



National Audit Office

**REPORT BY THE
COMPTROLLER AND
AUDITOR GENERAL**

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JANUARY 2013**

Ministry of Defence

Equipment Plan 2012 to 2022

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National Audit Office

Ministry of Defence

Equipment Plan 2012 to 2022

Report by the Comptroller and Auditor General

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Amyas Morse
Comptroller and Auditor General
National Audit Office

29 January 2013

The Ministry of Defence's ten-year Equipment Plan sets out its forecast expenditure plans to deliver and support the equipment the Armed Forces require to meet the objectives set out in the National Security Strategy over the ten years from 1 April 2012 to 31 March 2022. This report assesses the assumptions underpinning this statement.

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This report can be found on the
National Audit Office website at
www.nao.org.uk/mod-equipment-2012

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Summary

Scope of our report

1 The Ministry of Defence's (the Department's) ten-year Equipment Plan sets out its forecast expenditure plans to deliver and support the equipment the Armed Forces require to meet the objectives set out in the *National Security Strategy* over the ten years from 1 April 2012 to 31 March 2022. The Plan covers a budget of £159 billion. The Department has committed to publishing a Statement to Parliament each year on the cost and affordability of the Equipment Plan. The first Statement was published in January 2013. At the Department's invitation, we have reviewed the assumptions which the Department has used to compile the Equipment Plan. We performed our work to assist Parliament in evaluating the confidence it can take from the *Statement of affordability of the Equipment Plan* (www.gov.uk/government/publications/the-defence-equipment-plan-2012) as presented by the Department. Full details of the audit procedures we have undertaken are given in Appendix One.

2 Since the beginning of 2011 the Department has substantially revised the way it compiles and manages the Equipment Plan, and is now approaching the task on a more prudent basis. It has taken difficult decisions to address what was estimated to be a £74 billion gap between the Department's forecast funding and cost of the defence programme as a whole and to try to bring the Equipment Plan itself into balance. These include cutting unaffordable expenditure and revising the way it compiles and manages the Equipment Plan to include greater contingency and provide greater protection to a core of prioritised projects, which will allow it to better manage cost variability.

3 The Equipment Plan is based on forecasts of costs and funding, representing the position at the end of the Department's year-long planning process known as Planning Round 12. The plan will inevitably change over time as economic and operational priorities evolve and as short-term affordability or urgent requirements cause the Department to flex its plans. For this reason, this report does not, and future reports will not, offer a definitive view on the affordability of the Equipment Plan. Rather, we have constructed an affordability assessment model that breaks the Department's assertions down into assumptions covering costs and funding against which we can test the realism of its approach. Of necessity some time must elapse before performance against these matrices can be properly assessed. To increase confidence in the realism of its assumptions and the consistency with which its forecasts are calculated, the Department will need to demonstrate their reasonableness over a period of years. The Department does not yet have in place all of the necessary measures to do this. We have set out in more detail the type of measures we would expect to see in Appendix Two.

4 This is the first year we have undertaken this engagement and we were aware from the beginning of issues, detailed in the findings of this report, which would limit the confidence that could be taken from the Department's Statement. In future years, as the Department's approach to producing the Equipment Plan matures, we intend to extend the scope of our work to cover progressively more elements of and assumptions included within the Equipment Plan. Notably, in agreement with the Department, this year we have not performed any review of the Equipment Support costs, which make up just over half the Equipment Plan cost by value: £86 billion (54 per cent) of the total ten-year cost. This is because in preparing the Equipment Plan 2012 to 2022 the Department focused on increasing the robustness of its procurement costings, and has yet to apply the same level of challenge and review to the support costs element, although it plans to do so for the Equipment Plan 2013.

Conclusion

5 The Department has taken significant positive steps designed to deal with the accumulated affordability gap and lay the foundations for stability going forward. The crucial test will be whether the Department is able to deliver the Equipment Plan within planned expenditure limits, supported by the existence of a substantial contingency provision, over the next few years. If such a track record is established, which can only happen over time, the Department will be able to demonstrate it has really turned a corner.

Background

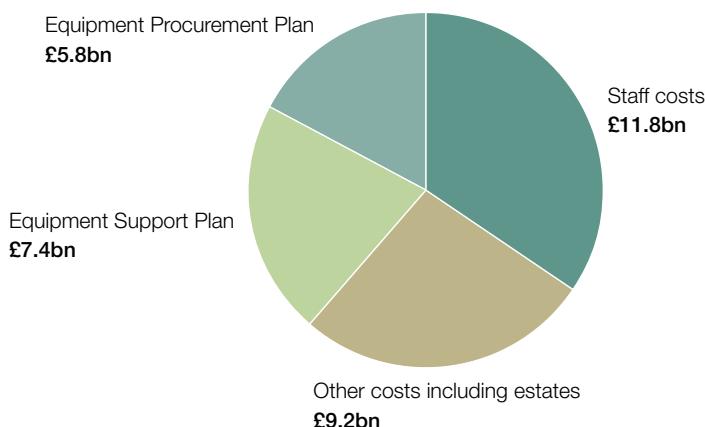
6 The Department's ten-year Equipment Plan sets out its forecast expenditure plans to deliver and support the equipment the Armed Forces require to meet the objectives set out in the *National Security Strategy*¹ and *Strategic Defence and Security Review*² over the ten years from 1 April 2012 to 31 March 2022. The Plan covers forecast expenditure within a planned budget of £159 billion. **Figure 1 a)** shows that the Equipment Plan is split between equipment procurement and support expenditure, which in 2012-13 combine to form 39 per cent of the Department's in-year planned budget. **Figure 1 b)** shows the profile of the Equipment Support costs and Equipment Procurement costs over the ten-year planning period as a proportion of the total assumed budget.

7 The funding available to the Department for the Equipment Plan is provided by HM Treasury through the four-year *Spending Review*,³ which sets the Departmental budget for the period 2011-12 to 2014-15. As most equipment procurement projects extend well beyond *Spending Review* planning horizons HM Treasury has agreed with the Department that, for the period after 2015 to 2022, it can plan on the basis of receiving a 1 per cent real increase in funding for the Equipment Plan. We have previously recognised that Defence plans require a longer horizon than Government spending plans and are relatively inflexible.⁴

Figure 1

A breakdown of the Department's spend between the Equipment Plan and non-Equipment Plan costs for a) the planned in-year budget in 2012-13; and b) the ten-year Equipment Plan period

a) The Equipment Plan comprises 39 per cent of the Department's forecast spend in 2012-13



1 HM Government, *A Strong Britain in an Age of Uncertainty: The National Security Strategy*, Cm 7953, October 2010.

2 HM Government, *Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review*, Cm 7948, October 2010.

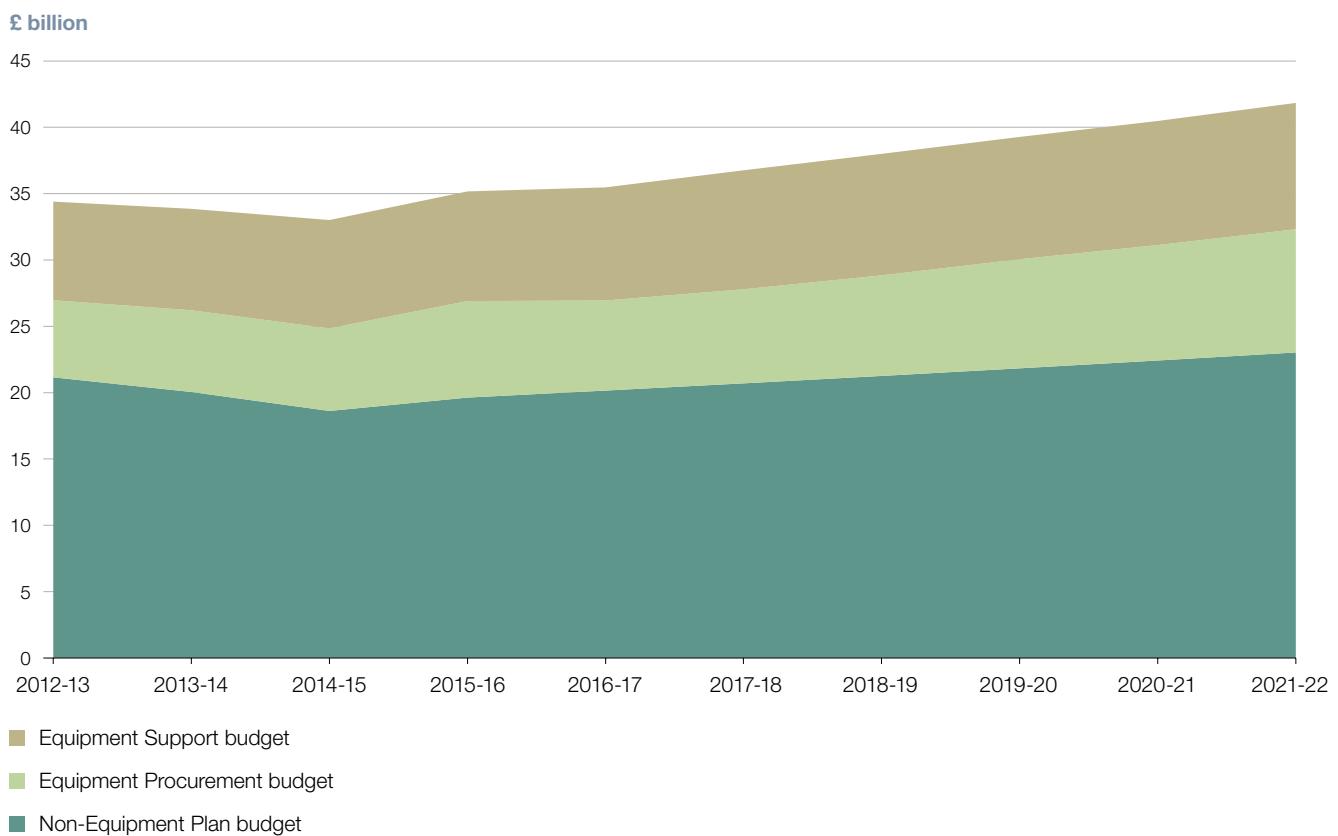
3 HM Treasury, *Spending Review 2010*, Cm 7942, October 2010.

