



National Audit Office

Report

by the Comptroller
and Auditor General

Nuclear Decommissioning Authority

Assurance of reported savings at Sellafield

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Report by the Comptroller and Auditor General

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Comptroller and Auditor General
National Audit Office

25 October 2013

This report examines whether the Nuclear Decommissioning Authority's approach to measuring and reviewing claimed savings at Sellafield assures the accuracy of reported savings.

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This report can be found on the National Audit Office website at www.nao.org.uk/2013-sellafield

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Summary

Background

1 Sellafield is the UK's largest and most hazardous nuclear site. The Nuclear Decommissioning Authority (the Authority) owns the site, its assets and liabilities, and leases the site to Sellafield Limited. Sellafield Limited holds the management and operations contract for the site and is the site licence company. In 2008, the Authority appointed Nuclear Management Partners Limited (NMP) as the 'parent body' of Sellafield Limited for an initial period of five years from 2009-10 to 2013-14, with options for extensions up to 17 years. As parent body, NMP owns Sellafield Limited for the duration of the parent body agreement and provides the senior management leadership to drive performance on the site.

2 Cost performance is an important part of overall site performance and is measured by site-wide savings figures. Savings at Sellafield are calculated by comparing actual spend in each year under NMP's management with baseline estimates of costs which would have been incurred under previous management to achieve the same outcomes. These baseline estimates are known as the contract baseline. One of the minimum performance standards for NMP was the achievement of at least 80 per cent of the site-wide savings potential for the initial period, which it had identified in its bid. The standard was revised in December 2012 to exclude legacy ponds and silos. Sellafield Limited is also eligible for efficiency fees. These are paid to NMP as dividends. The maximum efficiency fee available is calculated as 17.5 per cent of savings up to one-tenth of site funding for eligible activities, and 25 per cent of savings above that level.

3 The Committee of Public Accounts, in their report published in January 2013, *Nuclear Decommissioning Authority: Managing risk at Sellafield*¹ expressed concern that claimed savings figures are often overstated across government. They were particularly concerned that organisations can overstate their savings by moving costs from one part of their business to another. The Committee asked the National Audit Office to review the basis on which the Authority assesses savings at Sellafield and provide assurance to the Committee that the Authority has accurately measured and reported the level of savings achieved.

¹ HC Committee of Public Accounts, *Nuclear Decommissioning Authority: Managing risk at Sellafield*, Twenty-third Report of Session 2012-13, HC 746, February 2013.

Scope of the report

4 We reviewed the Authority's systems for assuring the reported savings at Sellafield, and performed our own testing on items contributing to savings in 2012-13. The Authority has not yet completed its work to agree with Sellafield Limited the savings for 2012-13. This report is based on progress to date and includes the Authority's latest forecasts of savings for 2012-13 and 2013-14. We did not test the reliability of reported actual site-wide costs reimbursed by the Authority because assurance over those costs is gained through our certification of the Authority's accounts.

5 In this report:

- Part One describes the systems for measuring and reporting savings at Sellafield, including setting the baseline against which savings are judged. It presents latest forecasts of site-wide savings.
- Part Two describes and evaluates the Authority's assurance systems during the initial period to validate savings reported by Sellafield Limited.
- Part Three presents the results and conclusions from our own testing of reported savings for 2012-13.

Key findings

6 The original target for site-wide savings was £796 million over the initial period of the parent body agreement (from 2009 to 2014) at 2012 prices. This target is also one of the minimum performance standards for NMP, achievement of which would provide for automatic rollover of the contract into a second term. The target is calculated as 80 per cent of £1.4 billion of savings potential based on NMP's bid, adjusted to the same estimating basis as the baseline for savings. Forecast site-wide savings over the initial period fell from the £825 million forecast in October 2012 to £652 million forecast based on latest data. These forecast savings relate to impacts in the initial period and do not include the impacts of savings initiatives on costs in later years (paragraph 1.17).

7 On the most high-risk parts of the site – the legacy ponds and silos, the Authority is looking to incentivise progress on the ground rather than cost efficiency. Therefore, during 2012-13, it removed legacy ponds and silos from the efficiency fee mechanism. It is the Authority's view that legacy ponds and silos should also be removed from the minimum performance standard for savings from the date of agreement of the new mechanism, December 2012. Removing legacy ponds and silos from the minimum performance standard from December 2012 reduces target savings to £699 million at 2012 prices. The Authority's latest forecasts are for savings of £691 million against this target (paragraphs 1.18 to 1.19).

8 Moving from a whole-site approach creates new risks for the accuracy of reported savings against the minimum performance standard for the rest of the site. These risks can be mitigated by continuing to track the site-wide position and focused assurance work to confirm that costs are not shifted inappropriately to legacy ponds and silos from the rest of the site. The Authority understands the risk and intends to continue to monitor site-wide savings (paragraph 1.16).

9 The Authority tracks savings by comparing the cost of work carried out with the estimated cost of that work in the contract baseline, adjusted to remove savings not attributable to Sellafield Limited's actions. This system provides transparency over the baseline for measuring savings against. We reported previously that the contract baseline against which savings are currently measured underwent extensive assurance but uncertainty remains about delivery schedules and costs in the short and long term. The contract baseline is maintained through robust change control procedures (paragraphs 1.12 to 1.13 and 2.4 to 2.7).

10 The Authority's forecast of savings for 2012-13 are drawn from consistent and well-established systems and the Authority has undertaken appropriate assurance tests. It has also commissioned some further tests in the light of initial results. In addition to its general systems for measuring and reporting savings, the Authority requires Sellafield Limited to report progress on specific cost reduction initiatives. The project by project narratives associated with this reporting can help the Authority understand and, where necessary, challenge Sellafield Limited's attribution of the savings to practices, methods or initiatives it has introduced since appointment of NMP. It is, however, difficult to distinguish the contributions of such positive actions from the natural evolution of cost estimates when seeking to explain and attribute variances from that baseline (paragraphs 1.14 and 2.9 to 2.10).

11 Less reliance can be placed on savings reported in the previous years of the initial period when the baseline and/or the Authority's assurance were less well developed. The contract baseline was not established until October 2010 and was not applied to the first year of the initial period – 2009-10. The Authority's systems for assuring savings in 2010-11 and 2011-12 had weaknesses in the timing of scrutiny and/or the basis of sampling (paragraphs 1.10 and 2.15 to 2.16).

12 The Authority's current measurement, reporting and assurance systems for savings are very different from central government because they are based on its contractual framework for the site. In particular, site-wide measurement and reporting of savings mitigates the risks of efficiency savings being claimed by reallocating costs between cost categories. Costs moved from one unit to another will not improve site-wide performance (paragraphs 1.15 and 2.11 to 2.12).

Overall assurance conclusion

13 We judge that Authority's systems for recording, scrutinising and challenging claimed site-wide savings at Sellafield provide moderate assurance of reported overall savings. The Authority's testing and challenge of claimed savings was strongest in 2012-13, yielding credible explanations or appropriate adjustments, although this process is not yet complete. Weaknesses in the baseline, timing of scrutiny, or basis for sampling projects in earlier years means we can provide less assurance for savings reported for those years. As the Authority recognises, the exclusion of legacy ponds and silos from the minimum performance standards creates new risks to the accuracy of reported savings against that standard. These risks arise from the opportunity to allocate or charge a disproportionate share of costs to legacy ponds and silos, thus improving the apparent performance on the rest of the site. The Authority intends to mitigate this risk by continuing to monitor site-wide savings.

