concept of Employment document produced during the Capability Definition Phase.	

1.4 Schedule of Capability Definition Phase

Dates	Duration	Explanation
April 2010 to September 2011	17 months	See Narrative in section 1.1

1.5 Expenditure in Capability Definition Phase

	Expenditure (NZ$)
Definition Phase	2010/11 102,294.05 2011/12 350,849.61 2012/13 288,018.42
Explanation	In the capability definition phase, the above costs are classified as pre-acquisition costs and have been met from the NZDF operating and capital expenditure budgets.

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2010	2011		
Costs (NZ$ million)	175	175		
Explanation of Variance				

1.7 Estimates of Acceptance Date made in the Capability Definition Phase

Estimates	Initial Estimate	Updated Estimate	30 June 2013 Estimate	Actual
Date	Not stated	Not stated	Delivery of first aircraft to New Zealand by January 2015. Last aircraft by August 2015.	In early acquisition phase; no aircraft have yet been delivered.
Explanation of Variance	The aircraft will be provisionally accepted by the Crown at Kaman's facility at Connecticut and then delivered by Kaman to New Zealand where they will be accepted by the MoD and begin the introduction into service process.			

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of acquisition phase

Description of acquisition work

The acquisition phase of the Maritime Helicopter Capability Project has to date included engagement with Kaman prior to Cabinet approval to negotiate; the negotiation of a contract with Kaman and the establishment of a project team at Kaman's facilities in Connecticut.

The deliverables from this prime contract with Kaman are:

- Aircraft:
  - Ten SH-2G(I) Super Seasprite helicopters
- Training systems:
  - One Full Motion Flight Simulator (FMFS)
  - Six Part Task Trainers (PTT)
- The Software Support Centre (SSC) comprising the hardware and software for:
  - Systems Integration Laboratory (SIL) and
  - Software Development Environment (SDE)
- Mission Planning equipment:
  - Six laptops, each with Mission Preparation System (MPS) and Mission Debrief Facility (MDF) Software
- Spares
- Support Equipment
- Training Services and Training Packages
- Publications

There are additional acquisition activities for:

- Procurement of avionic spares for equipment not supplied or supported by Kaman
- Procurement of the Penguin missile and associated equipment and support

How Defence decided to acquire the Capability Solution

Defence engaged with Kaman Aerospace (the manufacturer of the existing Seasprite fleet) for technical advice and indicative costs to upgrade the existing fleet. Following the cancellation of Kaman's contract to supply newly upgraded Seasprites to Australia, Kaman made an unsolicited offer of these aircraft to New Zealand as an alternative to the upgrade option.

The Minister of Defence recommended that due diligence on the offer be undertaken, including the use of an external airworthiness consultant. Defence also examined a wide range of options for delivery of the naval aviation requirements, against which to compare the Kaman offer.

Cabinet agreed that the Kaman offer was potentially the best value for money and authorised negotiations with Kaman. At the conclusion of negotiations, Cabinet approved the contract in May 2013.

2.2 Project Budget

Budget variation

	Date Approved	Total (NZ$ million)
Original budget at Approval to Commit	15 April 2013	242.2
Current approved budget	15 April 2013	242.2
Variation on approved budget		NIL

Explanation of major budget variations

Date of Individual Variation	Total ($m)	Explanation
N/A	N/A	N/A

2.3 Financial Performance

Project expenditure to date (as at 30 June 2013)

	Total (NZ$ million)
Life to date expenditure (cumulative)	17.455
Remaining balance of approved budget	224.745
Forecast commitments	224.745

Expenditure to 30 June 2013 consists of the first payment to Kaman Aerospace.

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	242.2
Total forecast expenditure	251.3
Gross project variation (forecast)	-9.1
Foreign exchange impact	-9.1
Actual project variation (forecast)	0.0
Explanation	NOTE: The impact of a foreign exchange rate at any point of time in a project is constantly subject to change as the project progresses. These fluctuations are expected and mitigated by forward cover. Actual expenditure can only be measured once the project is complete and any variations resulting from foreign exchange differences are managed through forward cover.

Project Contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	20.0
Total contingency expended	0.0
Remaining balance	20.0

Explanation of major contingency draw downs

Draw down	Total (NZ$ million)	Explanation
N/A	0.0	N/A
Total	0.0	

Major reallocations of funds within the approved budget

Date of individual variation	Total ($m)	Explanation
N/A	N/A	N/A

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date

		Original forecast at Contract Signing	30 June 2013 forecast / achieved	Variation in Acquisition phase (months)
Acceptance Date	First platform	Delivery to New Zealand January 2015	January 2015	0 months
	Last platform	Delivery to New Zealand August 2015	August 2015	0 months

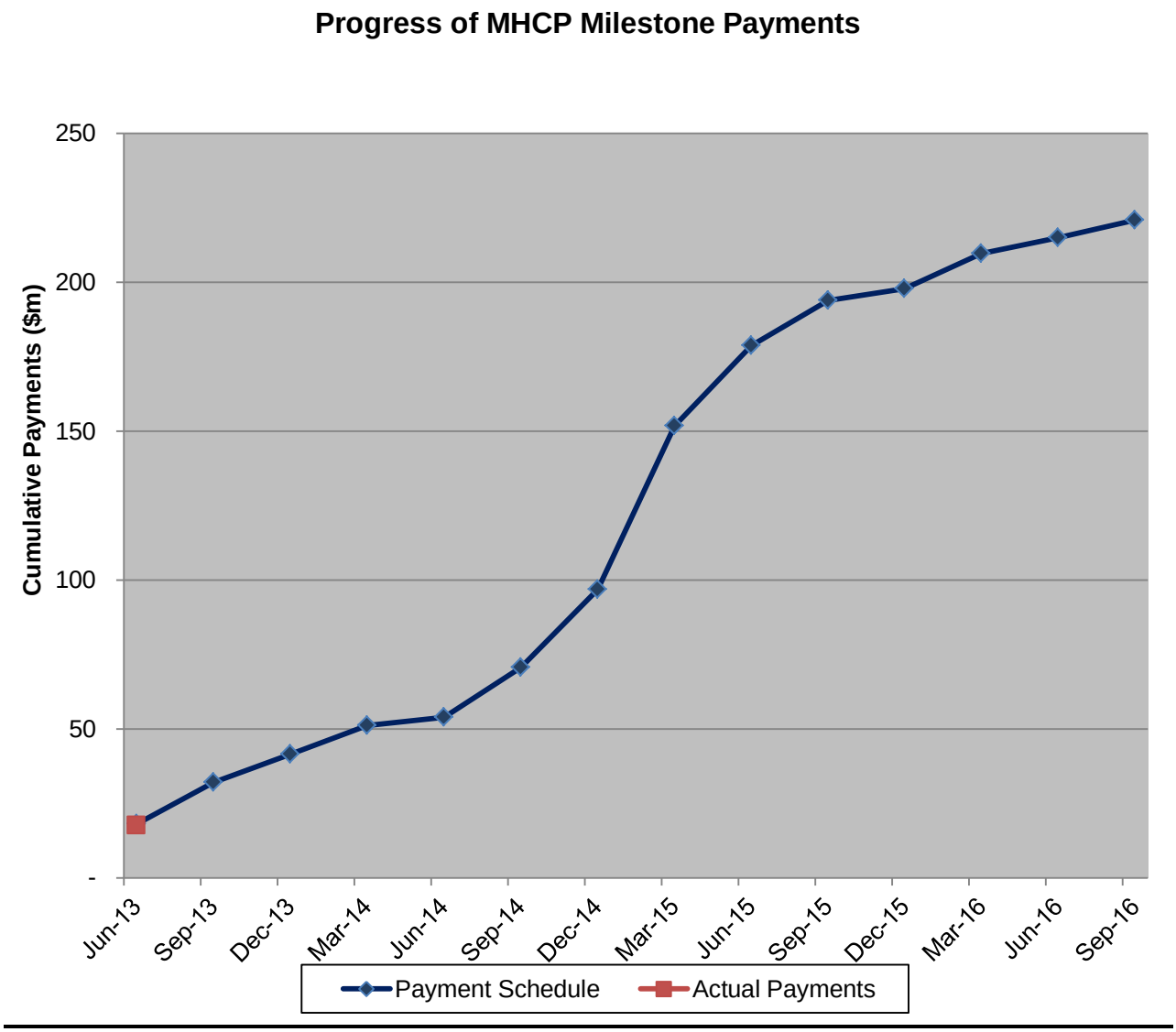
History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
N/A	N/A	N/A

Delivery of the first helicopters is scheduled for January 2015. The 20 months between contract signature and delivery is for regeneration of the aircraft from storage, final design, installation and testing of the modification for the Decklock anchoring system, provisional airworthiness acceptance by the Crown and shipping to New Zealand.

Progress of MHCP against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual payments against the milestone payment schedule in the project budget. Payments are made by the Crown upon the contractors' provision of key deliverables and are therefore a good way to identify the timing and size of schedule slippage.



SECTION 3: INTRODUCTION INTO SERVICE PHASE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the operational test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service phase

Description of Introduction into Service phase

The NZDF established the MHCP Introduction into Service team in May 2013. The work streams are structured around:

- management of personnel and training for the new aircraft;
- construction of facilities;
- establishment of ground support capabilities;
- planning for the transition between the SH-2G(NZ) and SH-2G(I);
- planning for subsequent obsolescence upgrades for the flight simulator and software support environment;
- planning for Operational Test and Evaluation, First of Class flight trial and weapons qualification activities;
- establishing commercial support arrangements for software, the flight simulator and newly introduced equipment; and
- finance related to operating the new aircraft.

The plan includes an internal communications strategy.

The plan also details the process of maintaining a risk register and producing mitigation plans should they be needed, along with the reporting requirements to the Defence governance system. The main project dependencies detailed were:

- establishment of software support facilities; and
- provision of the flight simulator.

In 2006 the RNZAF established a Programme Management Office to coordinate the helicopter projects. The MHCP Introduction into Service is being coordinated through this office.

Status of Introduction into Service phase

The Introduction into Service plan is under development ahead of the first delivery of helicopters in January 2015.

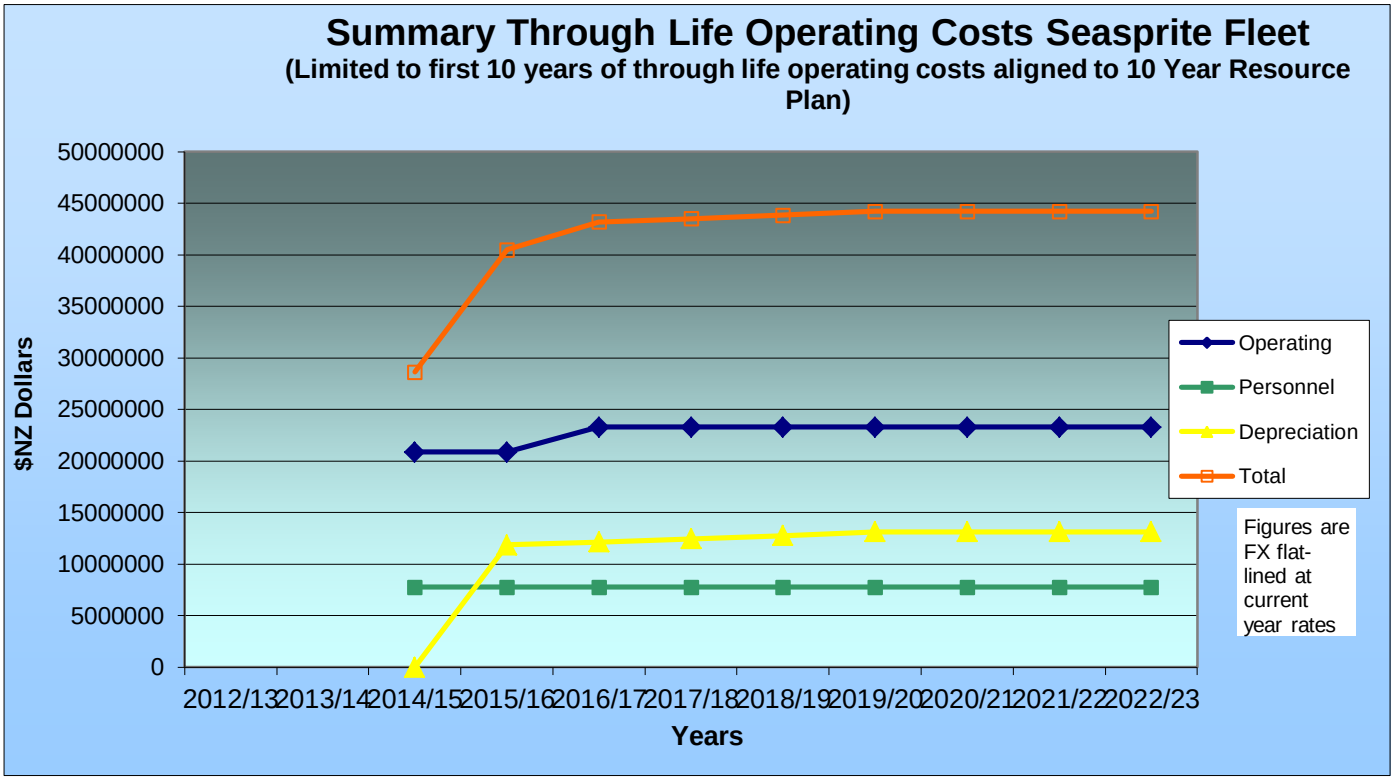
3.2 Schedule of Introduction into Service

Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.
Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.
Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.

	Initial Estimate	30 June 2013 Estimate	Actual	Variance
Date first helicopter accepted by Crown	Oct 2014	Oct 2014		
Delivery of first helicopter to New Zealand	Jan 2015	Jan 2015		
Commence operational test and evaluation	Feb 2015	Feb 2015		
Finish operational test and evaluation	March 2016	March 2016		
Achieve initial operating capability	April 2016	April 2016		
Establish operational level of capability	2016	2016		
Establish directed level of capability	2016	2016		
Explanation	This project entered the acquisition phase in May 2013. Delivery, testing and operational dates will be revised after the first aircraft has completed regeneration, modification and acceptance testing in Connecticut.			

3.3 Summary of Annual Through-life Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Capability and Operational Requirements

Progress as at June 2013
The Explanations are Subject to Change as the Project Progresses and Solutions are Implemented

Operational Requirement	Requirement Likely to be met	Explanation
Conduct military and civil surveillance in all weather conditions, day and night up to and including SS 5 and in a range of climatic, geographical and threat environments	Yes	
Embark and operate from all RNZN aviation capable units up to the top of SS 5 and from appropriately equipped coalition ships.	Yes	
Prosecute anti-surface and anti-submarine targets, acting autonomously or in a co-ordinated force with a variety of weapon payloads and targeting systems	Yes	
Detect threats in a hostile environment and be able to automatically deploy the appropriate countermeasures.	Yes	
Conduct boarding operations. by landing, fast roping (with at least two ropes), and winching	Yes	
Conduct maritime SAR and be able to hoist personnel and equipment including a rescue swimmer, medical staff and an injured person	Yes	
Transport personnel to and from other naval units or small, unprepared landing sites.	Yes	
Transfer equipment and supplies between ships whilst underway or at anchor and between ship and shore	Yes	
Be interoperable with other NZDF units, relevant government agencies and likely coalition partners through communications and data exchange.	Yes	

Assessment: All requirements likely to be met.

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years.

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Verification of specifications.** There is a risk that we may determine that specification requirements have not been adequately demonstrated.	Acquisition	Medium	**Schedule & Cost.** This may require further testing to be completed at Crown expense.	Possible	Early establishment of an on-site team with a specific focus on completing the verification review as soon as possible, and use of some project contingency funds if further testing is needed.
2	**Support contracts.** There is a risk that the support contracts may not be established in time to meet the in-service date, because of personnel limitations.	In Service	Medium	**Schedule.** Introduction into service and pilot training may be delayed.	Possible	Establish specific monitoring of progress at Governance level.
3	**Simulator delay.** The Simulator may take longer than planned before it is ready to support in-service training.	In Service	Medium	**Schedule.** Introduction into service and pilot training may be delayed.	Possible	Use aircraft to fill the gap for training if the simulator encounters delays.

