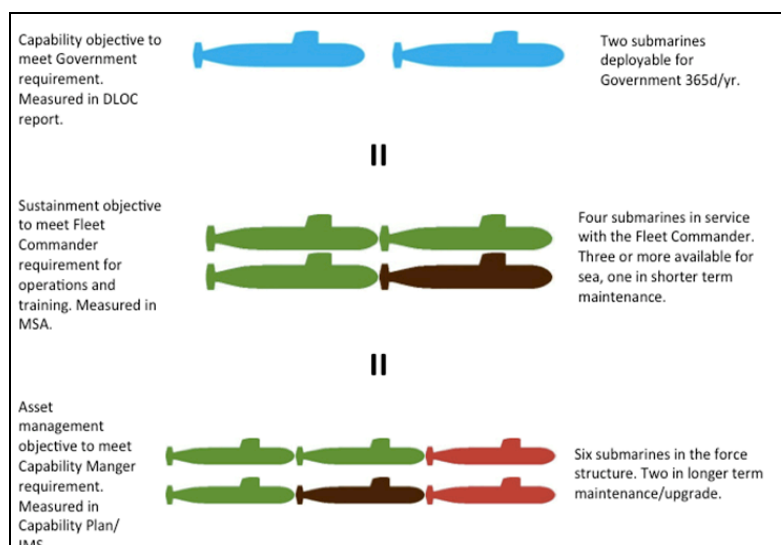


Figure 1 - An example of a clear operational objective



Note: The RAN, informed by conclusions of the Phase 2 work, has now promulgated an unclassified statement of availability.

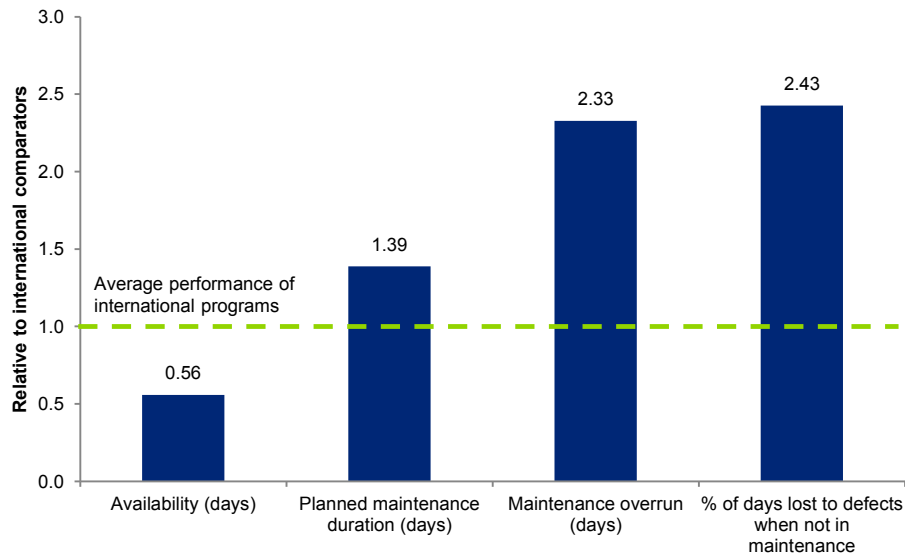
Comparison to other Navies' whole platform availability

To assess the effectiveness of the Collins Class Sustainment Program, it has been compared with data supplied by international navies as reported in the International Benchmarking Report produced by the DMO. Benchmarks of this type have many variables such as differences in program availability definitions, the specific complex features of submarine fleets and their differing demands and operating environments. Nevertheless the differences in availability performance between the comparator navies were sufficiently narrow to develop a reliable benchmark. The comparator submarine fleets used were similar in fleet number and size to the Collins Class.

The Collins Class Sustainment Program performance from FY06/07 to FY10/11 is compared with the average performance of each comparator submarine fleet in Figure 2. The analysis indicates the availability performance of the Collins Class has been slightly over half that achieved by the comparable international programs; the time in planned maintenance was about one third greater than other nations; and the maintenance overruns and the percentage days lost due to defects were approximately double that of the comparators.



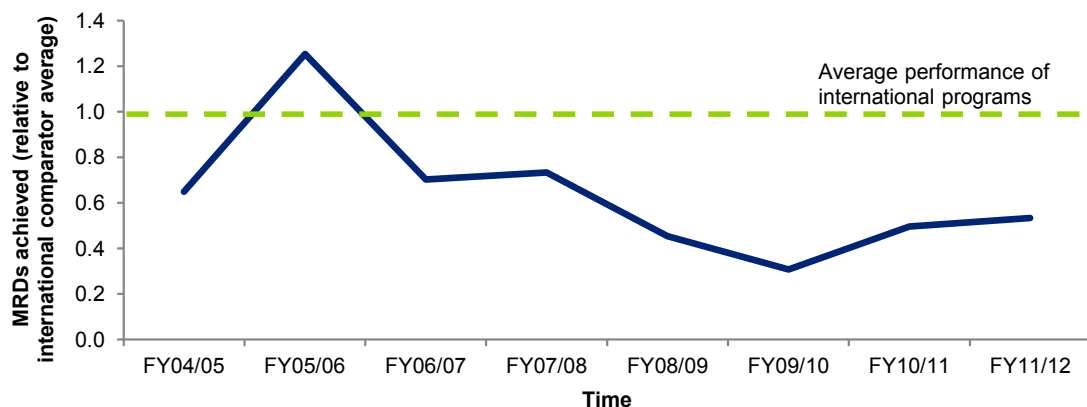
Figure 2 - Collins performance compared to other international navies



Availability

Collins Class availability compared to the international comparators reduced between FY06/07 and FY09/10, as illustrated Figure 3. The availability reduction is a result of a combination of factors related to legacy design and build issues, reliability problems and the way in which sustainment is organised and managed. There has been an improvement in availability since FY09/10, but the rate of improvement in FY10/11 has not been maintained subsequently. The program appears to have stabilised, but this is too early to confirm. The level of performance at 56% of the international comparators was significantly below the RAN's requirement for FY11/12.

Figure 3 - Comparative Availability

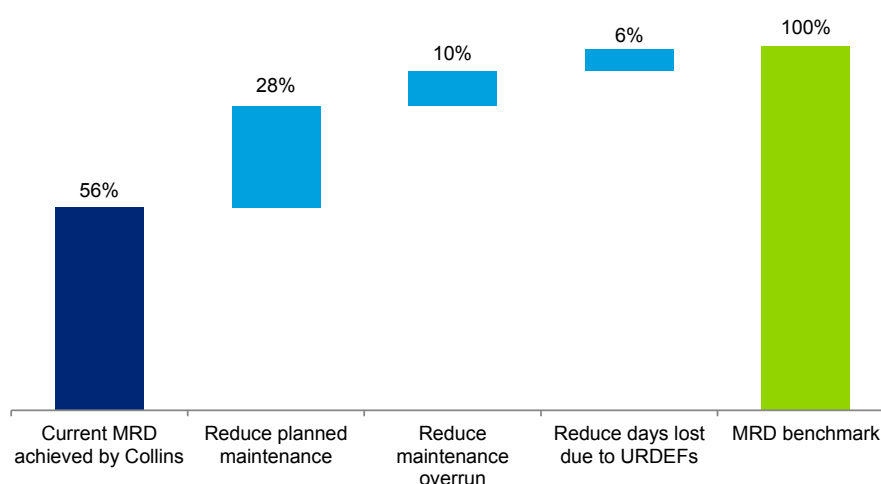


Low level materiel availability is driven by three key factors:

- Long planned maintenance periods;
- Overruns to planned maintenance periods; and
- Defects to the submarines when they are outside of maintenance periods (poor reliability), which can be exacerbated by inadequate availability of spares.

The relative contribution (opportunities) of these factors to improve availability performance to match the Material Ready Days (MRD) benchmark is shown in Figure 4.

Figure 4 - Opportunities to improve availability to MRD benchmark



This data indicates that fundamentally changing the usage-upkeep cycle and shortening the maintenance periods, and managing them in a way that reduces time overruns will yield the biggest contribution to improving the number of MRDs achieved. The MRDs due to defects cannot in practice be eliminated altogether. All nations lose some MRDs to defects. However, when operational days are lost they have a far more disruptive effect than days lost in maintenance and it is still very important to improve reliability and reduce the time taken to repair defects when they occur.

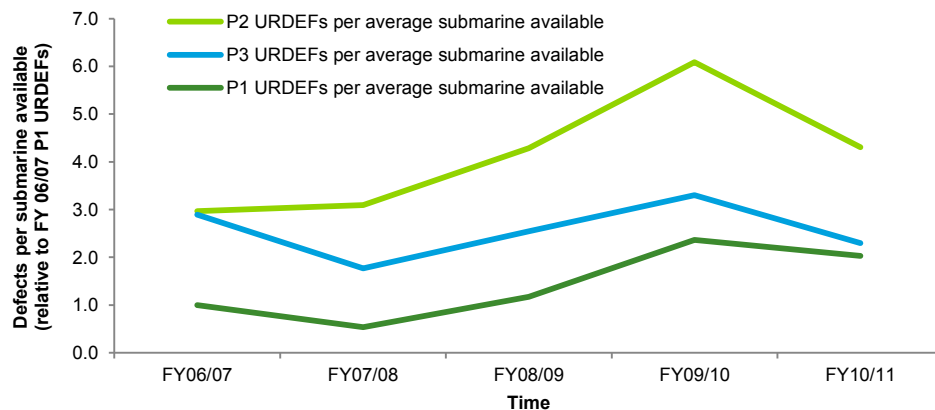
Reliability

Figure 5 illustrates the reliability of the Collins Class through the Priority 1 (P1) urgent defects (URDEFs) reported each year normalised by the average number of submarines in-service (not in planned maintenance) in each year and referenced to FY06/07. Whilst the number of submarines in-service reduced in FY08/09 and FY09/10, it demonstrates that the number of defects per submarine increased, greatest of which was for Priority 2 (P2) URDEFs. The defect rate improved in FY10/11, which aligned with the improvement in availability noted above. We did not analyse FY11/12 as the data is a mixture of planned and actual. The URDEF rate in FY10/11 was significantly above levels achieved in earlier years (FY06/07 and 07/08). The overall upward trend is indicative of poor reliability and obsolescence management in earlier years. The original design shortcomings should have



been removed over time through sound application of these basic sustainment management processes.

Figure 5 - URDEFs normalised by the average submarines in-service (relative to FY 06/07 P1 URDEFs)



Cost

The cost of the Collins Class Sustainment Program was generally stable from FY06/07 to FY09/10 with cost increases in FY10/11 for the purchase of additional spares and the implementation of an improved maintenance program. The year FY06/07 is used as the datum year because we have more confidence in the availability data from that year forward. It does not represent a datum point for the cost being adequate to fully fund the Collins Class Sustainment Program.

As illustrated in Figure 6, cost effectiveness can be measured by comparing the total cost versus availability achieved (\$m/MRD), this is indicated by the green line on the graph, which illustrates cost effectiveness declined from FY07/08 to FY09/10. Additionally, cost effectiveness improvements commencing in FY10/11 coincide with increased investment in the program, however the improvement and the investment cannot be directly linked in time. Benefits from consuming additional resources may not be visible for 18 to 30 months after committing to the investment as the lead time required to procure and deliver spares can be one to two years and the time required to improve maintenance schedules that deliver performance may be of several years duration.



Figure 6 - Relationship between sustainment cost and availability (MRD)

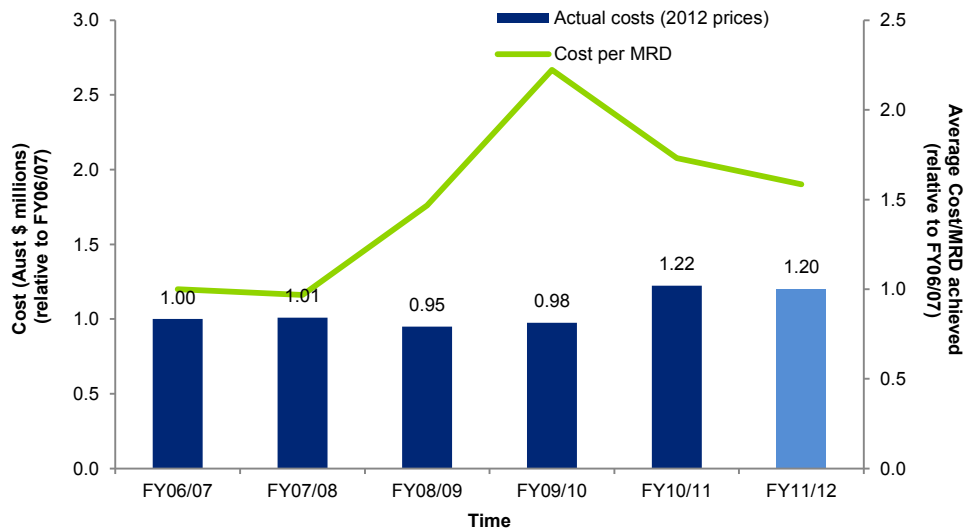
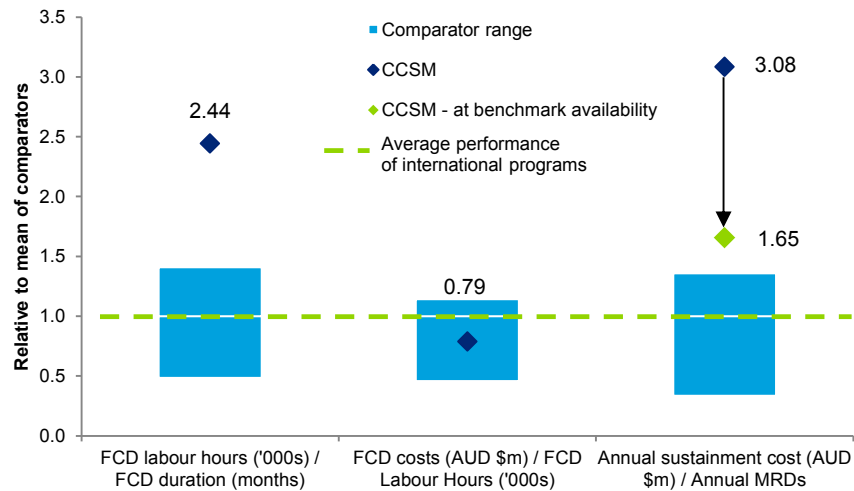


Figure 7 shows a comparison of three measures between Collins and benchmark data indicating the rate of consumption of man-hours during comparable Full Cycle Dockings, the effective man-hour rate and the cost per MRDs achieved. However, international comparator data cannot be considered as precisely comparable to the data relating to the Collins Class given the wide variance in accounting practices and attribution of costs to the various activities.

Nevertheless averaging the three measures provides an indication, not an absolute, that the cost effectiveness (defined as the cost per MRD) of the international comparators is at least twice that of the Collins Class Sustainment Program. This analysis includes all the costs across the entire Collins Class Sustainment Program and not just the cost of the maintenance activity or the ASC contract. Therefore improving cost effectiveness will require improvements across all the participants in the Collins Class Sustainment Program. The cost effectiveness would more closely match the international navies if the availability was increased to benchmark.



Figure 7 - Cost effectiveness comparison to international program



Organisation Implications of the In-Service Support Contract

The In-Service Support Contract (ISSC) places responsibility on the ASC for delivering outputs and uses Key Performance Indicators (KPIs) related to these outputs to measure and reward the performance of the ASC. This move to performance based contracting will significantly change the current roles and responsibilities of the DMO, ASC and the RAN. Our high level analysis of the Collins sustainability responsibilities (the Value Chain) shows that currently the DMO is involved in eight of the activities, the RAN six, ASC nine and the Capability Development Group two. Under the In-Service Support Contract, using “good practice” guidelines, these responsibilities should be realigned such that the DMO is involved in four activities, the RAN eight, the ASC eleven and the Capability Development Group two. In order to deliver the benefit expected from the ISSC it is essential that the necessary organisational adjustments are made to align resources with the good practice value chain.

ii. What caused the current problems with sustainment performance?

Our analysis has identified 20 key issues we believe are driving the low level of sustainment performance and we traced these back to five root causes which are equally significant:

- **Unclear requirements** – Operational requirements were not defined in a way that can be effectively translated to sustainment activities. There is a need for a clear unclassified top level requirement for the Collins Class program that can be used to drive the sustainment program through effective planning and contractual incentives for all participants. The RAN, informed by conclusions of the Phase 2 work, has now promulgated an unclassified statement of the required availability.
- **Lack of a performance based ethos** – As detailed in the Phase 1 Report, in the past there has been a clear lack of a performance based culture across the Collins Class



Sustainment Program. However, there have been significant improvements over the course of this study.

- The development and transition to the ISSC (between DMO and ASC) is recognised as a significant step forward in the implementation of a performance based culture. This should support a change in ethos, as the historical contractual arrangements between DMO and ASC were not performance based.
- Although defined KPIs existed in prior versions of the Materiel Sustainment Agreement (between RAN and DMO), it was unclear how the RAN held DMO to account for achievement against these KPIs as targets were not apparent. The introduction of the new Materiel Sustainment Agreement between the RAN and DMO now contains clear performance requirements and is a similarly positive development. The RAN has a significant role to play in onboard maintenance, which is now clearly articulated in the new Materiel Sustainment Agreement.
- As the shareholder of the ASC, Finance has reviewed the existing performance arrangements and is introducing a new comprehensive performance management framework for the business.
- These new performance targets linked to the new top level requirements are essential to support a performance based ethos.

We welcome these initiatives, however they need to be coordinated across the Collins Class Sustainment Program to most efficiently achieve the availability outcomes.

- **Unclear lines of responsibility** – Many key roles and responsibilities at all levels within the Collins Class Sustainment Program are not clearly defined or understood from an organisational and an individual perspective. This results in blurred accountability where duplications and gaps in responsibility have developed over time. This is particularly evident between DMO and ASC. Additionally the customer-supplier relationship between the RAN and DMO has not been sufficiently clear. The new Materiel Sustainment Agreement for 2012-2014 has now established the clear responsibility on the DMO to deliver materiel sustainment for a given budget with a corresponding obligation on the RAN to supply crews and on-board maintenance to support the program.
- **Poor planning** – The lack of a clearly stated long-term strategic plan prevents accurate lower level plans and targets being established and achieved. This results in unclear and conflicting requirements across the Collins Class Sustainment Program leading to limited mechanisms with which to drive a unified management approach. A lack of planning at the strategic level means lower level plans for maintenance and military operations are built in isolation and are not managed in a portfolio manner. The absence of application of an asset management strategy has also resulted in poor obsolescence and a lack of reliability management. This has created a 'bow wave' of reliability related defects and obsolescence, resulting in an uncertain and uncoordinated planning baseline. This is regarded as a key factor that is impacting



performance of the Collins Class Sustainment Program in delivering sustainment activities.

- **Lack of a single set of accurate information to inform decision making** – Effective systems and processes in addition to accurate and timely data are crucial to achieving an informed position upon which organisations can make decisions. The Collins Class Sustainment Program is not in a position, from an information perspective, to make optimised long-term decisions. There are multiple systems and datasets in use for financial, maintenance and supply chain activities. In many cases these are not linked, resulting in data integrity issues. The lack of a “single version of the truth” means decisions are unlikely to be consistent or accurate.

iii. Will current improvement initiatives address these issues?

The current initiatives underway in the RAN, DMO, and ASC align with the majority of our findings. Many of the current initiatives are aimed at addressing the fundamental sustainment management issues of maintenance obsolescence and reliability management, supply chain improvements, establishing adequate crewing, and introducing performance based management. However, they will not resolve all of the issues or root causes identified in this report.

In the main the existing initiatives are aimed predominantly at resolving specific sustainment issues. There are some key issues that are not being addressed at all, mainly at a strategic level across the Collins Class Sustainment Program, while other issues are being addressed by multiple initiatives. These overlaps and gaps will require coordination and realignment of their ownership. Where key issues are not fully addressed the current initiatives will require enhancement.

The Commonwealth has embarked upon a Submarine Life Evaluation Program study for the Collins Class. The key issues identified in the report are synergistic with this study. These were: obsolescence and obsolescence management, design and the associated growth margins and their consumption. This program should it be implemented, while it is not an availability improvement initiative, is essentially extending the sustainment boundary and will magnify many of the sustainment issues we have identified.

iv. What are the recommendations to resolve the remaining issues?

Based on the experience of the Review Team, the following recommendations are made and should be implemented to enable meaningful change to occur. They are set against each of the five root causes as detailed in Table 1. The RAN, DMO, and ASC have already implemented or are addressing some of these recommendations. Progress is detailed in the body of this report.



Table 1 - Recommendations

Root cause	Recommendation
Unclear requirement	<p>R1. Set a realistic target for the DMO to deliver MRDs and incorporate in the MSA</p> <p>R2. Define a clear (unclassified) requirement for the sustainment program</p>
Lack of a performance based ethos	<p>R3. Implement the ISSC to encourage performance based behaviour</p> <p>R4. Finance to strengthen and broaden the accountability framework for the oversight of ASC</p> <p>R5. Strengthen the RAN as the Intelligent Customer for Sustainment</p> <p>R6. A forum to bring together all suppliers within the Collins Class Sustainment Program</p> <p>R7. Coordinate existing initiatives, accept recommendations from the Phase 3 Report and coordinate implementation according to the Implementation Strategy</p> <p>R8. Develop and implement a contracting strategy</p> <p>R9. Create a collaborative framework known as the 'Enterprise' without diluting the individual responsibilities of the participants</p> <p>R10. Improve leadership skills, knowledge and experience</p>
Poor planning	<p>R11. Defer HMAS COLLINS Full Cycle Docking (FCD) and improve maintenance planning</p> <p>R12. Develop an Asset Management Strategy for sustainment</p> <p>R13. Availability requirements in the MSA should be derived from the IMS and a working level plan generated</p> <p>R14. Develop a through-life capability management plan reflecting the updated requirement</p> <p>R15. Define and endorse an Asset Management Plan</p> <p>R16. Implement and complete a fully-integrated sourcing and materials supply support program under the ISSC</p>
Unclear lines of responsibility	<p>R17. Treat defects occurring prior to the completion of Sea Acceptance Trials (SATs) as part of the contracted maintenance period</p> <p>R18. Review and where necessary improve procedures to audit O-level maintenance and records</p> <p>R19. Create a Head of the Submarine Profession</p> <p>R20. Develop a clear line of authority for maintenance of the design intent</p> <p>R21. Develop and implement a workforce strategy to specifically address skills shortages at the management level</p> <p>R22. Develop and implement a plan to resolve loss of Naval Engineering Skills</p>
Lack of a single set of accurate information to inform decision making	<p>R23. Improve adequacy of the Ships Information System and implement the use of onboard portable technology to aid in maintenance efficiency</p> <p>R24. Develop Enterprise-wide IT strategy and information management strategy</p> <p>R25. Develop cost baseline / model and supporting processes for sustainment program</p>



1 Introduction

1.1 Background

Submarines are a complex strategic capability. The range of strategic and tactical duties and high acquisition costs means submarines are a strategic asset requiring high reliability and consistent availability.

Australia's current fleet of Collins Class Submarines (CCSM) have been in service since 1996 and are expected to remain in service for some time, possibly beyond the projected design life, by means of a Service Life Evaluation Program (SLEP). Sustainment of the Collins Class consumes approximately 30% of the RAN's annual sustainment budget (\$450m) and consequently attracts significant attention from the public, Defence administration and Government all of whom seek evidence the submarines deliver value for money. With regard to effectiveness, a fully functioning Collins Class is regarded by all allies as a respected and very capable platform.

The Collins Class has a history of poor availability and reliability and has been the subject of many reviews from which a number of lessons learnt have been extracted for this study. The 2009 Defence White Paper emphasised the importance of Australia's maritime capabilities over the next decade and was recently re-endorsed by the Prime Minister. Given the strategic landscape, the Government has pledged to replace the Collins Class with a substantially expanded fleet to be assembled in South Australia. This will be Australia's largest ever single defence project and will span several decades. This commitment has reinforced the imperative of delivering and sustaining an improved submarine sustainment capability for the Collins Class.

Recent initiatives pursued by the RAN, DMO and ASC have seen considerable resources expended to improve the performance of Collins Class sustainment. However, the pace of improvement appears slow with concerns about the efficiency and effectiveness of the industrial base. Consequently it was decided to conduct an independent, expert study of the Collins Class end-to-end sustainment program. The purpose of this study was to identify the root causes of the problems and to confirm or redefine where ongoing resources should be focused for an improved and sustainable output.

1.2 Aims of the study

Mr John Coles was engaged to conduct an independent, expert study of the Collins Class end-to-end sustainment program. Formal Terms of Reference were signed by the Chief of the Defence Force, the Secretary of Defence and the Secretary of Finance and Deregulation (Finance). These specify a four phased approach to the study, of which this report represents the output of Phase 3 and addresses all Terms of Reference:



- The optimal commercial arrangements between Defence and ASC to support the delivery of efficient and effective CCSM sustainment, which will be used to guide the ongoing development of the ISSC commercial framework;
- The appropriate performance goals for sustainment activities, based on world best practice efficiency and effectiveness benchmarks;
- Options for demonstrating value for money in sustainment activity and the supply chain arrangements;
- Opportunities for improvements in management arrangements between ASC, DMO and the RAN to achieve an efficient submarine sustainment business;
- Future infrastructure needs to support the submarine sustainment activity;
- Measures to be implemented by DMO and the RAN to ensure that ASC is able to operate under a performance based contract; and
- The subsequent priorities for ASC, DMO and the RAN reform to effect greatest improvement, given time budget and system constraints.

The overall study comprises four phases:

- **Phase 1:** Discover issues which need to be addressed and undertake the development of a detailed statement of work, deliverables, schedule and planning arrangements. The Phase 1 report was published in December 2011. Ten issues were identified and a number of recommendations were made.
DMO has provided an update on the actions that are currently being taken in response to the recommendations. These actions are set out in Annex 2.
- **Phase 2:** Gather evidence on current operations and performance and compare to good practice identifying gaps and impacts where applicable. These gaps were then prioritised and assessments made of the confidence in extant initiatives to address these gaps¹. This phase was conducted between March and May 2012 delivering immediate and interim recommendations. The evidence gathered was also mapped at a high level against the Phase 1 issues to determine whether these were valid (set out in Annex 3).
- **Phase 3:** The Phase 3 report represents the findings of the second and third phases of work; in which a detailed fact based approach was employed to identify and quantify the gaps in sustainment capability against good practice and develop a set of recommendations. The Phase 3 work took place between September and November 2012.
- **Phase 4:** Implementation of the Phase 4 plan during which the Review Team will undertake progress reviews against final recommendations.

¹ The original Terms of Reference placed the solution and implementation plan development in Phase 2. The Government of Australia subsequently decided to adopt a staged approach and moved the development of solutions, implementation strategy and recommendations to Phase 3 of the study



Notes:

The boundaries of this study were limited by agreement with the Commonwealth to the sustainment activities as detailed in the Phase 1 report and do not cover for example escape and rescue, supply of commodities, weapons and pyrotechnics or other Defence-wide infrastructure.

The vast bulk of the analysis supporting this study was undertaken during Phase 2 but additional information was supplied to the Review Team during Phase 3 and we have incorporated this where this was both practical and appropriate.



2 Approach to analysis

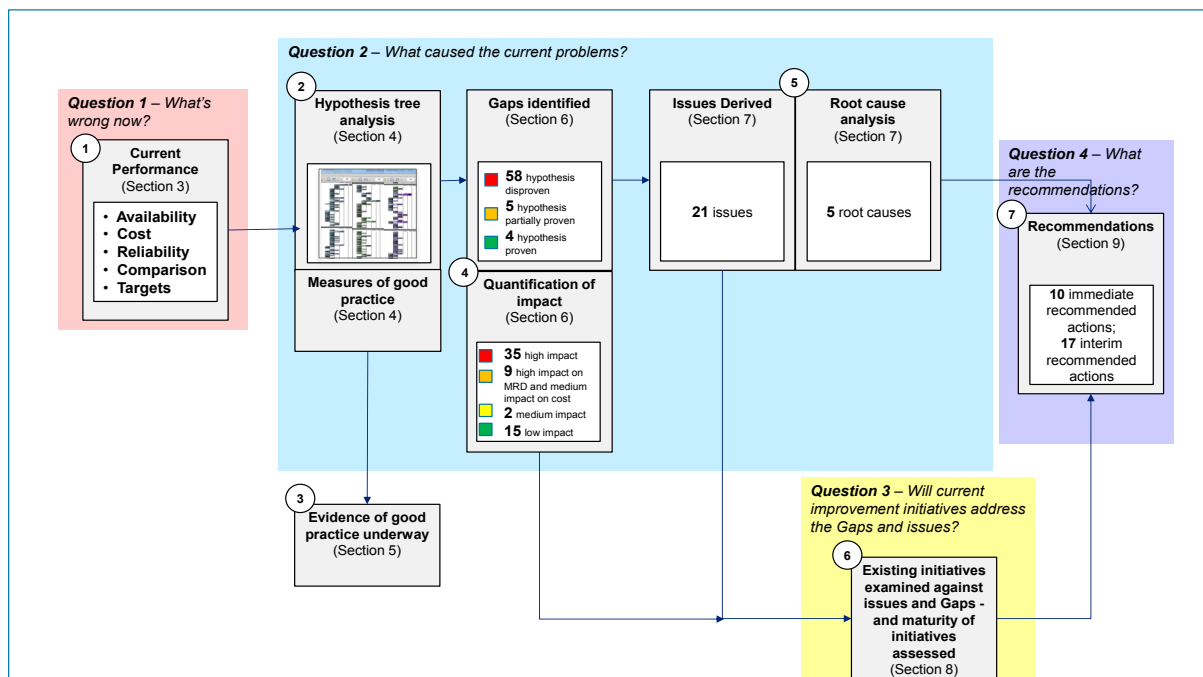
2.1 Our seven step approach to analysis

Collins Class sustainment activities are complex and require the cooperation and coordination of activities across the RAN, DMO, Finance, ASC and the wider supply chain to be effective. This creates an unusual span of investigation for a study such as this. Our approach was designed to allow evidence based analysis of the key issues impacting sustainment, to identify relevant good practice comparators, and ascertain the gap between current state and the desired good practice enterprise. The purpose of the analysis undertaken focused on addressing the following questions:

- Q1. What is wrong now with the Collins Class sustainment performance?
- Q2. What caused the current problems with sustainment performance?
- Q3. Will improvement initiatives address these issues?
- Q4. What are the recommendations to resolve the remaining gaps?

To enable the study to answer these questions, a seven step approach was undertaken as illustrated in Figure 8. We have also taken into account new information related to the SLEP and infrastructure implications detailed in Section 9.

Figure 8 - Overall Analysis Approach



2.2 Step 1 – Current performance

To assess the overall Collins Class Sustainment Program (CCSP), it is important to understand the current environment and historic performance in terms of both reliability and availability. This step provided analysis with regard to key performance measures over the recent history of the Collins Class to ascertain trends and historic levels of performance versus targets.

2.3 Step 2 - Hypothesis tree analysis and measures of good practice

The hypothesis tree was adopted as a guide to test the effectiveness of the CCSP. A hypothesis tree is an analytical problem solving tool that breaks down an overarching hypothesis into numerous sub-hypotheses to ensure all examinations are aligned. These sub-hypotheses are mutually exclusive and collectively exhaustive to ensure thinking is clearly structured and no areas of analysis are overlooked. The sub-hypotheses are then tested, using evidence and analysis, to prove or disprove the top-level hypothesis and thereby verify or refute the argument or conclusion. It is a useful technique for analysing large scale or complex programs, as it allows analytical effort to be coordinated and focussed on discrete and relevant areas preventing wasted effort or duplicated workload.

The hypothesis tree provided the means to structure the Phase 2 work, defined the scope of activity and allowed the link between gaps, impacts and issues to be understood. It was used to build the data requests that were made to the RAN, DMO, Finance and ASC.

This step also identified a series of good practice measures, such as Australian and International standards, Australian Defence Force and other military, public sector, and industry guidance. These were utilised to identify benchmarks on which to base the hypothesis tree test.

2.4 Step 3 – Evidence of good practice underway

The hypotheses defined within the tree were then tested against the good practice benchmarks and measures to ascertain what was deemed acceptable and good practice. These were used to assess to what extent the CCSP across the business entities met the good practice measures.

2.5 Step 4 – Gaps identified and quantification of impacts

Data responses were received, analysed against relevant sections of the hypothesis tree to determine gaps against good practice and supplemented by stakeholder interviews across the CCSP. Additionally a Commitment and Culture Survey was also conducted which was completed by 665 leaders and personnel.



Gaps against good practice were quantified to understand the likely impact they have on Materiel Ready Days (MRDs) and cost. Impacts were classified into groups to enable separation of significant and minor gaps.

As increasing MRD availability is the main driver for the study we weighted this as more significant than cost impact. Each gap was also categorised as 'Deliver', 'Enable', or 'Sustain'. This framework helped prioritise gaps as it indicated the functional sequence in which they need to be addressed to deliver long-term results. The priorities are ranked in order - 'Deliver', 'Enable', and 'Sustain'.

2.6 Step 5 – Issues and root causes

The issues causing each gap were identified and documented. Common themes were identified and grouped to form a list of key issues. As part of this process we identified areas meeting the good practice benchmarks.

Root causes were identified based on the experience and knowledge of the Review Team, and through a structured assessment of each key issue. These were later used in the analysis to formulate recommendations.

2.7 Step 6 - Examination of existing initiatives

The study team employed a sustainment value chain model to map gaps against current Collins Class improvement initiatives. The value chain allowed the team to identify and assess the following:

- Key issues that were not being addressed by current improvement initiatives;
- Key issues that were being addressed by multiple initiatives, indicating duplication of effort and inefficient use of resources; and
- A confidence rating for the resolution of each key issue based on the maturity of each initiative and its current scope of activity.

2.8 Step 7 - Recommendations

A set of recommendations was developed based upon the gaps, root causes, and confidence in the existing initiatives. We have also included an assessment of the impacts and likelihood of success.



3 Step 1 - Current performance

This study aims to provide a true and fair representation of the recent and current performance of the CCSP and to provide an indication of the scale of the challenge as it seeks to deliver improved availability. This section of the report does not seek to address the root causes of current levels of performance. Rather the intention is to provide a clear and simple picture of current levels of performance across the following areas:

- Current and historic Collins Class availability performance;
- The cost effectiveness of availability performance;
- Collins Class reliability performance;
- The performance of the CCSP against international comparative programs; and
- Future availability targets.

3.1 Current and historic submarine availability performance

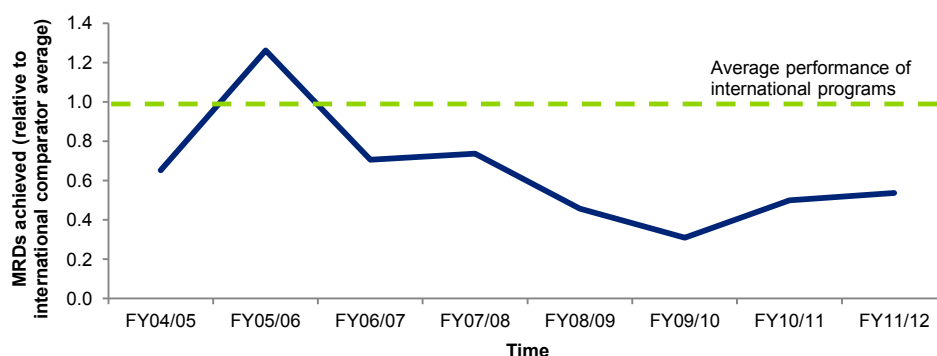
The current CCSP and its outputs are poor as demonstrated in Figure 9. Between FY06/07 and FY09/10 the materiel availability of the Collins Class had a compound annual reduction of approximately 24%. The reduction in Collins Class availability is symptomatic of issues identified in this report and is exacerbated by a number of legacy problems (such as main motors and diesel generators) that masked the underlying poor reliability of the Collins Class.

In FY10/11 the availability improved by approximately 61% from the previous year. Data relating to FY11/12 indicates that this significant uplift trend in availability has not continued into FY11/12, and the program appears to have stabilised above its lowest availability recorded. The level of performance at 56% of the international comparators was significantly below the RAN's requirement for FY11/12.

While recent investments in the program have been made, it will take a number of years to demonstrate tangible MRD benefits. Further, we expect legacy issues to continue to impact MRDs over the short to medium term.



Figure 9 - Comparative Availability ²



3.2 The cost effectiveness of submarine availability

The CCSP cost was stable from FY06/07 to FY09/10. The uplift in FY10/11 reflects the provision of extra funding, predominantly for the purchase of additional spares and the implementation of an improved maintenance program.

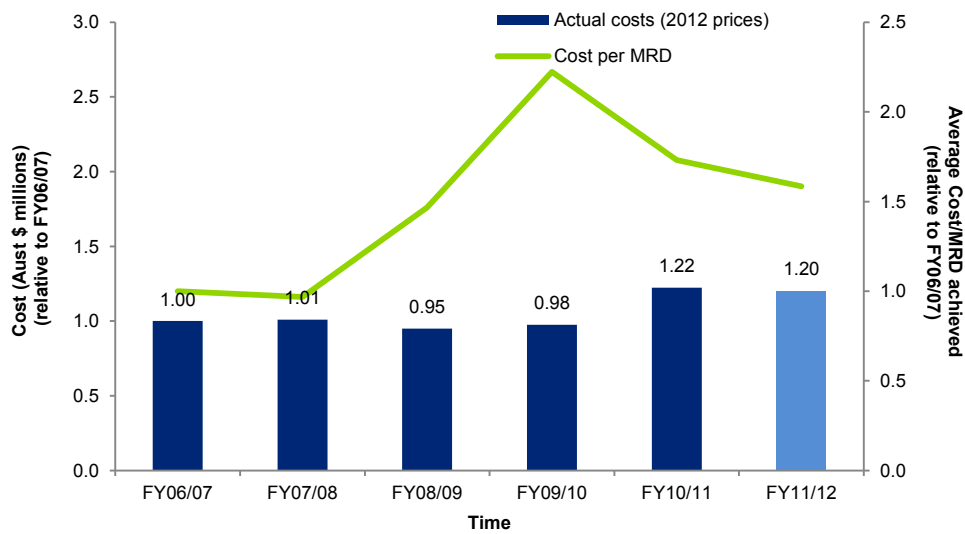
Figure 10 indicates that the cost effectiveness of the program in delivering availability declined from FY07/08 to FY09/10. The cost effectiveness improvement commencing in FY10/11 coincides with increased investment in the program, however the cost effectiveness improvement and the investment cannot be directly linked. We would not expect the benefit of the additional funding to be visible for 18 to 30 months after committing to the investment as the lead time required to procure spares can be one or two years and the time required to improve maintenance schedules delivering performance can be several years in duration.

The highest cost in \$/MRD was in FY09/10. This reflects the low level of MRDs achieved over this period. Although the \$/MRD improved in FY10/11 and FY11/12, it remains approximately 160% of the \$/MRD achieved in FY06/07.

² Data derived from monthly MSA reports and MRD summaries FY04/05 to FY11/12. Data for FY05/06 is considered to be an outlier by DMO. No explanation could be given for the high rate of MRD achievement.



