SSRO

Single Source Regulations Office

Assuring value, building confidence

Cost risk and incentives in qualifying defence contracts: Recommendations to the Secretary of State for Defence - Appendices

November 2017

Contents

Appendix 1: Developing the SSRO's guidance on risk and incentives in Allowable Costs and the profit rate adjustments

1. The topics of risk and incentives are referenced throughout the SSRO's contract pricing guidance, both in relation to Allowable Costs and the six steps which determine the contract profit rate (CPR) for a qualifying defence contract (QDC). We have reviewed our guidance in the light of our work on risk and incentives in 2017. This appendix discusses possible changes to the following sections of the current guidance (which are replicated in Appendix 2):[1]

SSRO (2016) *Single Source Cost Standards: Statutory Guidance on Allowable Costs*
• Risk (9.8 to 9.10)
SSRO (2017) *Guidance on the Baseline Profit Rate and its Adjustment 2017/18*
• The basis of the cost risk adjustment (6.1 to 6.2) • Regulated pricing methods (7.1 to 7.2) • Principles of the cost risk adjustment (8.1 to 8.11) • Basis of the incentive adjustment (14.1 to 14.3) • When to apply the incentive adjustment (15.1 to 15.2) • Principle of the incentive adjustment (16.1 to 16.4)

2. The changes highlighted for discussion take account of the views previously expressed by stakeholders, a summary of which are provided below.

Summary of proposals

3. We propose to:

   a. update the Allowable Costs guidance on risk to more clearly align it with the principles of the AAR[2] test, the cost risk adjustment and the incentive adjustment (paragraphs 9.8 to 9.10);

   b. provide any information, in addition to the legislation, that is required to clarify the purpose and role of the step 2 and step 5 adjustments in contract pricing (CPR paragraphs 6 and 14);

1 Other matters related to the topic of Allowable Costs and the contract profit rate are being addressed separately, through a series of working papers shared with stakeholders and subsequent consultation.
2 Appropriate, Attributable and Reasonable. See SSRO (2017) *Single Source Cost Standards: Statutory Guidance on Allowable Costs*.

c. provide a more comprehensive presentation of the role of the six regulated pricing methods, the final price adjustment and any other methods of risk allocation in the apportionment of cost risk between the MOD and contractor in the application of step 2 (CPR paragraph 7);

d. clarify the rationale for the principles of the cost risk adjustment, and their role in determining the quantum of this adjustment, simplifying their presentation where possible (CPR paragraph 8);

e. note the relevant considerations when determining if a step 5 adjustment may be appropriate given the characteristics of the contract (CPR paragraph 15); and

f. include additional guidance on the principles to consider when determining the quantum of the step 5 incentive adjustment (CPR paragraph 16).

4. The SSRO's considerations in respect of these proposals are set out in this appendix.

Stakeholder views

5. We provide below an abstract of comments made by stakeholders in previous SSRO consultations that are relevant to the contract pricing guidance.

Stakeholder feedback – cost risk
Contracts should be priced at the mean expected Allowable Cost and should include the risk allowance at this point, thereby attracting the Contract Profit Rate. The approach does not appear to consider the volatility of the risk that should to be reflected in the Allowable Cost. This is an essential aspect of calculating a fair and reasonable price. It would be beneficial for the SSRO to provide further clarity as to whether their intention is to permit pricing at some point other than the mean expected Allowable Cost.
Version 1 of the Guidance included a table indicating that Firm, Fixed and Volume-driven Prices should attract +25% cost risk adjustment. This level of adjustment is still appropriate and, for clarity, the table should be reinstated.
Contractors should price at the mean expected allowable cost, this means that if the contract was run an infinite number of times, the outcome would be at the contracted profit rate. To price at this point will require the inclusion of risks at that mean expected outcome, this has not lowered or changed risk. The risk faced is the level of volatility on that outcome.
The asymmetry in PEPL (Protection against excessive profits and losses) in the MOD's favour may increase the risk and therefore the profit to contractors.

Stakeholder feedback – cost risk
The estimate-based pricing methods set out in regulation 10(7) and 10(8) have wholly different risk characteristics. Under 10(7) the allowable costs are estimated whilst under 10(8) the allowable costs are the actual costs determined during the contract performance or after contract completion. 10(7) may be used within a contract to set out the pricing arrangement for options that are at contract award unpriced because the Statement of Work (SoW) is at that time under-developed e.g. post-design services. 10(7) would also be used for framework contracts. The prima facie level of pricing risk for 10(7) should be included within the same grouping as firm or fixed contract prices. For 10(8), where prices are agreed during the contract performance, the risk level may be far from low (as many companies undertaking Urgent Operational Requirements will attest).
If the contractor is successful in passing some risk [to subcontractors] then they are managing well, however, they will always be ultimately responsible to the MOD. This should therefore be irrelevant (and how can this take account of sub-contract terms that are not in place at the time of pricing).
An element of the profit is the reward for taking cost risk, the estimated allowable cost is the mean expected allowable incurred cost. The SSRO needs to make a clear statement consistent with the Act and the Regulations approved by Parliament.
If a contractor has a fixed price subcontract then its risk is limited to those risks that the subcontractor has not assumed, for example, they have to remain in business; the specification and SoW requirements let upon them need to fulfil the contract needs; goods or services need to be delivered to agreed schedule.
The MOD firmly supports the principle of more appropriate, lower rates of profit on pass-through costs. The MOD agrees that the cost risk adjustment is, in the interim, the best mechanism to deal with pass-through costs, and that the higher the proportion of pass-through costs to the total cost, the higher the adjustment should be (i.e. the higher the negative adjustment at Step 2).
The guidance would appear to imply that adjustment for risk can only occur when there is a high risk that the eventual allowable costs would differ from the estimate. Where a medium risk exists then there should remain an opportunity to take risk into account by variance of the profit rate; although that adjustment would be at a proportionally different rate. The inference that where the medium risk is shared by the parties ignores the possibility that the risk may still turn to reality and either the MOD or the contractor would want to reasonably protect their respective positions.
MOD contracts do not provide an indemnity from these circumstances [force majeure], so there must still be a risk. If the contract contains a special term that provides some protection for these circumstances then that will be taken into account as a result of the third (and seventh) bullet; however, it is not MOD practice to give a full force majeure provision and, even then, the cost risk is not mitigated as there is no price adjustment for those events, only a timescale adjustment.

Stakeholder feedback – cost risk
An element of profit is the reward for taking cost risk, so this guidance is conceptually wrong. The risk also depends on the range of the estimate and the variability of it.
The implication is that the estimate is taken at other than the 50th percentile, which should not be the case.
How does a contractor “pass on” the risk to a third party?
Is the set ‘uncertainties’ the same as the set ‘risks’ or has it a different meaning or scope? All allowable costs need to be managed and all allowable costs estimates contain some uncertainty else they are not an estimate. I can understand why overspend is included in the text as this is consistent with the legislation. I don’t understand why underspend is included. If the costs are estimated at the mean expected outturn then the probability of each outcome multiplied by its impact is the same for overspends and underspend. The risk adjustment is to vary the profit for the shape of the distribution. The allowable cost guidance should say that estimates need to reflect the mean expected cost outturn. Pricing outside of the mean should be fixed there.
The BPR does not address estimated/programme risk. Contractors must price so that, on average, the outturn is at the priced profit rate (or the contractor/MOD will be advantaged). The variability around that outturn is risk. Contractors cannot influence the price of, say, steel, however, they must assess the likely actual costs and price it in. The BPR should assess the variability of this outcome (the shape of the distribution curve) and this methodology would lead to fair and reasonable prices, with reward for variability and therefore riskier contracts.
The paragraphs on risk should distinguish between estimating and programme risk as well as what constitutes a contingency.
SSRO should state that cost estimates should be based on available empirical evidence (including use of recorded costs of analogous transactions and maintained cost estimating relationships) and developed whereby they amount to the mean expected outturn of cost. The extent of variability in the cost outturn and costs falling above the mean is rewarded through the contract profit allowance (and, in particular, inclusive of any adjustment to the baseline profit allowance). Evidentially based estimates minimize the use to which management judgement is needed to be incorporated within cost estimates (as risk and/or contingency must only be included within cost estimates to the extent to which the overall cost estimate is consistent with the mean expected outturn of cost and risk to the extent to which it has been previously incurred i.e. risk previously incurred is already contained within in the actual cost experience used to development the estimate). The SSRO is able to make the simple statement that risk should not be included within cost estimates but rather estimates, based on available empirical evidence, should developed to reflect the amount of cost that is, on average, expected to be incurred. Similar arrangements should apply to contingencies.

Stakeholder feedback – cost risk
Risk and uncertainty are covered in several areas of this guidance and also in the guidance on adjustments to the baseline profit rate. Several different terms are used on the topic e.g. • cost risk • price risk • estimated risk • programme risk • risk based contract • contingency cost • cost contingencies Given that there is no consistent definition of these terms, and the risk issue is very complicated, we suggest restricting the guidance at this point to saying 'costs associated with compensating the contractor for risk should be clearly set out and only be recovered once'.

Stakeholder feedback – incentive adjustment
Precedent suggests that the MOD is unlikely to use incentives in such circumstances. For example, the section refers to performance over and above that specified in the contract which, to be effective, must be allowed for by the contract terms. On a practical level, MOD has openly discouraged early delivery as it disrupts the department's budgeting process.
The concept of an Incentive Adjustment for over-delivering must be enshrined in the contract terms to give effect, where appropriate, to the Adjustment.
The purpose of the contract is to specify what is required and by when. It is very unlikely that MOD would want to incentivise early performance or performance beyond that specified. It would be necessary for any of these incentives to be tightly defined within the contract.
It is not clear how the incentive adjustment might work. For example, what is the situation if an incentive is attributed to the speed of a vessel (which is achieved) but the delivery of the vessel is late (resulting in a breach of contract)? Or would the principle apply only to incentives related to delivery in the example given?

Discussion of issues

6. We discuss below issues related to our proposals for change to the current guidance on Allowable Costs, the cost risk adjustment (step 2) and the incentive adjustment (step 5).

Treatment of risks which relate to Allowable Costs

7. Depending on the pricing method for the contract, the Allowable Costs used to determine the contract price are either:

   a. the estimated Allowable Costs when the contract was entered into; or

   b. the actual Allowable Costs incurred in performing the contract.

8. As it is not always possible to predict the future, anticipated costs associated with risk or uncertainty may be included in estimated Allowable Costs if they satisfy the AAR test. In the case of actual Allowable Costs (those which have already been incurred and which satisfy the AAR test) the effects of risk or uncertainty will be known.

9. Whilst some stakeholders have previously expressed views that the estimated Allowable Costs for the purposes of pricing should be set at the mean or 50th percentile of the forecast range, the SSRO does not prescribe the method of cost estimation. This includes the approach to cost modelling or the metrics drawn from it and any subsequent adjustments to determine the estimated Allowable Costs for the pricing formula.