4	**Specialised equipment.** There is a chance that delivery of items of equipment held by the Australian Defence Force may be delayed.	Acquisition	Medium	**Schedule.** Delay to Crown acceptance testing until items are cleared.	Possible	Early consultation with third parties to expedite acquisition.
5	**Insufficient personnel**. The project may be compromised because of insufficient people being available during the acquisition and introduction into service phases.	Acquisition	Medium	**Schedule & Cost.** This may result in the capability not being delivered on time, within budget, or to full potential.		The cost of contractors to staff some IIS activities, have been provided for in the introduction into service budget. Pre-contract due diligence.

5.2 Issues

	Issues	Phase	Severity	Impact	Treatment Actions
1	**Software Audit.** Under the terms of the Contract, Kaman is obliged to complete an audit of the software for the Integrated Tactical Avionics System (ITAS) within three months of contract signature. The Crown has rights of termination if this audit is not completed in a timely fashion or if an impasse occurs with Kaman over the outcomes of the audit.	Acquisition	**High**	**Schedule.** The contract may be terminated if the ITAS fails the audit or if a satisfactory outcome cannot be negotiated.	Early engagement with Kaman and active monitoring by project team. This audit had begun by 30 June 2013.

MEDIUM/HEAVY OPERATIONAL VEHICLE PROJECT (MHOV)

PROJECT DESCRIPTION

This project is replacing the New Zealand Defence Force's aging medium and heavy operational vehicle fleet with new vehicles. Trucks are essential to transport troops and supplies.

Current military operations require trucks that can operate in difficult terrain, and handle bulk loads including pallets, containers and liquids. Forces on deployment may need to be supplied with everything they need (such as fuel, food, water and ammunition) across widely dispersed operations. Trucks need to protect the occupants through the provision of armour and electronic countermeasures as required. They need to support contemporary communications equipment. They need to be reliable, efficient and easy to use and provide support even when deployed in remote places.

Up to 200 new trucks are being procured from Rheinmetall MAN Military Vehicles (Australia) (RMMVA), replacing 290 vehicles in the current fleet. They will be delivered from November 2013 through to December 2015. On entry into operational service, they will allow the retirement of many current Mercedes Unimog and MB 2228 series trucks.

The new trucks are assembled in Vienna, Austria and then shipped to Auckland, where the manufacturer's agents (MAN) will complete NZ compliance. The MoD will do final acceptance and take delivery in Auckland, and the trucks will be transferred to NZDF ownership for distribution.

Some specific sub components (dump bodies and semi trailers) will be manufactured in New Zealand under subcontract to RMMVA. These components will be matched to the relevant trucks in New Zealand for final inspection prior to delivery.

Policy Value

The Medium/Heavy Operational Vehicle (MHOV) project provides essential land transport for the NZDF. This enhances the Government's options for utilising the NZDF for the principal tasks set out in the Defence White Paper 2010, in particular:

- to defend New Zealand's sovereignty;
- to discharge our obligations as an ally of Australia;
- to contribute to and, where necessary, lead peace and security operations in the South Pacific;
- to make a credible contribution in support of peace and security in the Asia-Pacific region;
- to protect New Zealand's wider interests by contributing to international peace and security, and the international rule of law; and
- to contribute to whole-of-government efforts at home and abroad in resource protection, disaster relief, and humanitarian assistance.

Better Business Case Milestones[35]

Better Business Case Milestones

Project Charter: Defence project initiation is guided by the Defence White Paper 2010 and the 2011 Defence Capability Plan. Projects commence following notification to the Minister of Defence and approval of a project charter by the Capability Management Board.

Approval of Indicative Business Case (IBC): Attained when Cabinet agrees to the strategic context for an investment and agrees to progress a shortlist of capability options to the Detailed Business Case stage. May also authorise Defence to engage with industry for more detailed information (e.g. a Request for Information).

Approval of Detailed Business Case (DBC): Attained when Cabinet agrees to a refined capability requirement and authorises Defence to commence formal engagement with industry (through a request for proposal or request for tender) on a preferred capability option.

Approval of Project Implementation Business Case (PIBC): Attained when Cabinet agrees that Defence can conclude a contract based on the preferred supplier, the negotiated services, the maximum funding level and the arrangements to manage the project and the ongoing delivery of services.

Date	Approved By	Approval
18 June 2012	Cabinet CAB Min (12) 21/4	**Approval of Indicative Business Case.** Cabinet approved the IBC and directed that alternatives to address the land transport capability shortfall be examined. Defence officials were to investigate the viability of purchasing vehicles in collaboration with the UK MoD and the Australian Defence Force.
10 December 2012	Cabinet CAB Min (12) 44/15	**Approval of Detailed Business Case:** Cabinet authorised Joint Ministers to commit and approve expenditure of public money for the purchase of a replacement MHOV fleet of 200 MHOV for $135 million. They noted that there were potential savings through collaboration with the UK MoD and Rheinmetall MAN Military Vehicles, and authorised the Secretary of Defence to commence negotiations.
25 March 2013	Joint Ministers (Finance and Defence) as per CAB Min (12) 44/15	**Approval to Commit.** The Secretary of Defence and Chief of Defence Force advised Joint Ministers that negotiations had resulted in the quantity of vehicles required being available within the capital authorised. The Joint Ministers assented to the contract being concluded.

[35] See Part One for a comparison of these steps with the Government Approval Milestones used to track earlier projects.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

The NZDF Land Mobility and Distribution operational concept document outlines how the NZDF will provide support to operations. Transport is required at all levels of operations to support both combat and support elements. In addition, land transport is needed to support other services, such as refuelling for aircraft and helicopters, and distributing cargo carried by maritime assets.

The capability enhancements to the NZDF over the last decade have increased the importance of land transport. For example, the LAVs and the NH-90 helicopters both consume considerably greater amounts of fuel and other consumables than their predecessors. The new helicopters can also carry considerably greater loads. Most bulk cargo is handled using containerised methods, which are very efficient but require vehicles to have mechanised handling equipment.

Modern operations have demonstrated the importance of mobility and protection for logistic vehicles. Units are at risk of attack at any time and in any location. The increased use of weapons such as improvised explosive devices has led to a need to ensure all vehicles can be protected, rather than just front line combat vehicles. Protection also includes electronic counter measures, which in turn has implications for vehicles by way of electric power generation and ensuring that electronic interference is limited.

The current NZDF MHOV fleet lacks most of these capabilities. The Unimog vehicles have excellent mobility, but are unprotected and lack the other characteristics needed for modern operations. The heavy trucks also have very limited mobility.

The current MHOV fleet is also old. Most vehicles were procured in the 1980's and are now past their 'life of type'. Maintenance costs are rising sharply, and vehicles are increasingly unreliable and unavailable. In addition, the ability to procure key spares from the manufacturer is diminishing.

Any new MHOV fleet needed to address the above capability shortfalls.

How Defence analysed the requirements options in the Capability Definition phase

A number of capability options were investigated in the Initial Business Case. These included:

- do nothing – continue with the legacy fleet;
- modify current vehicles to address reliability and capability deficiencies;
- commercial vehicles;
- modified commercial vehicles, to enhance military suitability; and
- military 'off the shelf' vehicles; and

- high specification military vehicles.

Quantities were determined by the needs of the Task Groups that met required outputs.

A Task Group is the combination of Army military units that are brought together to provide the desired military effect. The Annual NZDF Output Plan sets out the Task Group requirements in size, concurrency and duration that MHOV will support. The requirements for MHOV were informed by both the 2007 Evaluation Report that concluded that some outputs could not be delivered by the current fleet; and by a Defence Technology Agency analysis of unit needs and rates of consumption. Different quantities that allowed different rates of sustainability were also considered.

The Detailed Business Case further refined the requirements through a Limited Objective Exercise that examined user requirements through a range of operational scenarios. The efficiencies of moving to a Managed Fleet Utilisation (as opposed to the current system of unit holdings) were also incorporated (in essence equipping the force rather than individual units).

The final determination was that 200 vehicles would be needed, and this was endorsed by Cabinet. This compares to the current fleet of nearly 500 vehicles (although some of these perform non operational tasks).

How Defence considered interoperability[36]

Interoperability was carefully considered. Ensuring that new vehicles are compatible with standardised load sizes, load restraining devices, pallets, containers and mechanical handling methods is essential.

Whilst vehicles do not have to be the same make to ensure interoperability, they have to be similar sizes, have similar performance, run on compatible fuels and have compatible electrical systems. These characteristics mean that they will be able to perform equivalent tasks for partners when used in a coalition environment.

The selected vehicle is essentially the same as that used by the British Army. Minor modifications include deck fittings that can secure some specific NZDF payloads and placards that meet NZ regulatory requirements. In addition, some modifications are made to provide functions that the UK does not use, such as dump trucks and tractor/semi-trailer combinations. These variants are mechanically identical to others in the MAN 'family' of trucks. The key significance of this commonality is that it enables the NZDF to benefit from all the testing, evaluation, and training material and support that has been developed by the UK. The dumper bodies and semi-trailers are being manufactured in New Zealand by RMMVA subcontractors (as also happens with the commercial equivalents of these items).

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[36] NATO broadly defines interoperability as: "The ability to act together coherently, effectively and efficiently to achieve tactical, operational and strategic objectives."

Specifically, Military interoperability is defined as: "The ability of military forces to train, exercise and operate effectively together in the execution of assigned missions and tasks."

There are three key dimensions to interoperability: technical, procedural and human.

Technical interoperability consists of hardware and systems. It is the ability of systems to provide information and services to, and accept information and services from, other systems, and to use the information and services so exchanged.

Procedural and doctrinal interoperability is the ability of joint and combined forces to work together on military operations toward the achievement of common objectives. Both are enabled through the formulation of appropriate doctrine, procedures and the undertaking of the necessary training.

Human interoperability is using a common language, understanding different cultures and training together. To achieve this form of interoperability is one of the key reasons military forces train with friendly military forces. It generates professional trust and confidence.

The MAN family has also been selected by the Australian Defence Forces (subject to successful negotiations). However, the ability of the NZDF to get full value from the trucks is not dependent on other militaries using the type, as MAN are a major commercial supplier of trucks throughout the world, including in New Zealand.

How Defence considered through-life costs and issues

Through life costs were assessed in both stages of the business case process. The efficiencies of a smaller and more reliable fleet were balanced against the higher depreciation costs that a new fleet would incur.

The selected vehicles benefit from a high percentage of parts being common with parts for commercial vehicles from the manufacturer. MAN has a commercial presence, and numerous MAN vehicles, in New Zealand. This contributes to managing whole of life costs.

Careful consideration has also been given to the amount of spares needed, and maintenance arrangements. A high priority has also been placed on training, including complete training vehicles, to ensure that operators are well trained on the vehicle. The modern features (such as automatic transmissions and electronic diagnostic equipment) will make the vehicles easier to use and maintain, thus reducing inadvertent damage.

The MAN truck has amassed considerable usage in very demanding operational conditions with the UK Army. This included use in high intensity combat operations, and in support of worldwide deployments that not only include current combat operations, but also exercises in a wide range of conditions from the Arctic Circle through to amphibious operations in small island nations. This has given a good understanding of the maintenance and other support requirements of the vehicle, and provides a robust baseline.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare, assess, and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

Options assessed for delivering the MHOV capability and operational requirements.

The long list analysis undertaken through the initial business case eliminated on value and capability grounds doing nothing, refurbishment of current vehicles, COTS (Commercial Off the Shelf) vehicles, a mix of COTS/MOTS (Military Off the Shelf) and specialised MOTS options. It also eliminated leasing, partnership or loan arrangements as neither offering cost savings nor providing superior capability.

The Detailed Business Case concentrated on numeric options and acquisition alternatives, as set out below.

Option	Cost estimates (NZ$ million)	Advantages	Disadvantages
135 vehicle fleet	106	• Cheaper	• May not be enough vehicles to sustain the deployment sizes and durations described in the Output Plan (including the need for training and maintenance, and allowing for attrition).
200 vehicle fleet (phased)	139 - 172	• Cost is spread out more, and may be slightly cheaper if second hand vehicles are available for some of the phases. • Onset of depreciation costs is partially delayed.	• May be more expensive, as cost of later phases may rise. • Need to keep legacy vehicles in service for longer. • May not be possible to get identical vehicles for all phases as production baselines may change.
200 vehicle fleet (one buy via UK/MAN contract)	140	• Get what we want when we want it. • Clarity over total buy (as can guarantee production standards and arrangements). • Leverage off the UK MoD MAN production run. • Legacy vehicles can be dropped from operational taskings more quickly.	• Higher upfront cost (although probably lower over whole fleet).

200 vehicle fleet (through RFT)	144 - 172	• Get to test the market more thoroughly than through the RFI process.	• Process takes time and costs money, potentially to reach the same conclusion (both UK and Australia went through a very comprehensive competitive process) • Time taken probably means leveraging UK production not possible. • Potentially more expensive in comparison with other options.

Note that different combinations of phasing (eg first phase via UK, subsequent tranches RFT, second hand etc) were broken out in the Detailed Business Case. The 135 vehicle fleet included options for both the UK/MAN contract and undertaking an RFT. In total, nine combinations and variations were looked at. The advantages and disadvantages for all nine variations are encapsulated in the above four options.

In the event, second hand vehicles (which were one option for the phased approach) were not available, so these potential savings could not have materialised. The overall final MHOV capital envelope was $135 million, so in practice it was less than the most optimistic DBC option assumptions.

ASSESSMENT	135 vehicle fleet: did not meet operational requirements. 200 vehicle fleet (phased): did not offer guaranteed financial advantages, and may not have provided optimum fleet commonality. 200 vehicle fleet (UK/MAN contract): Preferred. Met requirements, lowest cost and risk. 200 vehicle fleet (RFT):Risk of higher cost, no operational advantages.

Cabinet concurred with the assessment, and approved negotiations with the UK/MAN for 200 trucks with an overall capital envelope of $135 million.

1.3 Description of the Capability and Operational Requirements

Capability Requirements

The key investment objectives for MHOV to allow it to support policy objectives are:

- Support the range of operational tasks set out in the Defence White Paper 2010
- Improve availability and reduce unplanned maintenance of the MHOV fleet
- Reduce the risk of harm to defence personnel

Operational Requirements

- Can be fitted with NZDF specified voice and data communication equipment
- Can be equipped with active and passive protection
- Comply with current safety regulations
- Transportable by air and sealift
- Transport range of military loads including bulk liquids, palletised and containerised loads, NZDF modules, personnel, weapons and ammunition, loose loads
- Off road mobility including some self recovery
- Integrated load handling for some trucks
- NZTA compatible
- Operate in wide range of climate and lighting conditions
- Run of standardised military fuel
- Commonality across fleet
- Proven in service
- Supportable in NZ
- Proven global supply chain
- Supportable within current NZDF trades and resources
- Value for money over 20 year life

NOTE: The operational and capability requirements listed here were those identified in the suite of requirement documents produced during the Capability Definition Phase. During the tender and contract negotiation process these requirements are converted into functional and performance specifications (FPS) that become the contracted deliverables. During the contract negotiation process the operational requirements have to be balanced against cost and/or viability considerations.

1.4 Schedule of Capability Definition Phase

Dates	Duration	Note
29 May 2012 to 17 April 2013	10.5 months from presentation of Indicative Business Case through to contract signature	Contract allowed for some key decisions (specifications for two of the variants; weapons mount finalisation and spares; and logistics support finalisation) to be made after contract signature within agreed fiscal parameters.