Recommendations

14 Irrespective of whether fees or other contractual provisions continue to be associated with savings the Authority should:

- continue to measure, scrutinise and report site-wide savings against a robust baseline, set the baseline for the next contract period, and agree a stretching savings target relative to that baseline, before the start of that period;
- exercise particular scrutiny and timely challenge of change requests which seek to add budget to the baseline (or remove scope without adjusting the baseline);
- proactively identify where external changes have reduced the need for spending and seek to agree baseline changes accordingly;
- make better use of reports on specific savings initiatives to provide assurance on the source of savings and learn lessons on which actions have proved most effective in improving efficiency;
- finalise and report on savings within four months of year end; and
- report estimated changes in whole-life costs alongside its reports of annual savings attributed to management action.

Part One

Measuring and reporting savings

1.1 This part presents:

- the overall contract framework for measuring and reporting savings;
- the baseline for savings;
- procedures for tracking expenditure against baseline; and
- reported levels of actual and forecast savings.

The overall contract framework

1.2 Sellafield is the UK's largest and most hazardous nuclear site. It includes operational nuclear fuel reprocessing plant and legacy storage ponds and silos for nuclear waste material from the UK's first generation of nuclear plants. The Nuclear Decommissioning Authority (the Authority) owns Sellafield and 18 other UK licensed civil nuclear sites. The Authority is an arm's-length body sponsored by the Department of Energy & Climate Change (the Department).

1.3 Sellafield Limited manages the site under a management and operations contract with the Authority. The Authority sets strategic objectives and Sellafield Limited develops, implements and maintains a plan to deliver those objectives.

1.4 In November 2008, the Authority appointed Nuclear Management Partners Limited (NMP), a consortium of URS (United States), AMEC (United Kingdom) and AREVA (France), as the 'parent body' of Sellafield Limited. NMP owns Sellafield Limited for the duration of the parent body agreement and uses its expertise to improve performance at Sellafield. The parent body agreement has an initial five-year term ending in March 2014 (the initial period).

1.5 The Authority announced on 4 October 2013, that it had decided to extend its parent body agreement with NMP into a further five-year period. The Authority had options to extend the agreement by two or five years at the end of the initial period. The Authority had to exercise one of these extension options if Sellafield Limited met minimum performance standards during the initial period. The original minimum performance standards included a site-wide savings target linked to the potential identified in NMP's bid for the parent body agreement.

1.6 The Authority may terminate the agreement at any time and for any reason. If it terminates for a reason other than parent body default, it must give a year's notice and pay a prescribed compensation amount: set at £430,000 for termination in the final year of the initial period.

1.7 Savings are calculated by comparing actual spend in each year under NMP's management with baseline estimates of costs which would have been incurred under previous management to achieve the same outcomes. The minimum performance standard for savings across the whole site was £796 million at 2012 prices. This was calculated as 80 per cent of a £1.4 billion potential based on NMP's bid, but with an adjustment to a P50 estimating base² and indexed into 2012 prices. Bidders were told to exclude severance costs from their estimates of potential savings, and they are consequently excluded from measures of savings against the minimum performance standard.

1.8 As well as their relevance to the minimum performance standard, savings support Sellafield Limited's claims for payments of efficiency fees. These are paid to NMP as dividends. The maximum efficiency fee available is calculated as 17.5 per cent of savings up to one-tenth of site funding for eligible activities, plus 25 per cent of savings above that level. Payment of efficiency fees from this available pool is subject to achievement of specific milestones on site, and is subject to deductions for shortcomings in performance. Efficiency fees of £42 million after deductions have been paid to Sellafield Limited in respect of the first three years of the initial contract period.

1.9 For the first three years of the initial period, the Authority has measured and reported savings for the Sellafield site as a whole for both minimum performance standard and efficiency fee purposes. From 2012-13, the Authority has decided that it no longer wishes to incentivise work on legacy ponds and silos through efficiency fees linked to savings. Instead it wishes to incentivise delivery of key milestones on these projects. The Authority is adjusting both the minimum performance standard, and the savings which count towards that standard, to reflect the new treatment of legacy ponds and silos. It has yet to agree those adjustments with Sellafield Limited.

2 NMP's £1.4 billion efficiency target was set at the P80 level (meaning there was an 80 per cent probability of the projects being delivered at or under budget). This was consistent with the baseline information provided by the Authority to bidders. This has been adjusted to the P50 level (meaning there is a 50 per cent probability of the projects being delivered at or under budget), because the baseline for Sellafield is stated at the P50 level.

The baseline for savings

1.10 For 2009-10, the first year of the initial contract, the Authority did not have a credible baseline for measuring Sellafield Limited's savings. Prior to the appointment of NMP, Sellafield Limited had developed a lifetime plan for the site in 2007. This was designed to meet legally binding regulatory specifications but was rejected by the Authority as undeliverable. The parent body agreement required NMP, working with the Authority and Sellafield Limited, to review this lifetime plan and the Authority hoped to agree the new lifetime plan by April 2010. As a first step, the inherited 2007 plan was updated to reflect 2009 prices and other known changes, yielding a 2009 lifetime plan. It became evident, however, that the plan required more fundamental reworking. This involved Sellafield Limited developing and the Authority agreeing:

- a 'contract baseline', which is used to measure and report performance against the minimum performance standard and calculate savings for the purposes of efficiency fees. The costs and schedules in the baseline were based on assessing Sellafield Limited's past performance and working practices before appointing NMP. In October 2010, the Authority agreed the contract baseline for the whole of 2010-11 and subsequent years; and
- a 'performance plan', which sets out what Sellafield Limited expects to achieve each year, showing how it aims to outperform the contract baseline. This plan forms the basis of the Authority's budgeting and its estimate of the lifetime cost of cleaning-up the site. The Authority accepted the performance plan in May 2011.

1.11 Savings in the remaining four years of the initial period (2010-11 to 2013-14) have been measured, forecast and reported against the 2010 contract baseline, adjusted to consistent estimating bases and indexed to the latest year's price base.

Tracking expenditure against baseline

1.12 The Authority measures savings (and overspends) in a year for each Sellafield 'project'.³ It does so by comparing the actual cost of work performed in that year with the relevant baseline estimate for carrying out that work. At the end of each year the Authority adjusts these reported cost variances to arrive at true cost variances for each project and programme at Sellafield. The main adjustments are the removal of 'windfalls' and removal of differences between the allowed and actual levels of input costs faced by Sellafield Limited. Further detail on these adjustments is in Part Two.

³ Activity at Sellafield is split into 'projects'. A project can be a construction project such as building a new evaporator, an operational activity such as fuel reprocessing, or an administrative activity such as facilities management.