10. The SSRO considers that the estimated Allowable Costs for the purposes of pricing should represent a realistic forecast of the cost that the contractor expects to incur in delivering the contract and which are expected to meet the AAR test. This estimate will include items whose occurrence or value may be yet to be determined or which cannot be precisely quantified and therefore represent a risk or uncertainty in respect of the actual Allowable Costs.

11. For contracts priced on the basis of actual Allowable Costs, any variation between estimated and actual Allowable Costs due to uncertainty or the materialisation of risk has no impact on the contractor. The contractor will be paid the actual Allowable Costs incurred, subject to satisfying the AAR test. However, where the contract price is based on an estimate of the Allowable Costs (a single point selected from a range of possible outcomes), any variation (positive or negative) between the estimated and actual Allowable Costs will be borne to some extent by the contractor. In such contracts, the contractor will prefer an estimate of Allowable Costs that reduces the likelihood that uncertainty and the materialisation of risk will result in actual Allowable Costs exceeding the estimate. The risk that actual Allowable Costs vary from estimated Allowable Costs is dealt with through the cost risk adjustment to the baseline profit rate.

12. At the point of estimation, it is not known which anticipated items of expenditure will cost more or less than expected, or which risks will arise and their impact. Estimating individual items of expenditure and, therefore, total expenditure in a way that satisfies the AAR test therefore has some complexities. Even if, at contract completion, the total actual Allowable Costs equals the total estimated Allowable Costs, there will be numerous combinations of positive and negative variations in the cost of individual items of expenditure that could achieve that result (Box A). In practice, this means that for an estimate of Allowable Costs which factors in risk and uncertainty, consideration may need to be given to a range of possible outcomes when applying the AAR test.

Risk contingency

13. For the reasons set out above, a contractor may choose to set aside a portion of their total Allowable Costs in the form of a risk contingency. The allocation or attribution of this set-aside budget to individual cost items will be contingent on what risks and cost variations occur. Therefore, the consideration as to whether a risk contingency may be Allowable should be made with reference to those items to which it may be allocated.

Box A: Illustration of the effect of risk and uncertainty on cost estimation

A contract has two cost items: A and B. Each has an equal probability of being £20 million or £10 million.

Probability	Cost A	Cost B
50%	£20m	£20m
50%	£10m	£10m

Given the characteristics of the costs A and B, the potential contract costs are £20 million, £30 million or £40 million. Mathematically, £30 million is the expected total cost, which, for the purposes of this example, are the estimated Allowable Costs for the pricing formula.

Scenario	Cost A	Cost B	Total contract cost
A high / B high	£20m	£20m	£40m
A low / B high	£10m	£20m	£30m
A high / B low	£20m	£10m	£30m
A low / B low	£10m	£10m	£20m

However, a simple equal apportionment of the estimated total cost results in £15 million for each item, which is not a possibility for either. Allocating £10 million to A and £20 million to B (or vice versa) is potentially misleading. Thus the need to consider the AAR test in respect of all risks which may give rise to an Allowable Cost.

To illustrate the matter of application further, the contract estimate can be reformulated into two costs (A and B) and two risks (C and D).

	Probability	Cost	Expected cost
Cost A	100%	£10m	£10m
Cost B	100%	£10m	£10m
Risk C	50%	£10m	£5m
Risk D	50%	£10m	£5m
Total			**£30m**

A and B are known requirements for which £10 million each can be allocated. The total expected cost of risks C and D is £10 million, which is set aside as risk contingency and allocated to risk as it arises. The total expected cost of the contract is £30 million, as in the original formulation.

The estimated £10 million costs for A and B are established as Allowable via the AAR test. While it is expected to incur the remaining £10 million for risks C and D, it is not possible to say with certainty whether it will be used to cover the occurrence of risk C or risk D. Therefore, in this example, the AAR test may need be satisfied in respect of both risks C and D for the £10 million cost of risk to be considered Allowable.

Allowable Costs risk guidance

14. Taking into account the matters above, the SSRO is considering whether it may be appropriate for the following considerations to apply to Allowable Costs associated with risk:

    a. The costs which may or do arise as a result of risk occurring in delivering a QDC or QSC, and the costs associated with the management of those risks may be Allowable. These costs should be based on reasonable, documented assumptions and evidence and may be determined on a forecast or hindsight basis depending on the pricing method.

    b. Where a contract is priced based on estimated Allowable Costs, the estimate may include the projected financial impact of risks arising and be subject to the effects of uncertainty on the costs that may be incurred to deliver the contract. The parties will need to be satisfied that the inclusion of risk and uncertainty in the individual estimates accord with an expectation of Allowable Costs that are Appropriate, Attributable and Reasonable in the circumstances.

    c. Where the contract is priced based on actual Allowable Costs, the cost of risks that materialised in delivering the contract should be known. The parties will need to be satisfied that the costs incurred due to risk arising are Appropriate, Attributable and Reasonable in the circumstances in order to be Allowable Costs.

    d. The consideration of whether a risk contingency may be an Allowable Cost must be made with reference to the individual cost items which it is anticipated the funds set aside may be allocated to.

    e. Risk and uncertainty may result in a range of possible outcomes for the actual Allowable Costs at the point of estimation. Consequently, there will be a risk of the actual Allowable Costs deviating from the single point estimate used for the purposes of the pricing formula. A compensating adjustment may be made to the baseline profit rate using the step 2 cost risk adjustment to account for this.

Allowable Costs associated with the incentive adjustment

15. A contractor may incur costs in attempting to deliver a performance target associated with the application of the step 5 adjustment, which it may not have incurred otherwise. Consideration will need to be given to the extent that these additional costs are Allowable, noting that costs incurred may not always lead to performance achieved.

Key points

- The AAR test is the overriding factor in the determination of whether costs associated with risk and incentives form part of the Allowable Costs.
- Subject to the application of the AAR test, the SSRO is not prescriptive about the approach to cost estimation or the calculation of risk contingency.

16. These matters form the basis of proposal 3(a).

The basis of the cost risk adjustment

17. Regulation 10(1) requires that the contract price is based on Allowable Costs: that is, costs which satisfy the test that they are AAR. The Regulations do not impose the reverse requirement that any cost which satisfies the AAR test must form part of the contract price. The possibility that actual Allowable Costs may deviate from the costs which are the basis of the contract price provides the justification for the cost risk adjustment.

18. Section 17(2) of the Act, and Regulation 11(3), set out the requirement for the cost risk adjustment: “Adjust the baseline profit rate by an agreed amount which is within a range of plus or minus 25% of the baseline profit rate, so as to reflect the risk of the primary contractor’s actual allowable costs under the contract differing from its estimated allowable costs”.

19. The SSRO considers the phrase ‘to reflect the risk’ to encompass the combination of both the likelihood and impact of risks which influence Allowable Costs, to the extent they are of financial consequence to the contractor.

20. The legislation bounds the scope of the cost risk adjustment as a compensating factor for exposure to risk related to Allowable Costs. It does not exclude or differentiate between any particular cause or type of risk from consideration in this regard; for example, estimating or programme risk.

Regulated pricing methods

21. Regulation 10(1) expressly defines AC in the pricing formula (CPR x AC) + AC as costs that satisfy the AAR test and have been determined in accordance with one of the pricing methods. There is no similar reference to the pricing methods (and their associated timings) in Regulation 11(3). Nevertheless, the primary function of the contract pricing method, as it relates to risk, is to apportion between the MOD and the contractor any deviations in the actual Allowable Costs of a contract from those estimated in the pricing formula. Consequently, the pricing method is a fundamental determinant of the risk in respect of the final price paid by the MOD and the profit earned by the contractor.

22. As there will be a range of risk profiles across different contracts, there is no unique ranking of pricing methods in terms of their relative risk. Nevertheless, a consistent approach to the application of the cost risk adjustment for each pricing method should occur across projects where the contractor faces similar risks. For example, all contracts priced on actual Allowable Costs where the contractor bears little or no risk with respect to their expected profits should apply a minus -25 per cent cost risk adjustment. A consistent approach would require that a contract priced on estimated Allowable Costs where there is similarly low cost risk should also apply the full negative adjustment.

23. Other relevant risk factors related to the pricing method may include:

    a. the specification of any target cost incentive fee structure;

    b. variances in purchase volumes or usage;

    c. prices linked to indices or rates;

d. the possibility of a final price adjustment; or

e. any other price variation clauses (such as price banding, or minimum take or pay) applied to a contract.

24. The issue of pricing mechanisms and the cost risk adjustment is examined in section 5 of the main report.

Principles of the cost risk adjustment

25. It should be anticipated that the estimated Allowable Cost will be sufficient to deliver the project, inclusive of the cost associated with risks that may arise. Consequently, the remainder of the contract price will represent the contractor's anticipated profit. It should not be necessary, nor does the SSRO consider it appropriate, that the cost risk adjustment be applied to compensate for foreseeable increases in the Allowable Costs, which may lead to reduced profit or losses. Contractors should reasonably expect to earn the profit element of the contract price, irrespective of the cost risk adjustment.

26. The SSRO agrees with the view, expressed by some of its stakeholders, that where the Allowable Costs are set on the basis of an estimate of their expected value, inclusive of the effects of risk and uncertainty, the cost risk adjustment should reflect the extent of the volatility or variance surrounding that estimate. Uncertainty in regard of the actual Allowable Costs and, by implication, actual profit earned, will be undesirable to contractors. The effect of the cost risk adjustment is to act as a compensating factor to take account of such uncertainty or, indeed, lack of it.

27. The SSRO considers that risks which may give rise to costs that the parties have not agreed to be Allowable should not form part of the determination of a cost risk adjustment. There is no obvious justification for compensating for such items by way of a cost risk adjustment as they will not form part of any variance between the actual Allowable Costs and estimated Allowable Costs as required by section 17(2) of the Act and Regulation 11(3). This view is consistent with that expressed in the SSRO's determination on matters related to the Adour Availability Contract.[3] Furthermore, there is no cogent basis for determining the quantum of compensation for a party exposed to such risks where these have not been subject to some quantitative assessment themselves, although it is accepted that this might occur to varying levels of precision. Therefore, the underlying principles for any such assessment should be that it is based on the quantified estimates of cost attributable to risk arising, such that these might satisfy the AAR test, and therefore impact the actual Allowable Costs.

28. The characterisation of risk held by the contractor with respect to actual Allowable Costs will be principally determined by:

a. the assessment of underlying risk in respect of the actual requirements of the contract and their associated cost; and

3 The SSRO was referred a request for a determination on two matters by Rolls-Royce regarding its contract with the MOD for the availability of Adour engines, which power Hawk jet aircraft. The contract was awarded on the condition that the SSRO's verdict was sought on these two issues: the extent to which sales and marketing costs could be included and whether the level of cost adjustment for risk was appropriate. For further details see SSRO (2016) *SSRO Determination: Determination on matters relating to the Adour Availability Contract*.

b. any arrangements which seek to avoid, share or reduce the probability or impact of these risks.

