



Mobile Data Terminal Replacement Project

A 'Lessons Learnt' review

North Yorkshire Fire and Rescue Service

Internal Audit Report 2019/20

Business Unit: Risk Management
Responsible Officer: Director of Finance and Technical Services
Service Manager: Head of Finance and Administration
Date Issued: 26 August 2020
Reference: 45575/001

	P1	P2	P3
Actions	0	6	2
Overall Audit Opinion	No Opinion Given		

Summary and Overall Conclusions

Introduction

Since 2010 the 66 operational vehicles in the Fire Service vehicle fleet have been fitted with Mobile Data Terminals (MDT). These data terminals provide more than just satellite navigation information as they also warn Fire fighters about potential hazards at the scene they are attending. In 2015/2016 the Fire Service's Corporate Risk Management Group became aware that these terminals were reaching the end of their useful life and needed to be upgraded. The Group recommended that a project was needed to organise the replacement of the terminals.

How the Fire Service manages business change, programmes and projects is set out in the Business Management Policy. Section 4 details the steps to be taken when following the Business Change process and Section 7 has the process to be undertaken for programmes and 'major projects'. The service established the Emergency Services Mobile Communications Programme (ESMCP) with responsibility for managing the services response to the national programme to replace the Airwave system. The MDT's also connected to the airwave system and the service did not want to spend £300,000 replacing the terminals if they would later be incompatible with the new system that replaced Airwave.

The national project to replace Airwave was delayed by the Government and has not yet commenced. Replacement of the MDT's was a priority, so a Project Manager was appointed and a procurement exercise undertaken in 2017/2018. The procurement was undertaken using a framework contract with Dorset and Wiltshire Fire Service. After the procurement had been completed unanticipated complications arose with getting the connectivity to the Government Secure Intranet authorised. This process took five months to complete.

The first MDT's became operational in June 2019. Within a few weeks some operational issues were being raised. The Health and Safety Group received a number of 'Cause for Concern' forms submitted by operational Firefighters highlighting these issues with the new terminals. A decision was made to halt the programme on two occasions and carry out further field tests. Once it was felt these issues had been addressed then the rollout recommenced. However, further issues came to light, some of which required further financial investment by the service. A number of other issues around the governance of the project have been identified.

The service's Risk Management Group feel there are 'lessons that can be learnt' by the service over the governance and management of the MDT project, which can be transferred to future projects and asked Veritau to review the project to help support those future improvements.

Objectives and Scope of the Audit

The purpose of this work was to review the Mobile Data Terminal (MDT) project to assess:

- The adequacy of the governance and risk management processes
- Whether effective project management guidance and processes were in place and adopted by those involved
- Information on the MDT project was available and retained to support decisions.

Key Findings

Section 4 of the Business Management Policy was followed and a Business Case created and submitted in July 2017. The Business Case received approval. However the service did not follow all requirements of section 7 of the policy which requires each major project to be managed using PRINCE2 principles. If these principles had been followed then the Projects Governance arrangements would have been set out in a Project Initiation Document (PID). By following PRINCE2 and the PID, a number of the weaknesses subsequently identified in respect of the MDT project could have been highlighted and addressed.

The Governance of this project was through the Emergency Services Mobile Communications Programme (ESMCP) board. This board received regular MDT project reports throughout the early and mid-stages of the project. However, as the ESMCP project became delayed by central government, meetings of the ESMCP board had stopped by the end of 2018. Whilst in operation the board maintained a high level overview of the MDT project. As the project was following Section 4 of the policy then it would have benefited from the formation of a task/finish group reporting to the ESMCP. This group should have consisted of employees having the relevant experience and range of skills required.

The early documentation viewed clearly shows that someone with project management experience had been involved in its preparation, including the business case document that was produced in July 2017. There were a number of weaknesses in the Business Case, including recording who the project team would be, what considerations on the effects of other areas of the business had been included, how the training for RDS would be achieved and providing a realistic and researched timetable and fully costed budget.

