



National Audit Office

**REPORT BY THE
COMPTROLLER AND
AUDITOR GENERAL**

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Ministry of Defence

The use of information to manage
the logistics supply chain

Summary

Background

1 Over the last decade the UK's armed forces have engaged in high intensity operations across the globe, notably Operation TELIC in Iraq, and the ongoing Operation HERRICK in Afghanistan, the Ministry of Defence's stated number one priority. Supporting these operations requires a significant logistics effort to ensure personnel and materiel (military supplies) get to the right place at the right time. In addition to supporting these operations, the Ministry of Defence (the Department) must also supply its forces across the globe, in permanent bases and training facilities, and whilst on exercise in some of the most inhospitable environments in the world.

2 This report assesses whether the Department has the information it needs to deliver the right items to the right place, at the right time, and in the most cost-effective manner. When we refer to the supply chain we mean the processes involved in the availability, storage and distribution of materiel. The primary focus of this report is the use of information to manage the supply chain, not the performance of the supply chain. However, the majority of the Department's management information we were able to collect pertained to the Department's single biggest commitment – Afghanistan – and therefore we have used overall performance of the supply chain to Afghanistan as a case study for this review.

3 **Part One** of this report sets out how the supply chain is managed, **Part Two** examines how the supply chain is performing, **Part Three** looks at how the Department uses information to manage the supply chain, and **Part Four** evaluates the plans in place to improve supply chain management in the future.

4 This report is related to the National Audit Office's wider work in examining how Government is building its business intelligence capabilities in order to further its cost reduction and efficiency aims. Our report: 'Information and Communication Technology: Landscape Review', published in February 2010, discussed these issues in more detail.

Key findings

5 Many of the challenges facing the Department are different to those of a private organisation. The pace of military operations can be unpredictable and, as a consequence, the demands on the supply chain can ebb and flow. Moreover, the supply chain has to work in two directions, returning personnel and equipment from the front-line for rest, repair and replacement. Unlike the private sector, financial profit cannot be used as an indicator of success, and if the military supply chain fails the impact is not reduced profits, but increased risks to personnel and military tasks.

6 Notwithstanding these factors there are many things that are within the Department's control and these can be benchmarked objectively against industry using the Supply Chain Operating Reference model. This benchmarking shows that the Department measures *reliability* (making sure materiel arrives) and *responsiveness* (making sure it arrives in time) comprehensively, but also that it measures few *cost* and no *agility* metrics (where agility is the ability to respond to external influences). This demonstrates that the Department is focused on getting materiel to where it is needed, with the cost of doing so a secondary concern.

On the performance of the supply chain

7 Performance has improved since our 2009 report on Support to High Intensity Operations. We found that the Department has been largely successful in getting materiel into theatre, sending some 130,000 consignments to Afghanistan in 2010 and, in doing so, overcoming considerable logistical challenges ranging from volcanic activity, to attacks on convoys and customs problems in neighbouring states.

8 Despite these improvements the Department is still not meeting its own performance targets, making deliveries on time in only 54 per cent of cases. Highest priority items sent by air should arrive in theatre within five days; this was only achieved in around a third of cases. There is often a large variation in the time it takes similar items to move through the supply chain. The Department makes decisions on the appropriate mode of transport for an item based on urgency, the operational risks within the air, sea and ground delivery routes and the nature of the equipment being transported – these factors currently lead more deliveries to be sent by air than surface. Not enough financial performance information exists to evaluate the additional costs incurred.

9 Failure to deliver the right item on time is primarily due to items being unavailable for transport. For orders to be fulfilled items need to be available for dispatch and they need to move through the supply chain effectively. Where items did not arrive on time, over half of all failures were due to lack of item availability. This means that either the Department is not forecasting accurately usage and repair rates of materiel to ensure the right amount of stocks are held (an information issue, made more challenging by the dynamic nature of the Afghanistan operational environment), or suppliers are unable to respond to the theatre demand (a procurement issue).

On the information used to manage the supply chain

10 There are significant gaps in the information the Department produces, and the lack of visibility of its assets directly contributed to our qualification of the Department's 2009-10 resource accounts. Good business intelligence is crucial if the Department is to succeed in running an effective and efficient supply chain. While the Department collects much of the information required, gaps remain. For example, the Department could not provide us with complete data on the costs of the deliveries to Afghanistan that we tracked. Moreover, the Department is unable to reconcile in a coherent manner the information it does possess on the location of its assets and its inventory and supply chain costs.

11 Segmentation of the supply chain creates significant management challenges. There are three distinct parts in the supply chain (in UK, in transit and in theatre) which on a day to day basis are managed by different entities within the Department. The practical consequence of this is that no single entity involved in operational management has access to all the information needed to manage the supply chain effectively. Furthermore, difficulties combining and reconciling financial and performance information mean that that financial considerations do not play an integral role in the decision making process.