1.13 By making these adjustments, any reported savings should be attributable to practices, methods or initiatives introduced by Sellafield Limited since appointment of NMP. It is not, however, always straightforward to distinguish the contributions of such positive actions from the natural evolution of cost estimates when seeking to explain and attribute variances from that baseline.

1.14 The Authority's systems for measuring savings at Sellafield are underpinned by a consistent and contractual framework for monitoring project costs. Sellafield Limited operates a well-established earned value management system. This measures project cost and delivery performance against baseline schedules of delivery dates, milestones and estimated costs for each element of work. This system has been in place at Sellafield since before NMP's appointment as the parent body, and is prescribed within the management and operations contract. It incorporates a consistent work breakdown structure for cost recording, and is supported by the baseline change control processes described in Part Two.

1.15 The Authority's reporting of savings for the Sellafield site is different from the reporting for central government savings because it is based on a consistent and contractual framework. All savings reported at Sellafield, including those of its large and complicated major projects, draw on the same earned value management information system and are measured using actual rather than estimated costs. Furthermore, Sellafield Limited's systems measure all project's savings, including those overspending projects whose 'negative savings' are netted off the total site-wide reported savings.

1.16 The Authority has recalculated the minimum performance standard and performance against it as a consequence of excluding legacy ponds and silos. The Authority calculates that the revised minimum performance standard for savings is £699 million at 2012 prices over the initial contract period. The removal of legacy ponds and silos creates new risks to the accuracy of reported savings against that standard. Although the Authority measures savings and overspends at project level, until 2011-12 they were aggregated across all projects on the Sellafield site for the purpose of reporting against the minimum performance standard. This mitigated the risk that the contractor would seek to shift costs between projects to optimise reported performance against the minimum performance standard. Removing legacy ponds and silos from the minimum performance standard calculation gives the contractor a new incentive to load costs on to those legacy projects to reduce costs and increase savings on the remaining projects and programmes, although that will not distort reported savings for the site as a whole. This risk is understood by the Authority. It intends to continue to monitor site-wide savings even though they will not all score against the revised minimum performance standard. An external report for Sellafield Limited's internal audit department also addressed this issue and concluded that "there appear to be adequate controls in place to mitigate the risks of inappropriate charging practices being applied". But this has not been independently assessed by the Authority or its internal audit function.

Reported levels of savings

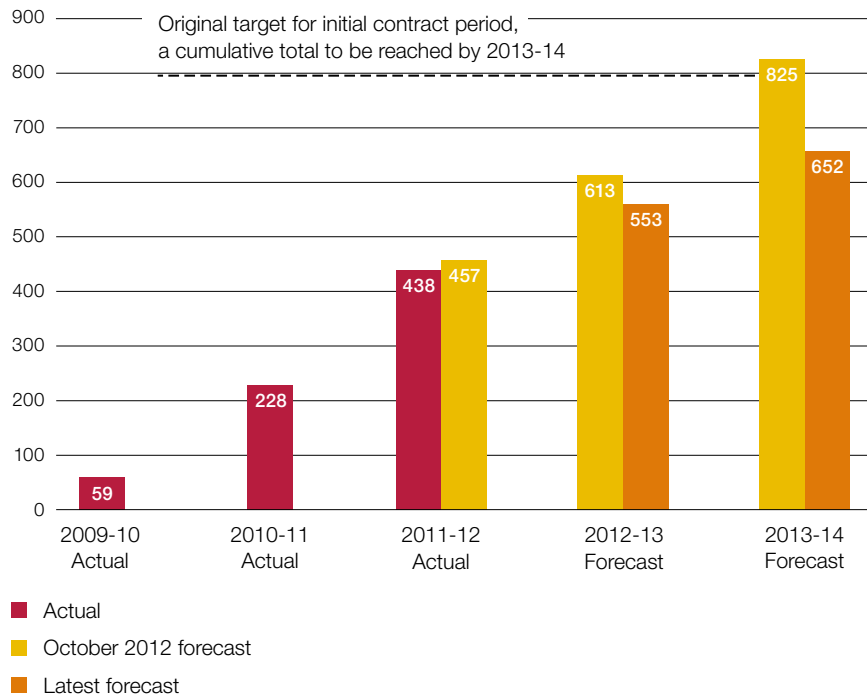
1.17 In October 2012, Sellafield Limited was forecasting it would achieve £825 million savings at 2012 prices against an original minimum performance standard of £796 million. Latest data from Sellafield Limited suggest that only £652 million of savings will be achieved against the original site-wide target, even if the company's claim for 2012-13 savings is agreed in full by the Authority (**Figure 1**).

Figure 1

Cumulative site-wide savings at Sellafield

Sellafield Limited's forecast for cumulative site-wide savings has fallen from £825 million to £652 million

Cumulative, 2012 prices (£m)



Note

1 Figures exclude costs of voluntary severance programme (£8.8 million in 2010-11 and £17.6 million in subsequent years, or £61.6 million over initial contract period).

Source: Nuclear Decommissioning Authority

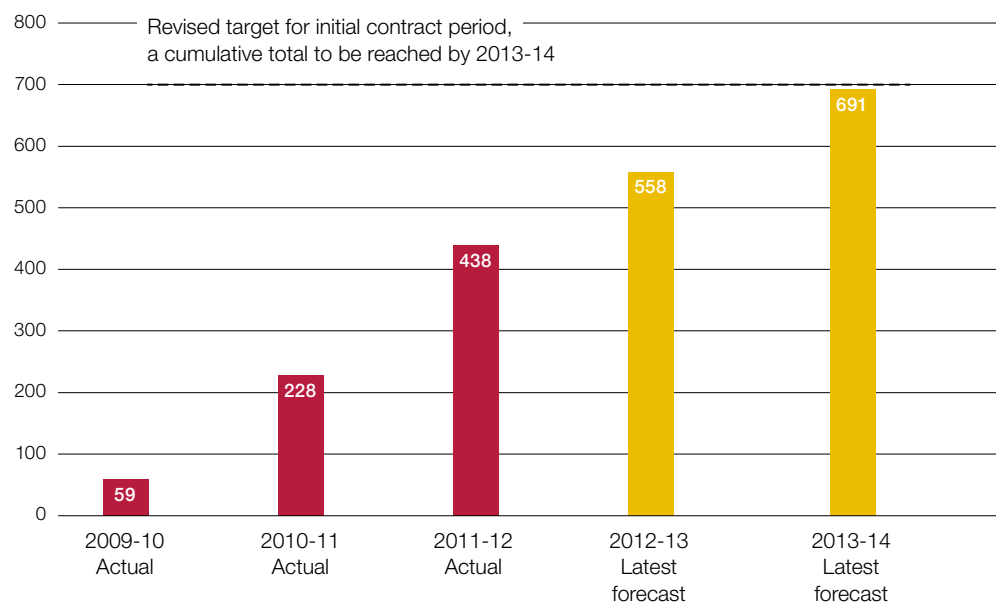
1.18 The Authority's latest forecasts suggest £691 million of savings will be achieved against the revised minimum performance standard, excluding legacy ponds and silos, if it is applied from December 2012 (**Figure 2**). This is because overspends on legacy ponds and silos after December 2012 do not count against the revised minimum performance standard. The revision to the minimum performance standard has made it more likely that Sellafield Limited will meet the standard.