Project Risks were touched upon in the business case document but not in great detail. If the procedures within Prince2 had been followed then a specific and detailed MDT project risk register would have been maintained throughout the project.

In this case just four risks were listed in the Business Case, together with mitigating actions. On Sharepoint there is a Risk Log document, but this just contains two of the four risks mentioned in the Business Case. If a MDT task/finish Group had been formed then one of the tasks, through with the Project Manager, would have been to put together a specific comprehensive risk register. This may have identified/anticipated some of the later issues.

The Project Manager left the service in October 2017, and was not replaced with anyone who had project management experience. The GIS Technician took over the project. This decision not only lost the project management skills to the project but, also had the effect of reducing the overall resources available by one. Other major projects were taking place within ITSS at this time, and more projects were forthcoming. This led to the department being under resourced. In hindsight, the appointment of another project manager would have benefited the project.

At the start of the project we would have expected a fully costed budget. For this project the budget consisted of a £300,000 Capital Budget allocation which would have covered the original quotes for supply and fitting of the MDT units. There was no consideration of the costs involved with the software, replacement of antennas, the cost of staff (including the Project Manager, and within ITSS and Transport), or any potential training costs. There also does not appear to have been any documented consideration to the effect on other areas of the business as required

under section 4. Fortunately, the procurement of the units came in lower than expected and therefore the residue of the budget has been able to meet most of the other non-staff costs.

Following the procurement process the contract was awarded to Centerprise International Ltd, who sub-contracted the fitting of the units to Maple Fleet Services Ltd. It was not until Maple Fleet were arranging the fitting that the service became aware they were not accredited by Airwave to fit the units. This meant additional resources had to be deployed by the service to assist in the fitting. During procurement exercises questions should be asked about areas that will be sub-contracted to highlight these potential issues.

The delay in receiving the authorisation for the Code of Connectivity from the Government set the project back five months. The delay was because an assumption had been made that the service could use the documentation granted for the old units back in 2010. In the original Business Case only three days was allocated to this task. Further research into this area should have been completed at the start of the project. This delay was fundamental to the decision by the Head of Technical services to reduce the original roll out programme from 12 months to 3 months. The time pressures to rollout the programme were also the key factor in deciding that no operational testing being carried out. This should have been done, especially as North Yorkshire is such a diverse area. The only testing that was carried out on the MDT units were static tests in Northallerton, and York. Operational Testing would have highlighted several issues that came to light during the rollout.

Whilst training for Retained Firefighters was mentioned in the original Business Case and some discussions were held with the Training Manager, no face to face training actually took place. Reliance was placed on handouts and online training.

There were issues with identifying exactly how many of the old units had been fitted to Fire Appliances. The original data obtained by the GIS Technician showed that she had ordered the amount shown in that data (70 units) and according to her this should have been sufficient to ensure each vehicle would be equipped with a unit. The Head of ITSS report of 20th November 2019 indicates only 66 units were purchased. There seems to be an element of confusion over exactly how many units have been ordered and received. We have been informed that all units are now be recorded on the IT Asset Management system TRAKIT.

When calculating the number of licences for the units the decision was based on the circumstances at the time, namely that the only licences needed were for the units which were active in the appliances. The firms licensing the software changed the rules, so that every unit active or not, had to be covered. The service have had to apply for more licences.

Relevant documents have been filed in the Sharepoint file under the MDT Project link. There is also some relevant documents available under the ESMCP file on Sharepoint. We have reviewed those files, which have assisted us in raising our conclusions. We are not aware of any other documentation retained elsewhere.

Overall Conclusions

The nature of this work was such that we have not awarded an assurance rating

1 Project Governance

Issue/Control Weakness

There was ineffective project governance in place.

Risk

The ESMCP were unable to identify potential areas of delays in the project.