29. Given the quantitative nature of Allowable Costs and the pricing formula, the contractor should be able to explain the cost risk adjustment by way of a simple and measurable link between the risk that actual Allowable Costs may deviate from estimated Allowable Costs and the quantum of step 2.

Key points

- The estimated Allowable Costs should be sufficient to deliver the project, and the remainder of the contract price, including any cost risk adjustment, will be the contractor's anticipated profit.
- The cost risk adjustment should reflect the volatility around the estimate of Allowable Costs only to the extent it impacts the contractor's profit.
- The adjustment should be founded on the quantified underlying risks of the contract and any actions which seek to avoid, share or reduce the probability or impact of these risks.

30. These matters form the basis of proposals 3(b) to 3(d).

Basis of the incentive adjustment

31. Section 17(2) of the Act, and Regulation 11(6), set out the requirement for the incentive adjustment: "Where the Secretary of State determines that the amount resulting from Step 4 should be increased so as to give the primary contractor a particular financial incentive as regards the performance of provisions of the contract specified by the Secretary of State, increase that amount by an amount ("the incentive adjustment") specified by the Secretary of State, that amount not to exceed two percentage points."

32. As stakeholders have pointed out, the incentive adjustment may only apply where the provisions of the contract specify one or more requirements which allow for some variance in their respective performance. Consequently, the contract profit rate may be adjusted with reference to any such variations in the performance of a requirement by way of step 5.

When to apply incentive adjustment

33. Conventional economic thinking suggests that it may be of benefit for a contracting authority to offer performance-related payment to a contractor to align the interests of both parties, where some misalignment may occur otherwise. Consequently, it should therefore only be necessary to apply the incentive adjustment where there is an expectation the contractor would not be otherwise motivated to fully pursue the interest of the MOD. Put another way, it is hard to justify as value for money, the award of a step 5 adjustment for performance which was at least as likely to occur without the possibility of an incentive payment.

34. As some stakeholders have pointed out, the additional activities associated with delivery of performance above some baseline requirement may result in consequential impacts, some of which may be unanticipated or undesirable. These may be in the form of additional costs, offsets in the performance elsewhere, or

disruptions across the other Defence lines of Development.[4] The SSRO considers these to be important factors in determining whether it is appropriate to utilise the step 5 incentive adjustment.

35. The MOD is likely to have a range of options to incentivise performance. In determining if the application of step 5 is appropriate, the MOD may wish to consider the alternatives, such as consequences of contractually requiring a contractor to deliver the preferred level of performance, with no additional profit available at step 5, and accepting any associated additional cost and performance risk. This provides the baseline against which to determine if it is likely to be more cost effective to accept a lower level of performance, with additional profit paid if the higher preferred level of performance is delivered. In either case the contractor is incentivised to deliver the preferred level of performance, but the costs and risks may be different.

Principle of the incentive adjustment

36. The relationship between the quantum of the incentive adjustment and the performance to which it relates is a pivotal consideration in its effective application. In determining the appropriate level for step 5 consideration may need to be given to:

a. the value (financial or otherwise) of the capability benefits from the performance enhancement linked to step 5;

b. the direct or indirect cost to the MOD of the contractor pursing the performance enhancement;

c. the direct or indirect cost to the contractor of pursuing the performance enhancement;

d. the total value of additional profits associated with step 5; and

e. the risk that, despite an attempt, the contractor may fail to deliver the performance linked to step 5.

37. The inclusion of a particularly stretching performance target in respect of step 5 may have consequential impacts for the risk associated with the actual Allowable Costs. Whilst this effect may be difficult to isolate, consideration may need to be given to this feature of step 5 in the application of the cost risk adjustment, to the extent that it is possible.

Key points

- The application of step 5 should only be required where the contractor would not be incentivised to attempt to deliver the performance to which the adjustment is linked.
- The effectiveness and desirability of an incentive adjustment will depend on the quantum of the adjustment and the costs to the MOD and contractor associated with delivery of the performance to which it is linked.

38. These matters form the basis of proposals 3(b), 3(e) and 3(f).

4 The eight Defence Lines of Development (DLoD) required to deliver defence capability are: personnel, training, equipment, logistics, information, infrastructure, concepts, and doctrine and organisation.

Appendix 2: Existing SSRO guidance

1. We provide below, for reference, extracts from the SSRO's extant guidance related to the pricing of risk in contracts. (Paragraph numbers are as given in the published documents.)

Guidance on Allowable Costs[5]

Risk

9.8 Risk that can be estimated and modelled may be an Allowable Cost within the contract price if agreed by the Secretary of State. Costs associated with compensating the contractor for such risk should be evidenced, be appropriately modelled, and only be recovered once.

9.9 A risk over which the contractor has no or little control, may be covered under the provision of an adjustment to the baseline profit rate if the relevant evidence is provided. Further detail on the basis of a cost risk adjustment is covered in the SSRO's Guidance on adjustments to the Baseline Profit Rate.

9.10 Given that there is no consistent definition of the various terms relating to risk, the underlying principle to be applied is that costs associated with compensating the contractor for risk should be clearly evidenced and only be recovered once.

Guidance on adjustments to the baseline profit rate[6] – cost risk adjustment

6. Basis of cost risk adjustment

6.1 Section 17(2) of the Act, and Regulation 11(3), set out the requirement for the cost risk adjustment:

"Adjust the baseline profit rate by an agreed amount which is within a range of plus or minus 25% of the baseline profit rate, so as to reflect the risk of the primary contractor's actual allowable costs under the contract differing from its estimated allowable costs".

6.2 The cost risk adjustment guidance is principles, rather than rules, based.

7. Regulated pricing methods

7.1 Regulation 10(2) states that the parties to a qualifying defence contract may agree which regulated pricing method is to be used for that contract. The parties can also agree a different pricing method for defined components of the contract (Regulation 10(3)).

7.2 There are six regulated pricing methods that the parties to a qualifying defence contract may decide to use, as set out in Regulation 10(4) to 10(11). All regulated pricing methods use either an estimate or actual Allowable Cost base.

5 SSRO (2016) *Single Source Cost Standards: Statutory Guidance on Allowable Costs*.
6 SSRO (2017) *Guidance on the Baseline Profit Rate and its Adjustment 2017/18*.

8. Principles of risk adjustment

General approach

8.1 Contractors and the MOD must have regard to the following approach and principles when negotiating the cost risk adjustment to the baseline profit rate. The terms and conditions of each individual contract should always be considered when determining the adjustment.

8.2 The purpose of the cost risk adjustment is to incorporate into the contract profit rate an additive or deduction to reflect the risk that the contractor's actual Allowable Costs in delivering the requirement will differ from the estimated Allowable Costs included in the contract price. While one factor will be the proportion of actual versus estimated costs included in the pricing method, other factors also drive risk. The adjustment should be agreed by considering the principles stated at paragraph 8.11.

8.3 For qualifying defence contracts that are based on the cost-plus or estimate-based fee pricing methods, the cost risk adjustment should be minus 25 per cent, because actual Allowable Costs are used to determine the costs to be paid, although the MOD and the contractor should always have regard to the principles at paragraph 8.11.

8.4 For all other pricing methods, the adjustment may vary from minus 25 per cent to plus 25 per cent, depending on the risk of actual Allowable Costs differing from estimated Allowable Costs, using the following guidance and the principles stated at paragraph 8.11.

8.5 Subject to the considerations of the regulated pricing method, the starting point for the appropriate cost risk adjustment is that none should apply. A positive or negative cost risk adjustment should apply where it can be reasonably justified and evidenced.

Negative adjustment

8.6 A negative adjustment should be made where the MOD and the contractor agree there is a lower (or no) risk of actual Allowable Costs differing from estimated Allowable Costs.

8.7 For example, this may be justified where there are risks that are well understood and for the large part mitigated.

8.8 The SSRO recognises that for some defence contracts most of the cost risk associated with one or more sub-contracts is held by, or assigned to, the Secretary of State. It is appropriate to recognise these circumstances when agreeing a cost risk adjustment. The cost risk adjustment should reflect the reduced risk of the primary contractor's actual Allowable Costs under the contract differing from its estimated Allowable Costs, thus recognising the reduced risk held by the prime contractor associated with the sub-contract(s).

Positive adjustment

8.9 A positive adjustment should be made where the MOD and the contractor agree there are higher risks of actual Allowable Costs differing from estimated Allowable Costs.

8.10 For example, this may be justified where the risk is held by the contractor, and not the MOD, and where the risks are not well understood and/or cannot be managed in the Allowable Costs because they are not in the control of the contractor and therefore cannot be mitigated.

Principles to consider

8.11 The contractor and the MOD must have regard to the following principles (which are not exhaustive) when determining the cost risk adjustment. The adjustment should:

a. only consider uncertainties that impact on Allowable Costs;

b. give consideration to the contract pricing method (refer to 8.3 and 8.4);

c. not take into account risk that should be managed in estimated Allowable Costs;

d. be based upon an assessment of the extent to which actual Allowable Costs may vary from estimated Allowable Costs, both positively and negatively;

e. take into account the relative likelihood of actual Allowable Costs being over or under estimated Allowable Costs;

f. take into account the extent to which the probability and expected impact of cost risk has been mitigated, eliminated or transferred to another party, for example through insurance or where sub-contract risk is 'passed through' to a party other than the prime contractor;

g. take into account the extent to which cost risk should be covered through Allowable Costs;

h. reflect and draw upon the overall approach to risk assessment such as risk allocation, management, and risk registers (and be recorded in the risk register);

i. not take into account uncertainty resulting from force majeure, for example an unforeseeable natural disaster; and

j. be based on reasonable documented assumptions and/or evidence.

Guidance on adjustments to the baseline profit rate – cost risk adjustment

14. Basis of incentive adjustment

14.1 Section 17(2) of the Act, and Regulation 11(6), set out the requirement for the incentive adjustment:

"Where the Secretary of State determines that the amount resulting from Step 4 should be increased so as to give the primary contractor a particular financial incentive as regards the performance of provisions of the contract specified by the Secretary of State, increase that amount by an amount ("the incentive adjustment") specified by the Secretary of State, that amount not to exceed two percentage points."

14.2 This document provides guidance for the Secretary of State to use when determining when to apply the incentive adjustment to a qualifying defence contract and what to consider when setting the adjustment between zero and two percentage points.