4 Comptroller and Auditor General, *Ministry of Defence: Strategic Financial Management of the Defence Budget*, Session 2010-11, HC 290, National Audit Office, July 2010, paragraph 7.

Figure 1 continued

A breakdown of the Department's spend between the Equipment Plan and non-Equipment Plan costs for a) the planned in-year budget in 2012-13; and b) the ten-year Equipment Plan period

b) The Equipment Plan makes up an increasing proportion of the total Departmental funding over the ten-year planning period



	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Equipment Support budget (£m)	7,436	7,647	8,168	8,264	8,528	8,969	9,160	9,220	9,355	9,522	86,269
Equipment Procurement budget (£m)	5,811	6,159	6,222	7,277	6,789	7,093	7,581	8,223	8,702	9,289	73,146
Non-Equipment Plan budget (£m)	21,153	20,050	18,620	19,626	20,156	20,700	21,259	21,833	22,422	23,028	208,847
Total funding (£m)	34,400	33,856	33,010	35,167	35,473	36,762	38,000	39,276	40,479	41,839	368,262
Equipment Plan as a percentage of total funding	39%	41%	44%	44%	43%	44%	44%	44%	45%	45%	43%

NOTES

- In Figure 1a) the Equipment Support and Procurement values have been taken from the Equipment Plan. All other costs have been taken from the Department's 2012-13 Main Estimate.
- In Figure 1b) the total Departmental budget was derived by subtracting the Equipment Plan cost from the 2014-15 Spending Review settlement to give the non-Equipment Plan spend, we then inflated that cost using the GDP deflator for each year up to 2021-22. The Departmental funding up to 2014-15 is taken from the 2010 Spending Review, as modified by HM Treasury's Autumn Statement 2012. Funding is assumed to equal total costs.
- The Equipment Plan lines represent the planned budget, and the Equipment Procurement line contains a £4.8 billion contingency provision and £8 billion of unallocated budget.

8 Since 2009 the Department has acknowledged a gap (which was initially reported to be £38 billion in the *Strategic Defence and Security Review*) between its estimated funding and the forecast cost of Defence over the next ten years. Following the outcome of the four-year *Spending Review* the Department estimated that the gap had increased to almost £74 billion. As we have reported several times in recent years, the imbalance in the budget has forced the Department to take deliberate decisions to slip projects or cut equipment numbers which were not value for money and meant that new capabilities were not delivered on time.⁵

9 On 14 May 2012, following changes to the forward programme arising from the *Strategic Defence and Security Review*, which required the Department to make difficult choices about future capabilities, the Secretary of State for Defence announced that the Department had achieved a balanced budget, at the heart of which was an affordable Equipment Plan.⁶ Following a recommendation by Bernard Gray in his 2009 *Review of Acquisition for the Secretary of State for Defence*,⁷ the Department committed to publishing a Statement to Parliament each year on the cost and affordability of the Equipment Plan. The first Statement was published in January 2013.

10 The *Major Projects Report 2012*⁸ covers the 16 biggest procurement projects, which together account for £19.5 billion of the procurement spend in the Equipment Plan. If these projects are not delivered within approved cost and time boundaries the turbulence and uncertainty this introduces into the Equipment Plan reduces the Department's ability to plan and manage half of the defence budget effectively. Taken together with the annual *Major Projects Report*, the *Statement on the Affordability of the Equipment Plan* provides an informed basis for Parliament to understand whether the Department is cost-effectively managing the procurement and support of defence equipment capability.

11 At the Department's invitation, the Comptroller and Auditor General has reviewed the Statement. To enable Parliament to understand the adequacy of the Department's approach to compiling the Equipment Plan, this report examines whether:

- the broad assumptions underpinning the costings in the Equipment Plan are reasonable and consistent;
- the assumptions around the forecast total funding available to the Department and the amount of funding allocated to the Equipment Plan are realistic; and
- the Statement contains sufficient and appropriate disclosures such that the user is aware of the key assumptions, risks and the sensitivity of the affordability position.

⁵ Comptroller and Auditor General, *Ministry of Defence: The Major Projects Report 2010*, Session 2010-11, HC 489-I, National Audit Office, October 2010.

⁶ Available at: www.mod.uk/DefenceInternet/DefenceNews/DefencePolicyAndBusiness/DefenceSecretaryBalancesModBudget.htm

⁷ Bernard Gray, *Review of Acquisition for the Secretary of State for Defence*, October 2009.

⁸ Comptroller and Auditor General, *Ministry of Defence: The Major Projects Report 2012*, Session 2012-13, HC 684-I, National Audit Office, January 2013.

The affordability assessment model

12 The Department asserts within its Statement that it has “established an affordable and fully funded core Equipment Plan which covers our current project commitments, the major equipment programmes announced in the *Strategic Defence and Security Review* and in July 2011, future investment in a successor to the Trident nuclear deterrent system, and the associated support costs for all our current in-service and new equipment”. To test overall affordability we constructed an affordability assessment model that breaks the Department’s assertions down into testable assumptions covering costs and funding. Our high-level ‘affordability assessment model’ is shown in [Figure 2](#).

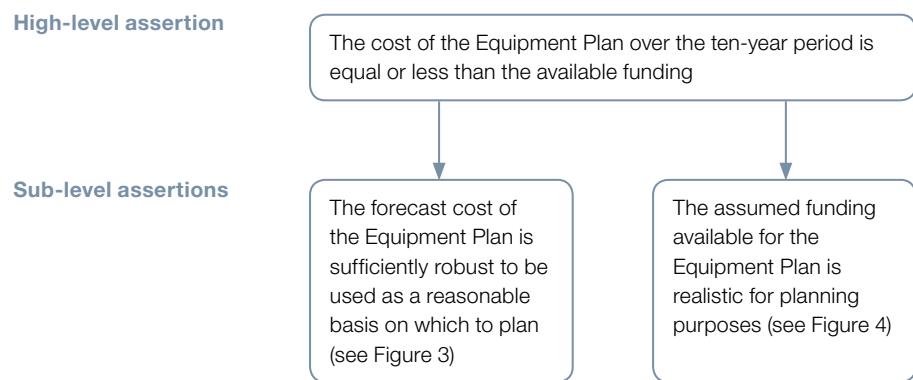
[Figure 3](#) on page 13 and [Figure 4](#) on page 19 provide more detail of our testable assertions on cost and funding and show our key findings in these areas. In defining affordability, we have considered capability only to the extent of identifying tensions between maintaining affordability and the delivery of the Department’s strategic vision as consistent with Future Force 2020.⁹

13 In addition to assessing the affordability position against the affordability assessment model, we also reviewed the adequacy and sufficiency of disclosure in the Statement of the key assumptions, risks and sensitivities, such that the user of the Statement would have an understanding of the affordability position.

Figure 2

The affordability assessment model

The affordability assertion is divided into cost and funding assertions



NOTE

- We have developed the affordability assessment model to provide the basis to evaluate the Department's affordability Statement. From the high-level assertion that the Equipment Plan is affordable, we derived testable assertions and the assumptions that the Department is making which need to be robust for the assertions to be valid. Our opinion is then derived from our view on the reasonableness of these assumptions.

Source: National Audit Office

⁹ “Future Force 2020” is the government’s intended shape of the Armed Forces from 2020.