Findings

The service established the Emergency Services Mobile Communications Programme Board (ESMCP) as per section 7 of the Business Management Policy. At the start of the project the Risk Management Group recommended the Governance for the MDT project would be through the ESMCP due to their links with the airwave system. The leadership of the ESMCP consisted of senior officers from the Fire Service. As the ESMCP is a national scheme, the MDT Project was just one small element in the overall programme.

For the early and mid-stages of the MDT project this was a suitable arrangement. The ESMCP had an overview of the MDT Project and board members were receiving regular updates and offering challenge. However, as the wider ESMCP project became delayed by central government, then the meetings of the ESMCP board were stopped at the end of 2018.

In February 2017 a Project Manager was employed to manage the MDT Project. Following section 4 of the policy a Business Case document was submitted and approved in July 2017. However, the service did not follow all requirements of section 7 of the Policy. Section 7 states each project should be managed using PRINCE2 principles. This would have meant the Projects Governance arrangements would have been set out in a Project Initiation Document (PID). By following PRINCE2 and the PID, a number of the weaknesses subsequently identified in respect of the MDT project would have been addressed. Without a definition of a major project within the policy it may not have been clear whether section 7 should have been followed fully. Section 7.1 defines project as 'a temporary structure which will deliver one or more outputs in accordance with an approved business case'. The appointment of a project manager would give the impression section 7 should have been followed, however, in practice the service have followed the process as laid out in section 4.

Under section 4 of the policy, 'on occasions a task and finish group will be set up to consider the feasibility of a particular idea'. Following our discussions, and with hindsight the formation of a separate MDT Project Task/Finish Group would have benefited and added value to the project. This group should have been led by the Project Manager and consisted of people with the relevant experience and required skills. This would include the Project Manager (to report back to ESMCP), ITSS Managers and technicians with experience in communications (airwave), mapping, procurement, transport (fitting and testing of units), an operational firefighter with experience of using a MDT unit and finance.

Agreed Action 1.1

The introduction of enableNY gives NYFRS access to qualified project management resources. The Deputy Chief Fire Officer (DCFO) co-chairs the Change Board and the associated governance arrangements. This includes regular project progress reporting, exception reporting, risk management and the ability to address any issues being encountered.

Also included within this is the link to procurement. NYFRS currently utilises the procurement arrangements from NYCC and this is provided via a qualified team of specialists

Priority

2

Responsible Officer

Head of Business Design
and Assurance
enableNY

Timescale

Completed

2 The Business Case did not contain sufficient detail

Issue/Control Weakness

The business case was not completed with sufficient detail. The amount of work required in this project was underestimated, especially around the Code of Connection.

Risk

The cost and projected timings of the project will be underestimated.

Findings

Section 4 of the Business Management Policy relates to the Business Change Process. The section says a Business Case should be completed and the areas that should be considered when completing that Business Case. The Business Case submitted for the MDT project followed the template that is available on the service's intranet. There were a number of weaknesses within the Business Case document.

The Business Case identifies the Project Manager and the owner of the project, but does not identify who else is involved in the project. For the project we have been unable to find documentation showing the roles and responsibilities of any the team members involved in the project.

- The Business Case did not contain full details on any considerations that have been made on the projects effect on other areas of the Business. Whilst essentially this was an ITSS project, the project did have an effect on other areas of the business particularly transport.
- The Business Case briefly mentioned training for the Retained Firefighters, but no detail was recorded about when and how this was going to be achieved. Training is covered further in finding 6.

Looking at things now, we can see the amount of work required in this project was underestimated. For instance from reading the early documentation it was felt the project was just a straight forward updating of hardware. However during the project, the main delays were around the hardening of the units and security aspects around connectivity to the airwave system. The Code of Connection (CoCo) is a mandatory set of requirements that must be demonstrated before local authorities in England and Wales can connect to the Government Secure Intranet (GSI). The original documentation has 3 days for the CoCo were allowed; in the end it took 5 months. This is something that should have been checked/researched at the start of the project.