Figure 10 - Relationship between sustainment cost and availability (MRD)³



3.3 Submarine reliability performance

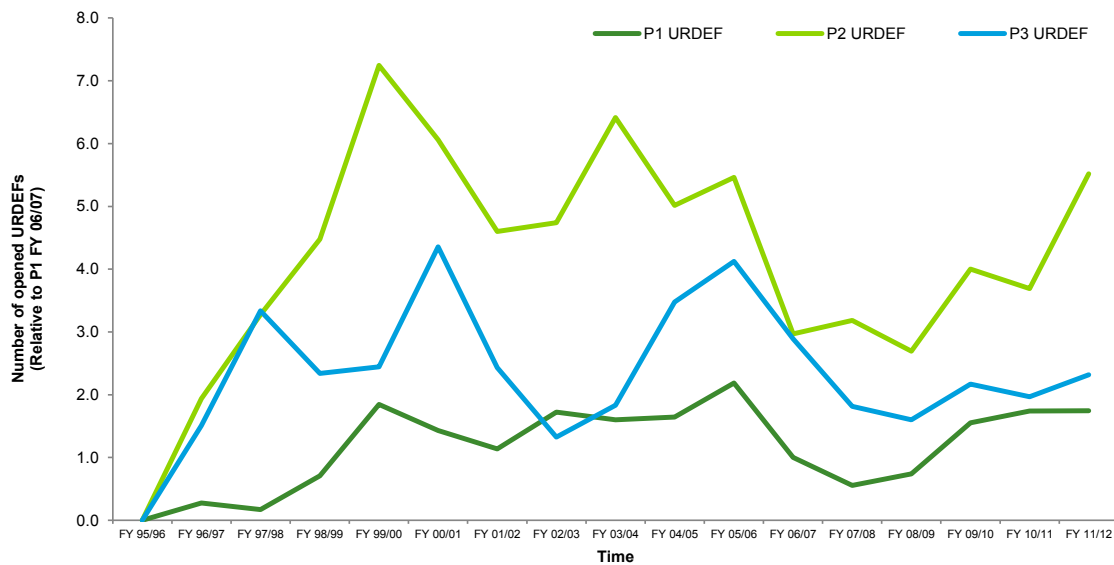
The reliability of the Collins Class can be assessed through the number of urgent defects (URDEFs) experienced by the submarines when outside of maintenance periods and how these relate to the underlying availability of the fleet. There are three categories of URDEF, ranging from Priority 1 (P1) that have a direct impact on submarine availability, to Priority 2 (P2) and Priority 3 (P3) that reflect the overall health of installed materiel.

Figure 11 indicates that the number of URDEFs reported has been increasing since FY08/09, after an initial decrease. P1 URDEFs have a compound annual growth rate of about 33% from FY08/09 to FY11/12 while P2 and P3 URDEFs have compound annual growth rates of 27% and 13% respectively. The increase across all categories of defect could reflect systemic issues with the reliability management of the Collins Class.

³ All costs have been inflated to 2012 prices to allow for comparability between years.



Figure 11 - Opened URDEFs per annum 1996 to 2011



The relationship between availability and reliability is illustrated in Figure 12 and Figure 13 and shows the number of defects opened per MRD across each category of URDEF, and the average number of URDEFs raised by the submarines outside a defined maintenance period. This analysis indicates that the number of defects has increased, while the level of submarine availability has been declining. This suggests that the reliability of the submarines has been progressively decreasing since 2008. The peak in numbers of defects per MRD in FY09/10 is significant and requires further investigation.

Figure 12 indicates that the number of P1 URDEFs per MRD (and per submarine) has broadly stabilised in FY11/12 following a reduction in FY10/11, albeit at a level considerably greater than the rate achieved in FY07/08. The rate of P2 URDEFs has started to increase following a reduction in FY10/11.



Figure 12 - Defects per MRD FY04/05 to FY11/12

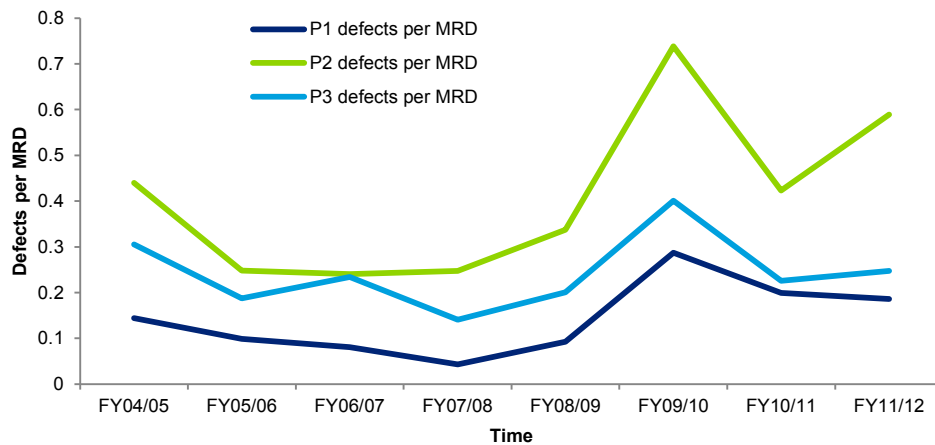


Figure 13 - URDEFs normalised by the average submarines in-service (relative to FY 06/07 P1 URDEFs)

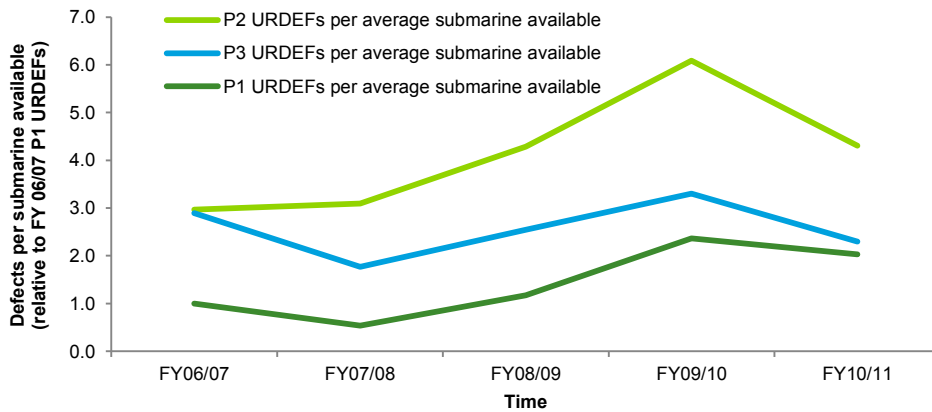


Figure 13 confirms the same trend as Figure 12 with reliability performance improving in FY10/11 from a peak in FY09/10. However, the rate of P1 URDEFs per average submarine available in FY10/11 remains approximately double the rate experienced in FY06/07, even though there are a broadly similar number of submarines available in both financial years. The overall upward trend is indicative of poor reliability and obsolescence management in earlier years. The original design shortcomings should have been removed over time through sound application of these basic sustainment management processes.

3.4 The performance of the CCSP against international comparator programs

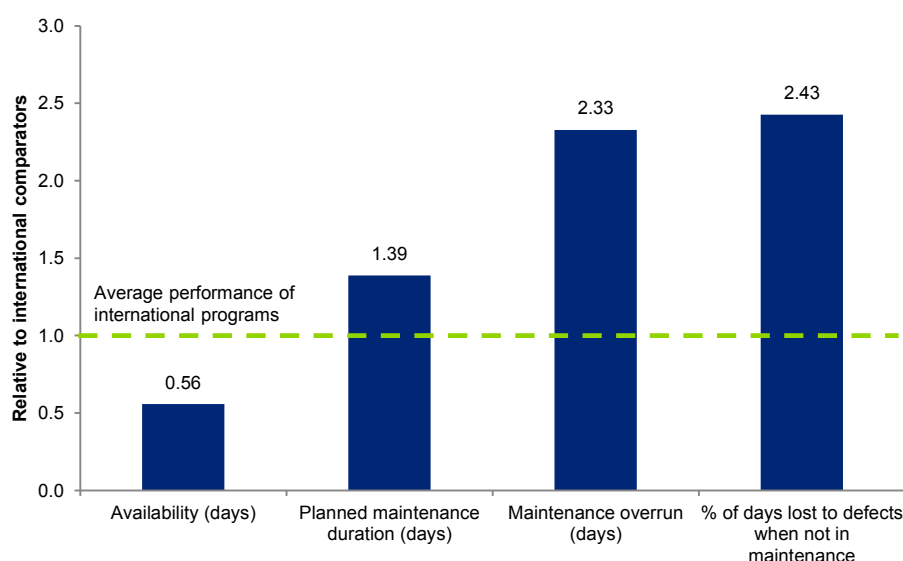
The effectiveness of the CCSP in delivering submarine availability was assessed against international comparator data obtained by the DMO. Deriving benchmarks of this type is challenging, principally due to differences in program availability definitions and the specific complex features of submarine fleets and their differing operational demands and operating



environments. Despite these differences the availability performance of the comparator nations falls within a narrow band and therefore constitutes a valid benchmark.

The CCSP performance from FY06/07 to FY10/11 is compared with the average performance of each comparator submarine fleet in Figure 14. The analysis indicates the availability performance of the Collins Class has been slightly over half that achieved by the comparable international programs; the time in planned maintenance was about one third greater than other nations; and the maintenance overruns and the percentage days lost due to defects were approximately double that of the comparators.

Figure 14 - Collins performance compared to other international navies



The recording of Collins Class URDEFs has formerly differed from good practice. The recording of URDEFs on the Collins Class commences on completion of Harbour Acceptance Trials (HATs). However, good practice recording of URDEFs would commence on completion of Sea Acceptance Trials (SATs). The Collins method of recording has artificially increased the number of URDEFs. The contract based defect reporting procedures should be used prior to completion of SATs.

3.5 Characteristics of International Programs

Each of the programs contributing to the International Benchmarking Activity⁴ has various features that collectively form the “way they operate” in procuring and delivering submarine sustainment. Figure 15 illustrates these features and shows the percentage of contributing nations that have each of these features in common. The CCSP alignment with each of these features is assessed against the International Nations and given a status.

⁴ Collins Class Submarine International Benchmarking Marking Activity Report (June 2012)



White means that the CCSP has little or no alignment with other nations, dark green means the CCSP aligns strongly with other nations and light green means there is some alignment with other nations. It is not possible to rank these features in order of importance to successful sustainment.

Figure 15 - Alignment between the CCSP and the International Program

Features		% of Nations with this feature	CCSP Status
Contracting	Sole source provider	100%	Aligns strongly with this feature
	Private sector provider	50%	Some alignment with this feature
	Government-based entity provider	33%	Aligns strongly with this feature
	Government provider	17%	Little or no alignment with this feature
	Output-based performance measurement	87%	Some alignment with this feature
	Fixed priced Full Cycle Dockings	50%	Little or no alignment with this feature
	Separate cost plus incentive contract for in-service support	67%	Little or no alignment with this feature
	Contracting for availability	17%	Little or no alignment with this feature
Design	Evolved design	100%	Little or no alignment with this feature
	Design for reliability	17%	Some alignment with this feature
	Evolving maintenance specification	87%	Little or no alignment with this feature
Enterprise	Technical expertise to act as an intelligent customer	100%	Some alignment with this feature
	Government responsible for design changes	87%	Little or no alignment with this feature
	Close co-operation between Navy, DMO and Industry	100%	Little or no alignment with this feature
	Co-location of Naval Base and dockyard	100%	Little or no alignment with this feature
Other	Budget pressure	67%	Little or no alignment with this feature
	High demanding operating profiles	67%	Aligns strongly with this feature
	Low demanding operating profiles	33%	Little or no alignment with this feature
	Average crews/submarine in the fleet	1.2	Little or no alignment with this feature

In Table 2 we discuss the features under the various categories and the implications for Collins Class sustainment.



Table 2 - Alignment with International Programs

Category	Observations and Implications
Contracting	<p>The contracting arrangements for the CCSP, in common with the international programs, use performance based management arrangements, however, these have yet to mature and they are implemented in a manner that differs from the international programs. Of the international programs that have contractual arrangements the majority use Fixed Price contracting for planned docked maintenance and Cost Plus Incentive contracts for in-service support services. The use of output based performance management arrangements is rated light green for the CCSP because the recently let ISSC has yet to bed in and blank for the manner in which the ISSC has been structured. The assessments in this report have by necessity been made against a baseline of the Through-Life Support Agreement (TLSA) and therefore do not yet reflect the effects of performance based contracting.</p>
Design	<p>The Collins Class varies considerably from the International Programs in relation to the selected design features in Figure 15. While the Collins Class shares much of its design philosophy with previous Swedish designs it is virtually a “one off” design, unlike other nations who generally have evolved designs. This uniqueness results in much of the platform equipment being exclusive to Collins and therefore presents a limited opportunity to learn from others about in service issues.</p> <p>Perhaps the most significant design feature misalignment is with the nature of the maintenance specification. Most of the International Programs report the active pursuit of continuous refinement of the maintenance specification for overhauls FCDs and in-service maintenance (Mid Cycle Docking (MCDs), Intermediate Dockings (ID) etc), thus providing the bedrock for good planning and management of the maintenance program. This refinement will include all elements of direct equipment, system and hull maintenance as well as the consequential work-in-way to gain access to conduct the maintenance and to make good afterwards. The Collins Class maintenance specifications seem to lack this refinement process leading to great difficulty to accurately plan the maintenance periods and define the required bill of materials.</p>
Enterprise	<p>The manner in which the submarine enterprise (government, navy and industry) operates for the Collins Class is misaligned with the enterprise features of the International Programs. Unlike all the other nations, there is a considerable distance between the location where deep maintenance is undertaken and the submarine base. This would be a considerable challenge to rectify in Australia.</p> <p>The need for closer co-operation between the RAN, DMO and ASC has been recognised and is being addressed.</p> <p>The other enterprise features need to be considered in the Implementation Phase and in particular the issue of design ownership by the Government and the resources to discharge this role.</p>
Other	<p>Budget pressure has probably provided one of the drivers for innovation, restructuring and transformation in sustainment support in the International Programs. Whilst there is a perception of budgetary constraint for the Collins</p>



Category	Observations and Implications
	<p>program it is only recently that significant focus has been applied to transforming the sustainment of the Collins Class.</p> <p>High demanding operating profiles are clearly not unique to the Collins Class although it is likely that Collins is at the top end of the high profile.</p> <p>The most significant misalignment with the International Comparators is the average number of crews per submarine in the fleet. The Collins Class has been operating with 3 crews for 6 submarines and will be increased to 4 crews soon. This falls well short of the comparator of 1.2 crews per submarine in the fleet. This has a direct impact on the level of involvement in and understanding of maintenance, whether in Fleet Time or overhaul. Rotating crews could lead to a “lack of ownership” of the maintenance by the ships company and to deterioration in its completeness and quality.</p>

3.6 Drivers of low materiel availability

The low level of materiel availability achieved by the Collins Class is driven by three key factors:

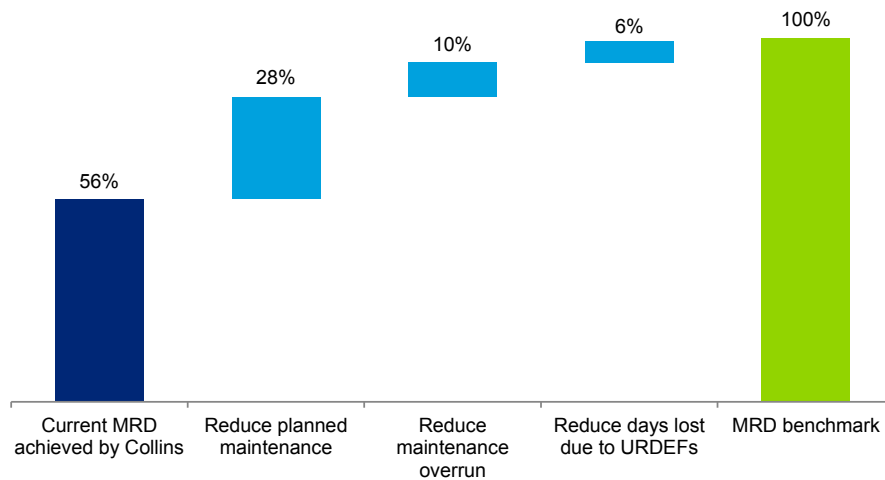
- Long planned maintenance periods;
- Overruns to planned maintenance activities; and
- Defects to the submarines when they are outside of maintenance periods (poor reliability) which can be exacerbated by inadequate availability of spares.

The relative contribution (opportunities) of these factors to improve CCSM availability performance to match the MRD benchmark is shown in Figure 16.

This data indicates that fundamentally changing the usage-upkeep cycle and shortening the maintenance periods, and managing them in a way that reduces time overruns will yield the biggest contribution to improving the number of MRDs achieved. The MRDs due to defects cannot in practice be eliminated altogether and future performance targets should, at least initially, allow for achieving, but not exceeding benchmark performance. All nations lose some MRDs to defects. However, when operational days are lost they have a far more disruptive effect than days lost in maintenance and it is still very important to improve reliability and reduce the time taken to repair defects when they occur. Indeed if the reliability is not improved the number of MRDs lost to unreliability will increase by around 50%. With a considerably higher impact of loss of operational days due to defects compared to days lost due to maintenance the focus on improving reliability should remain a high priority.



Figure 16 - Opportunities to improve availability to MRD benchmark



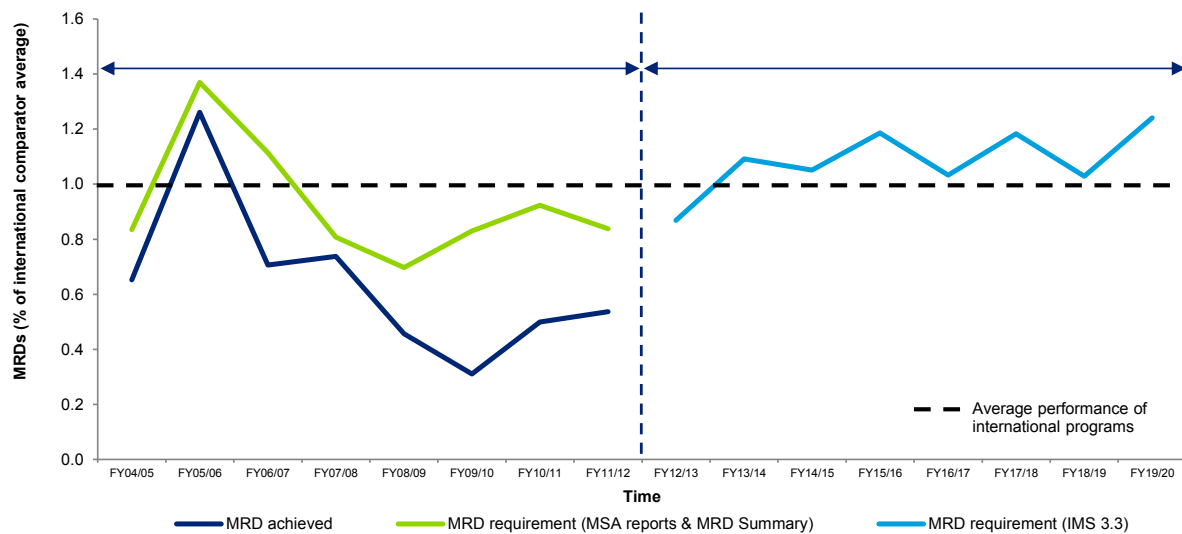
3.7 Future availability targets

An availability of around 50% for submarines of the size and generation of the Collins Class is a realistic expectation. As a result, setting a requirement that matches the international comparator navies is not unreasonable for a fleet of six submarines with benchmark reliability performance. However, given the need to resolve original design and build problems and the systemic issues raised elsewhere in this report, this is too high a target to set in the short to medium term. Figure 17 illustrates the historic gap between availability achieved and the availability requirement in past Materiel Sustainment Agreement (MSAs)⁵, and an unrealistic future requirement. Setting unachievable requirements does little to motivate any organisation to perform and institutionalises a culture of failure.

⁵ The MSA for sustainment of submarines is now called Product Schedule (PdS) CN-10 FY12/14.

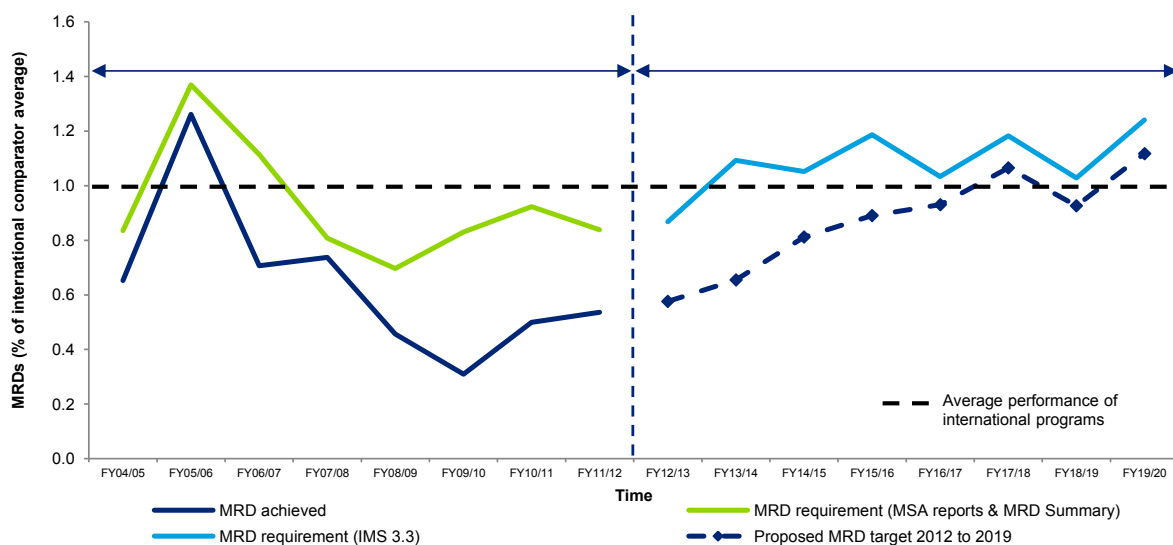


Figure 17 - Historical availability performance and future requirement



We recommended that future requirements be reviewed and more realistic availability levels be set in future MSAs as illustrated in Figure 18. Further detailed analysis work would be required to underpin this.

Figure 18 - Indicative proposed availability target for the Collins sustainment program



The RAN has accepted our recommendation and has set and agreed progressively increasing annual targets as part of its annual negotiations with the DMO. The Finance Department, as the shareholder, has instigated a performance management system on the ASC that reinforces the focus on delivering the output that the RAN requires. These actions are welcome and an example of the improving relationship between the RAN, DMO, ASC and Finance.



4 Step 2 - Hypothesis tree analysis and measures of good practice

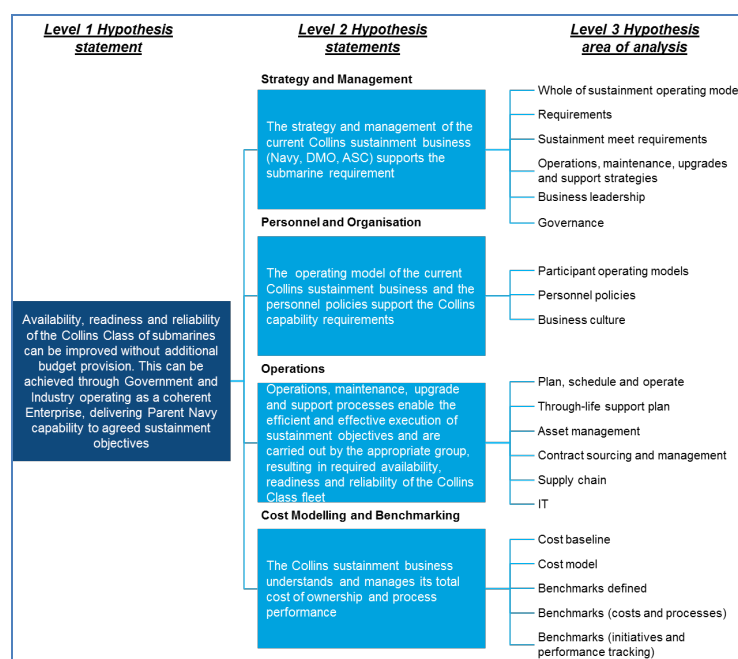
4.1 Development of the hypothesis tree approach

A detailed hypothesis tree was developed to focus analysis on the key business areas associated with Collins Class sustainment. The hypothesis assumes that the organisation is successful in achieving its aims and the tests were set to seek confirmation of this. To test the hypothesis that 'Availability, readiness and reliability of the Collins Class of submarines can be improved without additional budget provision' four projects were established:

1. Strategy and Management
2. Personnel and Organisation
3. Operations, Maintenance, Upgrades & Support
4. Cost modelling and benchmarking

Each project team investigated a range of specific elements of the CCSP to identify gaps in current performance against good practice. 67 level three hypotheses were tested with a number of the level three hypotheses across the project workstreams, some requiring substantial breakdown to lower levels of analysis. Figure 19 presents the breadth of investigation at levels two and three.

Figure 19 - Hypothesis Tree summary



The information used to test the hypotheses came from approximately 2,500 documents, interviews with stakeholders from across the sustainment program and a Commitment and Culture Survey which was completed by 665 individuals from across the RAN, DMO, Finance



and ASC. For further information on the sources of evidence refer to Annex 4. A breakdown of the results from the Commitment and Culture Survey is contained in Annex 5 and 6.

4.2 Determining good practice

A variety of benchmarks, measures and standards were used to determine what good practice was and to present a baseline for the assessment of current performance. These included best practice reference models and frameworks, external benchmark reports relevant to specific elements of the CCSP, International Standards in areas such as asset management and other publically available published information.

The ability to gauge performance across the sustainment program was constrained by low availability of relevant external cost and performance data. The submarine industry provides limited open source information with regard to submarine usage worldwide (and there are few if any comparable industries) to enable development of like for like submarine maintenance cost and performance comparisons, which require detailed operational data to prepare.

The basis for the external benchmarking data to inform this study was the DMO commissioned First Marine International (FMI) Benchmarking review of ASC and International Navy benchmarks obtained by the Government. Due to the sensitive nature of submarine performance, the complete set of International Navy benchmarks was not provided to the Review Team. Information from several Navies was obtained. We have sourced and utilised comparator data related to availability, reliability and maintenance, and have some financial information. Additionally, the FMI report focused on process benchmarks against a qualitative scoring scale of one to five rather than providing quantitative performance metrics for various elements of sustainment against which the Collins Class could be measured. This means that the use of the FMI report is limited to qualitative comparisons.

It should be recognised that the definitions of good practice articulated below represent a very stringent test. It is unlikely many organisations would pass on all aspects, and this is an even more difficult test to pass when looking at a combination of organisations as is the case with the CCSP.

4.3 Good practice measures by project workstreams

The following benchmarks and measures of good practice per project workstream were utilised to allow a meaningful comparison to occur and to identify where gaps in capability were evident.



4.3.1 Strategy & Management

Table 3 – Strategy & management

Definitions of good practice	<p>Good practice in the context of the strategy and management of the CCSP is a Submarine Enterprise construct, defined as ‘an industrial capability represented by the minimum facilities, infrastructure and core skills required to deliver a particular program demand,’ typified by a collaborative approach to delivering required program outcomes.</p> <p>Achievement of a successful Submarine Enterprise construct, which implicitly includes the development of a joint approach to strategy, program governance and program improvement, and good practice program strategy and management.</p> <p>A successful Submarine Enterprise requires the roles and responsibilities of participants to be clearly defined, from strategy through to execution, based around the core roles of ‘Owner and Operator’ for the RAN, ‘Intelligent Buyer’ for DMO and ‘Supportive Industry’ for ASC. These clearly defined core roles operate alongside jointly held responsibilities such as program management and governance, quality assurance and information and knowledge management.</p> <p>A successful Submarine Enterprise is supported by:</p> <ul style="list-style-type: none"> • A clearly and simply expressed program vision which informs realistic and achievable objectives that are shared and understood by all participants; • A jointly developed program level strategy to deliver agreed objectives that sets and cascades a direction to align individual participant strategies; • Coordinated planning and management of improvements to deliver the effective execution of the program strategy; • Defined and resourced program-wide structures and forums at suitable levels to enable joint working and collaborative decision making; and • Commercial constructs that reward performance over activities and foster long-term collaborative and transparent working.
Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>The UK Submarine Enterprise Performance Programme</i> • <i>UK OGC project management guidelines</i> • <i>Chartered Quality Institute guide to corporate strategy</i> • <i>PRINCE2®</i> • <i>ANAO Public Sector Governance vol.1</i> • <i>ISO 31000-2009 Risk Management Principles and Guidelines</i> • <i>Commonwealth Government Business Enterprise Governance and Oversight Guidelines, October 2001</i> • <i>Key financials of Australia Post and Defence Housing Australia (Annual Reports 2010 and 2011)</i> • <i>Key financials of BAE Systems, General Dynamics, Rolls Royce, Thyssen Krupp, Raytheon and Thales (Annual Reports 2010 and 2011)</i>



4.3.2 Personnel & Organisation

Table 4 - Personnel and organisation

Definitions of good practice	<p>Good practice in the context of the personnel and organisation of the CCSP is a clearly defined and documented operating model or Submarine Enterprise that supports the capability requirements of the business. The roles and responsibilities of the participant organisations are understood and executed within a framework of key performance indicators and associated targets. The characteristics of good practice roles and responsibilities in the Enterprise include :</p> <ul style="list-style-type: none"> • Most functions in the Submarine Enterprise have a single accountable owner; • Only one participant organisation is accountable per activity; • Shared responsibilities occur at hand-off points where KPIs are established to measure performance of both parties; and • The bulk of allocated responsibilities are aligned with the participant organisations charged with completion of the work. <p>Suitably qualified and experienced people exist within the Submarine Enterprise and, at a minimum, policies for recruitment, retention, workforce planning and training and development are used and maintained. Turnover would be maintained below the 12.6% average turnover rate of large Australian organisations. The number of vacant positions would be maintained below a rate of 10%.</p> <p>Based on the 'best practice' roles in an enterprise, we would expect to see key skills being applied in the following domains:</p> <ul style="list-style-type: none"> • Maintenance, submarine operations, strategic planning and cost management processes for the RAN (as the Informed Customer); • Engineering, strategic sourcing, scheduling and inventory management for ASC (as the Supportive Industry); • Strategic contracts and procurement for DMO (as the Intelligent Buyer); and • Submarine expertise, finance, human resources and project and program management across all participant organisations. <p>A 'good' organisational culture that supports the objectives of the CCSP would have an engaged, committed and motivated workforce and an effective leadership team that can drive change. A good benchmark for employee engagement is a score of 65% or above and effective leaders would be able to:</p> <ul style="list-style-type: none"> • Gain the trust of their team during times of change; • Empower and trust people to do their jobs; • Motivate and inspire people by encouraging them to strive for excellence and achieve more; and • Be available to their team members.
Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>Characteristics of good practice roles and responsibilities adapted from Thought Leadership of McCann, J.E., & Gilmore, Bauer, P., & Simmons, P. Galbraith, J., Downey, D., & Kates, A</i> • <i>Average turnover rate according to Australian Institute of Management 2011 National Salary Survey</i>



	<ul style="list-style-type: none"> • <i>Good benchmark employee engagement score according to Hewitt, “2009 Hewitt Best Employers in Australia and New Zealand Study” and Aon Hewitt, “Tends in Global Employee Engagement”, 2011</i> • <i>Characteristics of an effective leadership team adapted from Deloitte As One Survey</i> • <i>Average turnover rate according to Australian Institute of Management 2011 National Salary Survey</i> • <i>Australian Institute of Management, National Salary Survey, 2011</i> • <i>Australian Institute of Management, ‘Australian Training and Investment Report’, 2011</i>
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4.3.3 Operations, Maintenance, Upgrades & Support

4.3.3.1. Operations, Planning and Scheduling

Table 5 - Operations, Planning and Scheduling

Definitions of good practice	<p>Planning is concerned with the scheduling and organisation of sustainment activities to effectively achieve sustainment objectives and meet the RAN’s requirements for the submarine capability.</p> <p>Good practice planning and scheduling in the support and maintenance of defence equipment has a number of key features, including:</p> <ul style="list-style-type: none"> • A clear and unambiguous statement of requirements that is understood by all participants and is measurable and achievable within the current capacity of the sustainment system to drive effective planning and scheduling; • Use of plans to ensure supply lines and production systems are effectively scaled and linked to demand; • Plans exist and are aligned across the long-term whole of capability timeframe, the medium term budgeting cycle and workforce planning and short term detailed planning on rolling 12 month periods; • Change management systems have been defined to ensure changes to baselines are made in a systematic and timely manner and the impact of changes on program impacts is clearly understood; • Plans have sufficient flexibility to allow the planning team to optimise the balance between operational and maintenance activities, including the incorporation of minimum and maximum buffers to manage unplanned schedule fluctuations that are actively controlled through a multi-level change process; • Schedule adjustments need to be possible at operational levels, as long as high level customer needs can still be met, without needing top level management approval; • Single plan for each planning horizon which is maintained and complete to allow for one single source of the truth. • Design constraints and platform limitations are well documented and supported by automatic logging and condition based monitoring and reporting to provide ongoing
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	<p>condition and output data that is used to inform decisions relating to exceeding constraints and limitations; and</p> <p>Planning compliance and performance is monitored through defined KPIs and reporting cycles to drive continuous improvement.</p>
Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>Automotive industry (Designated Engineering Representatives)</i> • <i>Management Successful Programmes (MSP) framework and concepts - Office of Government Commerce (OGC)</i> • <i>Product Part Approval Process (PPAP) change management system</i> • <i>Earned Value Management standard (AS-4817 Defence supplement)</i> • <i>PRINCE2®</i>

4.3.3.2. Supply Chain

Table 6 – Supply chain

Definitions of good practice	<p>Good practice in the context of supply chain and logistics management for defence support programs is concerned with the efficient and effective ordering, procurement and movement of inventory and spares in a timely manner to meet sustainment needs and facilitate the delivery of submarine requirements.</p> <p>Good practice supply chain management has a number of key features, including:</p> <ul style="list-style-type: none"> • A comprehensive and clearly defined supply chain plan, incorporating demand planning, procurement, distribution and inventory management strategies and supported by KPIs and reporting to monitor and manage compliance with, and performance against, the plan; • Integrated information systems to enable obsolescence management and configuration control processes; • The use of reliable and efficient inventory suppliers who share the responsibility for balancing supply and demand through joint service agreements and regularly monitor and remediate product compliance; • Accurate supplier performance management, including comparative analysis of supplier performance, to support the periodic rationalisation of suppliers in line with performance metrics; • Development of, and adherence to distribution plans and policies integrated with quality and materials management systems and processes to effectively optimise cost and schedule requirements; • Streamlined and integrated procurement processes that are used homogeneously across the business and reflect the type of product or service being procured based on business impact, value and category; • Inventory management processes that deliver accurate inventory data integrity and ensure inventory is 'right sized' to minimise the risk to safety stock levels; • Dynamic safety stock levels are maintained based on forecast error, service level, demand variability, production non-conformance and lead time uncertainties and obsolescence is minimised by active management; and • Continuous improvement across all supply-chain areas based on effective data management and feedback into supplier assessments and demand forecasting.
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Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>Supply Chain Operations Reference (SCOR) Model</i> • <i>Deloitte Integrated Supply Chain (DISC) Toolkit</i> • <i>FMI Benchmark Report</i> • <i>Business Link benchmark index manufacturing sector study</i>
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4.3.3.3. Asset Management

Table 7 - Asset management

Definitions of good practice	<p>Good practice in the context of asset management is defined by the British Standards Institution Publically Available Specification (PAS) 55 guidelines for the optimised management of physical assets.</p> <p>Asset management is the systematic and coordinated activities and practices through which an organisation optimally and sustainably manages its assets and asset systems, their associated performance and risks and expenditures over their life cycles for the purposes of achieving its organisational strategic plan.</p> <p>Good practice asset management within the ADF should efficiently and effectively maintain materiel to deliver the optimum balance between availability and asset preservation.</p> <p>Steps in the development of a good practice asset management system as defined in PAS 55 include:</p> <ul style="list-style-type: none"> • The clear definition of asset management policies; • The development of an asset management strategy, including the clear articulation of objectives and plans to support their achievement; • Clearly defined asset management enablers and controls, including clear roles and responsibilities, awareness and competence training, asset management systems documentation (e.g. engineering data, drawings and design parameters, work instructions and schedules, condition reports) and risk, information and change management processes; • Implementation of asset management plans across whole life cycle activities; and • Performance assessments and reviews of the asset management system to ensure its continuing suitability, adequacy and effectiveness and to drive continuous improvement. <p>Attributes of a good practice asset management system include:</p> <ul style="list-style-type: none"> • Achievement orientated, with the goals of the asset management system set by organisational objectives; • Transparent decision making, with sufficient information within the asset management system to support effective decisions; • Clear accountabilities and responsibilities, ensuring risks are identifiable and controllable; and • Integration in asset management systems and adherence to practices across organisational groups.
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Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>ISO/CD 55001 Asset management</i> • <i>PAS 55 Asset Management</i> • <i>ABR 5225 – RAN Engineering Manual</i> • <i>ABR 5230 – RAN Ship Maintenance Administration Manual</i> • <i>ABR 6492 – RAN Technical Regulations Manual</i>
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4.3.3.4. Information Technology

Table 8 – Information Technology

Definitions of good practice	<p>Good practice in the context of IT in the CCSP is the existence of IT architecture, information architecture and IT governance that is integrated and effectively maintained to support the efficient and effective delivery of the objectives of the CCSP and documented in an IT strategy.</p> <p>In a commercial environment a common IT strategy and governance is not typically expected. However, given the shared-responsibilities during the lifecycle of submarine sustainment and the importance of maintaining data quality during this process, it is reasonable to expect close collaboration and agreed governance between the IT departments at the RAN, DMO and ASC.</p> <p>Evidence of this close collaboration and good practice IT includes:</p> <ul style="list-style-type: none"> • The application landscape aligns to the objectives of the Submarine Enterprise, includes a holistic view of architecture and governance across the CCSP and is documented and current; • A single point of ownership and accountability exists for management and control of the IT landscape; • IT systems and platforms are current and adequately supported by skilled people; • IT governance, standards, processes and procedures are established, utilised and maintained, • Where appropriate, automated interfaces should exist between systems that need to exchange data; • Data is available to support processes and decisions and is accurate, complete and secure; and • A single source of truth exists for performance data and management information.
Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>Deloitte Data Management Framework</i> • <i>Global Reporting Data Warehouse Strategy</i> • <i>Deloitte Enterprise Architecture and Integration frameworks and best practice</i> • <i>Information Technology Infrastructure Library (ITIL)</i>



4.3.3.5. Contracting

Table 9 - Contracting

Definitions of good practice	<p>Good practice contracting is typified by commercial arrangements that successfully drive the achievement of required program outcomes whilst incentivising transparent collaborative working between parties and minimising the management and monitoring burden for both the customer and supplier.</p> <p>Key features of good practice contracting and contract management for the procurement of equipment support services in a single-source environment include:</p> <ul style="list-style-type: none"> • Clearly defined output-based user requirements developed by the informed customer in conjunction with the supplier to drive desired behaviours and contract performance; • A single prime contract focussed on cultural and behavioural changes, performance outcomes and continuous improvement; • Clearly defined contractual KPIs and milestones linked to the payment of incurred costs and target profit to incentivise the delivery of desired outcomes; • A contract of sufficient length to allow the supplier to invest and make a profit whilst driving continuous cost improvement; • Use of Target Cost Incentive Fee (TCIF) pricing arrangements for longer duration, high value contracts where there are opportunities for continuous cost improvement; • Pricing, payment and incentivisation mechanisms structured to facilitate contract flexibility with streamlined change control processes to ensure nimble responses to changing requirements, costs or schedules; • Clearly defined roles and responsibilities for all parties to allow the supplier to meet contractual obligations without ongoing reference to the customer unless specific concessions are sought; • Clearly defined dispute resolution processes based on the principle of resolving disputes at the lowest operational level possible; and • Documented and streamlined contract management processes and reporting to ensure a consistent and rigorous approach to contracts that minimises the burden of administration for both the customer and the supplier.
Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>MP11750 - SM Branch EMP</i> • <i>Ministry of Defence (UK) Acquisition Operating Framework</i> • <i>The Deloitte Procurement 20:20 Framework</i> • <i>UK Royal Dockyard Privatisation Agreements (April 1997)</i> • <i>UK Ministry of Defence Warship Support Modernisation Initiative (2002)</i>



4.3.4 Cost Modelling & Benchmarking

Table 10 - Cost modelling and benchmarking

Definitions of good practice	<p>Good practice in the context of the cost modelling and benchmarking in the CCSP is an accurate, coherent and consistent view of the cost of ownership and process baseline, good financial controls and the ability to source and to utilise meaningful benchmarks, both internally and externally to measure performance, track benefits and identify improvement opportunities.</p> <p>This would include the evidence of:</p> <ul style="list-style-type: none"> • a single point of accountability for management and control of sustainment costs; • cost centres and accounting structures that mirror operational activities; • a mechanism to collate costs from a number of sources; • a clear and consistent rationale for what constitutes different types of costs, such as fixed and variable; • suitable data quality and version control to maintain financial positioning; • documented and clear processes that support timely and accurate amendments to the cost and process baseline; • the existence of supporting systems that allow timely flows of information; • sufficiently granular and accurate data to allow the definition of suitable metrics to compare to relevant benchmarking metrics; and • a robust benefits management process and supporting business case which allows cost performance, including performance related to improvement initiatives, to be tracked against the baseline
Benchmarks and measures utilised	<ul style="list-style-type: none"> • <i>Adaptive Planning Research</i> • <i>JSP462 DGFM Financial Management Policy Manual (January 2007)</i> • <i>DSTO - Australian Defence Risk Management Framework: A Comparative Study, 2005</i> • <i>Department of Finance and Deregulation "Performance Information and Indicators" (October 2010)</i> • <i>UK HM Treasury, "The Orange Book" - Management of Risk - Principles and Concepts (October 2004)</i> • <i>JSP 507 - MOD Guide to Investment Appraisal and Evaluation (December 2006)</i> • <i>SMART Approvals Guidance (SMART 2009)</i> • <i>Deloitte 'Good practice' benchmarking methodology</i> • <i>CIMA - Planning and Forecasting Topic Gateway Series No. 17</i> • <i>Effective Financial Management in the APS</i>



5 Step 3 – Evidence of good practice

5.1 Evidence of good practice underway

It should be recognised that whilst there are a number of serious issues within Collins sustainment that this report seeks to highlight and understand, there are also a great number of activities that are being performed to a level that would meet good practice requirements. This section highlights areas of good practice that are being achieved by the CCSP. The evidence of good practice and remedial actions evidenced as part of the study are discussed below on a project workstream basis.