14.3 The incentive adjustment guidance is principles, rather than rules, based.

15. When to apply incentive adjustment

15.1 It may be desirable for the Secretary of State to include a positive incentive in certain circumstances.

15.2 The incentive adjustment is not automatic and will be applied exceptionally for qualifying defence contracts.

16. Principles of applying incentive adjustment

16.1 The inclusion of an incentive adjustment is at the Secretary of State's discretion. When considering whether to apply an incentive adjustment the Secretary of State should have regard to the following principles:

a. The incentive adjustment can be applied to any qualifying defence contract, or qualifying sub-contract using any regulated pricing method. The incentive adjustment must relate to the performance of the contract to which it applies.

b. The incentive adjustment must be used for delivering performance on a contracted performance metric. The contract should be priced on the basis that a contractor will deliver the performance specified in the contract.

c. The incentive adjustment must relate to performance enhancements which benefit the Secretary of State. The additional value delivered to the Secretary of State through the achievement of incentivised elements must be tangible and demonstrable.

d. The incentive adjustment must be within a range of up to two percentage points. A positive incentive adjustment will not be applied to all qualifying defence contracts and is not an entitlement.

e. The link between the incentive adjustment and performance must be simple and measurable. The criteria for achievement must be measurable and set objectively.

f. The link between the incentive adjustment and performance, and the criteria for achievement and payment must be clearly stated in the contract. This includes:

i. the required level of performance;

ii. how it will be demonstrated;

iii. when it will be measured; and

iv. if incentivised performance is delivered, when incentive payments will be made.

16.2 The incentive adjustment must not be linked to legislative obligations. An incentive adjustment must not be given for compliance with the Act, Regulations, or other legislative obligations.

16.3 The incentive adjustment should not be linked to a reduction in the Allowable Costs of the contract. Reducing Allowable Costs of a contract should be rewarded via the chosen regulated pricing method.

16.4 Subject only to this guidance and the maximum incentive adjustment of two percentage points provided for in Regulation 11(6), the Secretary of State can determine the amount of an incentive adjustment and when to apply an incentive adjustment to a qualifying defence contract.

Appendix 3: Pricing of QDCs

1. The Single Source Procurement Framework (the Framework) was introduced by the Defence Reform Act 2014 (the Act) and Single Source Contract Regulations 2014 (the Regulations). It put in place measures to ensure that, when the government does not secure the benefits of competition,[7] contracts for military goods, works and services are priced such that:

   - the government obtains good value for money in its expenditure; and
   - contractors are paid a fair and reasonable price under those contracts.

2. To achieve this, the Regulations specify that QDCs are priced in accordance with a formula:

   Price = (Contract Profit Rate x Allowable Costs) + Allowable Costs

Allowable Costs

3. The SSRO is responsible for providing statutory guidance, to which the MOD and contractors must have regard, on the principles to apply in determining Allowable Costs.[8] Allowable Costs are the direct and indirect costs of delivering the contract which the MOD and the contractor agree satisfy the test (the AAR test) that they are:

   - Appropriate – a cost that is expected to be incurred in the conduct of delivering the QDC;
   - Attributable – incurred directly or indirectly for the fulfilment of the QDC in question and necessary to fulfil the requirements of that contract; and
   - Reasonable – do not exceed what might be expected to be incurred in the normal delivery of the QDC in question, whether under competitive tendering conditions or as a single source contract.

4. Depending on the pricing method for the contract, the Allowable Costs used to determine the contract price are either:

   a. the estimated Allowable Costs when the contract was signed; or

   b. the actual Allowable Costs incurred in performing the contract.

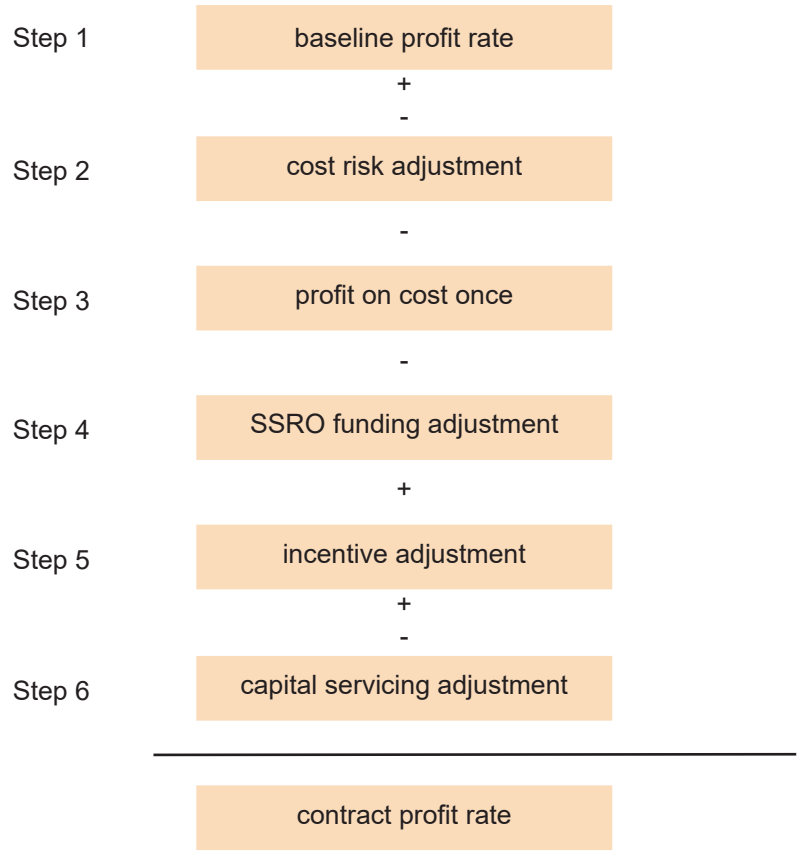
7 The MOD may enter into a contract without competition in cases where there is only one supplier; where it has an urgent requirement; where it is deemed desirable to maintain sovereign capability; or where there are national security considerations.

8 SSRO (2016) *Single Source Cost Standards: Statutory Guidance on Allowable Costs*. Section 8 sets out guidance on Appropriate, Attributable and Reasonable criteria.

Contract profit rate

5. The contract profit rate is calculated using a six-step process[9] (Figure A1).

Figure A1: Process to calculate contract profit rate



Source: SSRO

6. The SSRO is responsible for providing guidance on the application of the six steps in calculating the contract profit rate.[10] The SSRO is also required to make a recommendation each year to the Secretary of State for the rates to be applied at steps 1, 4 and 6.

7. The ranges within which the MOD and contractors agree the adjustments at steps 2 and 5 are specified in the Regulations. These may be amended by the MOD preparing a statutory instrument that becomes law unless annulled by resolution of either House of Parliament.[11]

   - Step 2 currently provides for an adjustment of up to ± 25 per cent to the baseline profit rate to reflect the risk that actual costs will vary from estimated costs. The SSRO's guidance indicates that (all else being equal) contracts priced on the basis of actual Allowable Costs (where contractors' cost risk is lower) should have a lower profit rate than those based on estimated costs (where contractors' cost risk is higher).

9 Described in Regulation 11.
10 SSRO (2017) *Guidance on the Baseline Profit Rate and its Adjustment 2017/18*.
11 Section 42 of the Defence Reform Act 2014 refers. Any amendment of Regulation 11 to change the ranges of step 2 and step 5 would need to remain consistent with the requirements for these steps specified in section 17(2) of the Act.

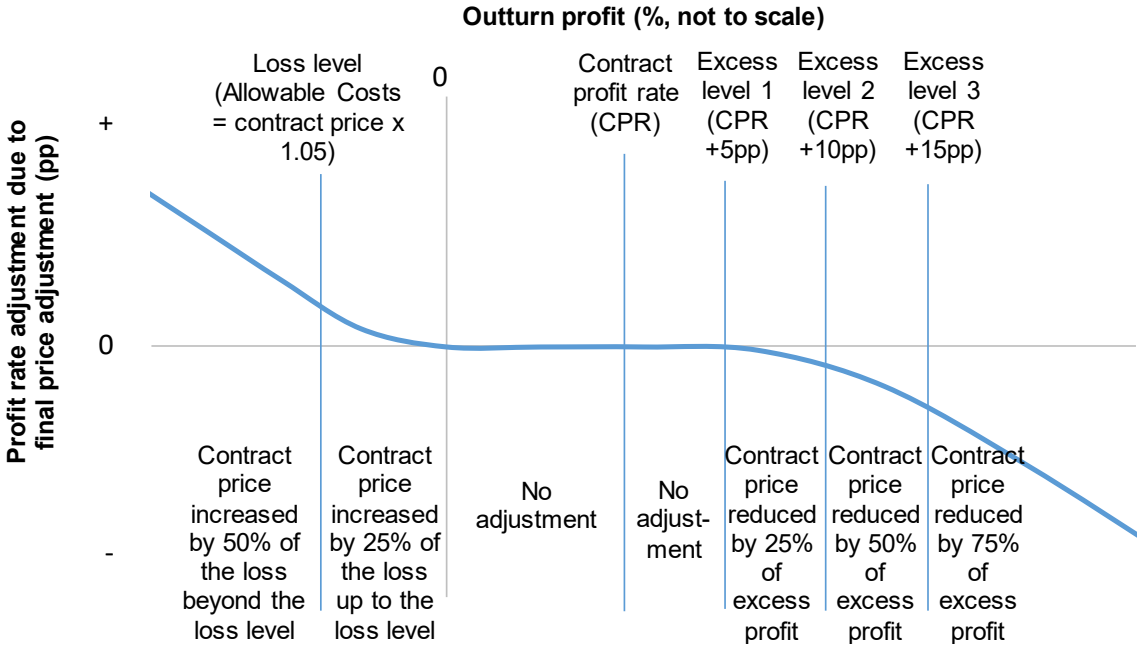
- Step 5 currently provides for the addition of up to two percentage points to the profit rate contingent on the achievement by the contractor of enhanced performance targets.

The final price adjustment

8. The Regulations specify that a final price adjustment should be made in some contracts where there is variance between the actual and agreed contract profit rates due to differences between actual and estimated contract performance.[12] The Act and Regulations state no specific purpose for conducting a final price adjustment, but through the reallocation of excess profit or loss, this mechanism ensures a balance is struck between value for money for taxpayers and fair and reasonable returns for contractors.

9. The scale of the final adjustment to contract price, and consequently profit, depends on the degree of variance between the actual and agreed contract profit rates (Figure A2).

Figure A2: The effect of the final price adjustment on actual contract profit rate



Source: SSRO

10. No adjustment is made where the actual profit rate is between 0 per cent and 5 percentage points (pp) above the contract profit rate ('excess level 1').

11. Where the actual profit rate is:

- at least 5pp above the contract profit rate, but less than 10pp above ('excess level 2'), the contract price is reduced by 25 per cent of the profit above excess level 1;
- at least 10pp above the contract profit rate, but less than 15pp above ('excess level 3'), the contract price is reduced by:
  - » 25 per cent of the profit above excess level 1; and

12 The final price adjustment may apply to contracts priced using the firm, fixed or volume-driven pricing methods and may only apply where the amount of any adjustment would be at least £250,000.

  - » 50 per cent of the profit above excess level 2; and
- at least 15pp above the contract profit rate, the contract price is reduced by:
  - » 25 per cent of the profit above excess level 1; and
  - » 50 per cent of the profit above excess level 2; and
  - » 75 per cent of the profit above excess level 3.

12. Where the actual Allowable Costs exceed the contract price (so that the contractor makes a loss), the contract price is increased by:

- 25 per cent of the excess costs up to the ‘loss level’ (an amount 5 per cent higher than the contract price); and
- 50 per cent of the excess costs beyond the loss level.