1.5 Expenditure of Capability Definition Phase

	Expenditure (NZ$)
Definition phase	$170,000
Explanation	In the capability definition phase, the above costs are classified as pre-acquisition costs and have been met from the NZDF operating and capital expenditure budgets.

1.6 History of Cost Estimates in the Capability Definition Phase

Date	2012 IBC	2012 DBC	2013 Advice to Joint Ministers	Contract Signing - April 2013
Costs (NZ$ million)	153 – 212	140	135	135
Explanation of variance	Note that all estimates are for the option finally selected. Price came down as costs and requirements were refined. Note that only $112.7m is currently committed. The balance of $22.3 million is earmarked for improved permanent infrastructure that will be part of wider NZDF infrastructure renewal. The $112.7m currently committed includes $104.9m under contract to the suppliers; management and contingency allowances; and introduction into service costs including upgrades to existing infrastructure in lieu of major infrastructure developments.			

1.7 Estimates of Acceptance Date Made in the Capability Definition Phase

Estimates	Initial	Estimate at Contract Signing	Actual
First delivery	Fiscal 13/14	November 2013	
Last delivery	n/a	December 2015	
Explanation of variance	An estimate for initial delivery completion was not made in the Detailed Business Case as it was dependent on whether a single buy or phased approach was selected. As a single buy was approved by Cabinet, the delivery schedules were set at the time of contract.		

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of acquisition phase

Description of acquisition work

How Defence decided to acquire the Capability Solution

To test the market, an MHOV RFI was issued in December 2011 on GETS. The response to the RFI was good, with responses from the five top military truck manufacturers. Analysis of the RFI revealed the Rheinmetall MAN Military Vehicles Australia (RMMVA) offer was the most cost effective (costs were primarily based on the UK MoD support Vehicle Project).

On 10 December 2012, Cabinet agreed to the purchase of up to 200 MHOV vehicles to replace the current fleet, which is reaching the end of its life and has operational limitations. Cabinet approved an indicative capital cost of up to $135.000 million, and authorised negotiations with the UK MoD and RMMVA to achieve that (CAB Min (12) 44/15 refers).

The Detailed Business Case (DBC) noted that the purchase via the UK MoD and Rheinmetall MAN Military Vehicles (RMMV) may take the form of all or any of the following:

- direct from RMMV (but with pricing and specifications as per the UK MoD purchase where applicable);
- through the UK MoD contract with RMMV, whereby some of their production commitment is diverted to New Zealand; and/or
- surplus vehicles direct from the UK MoD.

Leveraging the large UK MoD procurement of 7,500 vehicles, thereby securing significant cost reductions, was time sensitive and conditional on allowing an uninterrupted production of MHOV on the RMMVA production line. The critical time was the end of March 2013, at which point the production line was to finish the UK MoD order. There was some flexibility into April, and meeting this deadline was the focus of the project team.

Initial negotiations with the UK MoD indicated that 68 vehicles in two variants could be transferred from UK production contracts. However, the UK MoD advised on 22 February that no surplus vehicles would be available, and no UK production contracts could be transferred due to potential shortages in the UK fleet.

Negotiations for the supply of vehicles were then undertaken with RMMVA (Rheinmetall RMMVA Military Vehicles (Australia). RMMVA generically covers Rheinmetall MAN Military Vehicles (RMMV) and their subsidiaries, including RMMV (Australia), MAN Truck and Bus (UK); and their subcontractors including MAN Automotive Imports (NZ).

The negotiations have resulted in a contract for the supply of 194 vehicles, together with five semi trailers, peripheral equipment (including armour protection kits), logistic support and training packages.

The six recovery vehicles included in the DBC fleet of 200 vehicles and offered by RMMVA are too large for NZDF requirements. RMMVA is currently developing a smaller recovery variant for a number of users, including the UK. The capital to procure up to six of this variant has been included in the project, subject to it meeting user requirements.

Parent company	Rheinmetall MAN Military Vehicles (Australia) Ltd
Prime contractor at contract signing	Rheinmetall MAN Military Vehicles (Australia) Ltd
Current prime contractor	Rheinmetall MAN Military Vehicles (Australia) Ltd

2.2 Project Budget

Budget variation

	Date approved	Total (NZ$ million)
Original budget at Approval to Commit	28 March 2013	$135 million
Current approved budget	28 March 2013	$135 million
		Note that $112.7m is currently committed – the balance is earmarked for eventual infrastructure development. See note below.

MHOV Infrastructure: The $135 million envelope approved by Cabinet included $22.3 million for new MHOV related infrastructure. Because MHOV infrastructure is related to wider infrastructure developments (for example, new workshops would serve both MHOV and other NZDF equipment), a specific request for major infrastructure was not included in the eventual contracts that were approved by Joint Ministers. The intention is that this money remains 'earmarked' for MHOV related infrastructure, and will be requested when relevant major infrastructure projects are undertaken.

MHOV operational capability is not immediately dependent on new infrastructure. The $112.7 million appropriation includes up to $1.1 million for improvements to current infrastructure so that MHOV will be properly supported on introduction. However, over time it is expected that new infrastructure will be required across much of the NZDF, and the $22.3 million fully allows for future replacement of infrastructure optimised for MHOV in conjunction with other contemporary vehicles and equipment.

Explanation of major budget variations

Date of individual variation	Total (NZ$ million)	Factor	Explanation
N/A			

2.3 Financial Performance

Project expenditure to 30 June 2013

	Total (NZ$ million)
Life to date expenditure (cumulative)	N/A
Remaining balance of approved budget	N/A
Forecast commitments	N/A

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	$112.7
Total forecast expenditure	$112.7
Gross project variation (forecast)	N/A
Foreign exchange impact	N/A
Actual project variation (forecast)	N/A

Variance explanation

Nature of variation (forecast)	Total ($million)	Explanation
N/A		
N/A		

Project Contingency (as at 30 June 2012)

	Total (NZ$ million)
Contingency built into the budget	2.3
Total contingency expended	0.0
Remaining balance	2.3

Explanation of major contingency draw downs

Drawdown	Total (NZ$ million)	Explanation
N/A		

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date

		Original forecast at Approval to Commit	30 June 2013 forecast / achieved	Variation in acquisition phase (months)
Acceptance Date	First vehicle	November 2013	November 2013	
	Last Vehicle	September 2014	September 2014	

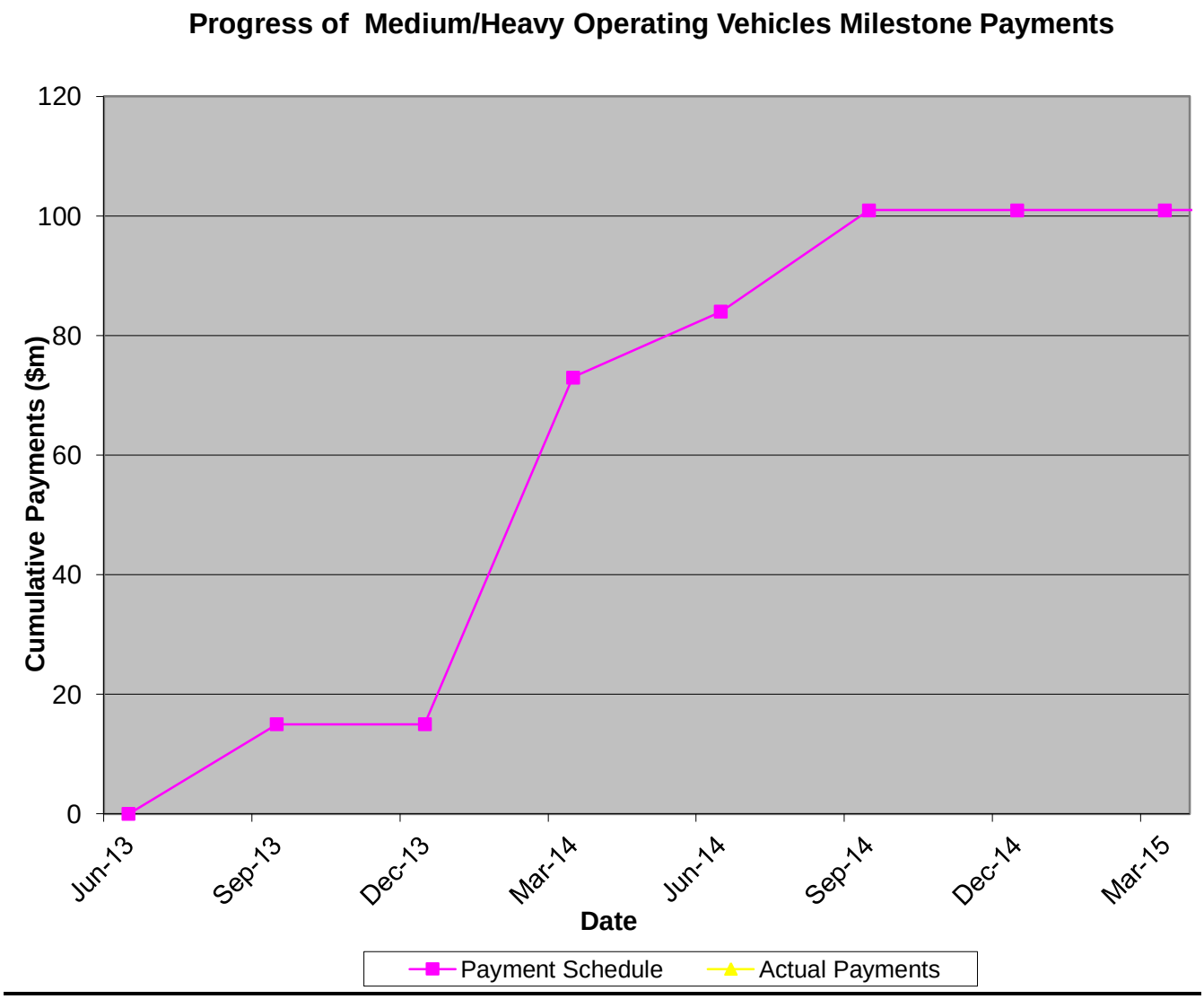
History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
N/A		

Progress of MHOV against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual milestone payments against the milestone payments schedule agreed to in the prime contract[37]. Milestone payments are made upon the contractor's provision of key deliverables and are therefore a good way to identify timing and size of schedule slippage.

An additional $3.8 million is available through the NZDF for infrastructure and IIS. It is anticipated that this money will be expended in 2013/14 and 2014/15.



[37] The milestone payments schedule has cumulative payments that are less than the total budget because it excludes the ancillary and discretionary costs of the project.

SECTION 3: INTRODUCTION INTO SERVICE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service Phase

Description of Introduction into Service phase

Introduction into service will be managed by the NZDF establishing a Transition into Service Team. This team will:

- Conduct maintainer and operator training.
- Imbed training plans for follow on training.
- Receipt the vehicles, support equipment and spares.
- Issue equipment to user units.
- Validate other contract deliverables (A frames, armour, test equipment, wheel chains, publications etc) to ensure they are fit for purpose.
- Develop MHOV policy, training, tactics and procedures.

Status of the Introduction into Service plan

The Introduction into Service Plan is currently under peer review.

3.2 Schedule of Introduction into Service

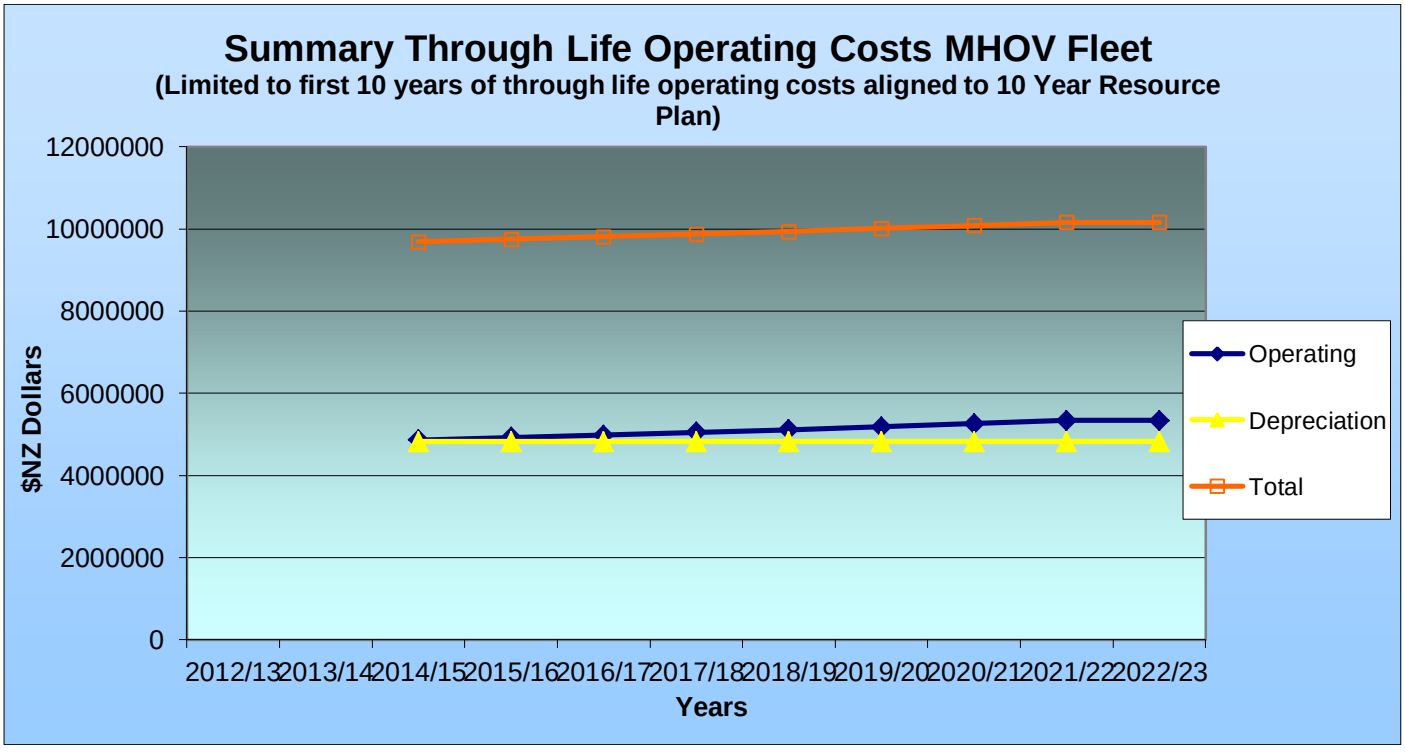
Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.
Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.
Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.

NZDF Output Plan, 2009, S1-12

	Initial Estimate	30 June 2013 Estimate	Actual	Variance (months)
Date first batch accepted by Crown	13/14	1 November 2013		
Date last batch accepted by Crown	TBA	1 September 2014		
Commence operational test and evaluation	TBA			
Finish operational test and evaluation	TBA			
Achieve initial operating capability	TBA			
Establish directed level of capability	TBA			
Explanation				

3.3 Summary of Through Life Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Operational Requirements

Operational Requirements	Delivery	Comment
• Can be fitted with NZDF specified voice and data communication equipment		Comment reserved until vehicles in service
• Can be equipped with active and passive protection		
• Comply with current safety regulations		
• Transportable by air and sealift		
• Transport range of military loads including bulk liquids, palletised and containerised loads, NZDF modules, personnel, weapons and ammunition, loose loads		
• Off road mobility including some self recovery		
• Integrated load handling for some		
• NZTA compatible		
• Operate in wide range of climate and lighting conditions		
• Run of standardised military fuel		
• Commonality across fleet		
• Proven in service		
• Supportable in NZ		
• Proven global supply chain		
• Supportable within current NZDF trades and resources		
• Value for money over 20 year life		

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years.