5.2 Strategy & Management good practice

Within the Strategy and Management project workstream, only one of the hypotheses was proved in its entirety. This relates to the role of ASC's shareholder in effectively supporting sustainment:

- Finance, as the shareholder of ASC supports the program by broadly aligning ASC's corporate objectives with the objectives DMO has placed on ASC and by supporting ASC in its pursuit of business improvement initiatives and improved relations with DMO. In addition to its responsibilities outlined in Government Business Enterprise (GBE) guidelines⁶, Finance plays a role in the stewardship of the CCSP through participation in the Government/ASC Steering and Stakeholder Committees, supporting the development of a 'Whole of Government'⁷, strategy for the Collins Class and providing forums for dispute resolution between Defence and ASC.

Additionally, there were a number of hypothesis that demonstrated elements of good practice whilst not fully passing the test. These are outlined below:

- The principle of tripartite program governance structures, supported by defined processes and information driven analytical approaches to decision making is a positive step in the development of joint working and shared ownership of the CCSP. The need to finalise and further support these structures with the implementation of training and communication activities and the completion and approval of operating instructions has been recognised and work is ongoing.
- The principle of the Integrated Master Schedule (IMS) represents recognition of the benefits of imposing a disciplined approach to program baselines to support program planning and control is evidence of joint ownership of program planning by the RAN, DMO and ASC. Attempts to formalise other program baselines, notably through the MSA-CN10 and ISSC, are ongoing and should support informed decision making and

⁶ Commonwealth Government Business Enterprise: Governance and Oversight Guidelines, October 2011

⁷ Terms of Reference for the Government-ASC Steering Committee and Stakeholder Groups, 24th Feb 2012



planning through a clear understanding of the impact of program trade-offs. We note that there is now an agreed Contract Master Schedule.

- There is recognition of the benefits of a move to a performance based culture and an emphasis on collaboration to successfully deliver program outcomes, as represented by the ISSC.
- Evidence from the Commitment and Culture Survey indicates that leadership within the CCSP (classed as the 1* level and above) is considered by the majority of respondents to be available and supportive to staff.

5.3 Personnel & Organisation good practice

Within the Personnel & Organisation project workstream, there was evidence of some of the hypotheses being proved. These are listed below:

- In general terms, effective personnel policies exist within the CCSP which will form a sound foundation for change. This is indicated by the number of vacant positions, personnel turnover rates and current workforce planning practices in addition to the existence of the policies. According to the data provided there are 1,731 budgeted positions and 1,670 people employed within the CCSP. This amounts to 4.5% of positions being vacant. The RAN has the largest number of vacant positions at 8% however this is still lower than what we consider a sustainable maximum vacancy rate of 10% based on industrial good practice benchmarks. We found that turnover rates at the three participant organisations are below the 12.6% average turnover rate of large Australian organisations. The RAN and DMO have similar turnover rates of around 9% and ASC has a very low rate of around 5%.
- Evidence exists that indicates that the three participant organisations undertake comprehensive workforce planning (the clarification of roles, responsibilities and the alignment of resources to organisational requirements). We would like to see the workforce planning more integrated across the RAN, DMO and ASC to better balance workload with responsibilities. There is evidence of the three participants having common dependencies on particular skill sets, such as Engineers. The current recruitment, retention and workforce planning processes are being used effectively to ensure a sufficient number of personnel across the participant organisations. A clearer definition of the roles of each of the participant organisations will lead to more accurate personnel levels, and subsequently better allocation of these resources to match skill requirements. The study found that personnel policies across the Enterprise are managed to a good practice standard.
- The Commitment and Culture Survey was completed by 665 people involved in sustainment, across the RAN, DMO, Finance and ASC, Joint Logistics Command (JLC), Joint Operations Command (JOC) and Capability Development Group (CDG). The survey results indicate the passion and commitment of the workforce to the success of the



submarine program. Over 90% of respondents support this goal to embrace change. Overall, the results for cultural aspects of collaboration, quality and customer focus indicate that, at an operational level, people take pride in their work and work well together to achieve good outcomes.

5.4 Operations, Maintenance, Upgrades & Support good practice

5.4.1 Operations Planning and Scheduling

Within the Operations, Planning and Scheduling project workstream, whilst none of the hypotheses tests were proved in their entirety, there was one area that did demonstrate elements of good practice whilst not fully passing the test:

- There is a good understanding within ASC of the sustainment objective expressed as “3 in the green”. This is evidenced by dashboard reporting targets, visual management and general verbal consensus. The daily status against this objective is well known across the organisation, although it is not widely understood how the “3 in the green” objective relates to the Australian Submarine Program Office (ASPO) top level objective.

5.4.2 Supply Chain

Within the Supply Chain project workstream there were instances of certain hypotheses being partially proven. The findings are as follows:

- The RAN, DMO, and ASC have separate process documentation covering ordering and procurement processes. It was evident that well defined procurement and ordering documentation provided each organisation with the basis to perform effective ordering and procurement for the CCSP.
 - The DMO Naval Inventory Procurement Office (NIPO) Demand Management Process Guidance describes the processes for which NIPO Inventory Managers are to perform inventory requirements determination and purchasing.
 - ASC processes exist to define procurement activities that ASC undertake to purchase Contract Furnished Equipment (CFE) to support planned and unplanned supply requirements. ASC process documentation covers purchasing activities for request for quotation, tenders, and purchase orders.
 - The RAN Stores Naval Support Responsibilities document describes the roles and responsibilities for Onboard Storemen. These are to manage Onboard Stores and place demands when stores have been exhausted or when additional supplies are required.
- The RAN, DMO, ASC and JLC have all undertaken improvement initiatives to improve ordering and procurement processes. The majority of efforts have been focused on improving the Task Material List (TML) and Shipboard Allowance List (SAL) accuracy to



ensure the correct spares are purchased and are available when required to support maintenance activities.

- The RAN, DMO and ASC all have well documented processes with regard to inventory management. These documents form part of the wider defence policy documents that the Collins Class is required to adhere to. There remains poor performance with regard to inventory management onboard operational submarines.
- The RAN, DMO and ASC have good stock classification processes. ASC has a detailed and well defined stock catalogue and codification process that is able to interface with Defence processes in the event of non-codified stock. A large amount of non-codified inventory does however still exist within the overall sustainment program.
- Recent work by the Directorate of Supply, Support, and Logistics (DSSL) team has been directed at developing information to support the establishment of relevant safe stocking levels and supporting initial procurements via NIPO. This work is still maturing.
- We note also that ASC has embarked on a number of initiatives to improve the performance of the supply chain. There have also been recent changes to the management of the carried on board spares (SAL) which should improve feedback to the supply chain. The DMO has developed a Supply Support Strategic Plan which sets out to reform their part of the supply chain support processes but progress to date has been limited.

5.4.3 Asset Management

Within the Asset Management project workstream, whilst none of the hypotheses were proved in their entirety, there were a number of areas that did demonstrate elements of good practice. These were:

- A Denken Partners report provided some insightful data and information with regard to further analysis of FCD work effectiveness. This highlighted some key statistics as follows:
 - Work readiness, which we understand to mean how much work was planned, has increased from 56% (September 2009) to 85% (June 2011).
 - The efficient use of labour, which we understand to mean how much of people's time is booked to planned work, has increased from 47% (September 2009) to 75% (March 2011).
 - ASC has already established an internal improvement program to improve effectiveness. Currently this is running at approximately 40% with the intent to lift it to 95%. This approach to self-improvement on the part of ASC is commendable and a tangible indicator of proactive behaviour, albeit it shows improvement from a low baseline.
- Evidence was found of good engineering reports from ASC and of root cause analysis being carried out by DSME and Defence Science and Technology Organisation (DSTO) (in



line with Rizzo recommendations), an example being the HMAS WALLER battery problem report which consisted of detailed analysis resulting in 24 recommendations being made. DSMS has also commenced a process to carry out further root cause analysis in WA.

5.4.4 Information Technology

Within the IT project workstream, whilst none of the hypotheses were proved in their entirety, there were a number of areas that did demonstrate elements of good practice. These were:

- The current inventory of applications within the wider sustainment program appears to meet all major functional requirements. ASC has a seven year plan for each key application it supports, including SIMS. This roadmap includes plans for upgrades, replacements and consolidation.
- Individually, each organisation has architecture plans and roadmaps with regard to their holistic IT architecture.
- ASC has established a program of initiatives, as evidenced by the ASC Application Architecture Assessment, to drive the alignment of processes in ASC West and ASC North.
- Evidence of individual systems experts with detailed knowledge related to particular applications.
- Engineering and Maintenance Management Plans, and documentation on the Defence Restricted Network provided by DMO outline the processes for managing the configuration of technical and engineering data.
- ASC provided schematics for information architecture and outlined the work underway in this area. Additionally documentation was provided on the recent proposals to establish a data governance subcommittee to the Enterprise Architecture Working Group to define and establish a formal policy and framework for data governance.
- ASC has begun to address issues relating to integration of data and systems through initiatives to implement a Service Oriented Architecture and the introduction of an Enterprise Service Bus approach to integration.

5.4.5 Contracting

Within the Contracting project workstream there were instances of certain hypotheses being partially proven. The evidence that supported these findings is as follows:

- The ISSC is a comprehensive new contractual approach that will begin to embed a performance based culture between DMO and ASC. It replaced the Through-Life Support Agreement (TLSA) which was no longer a suitable commercial vehicle in which to manage sustainment in the current environment. The ISSC brings:



- KPIs and health indicators.
- Performance based profit/pay for ASC.
- Longer term funding allowing ASC to negotiate better terms with its supply chain, ultimately flowing these through to DMO.
- The ISSC transfers the provision of all platform specific spares and repairables to ASC. This includes warehousing and distribution. The ISSC performance based contracting strategy with its KPI linkage to loss of profit should provide a powerful incentive for a more accurate Bill of Material (BoM), significantly improved availability of spares for defects and improved supplier performance to better manage maintenance periods to schedule.
- ASC follows robust processes for contract management of its strategic contracts including rationalisation. In addition, it is currently undergoing a comprehensive contract rationalisation activity.

5.5 Cost Modelling & Benchmarking good practice

Within the cost modelling and benchmarking project workstream, whilst none of the hypotheses were proved in their entirety, one did demonstrate elements of good practice.

- The CCSP faced a significant underfunding issue over a ten year period. DMO has undertaken an exercise to understand and quantify requirements against previously allocated budgets and gained a clear understanding of which elements of the program requirements, as defined in the MSA-CN10, were not funded. DMO has recently been granted approval for funding for the entire amount under funded against MSA-CN10 plans through the Federal Budget allocations.
- Government-to-Government discussions were initiated to capture operational and financial benchmark data for on-going performance management.



6 Step 4 – Gaps identified and quantification of impacts

Gaps were identified across all of the project areas. Of the 67 level three hypotheses, 58 were disproven, four were partially proven and five were proven. Consequently, the study finds that the availability of the Collins Class is unlikely to consistently achieve required availability levels without changes being made to the way resources are deployed across the sustainment program.

A summary of the gaps and impacts by project workstream is provided below. The detailed evidence to support the gap analysis findings is provided in Section 7.

6.1 Methodology to quantify impacts

A critical step in the analysis is to understand the potential impact of gaps in capability. The study has assessed and articulated at a high level the potential impact of gaps in terms of cost and MRDs to allow prioritisation of the gaps to take place after all workstreams had completed their assessment. This information was important in the development of final recommendations.

To assess the impact of gaps a scoring matrix was developed to categorise cost and MRD levels of impact.

Table 11 – Impact Scoring Matrix

	Impact on MRDs	Impact on \$
High	>5% of Benchmark	\$50m +
Medium	1%<5% of Benchmark	\$10m - \$49m
Low	<1% of Benchmark	Up to \$10m

The assessment was completed for all gaps identified by the workstreams in order to identify which of the gaps are most important to address if availability is to be improved.

In conducting the analysis, greater weight was given to an MRD reduction than cost as the overarching problems experienced by the CCSP result in unavailability of submarines and therefore a failure to meet MRD targets.

Each gap was also categorised as Deliver, Enable, or Sustain. This perspective assisted the study to prioritise gaps based on the functional sequence in which gaps need to be addressed in order to deliver long term results. Initiatives to close ‘Enable’ gaps are required before those related to ‘Deliver’ gaps can achieve their maximum benefit. The initiatives which address the ‘Sustain’ gaps will need to be put in place to ensure the benefits of transformation are not lost in the longer term.

- **Deliver** – This relates to the gaps in the hypotheses tree that if closed, would directly deliver benefit in terms of MRD and/or costs.



- **Enable** – This relates to gaps that if closed would enable resolution of the ‘Deliver’ gaps to achieve maximum benefit.
- **Sustain** – This relates to gaps that if closed would enable the improvements to be sustained over time.

6.2 Strategy and Management

Figure 20 represents the findings of the Strategy and Management workstream. The study found that 13 of the 14 level three hypotheses were disproven (shown under the “Status” column), indicating requirements for Collins Class were unclear and that governance processes were not operating effectively.

The proven hypothesis related to ASC’s shareholder effectively supporting the Collins sustainment program. The evidence showed that key elements of Finance’s role are aligned to wider program objectives and give guidance to ASC on how to improve relationships with DMO. However, there is scope for the shareholder to play a more direct role in the stewardship of the CCSP although it is recognised that the relatively new steering and stakeholder committees provide opportunity to do this.

Figure 20 - Strategy and Management Impact Analysis Summary

Level 1	Level 2	Level 3	Status	Impact		
				Deliver	Enable	Sustain
Strategy and Management The strategy and management of the current Collins sustainment business (Navy, DMO, ASC) supports the submarine requirement Key (Status) Hypothesis disproven: 13 Hypothesis partially proven: 0 Hypothesis proven: 1 Key (Impact) High impact on MRDs and costs: 11 High impact on costs and medium impact on MRDs, or vice versa: 0 Medium impact on MRDs and/or costs: 0 Low impact on MRDs and/or costs: 2 N/A: 1	1.1	An optimal Collins sustainment operating model can be defined, which encourages all participants to deliver improved levels of readiness, availability and reliability of Collins class fleet	1.1.1 Disproven			
	1.2	Defence requirements of the Collins submarine fleet are clearly defined and promulgated	1.2.1 Disproven			
	1.3	The sustainment of the Collins submarine fleet meets Defence requirements of availability, readiness and reliability	1.3.1 Disproven		N/A	
	1.4	Operations, maintenance, upgrade and support strategies exist and are used by all Collins sustainment business participants and partners (Navy, JOC, CDG, DMO, Industry - PMB, ASC, etc)	1.4.1 Disproven			
			1.4.2 Disproven			
	1.5	Leadership exhibits the right core attributes to drive delivery against core objectives of the sustainment program	1.5.1 Disproven			
			1.5.2 Disproven			
			1.5.3 Disproven			
	1.6	Collins sustainment business governance models and processes support effective strategy execution	1.6.1 Disproven			
			1.6.2 Disproven			
			1.6.3 Disproven			
			1.6.4 Disproven			
			1.6.5 Proven			
			1.6.6 Disproven			



Figure 20 presents that 11 of the 14 gaps in the Strategy and Management workstream were deemed to have a high impact. Of those the main drivers were the lack of an unclassified requirement that can be promulgated, senior leadership not having the right skills to drive delivery against core objectives nor the resources at their disposal to set the strategic direction, and governance structures and processes not being embedded to support effective strategy execution.

6.3 Personnel and Organisation

Figure 21 represents the findings of the Personnel and Organisation workstream. The study found that of the ten level three hypotheses tested, seven were disproven and three were proven. This indicated that whilst the personnel planning and the recruitment and retention of staff was found to be of the required standard, gaps were evident compared to best practice in the area of a performance based ethos, change management and the level to which roles and responsibilities are appropriately defined, understood and supported.

Of the seven hypotheses disproven, all were deemed to have a high impact on MRDs and cost. This is because without a performance based ethos or appropriately defined, understood and supported roles and responsibilities it is difficult to drive the right behaviours over time and hold people accountable for outcomes. The ability to deliver change could be improved through more overt support by Senior Leadership. Without this support, initiatives are unlikely to be embedded in the long term and intended benefits will not be fully realised.



Figure 21 - Personnel and Organisation Impact Analysis Summary



6.4 Operations, Maintenance, Support and Upgrade

Figure 22 presents the findings of the Operations, Maintenance, Support and Upgrade project workstreams, indicating that of the 27 level three hypotheses tested, 23 were disproven and four were partly proven. This highlighted gaps associated with planning and scheduling of maintenance, asset management, supplier compliance, supply chain planning and distribution practices and the ability of reporting and management information to support decision making.

Of the 27 gaps identified, 18 were deemed to be high impact. These were driven by an unachievable IMS (based on current submarine reliability and maintenance plans), the lack of an efficient through life support plan, sub-optimal asset management procedures, non-performance based contracts including the TLSA and MSA, the low level of data integrity impacting decision making and the low level of systems integration to effectively support Collins sustainment program objectives.



Figure 22 - Operations Impact Analysis Summary

Level 1	Level 2	Level 3	Status	Impact		
				Deliver	Enable	Sustain
Operations, Maintenance, Upgrades and Support Operations, maintenance, upgrade and support processes enable the efficient and effective execution of sustainment objectives and are carried out by the appropriate group, resulting in required availability, readiness and reliability of the Collins Class fleet	3.1	Submarines are being planned, scheduled and operated by the Collins Program in an appropriate manner to allow sustainment objectives to be achieved	3.1.1 Disproven			
			3.1.2 Disproven			
			3.1.3 Partially proven			
			3.1.4 Partially proven			
			3.1.5 Disproven			
	3.2	A Collins Through Life Support Plan exists, drives alignment and achievement of operations and sustainment requirements and has a suitable timeframe to optimise the economic life of the fleet	3.2.1 Disproven			
			3.2.2 Disproven			
			3.2.3 Disproven			
			3.2.4 Disproven			
	3.3	Asset management, maintenance and enhancement plans/processes for the Collins class submarines support the efficient and effective achievement of sustainment objectives	3.3.1 Disproven			
			3.3.2 Disproven			
			3.3.3 Disproven			
			3.3.4 Disproven			
			3.3.5 Disproven			
			3.3.6 Disproven	N/A	N/A	N/A
	3.4	Sourcing of new performance based contracts and the management of existing contracts is used to efficiently and effectively support the execution of sustainment objectives	3.4.1 Disproven			
			3.4.2 Disproven			
	3.5	Supply chain management, including manufacturers, suppliers, distributors, procurement, ordering and inventory management, involves engaging the right industry partners to efficiently and effectively support the execution of sustainment objectives	3.5.1 Partially proven			
			3.5.2 Disproven			
			3.5.3 Disproven			
			3.5.4 Disproven			
			3.5.5 Disproven			
	3.6	Information technology is used to effectively support the execution of sustainment, governance and regulatory objectives	3.6.1 Disproven			
			3.6.2 Disproven			
			3.6.3 Disproven			
			3.6.4 Disproven			
			3.6.5 Partially proven			

Key

	TOTAL
Disproven	23
Partially proven	4
Proven	0

Key (Impact)

	TOTAL
High impact on MRDs and costs	17
High impact on costs and medium impact on MRDs, or vice versa	2
Medium impact on MRDs and/or costs	3
Low impact on MRDs and/or costs	4
N/A	1

Of the other gaps two had a high impact on MRDs and medium impact on cost, three have a medium impact on MRDs and cost and four have a low impact on MRDs and cost.



7 Step 5 – Key issues derived and root causes

This section sets out the key issues, provides details by project of the underpinning evidence and identifies a series of root causes that drive poor performance. It is based on the analysis undertaken during Phase 2. Some actions have already been initiated to address some of the issues identified. However insufficient time has passed to enable a recasting of the analysis.

7.1 Key issues

The project findings are categorised into 20 key issues as summarised in Table 12.

Table 12 - Table of Key Issues

Workstream		Key issue
Strategy & Management		Availability targets are unrealistic and unachievable in the short to medium term
		Lack of clear and coordinated strategic direction for the CCSP
		Participants are not acting as a Submarine Enterprise
People & Organisation		KPIs are not appropriately used to drive improved performance across the CCSP
		Lack of clear understanding of organisation roles, responsibilities and accountabilities
		Key skills shortages in critical strategic and management areas
		Leadership not driving change effectively
Operations, Maintenance, Upgrades & Support	Planning	Operational requirements are not used effectively by the CCSP
		No through life capability management plan exists
		The IMS is not driving the correct planning behaviours
	Supply Chain	Inefficient supply chain
		Ineffective planning and forecasting for maintenance
	Asset Management	Poor reliability performance
		Shortfalls in processing submarine improvement work
		RAN not fulfilling obligations as owner operators
		Inefficient preventative maintenance
	IT	Lack of an enterprise wide IT strategy
	Contracting	Current contractual arrangements are not founded on a performance basis
Cost Modelling and Benchmarking		No coherent cost baseline for sustainment
		Misalignment of the budgeting cycle and the planning horizon and challenges in linking expenditure to requirements



7.2.1 Strategy and Management

Hypothesis: “The strategy and management of the current Collins Class Sustainment Program (The RAN, DMO and ASC) supports the submarine requirement.”

Areas of examination:

- The definition and understanding of submarine sustainment and readiness requirements;
- The strategies and initiatives designed to drive and support the delivery of sustainment outcomes;
- The governance arrangements used to direct and control the program; and
- The operating model of the submarine program and how its participants interact to deliver sustainment outcomes.

Key Issues:

- 1) Availability targets are unrealistic and unachievable in the short to medium term.
- 2) Lack of clear and coordinated strategic direction for the CCSP.
- 3) Participants are not acting as a Submarine Enterprise.

Availability targets are unrealistic and unachievable in the short to medium term

The current performance of the CCSP and the challenges associated with the forward availability targets are explained in Section 3 ‘Current Performance’. To avoid repetition, the evidence to support this finding has not been included in this section.

Lack of clear and coordinated strategic direction for the CCSP

A successful program should be supported by a clear program vision with associated objectives and a sound and comprehensive strategy for delivery against those objectives. The program vision should be simply expressed capturing the top-level purpose of the sustainment program with a transparent flow down to realistic and achievable objectives shared and accepted by all participants. The strategy should outline how resources will be allocated to achieve objectives, have a single owner but be jointly developed by participants, and set a direction that aligns individual participant strategies.

There is evidence of a shared vision for the CCSP, notably in the ASPO vision and mission statements: the ASPO will ‘meet combined expectations at all times’ and will ‘work to



deliver the required capability safely and at an affordable price'⁸. There is little evidence however of a single program-wide strategy to drive the realisation of this vision. The closest equivalent is the IMS but this is fundamentally more a top down derived requirement rather than a bottom up tool that can be used to underpin strategic decision making. The IMS does not outline broader sustainment program objectives beyond availability targets, set out how resources will be allocated to achieve these objectives or analyse risks and constraints around the delivery of objectives. Individual participant strategies, where they exist, are immature and not aligned.

Senior leaders responsible for strategy development are constrained by the need to trade off strategic planning with business as usual. Commander Submarine Force, under Fleet Command, is responsible for exercising operational command of the submarine force, but is also responsible for managing⁹ the MSA between the RAN and DMO. What makes balancing these two tasks difficult is the number of legacy issues, remedial and upgrade works including diesel engines, generators, main motors and combat system. These have consumed resources and undermined program stabilisation and sustainment strategy development.

Strategy has been developed piecemeal, with higher level objectives embodied in working-level documents that are poorly or inconsistently communicated. There is a lack of an enterprise strategy, with a large number of immature working level documents also containing a strategy dimension.

The lack of top-down strategic direction creates opportunities for ambiguity in downstream management and operational targets. This influences how key decision makers make trade-off decisions (on work scope and quality, timelines, resources and costs for example) and how they define success in keeping a set number of submarines for operational use at best Value for Money.

Participants are not acting as a Submarine Enterprise

Although the RAN, DMO, Finance and ASC have made progress towards joint working, notably through the Team Collins reform, formation of the Program Boards, ASPO and the partnering principles of the ISSC, they are not currently operating as a successful Submarine Enterprise. In a coherent and successful Submarine Enterprise we would expect to see: a program-wide view of decision making; open and honest communications; a shared vision; defined responsibilities; transparent and shared objectives; a coordinated approach to the management and direction of program improvement; commercial constructs designed to facilitate collaborative cultures; and adequately resourced and supported business-wide

⁸ Source: 'Team Collins' ASPO document signed by all participants in June 2010

⁹ Source: Fleet Commander directive to Commander Submarines 2012 – Command Level Responsibility c) *Manage the Submarine Force related Materiel Sustainment Agreements and Materiel Acquisition Agreements in conjunction with the COLLINS Systems Program Office*



forums at suitable levels to enable collaboration to permeate through all tiers of participant organisations. The Submarine Enterprise should of necessity be established by its constituent organisations as the precise form and methods of operation will be unique to the combination of the RAN, DMO, Finance and ASC.

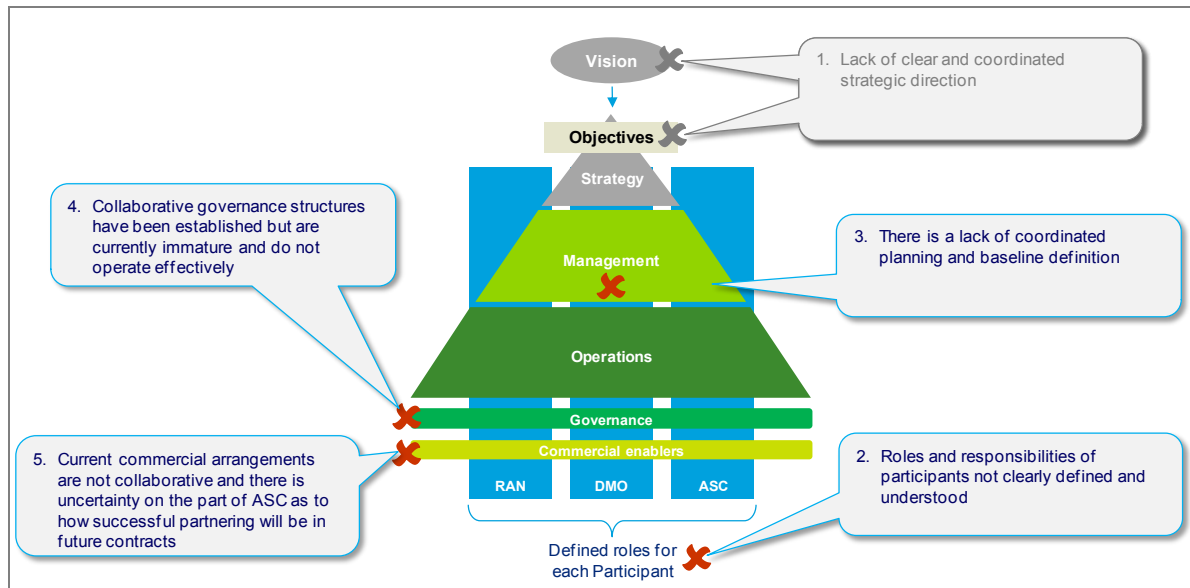
As illustrated in Figure 23 the key issues currently preventing the CCSP participants from acting as a successful Submarine Enterprise are:

- *Lack of clear and coordinated strategic direction* – discussed in key issue 2 above.
- *Roles and responsibilities of participants are not clearly defined and understood* - demonstrated by poorly documented or understood roles and responsibilities and the duplication of activities between DMO and ASC as evidenced through the Personnel and Organisation analysis set out in Section 7.2.2 of this report.
- *Lack of coordinated planning and baseline definition* – demonstrated by lack of defined program plans, consistent across participants and constructed to deliver the Submarine Enterprise objectives and lack of central oversight or any enterprise-wide portfolio approach to managing all initiatives within the CCSP.
- *Collaborative governance structures have been established but are currently immature and do not operate effectively* - although the principle behind the structures represents good practice and a positive step in the right direction, the evidence suggests that the governance structures and processes are still relatively immature and are not adequately supported. For example the program boards (Project Control Board, Sustainment Control Board and Program Review Board) have not established a regular drumbeat of meetings, program baselines (with the exception of schedule) have not been formally established and endorsed by all participants, and program level risk and issue management frameworks are in draft form with risks not being managed and mitigated effectively¹⁰.
- *Current commercial arrangements are not collaborative* - the former TLSA between DMO and ASC was a cost plus contract funded on a one year basis and, as a result, was not a commercial structure conducive to fostering collaboration between program participants. The ISSC was developed as a longer-term performance based contract with partnering principles to incentivise and underpin submarine sustainment program collaboration. If implemented successfully, the ISSC should constitute a commercial enabler of improved relationships between the RAN, DMO and ASC, but there is uncertainty on the part of ASC as to how successful the terms of the ISSC will be in engendering successful partnering. Issues associated with the ISSC are explored in more detail in the 'Operations, Maintenance, Upgrade and Support' Section 7.2.3.

¹⁰ For example 40% of the risks identified in the Feb 2010 report had no associated risk mitigation activity assigned to them. Of the 40% of risks with no mitigation, 72% were rated as likely or almost certain to occur and 83% were rated as having a major to severe impact.



Figure 23 - Issues with the current submarine operating model preventing participants from acting as a successful Submarine Enterprise



A successful enterprise requires structural and cultural enablers of collaboration horizontally across participants, and vertically through program layers. The layers range from the development of program strategy to the management of program elements and the day-to-day operation of program activities. In addition to the issues summarised above, informed and timely joint decision making is undermined by a failure to adequately support the Team Collins IPT and the governance boards themselves, driving the ineffective resolution of issues and actions. Action items on the Team Collins IPT log were open for an average of 573 days and were an average of 369 days late in being resolved¹¹. The lack of responsiveness is an ongoing issue, evidenced by 65% of actions from an IMS review meeting in November 2011 being incomplete by the target deadlines.

There is a lack of clarity over governance processes and low tolerances on delegated authority (the Sustainment Control Board Chair cannot authorise scope change decisions with a cost impact greater than \$70k¹²). This drives decision making up to strategic level management undermining the responsiveness of decision making and drives informal decision making at lower operational levels to avoid schedule impacts from delays. Examples of informal decision making and confused understanding of the decision making process include initiating capability upgrades to be included in the HMAS DECHAINEUX Intermediate Docking (ID) and the decision outside of the assigned process to take HMAS FARNCOMB into Intermediate Maintenance Availability (IMAV) two days late with the officer concerned indicating the issue was due to the continued 'use of a draft governance

¹¹ Source: Collins Program IPT Action Log, March 2012

¹² As stipulated in the 'delegations' section of the 'Collins Submarine Program: Business Rules and Standard Operating Procedures for the Management of the ASPO Governance Framework'



framework¹³. In both cases decisions were formally agreed through the governance framework after the original decision had been made.

Impacts:

- The absence of a successful enterprise construct drives sub-optimal outcomes for sustainment, both in terms of value for money and the delivery of submarine availability and capability. These impacts include:
 - **Sub-optimal decision making**, with decisions undermined by a lack of information or by program participants acting in their individual best interests rather than the program as a whole;
 - **Sub-optimal trade-offs between program elements**, including schedule, scope and cost, because of a lack of shared plans and baselines and a clear articulation of jointly agreed strategic priorities;
 - **Wasted or sub-optimal use of resources** due to siloed working and overlapping or duplicated activities across participants;
 - **The diversion of resources to short term priorities** due to a lack of coordinated long-term planning and effective collaborative program control; and
 - **Difficulty in delivering program improvement**, due to a lack of a portfolio approach to initiatives management and robust benefits management practices.

7.2.2 Personnel & Organisation

Hypothesis tested: “The operating model of the current Collins Class Sustainment Program and the personnel policies support the Collins Class capability requirements.”

This study has defined the CCSP using a value chain that describes the key activities to deliver sustainment effectively. There are 22 key steps in the value chain producing specific outputs that add to delivery of sustained capability. These can be grouped into seven broad categories and are described in Table 13 and presented in Figure 24.

Table 13 - Value chain categories

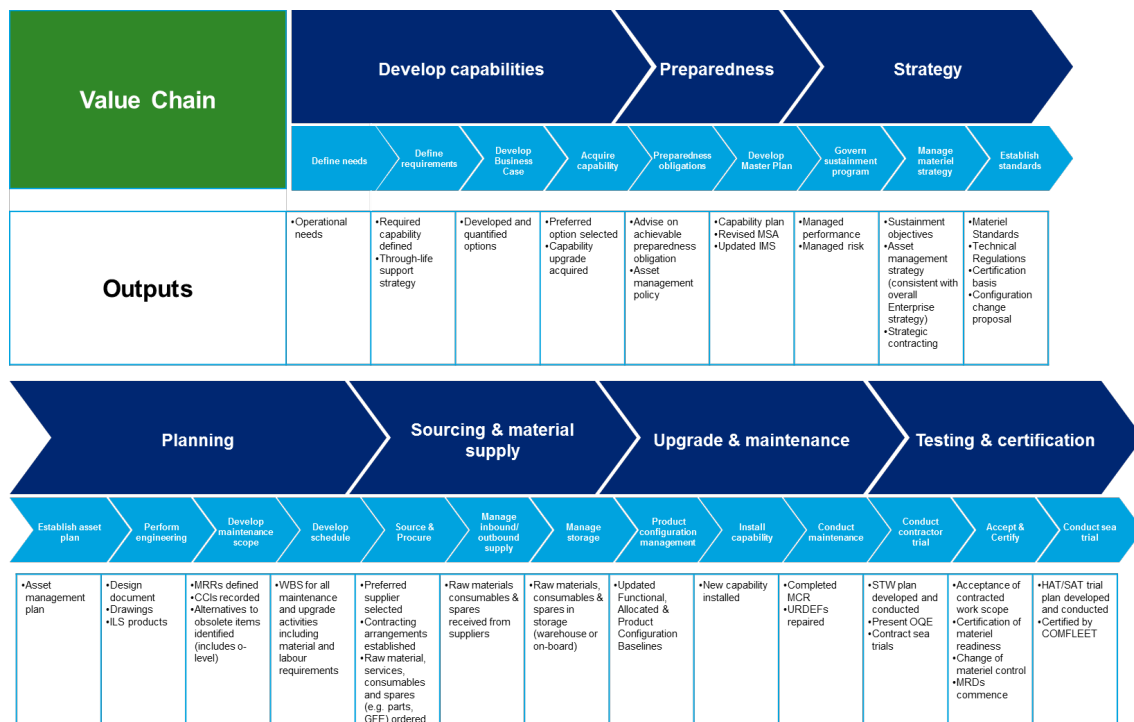
Category	Description of key value adding steps within category
Develop capabilities	Contains activities reflecting the addition of new capability to upgrade existing or replace obsolete assets that deliver capability to RAN
Preparedness	Contains activities that translate government policy and the operational needs of Head Quarters Joint Operations

¹³ Email exchange between the RAN and DMO relating to late entry of HMAS FARNCOMB into IMAV in November 2011 with a consequential loss of MRD, starting 5th October 2011



Category	Description of key value adding steps within category
	Command (HQ JOC) into clear requirements for the sustainment business, including Master Planning
Strategy	Contains activities that set the direction and goals of the sustainment business and manage performance to meet RAN's, and ultimately the Government's, requirements
Planning	Contains activities that consider operational requirements and sustainment strategies to deliver detailed scheduling plans and for sustainment activities specifically focussed on maintenance
Sourcing & materiel supply	Contains activities relating to the establishment and management of supplies through to provision of assigned parts and services to complete sustainment activities
Upgrade & maintenance	Contains the key activities that ultimately upkeep, update and upgrade through installation of upgrades and conducting maintenance on existing assets
Testing & certification	Contains the final activities in the value chain that ensure the materiel contribution to capability are fit for use by the RAN and HQ JOC

Figure 24 - Good practice value chain



The Personnel & Organisation Project contained three separate and distinct workstreams:

- **Enterprise Operating Model** which examined the current structure of the CCSP and how the operating processes support the objectives of the program. This involved an analysis of the roles and responsibilities of the RAN, DMO and ASC as the participants in the Submarine Enterprise as well as the key individuals within these organisations;
- **Personnel Policies** across the RAN, DMO and ASC and the role these policies play in ensuring that suitably qualified and experienced people exist to support the objectives of the CCSP were examined; and
- **Culture, Performance and Change** examined the conditions within the participant organisations that relate to organisational culture, performance ethos and change management.

Areas of examination:

- The end-to-end business of sustaining the Collins Class can be broken into seven high level functions containing 22 activities. We call this the Submarine Enterprise 'value chain' and we used this to focus on clarifying participant organisations roles and responsibilities within sustainment;
- Three key processes focusing on the roles and responsibilities of individual positions. These three processes were MSA-CN10 development, FCD scoping, and onboard inventory management. These processes were chosen as they address tactical activities across the participant organisations, have an impact on sustainment program performance and are complex in nature;
- Key personnel policies, such as recruitment, retention and workforce planning across the RAN, DMO and ASC; and
- Data from the Commitment and Culture Survey, embracing organisational culture, performance ethos and change management.

Key issues:

- 1) KPIs are not appropriately used to drive improved performance across the CCSP.
- 2) Lack of clear understanding of organisation roles, responsibilities and accountabilities.
- 3) Key skills shortages in critical strategic and management areas.
- 4) Leadership not driving change effectively.

1) KPIs are not appropriately used to drive improved performance across the CCSP

The evidence indicated that KPIs currently exist across the CCSP and the KPIs defined in the ISSC are a positive step in moving towards a performance based environment. However, despite the existence of KPIs, improvements in the business are not being delivered in a timely manner. For example there are numerous supply chain KPIs captured each month but



little or no improvement has been made in areas such as supplier conforming products or on time supplier delivery¹⁴.

At the strategic level within an enterprise, we would expect to see a holistic and balanced set of KPIs and associated targets. These indicators would help evaluate the performance from different perspectives and should be aligned to the overall operational requirement determined by Government. Strategic KPIs should include indicators such as those shown in Table 14. Once established, strategic KPIs need to be translated into lower level KPIs at the participant level and at an individual level which feed back into the relevant strategic KPI.

Table 14 - Examples of KPIs and associated targets

Category	Indicator	Target (for financial year)
Financial	Corporate cost	<i>100% budget compliance</i>
Operational	Availability Reliability	<i>Level to which Government operational requirements are being met</i>
Safety	Incident rates	<i>Zero incidents</i>
People	Employee retention	<i>8% staff turnover</i>
Corporate responsibility	Environmental compliance	<i>Zero compliance breaches</i>

We found no evidence of KPIs at an enterprise level and no evidence of a consistent set of KPIs in positional descriptions of individuals. The lack of these strategic KPIs makes it difficult to drive performance of an effective sustainment program because:

- Strategic decision making is difficult when there is not a balanced and overarching set of performance targets;
- Operational level KPIs need to align to targets and cannot be established in this form without the strategic level KPIs being defined; and
- KPIs for individuals cannot be derived from the operational KPIs.

2) Lack of clear understanding of organisational roles, responsibilities and accountabilities

In a well performing enterprise we would expect to see an Informed Customer, Intelligent Buyer and Supportive Industry. In the context of the Collins Class we would expect to find:

- The RAN as the owner and operator of the Collins Class should fulfil the role of the 'informed customer' (this includes the role of the 'Capability Manager').