Appendix 4: Key concepts of risk management

1. The risks an organisation faces will be influenced by the activities it undertakes, the environment within which it operates, and its relationships with its stakeholders. Risk management is the process by which organisations identify and analyse the risks arising from internal and external factors and evaluate whether those risks need to be treated in some way to satisfy the organisation's appetite for bearing risk.[13] The resources available for managing risk are finite, so the aim of risk management 'is to achieve an optimum response to risk, prioritised in accordance with an evaluation of the risks'.[14]

2. There is extensive literature about risk management. It has not been our intention to undertake or present an extensive review of this, but we think it is useful to note some of the key aspects to provide context for the issues addressed in this paper.

Assessing risk

3. There are two components to risk which require assessment:

   a. the likelihood of an event or outcome occurring – which may be measured numerically, for example, a 1 in 5 (or 20 per cent) chance, or qualitatively, for example, a low, medium or high chance; and

   b. the (positive or negative) impact of an event or outcome occurring – which might be measured in terms of effect on cost, delivery schedule, or some aspect of the quality or performance of the product, service or outcome that is expected.

4. Assessing risks in a consistent way allows their significance to be compared and risk management action to be directed accordingly. The MOD's guidance for staff identifies many different approaches to evaluating risk (Appendix 5).

5. The MOD has three different sets of likelihood criteria which can be used in its risk assessments (Figure A3).

13 Adapted from International Organization for Standardization (2009) *ISO 31000:2009 Risk Management: Principles and Guidance*.

14 HM Treasury (2004) *The Orange Book: Management of Risk – Principles and Concepts*.

Figure A3: The MOD's risk assessment likelihood criteria

	Likelihood	Probability	Approximate frequency	Description
5	Very high	> 90%	Occurs at least once every 5 years	Is a common occurrence in MOD
4	High	51 - 90%	Occurs once every 5 - 10 years	Has occurred within MOD many times
3	Medium	26 - 50%	Occurs once every 10 - 20 years	Has occurred in MOD on several occasions
2	Low	11 - 25%	Occurs once every 20 - 50 years	Has occurred on a small number of occasions in MOD's history
1	Very low	£10%	Occurs less than once every 50 years	Has occurred once / never in MOD history

Source: Ministry of Defence (unpublished) JSP 892 Risk Management: Part 1: Directive.

6. The MOD assesses the impact of risk on four different dimensions, each using a five-point scale: financial (Figure A4); reputational; impact on outputs/capability; and health, safety & environment.[15] The MOD's guidance states that where impacts are expected in more than one dimension, the highest assessment rating is that one that applies.

Figure A4: The MOD's financial impact assessment criteria

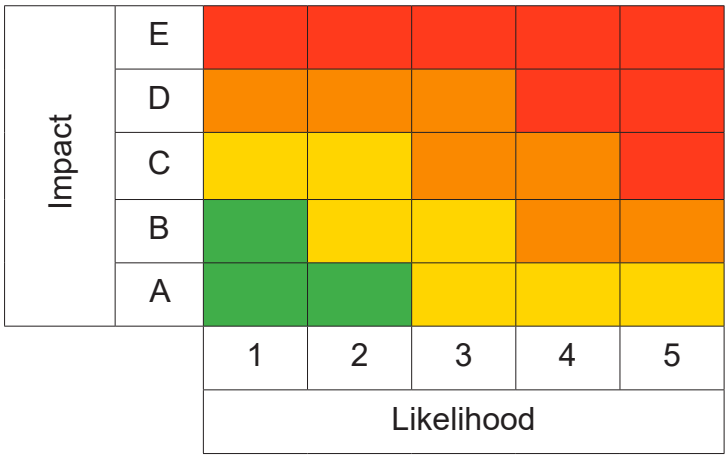
	Financial
E – Critical	>£250m
D – Severe	£150m-£250m
C – Major	£100m-£150m
B – Moderate	£50m-£100m
A – Minor	£10m-£50m

Source: Ministry of Defence (unpublished) JSP 892 Risk Management: Part 1: Directive.

7. Commonly organisations assess risks by combining their assessments of likelihood and impact. The MOD's guidance[16] adopts such an approach (Figure A5). It encourages staff to assess inherent risk (the level of risk before treatment) and residual risk (after risk treatment) and to compare the assessment of residual risk against a target level of risk. This helps identify whether the risk treatment is having the desired effect and whether residual risk is within an acceptable level.

15 The latter of which are impacts not resulting from hostile action.
16 Ministry of Defence (unpublished) *JSP 892 Risk Management7: Part 2: Guidance*.

Figure A5: MOD risk assessment matrix



Source: Ministry of Defence (unpublished) JSP 892 Risk Management: Part 2: Guidance.

Risk responses

8. Organisations can respond to risk in different ways. The MOD identifies different types of risk response (Figure A6) which are consistent with the risk 'treatments' identified by the International Organization for Standardization[17] and HM Treasury in its general guidance on the management of risk in the public sector.[18]

Figure A6: MOD risk response types

Response type	Description
Terminate	Exiting the activities giving rise to risk as the risk is unacceptable.
Treat	Action taken to reduce risk likelihood (called 'controls') or impact (called 'mitigations'), or both.
Transfer	Reducing risk likelihood or impact by transferring or otherwise sharing a portion of the risk.
Tolerate	No action is taken to affect risk likelihood or impact. This means the current risk exposure is accepted.
Take the opportunity	Action taken to increase the likelihood of realising a positive outcome or 'upside'.

Source: Adapted from Ministry of Defence (unpublished) JSP 892 Risk Management: Part 2: Guidance.

9. Risk transfer is a form of risk sharing that can be carried out through insurance or other forms of contract.

10. The key principle underpinning the MOD's approach to commercial risk is that 'risk should be allocated to whichever party from the public or private sector is best placed to manage it.'[19] This principle is widely accepted as good practice in risk management.

17 International Organization for Standardization (2009) *ISO 73:2009 Risk Management – Vocabulary*.
18 HM Treasury (2004) *The Orange Book: Management of Risk – Principles and Concepts*.
19 Ministry of Defence (unpublished) *Commercial Risk Policy Statement: Commercial Risk – Overview*.

"Risks are best transferred to those most able to manage and price them… The primary purpose of risk transfer in project delivery is to create incentives for their better management." (Professor Peter Hansford (2017) *The Hansford Review: Unlocking rail investment – building confidence, reducing costs.)*

Diversification

11. Diversification is a way that organisations can mitigate their exposure to risk. In a naturally diversified portfolio of contracts, where the underlying risks in the contracts are uncorrelated, cost overruns incurred on some contracts would be offset by cost savings on others.

12. The MOD approvals process assumes that projects are equally likely to be over budget as under budget, with additional spending on some projects offset by savings on others. In practice, the MOD has limited opportunities to create a naturally diversified portfolio of QDCs due to the relatively concentrated supplier market for single source contracts and the nature of the equipment and support it is seeking to purchase. The portfolio of QDCs is also skewed towards a small number of large contracts.

13. The National Audit Office reports that, in practice, projects that go over budget tend to do so by greater amounts than those that achieve savings.[20]

Insurance

14. Where there is a market, the MOD or contractors may choose to purchase insurance that provides partial or total indemnity in respect of costs arising through the materialisation of insured risks. Where insurance cannot be purchased, or where the cost is high, the MOD or contractors may choose to self-insure.

15. There are many types of insurance available. Examples we noted through our study included:

    - damage to property or equipment and consequent operating losses;
    - transport;
    - product liability;
    - third-party liability;
    - environmental liability; and
    - personal accident cover for employees.

16. The costs of insurance may be Allowable, but the nature of the insurance cover will be material to whether the costs satisfy the Appropriate, Attributable and Reasonable test.

20 Comptroller and Auditor General (2015) *Major Projects Report 2014 and the Equipment Plan 2014 to 2024*, HC 941-I Session 2014-15.

Appendix 5: MOD approaches to evaluating risk

1. The MOD's guidance for commercial teams identifies many different approaches that may be taken to evaluating risk (Figure A7).[21]

Figure A7: Approaches to evaluating risk

Approach	Description
Deterministic	Something that is fixed, with no allowance for or consideration of variation.
Three-Point Estimate	A technique that describes the uncertainty of a variable estimate. Three values are identified: The minimum (usually optimistic) value, the most likely value, and the maximum (usually pessimistic) value. The minimum and maximum values should exclude very remote possibilities. The three values are linked by a distribution function e.g. a 'triangular' distribution. Three-point estimates are used as inputs to quantitative risk analysis.
Aggregated Risk	The overall level of risk to the project, programme, or business objective, when the effects of all uncertainties and risks are combined.
Quantitative Project (or Programme) Risk Analysis (QPRA)	The statistical analysis (modelling) of a project or programme schedule, including estimating uncertainty and risk, which generates an aggregated view in the form of Confidence Curves. Either Schedule Risk Analysis (SRA) for time, or Cost Risk Analysis (CRA) can be performed. Note that QPRA is sometimes loosely referred to as "Three-point estimating".
Schedule Risk Analysis (SRA)	The statistical analysis of a project or programme time schedule including both estimating uncertainty and risk.
Cost Risk Analysis (CRA)	The statistical analysis of a project or programme cost schedule including both estimating uncertainty and risk.
Confidence Curve	A confidence curve is a graphic representation of the probability of a range of predicted outcomes in the form of a simple distribution or cumulative distribution. The 'x' axis is usually cost or time (duration or date). The 'y' axis is probability. A cumulative probability distribution is known as an 'S' curve and is used to derive confidence figures. Confidence curves are outputs of Quantitative Project (or Programme) Risk Analysis.

21 Ministry of Defence (unpublished) *Acquisition Operating Framework Preferred Terms & Definitions for Risk Management (by Topic)*.

Approach	Description
Confidence Level	A confidence level is usually given as a percentage value. Ranging from 0 to 100 percent, confidence levels are one axis (usually the 'y' axis) of a cumulative confidence curve ('S' curve). The 50 per cent confidence level of a cumulative confidence curve represents the point at which the predicted outcome is equally likely to be above or below.
Confidence Figure	A confidence figure is usually given as a value for cost or time (duration or date). Each confidence figure is associated with a specific confidence level. The range of confidence figures is one axis (usually the 'x' axis) of a cumulative confidence curve ('S-curve'). Note that confidence figures (QPRA outputs) should not be confused with Three-Point Estimates (QPRA inputs).
'Monte Carlo' Simulation	A statistical technique used to estimate the range of outcomes from a complex process by simulating the process under randomly selected conditions a large number of times.
Optimism Bias	An independent 'top down' assessment of risk, which recognises the demonstrated, systematic, tendency for appraisers to be over-optimistic about key project parameters.

Source: Ministry of Defence (unpublished) Acquisition Operating Framework Preferred Terms & Definitions for Risk Management (by Topic).