A Gantt Chart was also created on Microsoft Project which set out each stage of the project including the time each stage was expected to take and the dates of start and completion. We cannot get any assurance on how this was used as the document available on SharePoint has been updated. The earliest version seen, indicates 159 day's work, over 334 days, with a completion date of 10th August 2018, and this document had increased the time for the CoCo Resubmission to 8 days. The actual rollout commenced on 11th June 2019. The project is not yet fully completed.

Agreed Action 2.1

Activity formally identified as change will be managed through the Programme Management Office (PMO) within the Business Design and Assurance function. This includes the co-creation of the business case. The client is responsible for creating the business case with guidance and oversight of a Project Manager and the PMO. Standard templates have been produced and investigations are underway to find the most suitable way of sharing these across both fire and police ICT platforms.

The scoping and development of the business case includes stakeholder mapping and engagement, a project plan identifying key activities, roles and responsibilities, anticipated capital and revenue expenditure, project costs, reporting points and delivery milestones. For the purposes of this project, a Senior Responsible Owner should have been identified as ITSS are the enabler.

Priority

2

Responsible Officer

Head of Business Design
and Assurance
enableNY

Timescale

Completed

3 Project Costings

Issue/Control Weakness

The MDT Project was never fully costed and the true overall cost of the project is not known.

Risk

Without a clear framework in place costs may increase and challenges within the project will not be recognised at the earliest opportunity.

Findings

The financial costings for the project in the Business Case consisted purely of the costs of obtaining and fitting the hardware. A budget of £300,000 was agreed in the Capital Plan. However costs were identified and considered within the project. Such as: IT resources including the Project Manager; transport staff to help fit the devices; potential training costs and the effect of using internal resources for the MDT Project on other projects within the service..

At the start of the project in July 2017, the changes that took place affecting the service and IT departments could not have been recognised. Changes such as integration with North Yorkshire Police Crime Commissioner, increased the workload of ITSS. As the MDT project progressed, and became delayed, effective monitoring should have identified the extra work and resourced the work accordingly.

If the project had been fully costed, other costs incurred on the project, could easily have been identified, and therefore budget monitoring and the management of the project would have been improved.

Agreed Action 3.1

As per the response to 2 above, project costings are included in the business case and include the interdependencies from a cost and deliverability perspective.

Priority	2
Responsible Officer	Head of Business Design and Assurance enableNY
Timescale	Completed

4 Project Management and Guidance

Issue/Control Weakness

The management of the project was unstructured and under resourced

Risk

The Project was being managed with those who did not have the required knowledge or skills in Project management, and no guidelines in place to assist them. Resources within ITSS became more stretched.

Findings

On 27th February 2017, a Project Manager was appointed on a two year fixed term contract. The earliest indication on sharepoint is a project commencement date on the 10th April 2017. We reviewed the documentation in this period and it was clear that someone with project management knowledge had been involved in putting together this documentation. This includes the Business Case that was submitted for the project on 11th July 2017.

The appointed Project Manager left the Fire Service on 13th October 2017, and her leaving the service was reported to the ESMCP Board meeting on 5th October 2017 by the Head of Technical Services. This report went on to say, 'specification of device needs to be finalised - departure of Project Manager at relatively short notice means delays particularly around commencement of procurement - GIS technician to act as single point of contact until suitable project management arrangement can be put into place'.

The project continued without having another Project Manager appointed. The GIS Technician did not have any experience or qualifications in Project management. This also meant that the IT team were running the project with one less person. The resource issue was not helped when the Head of Communications retired in March 2018 and GIS Technician became a whole-time firefighter in July 2018. There had been some internal succession planning for the retirement of the Communications Manager, which did benefit the project.

In hindsight the appointment of another Project Manager, would have benefited the project and also allowed for the IT Team to be freed up from this responsibility. Had this been classed as a major project under section 7 of the Business Management Policy then perhaps a different decision may have been taken.