¹⁴ Period analysed was March 2011 to February 2012



- DMO should perform the role of an ‘intelligent buyer’ in support of the informed customer. Clarity of this role is essential for the successful execution of the ISSC.
- ASC is the main contractor for sustainment of the Collins Class and under the ISSC will fulfil the role of platform systems integrator. Therefore ASC and other industry partners and their suppliers perform the ‘supportive industry’ role.

In addition to the above roles, across all activities in the value chain we would expect to see:

- A single accountable owner with no overlap in accountability;
- One participant organisation responsible per activity with clearly defined support roles; and
- KPIs to measure performance at hand-off points.

Analysis found a lack of clarity in organisational roles, responsibilities and accountabilities across the CCSP.

A lack of clarity of roles and responsibilities was found with the MSA and associated processes. In a number of interviews conducted across the RAN and DMO there was no consistent view of the organisation responsible for the activity or the individual accountable. The MSA should be the responsibility of the RAN as the Informed Customer who is charged with defining the requirements in the MSA and monitoring and managing the DMO’s performance in fulfilling its obligations. Previously the RAN’s involvement in the development and approval of the document has been limited. This study acknowledges that steps have been taken to address this issue. It is also evident the DMO needs to do more to understand and recognise the RAN’s role as customer, owner and operator.

The RAN, DMO and ASC all indicated that they were responsible for managing the materiel strategy, but there is not a clear singular responsible or accountable organisation. However, as the Intelligent Buyer, the DMO should have lead responsibility for developing this materiel strategy, consistent with an overall enterprise strategy. As part of this responsibility, the DMO should define the sustainment objectives, develop and execute a materiel strategy (asset management strategy) and coordinate the execution and communication across the enterprise.

As a result of work completed in Phase 3 to analyse the current roles, responsibilities and accountabilities across the value chain, there remained ambiguity and potential duplication for the primary responsibility for five of the 22 value chain activities. The degree of duplication reduced during Phase 3 when the analysis expanded the task to distinguish between responsibilities for doing work compared with other supporting roles. This analysis demonstrates that the roles and responsibilities are not fully understood or defined relative to good practice.

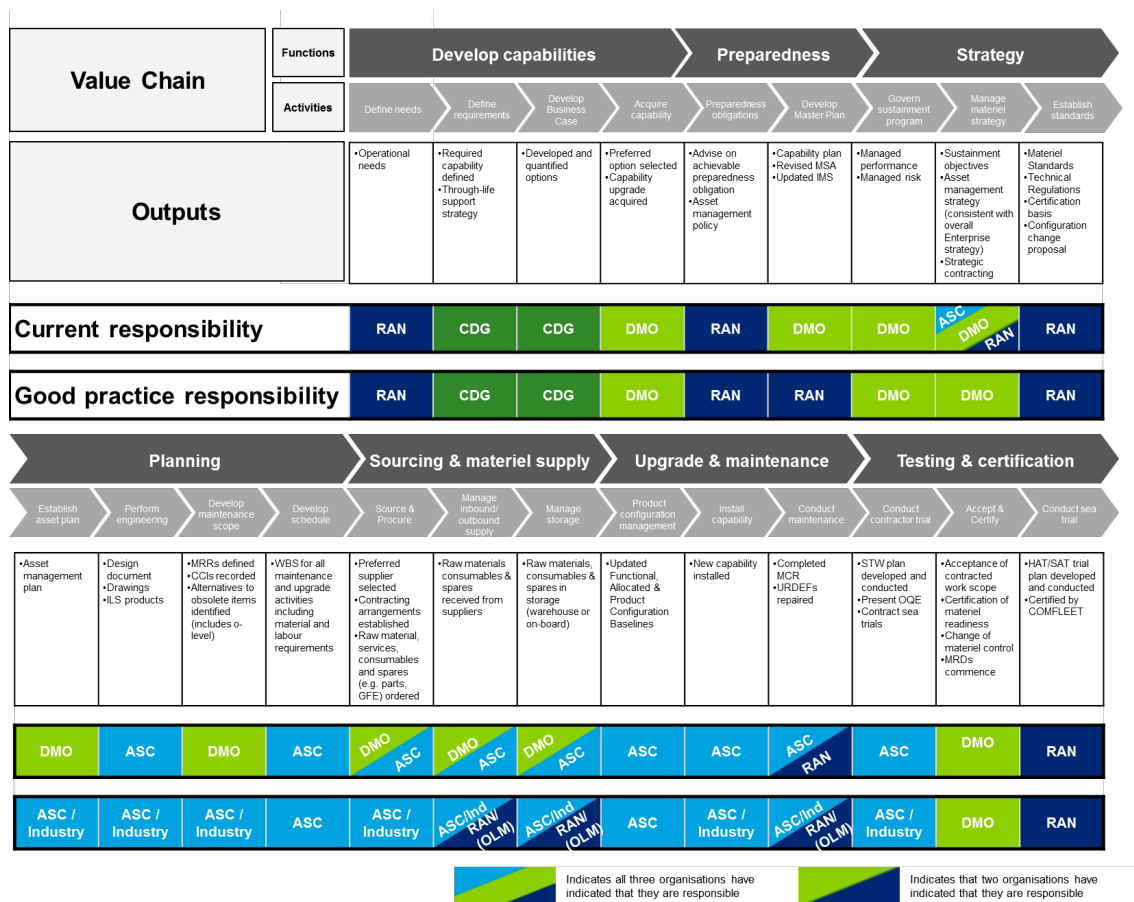
Duplication is particularly prevalent between the DMO and ASC. The DMO has indicated it is currently responsible for 10 activities in the value chain. In line with good practice, the DMO should have primary responsibility for acquiring the materiel component of capability,



governing the sustainment program, managing the materiel strategy and accepting and certifying the accepted work scope from key industry partners (including ASC). The DMO's current high involvement in the execution of planning, supply and upgrade and maintenance functions instead of providing a support role undermines its ability to effectively execute its primary role as the 'intelligent buyer' under the ISSC.

If all roles and responsibilities were aligned with good practice, the RAN would have primary responsibility for eight value chain activities, the DMO four and the ASC eleven. Current responsibilities have been compared against good practice responsibilities along the value chain as illustrated in Figure 25.

Figure 25 - Submarine Enterprise value chain with current and good practice participant responsibilities



Analysis of the FCD scoping process and on board inventory management process was undertaken to further examine the understanding across the CCSP roles and responsibilities. In terms of FCD scoping accountabilities and decision making we found that, in order to make appropriately informed decisions, individuals in the DMO chain of command engage the RAN and ASC stakeholders through the Sustainment Control Board (SCB) and the Program Review Board (PRB). In reality the SCB and PRB are not yet functioning effectively



due to low tolerances on delegation levels and decision making processes that have not yet been embedded.

On board inventory management is not performed effectively due in part to constraints in the way the Commanding Officer (CO) can exercise authority. The current process shows that the recording of inventory usage at sea is a shared responsibility between the Stores Naval Submariner (SNSM) and the Ship's Logistic Inventory Management System Controller (SLIC), who is part of Fleet Logistics Support Element (FLSE) ashore. However, the SLIC does not have a formal reporting line to the CO. Therefore the CO has no authority to hold the SLIC to account for his role in the onboard inventory management process¹⁵.

It was also found that governance framework roles and responsibilities and the escalation of decisions between Boards and IPTs are still evolving. This is creating confusion around roles and responsibilities and the operation of the framework. This is evident through examples where the RAN has made submarine schedule decisions, with an impact on MRDs, outside of the governance framework due to a lack of understanding of the process. There has also been an instance where senior program personnel have been 'not sure' of Sustainment Control Board (SCB) delegations¹⁶.

All of these examples indicated to varying degrees the lack of clarity of roles and responsibilities and some duplication of tasks. There is a clear and pressing need to redefine the roles of the RAN, DMO and ASC, and to redefine and clarify the roles, responsibilities, accountabilities of key individuals across some of the key operational processes. Effective mechanisms such as governance will also need to be enhanced to support the execution of roles and responsibilities.

3) Key skills shortages in critical strategic and management areas

Based on the good practice roles in an enterprise, the key skills that would be expected are contained in Table 15.

¹⁵ According to information provided in interviews with representatives from the RAN and the RAN SMCIP 16 April and 23 April 2012

¹⁶ Source: Collins Submarine Program: Submarine Program Controls, Jan 2012 and email exchange between Director Program Controls and Principal Naval Representative WA



Table 15 - Key skills for each participant organisation

Good practice role	Participants	Key skills
Informed Customer and Owner and Operator	<i>RAN</i>	<ul style="list-style-type: none"> • Maintenance policy management • On board maintenance • Submarine operations • Strategic planning • Cost management
Supportive Industry	<i>ASC</i>	<ul style="list-style-type: none"> • Maintenance • In-service engineering • Strategic sourcing • Scheduling • Supply chain management
Intelligent Buyer	<i>DMO</i>	<ul style="list-style-type: none"> • Strategic contracting • Acquisition • Procurement of sustainment services
All	<i>RAN, DMO, ASC</i>	<ul style="list-style-type: none"> • Submarine domain knowledge • Financial management • Human resource management • Project and program management • Technical regulation • Requirements management

Based on the finding in Phase 1 that submarine domain knowledge is thinly spread at senior levels, we identified the key decision-making roles requiring submarine domain knowledge expertise.

Due to demographics and career progression it is not possible to have high levels of submarine experience in all the key decision-making roles. It will therefore be necessary to manage appointments in such a way as to ensure that decision-makers can always benefit from access to an adequate level of submarine knowledge. We have not identified an explicit mechanism for this.

Phase 1 raised concerns about the reducing experience and number of qualified submariners. In Phase 2 and 3 we found the RAN is addressing these challenges in training and qualifying efficient submarine crews and their experience levels. Additionally, a fourth crew will be established by December 2012 which will greatly assist in increasing experience levels.

In terms of the other key skill domains we found a number of examples where skills are not being applied appropriately including:

- The RAN strategic planning skills not being appropriately applied to the management of the CCSP. As indicated in our 'good practice' sustainment value chain, MSA development should be driven by the RAN. In reality, the RAN's involvement in the



development and approval of the document is limited. The primary reason given for the RAN's limited involvement is a lack of resources and a lack of knowledge on how to write and manage such an Agreement. There is currently no training program to educate people in this skill-set.

- Analysis of the RAN's role as the Capability Manager found that there are four people allocated to the 'managing capabilities' function and four people allocated to the 'preparedness' function. We believe this investment in skills and time that the RAN is committing to these functions is not as high as it should be.
- In the Asset Management area the evidence related to O-level maintenance performed by the submarine crews showed there was a failure to correctly close out completed work, a backlog of aged work and sporadic schedule compliance. These are indicative of skills relating to on board maintenance and schedule compliance not being appropriately applied.
- Within DMO in the Cost Modelling and Benchmarking area the absence of a coherent cost baseline is evidence that appropriate finance skills are not being applied.
- Furthermore, in the Supply Chain area, contingency stock levels have not been managed properly and year over year stock has not been available when required, delaying maintenance and emergent work indicating that inventory management skills are not being applied.
- In line with the findings of the Rizzo Report, which identified a loss of Naval Engineering skills within the Surface Fleet, the Review Team believes this is applicable to the Collins Class as well. Therefore the submarine community should ensure that it plays its full part in implementing the Rizzo reforms, as this is fundamental in transforming Collins Class sustainment.

For ASC we did not find any examples where skills are not being applied appropriately however we acknowledge further work is required. An in-depth skills assessment should be undertaken to determine whether appropriate levels of skills, experience and knowledge reside in all of the key domains. This would be most beneficial to undertake once each of the participant organisations are better aligned in terms of roles and responsibilities.

4) Leadership not driving change effectively

The level of performance of the CCSP is currently below requirement. Improving the performance across the RAN, DMO and ASC requires holistic, enterprise wide transformation but evidence indicates this is not possible for a number of reasons, the most significant being leadership effectiveness in driving this change.

For leaders to be effective and for change to be realised, certain key enablers are currently not evident within the CCSP.



- Leadership must set a clear and strong vision with meaningful objectives for the business as a whole;
- The vision needs to be supported by defined operational plans that are cascaded down through all levels;
- Communication about progress, success and failures needs to be frequent and widely distributed;
- A governance system is required to allow leaders to work together and make decisions about the Enterprise plans and the implications for individual supporting agencies;
- There must be a clear channel for feedback to allow the workforce to report issues and problems; and
- The workforce needs to be provided with the required authority and autonomy to carry out the strategy.

The three and four star levels need to set the strategic vision and requirement and effectively communicate this across the sustainment program. The Leadership team at one star and above in enacting this vision must gain the trust of their teams during times of change and motivate, inspire and encourage them to strive for excellence.

The Commitment and Culture Survey demonstrated that respondents believe leaders are available but do not trust them in times of change nor see them as supporting change. Across the organisations the Survey showed that ASC is the most change ready, and that the DMO is the least ready.

There are a number of initiatives in progress to help improve the performance of the CCSP, however none of these initiatives appear to be tackling change at the program-wide level. Furthermore, evidence indicates that the participant organisations are showing a low level of readiness for change and lack a mature change management function to support significant change. The change management functions have a strong set of methods and tools and some highly skilled change professionals; however, they lack strategic alignment, business context and sufficient capacity to effectively drive and execute the extent of change required. The survey results show that the lack of vision, strategy and effective communications are the key drivers of low readiness for change.

Impacts:

- The lack of clearly defined, documented and understood roles and responsibilities at the participant organisation and individual position levels coupled with a lack of KPIs and associated targets to monitor and measure performance results in:
 - The inability of organisations and individuals to be held accountable for their performance;
 - Increased time to complete tasks due to excessive handoffs;
 - The creation of bottlenecks as decisions have to pass through more than one participant; and



- Poor morale and productivity due to workforce belief that their teams are not sufficiently resourced to meet objectives.
- At a high level the impacts of not having adequate skills, experience and knowledge in key domains includes:
 - Processes not being undertaken appropriately and outcomes not being realised;
 - Organisational stress, with some individuals working excessive hours to compensate for colleagues who do not have the skills, knowledge or experience to do their work;
 - Poor decision making; and
 - Bottlenecks in processes due to decisions not being made in a timely manner.
- The impacts of leaders that are not seen as supportive to change and who are not inspiring and motivating their teams includes:
 - A poorly engaged workforce which reduces productivity, through reduced discretionary effort and innovation; and
 - A workforce with little appetite for change which increases the risk that any change initiative will fail to generate a return on investment.

7.2.3 Operations, Maintenance, Upgrade & Support

The Operation, Maintenance, Upgrade & Support project is focused on analysing aspects of the sustainment program concerned with the following areas:

- 7.2.3.1 – Operations Planning & Scheduling
- 7.2.3.2 – Supply Chain
- 7.2.3.3 – Asset Management
- 7.2.3.4 – Information Technology
- 7.2.3.5 – Contracting

7.2.3.1 Operations Planning & Scheduling

Hypothesis: “Submarines are being planned, scheduled and operated by the CCSP in an appropriate manner to achieve sustainment objectives.”

Areas of examination:

- The objectives, planning and scheduling of sustainment activities;
- The operation of the submarines within their design intent; and
- Associated reporting systems.



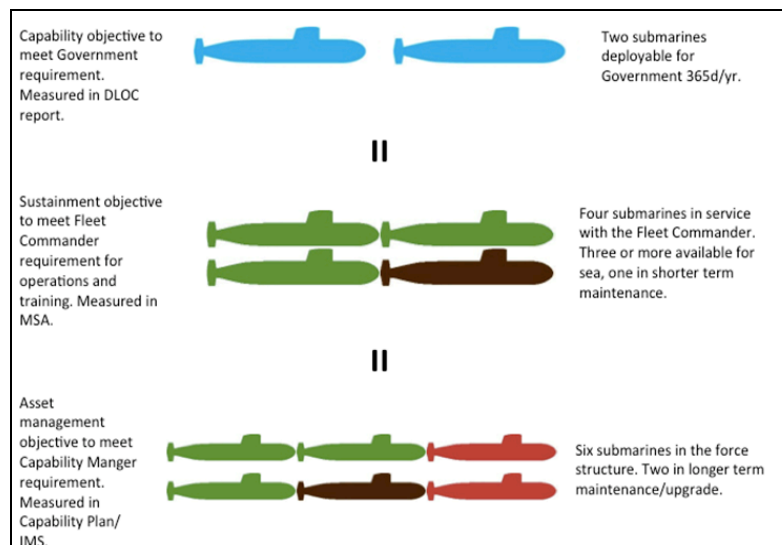
Key Issues:

- 1) Operational requirements are not used effectively by the CCSP.
- 2) No through life capability management plan exists.
- 3) The IMS is not driving the correct planning behaviours.

1) Operational requirements are not used effectively by the CCSP

Across the CCSP, there is a broad understanding that the ultimate objective is to deploy a number of submarines able to conduct military operations, but this number is not universally known to many who support the program. This lack of an unclassified operational requirement was significant. Although the details of the operational requirement are classified and must be protected, a broad unclassified statement of the capability's current top-level requirement for example 'maintain two deployable submarines 365 days a year in the medium term' would remove confusion and focus the entire business on the real output. This would clarify the supporting requirements of the Fleet Commander to meet operations and training needs, and would clarify the importance for all participants in meeting the scheduled IMS dates. The flow down of requirements is illustrated in Figure 26.

Figure 26 - Example of clear understanding of operational objective



For example, six submarines in the force structure allows two to be in longer-term maintenance and upgrade at any one time. The remaining four in-service submarines allow one (or none) to be in shorter term maintenance. The remaining three (sometimes four) submarines are available for sea and could be deployed to operations, training for operations, undergoing post maintenance test and trial or alongside between these



activities. Two of the three seagoing submarines must be deployable within their readiness notice at all times.

A clearly understood operational objective is also important to allow the submarine force to be maintained at a lower level of output during peacetime to save costs, but to be capable of increasing output to a higher level in a specified readiness timeframe as international tension increases. This situation is inherently difficult to manage as the sustainment system adapts itself over time to become efficient at the lower level of activity and perhaps becomes incapable of expanding to the higher level in the required timeframe. Sustainment decisions thus have to balance current and possible future levels of output and need to be based on a clear understanding of what the future could be as well as what the present is. The current level of output represents a limited base for any increased future need for submarine capacity.

The Navy's Capability objective is broadly summarised as two deployable submarines 365 days a year, with roles and readiness notice specified in classified planning documents.

This study found the Capability objective is not clearly communicated to the participants in the Submarine Enterprise and not clearly understood. The commonly used metric for measuring availability is MRDs which measures the non-maintenance days that submarines are provided to the RAN by ASC. While MRDs are a critical subset of overall availability, they are an inadequate measure of the availability requirement when considered in isolation. As a result the MRD target should operate alongside a realistic and achievable schedule that dictates when submarine availability will be provided.

If the requirement for submarines was expressed as a given number of submarines available for a defined percentage of the days in year this would more clearly resemble the incentive that can be applied to sustainment. An example of this could be:

- Two submarines materially available for sea X% of days;
- Three submarines materially available for sea Y% of days; and
- Four submarines materially available for sea Z% of days.

Without the requirement being fully defined and universally recognised¹⁷, it is difficult for the sustainment program to effectively build them into lower level planning assumptions. This means that lower-level planning teams build their plans in isolation and sometimes have to rely on assumptions around the scope of work needed on the submarines. This includes scope that involves significant cost and time to deliver (e.g. combat system upgrades and main motor remediation plans). This leads to unnecessary churn in the planning process and to schedule delivery risk being built into the IMS. Minutes from Team Collins IPT meetings include an explicit description that the 'IMS as it currently stands is

¹⁷ The RAN, informed by conclusions of the Phase 2 work, has now promulgated an unclassified statement of availability.



unachievable and based on MRD and not the ability to achieve it in terms of maintenance activities¹⁸.

Planning teams are not being effectively managed as a program, so there is little management opportunity to confirm that a decision made in one area will not be detrimental to achievement in another, therefore providing little opportunity for optimal value judgements to be made regarding cost and capability. Although Boards to facilitate a program wide view of decision making have been established, they are not yet embedded and operating effectively. An example is the decision to suspend work on developing information on contingency stocks as responsibility is to be transferred to the ASC under the ISSC, even though it will be many months before ASC will be able to take this on.

There is also virtually no allowance for unplanned unavailability within the operational schedule, partly because exercise schedules are often based on fixed dates committed long in advance. Urgent defects (URDEFs), which cause more than a few days of unavailability, thus often result in significant impact to operational output or to exercise schedules. There is some allowance within the maintenance schedules for overruns although there are a number of examples where this has been exceeded.

2) No through-life capability management plan exists

In addition to an unclear operational requirement, there is no Through Life Capability Management (TLCM) plan to inform lower-level planning. The TLCM plan should describe the RAN's operational objective, set out broadly how it plans to achieve that objective within the current and future submarine force structure and how that objective might vary over time. The plan should then specify the inputs needed across all Fundamental Inputs to Capabilities (FIC) to achieve the objective, with sustainment being one of those inputs. The sustainment objectives would thus be clearly linked to the submarine capability's ultimate operational output. The RAN as the capability manager needs to own and drive this plan. Elements of such a plan do exist but are not brought together in one coherent document.

Fundamental Inputs to Capability:

- Command and Management
- Organisation
- Major Systems
- Personnel
- Supplies
- Support (Sustainment)
- Facilities
- Collective Training

The lack of an overarching capability plan means that the IMS is being used for multiple purposes across the CCSP. It is being used for long-term availability planning and shorter-term resource planning. These are fundamentally different planning activities working to

¹⁸ Minutes of the Team Collins IPT meeting 11th Feb 2011



different time horizons and requiring considerable detail, yet these only exist as tasks in the IMS.

The RAN crew requirement is for four crews. Crewing plans are formally driven by the Submarine Workforce Sustainability Program (SWSP). However elements of crew planning is being driven by submarines moving in and out of unmanned long FCDs, and therefore has a dependency on the FCD plan. Higher levels of manning will be required at a point in time in the future, building up to the levels needed to man a force of 12 submarines and the Capability Plan should address this.

The lack of an overarching Capability Plan means that those detailed plans that exist for individual activities at the lower levels are not being managed as a program of activities that all contribute towards achievement of the operational objective. There is no attempt at linkage or of prioritisation.

Additionally, there is no mature Asset Management Plan nor coordinated mature subordinate plans for capital and maintenance projects. All the necessary information for these exists and is available from sources within the RAN, DMO and ASC, but there is no consolidation or aggregation of information into a single document. We note that the requirement to produce such a plan is documented in the strategic plans of the RAN, DMO and ASC but has not been completed.

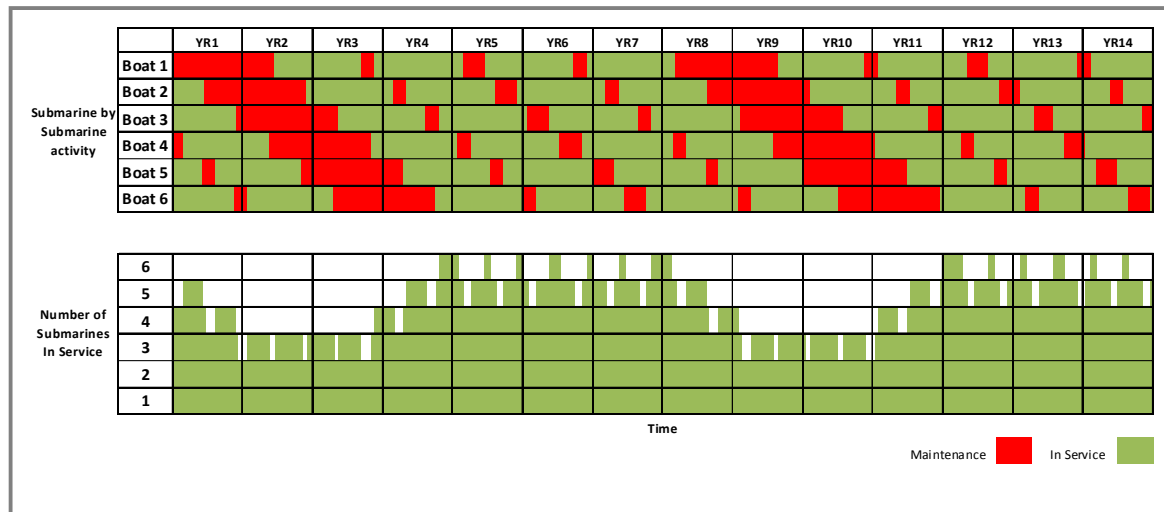
Combining the six individual Usage and Upkeep Cycles (UUCs) shows the overall fleet availability of submarines and illustrates the demand on crews and industrial resources. Good practice would try to minimise the variations in these patterns and offer opportunities for upgrades to the fleet. It would aim to avoid an unmanageable and volatile availability pattern impacting on planning and scheduling of crews and maintenance availabilities.

Furthermore, the opportunities for upgrades and enhancements should occur on a regular basis to allow rapid upgrade of the fleet. This is particularly important for electronic equipment such as combat systems, ship control systems and communications.

The figures below illustrate the original Collins Class UUC, the current UUC, and an idealised UUC that could be used as a basis for future planning.



Figure 27 - Original Usage and Upkeep Cycle



(6 Submarines: 19 month FCD, 4 month MCD and 2 x 2.5 month ID)

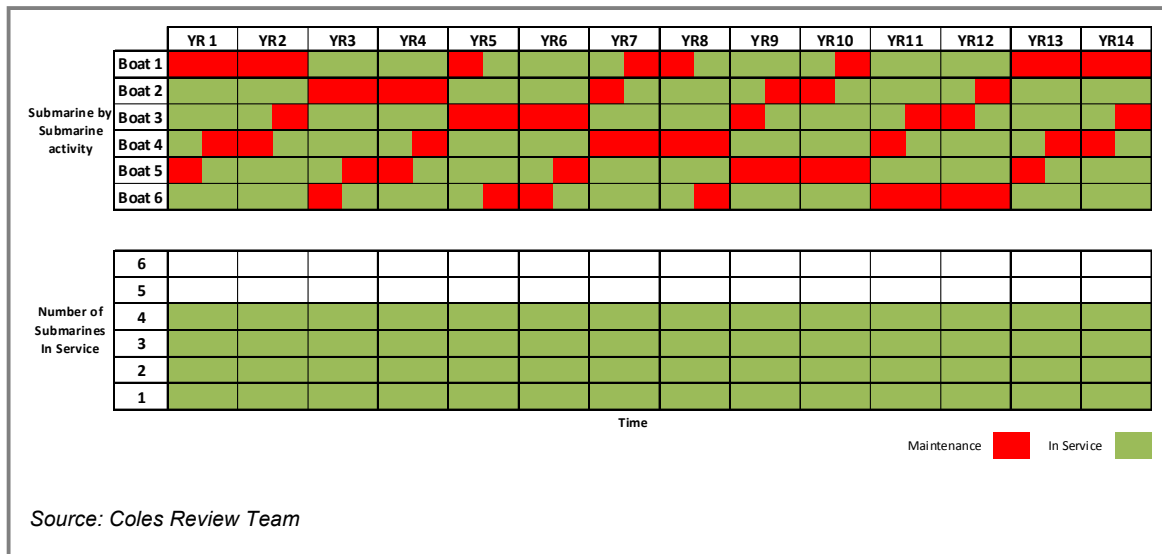
Figure 28 - Current UUC



(6 Submarines: 36 month FCD, 6 month MCD and 3 month ID)



Figure 29 - Optimised Usage and Upkeep Cycle



(6 Submarines: 24 month FCD, 12 month MCD and 6 month ID)

The original UUC (Figure 27) grouped FCDs together and the result is a profile that would be almost impossible to achieve in practice. Fluctuating maintenance loads and manning profiles would generate industrial inefficiency and un-crewed submarines.

Figure 28 shows that even with good reliability the currently planned docking cycle of a three year FCD, six month MCD and three month ID would produce unwelcome fluctuations in the numbers of submarines in service (defined as total time less depot level maintenance time) which would be difficult and potentially expensive to cope with.

Figure 29 shows that with a cycle of a two year FCD, one year MCD and a six month ID, a consistently higher level of availability would be generated. The lower cost from less time in ASC hands and ease of in service management renders this a potentially more cost effective way forward. Such a cycle would result in a more uniform number of submarines being available between dockings. This will also increase the opportunities for upgrades and enhancement, smooth the demand for crews and maintenance work, and be useful as a basis for a smooth transition to the Future Submarine.

We recognise that changes to the UUC would require detailed engineering investigations, and a thorough understanding of the maintenance status of the submarine and its configuration. Additionally the schedule impact of installing equipment to address obsolescence and capability upgrades needs to be understood. The skills required to achieve this are not currently evident within the CCSP as recognised by the Rizzo Review. This would therefore take a significant period of time to achieve.



3) IMS was not driving the correct planning behaviours

The IMS was not driving the correct planning behaviours and as such it was not possible to deliver the required MRDs in the MSA. Indeed the IMS and MSA were often in conflict and not managed in a coherent way. Recent changes to the MSA as recommended by the Review Team and its direct linkage to the IMS will permit a more accurate short to medium term program of maintenance periods. The introduction of a Contract Management Schedule (working-level IMS) will permit tactical planning to optimise submarine availability rather than a strategic stalemate.

Impacts:

- Without a capability plan to capture the RANs through life submarine capability requirements it is not possible for the entire submarine business to understand the long term view. Therefore there is potential for the lower level activities to diverge from this view and not meet the long term requirements.
- Without an agreed approach and clear linkages throughout the levels of planning (from the RAN to DMO to ASC) there is potential for the detailed activities to not only steer away from meeting the RAN's requirement but for there to be duplication of effort in some areas and gaps in other elements.
- It needs to be well understood across the enterprise what the baseline for reporting and measurement is and how it links to the day to day plan. Without this, the perception of an out dated view of the work or a view that ASC is not meeting its obligation will continue.
- Without a clear hierarchy of schedules that have some degree of flexibility and contingency there will continue to be a sub-optimised use of submarines and resources. This leads to an inability to accommodate URDEFs and unplanned maintenance and will therefore impact on MRD targets.
- Due to the lack of a capability plan the lower level planning is driven by maintenance activities rather than by operational requirements. Therefore the RAN is not optimising its operational capability.
- If a tight Program Management structure is not in place with decisions made in timely manner, there will be potential cost and schedule changes requiring contractual amendments.

7.2.3.2 Supply Chain

Hypothesis: "Supply chain management, including manufacturers, suppliers, distributors, procurement, ordering and inventory management, involves engaging the right industry partners to efficiently and effectively support the execution."



Areas of examination:

- Supply Chain Strategy;
- Planning and Forecasting;
- Procurement;
- Inventory Management;
- Warehousing; and
- Distribution.

Key Issues:

- 1) Inefficient supply chain.
- 2) Ineffective planning and forecasting for maintenance.

1) Inefficient supply chain

An efficient supply chain supports planned maintenance and reduces the impact of in-service defects. Good practice indicates supply chain management should include the execution of a well-defined plan. This should include objectives, requirements, the role of each organisation and key processes in each element of the end-to-end supply chain. Analysis across the CCSP has shown this is not the case. The current supply chain is highly inefficient resulting in the unavailability of spares for planned maintenance and in-service defects.

The analysis undertaken found evidence that inefficiency in the supply chain was driven by:

- Poor supplier performance;
- Delays in the movement of inventory through the supply chain; and
- Backlog in DMO obsolescence cases.

Poor supplier performance

ASC's suppliers are poor at providing quotations on time. Between February 2011 and February 2012 on time responses ranged between 25% and 70%. The general market expectation is this should be close to 100%, as suppliers should not be awarded the work if they fail to meet the quotation deadline.

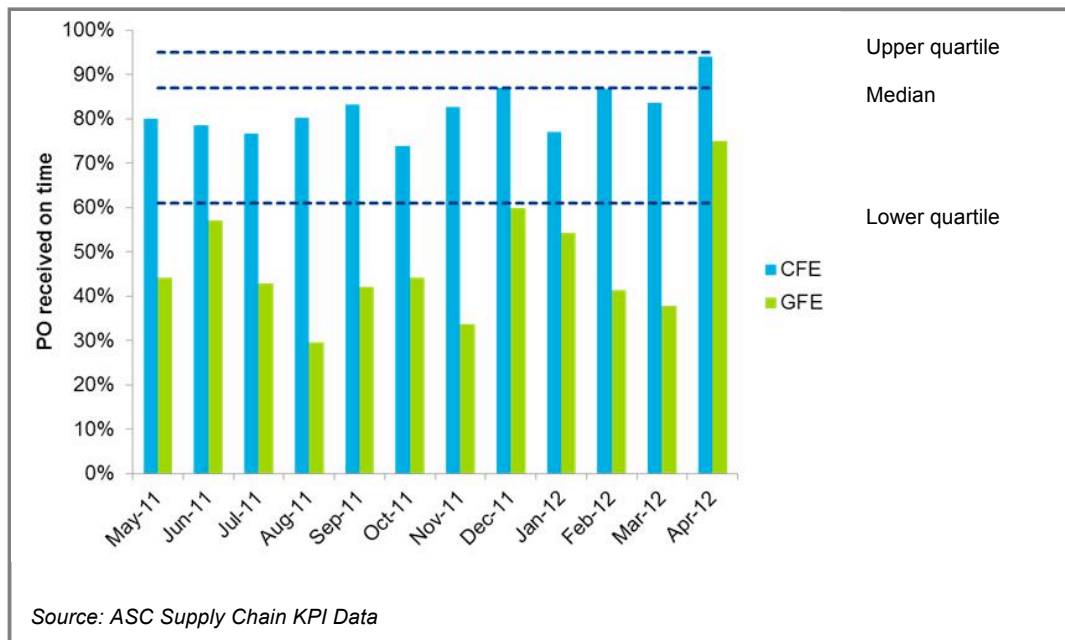
On time deliveries of purchased material are also below expectation. The annualised average for CFE was 82% and Government Furnished Equipment (GFE) was 47% as shown in the Figure 30. This compares poorly with a benchmark study¹⁹ which showed upper quartile

¹⁹ Business Link benchmark index manufacturing sector study



performers receive 95% of deliveries on time, a median performer receives 87% on time and a lower quartile performer receives 61% on time. CFE suppliers engaged through ASC provide between 74% and 94% of Purchase Orders on time. GFE suppliers provide material to ASC via DMO, with only 30% to 75% of POs provided on time for the period analysed.

Figure 30 - Supplier performance (measured by ASC)



DMO's ability to deliver GFE on time is impacted by the delays in the NIPO purchase order placement. Only 44% of NIPO raised purchase orders are currently placed on time and 29% of purchase orders raised through NIPO are placed more than 50 days later than the Required Due Date (RDD). This is reflected in the backlog of purchase orders to be raised with some 3000 purchase orders greater than 30 days in age waiting processing. No effective prioritisation is provided on procurement requests submitted to NIPO, leaving it to NIPO to determine what should be purchased first. This reduces the speed with which items can be processed and delivered to the customer. Under the ISSC the ASC will become responsible for the submarine specific spares in lieu of NIPO. The Review Team considers consolidating the Collins logistics support into a single supply chain structure under coherent performance management a positive step.

ASC also experiences a high level of product non-conformance on receipt of goods compared to industry benchmarks. For the period March 2011 to February 2012 product conformance ranged from 94% to 99% with an outlier of 45% of CFE products meeting the conformance standard in April 2011. This performance is below that of other manufacturers with upper quartile performance at 99.4%, median 98.5% and lower quartile 96.4% as indicated by the Business Link benchmark index report.



Any effort to improve poor supplier performance is hampered by ineffective supplier performance management. As illustrated in Section 7.2.2 (Personnel and Organisation), although a large number of KPIs are tracked over time by ASC and DMO the data highlights consistently poor performance over time. If supplier performance management is taking place it is not having the desired effect. This raises the question of whether measuring too many indicators is distracting the focus from key areas requiring change. Furthermore the lack of formal partnership agreements between DMO or ASC and their suppliers limits the ability of DMO and ASC to influence supplier behaviour and sufficiently incentivise the suppliers to make investment to improve their performance. In ASC's case this is a reflection of the TLSA funding model because DMO only provided 3 month rolling funding which hindered ASC's ability to enter into long term contracts with preferred suppliers. The ISSC goes some way to addressing this through the change in funding arrangements. This provides an opportunity to improve the level of effective partnership with key suppliers.

Delays in the movement of inventory through the supply chain

Distribution is driven by immediate ad-hoc need, rather than being treated as a scheduled activity. This drives inefficiency in the supply chain and unscheduled distribution is evident. Examples include between the FLSE store to the wharf where all distributions are essentially as-required adding inefficiency and cost to the process and with Customer Pick Ups (CPU) where ASC collect urgently requested materiel from Joint Logistic Unit (West) in what appears to be a sporadic and unstructured way rather than through an optimised pick-up schedule.

Distribution schedules are further challenged by constraints in supply chain visibility. The inaccuracy of the TML and resultant Additional Materiel Requests (AMRs) means that the true requirement is not defined, leading to products being ordered on an ad-hoc basis and often not in time to support planned activities.

There is also ineffective scheduling for the return of spares or repairables to the Original Equipment Manufacturer (OEM) or repair authority. This is evidenced by the large backlog of inventory awaiting repair that has not been returned or repaired, estimated to have a replacement value of \$89M and a repair cost of \$53M. Furthermore a large number of Critical System Repairables are currently on hand (averaging 502 per month between September 2011 and February 2012 with a DMO target of 50 repairable stock number items on hand by June 2012) and the number of understocked inventory items 'held' by DMO has been over 1,500 for the period September 2011 to February 2012 (500 or more is categorised as red on the KPI report).

The Submarine Capability Improvement Project (SMCIP) review determined that the current state of parts flow is "unnecessarily complex and the process is close to collapse" highlighting that change is required in order to improve efficiency of the distribution network.



Backlog in DMO obsolescence cases

DMO and NIPO have joint responsibility for obsolescence management for submarine related items. Interviews with SUBFOR and DMO indicate that there is a significant time lag across the obsolescence management process. There is a perception that an “obsolescence bow wave” is building up and that no one is taking proactive steps to resource or manage it; there is a failure to update technical publications, SAL and systems such as SIMS and Military Integrated Logistics Information System (MILIS) to reflect replacement items; and there is a lack of technical staff at NIPO to support technical investigation and obsolescence case management. Data gathered by the DSSL team indicates a significant backlog in obsolescence cases.

The information provided highlighted that half of the known obsolescence cases have not yet commenced technical investigation stage. The result is that suppliers are not available to provide stock items when required and significant time and money is needed to either fund another supplier to develop the capability required or re-work the existing design to meet operational requirements. The large backlog of obsolescence management cases is increasingly difficult for DMO to manage due to resource capacity and capability.

Under the ISSC obsolescence management is now a formal task. The benefits from this work will take some time to be realised.

2) Ineffective planning and forecasting for maintenance

Supply chain planning and forecasting has a significant impact on the timely completion of planned maintenance. Good practice indicates that forecasts of supply support requirements are accurate, planning processes are well defined, forecast accuracy is regularly measured and findings integrated into future forecasting periods. Analysis shows that planning and forecasting of supply support requirements do not meet good practice requirements. Ineffective planning and forecasting for maintenance is evidence by:

- Inaccurate Bills of Materials (BoM); and
- Failure to hold buffer stock for known problems.

Inaccurate Bills of Material

The BoM is the document that defines the materials required for a maintenance period and should be developed from the agreed scope of work. Without an accurate view of the material required and by when, delays are inevitable and/or disproportionate, causing costly workarounds. Whilst materials for emergent work will not be in the BoM it was observed that for HMAS RANKIN’s current FCD the BoM accounted for less than 60% of the activities as at January 2011.

The lack of an accurate BoM means In-service Support (ISS) supply requirement forecasts and therefore the TMLs generated by ASC are inaccurate.



The TML accuracy was measured by Denken Partners, a contractor to DSSL – DMO. They found inaccuracy in the TML which required AMRs to be raised for items required during the maintenance period but not included in the TML. For example the AMRs accounted for 31% of line items supplied for HMAS COLLINS ID Certification Extension Docking (CED), 19% for HMAS WALLER IMAV and 38% for HMAS FARNCOMB ID.

The Denken Partners Report (September 2011) also found that a number of line items ordered, both through the TML and as AMRs, are not actually used in the maintenance activity. This indicates a serious inaccuracy in ASC's supply forecasting process. For the 2011 HMAS COLLINS ID CED:

- Only 38% of materiel actually used was provided through the TML (yet accounted for 69% of the line items supplied).
- Of the additional material provided through AMRs, 19% was not used at all.
- Significant over ordering took place with an additional 141% of material being ordered and either not used or subsequently cancelled prior to delivery.