Figure 2

Cumulative savings at Sellafield excluding legacy ponds and silos

By excluding legacy ponds and silos Sellafield Limited is more likely to meet the revised target

Cumulative, 2012 prices (£m)



Source: Nuclear Decommissioning Authority

1.19 Annual measurement and reporting of savings means that the savings data do not capture impacts on future costs. Investments in the initial period may create adverse cost variances in that period, and only yield savings in the years ahead. Alternatively, short-term savings from reductions in care and maintenance activity may store up excess costs for the future. Reported savings for any one year, even if systematically recorded and robustly assured, give only a partial picture of the whole-life cost outcomes of Sellafield Limited and NMP's efforts.

Part Two

Authority assurance of reported savings

2.1 This part evaluates the systems used by the Nuclear Decommissioning Authority (the Authority) to gain assurance over reported savings at Sellafield. In particular, it evaluates systems used by the Authority:

- to assure the robustness of the contract baseline;
- to adjust reported savings for factors beyond Sellafield Limited's control;
- to check reported savings against cost reduction initiatives;
- to assure reported savings are not overstated by moving costs away from projects; and
- to assure the attribution of reported savings for individual projects.

2.2 Our overall evaluation of the Authority's systems is that their design provides moderate assurance of reported and forecast site-wide savings for the first four years of the initial contract period, 2009–2013. Systems weaknesses were the absence of a contract baseline for 2009-10 and weaknesses in the timing or sampling basis for individual project savings in 2010-11 and 2011-12. These weaknesses were addressed in 2012-13. The Authority's contract with Sellafield Limited provides that all savings are attributable to Sellafield Limited's actions unless the Authority can demonstrate to the contrary. This puts emphasis on the Authority having strong systems for challenge and scrutiny of savings claims. Sellafield Limited also deploys significant resources to justify savings claims in the face of that challenge. The application of the Authority's systems in 2012-13 is discussed in Part Three.

2.3 This part also considers the costs of the Authority's assurance activity.

Assuring the contract baseline

2.4 In our report *Managing risk reduction at Sellafield*⁵ we noted that the revised plan was better than the previous plan, although uncertainty remained. The Authority had undertaken extensive assurance of the contract baseline. It carried out detailed reviews of the programmes within the contract baseline which covered 75 per cent of its planned spending. It also obtained a reconciliation from Sellafield Limited between the performance plan, contract baseline and 2007 lifetime plan, to identify and challenge

⁵ Comptroller and Auditor General, *Managing risk reduction at Sellafield*, Session 2012-13, HC 630, National Audit Office, November 2012.

key changes in schedules and costs. However, the Authority had limited evidence on the basis of estimates within the contract baseline or benchmarks against which to compare them. The Authority had no benchmarks to judge the potential for efficiencies and made minimal comparisons with nuclear projects elsewhere in the UK or internationally to check the validity of the estimates.

2.5 Any changes to the contract baseline must be approved by the Authority through a contractually specified change control process. The contract baseline change control procedure is set out in Sellafield Limited's management and operations contract. Contract baseline changes typically arise from external factors modifying the scope, schedule and/or costs of required work. Examples include regulatory changes, changes in the Authority's strategy, changes in legislation and inherited conditions which Sellafield Limited could not reasonably have anticipated when the contract baseline was assembled. The baseline should not be adjusted upwards solely because actual costs are starting to exceed, or have already exceeded, the contract baseline. Changes to the methods of delivering baseline scope, for example innovations in manufacturing or improvements in processes, should also not change the contract baseline.

Adjusting reported savings

2.6 The site management and operations contract provides for the adjustment of cost variances to isolate savings attributable to Sellafield Limited (these are termed trueing adjustments and give the 'true cost variance'). The principal adjustments are to:

- deduct 'windfalls'. This covers the deduction of amounts included within the contract baseline but not actually incurred, which do not arise as a result of cost saving practices, methodologies, efficiencies or initiatives introduced by Sellafield Limited;
- add the amounts by which actual costs of commodities, materials and utilities exceed the allowances within the contract baseline to allow for inflation in input costs;
- exclude the effect of errors in the contract baseline or actual recorded spending;
- allow for changes in the contract baseline which are in hand but have not been finalised at the time of measuring the unadjusted cost variance; and
- allow such other adjustments as the parties may agree are necessary to ensure the true cost variance compares like with like. This provision has been used to allow for extra costs borne by Sellafield Limited through no fault of its own.

The contract also requires Sellafield Limited to maintain files to prove that savings arise from its cost saving practices, methodologies, efficiencies or initiatives.

2.7 The Authority and Sellafield Limited agreed a Contract Management and Implementation Agreement (CMIA) in November 2011. This provided for adjustment of savings for labour cost increases above or below those assumed in the contract baseline (capped to the top end of an agreed pay award range). This means that when Sellafield Limited experiences lower labour costs than were initially assumed in the contract baseline indexation, it cannot claim these as savings. However, when Sellafield Limited experiences higher than expected labour costs, they may have to bear some of the extra costs. The CMIA also provides that all variances are deemed attributable to Sellafield Limited actions unless the Authority can demonstrate to the contrary.

2.8 The Authority uses its knowledge of Sellafield Limited's business and its understanding of the savings adjustments processes to challenge Sellafield Limited's year-end savings claims, which results in significantly lower reported savings (**Figure 3**).

Checking savings against cost reduction initiatives

2.9 Sellafield Limited also reports annually on savings from specific cost reduction initiatives. The minimum performance standard for savings was based on efficiency potential identified within Nuclear Management Partners Limited (NMP)'s bid for ten types of opportunity specified within the Authority's invitation to tender. After winning the contract, NMP and Sellafield Limited developed an Integrated Change Programme (ICP) mapping the original ten types of efficiency opportunities onto 18 cost reduction initiatives. The Authority requires Sellafield Limited to report annually on savings achieved in individual projects or directorates against these initiatives. These reports have been submitted for 2010-11 and subsequent years.

Figure 3

The Authority's challenge has reduced reported savings from claimed levels

	2009-10 (£m) ¹	2010-11 (£m) ¹	2011-12 (£m) ¹	2012-13 (£m) ¹
	Agreed	Agreed	Agreed	Forecast
Sellafield Limited claimed site-wide savings	72	172	223	134
Reported site-wide savings	59	170	210	115