Appendix 6: Review of public disclosures about risk

1. The MOD has indicated that it would like to incentivise better performance from contractors in relation to cost and risk management through the transfer of more cost risk to them. This raises questions about the balance of risk between the MOD and its contractors, and whether contractors have the capacity and the capability to take on more risk exposure than they currently do.

2. We reviewed the annual reports and financial statements of the MOD and a sample of prime contractors to ascertain what publicly available information can reveal about the risk held by the parties to qualifying defence contracts, risk management, and the capacity to alter the approach to risk transfer. Our review considered the provisions and contingent liabilities set out in financial statements as these are possible indicators of the uncertainty held by an organisation at a point in time.

Strategic financial management in the public sector

3. Overall responsibility for public sector fiscal risk management lies with HM Treasury. It requires departments to manage risks within Departmental Expenditure Limits (DEL)[22] set by government. This means that increases in spending in one area of a Department's spending will usually be offset by reductions in another. Money within DEL can be split between resource spending (day-to-day costs) and capital spending (longer-term investment in assets).

4. The Office for Budget Responsibility's (OBR) July 2017 assessment of risks to the long-term sustainability of public finances reports that this system of budgetary control appears to be working 'reasonably well, with departments almost always underspending at least by a little against the final plans submitted to Parliament'.[23]

5. Departmental spending plans include a degree of contingency, but cannot factor in all possible future calls on resources. For example, the Ministry of Defence's departmental budget pays for the military to be ready for operations but the additional cost of military operations is met from a central reserve.[24]

6. The Treasury's Orange Book[25] provides general guidance on the principles of risk management.

22 For an explanation of terms related to UK public spending see HM Treasury (2013) *How to Understand Public Sector Spending* (available at: https://www.gov.uk/government/publications/how-to-understand-public-sector-spending/how-to-understand-public-sector-spending).
23 Office for Budget Responsibility (2017) *Fiscal Risks Report*.
24 Office for Budget Responsibility (2017) *Fiscal Risks Report*.
25 HM Treasury (2004) *The Orange Book: Management of Risk – Principles and Concepts*.

The MOD's balance sheet

7. The Government's Financial Reporting Manual (FReM)[26] provides departments and other public sector bodies with a guide to preparing financial statements at an organisational level, which would then be consolidated in the Whole of Government Accounts (WGA). The FReM applies European Union-adopted International Financial Reporting Standards (IFRS) and Interpretations, which include principles for reporting liabilities (present obligation resulting from a past event and likely to result in an outflow of resources) and provisions (liabilities of uncertain timing or amount) on the balance sheet, and for disclosing contingent liabilities (possible obligations and present obligations that are not probable or not reliably measurable).[27] In order to enhance public sector accountability, the FReM also requires departments to disclose material remote contingent liabilities where the likelihood of an outflow of resources resulting from a possible or probable obligation is remote.

8. At 31 March 2017, the MOD reported total provisions for liabilities and charges of £11.3 billion. While the total amount reduced by 4 per cent from 2016 to 2017 (from £13.3 billion to £12.8 billion) the 2017 value was 65 per cent higher than it was in 2007 (£7.7 billion). £5.9 billion of this increase resulted from the impact of HM Treasury discount rate changes since 2013, and most notably in 2016, on provisions for nuclear decommissioning.[28] Other categories of provisions held at 31 March 2017 are in relation to other decommissioning and restoration costs, early retirement commitments, legal and other provisions.

9. The MOD disclosed total quantifiable contingent liabilities of £1.5 billion at 31 March 2017,[29] of which more than £1 billion relate to contract risks (Figure A8).

26 HM Treasury (2016) *The Financial Reporting Manual 2017-18*.
27 International Accounting Standards, IAS 37
28 HM Treasury notes in the Whole of Government Accounts for 2015/16 that there was a large increase in provisions due to a change in the discount rate used to value long-term provisions. This long-term discount rate decreased significantly from 2.2 per cent to negative 0.8 per cent, reflecting decreases in government's borrowing costs over the last 10 or so years. 'The change in discount rate has a very significant impact on how future cash flows are converted to today's prices, most notably for the nuclear decommissioning provision due to its size and long-term nature' (HM Treasury (2017) *Whole of Government Accounts: Year Ending 31 March 2016* HC 254).
29 Ministry of Defence (2017) *Annual Report and Accounts 2016-2017*. This excludes details of restricted liabilities which are not given due to reasons of commercial confidentiality and / or national security.

Figure A8: Contract-related contingent liabilities reported by the MOD

Description	Value at 31 March 2017 (£ million)
Indemnity to contractors for third party risks	422
Indemnity for possible damage caused by contractors on Government property	386
Indemnity to contractors for risks associated with the handling of fissile materials	140
MOD exposure when providing an overall cap on contractor liability	57
Indemnity to contractors for loss or damage to issued property	10
Compensation for loss of revenue and costs incurred following non-award of contract	1.4
Contractor claims relating to project deferment or termination	0.5
Indemnity to contractors for service failure as a result of loss of transacting ability i.e. bankruptcy	0.4
Total	**1,017.3**

Source: Ministry of Defence (2017) Annual Report and Accounts 2016-2017.

10. The MOD's accounts also note several unquantifiable contingent liabilities related to equipment contracts, for example:

    - Indemnity to contractors for potential third-party risks arising from construction of the Queen Elizabeth carriers.
    - Strategic Weapons System Activities Future Delivery Project – outsourced contract includes an indemnity for non-nuclear events and unintended detonation of explosives.
    - Indemnity to Rolls Royce for redundancy costs in the event of the termination of the nuclear submarine construction programme.

11. The MOD, backed by government funding, has the ability to take on risk that, if it materialised, might threaten the financial sustainability of a contractor.

Strategic financial management in contractors

12. In the UK, the Financial Reporting Council's (FRC) Corporate Governance Code[30] (the Code) sets standards of good practice in relation to board leadership and effectiveness, remuneration, accountability and relations with shareholders. All companies with a Premium Listing of equity shares in the UK are required under the Listing Rules to report on how they have applied the Code in their annual report and accounts. The FRC publishes guidance to boards to assist them in considering how to apply the Code to their particular circumstances. There is guidance addressing board effectiveness, the role of audit committees and risk management, internal control, the going concern basis of accounting and the board's longer-term viability statement.[31]

30 Financial Reporting Council (2016) *The UK Corporate Governance Code*.
31 Financial Reporting Council (2014) *Guidance on Risk Management, Internal Control and Related Financial and Business Reporting*.

13. The board is responsible for the company's overall approach to risk management. It should determine its appetite for risk to meet its strategic objectives and ensure there are appropriate risk management and internal control systems to identify the risks facing the company. Management are responsible for implementing policies and processes on risk management and ensuring these are regularly reviewed. They should ensure that internal responsibilities and accountabilities for risk management are clearly established and documented. Risk management processes should ensure that risks are identified, evaluated and routinely monitored. A risk register should be regularly reviewed.

14. The aim of reporting on risk is to bring together elements of best practice for risk management and prompt boards to consider how to discharge their responsibilities in relation to the existing and emerging principal risks faced by the company. In doing so, risk management and internal control are embedded in the business process and should be highlighted in reporting processes. As part of the annual report and accounts, the board should provide clear and concise information to the specific circumstances important to company. The annual report and accounts related to financial and business performance should include:

    - the principal risks facing the company and how they are managed or mitigated;
    - a review of the risk management and internal control system and the main features of the company's risk management and internal control system in relation to the financial reporting process.

15. The description of risks and uncertainty should be sufficiently specific that a shareholder can understand the materiality of the risks. The report might include a description of the likelihood of the risk, under which circumstances the risk might be relevant to the company and its possible impact. Significant changes in principal risks such as change in the likelihood or the inclusion of new risk, should be highlighted and explained. A high-level explanation of how the principal risk and uncertainties are being managed or mitigated should also be included.

16. Taking into account the company's current position and principal risks, the directors should explain in the annual report how they assessed the prospects of the company over what period. It should state that they have a reasonable expectation that the company will be able to continue in operation and meets its liabilities.

17. The capacity of contractors to absorb risk will influence their willingness to take it on. This is commonly referred to as 'risk appetite'. Contractors with the ability to manage risk can benefit from the opportunities for profit generation that risk transfer creates. The level of an organisation's exposure to risk is a key influence on its ability to attract financial investment, in the form of equity or debt, to fund profit-generating activity. Investors will expect returns that are commensurate with their risk exposure.

18. A summary of the principal risks and risk management arrangements reported by a sample of the MOD's prime contractors is provided below (Figure A9).

Contractors' disclosure of exposure to cost risk in annual reports

19. Similar to the MOD, a contractor will report provisions and contingent liabilities in accordance with the financial reporting standards that apply to it and in accordance with its own accounting policies. Contractors are not subject to the FReM and, therefore, there is no requirement on them to report remote contingent liabilities.

20. The balance sheet and the disclosure notes to the financial statements provide a snapshot of an organisation's financial position depending on the probability of obligations, the probability of payment and the value or timing of provisions at that accounting period end. With liabilities, there is usually a clear obligation to pay an agreed amount in the future, however, with provisions and contingent liabilities, the obligation to pay or the timing or amount of that payment are less certain. Contingent liabilities in particular may indicate the degree of uncertainty for an organisation at the accounting period end.

21. We examined the level of provisions carried on the balance sheets of a sample of the MOD's prime contractors. While a large proportion of the provisions reported are not obviously related to contractual obligations, for some companies contract-related provisions can be significant. Examples include:

- Roll Royce and BAE Systems had provisions in 2016 of £474 million and £102 million, respectively, for warranties, guarantees and after-sales service;
- Babcock had £22 million in 2017 for onerous contracts and warranty obligations on completed contracts;
- Airbus had €1,151 million in 2016 for contract losses; and
- Leonardo had £208 million in 2016 in respect of product guarantees.

Issues arising from balance sheet review

22. Our review of the information provided raises a number of issues.

a. *Reporting requirements.* The MOD provides a greater volume of information in its financial statements about its provisions and contingent liabilities, indicating that it may hold a greater level of risk and uncertainty. However, there are differences in reporting requirements between the public and private sector which affect our ability to compare the risk held by the MOD with that held by its contractors.

b. *Materiality.* Decisions about what is material to the MOD's or contractors' financial statements affect what is reported about provisions and contingent liabilities.

c. Risk appetite. It is unclear what, if anything, an assessment of liabilities arising from historic actions can reveal about the capacity or appetite of a contractor to take on risk in the future. Other information, for example, future order books, may provide a better insight into contractors' appetite for taking on risk.