Active Risks at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Compliance:** If training is not robust, then compliance issues relating to overloading may arise.	Acquisition /Introduction Into Service (IIS)	Extreme	Impact on operation of the vehicles on public roads.	Probable, due to the fact that most legacy vehicles are not big enough to have incurred these issues.	Ensure that the implications for compliance management are fully appreciated. Training and awareness. This issue is not technical (many civilian vehicles need compliance management) – the treatment is effective understanding and training.
2	**Developmental Vehicles**: If there is a lack of clarity and agreement around functional specifications, users may feel they have not got what they wanted.	Acquisition	High	Relates to NZ specific variants (dumper, tractor/semi trailer combination). Vehicles do not meet the end-users expectations	Likely	FPS will be subjected to internal management review to confirm that the requirements are reasonable and achievable.

3	**Functional Performance Specifications (FPS):** If the Functional Performance Specification for developmental vehicles, some NZ specific ancillaries (such as towing frames) and weapons mounts are not robust, unambiguous and agreed by users, there may be user dissatisfaction.	Acquisition	High	A risk that the FPS "grow" the contracted capability and thus additional costs could be incurred.	Likely	Develop an FPS that adheres to already agreed requirements. Canvass users widely. Ensure specification relate to actual user needs and operational concepts. Involve contractor. Dependant on the contractor response there may be a need for trade-off discussions to determine final capability. Note that the MHOV contract agreed high level requirements for all these features, and the contracted responses were all agreed prior to contract.
4	**Operating Budget:** If in-service support arrangements do not leverage the characteristics of modern vehicles, and apply obsolete concepts and processes, then operating costs may be higher than anticipated.	IIS	High	Increase in the annual operating budget, an adjustment of the level of support to be provides, or a reduction in the planned usage rate.	Likely	Negotiation of support contract with the contractor, to address in service costs. Ensure that efficiency benefits of new vehicles are captured.
5	**Organisational Plan:** If coordinated planning for training, introduction into service and support arrangements is not done, then the inherent efficiencies and benefits may not be realised.	IIS	High	Delays in coordinated activities associated with introduction into service	Likely	Plan to be developed to pull together all related interfaces associated with the introduction into service and utilisation of the MHOV capability.

5.2 Issues

	Issues	Phase	Severity	Impact	Treatment
1	**Training** Training is critical to ensuring that the vehicles are operated within NZTA compliance limits, and supported in accordance with manufacturer's recommendations.	IIS	Assessment on severity will need to await IIS.	Successful operation.	Training is the critical element to ensure that compliance issues are met, and the vehicles are operated and supported in accordance with manufacturer's recommendations. Provision has been made for 'train the trainers' and initial training. How effective this is will be demonstrated during the IIS phase.

PROJECT DATA SHEET: STRATEGIC BEARER NETWORK (SBN)

PROJECT DESCRIPTION

This project will provide Satellite Communications (SATCOM) equipment to the New Zealand Defence Force (NZDF). A number of mobile (land based) terminals, maritime terminals for the Navy and fixed anchor station terminals will be purchased. This SATCOM equipment will access the US Department of Defense (DoD) Wideband Global SATCOM (WGS) constellation enabling deployed forces to meet current and future strategic information exchange requirements (and meet the growing demand for bandwidth).

The WGS is a constellation of nine communications satellites with a full operational date of 2018/19. Five of the satellites are operational in orbit now with the remaining four being launched over the next four years. The NZDF have gained access to the WGS constellation through a Memorandum of Understanding (MoU) with the US DoD. This will provide a large increase in SATCOM capacity for the NZDF in return for funding a share of the build of WGS Satellite Nine and a share of the through life management costs.

Cabinet has approved the SATCOM bearer phase of the project which is the subject of this report. A further HF phase is anticipated to begin development of a Business Case in 2015.

Policy Value

Strategic Bearer Network (SBN) is an enabling project supporting a number of key NZDF functions across several capabilities including the Network Enabled Army programme, Defence Command and Control System, the P-3 Orions and the ANZAC frigates. This project will enable the Government's options for utilising the NZDF for the principal tasks set out in the Defence White Paper 2010, in particular:

- to defend New Zealand sovereignty;
- to contribute to and where necessary lead peace and security operations in the South Pacific;
- to make a credible contribution in support of peace and security in the Asia - Pacific region;
- to protect New Zealand's wider interests by contributing to international peace and security, and the international rule of law;
- to contribute to whole of government efforts at home and abroad in resource protection, disaster relief, and humanitarian assistance; and
- to participate in whole of government efforts to monitor the international strategic environment.

Better Business Case Milestones[38]

Better Business Case Milestones

Project Charter: Defence project initiation is guided by the Defence White Paper 2010 and the 2011 Defence Capability Plan. Projects commence following notification to the Minister of Defence and approval of a project charter by the Capability Management Board.

Approval of Indicative Business Case (IBC): Attained when Cabinet agrees to the strategic context for an investment and agrees to progress a shortlist of capability options to the Detailed Business Case stage. May also authorise Defence to engage with industry for more detailed information (e.g. a Request for Information).

Approval of Detailed Business Case (DBC): Attained when Cabinet agrees to a refined capability requirement and authorises Defence to commence formal engagement with industry (through a request for proposal or request for tender) on a preferred capability option.

Approval of Project Implementation Business Case (PIBC): Attained when Cabinet agrees that Defence can conclude a contract based on the preferred supplier, the negotiated services, the maximum funding level and the arrangements to manage the project and the ongoing delivery of services.

Date	Approved By	Approval
6 July 2011	Project Charter	**Project initiation.** Following the Defence White Paper requirement for "Improved Offshore Communications" the NZDF's Strategic Assessment and Investment Concept Brief identified a requirement to improve capacity and access to a wider range of common and reliable communications paths. A project charter to initiate the SBN project was approved "to provide global connectivity into the NZDF networks of sufficient capacity and reliability to enable deployed forces to meet information exchange requirements". The project team was directed to write the Indicative Business Case (IBC).
19 September 2011	Cabinet CAB Min (11) 9/4	**Approval of Indicative Business Case.** Following submission of the IBC to Cabinet approval was given to develop a Detailed Business Case (DBC) to examine the recommended three short listed options.
14 November 2011	Cabinet CAB Min (11) 41/13	**Approval of Detailed Business Case.** Following submission of the DBC, Cabinet confirmed the preferred option was through a Memorandum of Understanding (MoU) with the US DoD Wideband Global Satellite Communications System (WGS). The NZDF was authorised to sign the MOU and CDF signed this agreement on 4 December 2011. Cabinet also approved a capital expenditure of $83.3m and a contingency of $5.6m totalling $88.9m. The preferred option was effectively contracted when the MoU was signed with the US DoD. This included the payment milestones required of the MoU. NOTE a percentage of the capital expenditure was set aside for investing in the NZDF infrastructure necessary to access the WGS satellites. This consists of mobile (land based) terminals, maritime terminals and fixed anchor stations. The NZDF was to administer the budget for the MoU, and the MoD was to administer the budget for infrastructure acquisition.
25 July 2012	Minister of Defence, Minister of Finance SBN financial appropriations	**Approval to Commit (joint note in lieu of a Project Implementation Business Case).** An appropriation of $18.31m to Vote Defence, Minister of Defence for Defence Equipment was approved by joint ministers. (NOTE a further $14m for additional purchases in 2022-2025 has not yet been appropriated.) This equipment will be delivered over three tranches in each of the following financial years.

[38] See Part One for a comparison of these steps with the Government Approval Milestones used to track earlier projects.

SECTION 1: CAPABILITY DEFINITION PHASE

During the capability definition phase, capability and operational requirements are assessed and refined. Stakeholder needs are considered. Scenarios may be used to identify requirements. Hypothetical options which include a rough order of costs are used to analyse affordability and evaluate requirements.

1.1 Summary of Capability Definition Phase

Capability Requirement: a description of the ability needed to achieve the policy objective.
Operational Requirement: a description of a component of what is required to complete a task.

How Defence identified and assessed capability and operational requirements

There have been two parts to this capability in the Defence Capital Plan, HF (radio) replacement, and SATCOM replacement. In 2010 Defence began formally considering options for replacing its strategic communications[39].

The NZDF developed an Investment Concept Brief (ICB) and fed this into the Strategic Assessment of the SBN project. This identified the problems to be addressed, the alignment with defence policy objectives (as identified in the Policy Value section above) and the benefits to be derived from investment in strategic communications. These are summarised as:

Problems	Benefits
Inadequate and unreliable networks and systems	More agile and knowledge led operations
Increasing obsolescence of the communications infrastructure	Improved ability to develop critical future capabilities
Fragmented and ad-hoc network management	Improved value from government investment

The ICB provided the investor (Commander Joint Forces) with sufficient confidence to consider this investment further.

An initial study was undertaken to identify the scope of the strategic communications required. This analysed NZDF deployments over the previous ten years to identify size, shape and nature of NZDF deployments. This was summarised as:

- the need to support up to six deployed maritime units simultaneously;
- the need to support up to six deployed missions simultaneously (at the time the NZDF was deployed to Afghanistan, Iraq, Middle East, Republic of Korea, Sinai, Solomon Islands, Sudan and Timor Leste);
- the need to deliver increased capacity to support growing information exchange requirements; and
- the need to deliver increased capacity to enable the delivery of new services on the network.

The US DoD proposed their WGS system as a potential solution for NZDF strategic SATCOM requirements in a visit to New Zealand in 2010. Once further information was gathered on this proposal a Project Charter was approved to stand up the Strategic Bearer Network project team to develop the Indicative Business Case. The project was then split into two phases, phase one to address SATCOM and phase two to address HF communications. Based on the rapidly increasing demand for SATCOM bandwidth it was determined by the NZDF that the priority for investment was SATCOM and HF communications was to be addressed at a later time (a business case for this is anticipated in 2015).

[39] Strategic communications are generally inter theatre between deployed units and their Headquarters in New Zealand where access the services and information on the defence networks is required. Tactical communications are generally intra theatre between individual units.

How Defence analysed the requirements options in the Capability Definition phase

Six options were considered in the IBC, with three of these discarded for not meeting one or more of the investment objectives or critical success factors. The remaining three options were;

- Status Quo, effectively do nothing and included for comparison reasons only.
- Enhanced Status Quo, investigate improving on the current model, adopt better business practices and leverage off improvements in commercial SATCOM.
- WGS, sign the MoU to gain global access to the US DoD owned SATCOM constellation. This would include the improvements to NZDF practices and procedures.

A Multi-Criteria Decision Analysis (MCDA) was conducted and WGS was identified as the preferred solution. Cabinet approved the IBC and directed defence to develop a detailed business case to further examine the short listed options.

A model was produced of the NZDF demand for SATCOM based on an extrapolation of previous years' consumption. A comparison of how the two options would deliver this model was made including capacity, cost, coverage and reliability. The benefits and risks of each option were then analysed and a monte carlo analysis was conducted against 19 variables for each option. WGS was identified as the preferred option for the following reasons:

- Known cost with reduced uncertainty.
- Delivers the capacity required of the NZDF model.
- Requires more capital expenditure up front but has significantly reduced through life costs.
- Reliable global access with redundancy built into the system.

How Defence considered interoperability[40]

The SBN project will provide interoperability through common equipment, procedures and support across the NZDF and with the other MoU nations of Belgium, Canada, Denmark, Luxemburg, Netherlands, the United States and also with Australia which has a separate bilateral MoU with the US. Other types of interoperability (for example of networks, systems and information) are enabled by the increased bandwidth capacity of the network bearer. These systems and services are being provided by other projects such as the Defence Command and Control System (DC2S) and the Network Enabled Army (NEA). The global coverage provided by WGS means the Defence Force can be assured of access where ever it deploys.

NATO broadly defines interoperability as: "The ability to act together coherently, effectively and efficiently to achieve tactical, operational and strategic objectives."

Specifically, Military interoperability is defined as: "The ability of military forces to train, exercise and operate effectively together in the execution of assigned missions and tasks."

There are three key dimensions to interoperability: technical, procedural and human.

Technical interoperability consists of hardware and systems. It is the ability of systems to provide information and services to, and accept information and services from, other systems, and to use the information and services so exchanged.

Procedural and doctrinal interoperability is the ability of joint and combined forces to work together on military operations toward the achievement of common objectives. Both are enabled through the formulation of appropriate doctrine, procedures and the undertaking of the necessary training.

Human interoperability is using a common language, understanding different cultures and training together. To achieve this form of interoperability is one of the key reasons military forces train with friendly military forces. It generates professional trust and confidence.

How Defence considered through-life costs and issues

Defence has been operating satellite communications equipment for over 10 years. And while there is an existing effort to improve coordination of these activities the assumption was made in the business case that personnel costs would remain within the Defence baseline, that is, there are no additional personnel requirements of this project.

The Defence share of the through life costs of the WGS satellite are detailed in the WGS MoU. These are an average of US$400k annually for the years 2018 to 2031.

In terms of the infrastructure required to access the WGS satellites, the equipment suppliers are asked to provide their recommendations for through life support. The MoD and NZDF then agree on the approach to take. Typically this will include an up-front purchase of spares, warranty, operator and maintainer training and documentation and some form or through life support agreement. The MoD has only recently signed the first contracts for the infrastructure and the through life support requirements will be iteratively reviewed as each contract is delivered.

A number of the WGS terminals will not last as long as the satellite constellation does. Estimates for mobile (land based) terminals range from 5 to 15 years but will be dependant on the frequency of their use and the conditions under which they operate. To this end a second round of infrastructure acquisition has been included in the years 2022 – 2025.

1.2 Requirements Analysis in the Capability Definition Phase

Options analysis in the capability definition phase is used as a tool to compare, assess, and evaluate capability and operational requirements. Whereas options analysis in the acquisition stage identifies the best procurement solution to deliver the capabilities required.

Options assessed for delivering the SBN capability and operational requirements

Option	Cost estimates (NZ$ million)	Advantages	Disadvantages
Status Quo	87 - 144	• Achievable • No change required • Cheaper infrastructure • Flexible	• All missions continue to be managed in an ad-hoc fashion • All bandwidth has to be purchased and all changes have to be negotiated • As demand grows so do costs, particularly in congested areas • Requires a mixture of contracts, equipments and suppliers • Bandwidth provided to defence is constrained by the budget available
Enhanced Status Quo	71-128	• Achievable • Centralised SATCOM Management and Control • Cheaper infrastructure • Flexible	• Access to commercial SATCOM can be contended (demand is greater than supply and access becomes limited or very expensive) • Coverage may not be available (either there is no satellite in sight, or all available bandwidth has been sold) • May not meet future demand without further investment
WGS MoU	112-114	• Achievable with known costs • Capacity to meet future demand is included • Guaranteed access • Reliable, certified equipment • Global access	• High up front capital costs • Committed to a single supplier • More expensive infrastructure
Hosted Payload (NZDF buys a portion of a satellites capacity)	200+	• High capacity • Dedicated	• Global coverage is not provided by one hosted payload (would need a payload on four satellites) • Unaffordable
Non-satellite option	Less than WGS	• Less equipment to manage • Not reliant on satellites	• Does not meet bandwidth requirements and would not enable other defence projects
Modified WGS MoU	More than WGS	• Greater customisation for NZDF	• Due to the multi national nature of the MOU it was not able to be renegotiated
ASSESSMENT	The WGS MoU option was recommended.		

1.3 Description of the Capability and Operational Requirements

Capability Requirements-The capability requirements necessary to support policy objectives include:

The key capability requirements:

- Provide a computer network infrastructure with global reach, high capacity and robust design.
- Enable the Command and Control of deployed forces.
- Meet the growing demands for information exchange with our deployed forces.
- Provide greater levels of interoperability with security partners.
- Provide Value for Money from investment in SATCOM.

Operational Requirements- The operational requirements necessary to support the capability include:

The operational requirements cover both the capability of the WGS Satellite and those of the user terminals required to access the Satellite.