The inability to accurately forecast future inventory requirements is partly driven by the inaccuracy of information held within the IT systems (e.g. MILIS and Ship Information Management System (SIMS)) across the participants and the 'true' baseline requirement for maintenance periods not being maintained. This causes problems in maintaining data integrity across the participants and is exacerbated by inaccurate data input. For example, there are large deltas between the operational on board SAL usage recorded in the system and the findings of SAL audits. This highlights crew failures to follow procedures and so fail to maintain an accurate record of usage. At various points in the end to end process inventory can go missing from the system as the systems are not integrated. This is made worse by inventory not being codified (approximately 39% of inventory held by ASC is non-codified) meaning much of the inventory is not visible in Government systems and decisions are being made on inaccurate information.

Furthermore there is a lack of clarity on roles for maintaining data held on various IT systems. An example is the shared responsibility for the maintenance of SIMS between RAN, DMO and ASC which is causing confusion. For example when asked who has this responsibility, ASC said the RAN; and DMO said ASC.

Failure to hold buffer stock for known problems

Recent work by the DSSL Team has been directed at developing information to support the establishment of relevant buffer or ready-use stocking levels and supporting initial procurements via NIPO. This included the procurement of "Tranche 1 – Heavy hitter" items (defined as an item ordered under an URDEF three or more times in the past three years). Currently 539 items meet this criterion, with the intention of establishing a contingency stock of these items. We were told that this is now on hold pending the transfer of procurement responsibility to ASC under the ISSC. However, until the ISSC is signed and ASC



have been given funding to build up stock levels there will continue to be a large risk that known heavy hitter items will not be available when required.

The extent to which stock levels have been allowed to run down is highlighted by the high number of Collins Class unique inventory items that currently have “nil stock global” dues out being in excess of 1,200 units. The target was 921 units by June 2012²⁰. This high volume of nil stock global highlights contingency stock levels have not been managed properly.

Impacts:

- The serious shortcomings of the supply chain are driving behaviours such as over ordering of inventory and cannibalisation. Considerable resources are being wasted due to the lack of supplier performance management and limited activity is underway to change behaviour across the whole supply chain.
- The overall impact is a lack in availability of spares across the supply chain to support maintenance activities and to rectify URDEFs. This is resulting in maintenance periods either being extended or work being deferred until a subsequent maintenance period, which increases problems downstream, impacts on future availability and leads to loss of operational time.

7.2.3.3 Asset Management

Hypotheses: “A Collins Class Through Life Support Plan exists and drives alignment and achievement of operations and sustainment requirements and has a suitable timeframe to optimise the economic life of the fleet; and Asset management, maintenance and enhancement plans/processes for the Collins Class support the efficient and effective achievement of sustainment objectives.”

Areas of examination:

- Through Life Support Plan;
- Asset Management Plan; and
- International guidelines, including PAS 55, and the emergent standard ISO 55000 to test whether key RAN Australian Book of References (ABRs) provide an effective and comprehensive asset management policy.

Key Issues:

- 1) Poor reliability performance.
- 2) Shortfalls in processing submarine improvement work.

²⁰ The number of Collins unique items that were Nil Stock Global as at June 2012 was 1110



- 3) The RAN not fulfilling its obligations as owner and operator.
- 4) Inefficient preventative maintenance.

1) Poor reliability performance

Despite high levels of URDEFs, there seems to be no definitive global analysis using the right tools to support managing the trend downwards. The high rate of P1 defects after maintenance availabilities and the toleration of a continuing high backlog of P2 defects indicate a systemic problem. Furthermore, there has been an increasing frequency of corrective maintenance requests which also indicates the downward trend in reliability.

It is assumed that reports raised as a result of repeat occurrences of the same defect are among those in the backlog of Design and Material Deficiency Reports (DMDRs) (see following section on shortfalls in processing submarine improvement work).

The approach to reliability mitigation needs to be reconsidered, particularly in the light of the improvement in reliability requirements set out in the MSA. The current reliability engineering practices being applied do not work to optimise availability as recognised in the Rizzo Report. We are told that Rizzo implementation is addressing this issue, but we have yet to see the results.

2) Shortfalls in processing submarine improvement work

The lack of sufficient follow up on Concessions, DMDRs, and Maintenance Amendment Proposals (MAPs), particularly in WA is demonstrated by a negative trend in the close out of DMDRs. The close out rate (which is the number of DMDRs closed/total managed) is normalised for fleet size and ranges from approximately 85% of all DMDRs correctly closed out in 1996, to less than 10% recorded in 2011. This shortfall in the processing of submarine improvement work which includes obsolescence has a material impact on submarine reliability. This is partly driven by a lack of engineering resources in the WA area of operations and inconsistencies in actions taken by DMO on detailed engineering reports, many of which recommend action to address the root causes of the problem.

3) The RAN not fulfilling its obligations as owner and operator

The RAN is not fulfilling its obligations as owner and operator of the submarines, demonstrated by its failure to ensure compliance of the various support organisations (DMO and contractors) with its ABRs, and lack of clear strategies to be applied to all aspects of submarine asset management. This is partly driven by the lack of a consistent Asset Management Policy and Asset Management Plan in which the role of submarines in meeting the objectives of the Defence Strategic Plans should be clearly stated.

Evidence suggests the RAN is not ensuring compliance by the DMO (and hence ASC) to its ABRs. This is leading to significant gaps in how these sustainment services are provided,



including management of information, conduct of availabilities (particularly FCDs) and the continual improvement of the maintenance baseline.

Shortfalls in the knowledge of the material condition of the submarines are due to limitations in scheduled condition assessment work. The schedule compliance of O-level maintenance performed by the submarine crews was extracted from SIMS/SIS for all submarines. A number of issues were discovered, including a failure to complete their work, failure to correctly close out completed work, a backlog of aged work and sporadic schedule compliance indicative of a lack of discipline in observing the maintenance strategy. The 2012 MSA-CN10 indicated that there was a strategy to increase the volume of O-level maintenance by 39%. This is not in the current MSA; however, there is a specific KPI on the RAN regarding the extent of deferred O-level maintenance across the fleet each month.

Low priority URDEFs are being tolerated for too long. This increases risk and demands an ever increasing level of workarounds by the crews.

4) Inefficient preventative maintenance

The frequency of preventive maintenance work in the submarine maintenance strategy is onerous for the work teams, and higher than high hazard, highly regulated industry norms for the types of equipment it is directed to (e.g. tank fixtures, compressors, electrical equipment). This indicates that at times the limited labour resource is being tasked to do work which has limited effect. An additional problem with the submarine maintenance strategy is that both O-level maintenance and docking maintenance activities are not preventing defects with, for example, P1 URDEFs being raised soon after a submarine leaves a major docking.

Performance was measured by assessing the rate at which Corrective Maintenance Work Orders (MCRs) and P1 URDEFs are raised. Corrective maintenance is increasing in frequency particularly in areas such as the hull and its fixtures, the main battery and the diesel engine. Additionally, there has been an increase in the rate of P1 URDEFs, which occur at a higher rate than was the case in 2009. Preliminary action has been taken to remedy the increasing rate of URDEFs, however it is expected that URDEF rates will remain high until reliability solutions are implemented across the fleet.

Inefficient preventative maintenance extends to the scope of FCDs. These are poorly planned and scheduled, including the TML, resulting in FCD completion times of three years plus, while the evidence shows a duration of two years is achievable. Given that labour and sub-contractor costs represent the highest component for FCDs, more should be done to identify and minimise costs. This will generate cost savings which will allow resources to be reallocated to where they are needed, such as engineering in WA. The following table highlights the significant lack of compliance to the FCD schedule for the recent HMAS RANKIN and HMAS SHEEAN FCDs.



Table 16 - Level of Compliance to FCD Schedule

FCD Work Activities	Start Date Compliance	Completion Date Compliance
HMAS RANKIN		
Failure to meet planned date (% Maintenance Control Record (MCRs))	86.5%	55.0%
Average delay (days)	32 days	48 days
Standard deviation	86 days	107 days
HMAS SHEEAN		
Failure to meet planned date (% MCRs)	72.0%	71.3%
Average delay (days)	24 days	120 days
Standard deviation	137 days	178 days

The statistics in Table 16 indicate that schedules are not being followed efficiently, with the majority of work activities for both FCDs being delayed significantly. There is a high degree of variance of work activity start dates, making it increasingly difficult for maintenance work to be planned and adequately supported by the supply chain.

Impacts:

- There are clear indications that reliability is not being improved at this time, evidenced by defect rates and an increasing demand for corrective work. Unless there is a check to the downward trend, reliability will continue to deteriorate.
- The lack of resolution of engineering improvement requirements means that submarines are carrying risks of potential new defects longer than they should. In addition, lack of alignment of work across the submarines within the IMS means that both submarine availability for operations and the scheduling of resources for programmed work are not optimal.
- Poor cost control in FCDs will continue to place a drain on funds which are clearly needed in WA to ensure maintenance availabilities are completed on time and submarines are returned to service in accordance with the Integrated Master Schedule.
- The overall impact of the asset management issues is that submarines are increasingly not available for planned fleet operations, irrespective of the investment being made in their maintenance or physical asset improvement. The reducing availability for operations has further knock-on effects such as reduced time for training its submarine force.



7.2.3.4 Information Technology

Hypothesis: “Information technology is used to effectively support the execution of sustainment, governance and regulatory objectives.”

Areas of examination:

- The application landscape and architecture, including the asset management system;
- Data quality and data management to support the sustainment program needs;
- Systems integration to support business objectives;
- Reporting and management information to support decision making; and
- Maintenance and support of systems now and in the future.

Key Issue:

- 1) Lack of an enterprise wide IT strategy.

1) Lack of an enterprise wide IT strategy

Information Technology is a business enabler supporting business operations and helping achieve an organisation’s objectives. This is accomplished through close alignment between the business and IT strategies as well as an agreed IT and data governance between participating organisations.

Analysis of evidence related to CCSP identified that IT is not effectively supporting sustainment program objectives. In particular, it was identified that an enterprise wide IT strategy covering all three entities does not exist. The lack of an enterprise wide IT strategy is symptomatic of:

- Lack of enterprise wide IT governance
- Multiple information systems with limited connectivity

There are a number of issues with regard to IT systems governance and connectivity discussed within this report. They fall into two separate categories, those that are related to Defence wide IT systems, and those that are specific to CCSP. The CCSP specific issues and those related to master data quality and maintenance can be addressed and resolved separately within the program.

Lack of enterprise-wide IT governance

Each participant runs its own IT domain, and there is no defined approach across the CCSP or clear IT governance. There is no overarching IT architecture, information architecture, IT governance or forum for IT departments to collaborate. This is causing operational IT issues with system integration and data integrity.



There is no Submarine Enterprise wide leadership of IT. There is no defined or consistent view of data management, with each organisation's IT department running separate data management practices for systems related sustainment which are documented and enforced with different levels of maturity.

The current inventory of applications appears to meet all major functional requirements. However there is a lack of clarity regarding the governance of the functionality and data for each organisation and application.

Business improvement initiatives (related to non IT activities) often take precedence over IT system refresh / replacement cycles at ASC. This increases the risk that the overall Collins Class IT landscape will not effectively continue to support operations.

ASC West and ASC North do not have the same processes and standards in relation to application use (partly due to the difference in the nature of work between ASC West and ASC North).

Multiple information systems with limited connectivity

The information systems present differing views of the sustainment program in relation to maintenance availability, inventory and maintenance tasks. Furthermore, there is no means of resolving data conflicts between the systems.

While it is recognised that under the ISSC there is a project to automate the interface between ASC's Control Open and Defence's MILIS, this project is immature and the indications are that it will be a substantial project. Although risk and complexity of such an initiative has not been examined as part of this phase of work, it is expected that complications (in lead times) will eventuate when coordinating the interface build between multiple organisations (including ASC, DMO and CIOG).

There is no common and agreed understanding among the IT organisations regarding the scope and purpose of information that ASC systems and DMO/RAN systems should provide. This in turn has resulted in a lack of integration between ASC systems and DMO/RAN systems, as shown in Figure 31.



The diagram illustrates the data flow and control architecture for the ISS. It is divided into three main sections: DMO (Data Management Office), RAN (Range Allocation Network), and ASC (Automated Support Center).

DMO (Data Management Office): Contains the MILIS (Mission Information and Logistics Information System) component. A callout box states: "MILIS tracks where the project material is sent." and "MILIS does not have visibility of what is in stock or the boat that has utilised the material".

RAN (Range Allocation Network): Contains the SIMS (Simulation and Modeling System) component. A callout box states: "Usage is entered into SIMS manually from picking tickets. Accuracy is ~ 80%".

ASC (Automated Support Center): Contains three "Control Open" components for Project 1, Project 2, and Project 3. A callout box states: "Control tracks what is issued and what is moved to each project".

Data Flow:

- Automated exchange of data:** Represented by solid blue double-headed arrows.
 - Between MILIS and the ASC Control Open components.
 - Between the ASC Control Open components and the Project 1, 2, and 3 icons.
 - Between the RAN SIMS component and the ASC Control Open components.
- Manual exchange of data:** Represented by dashed blue double-headed arrows.
 - Between the RAN SIMS component and the MILIS component.
 - Between the Project 3 icon and the RAN SIMS component.

Legend:

- Solid blue double-headed arrow: Automated exchange of data
- Dashed blue double-headed arrow: Manual exchange of data

Source: ISS Readiness Week 2 Presentation 20-10-11.

There is no management information solution (e.g. data warehouse, analytics and reporting tools) for enterprise information. There is little information sharing between the RAN, DMO and ASC and across the organisations reporting is predominantly siloed; reports are generated from information systems within each organisation's span of control. Information extraction, sharing and reporting from systems between the organisations is manual.

Because each participant runs its own domain, the application landscape and architecture exists in organisation based silos. For some applications (e.g. SIMS) this is related to security classification but, in general, this is due to a lack of collaboration (or forum for discussion) between the IT organisations.

- The lack of an enterprise-wide IT strategy and governance makes it difficult for the sustainment program to make aligned decisions that leverage IT to help improve sustainment performance. It also causes deterioration of data integrity across the Submarine Enterprise.
- It is not possible to achieve consistency of data across various business functions, as well as collaborating with internal and external data sources.



- Management information is not available at the Submarine Enterprise level to allow effective decision making.
- There is no common and agreed understanding among the IT organisations regarding the scope and purpose of information that systems should provide. This results in a lack of integration (automated interfaces) between ASC systems and DMO/RAN systems as well as no clear definition of the source of truth.
- Tactical projects initiated by each IT domain (resulting in many individual point solutions or duplication across IT departments) cause misalignment between IT departments.
- There are functionality overlaps between information systems, driving maintenance and support costs as well as data inconsistency.
- Manual nature of interfaces causes a resourcing overhead (four resources to replicate data from Control Open to MILIS only).

7.2.3.5 Contracting

Hypothesis: “Sourcing of new performance based contracts and the management of existing contracts is used to efficiently and effectively support the execution of sustainment objectives.”

Areas of examination:

- The sourcing of new sustainment contracts.
- The management of the existing sustainment contracts.
- Whether sustainment contracts are efficiently and effectively supporting the sustainment objective.

Key Issues:

The new performance based contract for the sustainment support of the Collins Class called the ISSC was placed recently. It has specific clauses to enable amendments to be made during the contract Transition Period as a result of this Study. We would suggest the following are considered:

- 1) That the overall structure of the ISSC is reviewed and consideration given to a three part structure that provides: an overarching contract containing the Platform System Integrator/Parent Navy aspects; individual Fixed Price or Fixed Price Incentive Fee contracts for the major maintenance periods; and a Target Cost Incentive Fee type arrange for the support services including minor maintenance periods and defect rectification.
- 2) Introduce an annual target for MRDs into the ISSC, which progressively increases over time to the level of the Benchmark. KPIs should also be developed that reflect the Benchmark performance for time overruns against the planned maintenance.



- 3) The completeness of the specification for the maintenance period should be reviewed with the objective to accurately predict the actual maintenance carried out during the maintenance period. This should include “learning” from previous maintenance periods (additional “work-in-way”), the work arising from inspections and emerging work. This will require all parties to be prepared to “take a risk” on the content of the specification and price. This will enable better scheduling and material supply planning. It will require the transfer of associated funding early in the Transition Period and senior management attention to resolve.
- 4) Unforeseen work will always arise during submarine maintenance. How the contract treats this growth in work scope is crucial to timeliness and cost control. The balance between them can be delicate, but delay is often more costly than the change. The thresholds for the ASC needing approval to commence emerging work are too low and should be optimised during the Transition Period in line with maximising the original in-contract price work scope.
- 5) Entering a contract and using a Transition Period to establish the performance metrics is a necessary risk that must be taken. However, this risk can be reduced by conducting an independent audit of performance and cost before formalising the metrics for the contract Performance Period.
- 6) There is a risk during transition that the baseline could become obscured. It is therefore recommended that an independent audit is conducted prior to the Performance Period.
- 7) Adjustment Events erode the effectiveness of an output based performance contract and should be minimised during the Transition Period. There should also be a formalised process involving DMO and ASC senior management to agree adjustment events during the Transition Period.
- 8) The use of Make-Buy Thresholds or benchmarks is not recommended for sustainment, rather we consider it preferable to use a framework of guidelines to be followed in determining Make-Buy decisions. We have recommended this framework.

The previous sustainment contract for the Collins Class, called the TLSA, contained KPIs, but they were not sufficiently focussed nor scaled in a manner to provide the right level of impetus to generate a true performance based ethos. It is clear from the profiles in Section 3 that the TLSA has been ineffective in delivering improved availability and is why the ISSC was conceived. The ISSC was signed at the end of June 2012. The ISSC is a comprehensive and innovative commercial vehicle combining together all maintenance activities in one contract. It is a significant step towards contracting for availability and this is applauded. It is, however, complex and this will require considerable resource, data integrity, cultural change and discipline for it to be successful.

We have reviewed the ISSC and offer the following observations and points to consider during the Transition Period to help optimise the effectiveness the ISSC and reduce some of its complexity:



1) Overall structure of the ISSC

The requirements for all elements of upkeep are specified as a total program including FCDs, MCDs, IDs, IMAVs, SMPs and ad hoc support for rectifying defects. It also includes the provision of “Parent Navy” activities such as Reliability and Obsolescence Management and the production of the specification for each maintenance period. In theory, encompassing all elements in one contract and one pricing arrangement seems an ideal concept removing the likelihood of confusion between project accounts. However, the manner in which deep maintenance and in service maintenance are delivered is different. To optimise their management they require different performance and contract management arrangements. Deep maintenance is conducted in IDs, MCDs and FCDs lasting from three to 36 months and have characteristics similar to large projects. In-service maintenance consists of many short duration maintenance periods (SMPs at one or two weeks long and IMAVs at eight weeks) and ad hoc support for defect rectification etc. Thus, in contrast to deep maintenance, the in-service maintenance is a form of continuous service delivery.

Defining large maintenance periods (initial material state of the submarine, maintenance required, start date, finish date and costs) cannot be done many years in advance. The disadvantages of trying to agree the late definition of the maintenance package, overall schedule and acceptance criteria at the start of the contract and then having to modify them as the actual maintenance requirements become clear some years downstream in a single multi-year long term contract along with in-service support may well outweigh the advantages of having depot level maintenance and support services in a single contract.

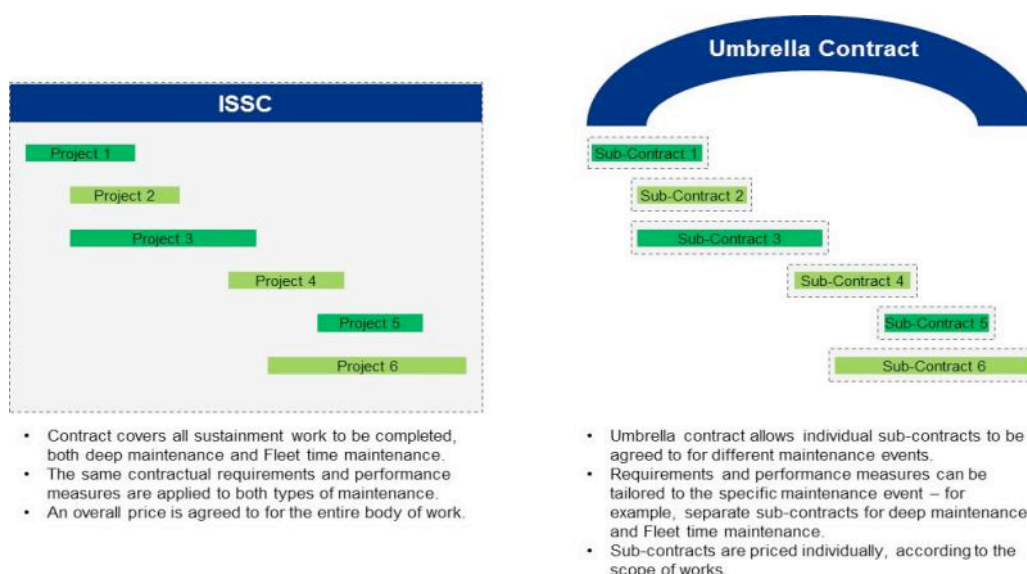
This aspect should be kept under review during the transition period and revisited after experience has been gained. Deep maintenance periods are akin to large standalone projects with milestones, KPIs and costs directly related to a single project. In-service maintenance is more representative of a service contract in which KPIs and costs should be related to the overall delivery of the service over a defined period of time.

Managing the duality of large projects and service delivery in one contract will create complexities. Contracts that we know to have been successful in delivering submarine sustainment in the UK and other European Nations for many years have structures that do not include such complexity.

Figure 32 depicts the differences between the ISSC and the international comparators’ contractual arrangements for sustainment contracts. The Parent Navy/Platform System Integrator activities can be incorporated in the overarching ‘Umbrella Contract’.



Figure 32 - ISSC versus Standard Umbrella Contract



Due to the Transition Period and the length of time for maintenance periods, it may be five or six years before the true steady state for delivering availability of in service submarines is achieved and it becomes evident whether the theoretical advantages of stepping into the unknown for submarine sustainment by combining deep and in-service maintenance in one contract will succeed.

The cost and performance parameters established at the outset of the ISSC will vary considerably over the five year contract period. The continual adjustment this entails will present a considerable contract management burden that will erode the contract effectiveness.

2) The desired outcome

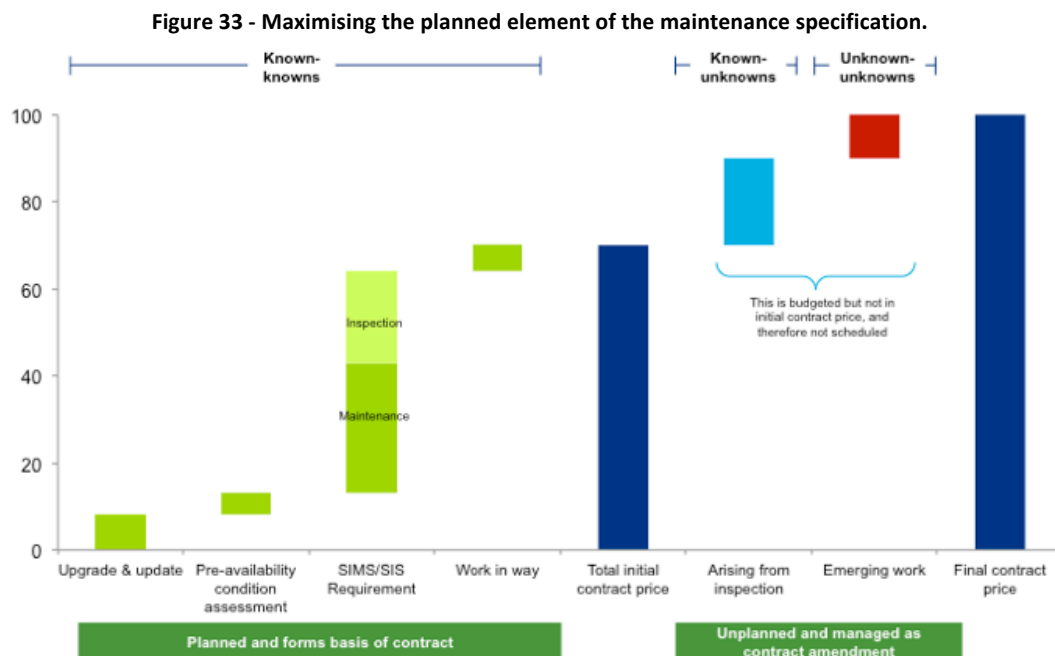
Clearly the CoA seeks to considerably improve the availability of the Collins Class with the advent of the ISSC. The contract does not specifically contain a given number of MRDs to be achieved nor does it directly incentivise the delivery of an increasing number of MRDs over time. We would recommended that over the Transition Period as confidence grows that a target number of MRDs is introduced into the ISSC as well as timely completion of maintenance allowing for a deviation to plan that equates to the average overrun of the comparator navies. Contracting a performance that betters the Benchmark is basically contracting for failure. The contract should fully reward the achievement of Benchmark performance and give enhanced reward if it is exceeded.

3) Accurately Specifying the Maintenance Requirement

The process for controlling maintenance periods and thereby optimising their duration and timely completion requires an accurate specification of the Upgrade, Update, Upkeep and



Inspection required including “work in way” to provide access to carry out the maintenance and the work that arises from inspection. There will always be an element of emerging work that cannot be built into the plan, but this needs to be minimised. A reasonable target to aim for is about 10% for a complex artefact such as a submarine. Figure 33 illustrates this arrangement.



We understand that the Initial Contract Price under the TLSA did not include the work arising from inspections (known-unknowns) nor emerging work that could not be foreseen (unknown-unknowns) and therefore they were not allowed for in the schedule. Both these elements will, however, occur during the maintenance period and eventually will form part of the final contract price. The aim of the ISSC should be to incorporate as much as possible of the work resulting from inspections and the emerging work into the initial contract price and therefore schedule. This more accurate specification of the total work required should form the basis for improved scheduling and schedule adherence as work progresses in FCDs, MCDs and IDs. To achieve this aim during the Transition Period the work arising as a result of the inspections carried out needs to be incorporated to the maximum extent possible into the contract definition and therefore price and schedule and an allowance for both price and schedule incorporated for emerging work. A large element of the work resulting from inspections should be predictable from previous records and the volume of emerging work is usually fairly consistent, except in exceptional circumstances. Achieving this requires both the COA and ASC to accept an element of risk in line with the performance based intentions of the ISSC.

This risk based approach is not being taken during the Transition Period. Indeed the Transition Period is piloting the concept of drip-feeding the ASC as work arises as the result



of inspection and not the bulk transfer of the associated funds allowing the ASC to manage and account for the expenditure. This would reduce administrative delays and the program disruption they cause and therefore the transfer of funds associated with growth in work should be done as early as possible in the Transition Period and should attract specific and dedicated attention from senior management in both the DMO and ASC.

4) Managing Work Scope Growth Within the ISSC

Good practice output based performance contracting should encourage a hands-off approach by the customer with minimal engagement. The ISSC does not appear to have used this principle as one of its guiding rules. Examples are evident in the lack of flexibility given to ASC to perform minor emergent work. Whilst there is provision for ASC to proceed without needing to request permission, the threshold is low, giving ASC insufficient authority and responsibility. Contract Change Proposals (CCPs) resulting from requests for emergent work will have ripple effects on price and schedule, requiring prompt negotiation and agreement of the impact. Managing these CCPs will generate a high administrative workload on both the CoA and ASC and consume commensurate resources, particularly since this process will be applied to manage the considerable amount of work arising from the inspections that is currently not incorporated into the contract price or schedules.

This piecemeal CCP based approach has the potential to delay progress, impact availability and create Adjustment Events. DMO argues this low threshold is necessary to prevent ASC from earning extra profit from less than acceptable performance, whereas ASC regards this as a double penalty. We would not see this as good practice. There is risk for both parties in moving towards output based contracting. Low thresholds of this nature are a consequence of the input controlled “old way” of contracting and should be discouraged. DMO should remove such practices by the end of transition.

5) Refining the Application of Key Performance Indicators (KPIs)

Within the Performance Period, the price will be based upon an incentivisation mechanism to reward ASC with increased profit as overall costs are reduced below the Target Cost Estimate (TCE). Similarly, if costs increase above the TCE, profit will be reduced. The sharing arrangements under the ISSC limit the impacts on ASC’s profitability arising from cost reduction/overruns. An arrangement such as this is considered good practice in a monopsonistic relationship with a strategic supplier, as in reality it is unlikely that the full risks can be transferred to the contractor. Coupled with this incentive to reduce costs it is necessary to include a mechanism to maintain output performance levels to protect against overly aggressive cost reduction driving down the output quality and quantity.

It is understood that payment of actual incurred costs will be on an ‘as submitted’ basis (historically this has been monthly), and that profit will be paid quarterly based upon the target profit. These payments will be reconciled annually against actual costs under the



shareline arrangement and profit determined. This also represents what we would consider good practice.

Within the ISSC there are currently six KPIs against which overall performance will be measured. These relate to timely completion of maintenance periods, schedule adherence during maintenance periods, availability during operating periods, and the supply chain. The data related to the metrics for these KPIs will be gathered during the Transition Period. As understanding matures they will be progressively applied to the profit related performance management system, gradually increasing the level of profit at risk. This is considered to be good practice as a measured way to enter into an output based performance contract.

The ISSC currently applies the KPIs to support services such as URDEF repairs and alongside maintenance and IMAVs in the same way as it applies to the deep maintenance. This is not considered to be good practice.

Good practice indicates that KPIs should relate to the type of goods and services required under the contract, thus, their application to projects (FCDs, MCDs, IDs) should be different to the provision of support services.

Applying KPIs related to schedule compliance and the rigours of Earned Value Management (EVM) is inappropriate for short duration events (SMPs, IMAVs). It is also inappropriate to manage these events as individual projects. The performance of a service delivery contract is best controlled within a rolling time window, typically six months. Shortfalls should be aggregated within this period. It is against this rolling time window that performance thresholds would be determined. Within this arrangement the application of the KPIs should encourage restoration of timely completion by allowing clawback of retained profit if required service levels are quickly re-established.

The performance management arrangements would then impact upon the overall profit related to the payment period (monthly or quarterly). Therefore support service performance management is characterised by performance over a period of time and is not based upon individual projects.

6) Mitigating the Transition Period Risks

The ISSC has two, possibly three distinct phases over the Transition Period, where the incentive and risk on ASC is limited. The Transition Period is designed to set the commercial foundations for the incentive arrangements in the Performance Period. Entering a contract that requires such foundation activity to be performed before it can be fully effective is a risk and may result in unexpected, counter-productive or detrimental issues. This is a risk that must be taken in order to provide the metrics and begin the transformation to a performance based approach. It would be prudent, however, to devise approaches to mitigate, as far as possible, this risk. A method of doing this would be to conduct a full and independent review of the cost and activity baseline before setting the contract baseline for the TCE and KPIs.



7) Adjustment Events

These events, should they arise, will suspend the performance mechanism for the related KPIs. It is important that these are minimised as they reduce the effectiveness of the performance management framework. This can be done by examining activities that relate to, but are outside of, the contracted scope and thus create a dependency. The impact of these dependencies should be determined and, where possible, those with a high impact encompassed within the contracted scope. Pre-defining and agreeing the impact before contract signature would be ideal, but is often not possible or too complex. In a partnering style contract such as the ISSC the impact of unforeseen events should be agreed through the Disputes Resolution Process under the principle of “fair and reasonable”.

The onus should be on the Contractor to prove that the event was exceptional not on the DMO Representative to prove it was normal.

The Adjustment Events incorporated in the ISSC can be categorised as those relating to an action by the DMO and those related to ASC. DMO Adjustment Events define specific actions, whereas those for the ASC are general all-embracing events. The ASC Adjustment Events can be summarised by stating if it is outside of its control or ASC did not make provision for it occurring then it represents an Adjustment Event.

Adjustment Events related to errors or omissions by ASC should be removed from the ISSC or modified to place the onus on ASC to demonstrate the event is abnormal.

Whilst it is reasonable to exclude events outside the control of ASC, allowing an Adjustment Event related to “not making provision” which is under the ASC’s control, does not accord with the good practice described above. ASC should be expected to make appropriate cost and time provisions to fulfil the contract requirement, and if a truly abnormal event occurs then the Disputes Resolution Process should be used. Open-ended Adjustment Events will tend to diminish the effectiveness of the performance management framework. ASC should be positively incentivised to improve its planning processes from the current quality shown in the Asset Management and Supply Chain sections of this report.

Managing Adjustment Events during transition and maybe beyond should be formalised and involve senior management perhaps even the CEO of the ASC and the equivalent senior representative of the DMO. It should not be left to individuals as part of their daily job, it will cause friction and frustrate the development of a co-operative working relationship such as that required by the ISSC to be successful. Claims for Adjustment Events should be logged over say a six to eight week period and reviewed and agreed as bulk lot by the senior representatives of the ASC and DMO. It should also be borne in mind that if an Adjustment Event for an unforeseen event is claimed and agreed then that event cannot be considered as unforeseen again and should be fully incorporated into the ISSC contract price and schedule before or at the end of the Transition Period.



8) Incorporating Make-Buy Plans

The ISSC has Make-Buy provisions and is seeking to set a target threshold. However, in the study team's experience such thresholds are more appropriate to new build contracts than to sustainment contracts. We would suggest that Make-Buy decisions should be based on the consideration of guiding principles such as those outlined in Table 17 rather than a predetermined percentage of the turnover.

Table 17 - Guiding principles for Make-Buy decisions²¹

Strategic
<ul style="list-style-type: none">• Whether the activity or sub-assembly represents a core competency of the organisation.• If the decision is irreversible.• If long-term supplier relationships and innovation are important factors.• The cost of updated technology or replacement assets for in-house manufacture.• Whether outsourcing will reduce leverage in the supply chain.• Whether outsourcing will increase competition amongst suppliers.• The effects of global price/exchange rate fluctuations.• The organisational desire to expand manufacturing capability.• The desire to have direct control over the product.• Political or environmental reasons that might influence the make-buy decision.• Whether the organisation has capacity to manufacture the product while keeping the manufacturing load constant.
Commercial
<ul style="list-style-type: none">• The total cost to make versus the total cost to buy.• If proprietary information will need to be disclosed, the risk to the organisation will need to be assessed.• Impacts on facilities and labour utilisation rates.• Potential suppliers track record and financial stability.• Whether there is sufficient volume required to attract supplier interest.• Whether there is sufficient volume required to justify set up costs.• Whether the organisation has the required level of technical expertise to manufacture in-house.• If brand preference is an important factor.
Organisational
<ul style="list-style-type: none">• Whether changes are required in the organisation to reflect adjustments to the future supply chain.• The ability of the organisation to partner with suppliers.• The ability of the organisation to manage an outsourcing function.
Risk Assessment
<ul style="list-style-type: none">• Potential impacts to the quality of the product due to a make or buy decision.• Whether there are any threats to the reliability of supply.• What the financial exposure will be as a result of the decision.

The ISSC contains a number of high level Make-Buy objectives which are aligned to these guiding principles. The ISSC contains a milestone in Transition Phase 2 where ASC is required to develop a Make-Buy plan. ASC confirms that it has commenced the development of this Make-Buy plan, but it is still in its infancy. As the Make-Buy plan is still in development, it would be premature to conduct an assessment of the plan.

²¹ The principles contained within this table have been adapted from Kraljic Framework (1983) which is based on the premise that a 'one size fits all' approach to procurement is ineffective.



Impacts:

- The overall impact of all of the issues above is that existing contractual agreements, including the ISSC, do not fully motivate the desired behaviour and are unlikely to maximise value for money and a significant increase in MRDs.
- Whilst DMO and ASC are moving toward performance based contracts, the structure of the ISSC and the complexity of the pricing model will prove too difficult to manage, causing: bottle necks, adjustment claims and an inability to achieve the Government's value for money ambitions.
- The intention for the ISSC to cover both deep maintenance and in-service maintenance, will undoubtedly prove too challenging under a single all-inclusive contract and ultimately prove unworkable. These types of maintenance require different contract and performance management arrangements to deliver them effectively.
- The maintenance specification for each maintenance period falls far short of being as complete as it could be and thus the schedule generated from it is unworkable with resulting delays and uncertainty. This should be rectified by allowing as much work as possible, arising from inspections or as emerging work, to be included in the initial contract price and schedule.
- Within the ISSC, a number of performance measures are yet to be determined, which may cause unintended consequences. Whilst it is not possible to accurately predict what may occur, entering the contract with many performance measures undetermined could drive unintended behaviours.
- Adjustment Events will tend to undermine the collaborative culture between the DMO and ASC that is essential to the success of ISSC.

7.2.4 Cost Modelling and Benchmarking

Hypothesis: "The sustainment program understands and manages its total cost of ownership and process performance."

Area of examination:

- Approaches taken across the participants to cost baselining; cost management; cost categorisation; and financial performance reporting.

Key Issues:

- 1) No coherent cost baseline for sustainment.
- 2) Misalignment of the budgeting cycle and the planning horizon and challenges in linking expenditure to requirements.

1) No coherent cost baseline for sustainment

We were unable to identify a 'single version of the truth' regarding the cost baseline of the sustainment program. Without a shared understanding of the baseline costs the financial



metrics for the business cannot be effectively understood and financial performance measured.

A coherent cost baseline requires a consistent cost structure, a mechanism to collate costs from a number of sources and a single point of accountability for management and control of sustainment costs.

We found that none of the participants has sight of the total sustainment cost at a sufficient level of granularity to manage the cost base effectively. Multiple IT systems require interrogation to manually identify and collate the costs of the sustainment program and although a contract work breakdown structure is being implemented as part of ISSC, it is not clear whether this will be used to capture non-ASC related costs of sustainment.

This lack of a consistent and comprehensive cost structure and source of cost data creates uncertainty that cost may be double counted or omitted entirely. As an example, when the DMO provided internal cost models containing information for 2010/11 there was a variance of 26% across the datasets. Similarly, there was a discrepancy of 14% between ASC's view of its actual costs for 2010/11 and the actual invoice data extracted from DMO's financial systems. This may be due in part to accruals and timing issues, but illustrates the challenges of maintaining a universally recognised reconciliation.

2) Misalignment of the budgeting cycle and the planning horizon, and challenges in linking expenditure to requirements

The 12 month budget allocation has not matched the planning horizon and has not allowed for the longer term planning and prioritisation of resources. Although the in-year budget within the MSA is broken down by submarine and maintenance availability type, there has been limited visibility of the ten year forward profile at this level of granularity. In addition, actual sustainment costs are not tracked to a sufficiently granular level to enable financial performance to be monitored and the cost drivers of the business understood. Within the monthly MSA Financial Performance Report, actual monthly costs are reported against forecast/budget. For 2012, year to date, the monthly cost variances range from +63% to -52% and yet the year end variance is projected to be less than 1% of the budget.

There are a number of other improvement initiatives underway across the CCSP focused on financial management. The SMCIP is developing a capability-wide financial dashboard, including a capability cost model. This initiative is in the implementation planning phase therefore it is difficult to determine the likelihood of its ultimate success.

For other initiatives that are underway, there is limited evidence of cost benefit analysis being undertaken against a consistent cost baseline to justify and track initiatives. It is recognised this is in part due to the historic challenge of establishing a robust cost modelling regime. Without the foundations of a singular baseline position it is almost impossible to accurately define end state benefits and track them on a periodic basis. This results in



uncertainty as to how financial benefits will flow down to the bottom line, and that they are not double counted.

Robust cost modelling regimes should be established as soon as practical to support cost benefit analysis of initiatives. This should be incorporated within the overall governance arrangements.

The inability to prioritise activity is symptomatic of having no coherent cost baseline to drive sustainment activities required to meet agreed sustainment objectives. Historically sustainment activities have been driven by the in-year budget rather than by the RAN's requirement. Only 75-80% of the total requirement has been previously funded each financial year. As a result, some activities have been part or unfunded at the start of the financial year, and have then depended on in-year cash injections to enable completion. This has resulted in inefficient planning of resource and activity, coupled with poor prioritisation, driving sub-optimal behaviour and impacting availability. An example is funding short term maintenance and repair requirements through resources allocated to FCDs and MCDs.

To address the budget shortfall an additional \$708m²² was recently granted to the CCSP through the Federal Budget allocations. This additional funding should enable DMO to fully fund sustainment for the next four years. This aims to align sustainment activity to the RAN's operational requirement (as defined in the MSA). Until the cost baseline is fully defined it will continue to be challenging to precisely predict costs and make informed decisions.