Figure A9: Principal risks and risk management arrangements reported by a sample of the MOD's prime contractors

Contractor	Principal risks identified	Strategic report commentary	Risk management framework
BAE Systems PLC	• Defence spending • Government customers • International markets • Competition in international markets • Laws and regulations • Contract risk and execution • Contract cash profiles • Pension funding • Information technology security • People	• Description • Impact • Mitigation	• Board • Audit Committee • Corporate Responsibility Committee • Executive Committee • Business Processes • Monitoring and reporting • Risk management policy (identification, analysis, evaluation, mitigation)
Rolls-Royce Holdings PLC	• Disruptive technologies and business models • Product failure • Business continuity • IT vulnerability • Competitive position • Political risk • Major programme delivery	• Risk or uncertainty and potential impact • How we manage it • Key controls • Change in risk level • Strategic priorities	• Board • Audit Committee • Internal audit • External audit • Risk Management System (identify, governance, impact on long-term viability, risk appetite, monitor and mitigate, report)
QinetiQ Group PLC	• Strategic risks - UK defence test and evaluation strategy - International strategy - Innovation strategy - Transformation - Recruitment and retention • Operational risks - Single Source Contract Regulations - Security and IT systems - Significant breach of relevant laws and regulations - A material element of the Group's revenue is derived from one contract	• Risk • Impact • Mitigation • Metrics • Responsibility • Risk appetite • Likelihood/ impact • Proximity/ velocity	• Board • Audit Committee • Risk and CSR Committee • Long-term viability assessment • Three lines of defence model: - Risk management - Risk assurance - Internal audit
Babcock International Group PLC	• Customer profile • The nature of our contracts, bid processes and markets • Reputation • Regulatory and compliance burden • Health, safety and environmental • People • Pensions • IT and security • Currency and exchange rates • Acquisitions	• Risk description • Potential impact • Mitigation	• Board • Executive Committee • Audit and Risk Committee • Group Security Committee • Internal Audit • Internal Controls • Group risk management • Employees

Contractor	Principal risks identified	Strategic report commentary	Risk management framework
Airbus Group Se	• Financial market risks - Global economic concerns - Foreign currency exposure - Sales financing arrangements - Counterparty credit - Equity investment portfolio - Pension commitments - Tax exposure • Business-Related Risks - Commercial aircraft market factors - Physical security, terrorism, pandemics and other catastrophic events - Cyber security risks - Dependence on key suppliers and subcontractors - Industrial ramp-up - Technologically advanced products and services - Dependence on public spending and on certain markets - Availability of government and other sources of financing - Competition and market access - Major research and development programmes - Digital transformation, integration, continuous improvement and competitiveness programmes - Acquisitions, divestments, joint ventures and strategic alliances - Public-private partnerships and private finance initiatives - Programme-specific risks • Legal risks - Dependence on joint ventures and minority holdings - Product liability and warranty claims - Intellectual property - Export controls laws and regulations - Anti-corruption laws and regulations - Industrial and environmental risks	Risk factors description	• Board of Directors / Audit Committee • Top Management • Management • Enterprise Risk Management Centre of Competence • Corporate Audit • Ethics and Compliance

Contractor	Principal risks identified	Strategic report commentary	Risk management framework
Lockheed Martin Corporation	• Risk factors from government contract laws and regulations • Reputation • Fines and penalties and the termination of contracts • Loss of ability to export products or services • Increased competition and bid protests in a budget-constrained environment may make it more difficult to maintain financial performance and customer relationships • Our financial performance and customer relationships. • Failure of subcontractors to perform their obligation • Risk from International sale • Political and economic factors • Regulatory requirements • Competition • Taxation • Other risks • Cyber or other security threats • Fail to manage acquisitions, divestitures, equity investments • Pension funding and costs are dependent on several economics assumptions which if changed may cause future earnings and cash flow to fluctuate significantly as well as affect the affordability of our products and services • Environmental costs • Maintain a qualified workforce • Market risk • Interest rates • Foreign currency exchange rates • Market prices on certain equity securities	Risk factors description	• Board of Directors / Audit Committee • Chairman

Contractor	Principal risks identified	Strategic report commentary	Risk management framework
Leonardo SpA	• Expenditure of national Governments and public institutions • Cuts in government grants for the research and development activities of the Group • Civil sectors exposed to crisis • Judicial investigations • Significant exposure to long-term contracts at a given price • Exposure to liability risks to customers or associated third parties in connection with the proper performance of contracts, also due to activities pertaining to sub-suppliers • Debt shows high level and could have an impact on the Group's operational and financial strategies. Credit rating is also linked to the opinions of the rating agencies • Risk of exchange-rate fluctuations • Joint Ventures • Defined-benefit pension plans • Market disputes • Environmental risks • Regulatory compliance • Significant proportion of Goodwill on balance sheet • Cyber security	• Risk description • Actions	Not stated

Contractor	Principal risks identified	Strategic report commentary	Risk management framework
The Boeing Company	• Market conditions including fuel prices, economic growth, political stability • Interest rate risk • Foreign currency exchange rate risk • Credit risk • Terrorism • Environmental regulations • Emerging market conditions • Changes in levels of US government defence spending • Contract risks • Competition may impact on reduction of future contracts and sales • The outcome of litigation and of government inquiries and investigations could have a material effect on financial position • A significant portion of our customer financing portfolio is concentrated among certain customers and in certain types of Boeing aircraft, which exposes us to concentration risks • Unable to obtain debt to fund operations and contractual commitments at competitive rates • Not be able to realise the anticipated benefits of mergers, acquisitions and joint ventures • Insurance coverage may be inadequate to cover all significant risk exposures • Industrial actions by labour unions • Pension and other benefit obligations which have an impact on earnings, shareholders' equity and cash flow from operations • Environmental liabilities • Cyber-attack on customers' information and systems	• Risk management: Managing the plan assets, company review and manage risk associated with funded status risk, interest risk, market risk, counterparty risk and operational risk, asset class diversification • Using foreign currency forward contracts to hedge the price risk.	Risk valuation is governed through several types of procedures, including reviews of manager valuation policies, custodian valuation processes, pricing vendor practices, pricing reconciliation, and periodic, security-specific valuation testing

Source: Annual reports for a sample of the MOD's prime contractors

Appendix 7: Examples of long-term contracts between the MOD and prime contractors

Contractor	Aim of the contract	Signed/ renewed	End date	Contract price
BAE Systems Surface Ships Limited	The company entered into a Terms of Business Agreement (TOBA) with the MOD. Specifically, it aims to provide: • a contractual guarantee to deliver £350 million of financial benefits to the MOD over the duration of the contracts; • a commitment to maintain key industrial capabilities; and • an incentive mechanism for achieving savings.	July 2009	2024	£230 million per year
Babcock International Group PLC	The company signed a Terms of Business Agreement (TOBA) with the MOD to provide key support services for the UK Royal Navy. Babcock committed to the progressive delivery of guaranteed cost saving to the MOD and to perform particular types of engineering work to support the navy's major warship and nuclear-powered submarines.	March 2010	2025	£2.5 billion
	The Maritime Support Delivery Framework (MSDF) contract was based on Babcock's existing TOBA which runs through to 2025. The extension of the contract aims to deliver services at HMNB Clyde and HMNB Devonport and replaces the Warship Support Modernisation Initiative (WSMI) contracts. The MSDF agreement also covers delivery of a number of surface ship projects.	October 2014	2020	c.£2 billion
QinetiQ Group plc	The company entered a Long-Term Partnership Agreement (LTPA) with the MOD to deliver Test & Evaluation (T&E) and Training Support Services to the UK armed forces. T&E is essential to all defence equipment projects to ensure reliability and fitness for purpose. The contract also includes maintenance of associated equipment, land and buildings and delivery of an investment programme to ensure that the capability is maintained and developed to meet the MOD's needs. As part of the contract QinetiQ manages 17 MOD-owned sites.	First signed February 2003. 5-yearly financial reviews.	2028 + 25-year extension option	£5.6 billion over 25 years £1 billion for the period 2013-2018
	In 2016 the LTPA was amended to include modernisation of air ranges and testing facilities and services and to make efficiency savings for taxpayers.	December 2016	2028	£1 billion
MBDA Missile Systems	The company agreed a long term partnering contract with the MOD through the Portfolio Management Agreement. The aim of the contract is to develop and supply new complex weapons to the UK armed forces. The agreement was evaluated to offer the MOD more than £1 billion of benefit over a 10-year period.	March 2010	2020	£4 billion

Contractor	Aim of the contract	Signed/ renewed	End date	Contract price
Leonardo Helicopters UK	The company agreed the Strategic Partnering Arrangement with the MOD to achieve cost efficiencies, exports and to sustain employment and specialist skills. The contract also commits Leonardo to support small and medium-sized enterprises in the supply chain.	June 2016	2026	c.£3 billion

Source: SSRO literature review

Appendix 8: The Yellow Book Risk/ Reward Matrix

1. Prior to the introduction of the Single Source Procurement Framework, the Yellow Book regime allowed for a risk-related adjustment of up to plus or minus 10 per cent of the (then) Standard Baseline Profit Allowance (SBPA) paid on 'risk contracts'[32] (and contract amendments) with an estimated or target cost of £50 million or more. The adjustment was determined based on linking risk to types of work, using a matrix of risk and reward (Figure A10). In the case of 'non-risk'[33] contracts, the adjustment was minus 25 per cent of the SBPA.

Figure A10: The Risk/Reward Matrix applicable within the profit formula for non-competitive government contracts

FLEXIBLE PROFIT ADJUSTMENT (TO STANDARD BASELINE PROFIT ALLOWANCE)			
TYPE OF WORK	**SBPA – 10%**	**SBPA**	**SBPA + 10%**
SUPPLY	• Follow on and repeat orders for production/ supply involving existing specification • Repeatable quality	• Interrupted production • Typical/normal production orders	• First production batch for a new requirement with significant development/production overlap • One-off high technology procurement
SUPPORT/SERVICE PROVISION	• Clearly defined specification • Repeatable quality • Reactive support/repairs, maintenance or ongoing contracts	• Initial repair and support order • Customer specified repair and maintainability standards • Support requirements not fully defined	• Long term commitment to Service and Capability provision to a defined output standard
DEVELOPMENT	• After design certification, support activities involving routine document maintenance and simple analysis of existing designs • Post development work, minor development work and programmes involving minor modification of established technologies	• Development work • Contractor accepts full responsibility for performance and integration • Modification Programmes including proposals for, and analysis of, extensive changes to existing design in respect of established technologies • Fault management	• High Technology or Specialist skills or new concepts

Source: Review Board for Government Contracts (2012) Report on the 2012 Annual Review of the Profit Formula for Non-Competitive Government Contracts.

32 A contract with a pricing arrangement which does not insulate the contractor against loss.
33 A contract placed on a cost reimbursement basis which insulates the contractor against loss.

Appendix 9: Cost risk in the baseline profit rate

1. The OECD's transfer pricing guidance[34] highlights the importance of the consideration of risk in the application of the arm's length principle to the benchmarking of profit in commercial transactions. This is because:

   a. in an open market, a higher level of risk would be compensated for with higher expected return;

   b. commercial activities carry uncertainty as to whether the returns will be higher or lower than expected; and

   c. commercial arrangements determine how profits and losses are allocated between the transacting parties.

2. There is significant diversity in the products and services provided under QDCs. Consequently, there is a wide range of companies in the comparator groups whose profits inform the determination of the BPR. It is important that the risk profile of the comparator group companies is such that it does not bias the BPR in a way that undermines it as a reasonable starting point for the six-step process to determine the contract profit rate for a QDC.