- The primary focus for SBN will be the South Pacific but the required support area is global.
- SBN will facilitate the transfer of information and data:
    - to support deployed forces;
    - to conduct network enabled operations (all deployed forces on the network); and
    - to support Command and Control of the deployed forces (primarily through systems such as DC2S).
- SBN will provide connectivity into the deployed maritime and land environments by providing these units with SATCOM terminals.
- SBN must operate within NZ and international radio frequency regulations governed by the International Telecommunications Union.
- SBN will need to support a minimum of three networks on the strategic bearer (an intelligence network, the defence network, and the internet).
- SBN must provide the data throughput requirements for maritime and land units as provided in the NZDF Strategic Communications Operational Requirements Document.
- SBN deployed terminals must be capable of meeting a minimum E1 (2.048Mbps) data throughput for each user.
- NZDF will establish the Satellite Communications Management Cell within the NZDF Network Operations Centre.
- SBN will support up to six deployed maritime and six deployed land units simultaneously.

NOTE: The operational and capability requirements listed here were those identified in the suite of requirement documents produced during the Capability Definition Phase. During the tender and contract negotiation process these requirements are converted into functional and performance specifications (FPS) that became the contracted deliverables. During the contract negotiation process the operational requirements have to be balanced against cost or viability considerations.

1.4 Schedule of Capability Definition Phase

Dates	Duration	Note
15 November 2010 to 19 March 2012	16 Months	This project was funded from depreciation and the full budget allocated to Vote Defence Force in November 2011. In December 2011 the NZDF signed the MoU with the US DoD officially making WGS the solution for SBN. In March 2012 the NZDF passed responsibility for the acquisition of terminals to the MoD whilst retaining the budget required to implement the MoU. The MoD was appropriated the first part of the project budget on 25 July 2012. The first MoD acquisition contract was signed on 1 May 2013 for the acquisition of two mobile land terminals.

1.5 Expenditure of Capability Definition Phase

	Expenditure (NZ$)
Definition phase	565, 007.84
Explanation	During the definition phase, the above costs were classified as pre-acquisition costs and were met from the NZDF's operating budget.

1.6 History of Cost Estimates in the Capability Definition Phase

Date	July 2011	September 2011	November 2011	2012
Costs (NZ$ million)	75 – 115	114	90.2	88.9
Explanation of variance	The first two estimates included both SATCOM and HF replacement projects. The first estimate was from the Strategic Assessment and Investment Logic Mapping. The second estimate was from the Indicative Business Case. The third estimate was from the Detailed Business Case. The fourth figure is the approved project budget from Cabinet including $5.6m of contingency.			

1.7 Estimates of Acceptance Date Made in the Capability Definition Phase

Estimates	Initial	Estimate at Contract Signing	30 June 2013 Estimate / Actual
Early Access	June 2013	August 2013	Early Access deliverables have a delivery and acceptance date of August 2013.
Initial Operating Capability (IOC)	June 2014	June 2014	First contract to deliver IOC (a permanent anchor station) has been signed with a delivery and acceptance of March 2014.
Full Operating Capability (FOC)	June 2015	June 2015	It may take longer than expected to have the maritime terminals installed and operational.
Explanation of variance	N/A		

SECTION 2: ACQUISITION PHASE

The acquisition phase procures the capability solution. Deeper analysis of requirements and options may be required once defence industry is engaged. Included in this stage are processes for tendering, contract negotiation and acceptance of the deliverables.

2.1 Summary of acquisition phase

Description of acquisition work

There are two parts to the Strategic Bearer Network acquisition. The first is the share allocated to the NZDF for the build and launch of WGS Satellite Nine. These costs are detailed in the MoU with the US DoD, are fixed and are managed by the NZDF. The second part is the acquisition of the infrastructure to enable the NZDF to access the WGS satellites. This includes the acquisition of mobile (land based) terminals, maritime terminals and fixed anchor stations. This part is managed by the MoD Acquisition Division.

It was agreed with the NZDF to split the first acquisition of WGS infrastructure across three financial years, with an iterative approach to delivering the capability. These three stages are:

- Early Access (EA) in FY 12/13. Early Access will deliver a limited number of mobile terminals and a means of operating a temporary anchor station so that the NZDF can start using the WGS constellation to establish communications links. This will allow the NZDF to develop tactics, techniques and procedures, identify logistics requirements, integrate the equipment into Defence networks and familiarise itself with the new technology. Options were included for maritime terminals and fixed anchor stations. This will meet approximately 10% of the project's total deliverables.
- Initial Operating Capability (IOC) in FY 13/14. This will deliver the first fixed anchor station, maritime terminals and additional mobile terminals. This will build on the lessons learned in Early Access. This will meet approximately 40% of the projects total deliverables.
- Full Operating Capability (FOC) in FY 14/15. This will deliver the remaining anchor stations and terminals to the users in the NZDF. This will meet approximately 80% of the project's total deliverables. Note FOC will not be achieved until the full capacity of the WGS constellation is available post launch of WGS Satellite Nine in 2017/18.

A number of documents were used to develop the requirements for Early Access. These included:

- The NZDF Strategic Communications Operational Concepts Document;
- The NZDF Strategic Communications Operational Requirements Document;
- The Memorandum of Understanding concerning the joint production, operations and support of Wideband Global Satellite Communications; and
- The Introduction Into Service Plan for SBN.

How Defence decided to acquire the Capability Solution

The SBN acquisition project team commenced a tender process in November 2012 for Early Access. Twelve responses were received and from the nine compliant tenders two successful tenderers were chosen to enter into contract negotiations. These were GigaSat Asia Pacific for the supply of mobile terminals and Rockwell Collins Australia for the supply of a fixed anchor station.

The tender included a detailed section on the tenderers background, relevant experience, and proven track record of the proposed solution. The response to this was included in the tender evaluation and the ability to provide proven equipment was a mandatory requirement. In addition all equipment has to be certified by the US Government to access the WGS satellites. This provides a level of interoperability built into the system.

The option for the maritime terminals was not taken up as the operational and commercial tender evaluation criteria were not met. The option for the fixed anchor station was taken up as this allowed a head start into the delivery of Initial Operating Capability.

Contracts were signed with GigaSat Asia Pacific on 1 May 2013 and with Rockwell Collins Australia on 26 June 2013. Deliveries commence in August 2013 and the first connection through the WGS satellite is scheduled for the last week in August.

Maritime terminals will be the subject of a dedicated tender which will be developed in September and released to industry in early October 2013. A minimum of one maritime terminal (for HMNZS CANTERBURY) is required to meet Initial Operating Capability, with a further four maritime terminals required to meet Full Operating Capability.

Contractor for Mobile Terminals	GigaSat Asia Pacific, operating out of Canberra.
Contractor for first Anchor Station	Rockwell Collins Australia, operating out of Sydney.

2.2 Project Budget

Budget variation

	Date approved	Total (NZ$ million)
Original budget at Approval to Commit (Note1)	14 November 11	88.9
Including budget for NZDF to manage the MoU	14 November 11	51
Including budget for MoD acquisitions (Note 2)	14 November 11	32.3
Current approved budget	14 November 11	88.9
Variation on original approved budget		Nil

NOTE 1. The approved budget includes a contingency fund of NZ$5.6m which has been constrained to the management of the MoU only and can be released once WGS Satellite Nine is launched and operational.

NOTE 2. The MoD currently has only has NZ$18.3m of its acquisition budget appropriated. The remaining $14m has been targeted to replace obsolete equipment at the mid-point of the MoU. This was presented in the through life analysis in the business case where it was identified that the Satellite has a longer life than the user terminals, in particular the mobile terminals. The MoU will provide the NZDF with 20+ years access to the constellation but most user terminals will reach end of life after approximately 10 years.

Explanation of major budget variations

There are no major budget variations.

2.3 Financial Performance

Project expenditure to 30 June 2013

	Total (NZ$ million)
Life to date expenditure (cumulative)	8.9
Remaining balance of approved budget	80
Forecast commitments MoU	46.4
Forecast commitments MoD	18.3
Contingency	5.6

Total forecast expenditure

Forward Cover

To remove uncertainty from a future cash flow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cash flows.

	Total (NZ$ million)
Approved budget	88.9
Total forecast expenditure	83.3
Gross project variation (forecast)	5.6
Foreign exchange impact	Nil
Actual project variation (forecast)	5.6

Variance explanation

Nature of variation (forecast)	Total ($million)	Explanation
Actual project variation-	5.6	Contingency
Foreign exchange impact	Nil	
Total	5.6	

Project Contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	5.6
Total contingency expended	0
Remaining balance	5.6

Explanation of major contingency draw downs

There have been no major contingency draw downs.

2.4 Schedule/Timeframe Progress

The following dates are those in the MoU and those for contract acceptance of acquisitions.

		Original forecast at Approval to Commit	30 June 2013 forecast / achieved	Variation in acquisition phase (months)
Acceptance Date	WGS Satellite Nine	2018	2018	Nil
	Early Access	30 June 2013	20 August 2013	2
	Initial Operating Capability	30 June 2014	30 June 2014	0
	Final Operating Capability	30 June 2015	30 June 2015	0
Comment		Until a tender is released for the maritime terminals it will not be known what the delivery and installation times will be. This may affect the completion dates for IOC and FOC.		

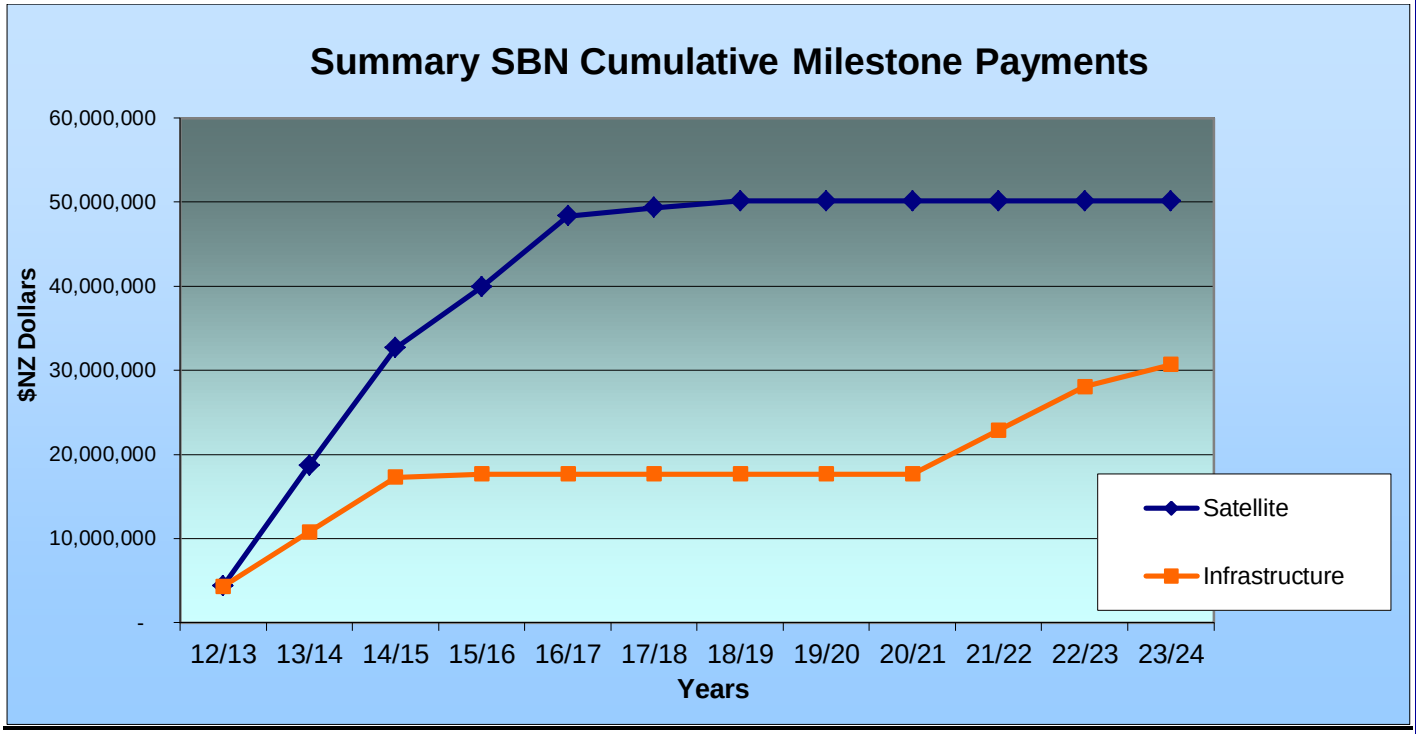
History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
Nil		

Progress of SBN against the Milestone Payments Schedule

NOTE: This graph displays the project's progress by comparing actual milestone payments against the milestone payments schedule agreed to in the MoU and acquisition contracts. Milestone payments are made upon the contractor's provision of key deliverables and are therefore a good way to identify timing and size of schedule slippage.

MoU milestone payments are made in August of each year and the final payment coincides with the estimated operational date for Satellite Nine. Contractual payments are summarised for each year and estimated.



SECTION 3: INTRODUCTION INTO SERVICE

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service Phase

Description of Introduction into Service phase

The NZDF is responsible for delivering capability into service and the MoD is responsible for ensuring any acquisition items required for Introduction into Service (IIS) have been included in the acquisition contract. To this end the NZDF developed an Introduction into Service Plan for SBN which listed all the then known IIS requirements. This included:

- Operator and Maintainer training;
- Support to installation, set to work and acceptance testing;
- Spares;
- Technical Documentation;
- Performance requirements;
- Contractors through life support recommendations;
- Software and Firmware support;
- Support for integration into Defence networks;
- Site preparation in New Zealand;
- Development of Standard Operating Procedures;
- Development of the Satellite Management Office;
- Transport requirements; and
- Other Integrated Logistics Support (ILS) requirements.

No capability has been delivered to the NZDF as yet and current work is based on the planned Introduction into Service of mobile terminals in August 2013. Current focus areas are ILS, training, site preparation and integration into the Defence networks. Early Access will be used to refine all IIS activities so that they are improved for Initial Operating Capability (IOC) and Full Operating Capability (FOC).

Status of the Introduction into Service Plan

The initial IIS Plan that was written for Early Access will be rewritten for IOC and FOC as the acquisition project continues. Lessons learned will be adopted and processes refined as the capabilities are rolled out to the users (Air Force, Army and Navy).

The major challenges for IIS during Early Access will be with the integration into Defence networks, and the change from a commercial service provider (commercial satellites, commercial contracts, commercial terminals) to a military service provider (certified equipment, satellite access procedures, positive monitoring and control, dedicated reporting). Defence has been operating SATCOM for over 10 years and is familiar with the concepts. The technical nature of WGS, however, will require some change. Defence is using the move to WGS as an opportunity to restructure its SATCOM management and control.

There are three components of the project team each with separate roles. The NZDF Communications and Information Systems (CIS) Branch are responsible for the management of the MOU and IIS of the WGS satellites, the MoD is responsible for the acquisition of necessary WGS infrastructure and associated ILS components, and the NZDF Capability Branch is responsible for the IIS of this WGS infrastructure. The project team meets weekly and actively manages all aspects of the acquisition and later IIS. While the acquisition phase of the project is active the MoD will take the lead in all project reporting. When FOC has been achieved the NZDF will take the lead.