There is a notion within the CCSP, that the costs of sustainment are fixed (driven by the current TLSA) and minimal leverage exists to influence the cost base. This should not be the case. Sustainment costs are driven by labour hours and material volume.

The implementation of the ISSC, which accounts for approximately half of the total submarine sustainment funding requirement, will require ASC to have a greater understanding of these cost drivers: maintenance price growth, labour efficiency and sustainment costs per actual maintenance day.

The ability to gauge performance within the CCSP is limited by the availability of relevant external cost benchmarks. Comparable industries are negligible, and available open source information with regard to global submarine usage is minimal. The development of like for like submarine maintenance cost comparisons therefore requires a series of normalisation factors to be applied in order for it to be directly applicable. The basis for the external cost benchmarking data was to be the DMO commissioned FMI Benchmarking review of ASC and international navy benchmarks sourced by DMO. International navy benchmarks were not available during the analysis timeframe for this study and additionally, the FMI report

²² Budget booklet, 17 October 2012



focused primarily on process benchmarks rather than financial processes. No link is made between improvements in sustainment processes and cost impact.

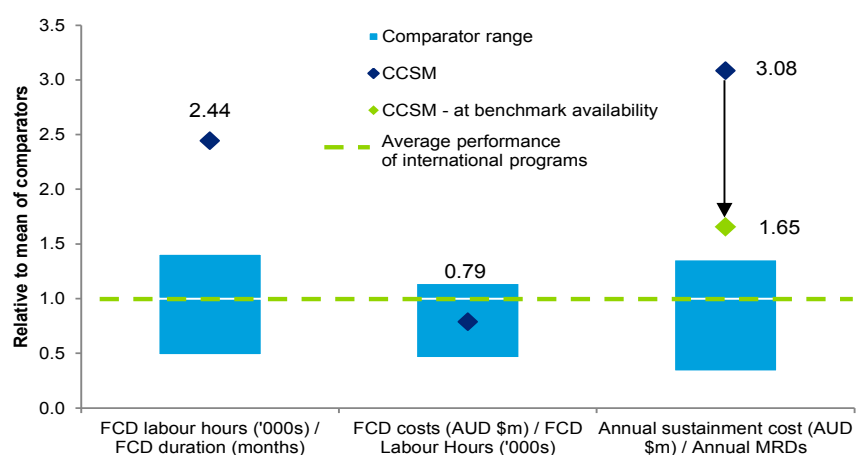
3) Cost Modelling and Benchmarking

The cost data in the Collins Class Submarine International Benchmarking Activity Report does not provide a complete set of costs across all the participating programs and therefore, creating a reliable single cost benchmark is impractical. This is also made difficult by variations in exchange rate assumptions, accounting practices in relation to direct costs and overheads and attribution of costs. For instance, some nations use significant levels of naval man power which do not necessarily appear in their annual cost statements along with the cost of all spares and infrastructure.

Nevertheless, we were able to derive a range of comparators relating to the level of effort, effective man hour rate and the annual availability achieved for the annual expenditure. These comparators represent the best available ratios but cannot be used as absolutes; they do indicate a measure of the cost effectiveness of the Collins Class sustainment relative to the International Programs.

Figure 34 illustrates this analysis across 3 comparators: the total labour hours divided by the duration of the FCD in months (hours/month); total FCD costs divided by the total FCD hours (effective labour rate in \$/hour); and the total annual costs across the entire CCSP divided by the total MRDs achieved (\$/MRD). The ranges shown in blue in Figure 34 are unmodified figures from the International Programs and represent the full range of values. The spread of these values indicates that the data is not reliable to use as a benchmark, but can be used as an indicator of trends. The values for the Collins Class have been made relative to the average of the spread in values. Whilst not precise they would suggest that the cost effectiveness of the CCSP is at least one half of that of the International Programs.

Figure 34 - Cost Effectiveness Comparisons to other Nations



The assessment that the CCSP is at least half as cost effective as the international comparator programs is supported by an examination of the current cost and availability performance of Collins Class. If the time in maintenance of the Collins Class was reduced to match the international comparator navies, this would almost double the number of MRDs and even if there were no cost reduction this would double the cost effectiveness as measured by dollars per MRD. Moreover, since sustainment is a capacity limited activity, as a rule of thumb, the maintenance costs should vary as a direct proportion of the time spent in maintenance. In this event, reducing the maintenance time by at least one third should substantially reduce the maintenance costs and if there were a proportionate improvement across the entire CCSP, this would lead to an improvement in cost effectiveness approaching a factor of three. This would result in the cost effectiveness of the CCSP matching the international comparators.

Some of the international comparator programs historically had availability levels at or around the current performance of the CCSP. With the introduction of performance based management arrangements and other transformational initiatives they were able to achieve or exceed the benchmark performance levels within a few years.

Impacts:

- Without an agreed cost baseline for the life of the Collins Class, based on robust planning, budgeting and forecasting information, uncertainty exists relating to the total costs of sustainment. Issues relating to gaps in the cost base and double counting of costs across shared activities and/or entities may exist and cannot be discounted.
- The 12 month funding cycle and part funding of projects does not allow for efficient planning and may result in cost increases. Advance material purchases have been delayed until there has been greater certainty that funding will be available, and the labour force has not been able to be readily flexed at short notice.
- Without a Submarine Enterprise financial cost model, it is difficult for the entities to understand the impacts of funding decisions as scenario and capability-cost trade off analysis cannot be accurately undertaken. Therefore, when funding appropriations are increased or decreased, there is limited visibility of the impacts of these decisions on submarine performance, creating challenges in understanding the optimal funding requirements for the business.

7.3 Root Causes

As detailed in Section 7.1, the key issues are varied and relate to people, processes, governance, technology and culture across different project areas and entities. Based on the review team's experience and thorough consideration of the issues, five root causes have been identified:



- Unclear requirements
- Lack of a performance based ethos
- Unclear lines of responsibility
- Poor planning
- Lack of a single set of accurate information to inform decision making

The 20 key issues were mapped to the five root causes. A number of these issues are resultant of a number of root causes. These issues can only be resolved if all applicable root causes are suitably addressed. These are illustrated in Table 18.

Table 18 - Mapping of issues to root causes

Workstream		Key issue	Unclear requirements	Lack of a performance based ethos	Unclear lines of responsibility	Poor planning	Lack of a basis for long term decision making
Strategy & Management		Availability targets are unrealistic and unachievable in the short to medium term	✓	✓		✓	
		Lack of clear and coordinated strategic direction for the CCSP	✓		✓		
		Participants are not acting as a Submarine Enterprise	✓	✓	✓	✓	✓
People & Organisation		KPIs are not appropriately used to drive improved performance across the CCSP		✓	✓		
		Lack of clear understanding of organisation roles, responsibilities and accountabilities			✓		
		Key skills shortages in critical strategic and management areas			✓		
		Leadership not driving change effectively		✓	✓		
Operations, Maintenance, Upgrades & Support	Planning	Operational requirements are not used effectively by the CCSP	✓			✓	
		No through life capability management plan exists	✓			✓	✓
		The IMS is not driving the correct planning behaviours	✓	✓		✓	
	Supply Chain	Inefficient supply chain	✓	✓	✓		
		Ineffective planning and forecasting for maintenance	✓			✓	
	Asset Management	Poor reliability performance			✓	✓	
		Shortfalls in processing submarine improvement work				✓	✓
		RAN not fulfilling obligations as owner operators			✓	✓	
		Inefficient preventative maintenance			✓	✓	✓
	IT	Lack of an enterprise wide IT strategy					✓
Cost Modelling and Benchmarking	Contracting	Current contractual arrangements are not founded on a performance basis	✓	✓			
		No coherent cost baseline for sustainment				✓	✓
		Misalignment of the budgeting cycle and the planning horizon and challenges in linking expenditure to requirements				✓	✓



Unclear requirements

Operational requirements are not stated in a manner that can be effectively translated to sustainment activities. There is a lack of a clear unclassified top level requirement for the Collins Class which is fundamental to inform tactical planning and the motivation of staff across the CCSP.

Whilst requirements exist, such as operational requirements placed upon the RAN or MRDs placed on DMO, the direct linkages between these are not clear. This creates conflicting demands on the participants, resulting in ineffective mechanisms for driving performance.

A single defined and realistic requirement is critical to target setting, future planning, and the development of enterprise behaviours. Unless an unclassified requirement is better articulated and linked to common outcomes, the submarine business will continue to find it increasingly difficult to deliver results.

Lack of a performance based ethos

The transition to the ISSC is recognised as a significant step forward in the implementation of a performance based ethos for the CCSP. The failure to define performance targets for individuals and organisations has been a key driver of inefficiency and sub-optimal behaviours, impacting on sustainment performance. Without meaningful targets to which individuals and organisations are held accountable, there is no mechanism to measure or recognise success.

Unclear lines of responsibility

Many key roles and responsibilities within the CCSP are not clearly defined or understood. This was evidenced across the businesses at strategic and tactical levels, from both an organisational and individual perspective. This has resulted in governance structures not being run effectively.

Without clearly defined and consistent governance structures at a strategic level there are material impacts on the ability of participants to set and manage the strategic direction of the program. This results in blurred accountability where duplications and gaps in responsibility have developed over time. This was evident between DMO and ASC. There is a clear need for a single “controlling mind” in sustainment to ensure the CCSP is focused on meeting Chief of Navy’s requirements for submarine availability. The recently announced appointment of GM (Subs) makes it clear that the need for such a “controlling mind” has been understood and actioned by Defence, although we have not yet seen terms of reference for the post.

At a tactical level a number of issues relate to a failure of organisations to act on or enforce their responsibilities. Elements of analysis focused upon MSA development, FCD planning, and the management of onboard inventory, with all areas indicating a lack of clarity on roles and responsibilities and a duplication of tasks. This is evidenced by the RAN not fulfilling all



obligations as owner and operator of the fleet and a failure to effectively apply asset management strategies and enforce compliance with ABRs across the CCSP.

Poor planning

The lack of a clearly stated long-term strategic plan prevents accurate lower level plans and targets being established and achieved. This results in unclear and conflicting requirements across the CCSP leading to limited mechanisms with which to drive a unified management approach.

A lack of planning at the strategic level means lower level plans for maintenance and military operations are built in isolation and are not managed in a portfolio manner.

The absence of an asset management strategy has also resulted in poor obsolescence and a lack of reliability management. This has created a 'bow wave' of reliability related defects and obsolescence, resulting in an uncertain and uncoordinated planning baseline. This is regarded as a key factor that is impacting performance of the CCSP in delivering sustainment activities.

Lack of a single set of accurate information to inform decision making

Organisations cannot make informed decisions without the correct information. Effective systems and processes and accurate data are crucial to achieving an informed position. The CCSP as a whole is currently not in a position, from a data analysis perspective, to make effective long term decisions.

Whilst significant levels of information and analysis are conducted across the CCSP, the basis for long term decision making is not always consistent or accurate, with multiple systems and datasets in use for financial, maintenance and supply chain activities. In many cases these are not linked resulting in data integrity issues.

Financial planning is impacted, as severe difficulties are created in setting an agreed baseline position and accurately linking expenditure to outputs. Without a single version of the truth from a financial perspective, it is difficult to assess the impacts of variances in funding appropriations on the achievability of sustainment objectives.



8 Step 6 - Effectiveness of current initiatives

8.1 Current initiatives

The study conducted a high level review of existing improvement initiatives. The assessment was comprised of two parts, firstly a maturity assessment of the initiative itself and secondly an assessment of how effective these initiatives address known issues.

Table 19 - Existing initiatives

Initiatives (group of projects)	No. of projects
Submarine Capability Improvement Program (RAN)	7
Submarine Workforce Sustainability Program (RAN)	6
Rizzo Reform Program (RAN)	6
Continuous Improvement Program (ASC)	7
ISSC Transition Plan (ASC)	15
Collins Reform Program (DMO)	4

The above initiatives represent 45 individual and often independent projects that have been grouped together based on ownership or similar benefits. To maintain simplicity in this report, this study has conducted its review on the individual projects, referred to as sub-initiatives and aggregated.

8.2 Maturity assessment of current initiatives

8.2.1 Maturity assessment criteria

Each sub-initiative has been reviewed against a project management assessment framework²³ to assess the maturity of the initiatives. The framework describes the critical aspects of good project governance:

- A clear purpose for the initiative has been explained;
- To help inform the enterprise strategy, the relevance of the initiative to improving sustainment of the CCSM has also been reviewed;
- Owners are identified, responsibilities and governance clearly stated;

²³ Adapted from OGC Project Management Guidelines and PRINCE2 principles



- Key milestones have been stated and described in a detailed implementation plan;
- Initiative status, costs and benefits are continuously tracked or if the initiative is not in implementation phase, whether there is a clear plan for ongoing tracking;
- The initiatives have been costed, including both financial and intangible costs to the organisation;
- Initiative is adequately resourced to deliver intended benefits;
- Benefits have been identified, including financial and intangible benefits;
- Perceived benefits of the initiative are realised and reported on; and
- Risks and contingencies have been identified.

8.2.2 Outcome of maturity assessment

Collectively the current initiatives were found to have above average maturity when assessed using the criteria described above. The results of this assessment are shown in Table 20.

The table shows that ASC and RAN-led projects are well defined and scoped, with clear governance and management plans. RAN's SMCIP initiative had the clearest identification of benefits, relating directly to cost savings and MRD gains, although in some cases the gains are more optimistic than could be justified by current levels of performance. Although ASC and Rizzo initiatives had clear benefits these were less precise and required some additional logic steps from this review to link them to availability benefits.

ASC's initiatives tended to be more securely funded, with RAN's SMCIP and Rizzo initiatives only partially funded.

While assessed with the same criteria as other initiatives, the DMO-led Collins Reform Program (CRP) is not viewed by this study as an initiative but rather a portfolio level intention. With the exception of the ISSC transition tasks predominantly managed by ASC, the program does not contain any specific and scoped tasks with clearly assigned owners. Instead it reflects an informal coordination of the other initiatives currently underway that impact on Collins under its four broad themes of culture change, strategic contracting, supply support and safety, reliability and optimised maintenance.

The new ISSC tasks the ASC with a number of activities that were identified under the CRP such as obsolescence management, reliability engineering and improvements to the supply chain. These activities are monitored as part of normal business rather than as a set of discrete initiatives. During the Transition Period these activities should be managed in the same way as all other initiatives and recommendations.



Table 20 - Initiative maturity summary

Owner	Initiative	Purpose	Relevance	Owners, roles, responsibilities and governance	Milestones and timelines	Tracking	Initiative Costed	Resourced	Benefits Identified	Benefits Realised	Risks	Current Status	Score
RAN	SM Capability Improvement Program	4	4	4	4	4	3	1	3	1	5	In progress	3.3
RAN	SM Workforce Sustainability Program	4.5	4.0	4.4	3.9	3.5	4.4	3.8	3.9	3.6	3.9	In progress	4.0
RAN	Rizzo Reform Program	4.1	4.3	3.8	4.0	4.0	3.4	2.0	4.2	2.3	3.8	In progress	3.6
ASC	ASC Continuous Improvement Program	4.0	4.6	4.0	3.7	3.9	3.9	3.5	3.8	2.5	2.5	In progress	3.6
ASC	ASC ISSC Transition Plan	4.0	4.7	4.0	3.9	3.9	3.7	4.9	4.9	2.5	3.2	In progress	4.0
DMO	Collins Reform Program ²⁴	3.8	4.8	1.3	1.8	1.8	2.3	2.3	2.8	1.0	1.8	In progress	2.3

Score	Description
1	Low maturity
2	Low to moderate maturity
3	Moderate maturity
4	Moderate to high maturity
5	High maturity

²⁴ Note: as the bulk of the Collins Reform Program is being delivered through the ISSC, this assessment applies only to the remaining task.



8.3 Initiatives – Addressing identified issues

8.3.1 Areas of the sustainment business impacted by issues

The 20 key issues identified in Table 12 by this study have been mapped against the updated value chain to understand where they impact the sustainment business shown in Figure 35, in which functions are coloured dark blue and activities are coloured light blue. The issues are listed in the vertical column on the left, categorised into 'Strategy and Management', 'Personnel and Organisation', 'Operations' and 'Cost Modelling & Benchmarking'.

This shows that the key issues impact almost the entire sustainment value chain with the exception of the activity of 'Conducting sea trials' and part of the function 'Develop capabilities', but predominantly impact the functions of 'Planning, Sourcing & material supply' and 'Upgrade & maintenance' sections of the value chain.

The activities of 'Developing master plan', 'Govern sustainment program' and 'Manage materiel strategy' are the steps in the value chain that are most heavily impacted by the key issues, with almost half of the issues impacting these activities.

8.3.2 Areas of the sustainment business impacted by current initiatives

The benefits expected to be realised from each of the 45 sub-initiatives were evaluated against the sustainment value chain to understand which 'value-adding' activities will be improved once each sub-initiative is completed. Figure 36 shows that the sub-initiatives within each of the six programs assessed in this study have an impact across most of the sustainment business, with the Rizzo Reform Program tending to impact more on the strategic level steps and the remaining programs having more impact on business operations.

The SM-CIP and Rizzo set of projects were found to have a high benefit on the steps in the value chain that they impact, with the ASC ISSC transition projects having a medium benefit, and the ASC CIP and CRP assessed as having medium to low benefit.

There tended to be more overlap of initiatives addressing value chain steps within functions of 'Strategy' and within 'Planning', particularly amongst RAN's SMCIP, Rizzo and ASC's ISSC projects.

The functions 'Develop capabilities', 'Preparedness', and 'Upgrade & maintenance' sections of the sustainment value chain tended to be impacted less by the current initiatives.



8.3.3 Effectiveness of initiatives in addressing issues across the sustainment business

The study team would expect that the existing initiatives would address a number of issues limiting performance across the sustainment business. Figure 37 shows that the initiatives have a moderate (grey) or high impact (green) on issues affecting 12 of the 22 value chain activities. The specific issues addressed by each sub-initiative and resulting priorities will be addressed during implementation.

The existing initiatives will have a high impact on issues affecting four key value chain activities, identified in green in Figure 37, specifically 'Develop master plan', 'Establish asset plans', 'Develop maintenance scope' and 'Accept and certify'.

Issues in 8 of the 22 value chain steps will be partially addressed by completing existing initiatives and will have a low impact on issues affecting a further five value chain activities, with specific reference to 'Govern sustainment program' and 'Product configuration management'. Additionally, this study believes that the issues affecting 'Preparedness obligations', specifically development of an asset management policy for the submarines will not be addressed by the current initiatives.

An important consideration is the ownership of each of the initiatives. Good practice suggests that ownership of the initiative should reside with the agency responsible for the execution of the relevant activity. Where shared responsibility is desirable, then coordination is important and needs to be carefully managed through a program office. This will be addressed during implementation.



8.3.4 Charts supporting effectiveness of current initiatives in addressing issues across the value chain

Figure 35 - Issues potentially arising from poorly conducted activities

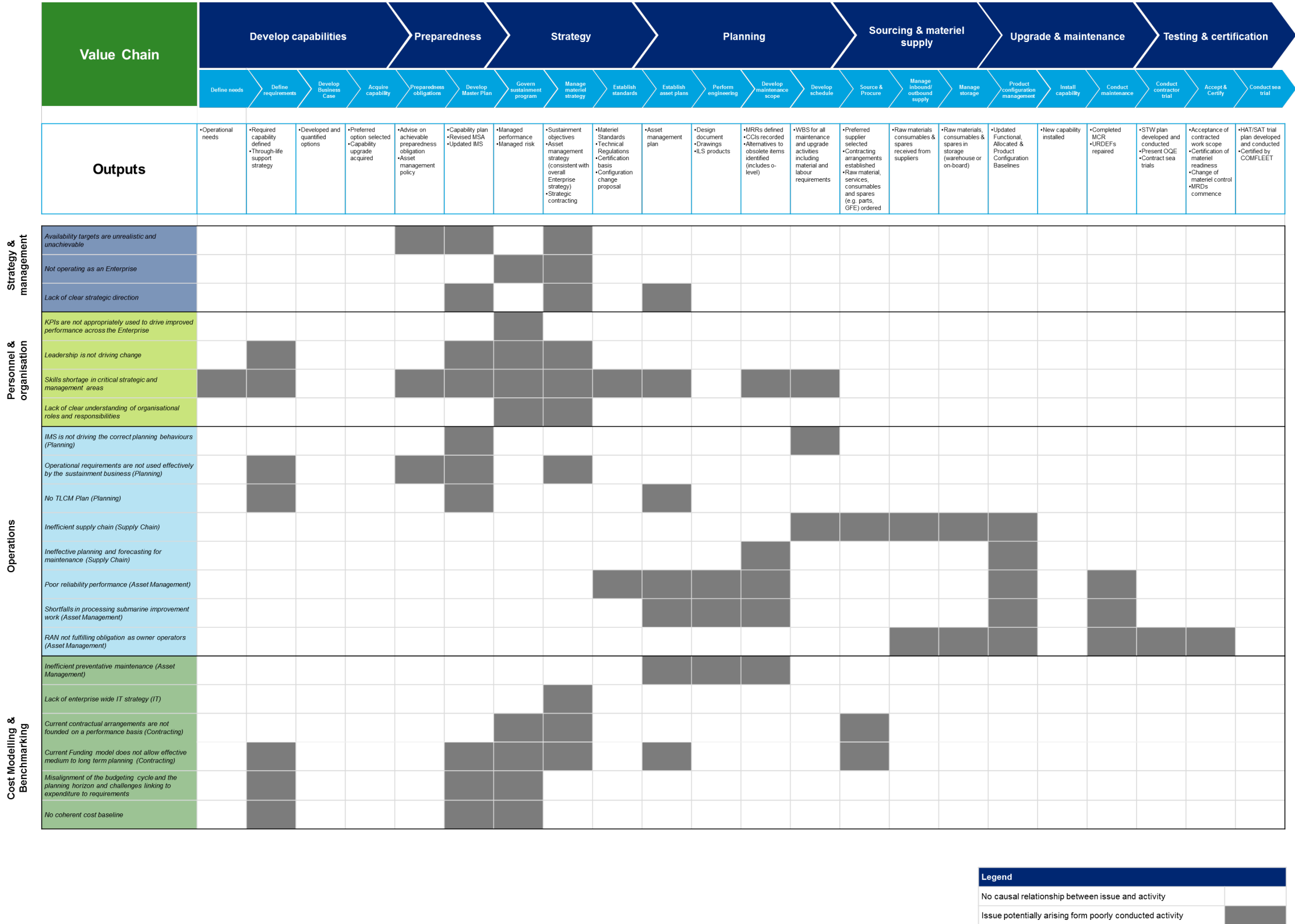
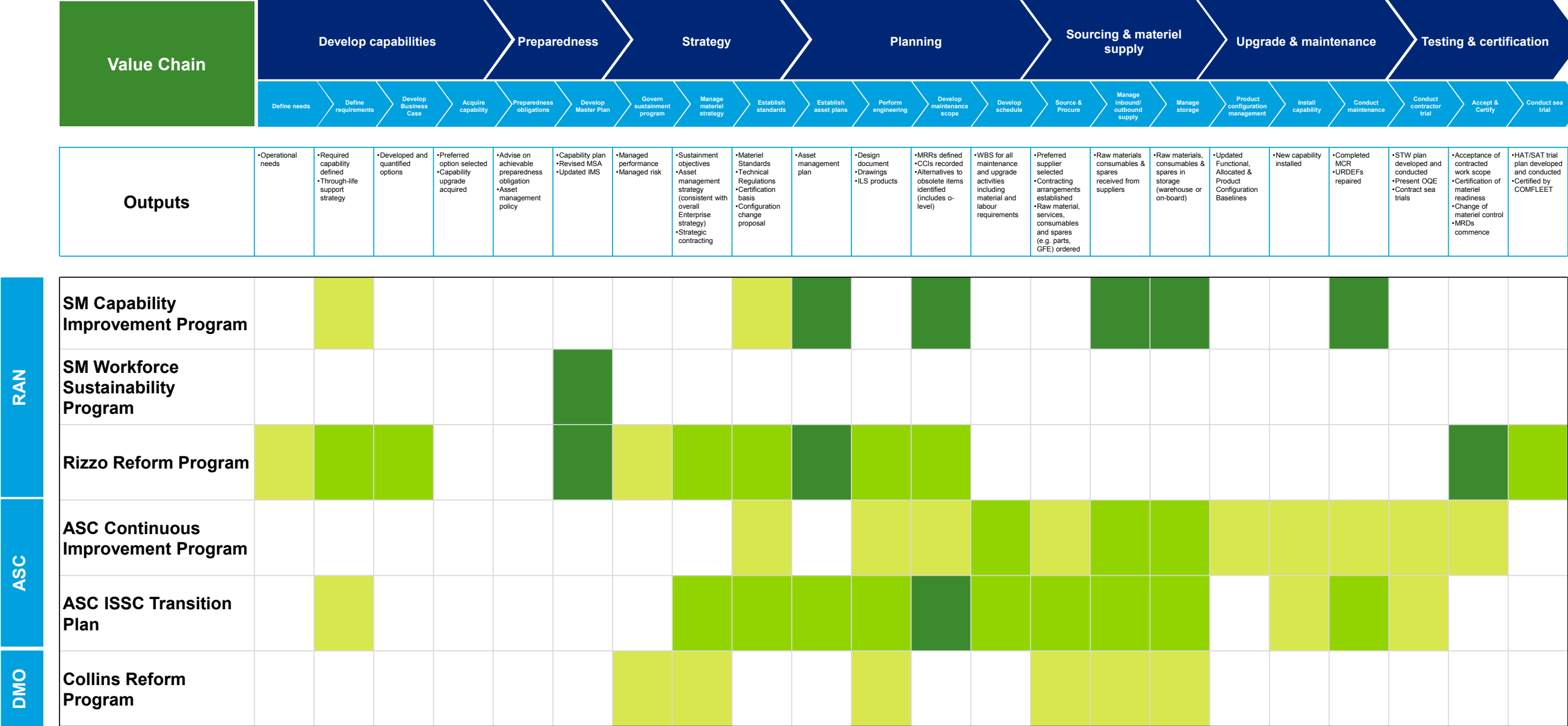


Figure 36 - Impact of existing initiatives on value chain



Legend

High

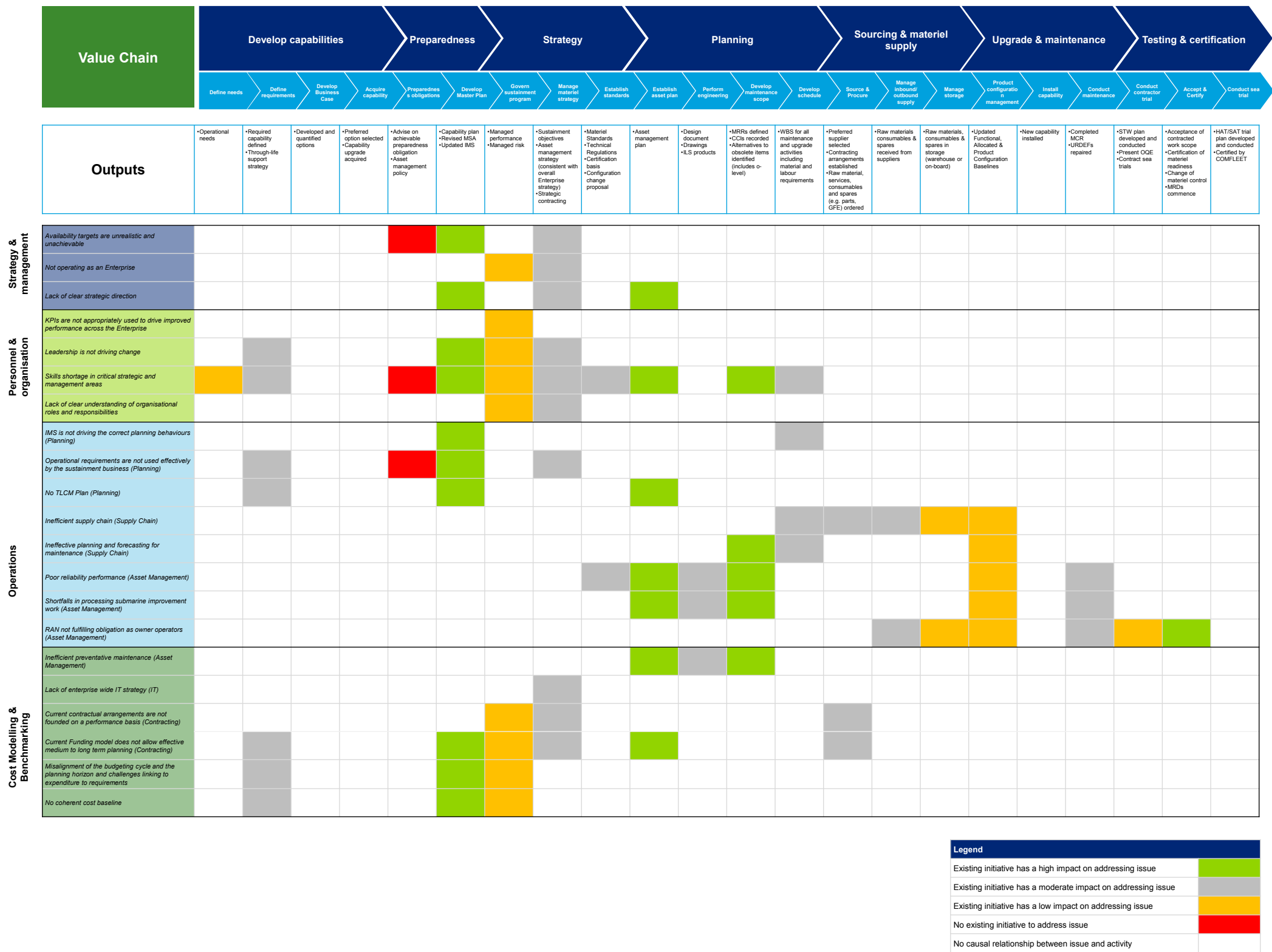
Medium

Low

Nil



Figure 37 - Impact of existing initiatives



9 Additional Information

Since completion of the analysis work in June 2012, additional information was made available to the study team during September and October by the Commonwealth and by more detailed discussions held with participants on the early operation of the ISSC. The following paragraphs summarise such information.

The International Benchmarking report undertaken by the Commonwealth on behalf of the Review Team was made available in September 2012. Prior to that date the Review Team had used preliminary information.

9.1 ISSC

As noted elsewhere the ISSC was formally let in June 2012. The contract makes fundamental changes to the roles and responsibilities of the DMO and the ASC in delivering sustainment services to the CCSP. The review team held a number of detailed discussions with participants in Canberra, Adelaide and Perth on the early operation and preparedness of the ASC, DMO and the RAN for the transfer of key tasks. While ASC had conducted preparatory work on its own, including staff training, we found neither the DMO nor the ASC had yet taken any serious steps in jointly preparing their respective staffs for operations under the contract. Preparation in the DMO seemed inadequate with little or no training of staff, practically no guidance on the details of contract administration and no substantive plan for the two year transition phase. In particular the DMO will need to acquire contract management skills for an output focused contract and develop the necessary changes in behaviour.

9.2 Infrastructure

For the sustainability of the CCSP the current shore based infrastructure in South and West Australia is sufficient and necessary. If, however, the 10 Operational Years + 2 years FCD User Upkeep Cycle (10 + 2 UUC) is adopted this would reduce the peak loading in the maintenance program and considerably reduce the required capacity of shore based infrastructure. This in-turn will provide an ideal opportunity for the phased transition to the build program of the Future Submarine and an enhanced infrastructure to support a fleet of twelve.

If the 10+2 UUC was established it would free up one of the two facilities in South Australia which could then be used for the build of the first Future Submarine. Further investment to support sustainment (workshops, warehouses etc) would also be required, in addition to a considerable enhancement of the workforce. As the build of the Future Submarine progresses it would be necessary to create further infrastructure to establish the sustainment capability required to support a fleet of 12 submarines. The sustainment of 12



submarines would require a capability to simultaneously dock a minimum of four submarines. Establishing the sustainment activity in the same location as the Naval Base from which the submarines operate is a successful formula operated by the programs contributing to the International Benchmarking exercise. These do not need to be in the same location and would readily suit two locations if that offered a better operational rationale.

9.3 Service Life Evaluation Programme (SLEP)

Consideration is being given to a SLEP for the Collins Class – although no decisions have been taken, a formal study has been launched. A SLEP by definition takes the service life beyond that envisaged at the design stage and is frequently employed by the majority of navies to gain the maximum life from costly assets. The downside is that the cost of maintaining aging assets to the original design intent can be disproportionately expensive in both materials and time. Reliability can create serious issues with the inevitable material degradation from age and the hostile environmental conditions of the submarine space. Several characteristics of a SLEP on all or some of the Collins Class submarines are considered to be worthy of comment since such an activity is extended sustainment.

9.3.1 Obsolescence

Obsolescence management has been a poor relation for some time with many equipments requiring design changes, life-time buys of spares, or new equipment as the individual supply chains cease to exist. A SLEP programme would need to be confident solutions were available for most major equipment and would be a significant change from an obsolescence perspective to that current envisaged for both platform and weapon systems.

9.3.2 Funding Obsolescence

The funding of obsolete equipment and systems should be funded from the sustainment budget since these are essentially “update” purchases. However replacing some major equipment especially those with a large software element can be very costly and replacement is more akin to capital expenditure. Some flexibility is necessary between the sustainment and capital budgets will be necessary to fund obsolescence.

9.3.3 Design Margins

At the start of life all naval vessels have an allowance for growth in power consumption, cooling and weight to incorporate additional capability throughout their lives. The consumption of both in absolute level and rate is a key sustainment activity which needs to be monitored continuously to maintain adequate safety margins for stability, power distribution and removal of wild heat. Where precisely the responsibility lies needs to be



clearly established. While the precise level of margin remaining is known for each submarine we would strongly recommend that the consumption of the remaining margins is given added focus by the Commonwealth to minimise the need to trade out capability.

9.3.4 Design Authority

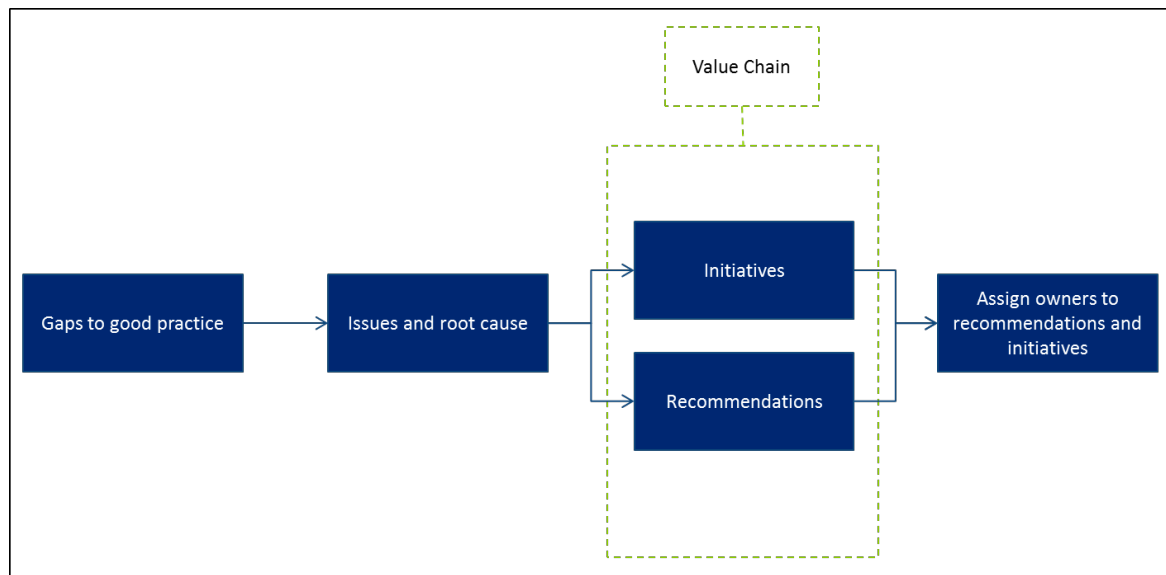
In Phase 1 Report we made reference to the lack of a clear directive on where the responsibility for the design of the Collins Class lies given the de facto design link with Kockums is tenuous. It was not entirely clear to us where the overall responsibility lies for the Collins Class design resides once the submarine is planned to operate outside the original designed life. We believe it should be clear where responsibility lies in both cases.



10 Step 7 – Recommendations

Recommendations have been developed based on our analysis of the gaps, root causes and the initiatives currently underway. This process is illustrated in Figure 38.

Figure 38 - Approach to defining recommendations



Approach for defining the recommendations

A causal-loop analysis was used to understand the relationship between each of the detailed issues in this report to validate the root causes. This analysis was undertaken due to the appreciation that each part of the Enterprise and each part of the value-chain is inter-linked: a change or issue in one aspect will have flow on impacts to others. Subsequently, each of the initiatives was assessed against the issues to determine their impact on the value chain and the root causes. This was done to provide assurance that the right initiatives were being targeted to address issues, the foundations for longer term improvements were being considered, and recommendations were streamlined, mutually exclusive and collectively exhaustive. Any gaps identified were considered in determining the final recommendations.

The recommendations have been aligned with the root causes to clarify how the fundamental challenges of the CCSP can be addressed, as shown in Table 21.



Table 21 – Recommendations

Root cause	Recommendation
Unclear requirement	<p>R1. Set a realistic target for the DMO to deliver MRDs and incorporate in the MSA</p> <p>R2. Define a clear (unclassified) requirement for the sustainment program</p>
Lack of a performance based ethos	<p>R3. Implement the ISSC to encourage performance based behaviour.</p> <p>R4. Finance to strengthen and broaden the accountability framework for the oversight of ASC</p> <p>R5. Strengthen the RAN as the Intelligent Customer for Sustainment.</p> <p>R6. A forum to bring together all suppliers within the Collins Class Sustainment Program</p> <p>R7. Coordinate existing initiatives, accept recommendations from the Phase 3 Report and coordinate implementation according to the Implementation Strategy</p> <p>R8. Develop and implement a contracting strategy</p> <p>R9. Create a collaborative framework known as the 'Enterprise' without diluting the individual responsibilities of the participants</p> <p>R10. Improve leadership skills, knowledge and experience</p>
Poor planning	<p>R11. Defer HMAS COLLINS Full Cycle Docking (FCD) and improve maintenance planning</p> <p>R12. Develop an Asset Management Strategy for sustainment</p> <p>R13. Availability requirements in the MSA should be derived from the IMS and a working level plan generated</p> <p>R14. Develop a through-life capability management plan reflecting the updated requirement</p> <p>R15. Define and endorse an Asset Management Plan</p> <p>R16. Implement and complete a fully-integrated sourcing and materials supply support program under the ISSC</p>
Unclear lines of responsibility	<p>R17. Treat defects occurring prior to the completion of Sea Acceptance Trials (SATs) as part of the contracted maintenance period</p> <p>R18. Review and where necessary improve procedures to audit O-level maintenance and records</p> <p>R19. Create a Head of the Submarine Profession</p> <p>R20. Develop a clear line of authority for maintenance of the design intent</p> <p>R21. Develop and implement a workforce strategy to specifically address skills shortages at the management level</p> <p>R22. Develop and implement a plan to resolve loss of Naval Engineering Skills</p>
Lack of a single set of accurate information to inform decision making	<p>R23. Improve adequacy of the Ships Information System and implement the use of onboard portable technology to aid in maintenance efficiency</p> <p>R24. Develop Enterprise-wide IT strategy and information management strategy</p> <p>R25. Develop cost baseline / model and supporting processes for sustainment program</p>



Each recommendation has been also categorised as either strategic, management or operational to specify the level of ownership required to successfully implement:

1. **Strategic:** Strategic level recommendations have pan Defence implications. The resolution of these issues requires support and direction from the 3 and 4 star levels of Defence.
2. **Management:** Management level recommendations are those that can be resolved through action at the 1 and 2 star level of the CCSP.
3. **Operational:** Operational level recommendations impact work done on a daily basis and the 'shop-floor' level in the Enterprise.

The detailed approach for implementing these recommendations including timing, phasing and identification of interdependencies of existing and new initiatives is contained within the implementation strategy. This strategy is a companion document to this report.

The following tables, organised according to strategic, management and operational, provide further detail about each recommendation.