Note

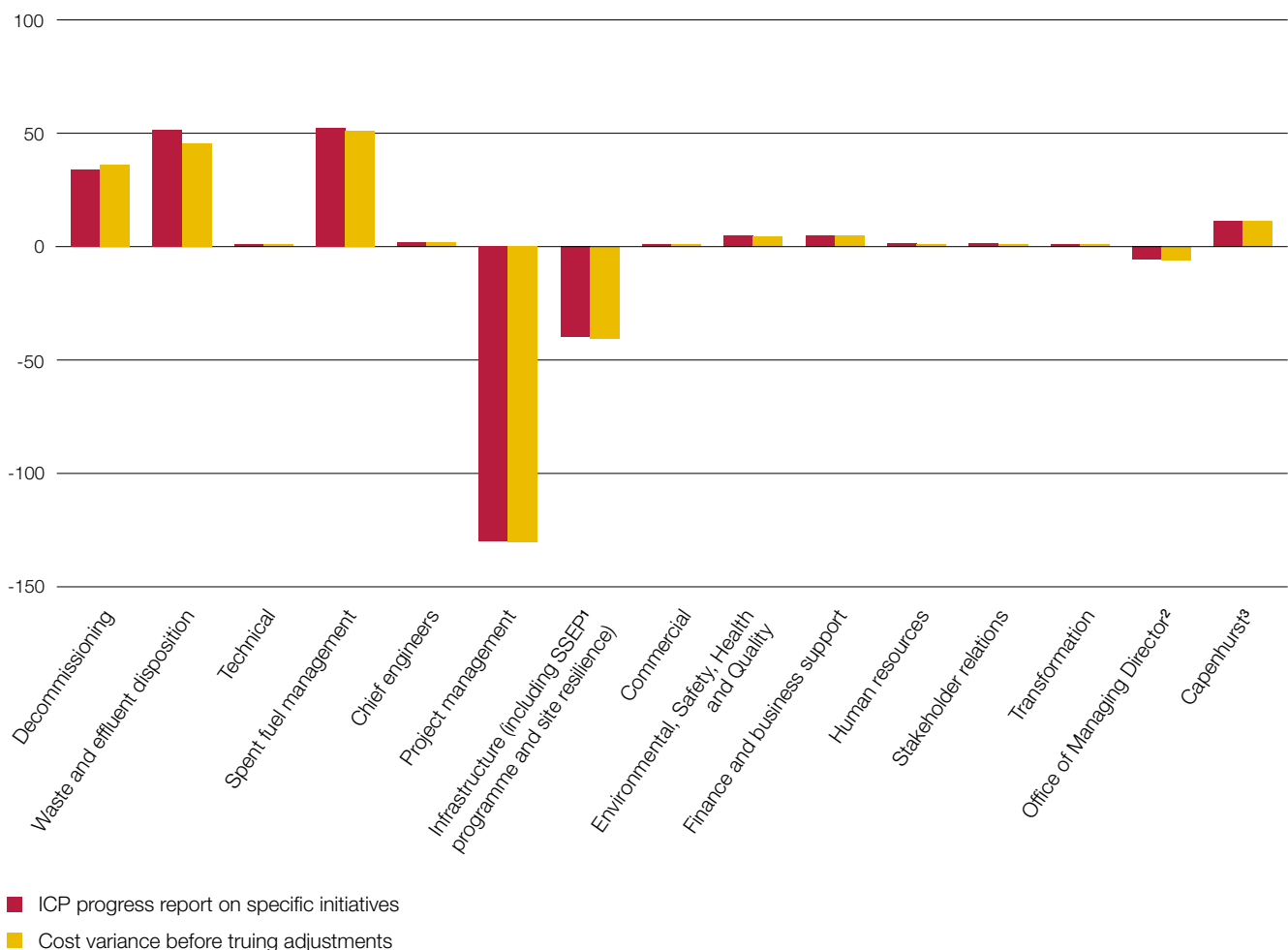
¹ At 2012 prices and excluding voluntary severance programme costs.

Source: Nuclear Decommissioning Authority

2.10 Checking reported site-wide savings against progress on specific cost reduction initiatives gives some assurance of site-wide savings. Progress reports on specific cost reduction initiatives contain both a statement of the amount of saving achieved, and narratives describing the management effort deployed and the resulting benefits. These narratives allow the Authority to review and challenge any attributions which appear questionable. The 2012-13 progress report covers cost increases as well as cost reductions. The cost variances evident from the 2012-13 progress report align closely with variances reported for minimum performance standard purposes before truing adjustments (**Figure 4**).

Figure 4
Progress against specific initiatives aligns with savings

Variance from contract baseline 2012-13 (£m)



Notes

- 1 SSEP = Site Security Enhancement Programme.
- 2 The cost of directors and other corporate costs.
- 3 Relating to the cost of the Capenhurst site.

Assuring savings when costs are transferred between projects

2.11 The reporting of savings at site level mitigates the risk that overall efficiencies will be overstated by transferring costs between projects. All activity at the Sellafield site is included within the baseline and reported actual costs, so transferring costs from one project to another would not yield savings at site-wide level. Any apparent reduction in costs would be offset by a corresponding increase in costs for the projects bearing the transferred costs. Moreover, Sellafield Limited is now managed by a parent body distinct from that for the Authority's other sites. Opportunities to 'export' costs from Sellafield by reclassifying them as support to other sites are therefore limited.

2.12 The management accounting treatment of support function costs mitigates the risk of overstating overhead cost reductions. Support functions are accounted for as operating units in their own right. All resources used by such support function units are charged to those units. Support unit costs are not generally recharged to other projects. There is therefore little opportunity for support unit staff to overstate overhead cost reduction by switching where they charge their time. Staff could be moved from support to production units but this would have significant consequences for the budget, capability and management of the receiving unit. It is therefore unlikely that Sellafield Limited would make such moves solely to reduce apparent overhead costs.

Detailed testing of individual project savings

2.13 The Authority has tested savings for a sample of projects in each year of the initial period, but the Authority's testing prior to 2012-13 provided only moderate assurance over the accuracy of total reported savings for these years.

For 2009-10

2.14 For 2009-10, the Authority sampled efficiency savings volunteered by Sellafield Limited as contributing to its total claimed savings. In 2009-10, there was no reliable baseline to support Sellafield Limited's claimed savings. The Authority reviewed a sample of 71 items from the 590 efficiency forms submitted by Sellafield Limited's operational units to support their claims for efficiency fees. The Authority reviewed the supporting evidence for each item tested to validate the credibility of the claimed saving. The Authority identified a number of common failings around the quality of the efficiency forms, the links to underpinning evidence of savings and the response of operating units to queries raised by the auditors. The Authority used the results of this testing, and similar testing in 2008-09, to reduce the total savings reported for the Sellafield site as a whole. The absence of a reliable baseline meant that assurance over the accuracy of reported savings was weak.

For 2010-11

2.15 For 2010-11, a reliable contract baseline was in place but assurance from the Authority's testing was reduced because it was conducted before the year end. The Authority tested 21 projects which had both an in-year budget of more than £4 million and where the cost of completing the work was at least 20 per cent less than planned. The testing focused on finding explanations for these cost savings against budget. The Authority's testing took place in-year with one project tested in January, twelve in February and eight in March. By sampling project performance in-year the Authority was not testing against the year-end savings figure. Spending on projects at Sellafield can be volatile with significant movement towards the year end. The testing therefore provided only moderate assurance over the accuracy of reported savings.

For 2011-12

2.16 For 2011-12, the Authority tested a sample of projects but did not focus its sampling, or its review of sampled projects, on explanation of differences between actual and baseline costs. The Authority selected a sample of 19 projects on the basis of large differences between the planned cost of work performed under the contract baseline and the planned cost of the equivalent work performed under the performance plan. This provided assurance that the scope of work performed under the performance plan was comparable with the scope of the equivalent work in the contract baseline. However, it did not test reasons why actual costs had varied from estimates, and nor was the level of that variance the principal basis for sample selection. The testing therefore provided only moderate assurance over the accuracy of reported savings.