Future engagements

14 In this, our first engagement, we have examined specific elements of the Equipment Plan in line with the scope that we agreed with the Department. The scope reflects the fact that this engagement is the first step of an iterative process whereby, over the next few years, we will start to increase the breadth and depth of our review of the elements of the Equipment Plan affordability, for example including the Equipment Support Plan within the scope of our work. We may move to a reasonable assurance engagement, whereby we give an opinion on whether the Department's Statement is free from errors which would affect the affordability position of the Equipment Plan as a whole, as we do with the statutory accounts, as and when this becomes feasible.

15 Using this incremental approach we have been able to identify issues which limit the confidence that can be taken on whether the Equipment Plan is affordable, at a cost and level of effort which is commensurate to our experience of the Equipment Plan and the Department's quality and availability of data. In order for us to provide assurance we will need to revisit the areas we looked at this year, but also include additional analysis of data that were not available, such as data to support the materialisation of risk across the whole Equipment Plan and the sufficiency of the contingency provision to absorb this.

16 Before we seek to commit the resources required to undertake an assurance engagement, the Department needs to be further advanced in its development so that evidence would be available to support the scope of the work, such that there is a reasonable probability that we will be able to provide a clear opinion. In practice, this means the Department needs to address the barriers to achieving an affordable plan, and evidence that it has addressed these issues as the data accumulate over time. In order for us to be confident that the Department had addressed these issues, we would expect improvement against certain performance metrics, which are detailed in Appendix Two.

The Ministry of Defence's assumptions underpinning the cost of the Equipment Plan

Background

17 The Equipment Procurement Plan is composed of more than 400 individual cost lines relating to specific projects, most of which comprise thousands of assumptions based on technical and specialist knowledge. These costs are generated by project teams within the Department, who have responsibility for delivering the projects to time, cost and agreed technical specifications. These teams forecast project costs on the basis of Departmental guidance, which specifies how teams should apply corporate assumptions on issues such as inflation and foreign exchange, and mandates the use of quantitative risk analysis to model the range of cost outcomes for projects. The Department takes particular note of the costs which have a 10, 50 and 90 per cent confidence level of not being exceeded. On an annual basis the project teams update the ten-year project costs using the cost forecast at the 50th percentile. The Department has quantified the provision it has made for risk within projects for the whole Equipment Plan as £8.4 billion. In theory the 50th percentile cost is as likely to be an overestimate as underestimate.

18 In 2012, for the first time, the Department has taken a new approach to its planning process. It has created a core Equipment Plan with a budget of £147 billion, by taking the 50th percentile procurement costs, and the support costs, for all the projects on which it definitely intends to proceed within the decade. It has then added a contingency provision of £4.8 billion, which leaves, within the £159 billion budget, an unallocated amount of £8 billion. The Department intends that this approach will enable it to:

- provide greater stability for the Department and the defence industry on which to plan;
- manage cost increases and/or timescale slippages on individual projects independently of each other such that issues which arise on one project do not automatically create affordability issues on others;
- fund additional projects incrementally and flexibly, as soon as it can be sure they are affordable; and
- allocate funds to projects not yet in the core programme only at the point when they need to become committed to be delivered on time, and only in accordance with the military assessment of priority at the time.

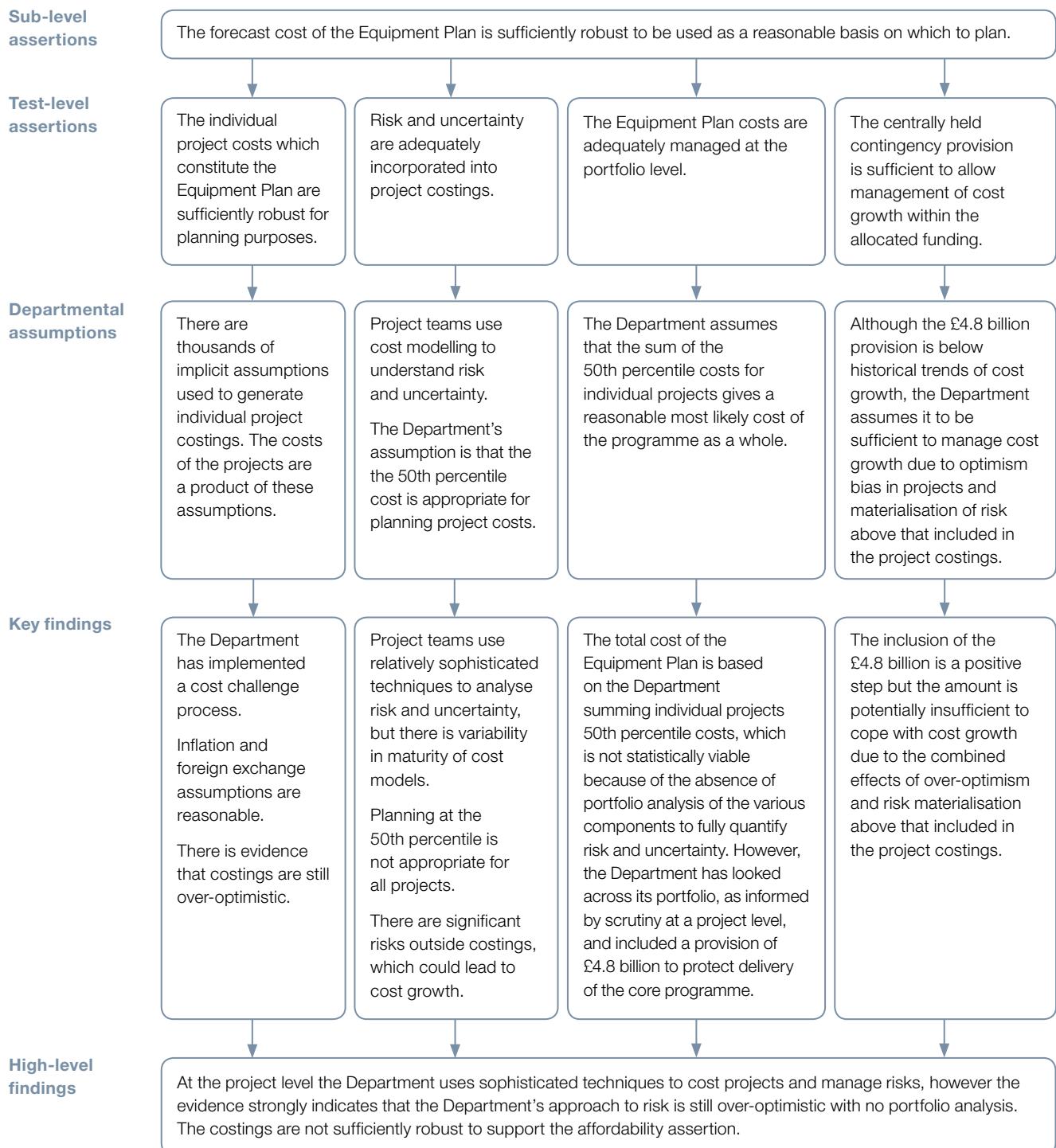
Method for assessing the validity of the Department's assertions

19 Due to the number of assumptions involved, as well as the complex and specialist nature of the procurement projects, we did not challenge the individual technical assumptions that contribute to project costs. Therefore, in order to review the validity of the Department's assumptions underpinning the cost of the Equipment Plan we:

- reviewed alternative costings to those of the project team, generated by the Department's internal Cost Analysis and Assurance Service. We worked with the Cost Analysis and Assurance Service staff to understand the reasons for the significant differences to the project team costings to identify potential risks to the accuracy of the costings;
- undertook a detailed review of eight of the largest procurement programmes in the Equipment Plan, the combined value of which is 33 per cent of the Equipment Procurement Plan. Our sampling constituted a review of the risk management processes, an examination of the cost modelling used, a reconciliation of costs to the Equipment Plan, and a walk-through of the process of how the inputs into the model are generated and how risk is applied;
- assessed the approach set out in the centrally issued guidance on the treatment of inflation and foreign exchange and looked for application of these assumptions in the eight sampled projects;
- used historical data and existing analyses to compare historical trends with the Department's assumptions about potential cost growth;
- assessed the Department's process for aggregating the project costs into the Equipment Plan; and
- reviewed the basis for the £4.8 billion provision and considered the sufficiency of the amount against our understanding of risk and historical trends.

Figure 3

The testable assertions and key findings related to the cost element of the Equipment Plan

**NOTE**

- 1 The 50th percentile cost is derived from cost modelling, which gives a profile of possible costs for a project. The 50th percentile is the mid-point of the range of costs and represents the cost at which the project is as likely to be over as under that cost.

Findings

Are the individual project costs which constitute the Equipment Plan sufficiently robust for planning purposes?