10.1 Strategic recommendations

Table 22 – Strategic recommendations

Root cause	Recommendation	Detail	Owner
Unclear requirement	R1. Set a realistic target for the DMO to deliver MRDs and incorporate in the MSA	<p>The MRD target should be progressively increased over three or four years. It should allow for planned maintenance and assume an improvement over the current level of in-service defects.</p> <p>Action taken to date</p> <p>Completed by RAN in MSA 2012-2014.</p>	RAN
	R2. Define a clear (unclassified) requirement for the sustainment program	<p>Validate and restate the strategic level requirement for Collins Class availability including:</p> <ul style="list-style-type: none"> • The number of submarines required to be available for operations on a daily basis; and • The number of submarines needed to support the Fleet Commander for training and operations. <p>Action taken to date</p> <p>Completed by RAN in October 2012.</p>	RAN
Lack of a performance based ethos	R3. Implement the ISSC to encourage performance based behaviour	<p>Noting that about half of the sustainment costs are attributed to ASC, it is important to implement the ISSC to encourage performance based behaviour. In doing so this will allow acceleration of two key aspects, improving the planning of maintenance periods and transformation of the supply chain. ASC should be required to seek further support from third party organisations that specialise in this area and coordinate this with the RAN and DMO. A similar behaviour must be developed in all other suppliers, however this section deals with ASC in the first instance.</p> <p>During the transition period of the ISSC, refine the ISSC and where appropriate trial in WA to gain necessary experience at low risk in the following areas:</p> <ol style="list-style-type: none"> 1. Review the overall structure of the ISSC to allow a greater focus on: <ul style="list-style-type: none"> a. the performance management of individual maintenance periods b. the management on a continuous basis of “Parent Navy” activities 	DMO



Root cause	Recommendation	Detail	Owner
		<p>c. support services to operational submarines.</p> <ol style="list-style-type: none"> Set an annual target for MRDs, based upon the MSA, in the ISSC Apply specific senior level oversight to ensure that the specification for a maintenance period (the work scope) contains all known work and that the contract price and schedule/plan is based upon this more complete specification Remove or increase the thresholds for the ASC needing approval to commence emerging work. These are set far too low for an output based performance contract and should be optimised during the Transition Period Before entering a performance period conduct an independent audit of performance and cost before formalising the metrics for the contract performance period Introduce early in the Transition Period a formalised process involving DMO and ASC senior management to agree adjustment events during the Transition Period Adopt a framework of guidelines for Make-Buy decisions and the refinement of this during the Transition Period <p>Action taken to date</p> <p>ISSC placed by DMO 29 June 2012.</p> <p>Finance is working to enhance the governance and financial oversight arrangements for ASC with implementation of these arrangements to be finalised by December 2012</p>	
	R4. Finance to strengthen and broaden the accountability framework for the oversight of ASC	<p>In the context of the ISSC, it will be important for Finance to strengthen and broaden the accountability framework for the oversight of ASC as it takes on more responsibility and risk.</p> <p>Action taken to date</p> <p>Finance is working to enhance the governance and financial oversight arrangements for ASC with implementation of these arrangements to be finalised by December 2012.</p>	Finance



Root cause	Recommendation	Detail	Owner
	R5. Strengthen the RAN as the Intelligent Customer for Sustainment.	<p>The RAN's operating requirement as expressed in the MSA should be derived from the RAN's mission, trials and training needs. This should then be discussed with DMO and harmonised with the maintenance requirements to produce a coherent IMS. From this the RAN should set performance targets along with the appropriate resources for the DMO related to timeliness of maintenance periods, number of MRDs and supply chain performance. The RAN should then monitor DMO performance and hold them formally to account against appropriate KPIs. We would see this role being performed by the Chief of the Navy (CN).</p> <p>Action taken to date</p> <ul style="list-style-type: none"> • Chief of Navy and General Manager Submarines signed a charter in August 2012 clarifying their roles and responsibilities with respect to submarine sustainment. • Created and signed a new MSA 2012-2014 • Defined realistic (stretch) MRD targets • Harmonised (to some degree) with IMS • Set new performance KPIs • More active control over where money is spent 'beyond baseline budget' (ie new funding) • More active dialogue between CN and GM Subs 	RAN
	R9. Create a collaborative framework known as the 'Enterprise' without diluting the individual responsibilities of the participants	<p>Create a collaborative framework known as the 'Enterprise' without diluting the individual responsibilities of the participants. This will involve:</p> <ul style="list-style-type: none"> • Enterprise governance framework • Based on the definition of roles and responsibilities at an organisational level in the value chain, redefine the responsibilities at the team and individual level within each organisation • A Charter • A Code of Conduct (which describes what it means to collaborate) 	GM Submarines



Root cause	Recommendation	Detail	Owner
		<ul style="list-style-type: none"> • Shared values, a common culture and behaviours • Decision making systems • Designing KPIs that monitor the performance of the Enterprise and drives objective <p>Action taken to date</p>	
	R6. A forum to bring together all suppliers within the Collins Class Sustainment Program	<p>Embed as part of the governance system, a forum to bring together all suppliers within the CCSP to raise issues and identify opportunities.</p> <p>Action taken to date</p>	DMO and ASC
Unclear lines of responsibility	R20. Develop a clear line of authority for maintenance of the design intent	<p>Identify how maintenance requirements can be modified by an authority with a clear line of accountability for maintaining the design intent and submarine safety</p> <p>Action taken to date</p>	DMO
	R19. Create a Head of the Submarine Profession	<p>Create a Head of the Submarine Profession to define the recruitment, training and career progression requirement of submariners. This role would also assist the Enterprise by ensuring the provision of submarine advice, where necessary and appropriate, to key decision makers. The Head of Submarine Profession should be added to an existing appointment as a formalised role.</p> <p>Action taken to date</p> <p>The Review Team has been advised:</p> <ul style="list-style-type: none"> • CN has appointed a Head of Profession and initial steps to formalise the role have been taken • CN has established a 'workforce forum' that brings together key contributors to recruitment, training and career progression 	RAN



10.2 Management recommendations

Table 23 – Management recommendations

Root cause	Recommendation	Detail	Owner
Poor planning	R12. Develop an Asset Management Strategy for sustainment	Develop an Asset Management Strategy for sustainment upon which funding can be justified and reconciled and ensure manpower and infrastructure strategies are aligned to this Action taken to date	DMO
	R13. Availability requirements in the MSA should be derived from the IMS and a working level plan generated	The MSA should be derived from the IMS on an annual basis to set the availability requirement on the DMO. Based on the MSA plan, a 'working level plan' should be created and then regularly updated to optimise availability throughout the year. Action taken to date MSA is now derived from the IMS. This then forms the basis of the Contract Master Schedule that is used as an active schedule management tool for all agencies	RAN
	R14. Develop a through-life capability management plan reflecting the updated requirement	Reviewing the proposed Rizzo capability management structure, develop a through-life capability management plan for the CCSP, covering all participants and phases of sustainment. The plan should reflect the unclassified sustainment requirement Action taken to date	RAN
Lack of performance based ethos	R7. Coordinate existing initiatives, accept recommendations from the Phase 3 Report and coordinate implementation according to the	Coordinating initiatives will involve: <ul style="list-style-type: none"> Establishing a Capability Reporting Office to provide a single conduit to monitor recommendations and help improvement initiatives realise intended benefits Establishing performance goals, measures and a reporting framework across all initiatives Developing standard benefits framework and process across all initiatives 	GM Submarines



Root cause	Recommendation	Detail	Owner
	Implementation Strategy	Action taken to date	
	R8. Develop and implement a contracting strategy	<p>Develop and endorse an overarching contracting strategy to improve performance based contracting incentives. This will also involve:</p> <ul style="list-style-type: none"> Developing the MSA to align with Rizzo recommendations Aligning related sustainment contracts with the ISSC structure <p>Action taken to date</p>	DMO
	R10. Improve leadership skills, knowledge and experience	<p>Improving leadership skills, knowledge and experience will involve:</p> <ul style="list-style-type: none"> Implementing a leadership development program to improve the ability of senior leadership in driving change across the CCSP. Confirming availability and relevance of existing leadership training programs in Defence Designing and implementing program amendments as required to support submarine enterprise needs <p>Action taken to date</p>	GM Submarines
Unclear lines of responsibility	R21. Develop and implement a workforce strategy to specifically address skills shortages at the management level	<p>Reviewing the SMWSP and Rizzo Workforce Plan, address skills shortages at the management level by developing an Enterprise wide workforce strategy to clarify how to manage skill requirements across the sustainment value chain</p> <p>This needs to go beyond known crew and engineering shortages, to include planning, supply chain, commercial, financial and other skills and it needs to align HR supporting processes to attract, develop, deploy and retain skills across the CCSP</p>	DMO



Root cause	Recommendation	Detail	Owner
		<u>Action taken to date</u>	
	R22. Develop and implement a plan to resolve loss of Naval Engineering Skills	Ensure clear and relevant role descriptions exist and recruit suitably qualified and experienced personnel into these positions <u>Action taken to date</u>	RAN and DMO
Lack of a single set of accurate information to inform decision making	R24. Develop enterprise wide IT strategy and information management strategy	Establish and embed an IT strategy across the CCSP covering the application landscape, architecture, data quality, data management, systems integration and management information <u>Action taken to date</u>	GM Submarines
	R25. Develop cost baseline / model and supporting processes for sustainment program	Establish an agreed cost baseline which effectively covers the scope of sustainment processes across the CCSP, ensure the concept of a 'single source of the truth' is delivered and define supporting cost management processes to drive planning and decision making <u>Action taken to date</u>	GM Submarines



10.3 Operational recommendations

Table 24 – Operational recommendations

Root cause	Recommendation	Description	Owner
Unclear lines of responsibility	R17. Treat defects occurring prior to the completion of Sea Acceptance Trials (SATs) as part of the contracted maintenance period	<p>Treat defects occurring prior to the completion of Sea Acceptance Trials (SATs) as part of the contracted maintenance period and do not record them as URDEFs. If necessary align the Contract Acceptance Date to differentiate the two processes.</p> <p>Action taken to date</p> <p>Performance metrics in the new Collins Materiel Sustainment Agreement (MSA) between Navy and DMO pertaining to defects now account for defects only following SATs completion. This action has not addressed the precise issue.</p>	RAN DMO ASC
	R18. Review and where necessary improve procedures to audit O-level maintenance and records	<p>Review and where necessary improve procedures to audit O-level maintenance and records at the handover point to maintenance providers. This should include an assessment of the amount of O-level maintenance that can be reasonably expected of the crews.</p> <p>Action taken to date</p> <p>The Navy has commenced rectification with inclusion of performance metrics in the MSA that track completion of O-level maintenance.</p>	RAN
Poor planning	R11. Defer HMAS COLLINS Full Cycle Docking (FCD) and improve maintenance planning	<p>Improvements in maintenance planning should be driven by the HMAS COLLINS Full Cycle Docking (FCD). The start of the FCD should be deferred until a full and reliable plan is developed for the schedule and Bill of Materials (BoM). A reliable plan should enable the end date to be held.</p> <p>Action taken to date</p> <p>The DMO advises that the HMAS COLLINS FCD has not yet commenced and is in enhanced preplanning.</p>	DMO
	R15. Define and endorse an Asset Management Plan	<p>Develop an Asset Management Plan for the Collins Class, consolidating current understanding to ensure it is clearly defined and followed across the CCSP and assure future adherence to the ABRs.</p> <p>Long term sustainment plans should be developed to justify and secure long term funding for sustainment. Long term plans should be shared with contractors to support capacity planning and</p>	ASC



Root cause	Recommendation	Description	Owner
		delivery of value for money. <u>Action taken to date</u>	
	R16. Implement and complete a fully-integrated sourcing and materials supply support program under the ISSC	Establish an initiative to ensure alignment and re-coordination of the supply of spares and material across the CCSP and rebalance efforts to ensure that existing supply chain initiatives efficiently contribute to improved sustainment outcomes. <u>Action taken to date</u>	ASC
Lack of a single set of accurate information to inform decision making	R23. Improve adequacy of the Ships Information System and implement the use of onboard portable technology to aid in maintenance efficiency.	To assist crews in carrying out their maintenance obligations, improve adequacy of the Ships Information System and implement the use of onboard portable technology to aid in maintenance efficiency. <u>Action taken to date</u> This recommendation is to be addressed in the Submarine Capability Improvement Program (Maintenance Effectiveness Review Project) which has commenced.	RAN



Annex 1 - Previous reviews and lessons learned

There have been numerous reviews which have looked at the Collins Class or which have touched on it as part of a wider scope.

We have studied these to draw out points relevant to our work. More recent reviews (Proust, Black and Rizzo)²⁵ together with ANAO Reports²⁶ have identified a number of systemic issues within the Defence organisation relating to the lack of alignment between authority, responsibility and accountability within the Capability Systems Life Cycle (CSLC) process for major capital equipment. There have been ongoing recommendations concerning the need to place much greater emphasis on the need to properly address sustainment at the beginning of the acquisition (CLSC) process.

There have also been various recommendations to strengthen the role and responsibilities of Capability Managers but it would appear that there has been little tangible action (one initiative now implemented required the Capability Manager to sign the Material Acquisition Agreement and others sought to strengthen MSAs).

Importantly recent reviews identified a range of sustainment issues not dissimilar to those we have identified during Phase 2 evidence gathering, including supply chain issues, asset management issues, unclear roles and responsibilities.

Within these reports and other documents such as 'The Collins Class Submarine Story'²⁷ a large number of lessons are drawn out. Below we have selected those lessons most relevant to sustainment.

Summary of Lessons Learned:

- Sustainment should be given much higher attention and priority during the initial 'Needs', 'Requirements' and 'Acquisition' phases of the CLSC process. Due to the potential cost/investment required during the 'in-service' phase, failure to fully address sustainment will simply exacerbate the cost of ownership (training, maintenance, upkeep, resources) (as our own evidence makes plain).
- Selection of systems/equipment should be based on systems sourced from credible/proven suppliers so that ongoing investment can be amortised with other users (e.g., combat systems, weapons, batteries, diesel engines) - avoid 'small pools'.
- The relationship with the Design Authority and OEMs should be maintained and exploited throughout the life of the capability (submarine).
- Proper attention should be given to asset management, logistic support, engineering

²⁵ Review of The Defence Accountability Framework, Black, Australian Government Department of Defence, 2011, Canberra; Report of the Defence Management Review, Proust, Ritchie, Kallir, Azarias, Australian Department of Defence, 2007, Canberra.

²⁶ Australian National Audit Office, ANAO Audit Report No. 57 2010/11 Acceptance into Service of Navy Capability.

²⁷ 'The Collins Class Submarine Story' by Peter Yule and Derek Woolner CUP 2008



requirements.

- The Capability Management role needs to be resourced appropriately to enable it to be fully capable of taking the lead roles of owner of the submarine program and customer for sustainment, including all operational, engineering, logistic and program management aspects of whole-of-life ownership and the transition from the Collins Class to the future submarine class.



Annex 2 - Response to Phase 1 advice

The Phase 1 report provided a number of recommendations for early consideration. Table 24 below outlines the actions that have been taken by the RAN, DMO and ASC in response to these recommendations.

Table 24 - Actions in response to Phase 1²⁸

Phase 1 Recommendation	Action
Direct more resources to spare parts and rotatable pool items.	Additional resources have been applied to inventory following the decision of the workforce management committee on 15 December 2011. An additional \$23.5m has been allocated to inventory in FY11/12, and an additional \$45.18m in FY12/13.
Strengthen decision-making in the management of agreed Materiel Ready Days or if not 'materiel' by the Fleet Commander or his senior submarine advisor Commander SUBFOR; both in formal consultation with the Capability Manager (CN).	The RAN is revalidating its requirement for MRDs to ensure the efficient use of resources. At the same time, reductions in MRDs are being formally managed by the ASPO whereby reductions are authorised by Program Manager Collins in agreement with the RAN Strategic Command. This ensures that the impact of reductions is fully understood, and will also capture consumption (informing updates of the MSA between the RAN and DMO, which allocates financial resources to all sustainment activities).
Continue to put the ISSC in place with ASC.	The ISSC took effect from 1 July 2012.
The classification of Priority 1 Urgent Defects by the submarine commander should be moderated by Commander SUBFOR to avoid over classification purely to increase priority of spares:	SUBFOR staff currently review all urgent defects raised by submarines. This ensures that all safety issues are fully considered, and that appropriate priorities have been assigned.
Implement pre-joining training for officers posted to submarines including industry modules, to improve their understanding of platform and equipment design:	<p>Training Authority Submarines is investigating how to incorporate industry training visits as part of the training continuum for Commanding/Executive Officers and Technical Officers. Training under consideration will include the following:</p> <ul style="list-style-type: none"> • Training visits to ASC (maintenance), Pacific Marine Batteries (PMB) (batteries), Thales (sonar), and Raytheon (combat system and communications) for Commanding/Executive Officers designate. • Training visits to ASC (maintenance), PMB (batteries), and Babcock (submerged signal ejectors) for Marine Engineering Officers designate. • Training visits to Thales (sonar), Raytheon (combat system and

²⁸ Provided by DMO April 2012



Phase 1 Recommendation	Action
	communications), and BAE (periscopes) for Weapons Electrical Engineering Officers designate.



Annex 3 - Evidence for Phase 1 Issues

Table 25 provides a summary of evidence gathered by workstream which supports the Phase 1 Report Issues.

Table 25 - Summary of evidence

Phase 1 report issues		Strategy & management	Personnel & organisation	Asset management	Supply chain	IT	Operations, planning & scheduling	Contracting	Cost model & benchmarks
1	Poor availability caused by a crew shortfall, lack of spares and unreliable equipment								
2	Strategic leadership lacks cohesion								
3	Finance, DMO, the RAN and Industry not acting collectively as an "enterprise"								
4	Lack of clarity of accountability, authority and responsibility								
5	Submarine domain knowledge thinly spread								
6	Lack of robustness of the RAN's contribution to manning and sustainment								
7	DMO tends to seek direct involvement at the tactical level								
8	Performance based ethos yet to be embedded in ASC								
9	No long term strategic plan for efficient asset utilisation								
10	Unclear requirement and unrealistic goals								

LEGEND

Workstream supports issue	
Workstream partly supports issue	
Workstream does not support issue	
Issue not applicable for workstream	



Annex 4 - Sources of evidence

Approach to evidence collection

The Phase 2 study is evidence based, therefore, the approach taken to the collection of evidence is important to the integrity of the report findings. All workstreams conducted their analysis with the objective of providing the highest level of evidence possible to support their findings.

Collection of materials was managed through dedicated points of contact within the RAN, DMO, ASC and Finance. The team recognises the considerable effort that these individuals put in to coordinate the collection, security screening and distribution process, which ran from week 2 to week 10 of the program. On completion of the study, the total number of documents provided to the analysis team exceeded 2,500.

Documentation was initially requested in 282 information requests on 8 March and 15 March 2012. Additional critical information was then identified during interviews and followed up by the workstreams. Approximately 1,700 files were provided by the DMO, 320 by the RAN, 500 by ASC and 40 by Finance. While there was a large document base to draw from to support analysis, there was not always documented evidence and/or data available and alternative approaches were used to support the findings. The quality of the proof provided by these alternative approaches varied, as outlined in Table 26.

Table 26 - Approach to evidence collection

Approach to evidence collection	Description of approach	Assessment of suitability
External benchmarks (related industry)	Industry reports are included in this category of evidence. Requires normalisation to be acceptable for reference	Acceptable primary evidence
Internal benchmarks/ comparisons	Referencing agency documents and processes. Analysis of performance across agencies and process variance	Acceptable primary evidence
Best practice reference models	Referencing industry and Deloitte methodologies. References to process excellence in specific functional domains	Acceptable primary evidence
Survey results	Results of the As One survey returns across the Collins Program compared with other large corporates	Used to support analysis combined with other sources (secondary evidence)
Corroborated interviews	The results of interviews and detailed discussions with industry	Acceptable primary evidence



Approach to evidence collection	Description of approach	Assessment of suitability
	experts and agency leaders on specific points of principle	
Interviews	Interviews with key participants in the CCSP	Used to validate and understand the data collected and the issues specific to each organisation
Rumour	Informal discussions and second-hand reporting of fact	Not used as the basis of report findings

Contributions from the Stakeholder Community

Over 200 people were consulted as part of this study. The level and type of contribution varied between stakeholders according to their role, experience and the requirements of the Review Team.

Submissions Received

The review team contacted twelve key companies and organisations inviting them to forward suggestions for improving the sustainability/availability of the Collins Class. Replies were received from nine and more may follow.

The responses varied in depth and contained some very useful material. The following were common themes:

- The importance of program leadership governance and accountability;
- Establishment of a key suppliers forum - building on the "enterprise" theme;
- Materials management / improved inventory management; and
- Long term contracts to incentives process or product improvement – the opposite is the norm at present.

Each supplier has several ideas to improve the availability of their equipment. In summary, there are a lot of potentially beneficial ideas coming from the submarine community. Based on these submissions, we recommend conducting a suppliers' conference in the near future to seek further ideas to improve availability.



Annex 5 - Commitment and Culture Survey Insights

The challenge

The key priority of the CCSS is to ensure the long term future of the Collins Class fleet and the Australian submarine program in order to defend Australia. As part of this goal, the Review Team is playing an important role in providing strategic evidence into the current state of the Australian submarine program and insight into how personnel are currently working together to deliver, operate and sustain Australia's submarines.

The Commitment and Culture survey was designed to provide insights into creating the right conditions to achieve the business objectives of the submarine program through understanding:

- Where employees most strongly connect to different organisational layers;
- How committed people are to the goals of the submarine program;
- The extent to which people experience work in their preferred style; and
- The levels of engagement, change readiness and key cultural measures throughout the program.

The survey was completed by 665 leaders and personnel across the CCSP. The survey was issued to personnel from the RAN, JLC, JOC, Capability Development Group (CDG), Finance and ASC. A 75% response rate was achieved, which provides a statistically significant sample size upon which to draw insights and conclusions.

Commitment and Culture survey insights

Phase 1 of the Coles Review identified ten key challenges of the submarine program, seven of which the survey is able to provide data, evidence and insight into (See Table 27).

Table 27 - Key Challenges of the Submarine Program

Challenge	Survey provides evidence
1. Poor availability caused by a crew shortfall, lack of spares and unreliable equipment.	✓
2. Strategic leadership lacks cohesion	✓
3. The RAN, DMO, Finance and Industry not acting collectively as an "Enterprise"	✓
4. Lack of clarity of accountability, authority and responsibility	✓
5. Submarine domain knowledge thinly spread	✓
6. Lack of robustness of the RAN's contribution to manning and sustainment	✗
7. DMO tends to seek direct involvement at the tactical level	✗



Challenge	Survey provides evidence
8. Performance based ethos yet to be embedded in the ASC	✓
9. No long term strategic plan for efficient asset utilisation	✗
10. Unclear requirement and unrealistic goals	✓

The remainder of this document describes the key insights and evidence obtained through the survey to each of these seven key issues.



Challenge 1: Poor availability caused by a crew shortfall, lack of spares and unreliable equipment

Key findings: A number of commitment and cultural issues are contributing to this challenge. More commitment is needed to key objectives relating to crew shortfalls, maintenance and design intent across the organisations. A perceived lack of resources may be a key contributing factor to the levels of commitment

Five goal statements were identified in the Commitment and Culture survey as directly associated with this challenge:

1. We will do everything we can to provide well maintained, safe and reliable submarines ready to go to sea (asked of all respondents).
2. Providing sufficient, fully trained and competent crews is our shared responsibility (all).
3. We will always ensure that we operate and maintain the submarines in accordance with established operating procedures and issued guidance (asked of the RAN/JOC only).
4. We will act as an intelligent provider to the RAN in order to equip and sustain the submarine fleet (DMO/JLC only).
5. We will deliver on our commitments to DMO and the RAN as our customers in the operational support and sustainment of Australia's submarines (ASC only).

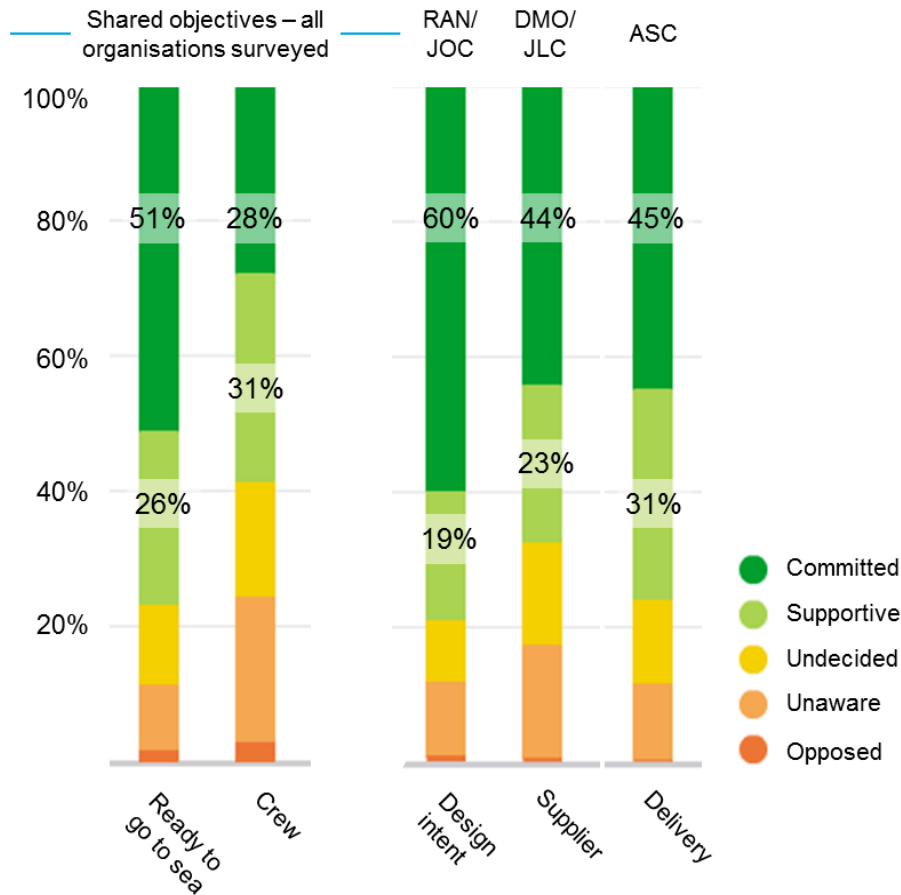
The results in Figure 39 show that, while overall commitment levels across all organisations are mostly positive, at an organisation level there is a degree of variability in commitment to achieving organisation priorities. Positively, 60% of the RAN is committed to operating the submarines in accordance with their design intent and just over half of all respondents across all organisations are committed to providing submarines that are ready to go to sea.

The data also shows, however that there are some areas where greater commitment is needed. The provision of crews as a shared responsibility is the least understood goal with only 28% commitment. This highlights that more clarity is required around inter-relationships in the system so that everyone understands how their role contributes to the provision of fully trained and completed crews. Almost one third of DMO do not recognise their fundamental role of acting as an intelligent supplier to the RAN as their customer and less than half of ASC are committed to delivering on their promises.

One of the key issues highlighted by these results is the high level of 'support' across the submarine program towards the strategic goals. It is important to note that 'support' indicates that people agree with the objectives but do not see it as their job to actively work towards achieving them. For these goals that directly relate to ensuring submarine availability, there is a high proportion of people who indicate they believe in these goals, but don't believe (or don't know how) that it's their job to contribute to them being achieved.



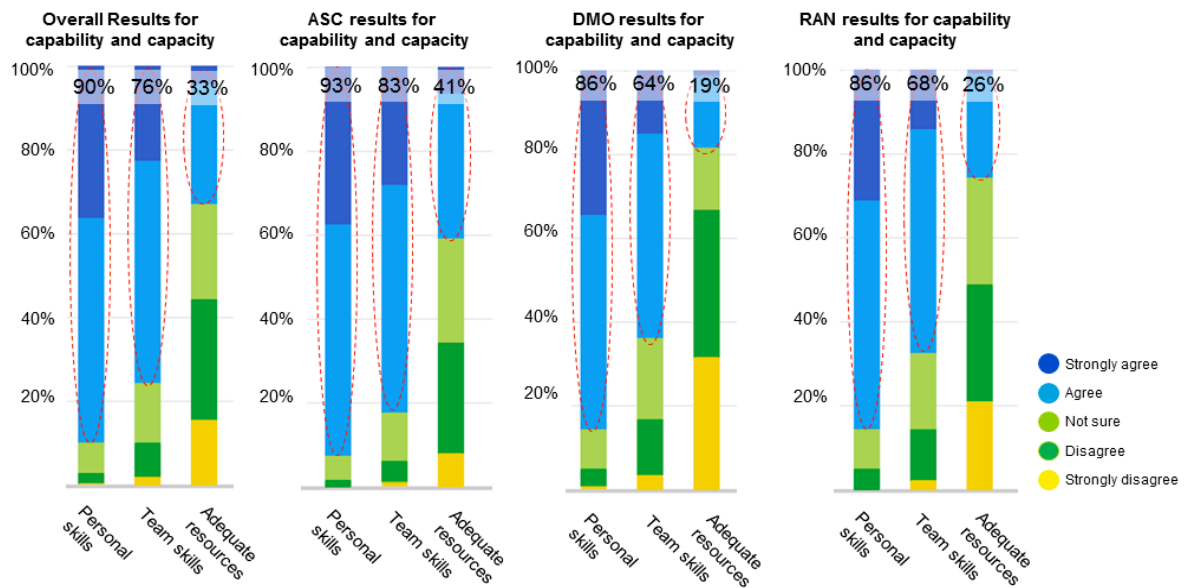
Figure 39 - The Commitment to goals related to availability, crew and spares



Part of the explanation for the variable levels of commitment can be linked to the fact that people across the submarine program do not believe that their team is adequately resourced to perform their job (Figure 40). Despite people agreeing that they (90%) and their teams (78%) have the necessary skills, there are identified capacity constraints placing pressure on successful achievement of objectives. Overall only one third of respondents agree that they have adequate resources to meet their objectives. Results for the submarine force are even lower; with only 14% of individuals agreeing that they have adequate resources providing further evidence that lack of crews is contributing to the overall issues in the submarine program.



Figure 40 - Capability and capacity perceptions across the submarine program



Taken together, these results indicate resourcing and commitment issues that will be hindering the availability and sustainment of submarines.

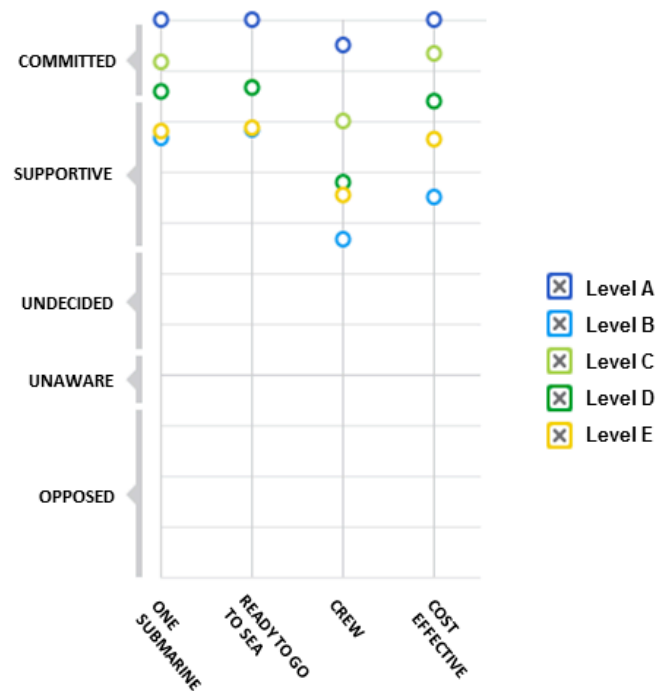
Challenge 2: Strategic leadership lacks cohesion

Key findings: Commitment and cultural issues at a senior leadership level (2 or equivalent and above) are particularly concerning. Senior leaders show varied and sometimes low commitment to objectives. They are not acting cohesively as a team and believe that there is no clear vision or defined requirements for the submarine program.*

Figure 41 highlights that senior leaders show varied and sometimes low commitment to the shared objectives of the submarine program. Positively, Level A leaders (4*, Band 4 or equivalent) who responded to the survey show the highest levels of commitment of all respondents. Of concern, however, is the low level of commitment of leaders at level B (3*, Band 3 or equivalent), which is lowest of all executive and middle management levels.



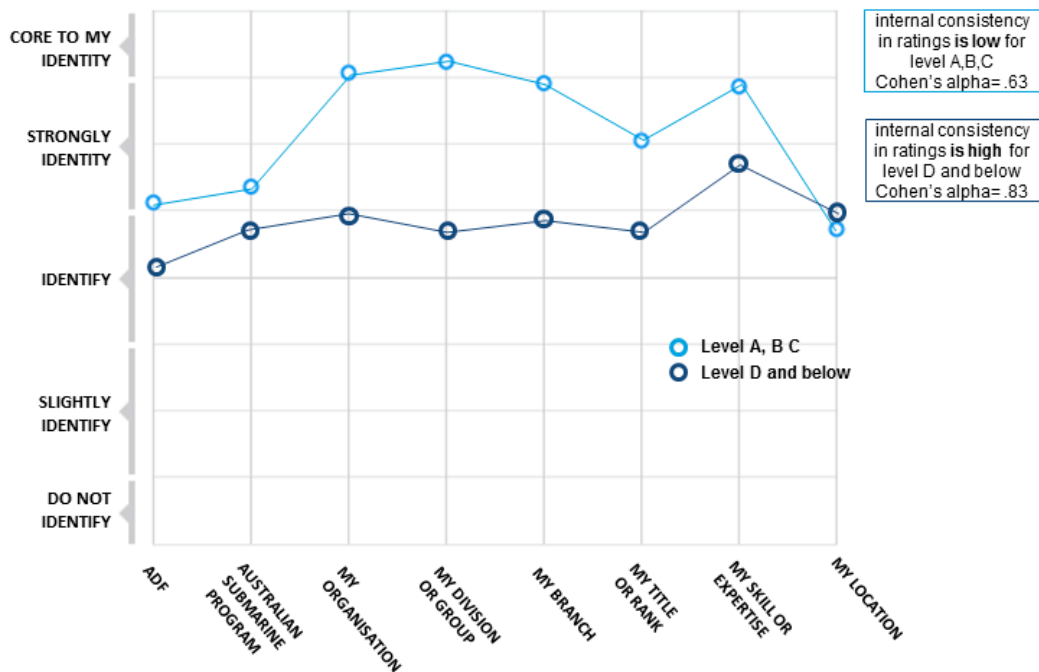
Figure 41 - Level of commitment by leaders to the submarine program's key strategic goals



The leadership group also show a much stronger connection with their organisation than with the submarine program (Figure 42). While this may be logical to a degree, given the wide portfolio of responsibilities at this level, the marked difference in the strength of connection between these two organisation aspects is concerning, particularly when compared with the results for those at level D (1*, Band 1 or equivalent) and below.



Figure 42 - Level of identity of leadership vs followers across the submarine program



Using a statistical analysis technique to measure the internal consistency of these results demonstrates that the senior leadership group are acting as less of a team than the levels below. Cohen's alpha is a measure used in statistics to test for consistency or reliability in a group of results. A result above 0.7 indicates acceptable internal consistency in team perceptions. The score for the senior leadership group is 0.63 compared with 0.83 for other levels. This indicates that the senior leadership team are showing a lower degree of consistency in their responses to the questions than the management and operational levels of the submarine program.

This result combined with the commitment to shared objectives shows a siloed group more focussed on their individual agendas rather than a shared and cohesive group working together towards achievement of an effective submarine program

Compounding this issue is the fact that the senior leadership group don't believe that there is a clear vision or strategy for the submarine program. Figure 43 shows that half the leadership group don't agree that there's a clear vision and almost three quarters of the group don't agree that there are clear requirements aligned with the vision.



Figure 43 - Senior leadership results for engagement and change readiness

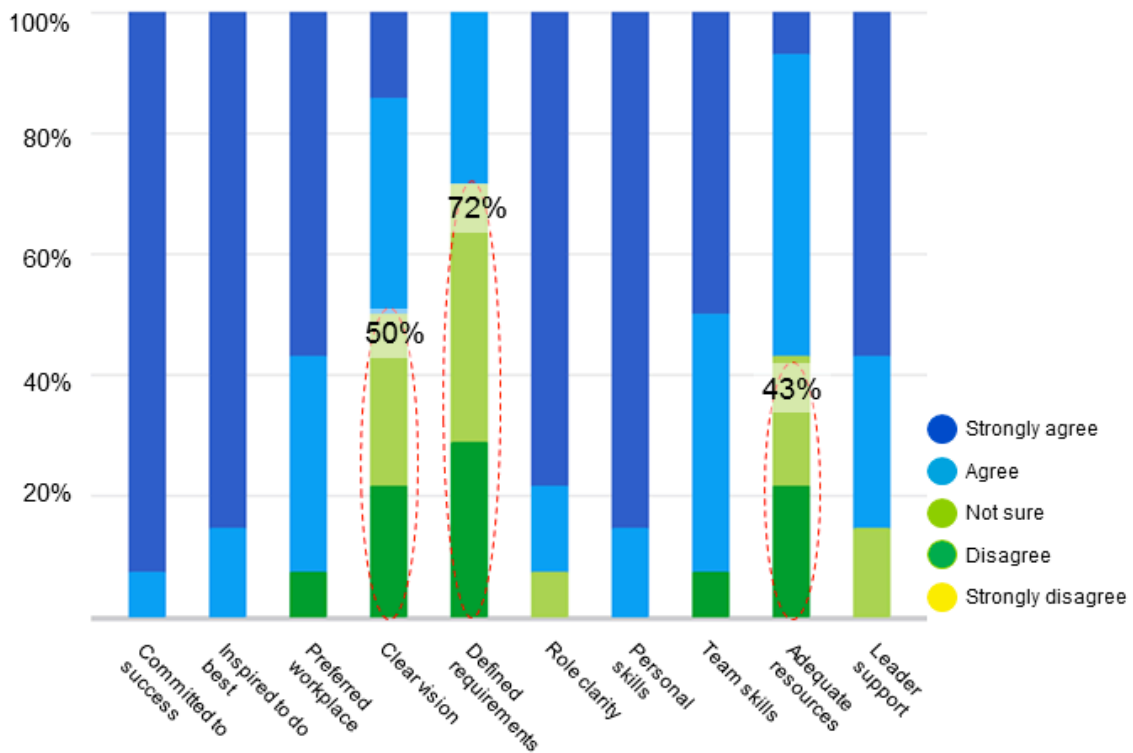
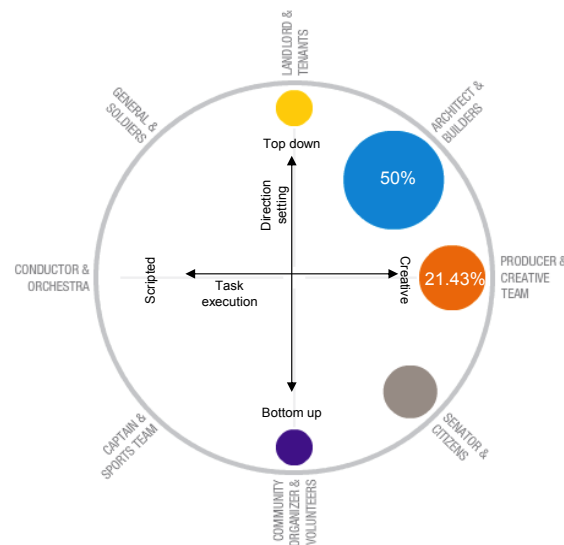


Figure 44 shows that the ideal organisation for the senior leadership group is one in which direction is set from the top and people are given relative freedom and creativity to execute the vision. The leadership group are largely aligned in this ideal world view with almost 75% showing this preference. For this style 'freedom with a frame' to be successful, however, requires a clear and inspiring vision for the organisation to follow. These results provide a clear indication that the leadership group need to focus first on developing and agreeing to a shared vision and strategy for the submarine program.