For 2012-13

2.17 For 2012-13, the Authority's testing expanded upon the exercise of 2011-12, covering more items and seeking explanations for savings. The Authority selected 40 projects on the basis of reported positive cost variances (that is, savings), with 15 of these selected for an 'in depth' review involving document review and interviews, and the remaining 25 selected for a 'light touch' review of documents only. The sample was selected to include items where actual spend in-year was substantially below baseline spend, but also used baseline versus performance plan variances as part of the secondary selection criteria. The Authority also asked for brief narratives to support savings claims for a further 39 projects. Following a review of the initial sample of savings claims, the Authority is reviewing a further 20 projects with lower savings to see whether this reveals any common issues in project and programme control. The Authority's approach to testing in 2012-13 provided good assurance that reported savings were accurate, but it did not test whether reported overspends were accurate. Our own testing of 2012-13 savings is presented in Part Three.

Costs of assuring savings

2.18 Both the Authority and Sellafield Limited devote significant additional resources over and above their normal business activity to calculate and assure the annual savings figure. The specific additional activity needed to calculate and assure savings consists of:

- Sellafield Limited's monitoring, compilation and submission of the savings calculations.
- The Authority's monitoring and challenge of the savings calculations.
- The Authority's sample testing of the attribution behind savings items.
- Sellafield Limited's costs in responding to the Authority's sample testing.

2.19 Our analysis suggests that the cost of assuring reported savings exceeds £100,000 per annum (**Figure 5**). These costs exclude baseline and benefits realisation framework maintenance, which we see as contract control mechanisms rather than savings assurance. This means that our figure should be seen as a conservative estimate of the marginal costs of assuring savings.

Figure 5

Estimated costs of assuring reported savings for 2012-13

Item	Estimated cost (£000)
Costs to the Authority (based on staff time estimate)	
Quarterly monitoring and year-end truing adjustments	5
Sampling of 40 claimed project savings	40
Costs to Sellafield Limited (scaled to Authority effort)	
Quarterly monitoring and year-end truing adjustments	10
Preparing data and responding to challenge on savings for 40 sampled projects	80
Total	135

Source: National Audit Office estimates

Part Three

NAO testing of reported savings for 2012-13

3.1 In order to gain additional assurance over the forecast savings figure for 2012-13 we conducted our own sample testing of Sellafield projects. The items that we tested were part of the Nuclear Decommissioning Authority (the Authority)'s sample for 2012-13 and these items were tested jointly with the Authority. We also reviewed the work done by the Authority in testing the remaining 31 items within their sample to gain assurance over their testing. We report our findings against the following Authority systems described in Part Two:

- Controlling the contract baseline.
- Adjusting reported savings for factors beyond Sellafield Limited's control.
- Assuring reported savings are not overstated by wrongly reclassifying overhead costs as production costs.
- Detailed testing of individual project savings.

3.2 For our sample, we selected eight projects on the basis of their large apparent savings. The reported savings from these eight projects totalled £51.2 million, representing 11 per cent of all positive savings variances reported at a project level for 2012-13.

3.3 We also tested one item on the basis of a large apparent overspend. This allowed us to review an item of 'negative efficiency' which contributes to the total reported savings.

3.4 Our overall conclusion was that the Authority's systems were being applied rigorously to challenge claimed savings on the projects we reviewed. That challenge yielded credible narratives on the attribution of most savings from Sellafield Limited, but also called into question the validity of some savings claims. In most cases where we believed savings were questionable the Authority has sought to remove these from the final reported figure. The assumption that all savings are attributable to Sellafield Limited unless the Authority can prove to the contrary means that the level of some savings is a matter requiring agreement with Sellafield Limited. The Authority cannot unilaterally impose its own view of the attribution of a saving unless that view is unambiguously supported by the contract's terms.

Controlling the contract baseline

3.5 Our testing found that the contract baseline was generally being controlled in line with the Authority's agreed procedures. Particular examples follow.

Separation Area Ventilation (SAV project):

- The area around the current and older production plants in the centre of the site is known as the Separation Area. The SAV project involves the replacement of legacy ventilation systems, the re-routing of exhaust ductwork and the creation of new filters and a discharge stack and plant room. The contract baseline for the project was based on standard assumptions about the load-bearing capacity of ground in the separation area based on 40 years of historic data.
- During plant room construction it became evident that the ground's load-bearing capacity where structures were planned for the SAV project was much less than assumed in the contract baseline. Sellafield Limited therefore submitted a baseline change request on the basis of inherited conditions – which are defined within the contract to include ground conditions. Since the contract specifically allows for adjustments in these circumstances, the Authority approved the change and the 2012-13 contract baseline was increased from £12.3 million to £13.6 million.
- During 2012-13, the project delivered £12.0 million of the baseline scope planned for that year, but at a cost of £28.0 million. The overspends were due to high corrosion rates of new pipework requiring resupply and reinstallation, and extra design and construction costs to address the adverse ground conditions beyond those anticipated in the baseline change request. But because the estimate within the baseline change request was made in the knowledge of those adverse ground conditions, Sellafield Limited sought no further adjustment to the baseline. Sellafield Limited was reimbursed for its extra costs, but the overspend against the contract baseline was netted off other efficiency savings and so reduced the associated efficiency fee position.

Additional isolations project:

- The project is tasked with decommissioning redundant effluent sludge piping systems. The contract baseline for this project was prepared on the basis of a requirement to perform bespoke design work for ten specific pipework isolations.

- Design work for bespoke isolation solutions for old effluent piping systems was not scheduled to finish until July 2015. During 2012-13, it became evident that new isolation techniques developed by Sellafield Limited for a preceding project could be replicated for the additional isolations. This greatly reduced the need for bespoke design. Sellafield Limited therefore sought authority to bring forward the design work to finish by June 2013 and start construction correspondingly early. Its request covered bringing forward the contract baseline allowances associated with the accelerated work. The Authority agreed the request, since the opportunity to avoid two years' worth of design costs arose from Sellafield Limited's own efforts in learning and applying lessons from the preceding project. This yielded a saving of £12.7 million in 2012-13 relative to the allowance in the contract baseline for the work performed.
- In finalising the design of the additional isolations it became evident that 14 rather than 10 isolations were needed. But since this change arose from a change in Sellafield Limited's own engineering judgement of requirements no change to the contract baseline was sought.

3.6 Our testing found one instance where baseline control was questionable, even though some efficiency savings had been achieved.

Property and rates project:

- Sellafield Limited's property and rates unit makes submissions on rating valuations of Sellafield property and manages the granting and management of rights for use of that property, including property beyond the boundary of the operational site.
- At the request of the Authority, Sellafield Limited proposed taking on new work on behalf of the Authority during 2012-13 to avoid duplication of effort and case handling. Sellafield Limited submitted a contract baseline change request to cover this new scope of work, seeking to increase the baseline from £516,000 to £1,572,000 for 2012-13. This change was incorporated into the contract baseline. On review during its sample testing, the Authority stated that it had agreed the scope but not the cost associated with the change, until the scope was more clearly defined and the costs better underpinned.
- In the event the property and rates unit did not use the extra resources underpinning the contract baseline change request. Indeed the unit had to cope with staff absences within its existing establishment while handling the extra work from the Authority. As a result actual spending was £361,000.

