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The Supply Chain in Air Capability Acquisition
by the New Zealand Defence Force

A thesis presented in partial fulfilment of the
requirements for the degree of

Master of Arts in Defence and Security Studies at
Massey University, Manawatū, New Zealand.

07294891 Karen A. Wemyss
2018
Disclaimer

The views, assumptions, thoughts and opinions expressed in this thesis are those of the author and do not necessarily reflect the official policy or position of the New Zealand Defence Force or any other agency of the New Zealand Government.
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Abstract
Over the last decade the New Zealand Government has acquired and introduced into operational service, two important platforms for air power capability, namely the new NH90, and SH-2G(I) Seasprite helicopters. The NH90 purchased new, and the Seasprite purchased second hand, are at different stages in their capability life cycles. The introductions of these aircraft have challenged support and sustainment within the Royal New Zealand Air Force (RNZAF) supply chain, which has been hampered by organisational factors such as the lack of capability and sustainment corporate knowledge, resource constraints, culture, and insufficient priority being given to Integrated Logistic Support (ILS) model In-Service. Equally aircraft specific issues such as their product maturity, and relationships also challenge the supply chain. The most significant level of aircraft acquisition is still yet to come as the Government progresses towards the replacement of the RNZAF surveillance and mobility capability. Therefore it is vital to understand the effect on support and sustainment from recent acquisitions.

Methodology
Research for this thesis has been drawn from both primary and secondary sources. The acquisition of the NH90 and the Seasprite helicopters provides two case study examples of the effect that the acquisition has had on the RNZAF supply chain. The two case studies selected were appropriate because they were acquired and introduced into service over the last decade to meet capability outlined in Defence White Papers. While both were rotary in nature, each helicopter type was at a different maturity point in their product life cycle, which had a direct impact on supportability and sustainment. The collection of data from primary research was gathered from semi-structured interviews with eight (8) New Zealand Defence Force (NZDF) personnel who met predetermined participant qualification criteria. The interviews took one to two hours each and were conducted face to face with interviewees over who had to have first hand knowledge or experience in areas that included: customers or suppliers of the RNZAF supply chain; or knowledge and experience in the introduction-into-service of either or both of the NH90 and Seasprite helicopters; or knowledge and experience of sustaining either or both
platforms in-service. All interviews with personnel participating in the research remain anonymous, and have been cited in a professional and appropriate manner. Each participant has been allocated a letter of the alphabet, which has been referred to when referencing the interviews in the thesis.

The aim of the interviews was to gain insight from participant’s knowledge and experience of sustaining the NH90 and Seasprite during their capability life cycles. Research was collected on a range of specific areas including the product and capability maturity in the life cycle, ILS across capability life cycles, Through Life Support (TLS) models and mechanisms, people and financial resourcing, supply chain management and reporting, technical influences, organisational and cultural factors, and training. Data was collected from the interview responses, and then codified and grouped into similar categories Results of the findings are set out in Chapter 3, and the analysis is presented using a qualitative Strength, Weakness, Opportunity, and Threat (SWOT) analysis in Chapter 4. This approach to analysing the findings is a simplified process that allows qualitative primary research collected through this thesis to be distilled into core themes and be presented in such a way that is meaningful.1 Secondary research was drawn from government reports, unclassified NZDF documents, scholarly articles, books, and reliable industry periodicals and publications, as well as other appropriate literature.

Appendix A provides further detail regarding the research methodology and limitations, during the completion of this thesis.

**Ethics Approval**

Massey University Human Ethics Committee Southern B – 16/41 and the NZDF Organisational Research Unit have approved this research project and the methodology to obtain the research required to complete the thesis.