20 As part of an intensive effort to improve the realism of its cost forecasts, in 2011, for the first time, the Department's Cost Assurance and Analysis Service, a semi-independent¹⁰ expert cost assurance function, scrutinised the costs of 40 of the largest procurement projects (totalling £54 billion over the ten-year period). The review concluded that, using the Department's extant guidance, the Equipment Procurement Plan was understated by £5.2 billion (6.5 per cent).¹¹ In addition, they estimated that on a 'most realistic' basis, the cost of the procurement projects in the Equipment Procurement Plan has been understated by £12.5 billion (15.7 per cent). The Department has used this figure to inform its judgement on the size of the contingency provision but does not accept the size of the estimate.

21 We tried to do a historical review of how accurate the Equipment Plan costings had been in previous years, however we were hampered in our ability to do this by the fact that the Department does not monitor and report actual in-year spend in a form that can be reconciled with the forecast costs in the Equipment Plan. We have not therefore been able to take assurance, or otherwise, about the quality of past cost forecasts or the Department's ability to manage within the parameters set by the Equipment Plan.

22 All procurement projects are affected by corporate planning assumptions on inflation and foreign exchange; the treatment of these assumptions is set out in centrally issued guidance to be implemented by the project teams. The affordability of the Equipment Plan is highly sensitive to the realism of these assumptions. Our analysis shows that a 0.5 per cent increase in inflation¹² would result in a cost increase of approximately £3.7 billion over the ten-year period of the Equipment Plan, to the extent that general inflation does not compensate for the increase in defence sector inflation. We reviewed the central guidance on the corporate planning assumptions for foreign exchange rate risks and inflation variations and consider them to be reasonable. For inflation, rather than mandating a single inflation rate to be applied to all project cost forecasts, the Department requires project teams to estimate the most appropriate inflation rate taking into account the specific circumstances of their project. Foreign exchange risk is managed centrally and the Department uses hedging to mitigate short-term fluctuations.

23 We reviewed in detail the application of the corporate planning assumptions underlying the eight largest equipment procurement projects, where relatively small changes in cost or schedule performance can have significant implications for the affordability of the Equipment Plan as a whole. The inflation assumptions on the eight projects we reviewed were based on historical analysis of similar projects, industry-specific indices and, where elements of the project are on contract, the contractual agreed variation of price clauses.

10 The function is part of the Department but has no direct responsibility for delivering projects.

11 The review was based on the Equipment Plan cost data as at June 2011.

12 We deflated the total Equipment Plan costs using the GDP deflator measure of inflation, and then inflated the costs at different rates to measure the impact.

Are risk and uncertainty adequately incorporated into forecast project costs?

24 All of the projects we reviewed had developed detailed guidance on the treatment of risk specific to their project. All had a dedicated risk manager and applied risk modelling in line with the guidance, but there was variation in the extent to which they used this to fully inform their forecasts of project costs. For example, four of the eight projects we sampled could not provide us with the range of cost outcomes from the quantitative risk analysis, showing the full range of potential costs that supported the Equipment Plan costings. Proper understanding of risk and incorporation into costings is yet to be consistent in its maturity through all project teams.

25 The Department uses the 50th percentile cost forecast for projects regardless of its stage of the procurement cycle or the outstanding level of risk and uncertainty. Projects at a relatively early stage have more uncertain cost forecasts than those at later stages. In his 2009 report Bernard Gray found that outturn costs were around forty per cent greater than those predicted at Assessment Phase¹³ of a project. However, the *Major Projects Report 2011* stated that projected final costs, at the time of the analysis, showed an increase of 11.4 per cent from the costs approved at the later main investment decision point.¹⁴ Of the 40 procurement projects reviewed by the Cost Assurance and Analysis Service, 24 had not passed the main investment decision, indicating the cost forecasts remain relatively uncertain. Although the Department has provided some resilience through its contingency provision, in light of the history of cost growth, the Department should review whether early stage projects, and those with greater inherent risk, should be planned at higher than the 50th percentile costing. One method would be to apply a Defence-specific optimism bias uplift.¹⁵ This would be consistent with HM Treasury guidance and practices applied by other departments such as the Department for Transport.

26 Costs in excess of the Department's 50th percentile estimate are not included within the projects' budgets and are described as 'risk outside costing'. The eight projects we reviewed collectively quantified this risk across their projects at £3.3 billion (9.0 per cent of their forecast cost). We do not have a robust figure for the total risk outside costing for the Equipment Plan.

¹³ The Assessment Phase is an early stage in the project cycle and begins with the approval known as 'Initial Gate'. The aim of the Assessment Phase is to develop an understanding of options for meeting the capability requirement. Approved spend is only sought for the assessment element, however the project team are required to have estimates for total procurement costs. This precedes the main investment decision point, when approval for demonstration and manufacture funding is sought.

¹⁴ Comptroller and Auditor General, *Ministry of Defence: The Major Projects Report 2011*, Session 2010–2012, HC 1520-I, National Audit Office, November 2011, paragraph 15.

¹⁵ Optimism bias uplift involves increasing the cost by a fixed percentage based on the characteristics of the project, such as maturity or type of equipment being procured.

27 In addition to costs above the 50th percentile, risks are excluded from costs where a project team cannot directly control that risk, for example where the project may be affected by rationalisation of an industrial sector or by the actions of a partner on a collaborative project or overseas procurement, or where it is not possible to accurately analyse the event. In our sample of eight projects we found a lack of consistency as to what risks were included within cost models. For example, only three of the eight projects we reviewed took account of the risk of variation from their assumed inflation rate within their model. Across the eight projects the risks excluded from costings were valued at £2.4 billion (7.4 per cent of their forecast cost).

28 The Cost Assurance and Analysis Service identified £1.6 billion of sector risk that could affect a portfolio of projects, but which was not included in any individual project's cost forecast. The Department is still maturing its understanding of these risks and we will revisit the position in our next review.

Are the Equipment Plan cost and risks adequately managed at the portfolio level?

29 The Department derives the total cost of the Equipment Plan by summing all 50th percentile costs for the individual projects. However, this is not a statistically valid approach to deriving a realistic cost for planning as adding costs derived by separate and distinct analyses does not result in a statistically sound total. The Department needs to undertake analysis at the portfolio level to understand the total risk and variability of the Equipment Plan population as a whole.

30 The Department applies the assumption that at the aggregate level, by costing at the 50th percentile, there will be approximately an equal number of overspends and underspends, resulting in a balancing-out effect over the whole Equipment Plan. However, the top ten equipment procurement projects constitute approximately 43 per cent (£31 billion) of the total value of the procurement element of the Equipment Plan. A 3 per cent increase in these projects alone would increase costs by around £1 billion and would not be balanced by even significant cost savings on a large number of smaller projects. The cost increase over the life of the 69 projects included in the Major Projects Reports from 2000 to 2012 has been 11.4 per cent; 39 projects had either no cost increase or a cost reduction but this equated to only a £1.7 billion total cost reduction compared with the £12.7 billion gross cost increase, demonstrating cost movements do not historically balance out.¹⁶

31 As part of its Transformation Programme the Department is putting in place a series of structural changes that are intended to help it manage its budget more effectively. It is too early for us to know if these will be effective. We will be producing a series of reports on defence transformation, which will inform future analysis of the Department's affordability Statement.

¹⁶ The Major Projects Report reports cost increases over the life of projects, which is nearly always longer than ten years. Cost increases reported between the Major Projects Report and the Equipment Plan are therefore not directly comparable.

Is the centrally held contingency provision sufficient to allow management of cost growth within the allocated funding?

32 In 2012, for the first time, the Department has added a £4.8 billion contingency provision to the Equipment Plan. This provision was added on the basis of the semi-independent cost assurance work in May 2011 as described in paragraph 20. The provision was added to compensate for potential under-costing by project teams, identified through the assurance process, and also for the cost growth in the programme due to the materialisation of risk beyond that already included in project costings. The amount therefore reflects both an increase to reflect the realism of the project costs and acts as a buffer for cost growth. The size of the provision will be reassessed during future budget rounds and adjusted in the light of programme performance. The contingency provision is held centrally and the Department has not yet established a process by which projects can use it.

33 The inclusion of the contingency provision is a positive step that demonstrates the Department's recognition of potential cost growth and the need to make greater provision for the materialisation of risk. The establishment of the contingency provision will increase the Department's ability to manage cost growth in the programme without delaying projects. However, for the reasons set out in paragraphs 20 to 30, we are concerned the amount may not be sufficient. If this proves to be the case then the Department would be able to use the £8 billion unallocated budget to protect the core programme, but this would have capability implications, as discussed in paragraph 50.

Conclusion

34 Although the Department has made progress in bringing its forecast costs within its budget and adding a contingency provision, we have a concern that there are still areas of risk to affordability which need further attention.

35 From our review we found that corporate assumptions such as for inflation and foreign exchange rate projections are reasonable and consistently applied. However, there is systemic over-optimism inherent in the Department's assumptions around the costing of risk and uncertainty at both project and portfolio levels, which may not be sufficiently mitigated by the contingency provision. The Department's understanding of the half of the budget related to equipment support costs is currently less mature than that of the procurement costs and, by agreement between the NAO and the Department, has not formed part of this first review.