3. The OECD provides a framework for transfer pricing which considers the sources of uncertainty which give rise to risk in commercial or financial transactions. It highlights the importance of external as well as internally driven risks. We used this framework to pose a number of questions (summarised in Figure A11) that explore where there may be differences in the risk profile of the activities of the comparator group companies and those involved in the delivery of QDCs, such that they might influence the expected returns associated with those transactions.

34 OECD (2017) *OECD Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations.*

Figure A11: Exploring differences in the profile of risk between the activities of the BPR comparator group companies and QDCs

OECD risk category	Summary of questions
Strategic risk or marketplace risk	To what extent does the single-source procurement of QDCs protect contractors from the risk associated with competing in an open market?
Infrastructure or operational risk	In what ways do the MOD's procurement arrangements influence the exposure of QDC contractors to such risks, relative to other commercial sales?
Financial risk	What does the financial risk profile of QDC contractors tell us about the return their shareholders and lenders may require relative to BPR comparator companies?
Transactional risk	Does the risk profile of transacting with the MOD on a single-source basis differ to that in a wider commercial environment?
Hazard risk	Is hazard risk relevant in the pricing of QDCs?

Source: SSRO

4. Other aspects of the BPR and contract profit rate methodologies may be relevant in the consideration of any differences in profits arising from differences in the risk profile of the comparator group companies and QDC activities.

    a. We remove loss-making companies in determining the BPR – that is, those companies that faced risks and failed to manage them.

    b. The BPR comparator groups contain companies that had a range of outcomes given the risks they faced.

    c. We use the median profit level indicator, which minimises the influence of companies with exceptionally high profits that may be indicative of having taken excessive risks.

    d. The cost risk adjustment offers the opportunity to adjust the BPR to reflect any QDC-specific cost risk.

5. The OECD's transfer pricing guidelines identifies the sources of uncertainty which give rise to risk in commercial or financial transactions. We present below relevant sections of the OECD's guidance and a series of questions related to the way that these risks may affect the profitability of:

    a. companies in the SSRO's baseline profit rate methodology comparator groups; and

    b. QDCs.

Strategic risk or marketplace risk

Strategic risks or marketplace risks. These are largely external risks caused by the economic environment, political and regulatory events, competition, technological advance, or social and environmental changes. The assessment of such uncertainties may define the products and markets the company decides to target, and the capabilities it requires, including investment in intangibles and tangible assets, as well as in the talent of its human capital. There is considerable potential downside, but the upside is also considerable if the company identifies correctly the impact of external risks, and differentiates its products and secures and continues to protect competitive advantage. Examples of such risks may include marketplace trends, new geographical markets, and concentration of development investment.

SSRO questions

a. Are these risks of any consequence for QDCs since, by definition, the contractor is not competing in the market for goods and services which are being supplied?

b. Does the existence of long-term defence spending plans and policy commitments mitigate contractors' uncertainty over future demand for products, and to what extent might this differ for comparator group companies conducting open-market operations?

c. Are the potential downsides of failing to operate at a competitive level relative to the wider market also likely to be more limited, relative to the comparator group, where the MOD has explicitly chosen to exclude other potential suppliers of similar goods or services, which might otherwise have been able to secure the contract to the cost of the contractor in the QDC?

Infrastructure or operational risk

Infrastructure or operational risks. These are likely to include the uncertainties associated with the company's business execution and may include the effectiveness of processes and operations. The impact of such risks is highly dependent on the nature of the activities and the uncertainties the company chooses to assume. In some circumstances breakdowns can have a crippling effect on the company's operations or reputation and threaten its existence; whereas successful management of such risks can enhance reputation. In other circumstances, the failure to bring a product to market on time, to meet demand, to meet specifications, or to produce to high standards, can affect competitive and reputational position, and give advantage to companies which bring competing products to market more quickly, better exploit periods of market protection provided by, for example, patents, better manage supply chain risks and quality control. Some infrastructure risks are externally driven and may involve transport links, political and social situations, laws and regulations, whereas others are internally driven and may involve capability and availability of assets, employee capability, process design and execution, outsourcing arrangements, and IT systems.

SSRO questions

a. Where there may be a bias towards more technically complex design and development activity in QDCs, is it the case that associated risks are also more likely to be shared with the MOD who is more likely to have already committed to the purchase?

b. Does the non-competitive nature of QDCs offer some protection to contractors against failures which might otherwise lead to a competitive disadvantage for companies in the comparator groups?

c. Is there any reason to expect the externally driven risks noted in the OECD guidance to be more or less applicable to QDCs as to any company in the comparator groups?

Financial risk

> Financial risks. All risks are likely to affect a company's financial performance, but there are specific financial risks related to the company's ability to manage liquidity and cash flow, financial capacity, and creditworthiness. The uncertainty can be externally driven, for example by economic shock or credit crisis, but can also be internally driven through controls, investment decisions, credit terms, and through outcomes of infrastructure or operational risks.

SSRO questions

a. Given the extent of the MOD's expenditure in QDCs (and historic spending in non-competitive contracts), investors' perceptions of the MOD's main single source suppliers, and their credit ratings, is it reasonable to characterise the companies that deliver QDCs as relatively low financial risk, in the sense defined by the OECD?

b. Are there any reasons to expect the BPR comparator group companies to have lower financial risk than QDC contractors, and therefore be able to offer lower expected returns to investors?

Transactional risk

> Transactional risks. These are likely to include pricing and payment terms in a commercial transaction for the supply of goods, property, or services.

SSRO questions

a. Does transacting with the MOD represent a riskier proposition than contracting in an open market, in the sense in which this is defined by the OECD?

b. Does transacting with a government offer some protections or dis-benefits which would not be applicable to companies in the comparator groups?

Hazard risk

> Hazard risks. These are likely to include adverse external events that may cause damages or losses, including accidents and natural disasters. Such risks can often be mitigated through insurance, but insurance may not cover all the potential loss, particularly where there are significant impacts on operations or reputation.

SSRO questions

a. Is the incidence and impact of hazard risks likely to differ between contractors involved in the delivery of QDCs and the BPR comparator group companies?

b. To what extent will the mitigation against the hazard risks in QDCs be borne by the MOD and/or its contractors?

c. Is it reasonable to assume the consequences for hazard risk in relation to certain types of activity, for example nuclear related, may be catastrophic, to the extent that the owner of such risk is likely to be national government?

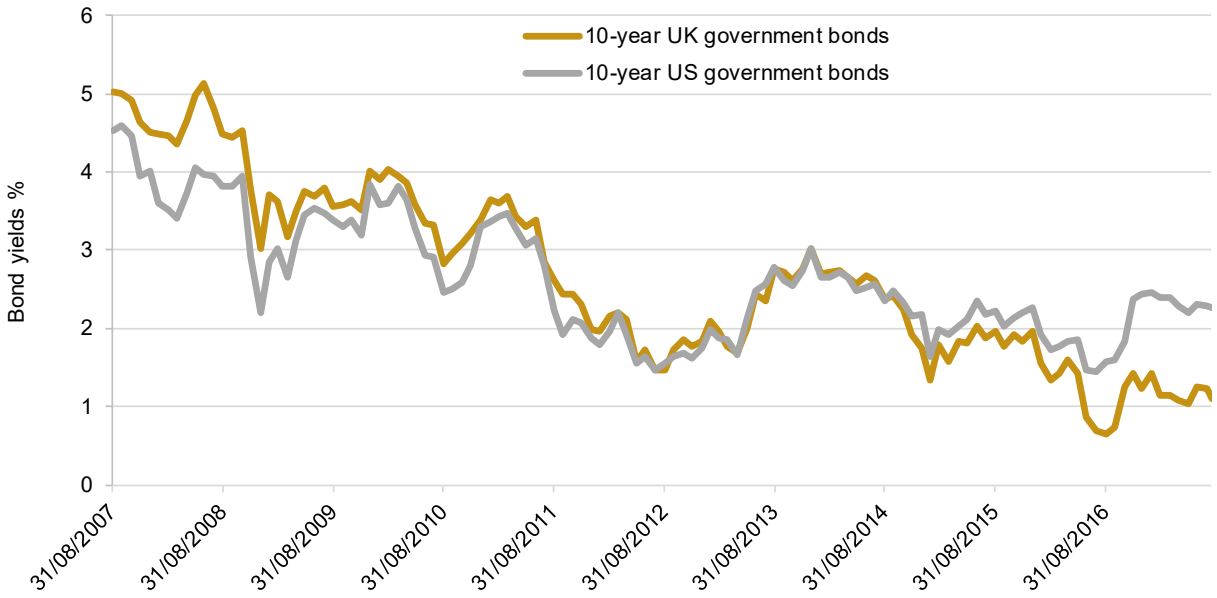
Appendix 10: The risk-free rate of return on capital

1. In capital markets, an investor in an asset will seek payment in return for investing their capital. The value of this payment over a particular time period, relative to the size of the investment, defines the rate of return on that capital. Some investments involve a degree of risk (uncertainty) concerning the value of the payments and the security of the initial investment. Some investments are riskier than others. When an investor knows for certain what return they will receive and there is little or no possibility of losing the money initially invested, the return on the asset is said to be at the 'risk-free rate'. Typically, investors will be willing to accept a lower rate of return where they face a lower level of investment risk.

2. In economics, an investment in a bond issued by a national government is typically used as a benchmark for the risk-free rate. Investors who purchase government bonds are lending money to the government on which they expect to earn interest. Government bonds may be said to provide a risk-free return as there is little or no expectation the original loan and associated interest will not be paid. The UK and US government bonds are commonly viewed as the benchmark for the risk-free rate of return, as investors consider these governments will be able to meet their financial obligations.

3. A recent study by PwC[35] estimated a range for the risk free-rate of between 1.5 per cent and 3.0 per cent using UK government bond data. Figure A12 shows the return (yield) on 10-year UK and the US government bonds since 2007.

Figure A12: 10-year UK and US government bond yields – 2007 to 2017



Source: Bloomberg (15/08/2017)

35 PwC Economics (2017) *Refining the balance of incentives for PR19.*

4. Discounting is a technique used to compare costs and benefits that occur in different time periods. It is based on the principle that people prefer to receive goods and services now rather than in the future: called 'time preference'. Time preference can be measured by the real interest rate on money lent or borrowed. The 'social time preference rate' represents the return society requires to delay current consumption in favour of future consumption. HM Treasury guidance requires that a discount rate of 3.5 per cent is used in the conduct of government investment appraisals.[36]

5. The UK Regulators' Network (UKRN) has published a paper which includes the risk-free rates used between 2013 and 2016 for a number of regulated industries.[37] These estimates ranged from 0.5 per cent to 1.75 per cent.

36 HM Treasury (2011) *The Green Book: Appraisal and Evaluation in Central Government.*
37 UK Regulators Network (2017) *Cost of Capital – Annual Update Report.*