Agreed Action 4.1

As per the response to 2 above, by projects being managed through the PMO, qualified Project Managers and Business Analysts with a wide breadth of project delivery experience and skills are engaged to provide the necessary support to develop the business case. The PMO provides a resilient model for delivery and in the event of a resource being unavailable, backfill can be provided or recruited against a role profile that is fit for purpose.

Priority	2
Responsible Officer	Head of Business Design and Assurance enableNY
Timescale	Completed

5 Project Risk Register

Issue/Control Weakness	Risk
A specific MDT project risk register was not maintained throughout the project.	Risks will not be identified leading to no mitigating actions being put in place and therefore potential project delays.

Findings

During our review we only found two references to a risk register specific to the MDT project. The first was within the Business Plan where there is a section about the risks to the project and how they are being mitigated. The risks identified within the Business Plan were:

- Airwave network might not be compatible with Windows 10
- No availability within ITSS to implement end-to-end security for windows 10 on MDT's
- The participation for collaborative procurement will cause for a minimum of 2 months delay on project delivery
- New MDT units might not be in compliance with ESN (Emergency Services Network - replacement of Airwave)

Within the files on sharepoint was a risk log which contained only two of the four risks mentioned above. The minutes of the ESMCP indicates that there was a risk register for the ESMCP and this was discussed at the ESMCP meeting on 5th October 2017.

As part of the planning stage for any project risk management should be included. Work should be undertaken to identify the risks, score them appropriately and identify the mitigating actions. The regular identification, monitoring and management of project risks is an important tool and aspect of any effective project. However this would appear not to have been in place for the MDT project.

A specific MDT Project task/finishing group working on a risk register would have provoked discussion and may have identified some of the issues that have caused delays in the project. For example, if there had been an operational officer on the group they may have identified that the software on the hydrants were not compatible with the new software on the units.

Agreed Action 5.1

As per the response to 2 above, a risk, issues and opportunities register is created and maintained by the Project Manager associated with the project. This is reviewed on a regular basis with the client and any exceptions are reported through the governance arrangements i.e. Change Board.

Priority

2

Responsible Officer

Head of Business Design
and Assurance
enableNY

Timescale

Completed

6 Operational testing

Issue/Control Weakness	Risk
No operational testing on the MDT Units took place before the units were rolled out to the stations.	Issues were not identified until they were being used operational.

Findings

It was highlighted to us on a number of occasions that there had not been any operational testing of the MDT units before the rollout commenced. The only testing of the units were done in a static locations in Northallerton and York. Whilst this testing did reveal a couple of software issues that Airbus corrected, it was not sufficient in such a diverse county as North Yorkshire. From our discussions this appears to have been a key decision by the Head of Technical services and related to the time pressures to achieve a timely rollout of the programme. The Head of Technical Services recognises this as a key error.

There should have been more operational testing, which would have resulted in the various issues raised in the 'Cause for Concerns forms' being recognised earlier. If these issues had been found out before the units were rolled out then there could have been a time and cost saving to the project. IT technicians from the service have had to make additional journeys to stations across the county to restore the MDT's.

Agreed Action 6.1

It is usual within a technology based project to include a period of User Acceptance Testing (UAT) prior to rolling out any technical solution to the wider cohort. The Project Manager would be responsible for the planning and coordination of this activity and it would be agreed on the basis of pre-set criteria which is contractually binding. It is incumbent on both the third party supplier and the customer to have all necessary arrangements in place to allow UAT to take place as planned and agreed. This allows for any issues to be dealt with within an agreed resolution plan and also provides remedy in the event of failure. The management of projects via the PMO ensures that any necessary UAT arrangements are included within third party contracts when required. The PMO team have worked closely with NYP colleagues on technology based projects and are very familiar with the challenges of the geography of North Yorkshire.

Priority	2
Responsible Officer	Head of Business Design and Assurance enableNY
Timescale	Completed

7 Training

Issue/Control Weakness

Sufficient training was not provided prior to the units being used in operation'

Risk

That the units will be used in operation without the users having the required knowledge, skills and understanding of the unit and mistakes may be made.