The Ministry of Defence's assumptions underpinning the funding of the Equipment Plan

Background

36 The Department funds the Equipment Plan expenditure with the budget allocated by HM Treasury through the *Spending Review*. Funding for the Equipment Plan is not ring-fenced by HM Treasury and it is up to the Department to internally allocate budget for the equipment costs, ensuring that sufficient budget is also available to meet non-equipment costs. For the ten-year period of the Equipment Plan, the Department has matched the planned cost of the Equipment Plan it needs to deliver its strategic objectives, including the contingency provision, to within the allocated funding. In addition, the Department has also changed the way it plans in order to provide greater protection of a core programme of procurement projects. This contrasts with the historical practice of planning to spend more than the likely funding, which has previously resulted in the need to delay programmes to manage affordability. The percentage of total defence funding committed to the Equipment Plan rises from 39 per cent in 2012-13 to 45 per cent in 2021-22 (see Figure 1b).

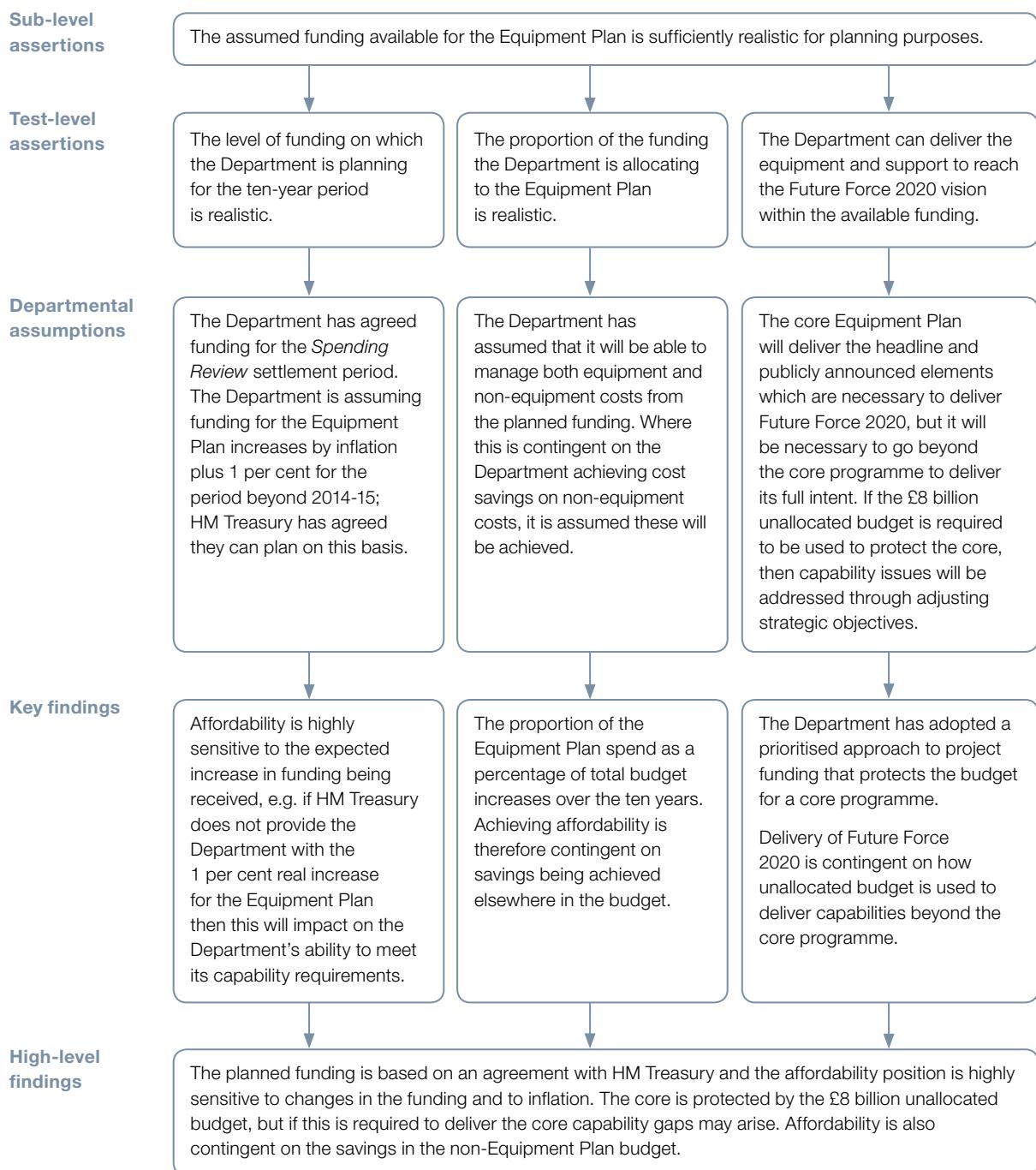
Method for assessing the validity of the Department's assertions

37 In order to review the validity of the Department's assumptions underpinning the funding of the Equipment Plan we:

- reviewed the realism of the assumptions on which the Department is basing its expected funding;
- compared the allocation of funding to the Equipment Plan as a percentage of total funding to historical trends;
- conducted a sensitivity analysis of the affordability position to changes in the assumptions underpinning the level of future funding; and
- reviewed evidence about whether the Department believes that the Equipment Plan will deliver the programme required to reach the Future Force 2020 vision by reviewing Department analysis of capability delivery and conducting interviews with key personnel.

Figure 4

The testable assertions and key findings related to the funding element of the Equipment Plan



Findings

Is the level of Departmental funding on which plans for the ten-year period are based realistic?

38 Until 2014-15 overall Departmental funding is based on the extant *Spending Review* agreement, as modified by HM Treasury's *Autumn Statement 2012*; after this the Department is planning on the basis of receiving funding uplifted annually by an inflation rate of 2.7 per cent with a further 1 per cent annual uplift for the Equipment Plan element until 2020-21. This latter uplift was agreed by the Chief Secretary to the Treasury in 2011 to be fixed for the stated period and not reopened unless in the case of a significant adverse fiscal shock requiring reprioritisation of public expenditure. No commitment was given for funding the non-Equipment Plan spend, and this is subject to future Spending Reviews. The agreed funding is not ring-fenced and the Department has moved £4.7 billion¹⁷ from non-Equipment Plan expenditure to increase the funding allocated to the Equipment Plan.

39 The Department plans to spend slightly more than its budget in 2012-13 and 2013-14 because the historical pattern of in-year spend on projects means planned rates of spend are unlikely to be achieved. Most recently, this was the case in 2011-12 when the Department was able to use the available funding to procure an additional C-17 strategic transport aircraft and 100 extra Foxhound protected mobility vehicles.

40 The overall affordability of the Equipment Plan is highly sensitive to changes in the assumptions about funding, which could be affected by changes to economic or political priorities. The unallocated £8 billion from the budget insulates the core programme from some of this sensitivity. However, any element of this expended on protecting the core would reduce the available funding for non-core projects, meaning the Department would have to find other ways of delivering capability or adjust its strategic objectives. **Figure 5** shows how changes in the Department's assumptions would impact on the funding available.

Is the proportion of Departmental funding allocated to the Equipment Plan realistic?

41 The percentage of the total defence funding committed to the Equipment Plan rises from 39 per cent in 2012-13 to 45 per cent in 2021-22 (see Figure 1b). This increasing proportion of funding is not ring-fenced and is contingent on other planned savings, notably manpower reductions and estates rationalisation, being achieved across the Department. The Department has established an unallocated provision on its overall budget of about £200 million per year over the ten-year period. This provides some protection from the risk of lack of progress on overall Departmental savings targets impinging on the affordability of the Equipment Plan. Our future work will examine progress on achieving these planned savings.

¹⁷ This is not the contingency provision, which is a component of the cost rather than of the funding.

Figure 5

An illustration of the sensitivity of the Equipment Plan funding to changes in the underlying assumptions

Equipment Plan funding scenarios	Expected total Equipment Plan funding (£bn)	Reduction to the available funding for the Equipment Plan (£bn)
3.7 per cent uplift – basis on which the Department is planning	159.4	0
2.7 per cent uplift	155.0	4.4
2.5 per cent uplift on budget	154.2	5.2
2.0 per cent uplift on budget	152.0	7.4
1.7 per cent uplift on budget	150.8	8.6

NOTES

- 1 In all funding scenarios the assumed inflation rate in the economy is 2.7 per cent using the GDP deflator measure.
- 2 The scenarios represent possible funding settlements from 2015-16 for the Department's Equipment Plan, expressed as an uplift from a 2014-15 baseline, and how these translate into the total expected funding compared with the current funding assumption applied by the Department (highlighted).