- During its sample testing the Authority sought further evidence for the claimed savings. Sellafield Limited provided a schedule of the work it had performed, and estimates of savings relative to costs for that work assumed in its baseline change request. On the basis of this evidence the Authority and Sellafield Limited agreed a £400,000 reduction in the claimed saving. Sellafield Limited's property and rates unit was thus deemed to have performed £1,172,000-worth of work at a cost of £361,000.

Adjusting reported savings

3.7 Our testing found instances where Sellafield Limited used the savings process to highlight that an adjustment was required because the apparent savings arose from outside factors. The Authority also challenged questionable adjustments requested by Sellafield Limited. Examples follow.

Site security:

- The contract baseline for site security assumed the use of uniformed police officers for all security activities at the Sellafield site, including increased officer numbers under the Civil Nuclear Constabulary's uplift programme. The contract baseline for work performed in 2012-13 was £38.6 million for both core and uplift security work.
- The Civil Nuclear Police Authority subsequently adopted a new operating model which facilitated Sellafield Limited's use of civilian security guards rather than police officers for some duties. A new approach to firearms training and staffing levels below those allowed for in the uplifted contract baseline also facilitated savings. Altogether Sellafield Limited claimed a £6.5 million saving against the contract baseline.
- The Authority has agreed a £3.4 million reduction in this claim, reflecting that the savings from civilianisation implemented by Sellafield Limited were facilitated by the action of the Civil Nuclear Police Authority.

Support to Sellafield Limited from parent body staff (Nuclear Management Partners Limited (NMP) seconds staff through a process known as 'reachback', to fill skills gaps at Sellafield Limited):

- Many parent body staff are United States citizens who must pay United States income tax on their overseas earnings. They must also pay UK income tax if their time working in the UK exceeds certain thresholds. Sellafield Limited indemnifies these individuals against changes in the UK tax rate so as to assure their levels of post-UK tax income. Sellafield Limited based the contract baseline on a UK higher rate income tax level of 40 per cent.
- Sellafield Limited requested an upward adjustment to reported savings of £221,000 for the extra costs of having indemnified US reachback employees against the increase in higher rate UK tax from 40 to 50 per cent. An adjustment of £524,000 was also requested for the costs of having indemnified Sellafield Limited's US directors in the same way.
- These extra costs arise from Sellafield Limited's decision to indemnify US staff for UK tax changes, rather than as an unavoidable consequence of that tax change. Following discussions with the Authority, Sellafield Limited has withdrawn these adjustment requests for 2012-13. The Authority had allowed comparable adjustments to the savings claimed in 2011-12.

Assuring savings when costs are transferred between projects

3.8 Our testing showed that where a project's costs are recharged to other projects the net savings on a site-wide basis are zero. For example, the 'Facilities Management Operations' project made a saving of £0.6 million by reducing staff numbers and delivering the same scope of work with fewer people. Some of these staff were assigned elsewhere on site, but their costs were borne by the projects which they joined. The facilities management project also reduced its costs by £0.5 million by transferring responsibility for one building and some guarding duties to other operating units. Those costs were, however, reported by the units they transferred to.

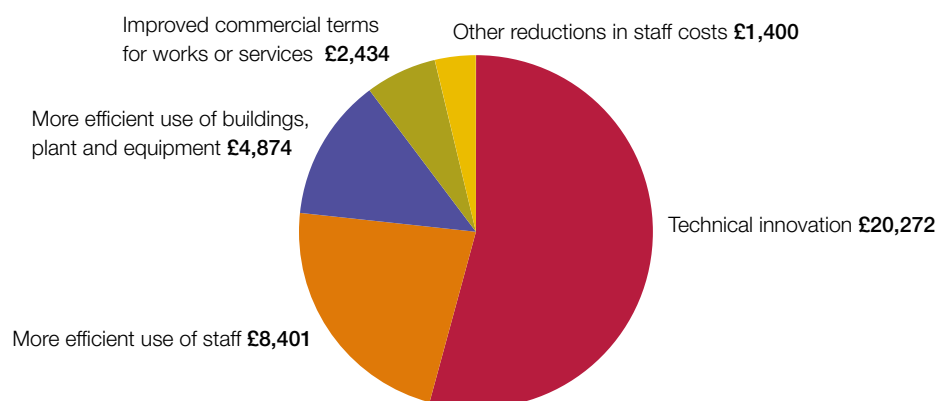
3.9 We found that one of our sampled projects – support to Sellafield Limited – only reported a saving because its costs were recharged to other projects. The gross costs of reachback before these recharges in fact exceeded the 2012-13 contract baseline of £9.7 million by £16.2 million. We checked that reachback costs recharged to other projects were captured in the receiving projects' reported costs. Our checks confirmed that this was the case.

Detailed testing of individual project savings

3.10 Sellafield Limited project teams were generally able to explain variances from the contract baseline with credible narratives supported by evidence. We sampled eight projects reporting £51.2 million of savings. Excluding support to Sellafield Limited (paragraph 3.9) the remaining seven projects spent £45.5 million less than allowed in the contract baseline for the work performed in 2012-13. Sellafield Limited and the Authority agreed that the contract baseline for the Fellside Heat and Power Plant was overstated by £7.6 million due to an error in the indexation of its gas costs. After adjusting for this, and the £0.5 million of costs transferred from facilities management to other units, Sellafield Limited's attribution of the remaining £37.4 million of savings is shown in **Figure 6**.

Figure 6

Reasons for savings claimed on sampled projects by Sellafield Limited 2012-13 (£000s)



Source: Nuclear Decommissioning Authority, Sellafield Limited and National Audit Office analysis

3.11 Some of the largest savings claims were explained by the following.

Technical innovation:

- Advanced Gas Reactor fuel storage asset care improvements: Sellafield Limited saved £0.8 million by building a simpler device for grabbing fuel and using in-house resources rather than going to the supply chain with the original, more expensive, grab design.
- Plutonium Finishing & Storage Residue Treatment Facility: the project involved relocating packages of plutonium, some of which needed to be repackaged into safe containers. Sellafield Limited proved to the regulator that, instead of expensively repackaging the unsafe containers using an isolated safe area, they could be safely overpacked into larger containers. This method was much cheaper and gave a saving of £3.6 million.
- The Additional Isolations project (paragraph 3.5) benefited from savings of £12.7 million on design costs due to technical innovations on a preceding project.

More efficient use of staff:

- Savings for both property and rates management (paragraph 3.6) and site security (paragraph 3.7) were attributed to more efficient use of staff through civilianisation or taking on extra work.