Findings

From the early stages of the project it was envisaged that a programme of training would be undertaken. In the business case issued on 11th July 2017, it was highlighted that the retained Firefighters in particular would require training on the units. It was reported by the Head of Technical Services at the ESCMP meeting on the 5th October 2017, that discussions had been held between the GIS Technician XXXX and Group Manager XXXX of the Training Department to try and arrange training. Resources did not allow the programme to be developed. It was considered that the training should be carried out online before the rollout of the programme.

As the project progressed the proposed training programme never happened. The only form of training delivered to the operational crews was through hand outs and online.

This would have been one of the responsibilities of a task/finish working group for the MDT project, where a responsible person could have been a member of the team.

Agreed Action 7.1

As per the response to 2 above, any necessary training requirements are identified during the development of the business case and included as part of the stakeholder management and engagement. This allows the necessary dependent departments to plan for this work being delivered.

Priority	3
Responsible Officer	Head of Business Design and Assurance enableNY
Timescale	Completed

8 Asset Management

Issue/Control Weakness

The service did not accurately identify how many vehicles needed to be fitted with a new MDT unit.

Risk

The service will either under or over order the number of units required.

Findings

Throughout the project there appears to have been confusion over exactly how many of the old units the Service had and also exactly how many vehicles needed fitting with the new MDT's.

The GIS Technician from transport provided us with a list of vehicles which indicated that 70 units would be required. On the Purchase Order submitted on 15th February 2018, this shows that 70 units were ordered. However, in the Head of ITSS report of the 20th November 2019 he indicates only 66 units had been ordered.

There was also an issue over the number of licences needed for the ScResponse Software and the Crash Recovery Software. The rules of these companies changed during the project, and all units now need to be licensed whether or not they are fitted to an operational vehicle. Previously only those fitted to operational vehicles need to be licensed.

Going forward the service need to ensure that their asset management systems are kept updated to record vehicles and units in place, together with the number of licences and their expiry dates. We have been assured that all units are now recorded on the IT Asset Management system TRACKIT, although this has not been checked.

Agreed Action 8.1

As per the response to 2 above, an understanding of the availability and reliability of current assets would be assessed as part of the business case development so that the associated costs and risks can be considered and included. This is all part of project management and included through the PMO.

Priority

3

Responsible Officer

Head of Business Design and Assurance
enableNY

Timescale

Completed

Audit Opinions and Priorities for Actions

Audit Opinions

Audit work is based on sampling transactions to test the operation of systems. It cannot guarantee the elimination of fraud or error. Our opinion is based on the risks we identify at the time of the audit. There are circumstances when it's not appropriate to give an opinion. For example non-assurance work such as grant claims, fact finding work, projects, and consultancy work.

Our overall audit opinion is based on 5 grades of opinion, as set out below

Opinion	Assessment of internal control
High Assurance	Overall, very good management of risk. An effective control environment appears to be in operation.
Substantial Assurance	Overall, good management of risk with few weaknesses identified. An effective control environment is in operation but there is scope for further improvement in the areas identified.
Reasonable Assurance	Overall, satisfactory management of risk with a number of weaknesses identified. An acceptable control environment is in operation but there are a number of improvements that could be made.
Limited Assurance	Overall, poor management of risk with significant control weaknesses in key areas and major improvements required before an effective control environment will be in operation.
No Assurance	Overall, there is a fundamental failure in control and risks are not being effectively managed. A number of key areas require substantial improvement to protect the system from error and abuse.

Priorities for Actions

Priority 1	A fundamental system weakness, which presents unacceptable risk to the system objectives and requires urgent attention by management.
Priority 2	A significant system weakness, whose impact or frequency presents risks to the system objectives, which needs to be addressed by management.
Priority 3	The system objectives are not exposed to significant risk, but the issue merits attention by management.

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