Figure 44 - Leadership results for their preferred way of working together



Challenge 3: The RAN, DMO, Finance and Industry not acting collectively as an enterprise

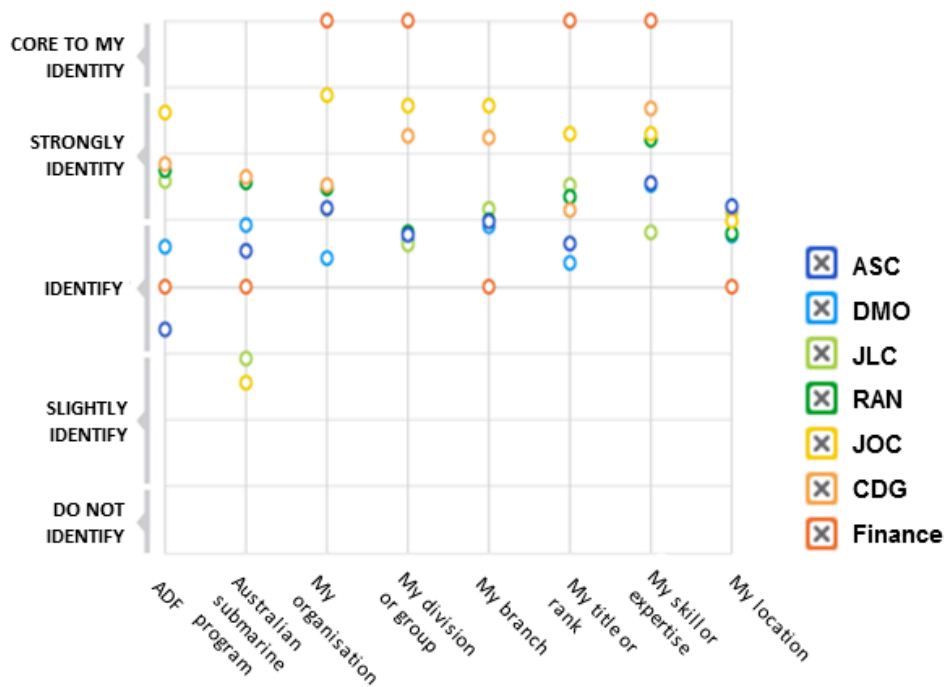
Key findings: A number of cultural issues are contributing to the overall lack of an enterprise view among the submarine sustainment program participants. Positively, however, there is a willingness to work together as an enterprise and recognition that this is critical to the future success of the submarine program.

Commitment levels explored previously (Figure 39) show that overall results are encouraging but that there is a large prevalence of passive support where people are not actively helping to pursue the goals, they are merely supporting on the sideline. Helping people to first understand their role and second be prepared to commit their discretionary effort is a significant challenge for leaders.

We can also see in Figure 45 fractured and inconsistent results for the strength of connectedness that people feel with different organisational aspects. Identity to the submarine program is consistently lower than the other aspects measured. To drive change and success across the program it is critical that this is consistently higher. People across the organisations first and foremost see themselves as professionals within their area of skill or expertise indicating that they are more focussed on achieving their personal/professional objectives as opposed to the objectives of the submarine program.



Figure 45 - Shared identity comparison between all organisations

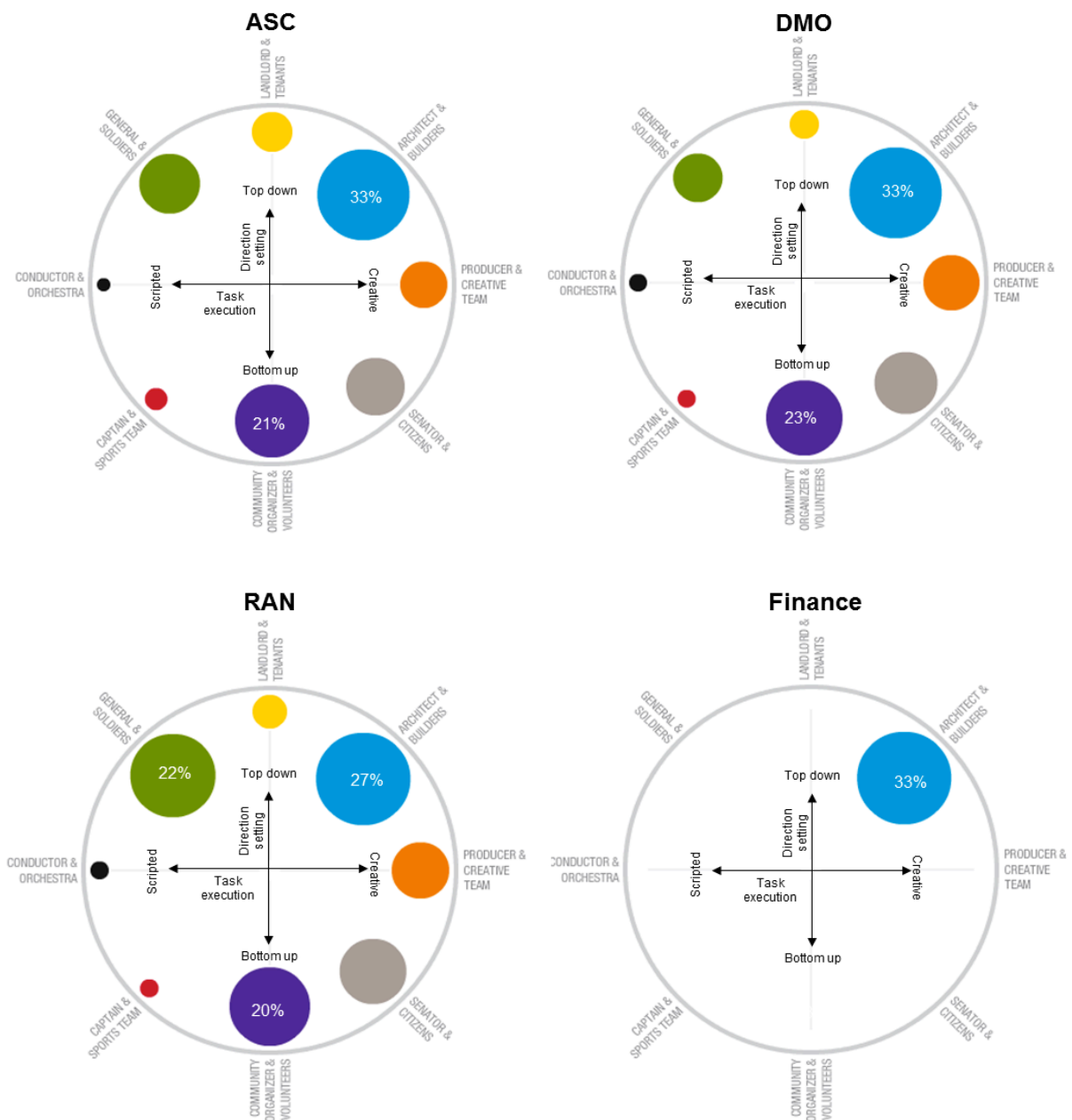


For an enterprise approach to be successful there needs to be a higher level of connection to the submarine program. This means that messages about the need for an integrated enterprise approach to submarine sustainment need to be highlighted, but in the context of how this will most benefit the individual. People will connect emotionally to the submarine program by understanding how it will further their personal skill development and career.

Positively, there is a willingness to work together to ensure the future success of the submarine program. Overall 95% of respondents are committed to the future success of Australia's submarine program. Figure 45 also shows that people largely agree on how this can be most effectively achieved. Across organisations there is a preference for top down direction setting coupled with relative freedom in the way strategy is executed. While there are some pockets of difference, largely it appears that there is some common understanding of how to work together to achieve the objectives of the program (as shown in Figure 46).



Figure 46 – The ideal world view of the key participant businesses



Challenge 4: Lack of clarity, authority and responsibility

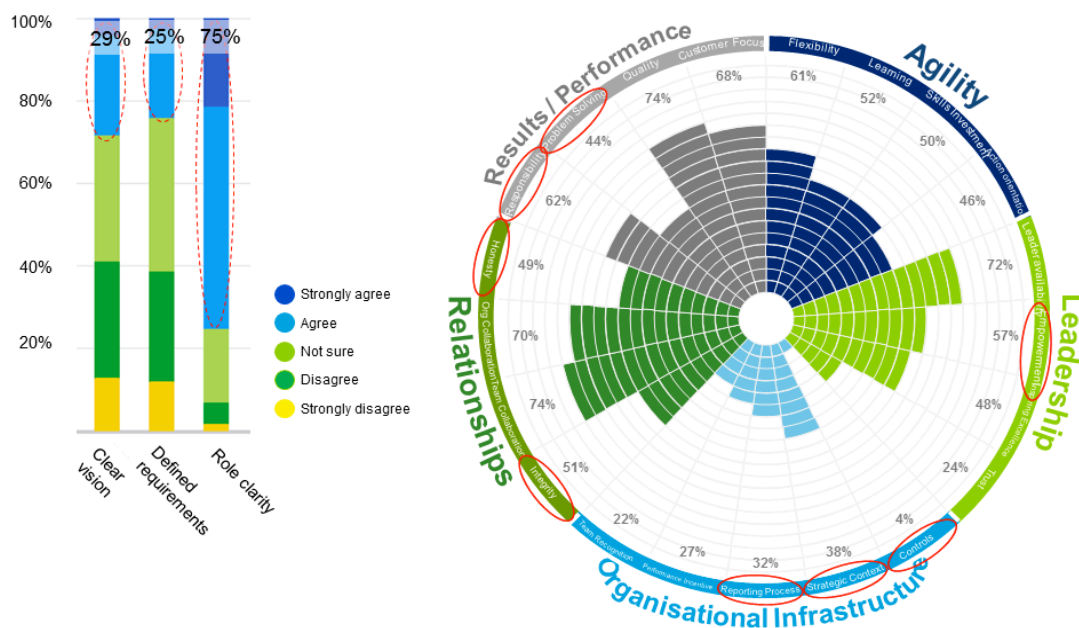
Key findings: A lack of clarity, accountability, authority and responsibility are some of the key cultural issues facing the submarine sustainment program participants, with the survey results that relate specifically to these aspects receiving some of the lowest results. Positively, however, people show a preference for organisational conditions that will drive an increase in authority and responsibility.

The culture results shown in Figure 47 highlight the lack of authority and responsibility that people experience throughout the submarine program participant businesses. While 63% of



people say they take responsibility for their work, just over half agree that people keep to their word and less than half say they hold each other accountable for this. Proactive problem solving is a key area of concern with less than half the population agreeing that people deal with issues before they become problems or deal with problems outside their area of responsibility. Almost half the population don't believe that leaders empower and trust people to do their jobs and only one third agree that the reporting processes are efficient and effective. 96% of respondents agree that they must go through many layers of approval before an idea can be implemented.

Figure 47 - Culture and change readiness results that provide evidence of a lack of clarity, authority and responsibility

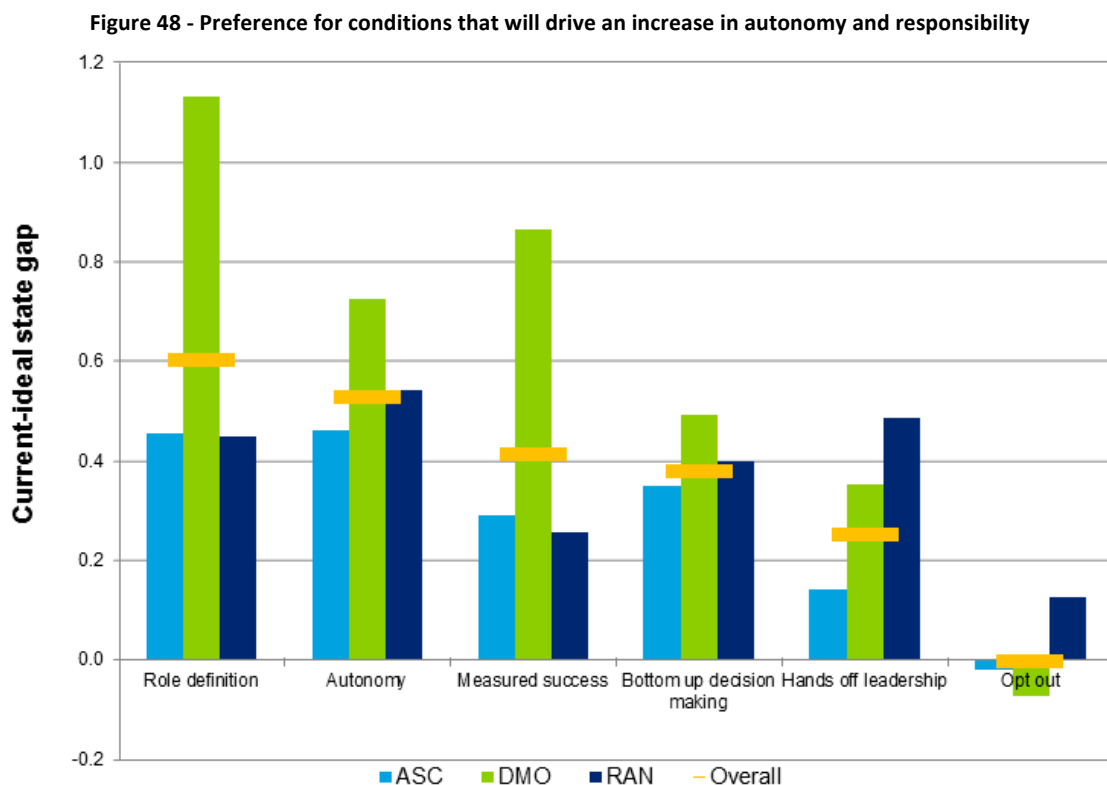


We saw earlier that senior leaders do not believe there is a clear vision or clearly defined requirements for Australia's submarine program. Unsurprisingly, these results are even worse for levels below senior leadership. These results show that less than one third of participants below senior leadership understand the vision and less than one quarter agree that there are clearly defined requirements that align to the vision. The culture results also show that only 38% of the population understand the business reasons for what is done. Positively, however, three quarters of the population understand their role in making the submarine program a success. Taken together with the identity results in Figure 44, these results indicate that people see themselves as skilled professionals capable of performing the task assigned to them, but they have limited sense of the bigger picture or the overall purpose of their actions.

Looking into more detail on how people would prefer to work, we can see that there is a preference for an increase in the organisational conditions that will drive autonomy and responsibility (Figure 48). Bars above the line show a preference for more of this condition



and below the line indicates a desire for less. In relation to authority, people are clearly indicating that they want a greater degree of autonomy, involvement in decision making and for leadership to be more hands off. We saw earlier that people largely understand their role, but these results also show that they want a better defined role and they want success to be determined by achieving measured goals and objectives. Overall, the degree to which people have to do what is asked of them is at the desired level, but at DMO we see a desire for less opportunity to 'opt out' and at the RAN a greater opportunity for this. This indicates that the level of control being exercised at each of these organisations is out of balance.



Challenge 5: Submarine domain knowledge thinly spread

Key findings: The demographics of the survey respondent indicate that there is a lack of specific submarine experience in senior roles

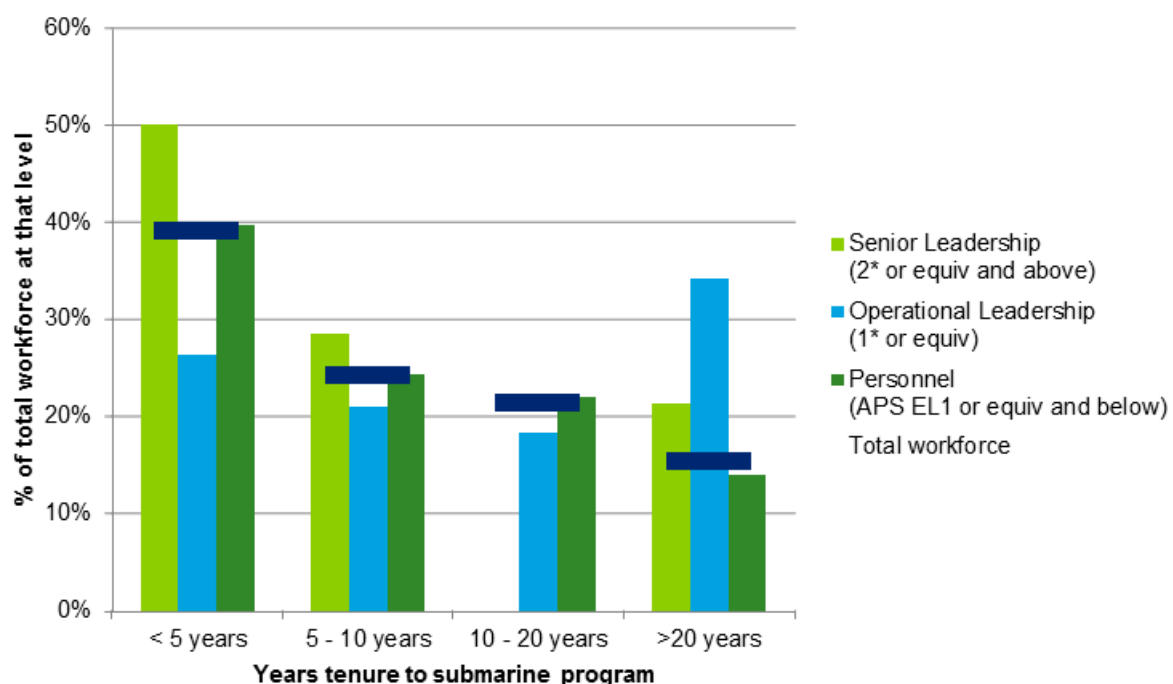
Results show a competency and capability gap to delivery with only a small number of personnel at the top with extended experience within the submarine program (Figure 49). Across all survey respondents almost 40% have less than five years' experience in the submarine program and a further 34% have 5-10 years' experience, totalling almost three quarters of overall workforce with less than 10 years' experience in the submarine program. At senior levels this is even more significant with almost 80% of people at 2* level and above with less than 10 years' experience (50% less than five and 28% 5-10 years).



We saw previously that senior leadership also show a stronger connection to their individual organisation than to the submarine program. A lack of submarine experience coupled with a greater allegiance to their organisation could impede the ability of senior leaders to make decisions that will benefit the entire submarine program.

We also see that half of the workforce at 1* level or equivalent have been involved with the submarine program for over 10 years indicating that there is a rich pipeline of experienced submariners that can be groomed to fill more senior roles. However, these results clearly show that these deeply experienced submariners do not occupy senior roles. This presents an additional challenge of how to ‘groom’ and leverage skills of submariners for leadership positions to build the foundation knowledge at the top.

Figure 49 - Years tenure to the submarine program of survey respondents



Challenge 6: Performance based ethos yet to be embedded in the ASC

Key findings: The results from the survey indicate that this issue is not isolated to ASC and that a performance ethos is not embedded in any of the participant businesses and, in fact, DMO show the greatest need for an increased performance ethos.

The results to the 10 questions specifically related to ‘performance ethos’ elements of culture are shown in Table 28 below. These results clearly show that a performance ethos is not currently present in any of the key sustainment program participants. More than 65% agree or strongly agree that only two out of the 10 performance elements exists in the businesses – quality and customer focus. Half of the dimensions measured received a positive perception score lower than 50%. At DMO in particular we see a concerning result



where every dimension rated 5 percentage points or more lower than the overall result. In fact, leaders inspiring excellence and individual proactive issue resolution received results almost 20 percentage points lower than average.

Table 28 - Results to specific elements that describe a performance ethos for each organisation

Culture Dial	Question	Overall	ASC	DMO	RAN
Quality	people in my organisation make an extra effort to ensure their work is a high quality	74% →	3% ↓	-9% →	-3%
Customer focus	people in my organisation take customer needs into account when making decisions	68% ↑	8% ↓	-5% ↓	-19%
Responsibility	people in my organisation take responsibility for the performance of their work	62% →	1% ↓	-9% →	1%
Flexibility	people in my organisation are flexible to achieve what is important to the business	61% →	2% ↓	-7% →	-3%
Integrity	people in my organisation keep to their word	51% →	2% ↓	-6% ↓	-9%
Honesty	people in my organisation hold each other accountable by respectfully telling it like it is	49% →	-3% ↓	-6% ↑	7%
Inspiring excellence	leaders motivate and inspire people by encouraging people to strive for excellence and achieve more	48% →	3% ↓	-18% ↑	9%
Action orientation	people in my organisation deal with issues before they become a problem	46% →	2% ↓	-18% →	4%
Problem solving	people in my organisation take ownership for resolving problems even if it is outside their regular responsibilities	44% →	-3% ↓	-7% ↑	8%
Performance incentive	there is a clear link between performance and rewards	27% →	1% ↓	-11% →	3%

This result is given greater emphasis when we focus on the preference for organisational conditions that relate to a performance ethos (Figure 50). These results show that people want to shift to an environment in which improving efficiency is part of everyone's every day job and where success is defined by achieving measured goals or objectives. The results for DMO show that they have the greatest desire to change the working environment.

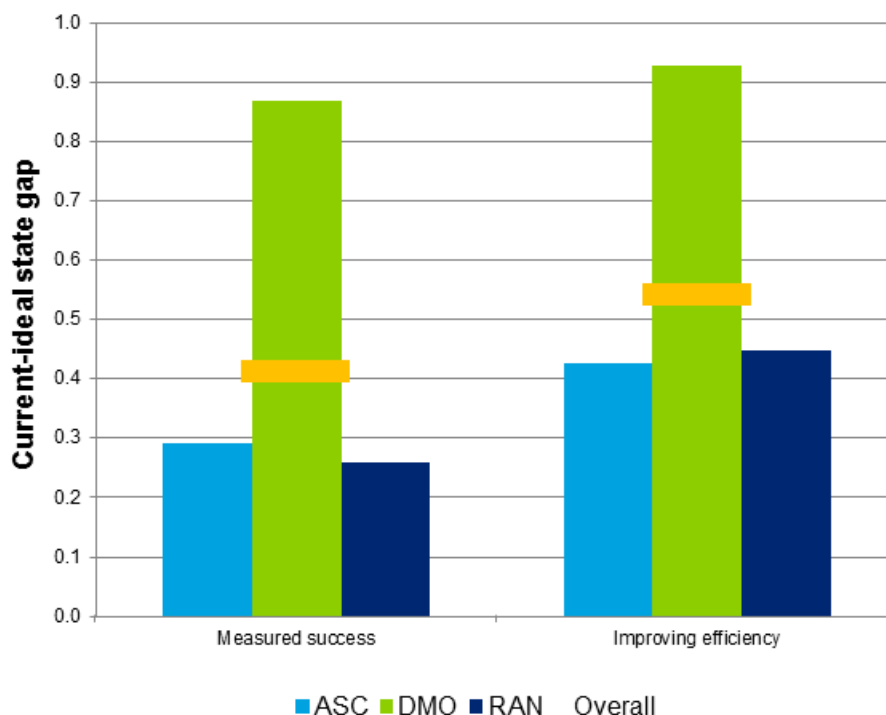
The impact of these results is significant. These results clearly show that a performance ethos is not currently part of the culture in any of the key submarine sustainment participant businesses. While people show a higher likelihood to take responsibility for their work and ensure that it's of a high quality, they do not keep to their word, hold each accountable or take proactive action to solve issues or problems. Leadership contributes to



this problem by accepting the ‘status-quo’ and the supporting infrastructure does not make a clear link between performance and rewards.

The current-ideal state gaps show, however, that people don’t want to work in this environment and desire a shift to a performance oriented culture. To make this change all of these aspects must be tackled and it must start with leadership. Leaders are responsible for creating the conditions in the business that drives performance. They must start by setting standards they expect everyone else to follow and establishing acceptable and unacceptable performance oriented behaviours and standards.

Figure 50 - Preference for organisational conditions related to performance ethos



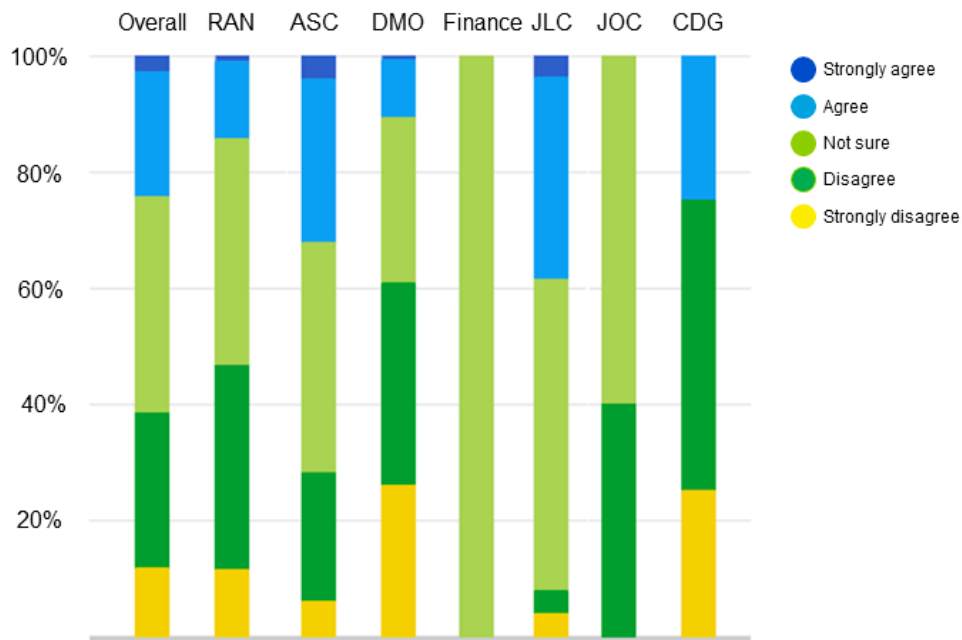
Challenge 10: Unclear requirements and unrealistic goals

Key findings: Clarity of vision, strategy and confidence in the ability to achieve goals are some of the key cultural issues facing the submarine business participants

Participants unitedly show concern regarding the level of clearly defined requirements aligned to the vision of the submarine program (Figure 51). 77% of participants across all organisations do not agree that “there are clearly defined requirements that align with the vision”. This question consistently scored the lowest results across all organisations and levels. Additionally, 25% of free text comments relate to strategy being unclear, poorly communicated or goals unrealistic.



Figure 51 - Results for “there are clearly defined requirements” across all organisations



Concluding remarks

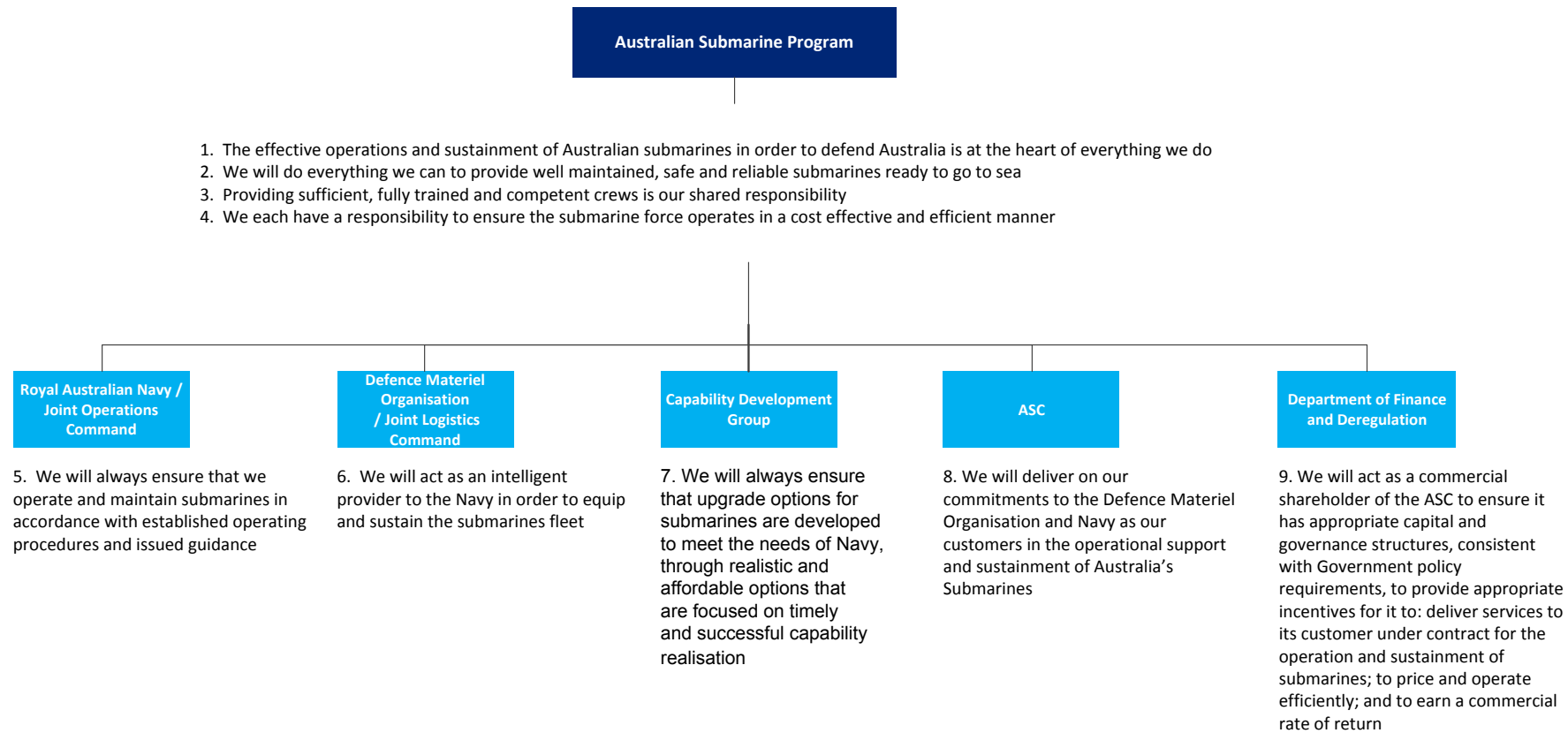
The Commitment and Culture survey that was deployed across all participant organisations involved in submarine sustainment provided clear and objective evidence in support of 7 of the 10 issues identified in the Coles Phase 1 Report. While this can be interpreted to show the extent of the problems facing the submarine program in the future, it also clearly demonstrates the desire and willingness to make things better. The challenge for leaders now is to create the conditions required to enable success and this must start with setting a clear vision and strategy for the future of the program.



Appendix 1 to Annex 5: Commitment and Culture Survey Additional Information

1.1 Commitment statements tested across the submarine program

Figure 52 - Commitment statements tested across the submarine program



1.2 Additional questions to measure engagement and change readiness

Table 29 - Additional questions to measure engagement and change readiness

No.	Segment	Dial	Survey Item
1	Employee Engagement	Success	I am committed to the success of Australia's submarine program
2	Employee Engagement	Inspired	I am inspired to do my best work in my current work place
3	Employee Engagement	Preferred place to work	I see my organisation as a preferred place to work
4	Change Readiness	Skills investment	There is a clear vision for the submarine program in the future
5	Change Readiness	Defined requirements	There are clearly defined requirements that align with the vision
6	Change Readiness	Personal role clarity	I clearly understand my role in making the submarine program a success
7	Change Readiness	Personals skills	I have the skills necessary to perform my role
8	Change Readiness	Team skills	My team has the skills necessary to perform their role
9	Change Readiness	Adequately resourced	My team is adequately resourced to meet our objectives
10	Change Readiness	Leadership support	My leaders support change in the submarine program
11	Free text	Change Readiness	Please provide additional feedback on ways we can work together more effectively to ensure the future of Australia's submarine program



Annex 6 - Commitment and Culture Survey Findings by Participant Organisation

Table 30 - Commitment and Culture Survey Findings by Participant Organisation

Survey element	Measure of 'good'	DMO	ASC	The RAN
Engagement	<i>The benchmark that defines an engaged workforce is 65%</i>	DMO have the lowest engagement of all participant businesses at 47% compared with the average result across all businesses of 66%	ASC's engagement score is 75%	The RAN's engagement score is 64%
Readiness for change	<i>Evidence found to show that all six elements of change readiness exist in the organisation</i>	<p>DMO scored consistently lower on all six questions designed to measure readiness for change:</p> <ul style="list-style-type: none"> 63% of people understand their role in making the submarine program a success 86% of people agree they have the required capability and 64% of people agree their team has the right capability 46% of people see their leaders supporting change 19% of people agree that their teams are adequately resourced 	<p>ASC consistently scored the highest of the three organisations on all six elements of change readiness. There are some clear areas of strength in this organisation, but also some areas of risk:</p> <ul style="list-style-type: none"> 85% of people understand their role in making the submarine program a success 93% of people agree they have the required capability and 83% of people agree their team has the right capability 63% of people see their leaders supporting change 41% agree that they have sufficient resources 	<p>The RAN consistently scored between the results of DMO and ASC showing similar strengths and issues:</p> <ul style="list-style-type: none"> 68% of people understand their role in making the submarine program a success 86% of people agree they have the required capability and 68% of people agree their team has the right capability 59% of people see their leaders supporting change 26% of people believe they have adequate resources 14% of people believe there's a clear vision and defined requirements for the submarine



Survey element	Measure of 'good'	DMO	ASC	The RAN
		<ul style="list-style-type: none"> 16% of people agree there's a clear vision for the submarine program 10% agree that there are defined requirements that aligned with the vision 	<ul style="list-style-type: none"> 37% of people agree that there's a clear vision 32% of people agree there are clear requirements 	program
Organisational culture	<i>75% positive perception score on elements of culture measured</i>	<p>The culture results for all organisations show opportunities to improve, but DMO's were consistently the lowest of the three main participants.</p> <ul style="list-style-type: none"> A lower positive perception score compared with the overall average on 20 out of the 21 cultural elements assessed in the survey 9 of the 21 elements were scored 10 percentage points or lower than the overall average Over half of the population only agreed to 6 out of 21 elements of culture being present at DMO 	<p>Consistent with engagement and change readiness results, ASC showed slightly higher results across most of the culture elements measured in the survey</p> <ul style="list-style-type: none"> 20 of the 21 elements were within five percentage points of the average overall positive perception score Strengths and weaknesses are consistent with the overall trends 	<p>The RAN showed a slightly stronger culture result, particularly for the dimensions of leadership and relationship:</p> <ul style="list-style-type: none"> Three of the four leadership dials scored 9 percentage points higher than the average result Three of the four relationship dials scored more than five percentage points higher than the overall average



Survey element	Measure of 'good'	DMO	ASC	The RAN
Degree of gap between current and ideal organisations	<i>A close alignment between the current and ideal organisation</i>	<p>DMO consistently showed the greatest gap between current and ideal organisational states. DMO in particular show a very strong desire to shift towards a working environment where:</p> <ul style="list-style-type: none"> • Roles are clearly defined; • People have an opportunity to provide ideas and have a voice in how the direction is set; • There is a greater focus on creativity and innovation; and • Success is defined by the achievement of measured goals or outcomes. <p>The size of the gap between the current and ideal states indicates that DMO are most in need of support in driving the change</p>	<p>ASC show a strong desire to shift towards ways of working that is characterised by creativity, opportunities for everyone to have a voice and input into direction, innovation and task variety. Importantly, the desired shift is most prevalent for the operational levels in the workforce. In contrast, Management, show a preference for top down direction setting indicating a specific executive challenge to address the mismatch between leaders and followers</p>	<p>The RAN's results for the gap between current and ideal organisations show different preferences for different groups:</p> <ul style="list-style-type: none"> • SUBFOR are showing a clear preference for top down direction setting and clearly defined roles and tasks. • The Sea Training Group and Training Authority are showing a clear preference for top down direction setting but with creativity in autonomy in execution of the goals. • Maritime Operations and Strategic Command are showing a preference for a work environment in which decisions are made from the bottom up and there is freedom and creativity to deliver on the goals. • These three different working preferences may be appropriate given the different business contexts of each of these divisions, however, there needs to



Survey element	Measure of 'good'	DMO	ASC	The RAN
				be a conscious acceptance of these different styles for collaboration across groups to be successful.
Hearts	<i>Respondents show a strong sense of identity to aspects of the organisation</i>	DMO show a lower sense of identity to their organisation than to the submarine program. While only marginally different, the trend is in contrast to that of the other participants who overall show a stronger identity to their organisation than to the submarine program. This is consistent with the low scores for engagement and culture and highlights the impact of poor organisational conditions on people's sense of connection to their broader organisation.	ASC do not strongly identify with any of the organisational aspect measures, which is somewhat surprising given their comparatively higher results in other survey aspects. This could be a reflection of their overall experience within the sustainment program and being made to feel like a 'scapegoat' for all the problems in the program. The strongest connection point of the ASC workforce is to their skill or expertise indicating that they will be motivated to act based on personal interest and gain in the first instance.	The RAN show the strongest connection to all organisational layers measured of the three key participants. In particular, they show strong identity to Defence and to their individual skill or expertise indicating that their 'hearts are in it'. They also show a comparatively higher identity to the submarine program than the other organisations, meaning that they are the most likely to act in the interests of the submarine program.
... and minds	<i>Minimum 50% commitment to key strategic objectives</i>	As a supplier to the RAN, less than half of DMO are committed to their fundamental role of acting as an intelligent supplier to their customer. On average only 40% of DMO are committed to the shared objectives of the	ASC show mixed results for commitment to objectives: <ul style="list-style-type: none"> Positively, 52% of the organisation is committed to do everything they can to providing well maintained, safe and reliable 	The RAN show the strongest commitment to all of the strategic objectives for submarine sustainment: <ul style="list-style-type: none"> 60% are committed to operating the submarines within their design intent.



Survey element	Measure of 'good'	DMO	ASC	The RAN
		submarine program	<p>submarines ready to go to sea.</p> <ul style="list-style-type: none"> Of some concern, however, 45% of ASC are committed to delivering on their commitments to their customers in the sustainment program (DMO and the RAN); and 42% are committed to working in a cost effective manner. An issue is that only 22% are committed to the shared responsibility of providing sufficient crews. 	<ul style="list-style-type: none"> More than 50% are committed to the shared objectives of providing crews and well maintained, safe and reliable submarines. 47% are committed to the idea of 'team submarine'. Of some concern, however, only 37% are committed to working in a cost effective way. The RAN also show comparatively higher numbers of people who are undecided, unaware or opposed to the objectives, indicating a different strategy is needed to drive increased commitment levels than in the other organisations.



Annex 7 - Glossary

Table 31 - Acronyms

Term	Definition
ABR	Australian Book of Reference
AMR	Additional Materiel Request
ANAO	Australian National Audit Office
ASC	ASC Pty Ltd (formerly Australian Submarine Corporation Pty Ltd)
ASPO	Australian Submarine Program Office
BoM	Bill of Materials
CCSM	Collins Class Submarines
CCSP	Collins Class Sustainment Program
CCSS	Collins Class Sustainment Study
CED	Certification Extension Docking
CFE	Contractor Furnished Equipment
CRP	Collins Reform Program
Defence	Australian Department of Defence
DMDRs	Defective Material Design Reports
DMO	Defence Materiel Organisation
DSSL	Directorate of Supply, Support, and Logistics
DSTO	Defence Science and Technology Organisation
EVM	Earned Value Management
FCD	Full Cycle Dockings
FIC	Fundamental Inputs to Capability
Finance	Department of Finance and Deregulation
FLSE	Fleet Logistics Support Element
FMI	First Marine International
GBE	Government Business Enterprise



Term	Definition
GFE	Government Furnished Equipment
ID	Intermediate Docking
IMAV	Intermediate Maintenance Availability
IMS	Integrated Master Schedule
Industry	All industrial elements contributing to the Collins Class capability
ISO	International Standards Organisation
ISSC	In Service Support Contract
JLU(W)	Joint Logistics Unit (West)
Long Term	Time period greater than four years
MAA	Materiel Acquisition Agreement
MAP	Maintenance Amendment Proposal
MCD	Mid Cycle Docking
MCR	Maintenance Control Record
Medium Term	Time period between one and four years
MILIS	Military Integrated Logistics Information System
MRD	Material Ready Days
MSA	Materiel Sustainment Agreement
NIPO	Naval Inventory Procurement Office
OEM	Original Equipment Manufacturer
OQE	Objective Quality Evidence
P1 URDEF	Priority 1 URDEF
Participants	The four organisations responsible for the CCSM; the RAN, DMO, Finance and ASC
PAS	Publicly Available Specification
PMB	Pacific Marine Batteries
PRB	Project/Program Review Board
RAN	Royal Australian Navy
RDD	Required Due Date (for spare parts)



Term	Definition
SAL	Shipboard Allowance List
SAT	Sea Acceptance Trial
Short Term	Period of time up to one year
SIMS	Submarine Information Management System
SIS	Submarine Information System (deployable version of SIMS)
SM	Submarine
SMCIP	Submarine Capability Improvement Program
SPO	System Program Office (Now referred to as Submarine Branch of DMO)
SUBFOR	Submarine Force
TCE	Target Cost Estimate
TLSA	Through Life Support Agreement between ASC and DMO
TML	Task Material List
URDEF	Urgent Defect
UUC	Usage and Upkeep Cycle