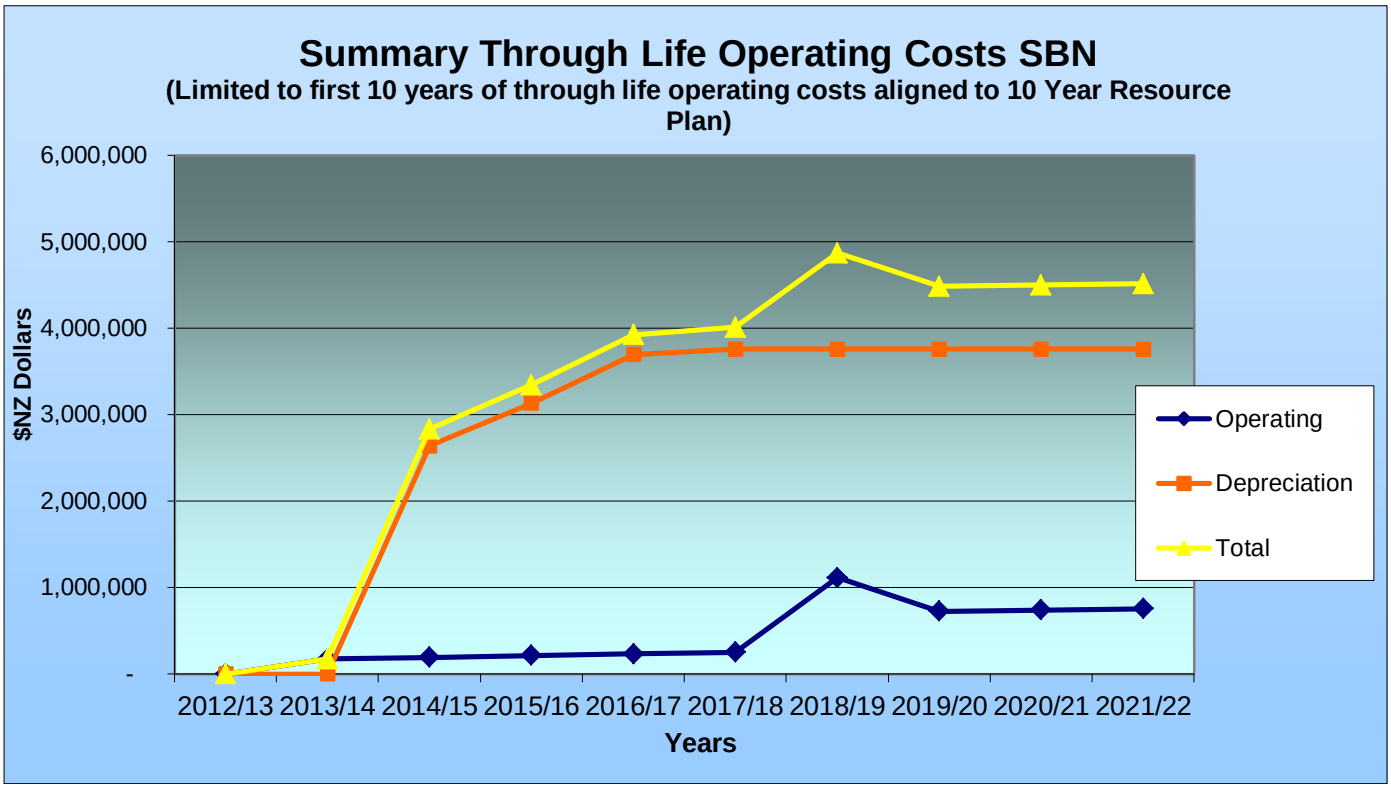
3.2 Schedule of Introduction into Service

Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.
Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.
Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.
NZDF Output Plan, 2009, S1-12

	Initial Estimate	30 June 2013 Estimate	30 June 2013 Actual	Variance (months)
Early Access accepted by Crown	30 June 2013	20 August 2013	N/A	2
Early Access Introduction into Service by NZDF	30 June 2013	29 November 2013	N/A	5
IOC accepted by Crown	30 June 2014	30 June 2014	N/A	-
IOC Introduction into Service by NZDF	30 June 2014	30 June 2014	N/A	-
FOC accepted by Crown	30 June 2015	30 June 2015	N/A	-
FOC Introduced into Service by NZDF	December 2018	December 2018	N/A	-
Explanation	The NZDF is using two exercises to assist in the Introduction into Service of the mobile terminals. These will complete at the end of November 2013 and will see the equipment used in operations type scenarios. The dates for FOC Introduction into Service by the NZDF are significantly later than the delivery of the MoD acquisition as the full capabilities of the WGS constellation are not available until all nine satellites are launched and operational.			

Summary of Through Life Operating Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Operational Requirements

No capability has been delivered to the NZDF as at 30 June 2013. Progress towards delivery of Operational Requirements is NIL apart from as noted below.

Operational Requirements	Delivery	Comment
The primary focus for SBN will be the South Pacific but the required support area is global.	50%	A WGS satellite is already in place over the Pacific and can provide immediate support to the South Pacific. WGS infrastructure is being delivered from August 2013.
SBN will facilitate the transfer of information and data: • to support deployed forces; • to conduct network enabled operations (all deployed forces on the network); and • to support Command and Control of the deployed forces (primarily through systems such as DC2S).	NIL	This will be tested as part of the NZDF Introduction into Service of the WGS terminals.
SBN will provide connectivity into the deployed maritime and land environments by providing these units with SATCOM terminals.	33%	Air Force will be the first users to take WGS equipment on exercise with a proposed deployment to Samoa in September 2013.
SBN must operate within NZ and international radio frequency regulations governed by the International Telecommunications Union.	50%	Radio licenses have been issued for use of WGS terminals at OHAKEA and LINTON.
SBN will need to support a minimum of three networks on the strategic bearer (an intelligence network, the defence network, and the internet).	NIL	This will be tested as part of the NZDF Introduction into Service of the WGS terminals.
SBN must provide the data throughput requirements for maritime and land units as provided in the NZDF Strategic Communications Operational Requirements Document.	NIL	
SBN deployed terminals must be capable of meeting a minimum E1 (2.048Mbps) data throughput for each user.	50%	This is a critical requirement in all tenders for WGS infrastructure equipment.
The NZDF will establish the Satellite Communications Management Cell within the NZDF Network Operations Centre.	NIL	This is being established as part of the restructure and move into the HQNZDF building by the CIS Branch.
SBN will support up to six deployed maritime and six deployed land units simultaneously.	33%	Maritime terminals will be subject to a tender in October 2013 for delivery before the end of the Financial Year. Two terminals will be delivered in August 2013 to the land based users.

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Key:	
	Low. Little or no impact on ability to deliver outputs, meet objectives and goals. Little or no resource allocation or management effort required.
	Medium. Degrade the ability to deliver outputs, meet objectives and goals. A moderate level of resource allocation or management effort is required.
	High. Significantly degrade the ability to deliver outputs, meet objectives and goals. A high level of resource allocation or management effort is required.
	Extreme. Goal achievement or output delivery unlikely. Significant resource allocation or management effort required.

Likelihood	
Almost certain	Very high probability of occurrence, could occur several times during the coming year.
Likely	Likely to occur about once per year.
Possible	Possible, likely to occur at least once over a ten-year period.
Unlikely	Plausible, unlikely, likely to occur during the next ten to forty years.
Rare	Very low likelihood, but not impossible, very unlikely during the next forty years.

Active Risks at 30 June 2013

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Supply**. If there are problems with the production or operation of the WGS satellites then this may impact NZDF access.	Acquisition / Introduction into Service	Medium	Delays in reaching Full Operating Capability (FOC).	Unlikely	The MOU provides the NZDF with visibility of the US DoD WGS program including management of this risk.
2	**Supply.** If there are problems with the integration into defence networks the users may not be supported.	Introduction into Service	Medium	Delays in reaching Initial Operating Capability (IOC) and FOC.	Unlikely	NZDF engineers and Contractor engineers will be on site during the installation and set to work to do the integration.
3	**Supply.** If there are contractual issues with the terminal suppliers delays may occur.	Acquisition	Medium	Delays in reaching Crown acceptance IOC and FOC.	Possible	The MoD is only purchasing proven SATCOM equipment which is already in production. There may be some problems with export licenses from the US but Contractors are already working on this.

4	**Supply.** If there are no installation slots in the fleet schedule there may be delays with the installation of maritime terminals.	Acquisition	Medium	Delays in the Navy reaching IOC or FOC.	Possible	Work with the Navy to identify the order in which they want terminals delivered.
5	**Acquisition:** If the costs of the acquisition project rise above estimates this may impact on meeting all the project requirements.	Acquisition	High	FOC may not be achieved.	Possible	MoD is working with suppliers to ensure all options are proposed in tender documentation. Recent supplier developments are making this less of a risk as more terminal options are appearing on the market. NZDF priorities will establish the order in which deliveries are made.
6	**Introduction into Service:** If there are problems with WGS operations or contractual supply this may affect the achievement of operational capability.	Acquisition /Introduction into Service	High	Delays with achieving Operational Capability.	Possible	NZDF and MoD are actively managing the many aspects of Introduction into Service including contract deliverables, installations, training and through life support.

5.2 Issues

	Issues	Phase	Severity	Impact	Treatment
1	Radio Licenses have not yet been granted to achieve Early Access.	Introduction into Service	High	Delays in the use of the equipment and in the support of NZDF exercises.	Radio Licenses have been granted that will allow for Crown acceptance though more licenses are required to complete Early Access. NZDF are working on this issue and are confident they will have the required licenses by August.

PROJECT INFORMATION SHEET: PROJECT PROTECTOR REMEDIATION MULTI-ROLE VESSEL, OFFSHORE AND INSHORE PATROL VESSELS

Introduction

Through the Project Protector Remediation Project, Defence will remediate capability shortfalls and deficiencies which are present in the delivered vessels. Project Protector delivered a Multi-role Vessel (MRV), two Offshore and four Inshore Patrol Vessels (OPVs & IPVs). These vessels were acquired to perform a range of sealift and naval patrol tasks for the NZDF and civilian agencies. The ships were delivered with capability shortfalls and deficiencies that were subject to a mediation claim and settlement.

Background

The Project Team will manage the various work streams for the Remediation Programme.

The Remediation Project involves implementing changes on ships that are not only still completing Introduction Into Service programmes but also have active service commitments. A key challenge and risk for the Project Team will be to minimise periods of unavailability for the ships outside of routine maintenance and scheduled survey dockings. Babcock will undertake many of the changes at the Devonport Naval Base under the existing dockyard management contract.

Canterbury is of particular focus, as it is the ship to which much of the implementation work is targeted, but also the vessel under the greatest operational demand. This is highlighted by the commitments to earthquake recovery operations in Christchurch, the 2009 tsunami relief efforts in Samoa, and the May/June 2010 Pacific Aid activity with the US Navy. Nevertheless, it is important that safety and capability issues with the ship are resolved. Such changes require the ship to be taken out of service for a period. Solutions will be implemented in a staged fashion, around the ship's operational commitments and maintenance periods, thereby minimising overheads, with programme completion projected to be in late 2015. This will provide a controlled, efficient release of capability.

Description of acquisition work

Remedial Programme Start-up and Phase One

Cabinet authorised Defence to undertake a two phase programme, on the basis that an efficient, prioritised programme would require a period of detailed planning and design work. Defence has assessed which remediation solutions and optimisations for *Canterbury* and the rest of the Protector fleet are priorities for implementation during Phase Two. Through Phase One Defence has scrutinised the costs of potential changes in relation to the level of benefit they provide and the amount of settlement funding that remains.

During the first phase, Defence has:

- established a project team;
- produced design and feasibility studies; and
- embarked upon a range of changes to *Canterbury* to address immediate safety and capability issues.

The Phase One design and feasibility studies have addressed complex issues that involve multiple ships' systems and for which a variety of solutions could be adopted. The work has indicated that the remaining settlement funding should be sufficient to carry out all the priority changes during Phase Two.

Phase One also identified a range of changes to address immediate safety and capability issues. Solutions to these issues have been identified, detailed designs for the solutions progressed, and any required physical changes scheduled for implementation. The changes include:

- relocation of *Canterbury's* sea boats from alcoves in the sides of the ship to higher locations near the ship's flight deck;
- modifying *Canterbury's* engine lubrication system to ensure the ship is not at risk from engine-related issues in high sea states;
- remediation of *Canterbury's* echo-sounder to ensure the crew can get accurate information on the depths in which the ship is operating;
- remediation of *Canterbury's* landing craft to ensure that they can continue to be operated as part of the ship's core ship-to-shore transfer capability; and
- acquisition of monitoring tools that are to be used to ensure optimal use of the OPVs' Service Life Margins[41], and their ability to accept future capability upgrades.

While not included as part of the mediation settlement, the requirement for a helicopter approach control radar on *Canterbury* has been incorporated into the Mission Systems work stream of Phase 2 of this project.

Identified work has been implemented on the ships progressively through to early 2013, and may overlap with some scheduled changes to be carried out under Phase Two. Sequencing of the work can be more efficiently and effectively conducted by aligning Phase One and Phase Two changes.

Phase Two Priorities

Phase Two involves the implementation of the prioritised list of physical changes that have been identified during Phase One. These changes will be undertaken by the Programme Team under six work streams. These work streams are outlined below.

Priority One: Sea-keeping

Defence will address a range of performance issues with the Protector fleet that can be generally categorised as sea-keeping issues (including hull performance, ship handling and stability).[42]

Canterbury's hull design presents challenges for operating in high sea states and is the primary source of many of the problems in operating *Canterbury.* It is not practical to modify *Canterbury's* hull, but the worst effects of the hull can be mitigated. Defence proposes to continue mitigation work, including electronic systems to inform and advise commanding officers in real time of the ship's performance and the addition of further ballasting. Conversion of current void spaces to ballast tanks will allow *Canterbury* to be loaded to the "load line" irrespective of cargo state.

In the case of the OPVs and IPVs, sea-keeping was not a mediation issue, but Defence has identified solutions that would provide the ships with additional safety and capability. Defence will carry out stability work on the OPVs, which will improve their stability in the icy conditions in which they may operate.

Priority Two: Canterbury's Ship to Shore Transfer system

This system provides *Canterbury's* core capability: getting personnel and equipment to and from shore. The system is complex and comprises methods and equipment to move and load landing craft, and then deliver their cargo to shore. Phase One provided interim changes to allow continued operation of the ship's current landing craft. Phase Two will implement more extensive, long-term solutions for maintaining and refining the system.

[41] "Service Life Margin" is an allowance to provide for weight growth to the ship through its life.
[42] Sea-keeping ability is a measure of how well suited a watercraft is to conditions when underway, and particularly the ability to operate in high sea states.

Priority Three: Canterbury's Mission Systems

Canterbury was delivered with a range of mission systems (software, displays, and controls) to provide situational awareness and allow the vessel to undertake taskings such as patrol. Some issues with these systems were covered in mediation, and other sub-optimal features have become apparent during operations. As a result Defence will remediate *Canterbury's* Obstacle Avoidance Sonar, Naval Gun System (MRV and OPV's) and Electronic Direction Finding Systems (Protector Fleet).

Priority Four: Aviation Integration on Canterbury

For Phase One, funding was allocated to complete design and feasibility work for the integration of the NZDF's new medium utility helicopter, the NH90, with *Canterbury*. Defence has designed a solution to integrate this capability, and will make required changes to *Canterbury* during Phase Two to deliver this solution. It requires optimisation of *Canterbury's* hangar spaces to ensure safe movement and transport of aircraft on the ship. The solution will also allow for the integration of the new training light utility helicopters (A109).

Priority Five: Canterbury's Medical Systems

The *Canterbury* has a spacious medical facility which, under Project Protector, has been outfitted with basic equipment in accordance with the capability requirements of the Contract, and can accommodate further portable equipment when needed. While not part of the mediation settlement, this space will be enhanced by the permanent outfitting of medical equipment. This investment would provide significant benefit, as it would provide better facilities available at immediate notice for medical tasking during disaster relief and other operations within New Zealand and throughout our region and globally.

Priority Six: Minor safety and compliance items

The mediation process provided resources to cover sundry safety and compliance items. There are several items that require remediation, including fuel and ammunition storage, security and fire protection. The resolution of these issues will increase the safety of the fleet.