More efficient use of physical assets:

- Fellside Combined Heat and Power Plant: The plant supplies steam to the Sellafield site and, as a by-product, also produces electricity, which is used on site or sold to the grid. Sellafield Limited modified the plant so that the steam lines were configured in a more efficient way and energy conservation initiatives also led to savings. These savings reduced electricity usage by 5 per cent and steam usage by 6 per cent, leading to a £2 million saving. Sellafield Limited also smoothed out the demand for steam and reduced the amount of unplanned offline time, which gave a further £1.4 million of savings. The more stable demand for steam gave a more stable generation of electricity sold to the grid, which paid Sellafield Limited a £400,000 'bonus' as a result.
- Facilities Management: the project covered the provision of building and operational services. The Authority decided to make off-site accommodation at Albion Square in Whitehaven available sooner than anticipated in the contract baseline. This enabled earlier rundown of some on-site buildings, saving £1.1 million of maintenance costs. The Authority did not challenge the £1.1 million saving even though the moves off site were accelerated by their own action rather than action by Sellafield Limited. Another £546,000 was saved through consolidating on-site accommodation, with the demolition of some buildings. A further £256,000 was saved through cheaper utility bills by removing or switching off redundant equipment.

Appendix One

Our audit approach

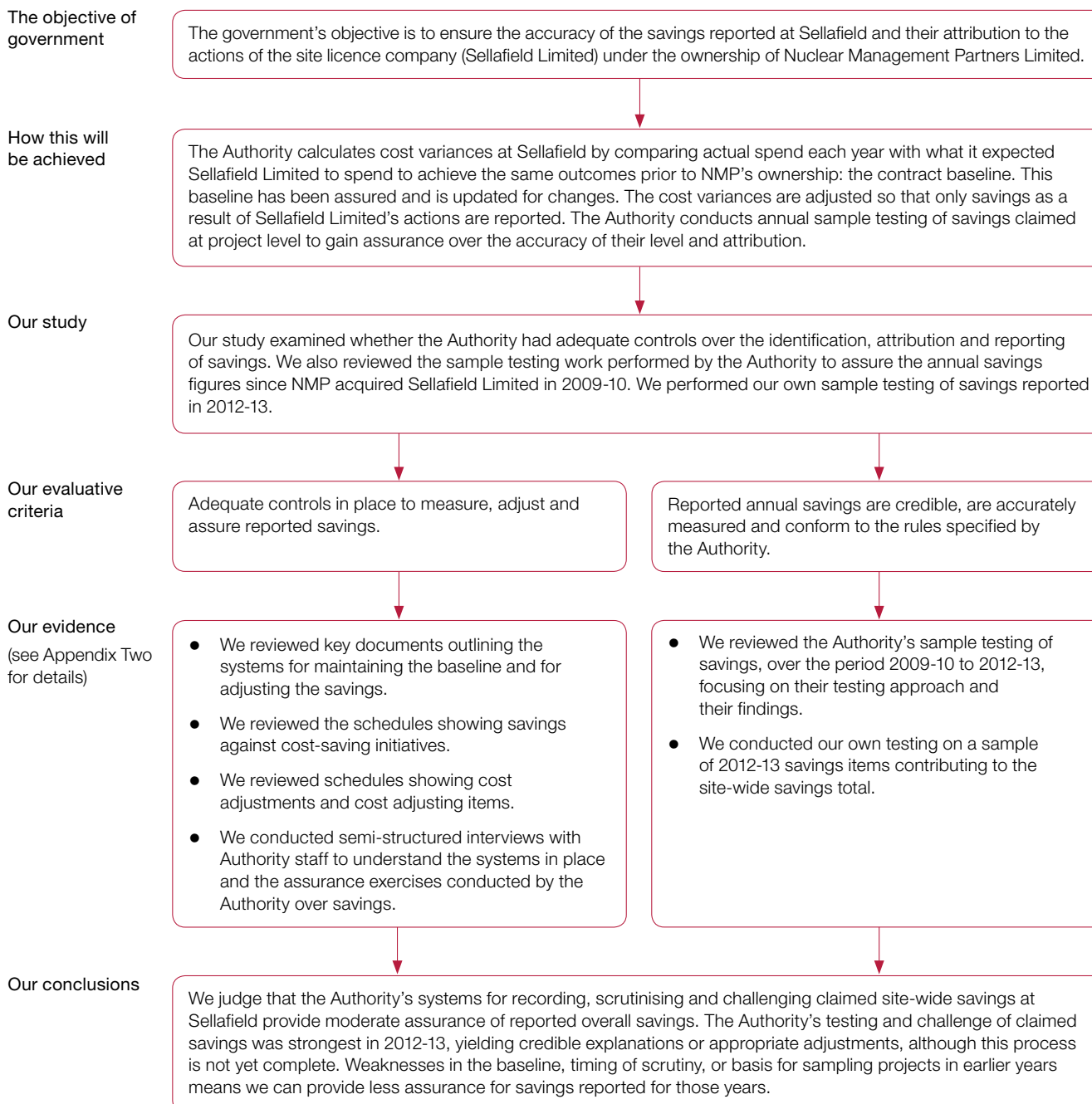
1 This report examined whether the Nuclear Decommissioning Authority's approach to measuring and reviewing claimed savings at Sellafield assures the accuracy of reported savings. We reviewed:

- whether control of the contract baseline for measuring savings is effective;
- whether adjustments to claimed savings for variances beyond the contractor's control are appropriate;
- whether controls prevent transfers of costs between operating units being reported as savings; and
- whether detailed review of individual project cost variances provide adequate assurance of the level and attribution of savings.

2 Although this was not an assurance engagement under ISAE 3000 we had regard to the principles within that standard when designing our tests and selecting our evidence. Our approach is summarised in **Figure 7** overleaf. Our evidence base is described in Appendix Two.

Figure 7

Our audit approach



Appendix Two

Our evidence base

1 We reached our independent conclusions on the Nuclear Decommissioning Authority's assurance over the reported savings at the Sellafield site. We did so by analysing the information we collected on the Authority's assurance processes and on the data collected from our sample testing exercise.

2 We reviewed documents to understand the Authority's systems for measuring and assuring the attribution of savings, including reviews of:

- previous National Audit Office reports, which allowed us to compare the methods for reporting savings at the Sellafield site with the savings reported across central government;
- assurance provided from the previous National Audit Office report on *Managing Risk Reduction at Sellafield* on the reliability of the contract baseline; and review of the contract documents and guidance setting out the Authority's systems for controlling the baseline, and actual change control requests at a project level;
- contract documents and guidance setting out the Authority's systems for adjusting cost variances for factors beyond the contractor's control, and schedules of adjustments for the years from 2009-10 onwards; and
- documents setting out the basis for, and the results of, the Authority's sample testing of project cost variances in 2009-10 to 2011-12.

3 We sampled nine projects for testing 2012-13 cost variances. We selected eight projects showing large savings and one item showing a large overspend. Our sample work consisted of on-site document review and interviews with Sellafield Limited project teams to:

- gain explanations for the apparent savings;
- compare these savings narratives and judge whether the savings fell within the Authority's guidance on what constitutes a saving;
- review any changes to the projects and judge whether changes complied with the guidance on change control and baseline maintenance; and
- gain assurance that the full scope of work covered by the baseline allowance was delivered.

4 We undertook a day of semi-structured interviews, and several telephone meetings with senior Authority staff to understand the Authority's assurance processes and agree a sample selection and testing approach for 2012-13 projects.



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