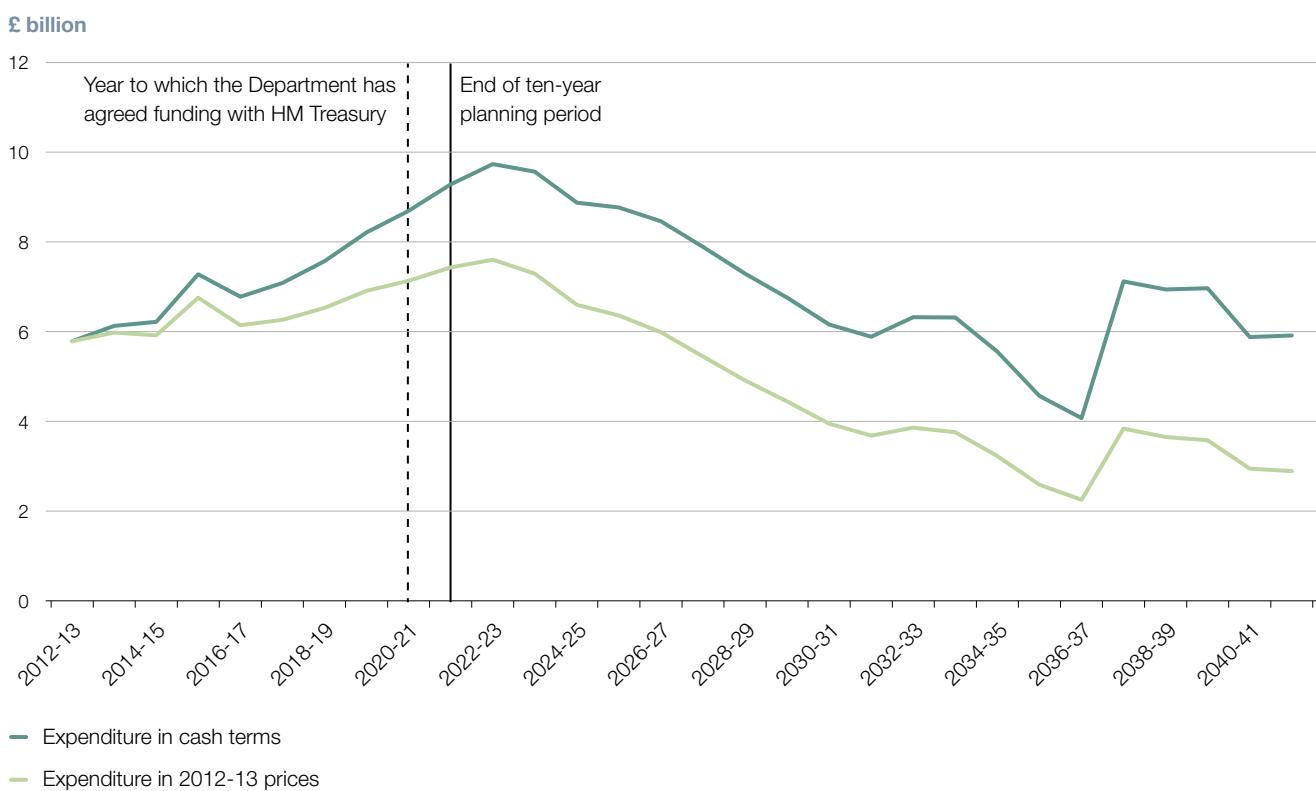
Source: National Audit Office analysis of Ministry of Defence data

42 The Department's affordability Statement on its Equipment Plan is prepared on a ten-year basis, however the Department forecasts its costs on equipment procurement over 30 years. **Figure 6** overleaf shows the Department's forecast cost for equipment procurement continues to grow at above forecast inflation levels until 2022-23, just outside the period where there is a funding agreement in place. Our work on the Department's *Major Projects Report 2012* identified that, in 2011-12 the 13 projects for which in-service date is measured in the report slipped from their timetable by an average of 11 months each (a total of 139 months). If slippage against forecast cost occurs over the next ten years then there is a risk that costs will peak above the available funding during the 2020s, or that further delays in some projects will be required to ensure costs are not in excess of funding in individual years.

Figure 6

The Department's 30-year forecast of its expenditure on equipment procurement

The Department's planned equipment procurement expenditure increases above the GDP deflator general inflation measure until 2022-23

**NOTES**

- 1 Costs decrease post 2023-24 as the Department has not yet planned its full spend for this period.
- 2 Expenditure in 2012-13 prices has had inflation removed using a GDP deflator rate of 2.5 per cent. Treasury rates for the deflator rate are projected to 2016-17 and are consistent with the March 2012 Budget Report. We have extended the use of this rate to all planned costs.

Source: National Audit Office analysis of Ministry of Defence data

Can the Department deliver its strategic objectives within the available funding?

43 During the preparation of the 2012 Equipment Plan the Department changed its approach to identify three key elements of its core equipment procurement programme. These are the projects to which it is contractually committed and where the scope for cost-effective change was limited; the nuclear deterrent; and projects where there was a policy commitment or that had been publicly announced. These form the core programme.

44 **Figure 7** overleaf shows that, under this approach, £8 billion of unallocated procurement expenditure is available towards the end of the decade, with a high level of commitment in the early years. The Department's intention is to use this money to fund additional projects according to their military priority as soon as it is sure they are affordable. The Department has a prioritised list of projects, categorised as non-core, from which it will look to approve additional projects at such a point as it is confident that it can afford them. However, should the funding situation change or the core programme experience a cost increase which requires use of some or all of the unallocated budget, the Department would have more ability to re-focus its resources, albeit with implications for the delivery of capability.

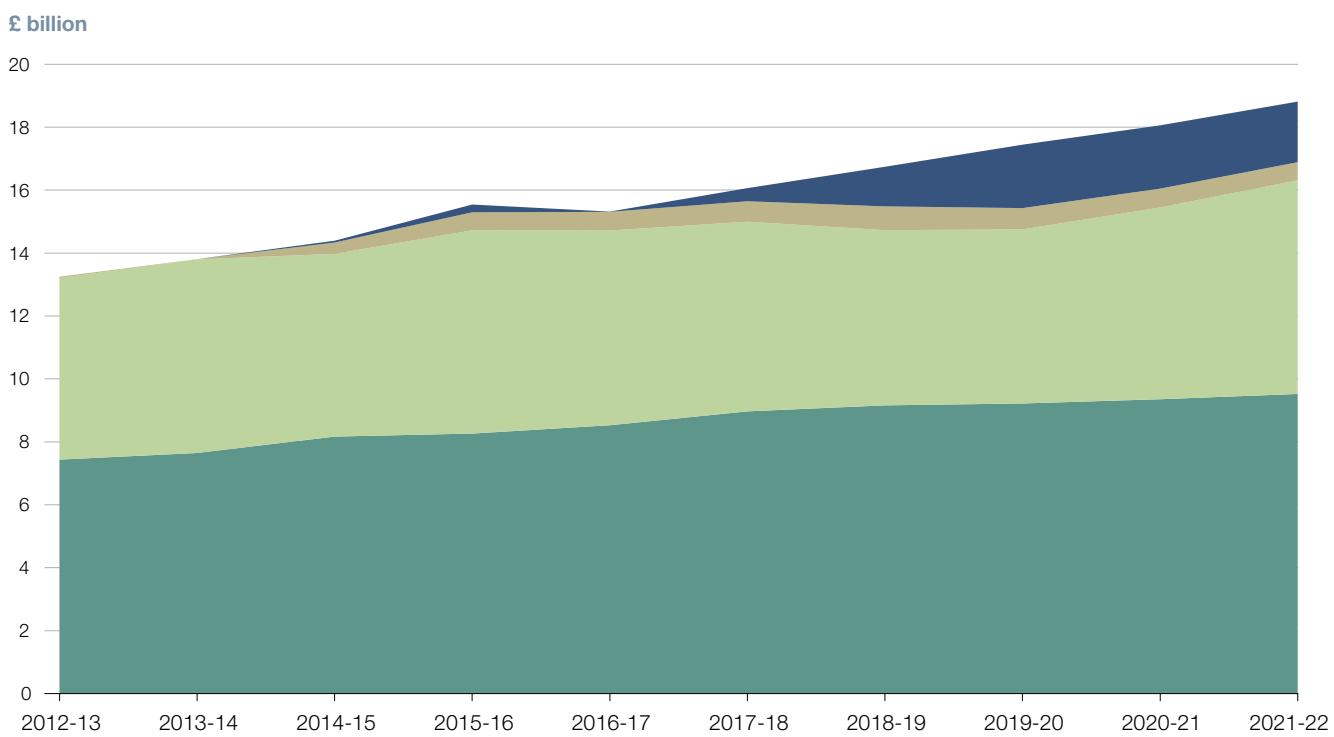
45 The Department intends that by splitting its equipment procurement programme between core and non-core it will give the projects in the core programme greater certainty to plan on, and place it in a better position to target available funding on high-priority areas of the non-core programme. It has developed a prioritised list of equipment it can procure with relatively short lead times and has already allocated £350 million of funding against equipment on this list as a result of a projected underspend in 2012-13.