Project Budget

	Date Approved	Total (NZ$ million)
Crown Budget Phase 1	July 2010	11.9
Crown Budget Phase 2	March 2011	53.0
Total		64.9
Variation on approved budget	Nil	

2.3 Financial Performance

Project crown expenditure to date (as at 30 June 2013)

	Total (NZ$ million)
Approved Budget	64.9
Life to date expenditure (cumulative)	37.0
Remaining balance	27.9
Forecast commitments	27.6

Total forecast expenditure (as at 30 June 2013)

	Total (NZ$ million)
Approved budget	64.9
Total forecast expenditure	64.6
Gross project variation (forecast)	0.2 (under spend)
Foreign exchange impact	0.0
Actual project variation (forecast)	0.2 (under spend)
Explanation	In early project stages contingency is yet to be allocated

Project Contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	8.7
Total contingency expenditure approved	2.5
Remaining contingency	6.2

Explanation of major contingency draw downs

Drawdown & Date	Total Expenditure approved (NZ$ million)	Explanation
Production Support Authorised October 2012	2.5	Transferred into the Production Budget for multiple work streams
TOTAL		

Major reallocations of funds within the approved budget

Date of individual variation	Total ($m)	Explanation
13 October 2011	-12.8	Reprogram 1 Outcome
21 January 2012	1.0	Mission Systems – Gun
31 May 2012	7.5	Mission Systems – Additional Funding

2.4 Schedule/Timeframe Progress

Following completion of a recent major remediation of *HMNZS Canterbury*, the Protector vessels are substantially delivering the intended capabilities and are being tasked accordingly. With the next phase of the Protector Remediation Project now under way, remaining contractual shortfalls will be addressed.

The macro level schedule for the project remains unchanged from the 2012 Major Projects Report and is planned to be completed by December 2015.

As at 30 June 2013 the project was 60% complete[43] and the plan anticipates work completion of around 76% (2014) and 87 % (2015) in out years.

The major work package for HMNZS *Canterbury* completed in May 2013 including relocating the ship boats, aviation upgrades for the new helicopters, surgical upgrades and the remediation of the landing craft. The Chief of Navy issued an "Interim Operational Release" [44] on 29 May 2013 that enabled *Canterbury* to commence Operational Test and Evaluation.

The purchase of mission systems for installation across the seven protector vessels is underway and progressive installation will occur commensurate with the 'Fleet Availability and Maintenance Plan' allowing operations of the vessels as appropriate.

Outcome of Remediation Programme (30 June 2013)

Items Complete in Previous Reports

Engine Lubrication System

Modifications to the engine control system and the addition of 200 tons additional ballast have effectively remediated concerns with respect to *Canterbury's* engine lubrication system. The Naval Authority have advised (inter alia) that whilst they are satisfied that the lube engine oil issue is resolved operating restrictions will remain in force until a final assessment of the RHIB relocation is made.

Echo-sounder

Canterbury's echo-sounder has been remediated to ensure the crew can get accurate information on the depths in which the ship is operating. The echo sounder has been installed and tested and this item has been completed.

Monitoring Tools

This involves the acquisition of monitoring tools that are used to ensure optimal use of the OPVs' Service Life Margins, and their ability to accept future capability upgrades. This product has been delivered and is installed on *Wellington* and *Otago.* This item is therefore complete.

Work Completed in *Canterbury* Remediation Maintenance Period

Sea Boat Relocation

The reconfigured RHIB launching system has been completed and certified as a Safety of Life at Sea (SOLAS)/Lloyd's Register of Ships (LRS) Fast Rescue Boat. From an operational perspective the boat system is fully configured for naval operations with the most demanding requirement to perform as a helicopter crash boat with actual performance to be determined through Operational Test and Evaluation currently underway.

Automated gangways and shell doors have been installed and commissioned.

[43] The 2012 MPR predicted that work would be 61% complete by June 2013.
[44] [NHQ10002-0001 dated 29 May 2013]

Landing Craft-Medium (LCM)

Canterbury's landing craft have being remediated. The replacement lifting structure, bow ramps and a revised ballast system have been completed and the LCM's are undertaking Operational Test and Evaluation.

Appropriate arrangements have been installed on *Canterbury* to allow the LCM to be secured alongside to allow for loading by the ship's cranes and through the new shell doors.

A weight reduction programme including replacement of the steel ballast system with lighter weight material has maintained the LCM weight within the Crane Limits. Notwithstanding, the LCM weights remain near the currently approved limits of *Canterbury's* cranes. The project has provided appropriate documentation and is working with the Naval Authority to increase the safe working load of the cranes.

Aviation Integration on Canterbury

The relocation of the starboard alcove in conjunction with earlier work to resize the Hangar doors for NH90 operations has resulted in a full reconfiguration of the aviation facilities suitable for the (limited) operation of NH90 helicopters in addition to SH2G Seasprites. Additional tie down points have been installed on the flight deck to allow for the conduct of MRH90 First of Class Flight trials.

Canterbury's Surgical Facility

The surgical facility has been fully outfitted to provide a comprehensive level 2+ surgical facility[45] including the provision of cardiac safe power systems. The systems have been installed and certified and are scheduled for operational release during Exercise Southern Katipo13.

Ship Monitoring Data Acquisition System

Sea keeping issues represent a major issue for Protector vessels and the Ship Monitoring and Data Acquisition System has been installed on *Canterbury* to allow full recording of a significant number of ship parameters to provide support for operations and through life assessment. Sensors have been installed and provide data to the recording system. The data system collects real data to assist in the determination to what if any further (sea keeping) changes to *Canterbury* are necessary.

Programme of Work to Completion

Ballast Conversion for Canterbury

Design for the conversion of void spaces to ballast tanks is completed. The design will allow the loading of *Canterbury* to the "load line" irrespective of cargo. The decision on implementation has been deferred to allow appropriate analysis of actual (vice theoretical) ship sea keeping performance in light of the considerable changes in weight and weight distribution as part of the production phases of remediation. It is expected that the ballast changes will be implemented when the ship next docks.

LCM - Automated Line Handling

The launch and recovery of the LCM is hazardous with the LCM acting as a pendulous weight on the ships cranes. Currently, the LCM is restrained using manual Line handling from the LCM deck to forward and aft of the LCM. This manual operation has proven ineffective in restraining the LCM and providing safe launch and recovery operations. The project is finalising a design to implement appropriate automated line handling equipment to assist in the restraining of the LCM during launch and recovery.

OPV Cross connect

The OPV were delivered with insufficient Service Life Margin (80 vice 150 tonnes). Cross connection of two wing fuel tanks will allow additional margin for damage stability and ice accretion particularly in the end

[45] A full 'life and limb' facility designed to accommodate a range of serious surgical procedures.

of life condition. Appropriate designs have been developed to provide the necessary cross connection and will be implemented during routine maintenance period for *Wellington* and *Otago*.

IPV Manoeuvring Systems

Investigations are continuing into modifying the Integrated Platform Management System (IPMS) to alter the power curve at low speed (fixing speed and adjusting pitch) to improve the dynamic response of the propulsion system.

Ship Motion Data Acquisition Systems

Ship Motion and Data Acquisition Systems have been developed and are in production for the IPV and OPV. Roll out of the SMDAS across the remainder of the protector fleet will occur following validation of the *Canterbury* installation with priority been placed on the IPV class.

Mission Systems

Obstacle Avoidance Sonar (WASSP)

The pre-production prototype of the Wide Angle Sub-Surface Profiler (WASSP) has been undergoing local tests and trials. WASSP provides detailed profiles of the seafloor in high resolution 2D or 3D views, generated in real time. A more expansive suite of trials is programmed for June/July 2013 with the intention to move to production models in October 2013.

Radar Detection System (TeKI)

The TeKI Radar Detection System provides intercept, location and display of other vessels radar emissions. TeKI is installed on all Protector vessels.

Communications Detection System (Karearea)

Daronmont Technologies has been contracted to provide the Karearea Communication Detection System. Karearea provides intercept, location and display of radio transmissions. The installation of the system is programmed to be late 2014 – early 2015 within scheduled maintenance periods.

Naval Gun System (TYPHOON and TOPLITE)

Rafael Defence Industries has been contracted to provide the TYPHOON (including TOPLITE Sensor) weapon system for *Canterbury*, *Otago* and *Wellington*. Additional TOPLITE sensors have been contracted for the IPV class.

Production is well advanced with units undergoing factory acceptance testing before delivery in the later half of 2013.

Installation designs are under review and installation will occur during scheduled maintenance periods.

Air Capable Radar

Studies have identified an alternative approach to the difficulties associated with tracking aircraft. Technology now allows parallel processing of the existing radar signals alleviating the need to replace the existing radars with expensive alternatives.

Engineering trials are being progressed in conjunction with the Defence Technology Agency and if successful should allow rapid insertion of the technology into *Canterbury*, *Otago* and *Wellington*.

Sensor Manager and Tactical Display

Sensor and Display of the tactical picture within the protector Fleet is provided using the existing display system AIMS-ISR. The new capabilities itemised in the “Mission Systems” heading above are to be integrated into the sensor manager as the equipment is installed.

MAJOR PROJECT RISKS AND ISSUES

Risks identified at project establishment (and managed on an ongoing basis).

	Risk	Phase	Treatment Actions
1	Civil classification to Lloyd's Register may compromise military capability and operational envelopes.	Throughout Project	LRS requirements to be considered as part of Design Review process. Naval Authority to grant Flag State waivers as appropriate.
2	Design delays may impact on production schedules.	Pre Production	No work to be authorised without design completion.
3	Operational demands on in-service ships may impact on production schedules.	Production	Conduct tranches of work during programmed work periods.
4	Introduction into service delays. NZDF may not be ready for introduction into service.	Introduction Into Service	Capability Release schedules to be advised to Introduction into Service authorities.
5	Original Project Protector specifications may be misaligned with current capability requirements.	Design and Feasibility	Optimise remediation outcomes within Capability Requirements. Document variations from Protector Specification highlighting operational and procedural remedies and enhanced requirements where appropriate.
6	Some capability requirements may not be achievable within existing platforms.	Design and Feasibility	Optimise remediation outcomes within capability requirements. Document variations from Protector Specification highlighting operational and procedural remedies and enhanced requirements where appropriate.
7	Some aspects of the intended scope of the remediation programme may prove unworkable.	Design and Feasibility	Due diligence of each aspect of the programme to validate solution prior to work commencing.
8	A change of strategic direction may modify remediation scope.	Throughout Project	Each solution to be validated against current strategic direction.
9	There may be production delays.	Production	Close oversight and early award of work with appropriate rescheduling for best effect.
10	Foreign Exchange Volatility. Any rapid reduction in NZ exchange rate may make solutions purchased from overseas less affordable.	Throughout Project	Pre purchase of FOREX when contract is signed.

Issues

	Issues[46]	Related Risk	Impact	Treatment Actions
1	Remediate or replace the LCM's.	5,6,8	Should the LCM's be practically remediated: • Potential savings of $12M from within the remediation mandate. • Early delivery of ship to shore transfer capability Should LCM's need to be replaced: • Remediation funds would likely be insufficient to fund a replacement. • A separate project would need to be established and would need to define a contingent requirement. • A fund transfer from remediation of LCM associated budget would need to be considered by CMB.	LCM to be remediated with upgraded lifting structure, a weight reduction programme and replacement bow ramps. Ship modification to upgrade the SWL of the crane to 65 tonnes and improve the control of the LCM in lifting on and lifting off. Comprehensive testing programme to validate the LCM's actual capability to identify the capability gaps between the protector baseline and contemporaneous requirements. Requirements for Interface Pontoon (MEXEFLOTE) to be better defined - consider trial using "Largs Bay" when delivered to RAN.
2	NH90 and A109 aircraft do not yet have manufacturers' certification to operate from Ships underway.	8,6	Little impact on ship ready work with NH90 essentially ship ready now with the ability to operate as self loading cargo "at dockside".	This issue is being managed as part of the Helicopter - Ship Integration and Trials project.

[46] Issues that appeared in the 2012 MPR but are not reported here have been resolved.

PROJECT INFORMATION SHEET: DEFENCE COMMAND & CONTROL SYSTEM (DC2S)

Introduction

The 2010 Major Projects Report included the Joint Command and Control System (JCCS) Programme. It reported that of the four projects identified in that programme, only the Defence Command & Control System (DC2S) Project had commenced, and that the other three were still in the concept stage.

On 18 July 2011, however, Cabinet cancelled the JCCS Programme. It did so because the capability gaps identified in the 2008 Business Case, and which were to be addressed by the three projects other than DC2S, had significantly reduced. The previously agreed scope and structure of the Programme, therefore, were no longer appropriate.

Accordingly, this Project Information Sheet reports on the DC2S Project only.

At the same time as the Cabinet decision, the lead for the acquisition of the DC2S Project transferred from the NZDF to the MoD. Governance remains with a MoD/NZDF Capability Steering Group (CSG) accountable to the Capability Management Board.

Project team membership includes one seconded NZDF specialist, and a further NZDF secondee (an Intelligence specialist) was assigned in December 2012.

The project team engages closely with the NZDF's CIS Br and the NZDF Intelligence Community to progress and develop the project.

Description of acquisition work

As reported under "Next Steps" on page 194 of the 2010 Major Projects Report, it was concluded in June 2010 that:

- the Global Command & Control System - Maritime (GCCS-M) Version 4 supplied by the US Navy would meet the project's basic requirements for the Multi-Agency Network, operated by the National Maritime Coordination Centre (NMCC) in Wellington; and
- the results of the NMCC implementation would inform a decision on whether GCCS-M Version 4 could fulfil requirements on higher classification networks.

Because of uncertainties concerning access to GCCS-M V4, the project has been managed in spirals and phases, as follows:

- Spiral 1: the implementation of GCCS-M Version 4 including Intelligence features onto the Multi-Agency Network – Restricted (MAN-R) at the NMCC located at HQ Joint Forces NZ in Trentham:
    - Phase 1 was the conduct of a Proof of Concept to confirm compatibility and performance in the laboratory environment of the NZDF's Communications and Information Systems Branch (CIS Br).
    - Phase 2 was the design and roll-out of the GCCS hardware and software (excluding the intelligence features) to the NMCC in November 2010.
    - Phase 3 is the design and roll-out of the intelligence features. The initially offered intelligence product did not meet the NZDF's requirements. As a result, the project team intended to install a newer version of the product. However, the assessment of the newer version was terminated due to unsatisfactory performance, and an alternative variant of GCCS was investigated. The alternative is the "Joint" variant, known as GCCS-J. This is more suited to the joint environments in which the NZDF operates. As at 30 June 2013, a detailed submission was being prepared for the Minister requesting approval for the adoption of this alternative.
- Spiral 2: the implementation of GCCS-M Version 4, including Intelligence features, onto the NZDF Secure Wide Area Network (SWAN):

- Phase 1 was the design and roll-out of GCCS-M Version 4 hardware and software, less intelligence features, to four sites within the NZDF previously using the obsolescent GCCS-M Version 3. This included appropriate operator training. This was achieved in June 2011.
- Phase 2 is the design and roll-out of GCCS-M Version 4 hardware and software, less intelligence features, to remaining sites (still to be finalised, and in excess of thirty) within the NZDF, including ships and deployed land sites. Note: As reported above, during the roll out it was discovered that the GCCS-M network system was not compatible with NZDF architecture, and an alternative would need to be sought.
- Phase 3 is the implementation of the intelligence features across the SWAN. As described under Spiral 1 above, assessment of the newer product that would implement the required Intelligence features was terminated and an alternative variant of GCCS investigated.
- The remaining phases have yet to be finalised but it is intended to include the integration of international intelligence data feeds and multi-level data sharing. This work is ongoing and is predicated on the integration of intelligence capabilities into the NZDF's requirements.