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# Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ADF</td>
<td>Australian Defence Force</td>
</tr>
<tr>
<td>ANAO</td>
<td>Australian National Audit Office</td>
</tr>
<tr>
<td>ANZAC</td>
<td>Australia, New Zealand Army Corps</td>
</tr>
<tr>
<td>ANZUS</td>
<td>Australia, New Zealand, United States</td>
</tr>
<tr>
<td>APIC</td>
<td>American Production Inventory Control society which merged with the Supply Chain Council and American Society of Transportation and Logistics</td>
</tr>
<tr>
<td>AUD</td>
<td>Australian Dollar</td>
</tr>
<tr>
<td>BBC</td>
<td>Better Business Case</td>
</tr>
<tr>
<td>CAF</td>
<td>Chief of Air Force</td>
</tr>
<tr>
<td>CapBr</td>
<td>Capability Branch</td>
</tr>
<tr>
<td>CIPS</td>
<td>Chartered Institute of Procurement and Supply</td>
</tr>
<tr>
<td>CMF</td>
<td>Capability Management Framework</td>
</tr>
<tr>
<td>CMP</td>
<td>Capability Management Plan</td>
</tr>
<tr>
<td>CMS</td>
<td>Capability Management System</td>
</tr>
<tr>
<td>CMSL</td>
<td>Capability Management System Lifecycle</td>
</tr>
<tr>
<td>CNS</td>
<td>Chief of Naval Staff</td>
</tr>
<tr>
<td>CoA</td>
<td>Commonwealth of Australia</td>
</tr>
<tr>
<td>CoE</td>
<td>Centre of Expertise</td>
</tr>
<tr>
<td>DA</td>
<td>Defence Act 1990</td>
</tr>
<tr>
<td>DBC</td>
<td>Detailed Business Case</td>
</tr>
<tr>
<td>DCP</td>
<td>Defence Capability Plan</td>
</tr>
<tr>
<td>DCAP</td>
<td>Defence Capital Plan</td>
</tr>
<tr>
<td>DCCAP</td>
<td>Defence Capability Change Action Programme</td>
</tr>
<tr>
<td>Defence agencies</td>
<td>Ministry of Defence and New Zealand Defence Force</td>
</tr>
<tr>
<td>Defence</td>
<td>New Zealand Defence</td>
</tr>
<tr>
<td>Paper</td>
<td></td>
</tr>
<tr>
<td>DLC</td>
<td>Directorate of Logistic Command</td>
</tr>
<tr>
<td>DPEC</td>
<td>Directorate of Project Engineering and Certification</td>
</tr>
</tbody>
</table>
DWP  Defence White Paper
EASA  European Aviation Safety Agency
EDA  European Defence Agency
EMAR  European Military Airworthiness Requirements
ERT  European Resident Team
FOC  Final Operational Capability (German NH90s)
FOC  Final Operational Configuration (Finnish NH90s)
FST  Fleet Support Team
Government  New Zealand Government
IBC  Indicative Business Case
IIS  Introduction-Into-Service
ILS  Integrated Logistic Support
IOC  Initial Operational Capability (German NH90s)
IOC-  Initial Operational Configuration (Finnish NH90s)
IOC+  Nearly Operational Configuration (Finnish NH90s)
IPT  Integrated Project Team
Iroquois  Bell UH-1H Iroquois
IS  In-Service
ITAR  International Traffic and Arms Regulations
ITAS  Integrated Tactical Avionics System
LEP  Life Extension Programme
LCC  Life Cycle Costing
LFR  Logistic Field Representative
LRU  Line Replacement Unit
LUH  Light Utility Helicopter
MAWA  Military Airworthiness Authority Forum
MHC  Maritime Helicopter Capability
MHCP  Maritime Helicopter Capability Project
MPR  Major Project Reporting
MRH90  Multi Role Helicopter NH90 (Australian)
MSP  Managing Successful Programmes
MUH  Medium Utility Helicopter
NAHEMA  NATO Helicopter Management Agency
NATO  North Atlantic Treaty Organisation
NH90  NH Industries TNZA NH90 Helicopter
NHI  NH Industries
NZ variant  Kaman Aerospace SH-2G(NZ) Seasprite Helicopter
            (previously NZ variant sold to Peru)
NZD  New Zealand Dollar
NZDF  New Zealand Defence Force
OPC  Offshore Patrol Combatant
PIBC  Project Implementation Business Case
PRICIE  People, Research and Development, I, C, I,
        Equipment and Logistics
PRINCE2  Projects in a Controlled Environment
PuMP  Performance Measurement Process
RACI  Responsible, Accountable, Consult, and Inform
RAF  Royal Air Force
RAN  Royal Australian Navy
RNZAF  Royal New Zealand Air Force
RNZN  Royal New Zealand Navy
SB  Service Bulletin
SC  Supply Chain
SCMS  Supply Chain Management Squadron
SSCCs  Support System Constituent Capabilities
SCOR  Supply Chain Operational Reference
Seasprite  Kaman Aerospace SH-2 G(I) Super Seasprite Helicopter
Super Seasprite  Kaman Aerospace SH-2G(A) Super Seasprite Helicopter (previously owned by Australia)
SWOT  Strength, Weakness, Opportunity and Threat
TLS  Through Life Support
TLM  Through Life Management
WoG  Whole of Government
WoLC  Whole of Life Cost
WW2  World War Two
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Name</th>
</tr>
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<tbody>
<tr>
<td>UK</td>
<td>United Kingdom</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
</tr>
<tr>
<td>USG</td>
<td>US Government</td>
</tr>
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Preface

Over the past decade, a significant level of new and upgraded major RNZAF air capability has been acquired and introduced into the NZDF. These projects have included the acquisition and introduction of the NH90 and the second-hand upgraded Seasprite helicopter fleets. The maturity of the product along with introduction of these aircraft, as well as the ILS and sustainment initiatives, has had a direct flow on effect to the RNZAF supply chain. This thesis examines those effects on the supply chain from the introduction into operational service of these aircraft.

Acknowledgements

The successful completion of this thesis would not have occurred without the substantial level of support and investment received from the NZDF, Massey University, family and friends, and colleagues. While too numerous to name all who have provided assistance, I would like to particularly acknowledge the significant help and guidance received from my thesis supervisors, Dr John Moremon and Dr Carl Bradley. Equally, the support and encouragement provided by Occupational Therapist Craig Gordon and Active + Co-Owner and Clinical Director/Senior Physiotherapist Kent Stembridge, as well as my colleagues and superiors, Mike Going and Mark Stevens. My close friends and peer reviewers Pippa Barratt and Hans Van Leeuwen, along with the very precious love from my mum Shirley and sister Joanna, have been instrumental in the successful completion of this thesis. You all know how much you have helped me celebrate the wins and overcome the challenges on a journey of discovery to reach this key milestone, both professionally and personally, thank you all so much.
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