46 Figure 7 shows that the Department's equipment procurement expenditure is fully committed in the early years and, if the Equipment Plan budget was to come under pressure in the short-term the most likely response would be either to reduce funding for the support of in-service equipment or to slow down committed procurement. The latter would have adverse longer-term cost implications and both scenarios would affect the delivery of capability.

47 In seeking to bring its forecast costs within budget, the Department has had to accept less capability and the possibility of greater operational risk in some areas. At the end of Planning Round 12, the Chief of the Defence Staff concluded that the projects within the core programme were sufficient to enable the Department to deliver on the headline and publicly announced elements within Future Force 2020. However, he noted that the Department still had further work to do to identify the capabilities and priorities necessary beyond the core programme to deliver the full intent behind Future Force 2020. Key to delivery of Future Force 2020 was for the Department to understand how to utilise the £8 billion non-core element of the Equipment Plan. The Department has been undertaking work to support this in 2012-13.

Figure 7

Breakdown of the Department's planned spend on the Equipment Plan between core and non-core programmes



- Unallocated budget
- Contingency
- Equipment procurement core costs
- Equipment support costs

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
Unallocated budget (£m)	0	0	57	247	8	417	1,259	2,015	2,011	1,926	7,940
Contingency (£m)	42	8	360	572	594	649	755	676	599	576	4,831
Equipment Procurement core costs (£m)	5,769	6,151	5,806	6,458	6,187	6,027	5,567	5,532	6,092	6,788	60,377
Equipment Support costs (£m)	7,436	7,647	8,168	8,264	8,528	8,969	9,160	9,220	9,355	9,522	86,269
Total (£m)	13,247	13,806	14,391	15,541	15,317	16,062	16,741	17,443	18,057	18,812	159,417

NOTES

- 1 The core programme includes the following categories of spend: contractually committed, publicly announced, nuclear deterrent, policy commitment to proceed and the entire Equipment Support element. The non-core programme includes unallocated budget.
- 2 The Department has planned to spend more than its budget in years 2012-13 (£263 million) and 2013-14 (£65 million).
- 3 All costs are given in cash terms.
- 4 The unallocated budget, contingency and equipment procurement core costs are components of the Equipment Procurement budget as illustrated at Figure 1.

48 If the cost of the core programme rises (causing a reduction in the budget available for the non-core programme), or if future funding is lower than expected, the Department's own analysis shows that capability gaps will arise in some areas, particularly in relation to the Army. In addition, the Equipment Plan as presented does not include funding or costs for the return and ongoing support of equipment purchased under Urgent Operational Requirements from Afghanistan. Further work is needed to agree what contribution this equipment will make to delivery of Future Force 2020 and how this will be funded.

49 The Department recognises that Future Force 2020 cannot be delivered through improvements in equipment procurement alone, and that achieving its objectives within budget will require it to make other changes including delivering efficiency savings across the Department; using the £8 billion of unallocated expenditure appropriately; and making changes to the way in which the Armed Forces conduct training and operations.

Conclusion

50 Small variations in the assumptions around the forecast total funding available to the Department will affect affordability. Similarly, the realism of the assumptions on the scale and timing of savings the Department expects to achieve elsewhere in the defence budget, and on which the increasing amount of funding allocated to the Equipment Plan is predicated, are as yet unproven. The £8 billion of unallocated budget does offer protection to the core programme. However, our review of Departmental documents and interviews with Departmental personnel suggest that the unallocated budget is essential to deliver the full intent behind Future Force 2020. Using this budget to protect the core programme would therefore result in capability gaps.

Disclosure

Background

51 As per paragraph 9 the government has committed to publishing an annual Statement on the cost and affordability of the Equipment Plan. This is the first year in which it has prepared this Statement and its format is the decision of the Department. The Department intends that the Statement should aid transparency, demonstrate the affordability and deliverability of the Equipment Plan, and provide the defence industry with more information on which to plan. For those reasons we would expect the Statement to contain adequate and sufficient disclosures for users to fully understand the affordability position of the Equipment Plan and its sensitivity to changes in the underlying assumptions.

Method for assessing the adequacy of the disclosures within the Department's affordability statement

52 In order to assess the adequacy and sufficiency of the disclosures within the Department's affordability Statement we used as a framework the International Standard on Assurance Engagements 3400, The Examination of Prospective Financial Information (the Standard). The purpose of the Standard is to establish standards and provide guidance on engagements to examine and report on prospective financial information. As per paragraphs 14 to 16, our examination of the Department's affordability Statement is not an assurance engagement; however, the guidance on the sufficiency and appropriateness of disclosure as set out in the Standard provides a sound framework for this engagement.

53 The relevant elements extracted from the Standard that are applicable to this engagement are:

- The presentation of prospective financial information is informative and not misleading.
- The assumptions are adequately disclosed in the notes to the prospective financial information. It needs to be clear whether assumptions represent management's best estimates or are hypothetical and, when assumptions are made in areas that are material and are subject to a high degree of uncertainty, this uncertainty and the resulting sensitivity of results needs to be adequately disclosed.
- The date as of which the prospective financial information was prepared is disclosed. Management needs to confirm that the assumptions are appropriate as of this date, even though the underlying information may have been accumulated over a period of time.
- The basis of establishing points in a range is clearly indicated and the range is not selected in a biased or misleading manner when results shown in the prospective financial information are expressed in terms of a range.

Findings

Sufficiency of disclosure on the Department's assumptions regarding the cost of the Equipment Plan

54 The disclosure in the Statement could contain greater detail for the user to fully understand the key assumptions and risks to the affordability position inherent in the costs. The Statement adequately describes the implementation of the inflation and foreign exchange assumptions and the basis for including risk at the project planning level. However, for the user to understand the sensitivity of the position to the cost assumptions, we would expect disclosures describing the following:

- Consideration of the risk at the aggregate level of the entire Equipment Plan, including the assumption that the over/underspends will balance out.
- A clearer explanation that the 87 per cent planned spend mentioned in the Department's affordability Statement excludes the £8.4 billion provision for risk which forms part of the 50th percentile project costings on which the Equipment Plan is based.
- Uncertainty around the sufficiency of £4.8 billion provision.
- The total value of risks that have not been included in cost models and the impact on the cost of the Equipment Plan if these risks were to materialise.
- The equipment support costs have not been subject to the same scrutiny as the procurement costs, such that the assurance the Department can offer Parliament is limited.
- The impact that cost growth in the largest programmes would have on affordability.

Is the level of disclosure on the Department's assumptions regarding the funding of the Equipment Plan sufficient?

55 The disclosure in the Statement could contain greater detail for the user to understand the sensitivity of the affordability position to funding. The Statement does contain sufficient information for the user to understand that the assumed funding is based on a 1 per cent real-terms growth for the period outside the Spending Review until 2020-21, and that the Department has taken the approach of ensuring a core programme is funded with an available £8 billion of unallocated funds. However, in order for the user to fully understand the effect that changes in the funding assumptions could have on the affordability position, the Statement should contain the following:

- Commentary on the impact to the Equipment Plan if the Department does not receive the 1 per cent real-terms uplift in 2015-16 as agreed by HM Treasury.
- A description of the need to meet cost reduction targets in non-equipment areas of the Department's budget to allow the planned level of funding to be available to the Equipment Plan.

Conclusion

56 While the Statement adequately describes some of the assumptions underpinning the Equipment Plan, the extent of disclosure is not sufficient for the user to fully understand the risks to affordability inherent in the cost assumptions. For example, it would benefit from a description of the Department's assessment of its ability to address the historical causes of cost growth and timescale slippage and to incorporate and effectively manage sufficient contingencies in its Equipment Plan to absorb cost increases. The level of disclosure is also inadequate for the user to understand the sensitivity of the affordability position to changes in the funding assumptions.

Appendix One

Procedures performed and associated findings

The specified procedures listed below have been selected and performed drawing on the principles set out in ISAE 3000: *Assurance Engagements Other Than Audits or Reviews of Historical Financial Information*. We have set out our findings against each of the specified procedures performed.

Procedures

The procedures we undertook and on which our findings are based are described below:

Procedures related to the assumptions that underpin the planned procurement costs

- We reviewed alternative costings to those of the project teams, generated by the Department's internal Cost Analysis and Assurance Service.
- We undertook a detailed review of eight of the largest procurement programmes in the Equipment Plan, the combined value of which is 35 per cent of the Equipment Procurement Plan. Our sampling constituted a review of the risk management processes; an examination of the cost modelling used; a reconciliation of costs to the Equipment Plan; and a walk-through of the process of how the inputs into the model are generated and how risk is applied.
- We reviewed the approach set out in the centrally issued guidance on the treatment of inflation and foreign exchange and looked for application of these assumptions in the eight sampled projects.
- We used historical data and existing analyses to compare historical trends with the Department's assumptions about potential cost growth.
- We reviewed the Department's process for aggregating the project costs into the Equipment Plan.
- We reviewed the basis for the centrally added provision and considered the sufficiency of the amount against our understanding of risk and historical trends.