Next Steps

It is now expected that subject to Ministerial approval to procure GCCS-J and access to ships during maintenance periods, the project will be completed by end of 2014. The remaining steps are as follows:

- Extend the interim fit of GCCS-M 4.0.3 to HMNZS Te Kaha.
- Negotiate a satisfactory a satisfactory FMS Letter of Offer with the US Defense Information Systems Agency (DISA) for the purchase and implementation of GCCS-J across all NZDF networks.
- Secure Ministerial agreement to procure GCCS-J.
- Plan and conduct upgrade of existing and proposed GCCS-M sites to GCCS-J, including ships and deployable headquarter elements, and training facilities.
- Complete the implementation of the Radiant Mercury cross domain system.
- Complete the integration of international data feeds.

2.2 Project Budget

Budget variation

	Date Approved	Total (NZ$ million)
Original budget at Approval to Commit	24 September 2008	23.6
Current approved budget	24 September 2008	23.6
Variation on approved budget		0.0

Explanation of major budget variations

Date of Individual Variation	Total (NZ$ million)	Explanation
N/A	N/A	N/A

2.3 Financial Performance

Project expenditure to date (as at 30 June 2013)

	Total (NZ$ million)
Life to date expenditure (cumulative)	4.6
Remaining balance of approved budget	19.0
Forecast commitments	18.6

Total forecast expenditure (as at 30 June 2013)

Forward Cover

To remove uncertainty from a future cashflow in a foreign currency, Forward Exchange Contracts are used to purchase the funds required to satisfy the forecasted project costs. A Forward Exchange Contract is a contract to buy/sell a nominated amount of currency on a given date. The rate is struck at the time of the contract and becomes the contract rate. This is the rate that will be used on the agreed future date to settle the contract and receive/pay the foreign currency regardless of what the market rate is on the day. The resulting gain or loss when the contract is compared to the market rate on the day – or at any point in the timeline – is the price of certainty of future cashflows.

	Total (NZ$ million)
Approved budget	23.6
Total forecast expenditure	23.2
Gross project variation (forecast)	0.3 under spend
Foreign exchange impact	0.3 (favourable)
Actual project variation (forecast)	0.0 under spend
Explanation	In the 2012 report, an under spend of NZ$ 0.6 million was forecast. This is no longer the case due to adjusted contract costs.

Project Contingency (as at 30 June 2013)

	Total (NZ$ million)
Contingency built into the budget	3.4
Total contingency expended	0.0
Remaining balance	3.4

Explanation of major contingency draw downs

Draw down	Total	Explanation
N/A	N/A	N/A

Major reallocations of funds within the approved budget

Date of individual variation	Total ($m)	Explanation
N/A	N/A	N/A

2.4 Schedule/Timeframe Progress

Variations in forecast acceptance date.

		Original Forecast – Investment Case	30 June 2013 Update	Variation in Acquisition phase
Acceptance Date	Initial Operating Capability	July 2010	June 2011[47] (achieved)	11 months
	Full Operating Capability	August 2011	December 2014 (forecast)	-

History of variations to schedule

Date of individual variation	Variation length (months)	Explanation
June 2009	7 - 10	**Approval for release-** The primary reason for the delay is the time taken on development and the need to gain the release of functions of the Global Command and Control System from the US.
September 2009-April 2010	**Note** the overlap with the delay above.	**Project placed on hold-** The NZDF's Assistant Chief of Development commissioned an independent review of the Joint Command and Control System Programme and subsequently placed the project on hold between September 2009 and April 2010. This was intended to allow time to resolve issues relating to project management and the required level of sophistication, functionality, and scope of the system.
June 2010	N/A	**Technical Complexity-** Integrating evolving information management software into existing NZDF networks is an ongoing challenge, particularly in view of the other capability upgrade projects.
April 2011	12	**Intelligence Functionality -** The initial intelligence database provided by the US Navy did not meet NZDF requirements. The US Navy withdrew the product and advised NZ to wait for a new database which is expected by June 2012.

[47] Initial Operating Capability is defined as the installation of the Global Command and Control system – Version 4 (Common Operating Picture only) and technical and operator training completed for the Restricted Multi-Agency network.

April 2012	12	**Intelligence Functionality –** The new database product has only recently become available. Initial evaluation of the product occurred in April 2012 and concluded with a recommendation to proceed to a Proof of Concept in Defence House in April 2013.
June 2013		**GCCS-M 4.1/I3 Proof of Concept** Detailed evaluation of the planned GCCS-M Proof of Concept concluded that GCCS-J was a significantly more suitable product, and the process for seeking Ministerial approval to evolve to GCCS-J was initiated.

SECTION 3: INTRODUCTION INTO SERVICE PHASE (IIS)

The introduction into service phase develops the force elements required to generate NZDF outputs at a specific level of capability. Part of this stage is the test and evaluation process, which demonstrates the capability has met specific standards of safety and is operationally effective in accordance with the suite of operational concept documentation.

3.1 Summary of Introduction into Service phase

Description of Introduction into Service phase

The IIS stage remains under development. IIS responsibilities continue to be shared between the project team and the receiving organisations/units. The project team continue to manage the physical installation, and the receiving unit manages the internal change timings (such as system readiness). Together the team and organisation identify business change requirements and identify the entry and exit criteria for IIS.

Status of Introduction into Service phase

The roll-out of the Global Command and Control System - Version 4, less Intelligence functionality, on the Multi Agency Network was completed in December 2010. This included operator training.

The roll-out of the Global Command and Control System - Version 4, less Intelligence functionality, to upgrade NZDF sites previously using an obsolete earlier version of GCCS, including operator and technical training, was completed in May 2012.

The roll-out of the Global Command and Control System - Version 4 (less Intelligence functionality), onto the rest of the NZDF SWAN network, less ships, was 80% completed by October 2012. The remaining 20% involved addressing technical issues related to the installation of GCCS-M software onto existing infrastructure. The search for alternatives was the trigger for considering an upgrade to GCCS-J.

As at 30 June 2013:

- The absence of the Intelligence functionality, limitations on database size, and technical incompatibility with NZDF network architecture continue to constrain the performance of GCCS-M on NZDF networks. The upgrade of GCCS-M to GCCS-J is the subject of Ministerial approval.
- The upgrade to GCCS-J on all NZDF networks is proposed to occur in two phases; Phase 1 is limited deployment on static headquarters and support element sites in October-November 2013, and Phase 2 the rest of the NZDF including ships and deployable headquarters February-December 2014.
- The implementation of the Radiant Mercury cross domain system has been delayed until Phase 1 of the proposed GCCS-J implementation is in place.
- The existing trial fit of GCCS-M 4.0.3 on HMNZS *Te Mana* will remain in use until it can be upgraded to GCCS-J late 2014. HMNZS Te Kaha will be fitted with the same interim solution as she comes out of extended maintenance late 2013, and then upgraded to GCCS-J late 2014. Subject to NZDF confirmation, fitting of GCCS-J to HMNZS *Canterbury* will occur late 2014.
- Implementation of GCCS on smaller ships is under NZDF review and likely to be integrated with the AIMS-ISR system already in-service on those ships.
- Work to enable connectivity with classified international data feeds will continue, with completion scheduled for December 2014.
- Upgrade of training facilities will occur during Phase 2.

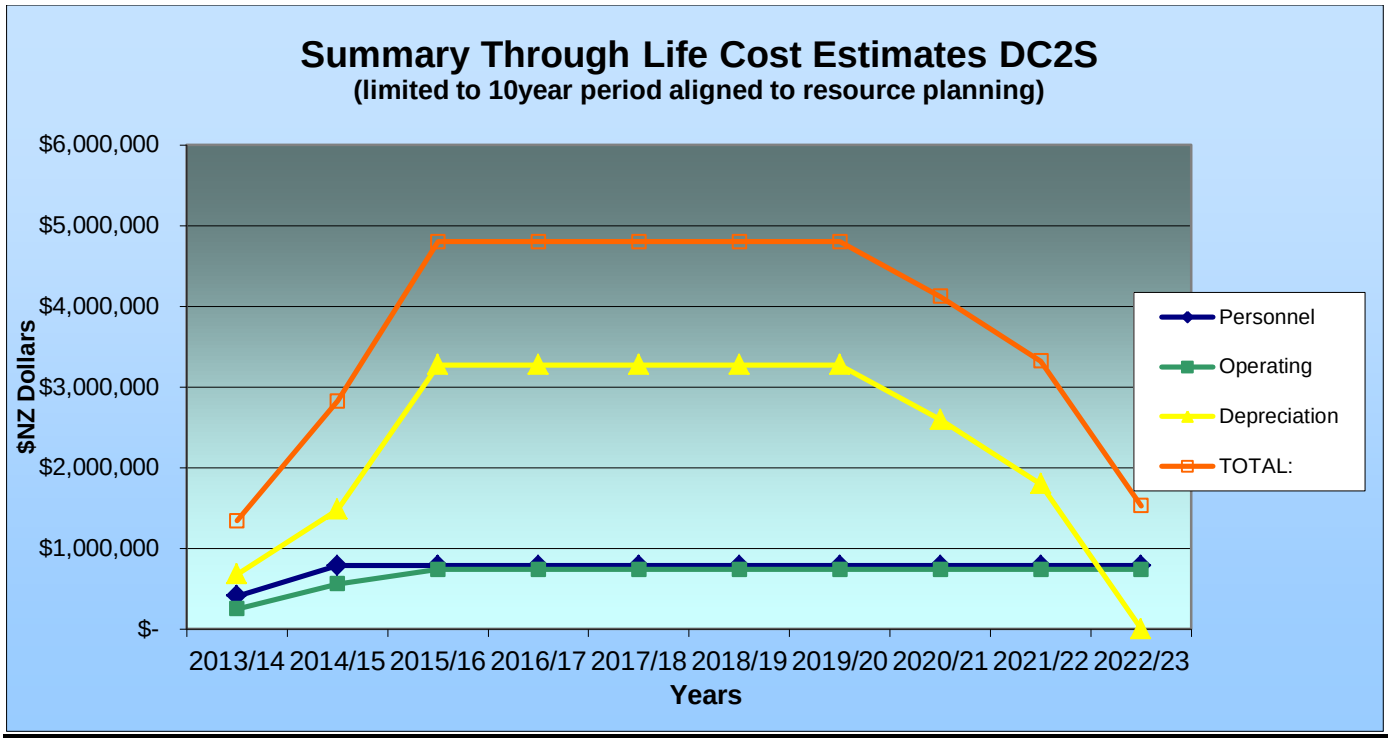
Levels of Capability

Initial Operating Capability: this is the first time the capability being introduced can achieve some or all of the operational requirements.
Operational Level of Capability: the generation of military capability so that force elements are able to carry out specific military tasks in accordance with the NZDF Output Specifications.
Directed Level of Capability: the maintaining of military capability at a minimum capacity from which force elements may be generated within a specified response time to achieve the operational level of capability.
NZDF Output Plan, 2009, S1-12

3.2 Schedule of Introduction into Service

	Initial Forecast	30 June 2013 Forecast	Actual	Variance
GCCS v4- Test of System and concept viability	Not provided	N/A	25 June 2010	N/A
GCCS v4- Test of multi-agency design and build	Not provided	N/A	December 2010	N/A
Achieve initial operating capability multi-agency	July 2010	N/A	December 2010	5
Achieve Full Operation capability multi-agency	August 2011	Suspended pending approval to upgrade to GCCS-J	N/A	-
GCCS v4- Test of NZDF network design and build (Proof of Concept)	N/A	Suspended pending approval to upgrade to GCCS-J	N/A	-
Achieve initial operating capability NZDF network	N/A	July 2013	N/A	-
Achieve Full Operation capability NZDF network	August 2011	December 2014	N/A	-
NOTE	The acceptance and introduction into service occurs concurrently because the system design and build has to be undertaken in New Zealand on operational networks.			

3.3 Summary of Through-life Cost Estimates



SECTION 4: OPERATIONAL CAPABILITY

4.1 Progress towards Delivery of Capability and Operational Requirements

Defence Command and Control System – Progress as at 30 June 2013		
Operational Requirements	**Requirement likely to be met**	**Explanation**
Implementation of base infrastructure, hardware and software.	Yes	Subject to Ministerial approval upgrade to GCCS-J
System integration with current NZDF information networks and hardware.	Yes	
Command and control software to be supplied to NZDF headquarters sites, 10 RNZN ships, distributed Air Force bases, Army headquarters, and deployed headquarters.	Yes	
Provide updated location, track and sensor information.	Yes	
Supports email, web browser and collaborative software tools across the NZDF's Secure Wide Area Network.	Yes	Email and web browser exist and are being integrated. The collaborative software tools will be introduced at a later phase of the project. There is, however, no indication that these will not be delivered.
Establish ongoing system support arrangements and staff training requirements.	Yes	These arrangements are being put in place. There are no risks currently identified that could prevent goal being achieved.
Assessment: All requirements likely to be met.		

SECTION 5: MAJOR PROJECT RISKS AND ISSUES

5.1 Risks

Risks identified at contract signing

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Foreign Military Sales (FMS) process.** This method of equipment acquisition may be time consuming.	Acquisition	Medium	**Schedule.** May cause delays to the Acquisition of the Defence Command and Control System.	Likely	Enhance relationships between project team and US agency contacts to get an improved understanding of likely procurement timings through the FMS process.

Active Risks

	Risk	Phase	Rating	Consequences	Likelihood	Treatment Actions
1	**Lack of end user endorsement.** There is a risk that the delivered Defence Command and Control System capability may not meet user expectations.	Introduction into Service	Low	**Operational Outputs.** Without endorsement of the solution by the end user the system may not be actively deployed or fully introduced into service.	Possible	Increase stakeholder engagement. Use of pilot systems (Proofs of Concept) and testing. Interdependencies are being identified, analysed and addressed.
2	**Uncertainty about the full capabilities of the Global Command and Control System-version 4.** There is a risk that the currently selected technical solution may not deliver the expected level of capability.	Acquisition / Introduction into Service	Medium	**Schedule and Capability Requirements.** The current solution may result in either reduced capability for the end user, or in the need to delay the project whilst alternative solutions are sought.	Possible	Confirm capability requirements and mitigate risk to these through use of Proofs of Concept and the possible development of alternative system/source options. Conduct due diligence of the product before final FMS commitment. In addition, and if required investigate potential alternative suppliers.
3	**CIS resources**. The NZDF's CIS branch may not have the capacity, networks, or resources to support DC2S.	Introduction into Service	High	**Schedule.** May generate delays for the system's introduction into service.	Possible	Ensure that engagement with CIS is open, ongoing and orientated toward problem resolution.

5.3 Issues

	Issues	Phase	Severity	Impact	Treatment Actions
1	**User and system requirements.** Requirements are currently defined at the programme level, not the project level. In addition some requirements are only 'place holders' rather than actual, measurable requirements.	Acquisition / Introduction into Service	High	**Schedule.** The project's progress will be delayed as the detailed operational requirements are confirmed by the project team.	The project team is leading a review of the NZDF's user requirements. Progress has been frustrated by the poor Intelligence performance of the GCCS-M product. The implementation of GCCS-J (subject to Ministerial approval), will allow the operational requirements review to be completed by March 2014.
2	**Project Vision and Management.** There were initial limits to the management and co-ordination of the NZDF's Network Enabled Capability strategy.	Acquisition / Introduction into Service	Low	**Capability Requirements**. There may have been a reduction in the capability and organisation benefits to be delivered.	The project management lead was transferred from the NZDF to MoD in July 2011. The project team have worked closely with key external and internal stakeholders to improve communication and relationships.
3	**Personnel.** The availability of appropriately skilled, qualified NZDF personnel to the project.	Acquisition / Introduction into Service	Medium	**Schedule.** Without sufficient skilled and qualified NZDF personnel to progress the development of the project the agreed schedule will be challenging to meet.	Close engagement with the NZDF to ensure sufficient skilled and qualified personnel are available to contribute to the projects development. Due to the nature of this work, utilising contractors is unsuitable.