12 Due to a lack of reliable information about stocks, in order to ensure sufficient deliveries are made, the supply chain has to prioritise effectiveness over efficiency. Without such information to inform its decisions, the Department focuses, understandably, on ensuring that deployed personnel have the supplies they need. This, however, represents a significant opportunity cost to the Department. Our view is that to compensate the Department must either be stockpiling more materiel than necessary in theatre, sending more than is necessary by air transport, or both. In the absence of reliable information, further work is required to estimate the cost consequences of this. The Department views an efficient split of air to surface deliveries to be around 20/80, but currently 70 per cent of individual deliveries to Afghanistan are sent by air, accounting for 31 per cent of the tonnage and at least 90 per cent of the Department's total transport costs. While we acknowledge that surface delivery routes can carry significantly higher risks and can be unsuitable for some equipment, such as ammunition, many routine items that could be sent by surface are being sent by air. Transferring just 10 per cent of items from air to surface delivery routes could save an estimated £15 million a year in Afghanistan alone.

13 Business intelligence to support the supply chain falls short of general logistics industry practice. We applied the Supply Chain Operating Reference model, an industry standard benchmarking tool, to the Department's business intelligence. Mindful of the challenges outlined in paragraph 4, this benchmarking identified several areas of weakness in the way the Department uses information to manage its supply chain:

- a** While some progress has been made, the Department has not yet fully defined, or agreed, the information it needs, or the data that should be collected, to manage the supply chain.

- b** The Department does not collect sufficient information on costs throughout the supply chain, and does not collate together what data it does collect, which limits its ability to maximise efficiency. Our analysis was hampered by the lack of available financial information.
- c** Data is not collected or available in a timely manner for all elements of the supply chain. Process and systems limitations, especially in the ageing and obsolete base inventory and warehousing systems, mean that management data is often up to four weeks old, which creates an environment in which management is reactive rather than proactive, and leads to many project teams conducting their own performance monitoring, duplicating effort with the central performance management team.
- d** Performance management centres of the supply chain are often staffed by non-specialist personnel who do not always have the necessary logistics or data analysis skills. As staff are assigned on two-year postings, by the time they are competent in the role they move on.

The Department's overall business intelligence capabilities (people, processes and technology) are immature, rating between 'reactive' and 'controlled' on our maturity scale. To achieve a similar performance to leading organisations we would expect it to achieve the highest level of maturity – predictive – where the Department can not only fulfil changing requirements with minimum disruption, but anticipate them. This has the potential to enable more effective management decision making, leading to a more efficient supply chain.

On information risks in the supply chain

14 The Department is exposed to considerable risks in the supply chain if information systems fail. Some of the data systems are over 30 years old and are no longer supported by the manufacturers, resulting in a high probability of failure. The Defence Logistics Board recently raised the risk of failure in the base warehouse inventory management systems to critical. These systems tell the Department what assets it has, and where. If the systems fail the consequences will be severe and could lead to shortages at the front line within 30 days. The shortcomings of these systems undermines the effectiveness and the efficiency of the supply chain.

15 The Department has acknowledged information gaps and committed significant funds to an improvement programme. The Future Logistics Information Services project aims to deliver better systems infrastructure by moving data servers into more secure environments, which has the potential to reduce the risk of failure in some legacy systems. As currently funded, however, it will not negate the risk of failure across all base inventory warehousing systems, nor will it resolve the supply chain information capability shortfall.

Conclusion on value for money

16 We understand and support the Department's priority of ensuring that critical materiel is reliably available to support operations. We recognise that this necessarily involves carrying significant contingency supplies in theatre. However, it is clear that the logistics cycle would be significantly more efficient if directed by a modern information system supported by appropriate skills and procedures. It follows that the current logistics cycle is not value for money.

Recommendations

17 In order to provide value for money in the future the Department needs experienced people, effective processes, and robust technology. Good business intelligence is needed to determine and manage the level of contingency required to mitigate risk. The following recommendations highlight areas where the Department can improve.

- a** **There is limited focus on the efficiency of the supply chain.** Whilst it is correct that the Department concentrates, in the first instance, on getting supplies to where they are needed, the Department must collect better information on the costs of the supply chain and use this data to control costs and increase efficiency.
- b** **There is fragmentation in the operational management of the end-to-end supply chain due to the number of agencies involved.** During the course of its organisational review, the Department should assess the costs and benefits of bringing the supply chain process agencies, their respective performance management teams, and a supply chain finance function, under one roof.
- c** **There is no clear business intelligence strategy which outlines what data is needed to operate the supply chain.** The Department has begun to develop its approach, through documents like the Interim Defence Logistics Information Strategy, and it should build on this work to develop a comprehensive information strategy for its supply chain, and the Chief Information Officer should champion the importance of good supply chain information.
- d** **Legacy systems, especially those for base inventory and warehousing systems, represent a critical risk to the Department's ability to supply its personnel.** The Department should improve and upgrade all facets of its supply chain information data systems, especially considering the significant operational risks of continuing to use decades-old IT systems.

- e** **The Department should make more use of the Supply Chain Operating Reference benchmark.** The Department should identify opportunities to learn from others, and benchmark performance and processes where possible. It should do this with immediate effect.
- f** **Many roles in the performance management cells in the supply chain are filled by non-specialists who often lack the requisite skills, furthermore, skills developed in-role are often lost as staff usually stay in post for two years or less.** This is inefficient and risks value for money. The Department should ensure it has specialists in post, through:
 - creating a specialist career path for logisticians to allow retention and reward of key skills; and
 - implementing documented handover processes and mentoring of new staff.
- g** **The Department has not clearly identified which arrangements are best suited for increasing the awareness of its staff of the need for good data, or for improving skills to produce data.** The Department should develop its 'federated' model for producing good data on its business.