Procedures related to the assumptions that underpin the planned future funding

- We reviewed the realism of the assumptions on which the Department is basing its expected funding.
- We compared the allocation of funding to the Equipment Plan as a percentage of total funding with historical trends.
- We conducted a sensitivity analysis of the affordability position to changes in the assumptions underpinning the level of future funding.
- We reviewed evidence that the Department can deliver the capability needed to deliver its strategic objectives within the funding envelope by reviewing Departmental analysis of capability delivery and conducting interviews with key personnel.

Procedures related to disclosure

- We reviewed the disclosures in the Department's Statement to assess the adequacy and sufficiency of the disclosures.

Report of findings

The Department's Statement presents the Equipment Plan as affordable, with the ten-year costs being within the ten-year assumed funding. Taking this as the Department's assertion, we performed the above procedures to evaluate the assumptions on which affordability is contingent. Our key findings are presented in summary against the procedures listed above.

Findings from procedures on the cost assumptions

- The Department's Cost Assurance and Analysis Service scrutinised the costs of 40 of the largest procurement projects and concluded that, using the Department's extant guidance, the Equipment Procurement Plan is understated by £5.2 billion. In addition, they estimated that on a 'most realistic' basis, the cost of the procurement projects in the Equipment Procurement Plan has been understated by £12.5 billion (15.7 per cent). The Department has used this figure to inform its judgement on the size of the contingency provision but does not accept the size of the estimate.
- All of the projects we reviewed had considered risk and uncertainty in their costings, although there was variation in the extent to which they used this to inform their forecast costs. Four of the sample could not provide us with the full range of potential costs from their risk analysis to support their range of costings. In line with Departmental guidance, project teams exclude a significant amount of risk from their costs; in the eight projects we reviewed a total identified risk of £5.7 billion was excluded from costings (16 per cent of the total costs).

- Inflation assumptions are derived by individual project teams to be the most appropriate rate for a specific project. In the projects we sampled we found evidence that the inflation rates used were based on historical analysis and/or contracted rates. Inflation rates are inherently variable, but we consider this a reasonable approach.
- Foreign exchange is planned using current rates, with cost variations managed centrally through a central provision with hedging used to mitigate short-term cash flow fluctuations. In our view, this is a reasonable approach.
- We tried to undertake a historical review of how accurate the Equipment Plan costings had been in previous years, however we were hampered in our ability to do this by the fact that the Department does not monitor and report actual in-year spend in a form that can be reconciled to the forecast costs in the Equipment Plan. Therefore we were not able to review the quality of past forecasts.
- Individual projects are costed at a point where the project is theoretically as likely to come over or under that cost. The Department derives the total Equipment Plan forecast cost by adding these project costs together and assuming that the over/underspends will have a cancelling effect that reduces overall cost variance. Historically, the Equipment Plan demonstrates a significant net increase in cost. Our view is that this method is not statistically valid and the Department needs to undertake portfolio analysis to understand the risk associated with the aggregate costs.
- The Department has added a central provision of 3 per cent of the total planned cost, which was derived by looking at the potential under-costing of ten projects, as determined by the internal costing assurance, then retaining a centrally held amount to absorb the potential cost growth. The provision will have to be sufficient to absorb cost growth from both unrealistically low costs and from the materialisation of risk and may not be sufficient.

Findings from procedures on the funding assumptions

- The planned funding is based on the extant 2010 *Spending Review* for the period until 2014-15, then a 1 per cent real-terms increase on the Equipment Plan funding post 2014-15. This assumption is based on an agreement with HM Treasury. The agreement allows for this funding to change in the advent of a fiscal shock requiring reprioritisation of public expenditure. Equipment Plan funding is not ring-fenced and can be moved to other areas of the Departmental budget.
- The level of funding allocated to the Equipment Plan is increasing from approximately 39 per cent in 2012-13 to 45 per cent in 2021-22. Allocating more funding to the Equipment Plan will be contingent on the Department making savings in other areas of its budget.

- Our analysis shows that the Departmental funding is highly sensitive to changes in the funding assumptions, with a 1 per cent decrease in the funding settlement equating to an approximate £4.4 billion fall in cash terms.
- For the 2012 Equipment Plan the Department has adopted the approach of identifying contractually and policy committed programmes to form the core programme. After deducting the core programme from the total available funding, this provides £8 billion of available funding towards the end of the decade. The Department has a prioritised list of non-core programmes and it will look to approve additional projects when it is confident it can afford them. Successful delivery of Future Force 2020 will be contingent on both how the £8 billion is allocated and how training and operations are delivered.

Findings from procedures on disclosure review

- The presentation of prospective information is informative to the user, but there are limitations to the disclosure which prevent the user from fully understanding the assumptions that underpin the affordability position.
- The disclosure in the Statement is not sufficient for the user to fully understand the key assumptions and risks to the affordability position inherent in the costs, or the sensitivity of the affordability to changes in the funding assumptions.
- The date as of which the prospective financial information was prepared is not disclosed.
- The Equipment Procurement Plan costs are based on the aggregate of project costs, which are a point cost selected from a range, whereby there is an equal probability of coming under or over that cost.

Appendix Two

Performance indicators

The measures against which the Department must improve its performance in order to demonstrate it has addressed the key risks to the affordability of the Equipment Plan.

Performance indicator	Why the performance indicator makes an important contribution to our understanding of the affordability of the Equipment Plan
Accuracy of historical forecasts of costs to deliver projects	The past performance of outturn against plan is a strong indicator of how good management is at accurately forecasting costs.
Accuracy of historical forecasts of time to deliver projects	The past performance of outturn against plan is a strong indicator of how good management is at accurately forecasting timescales.
Agreed military capability delivered through the Equipment Plan	Affordability should be achieved through sound financial management, rather than reducing capability during the lifetime of a project to bring costs within budget. An affordable Equipment Plan should include delivery of the planned capability.
Achievement of savings in non-Equipment Plan areas of the budget	The Equipment Plan is a component of the overall budget and therefore cannot be considered in isolation. If the Department faces cost pressures in other areas of the budget this will inevitably affect the affordability of the Equipment Plan by restricting the available funding, for example if the Department does not achieve its planned manpower savings then the budget will have to be reduced in other areas to ensure the budget is not breached. Potential sources of budget flexibility are to delay programmes in the Equipment Plan (potentially increasing overall cost and delaying capability) or to review capability solutions and reassess priorities.
Equipment support costs	The support element of the Equipment Plan makes up more than half the planned costs. The equipment support costs have different characteristics to the procurement element, being for ongoing service contracts rather than delivery of specific, identifiable equipment. For the Equipment Plan to be affordable, it is important that the Department manages these costs within the available funding.
Budget management	Spending within reasonable parameters of a set budget is an indicator that management is good at financial planning. Conversely, large variances from budget may indicate poor financial management, which reduces confidence in planning. Underspends and overspends against budget can arise due to changes in circumstances such as schedule slippage, cost growth, under- or over-provision of risk and changes in operational priorities. Accounting issues in 2011-12 indicate the Department has not managed its capital budget well.

Performance indicator	Why the performance indicator makes an important contribution to our understanding of the affordability of the Equipment Plan
Amount of risk incorporated into costings	<p>The amount of risk contingency included in the costings should be sufficient and appropriate. While we recognise that there will always be uncertainty, the amount of risk contingency included in the costings should be based on a sound rationale and be consistent with both the historical evidence and evidence to support assumptions about future performance. Affordability is dependent on the Department having sufficient contingency to absorb cost increases from the materialisation of risk so as to not breach the available funding envelope.</p>
Cost maturity and control including: <ul style="list-style-type: none"> ● Identification and treatment of risk ● Quality of data ● Internal control and assurance 	<p>Despite the sophistication of the cost techniques used, the Equipment Plan costs are unlikely to be realistic without a comprehensive identification and analysis of the risks and uncertainties to which those costs are subject and a reasonable reflection of these within cost models. Elements of the plan are developing technology at the cutting edge, and therefore will inevitably be speculative in terms of cost and time.</p> <p>Validated and verified data on the cost element and time elements of the different projects within the Equipment Plan are essential if robust estimates are to be generated with a comprehensive audit trail.</p> <p>Robust internal controls that are designed to ensure the realism and accuracy of the Equipment Plan are necessary to ensure that the Equipment Plan is costed at a realistic level. For example, robust management scrutiny and control within and above project teams is essential to ensure that costs are being generated on a reasonable and consistent basis, and a skilled, well-informed and well-resourced cost assurance function is necessary to challenge the realism of the costs and highlight any risks that have not been addressed.</p>



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