National Grid Gas Transmission

Enhanced Physical Site Security

RIIO-T1 Reopener Submission

May 2018

18th May 2018

National Grid Gas Transmission

Enhanced Physical Site Security Reopener 2018

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Executive Summary

This submission presents a request for funding of £23.79m (09/10 price base) of Totex costs over the RIIO-T1 period.

1. This document is the formal submission by National Grid Gas Transmission (hereafter referred to as National Grid) to Ofgem to request £23.79m (09/10 price base) of additional funding for Enhanced Physical Site Security costs incurred and forecast to be incurred over the remainder of the RIIO-T1 period. The document includes the following changes in funding:

    - Return of funding allocated to a number of sites now removed from the National Grid Physical Security Upgrade Programme (PSUP);
    - Capex funding for PSUP solutions to several Shared Sites;
    - Capex funding for PSUP solutions required at a number of Site Extensions; and
    - Funding for the design and development of a number of additional sites, to be delivered in RIIO-T2.

2. Since National Grid's Enhanced Physical Security reopener submission in 2015, the business has revised its delivery strategy and driven significant efficiencies into the PSUP. We are now broadly forecasting to deliver the Phase II sites within the allowances deemed efficient by Ofgem in 2015. All of the sites included within this submission will utilise a similar delivery model to the Phase II sites and all prices are based on market testing.

3. This document is being submitted under the Uncertainty Mechanism - Licence Special Condition 5E.1 for Enhanced Physical Site Security costs in the May 2018 reopener window.

4. This submission amounts to a funding request of £ 23.79m (in 2009/10 prices) of PSUP costs over the RIIO-T1 period. A summary of the 2018 submission for National Grid is shown in Table 1 below. Throughout this document all prices are expressed in the 2009/10 price basis.

Table 1: Summary of Funding Request

Submission	Totex Costs by Year (£m) – 09/10									
	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	Total	Materiality Threshold
Funding Request for Additional Sites	0	0	0	0	0.06	1.53	18.85	21.46	41.90	
Site Withdrawals									(18.11)	
Total Funding Request									23.79	14.5

RIIO-T1 Outputs

- PSUP solutions delivered to all sites included in our May 2015 submission by 31st March 2021, excluding a number of sites confirmed by BEIS as withdrawn from the programme;
- Delivery of PSUP solutions to a number of Shared Sites;
- PSUP solutions delivered and operational at a number of Site Extensions by 31st March 2021; and
- PSUP solutions approved at sites newly identified as PSUP by 31st March 2021.

1 Introduction

5. This document produced by National Grid has been prepared as the formal reopener submission to request regulatory funding for Enhanced Physical Site Security. This request follows a previous request for regulatory funding in May 2015.

6. In Appendix I we set out the context for the Physical Security Upgrade Programme (PSUP) and update on progress to date. The main body of this document details the background and funding request for the following four elements of the submission, covering the cost savings and efficiencies we have built into the PSUP programme since the May 2015 reopener:

- PSUP solutions at several Shared Sites;
- PSUP solutions required for a number of Site Extensions;
- Design and development of a number of additional sites, to be delivered in RIIO-T2 and
- Removal of several sites from the PSUP.

2 Cost Savings and Efficiencies

2.1 Summary

7. National Grid has developed a delivery strategy called 'The Five Pillars of Success' in order to deliver PSUP solutions in a cost efficient and effective way. We are currently forecasting £17.0m in efficiencies to be delivered as a result of the 'Five Pillars' strategy, which will be realised throughout the delivery of Phase II of the PSUP programme.

8. These efficiencies have been generated by implementing a leaner client organisation to support the PSUP programme, developing improved contracting strategies with third parties, and challenging and reviewing scope requirements to ensure solutions are 'fit for purpose'.

9. Unit cost comparisons between Phase I and Phase II reflect efficiencies achieved through the adopted procurement strategy. These savings enable the programme to deliver to the allowances agreed following the 2015 submission.

10. The efficiency savings and the delivery model we have developed for Phase II sites have been applied to proposals developed for the Shared Sites and Site Extensions to ensure we deliver this next phase of the PSUP at an efficient cost level.

2.2 Efficiencies – Commercial and Operational Activities

11. Following Ofgem's final determination in September 2015 and resulting cost challenge, we completed a thorough review of our delivery costs to identify additional areas where cost reductions could be achieved. The areas identified were:

- Project management;
- General items and preliminaries; and
  Fences and cameras

12. These areas are expanded upon in our approach outlined below.

2.2.1 'Five Pillars of Success'

13. The 'Five Pillars of Success' is a National Grid strategy that aims to deliver infrastructure projects in a cost efficient and effective way without compromising on a compliant solution.

14. The 'Five Pillars of Success' are:

- Fit for Purpose Solutions;
- Lean Client Organisation;
- Optimum Contract Strategy;
- Collaboration with Operations; and
- Governance and Project Controls

15. As a result of the 'Five Pillars' approach, all sites in development, or to be introduced into delivery, will benefit from the learning achieved through this work, with innovative solutions being deployed across the portfolio and shared learning being at the heart of how we deliver.

Fit for Purpose Solutions and Collaboration

16. To ensure Fit for Purpose Solutions we conducted a detailed review of the specific risks associated with each asset on each of the Phase II sites. By jointly assessing the overall risk levels of each Phase II site against the required Operational and Security Standards, we were able to ensure we developed designs consistently across our programme.

17. The developed designs both safeguarded the assets of most concern and avoided reinforcements to assets which were low risk.

18. This work was instrumental in providing a more informed basis for the design and scoping work which was to follow for Phase II. The aim of this work was to:

- Challenge scope requirements and ensure they are fit for purpose for Gas Transmission Assets; and
- Minimise the impact of scope change occurring in the delivery phase, by assessing asset risk and requirements on a consistent set of criteria linked to the original drivers.

19. This included taking into account site specific challenges and developing innovative solutions to overcome them.

Lean Client Organisation

20. The 'Lean Client Organisation' pillar drove National Grid to develop a leaner structure to support the PSUP by reviewing and challenging the levels of resource deemed necessary to deliver the programme.

21. This review led to some previously outsourced management roles being delivered in-house, as well as a reduction in PMO resource to support the programme and site specific delivery teams; leading to a reduction in project and professional services costs. These efficiencies have been built into our cost proposals.

Optimum Contract Strategy

22. The 2015 reopener submission was based on the assumption that elements of the solution were going to be let as separate contracts (as per the first phase of the PSUP); this led to multiple lots of preliminary costs being included within site forecast costs.

23. The 'Optimum Contract Strategy' pillar drove National Grid to re-evaluate the previous contracting model and introduce a new strategy.

24. The Phase II works was bundled as required to provide volume certainty to the third parties, driving value for money. As a result of the geographical nature of this strategy efficiencies in resource allocation and reduction in overall costs for site preliminaries have been achieved. These efficiencies have been built into our cost proposals.

Governance and Project Controls

25. Sanctioning of the Phase II works as a programme, in-line with the 2015 reopener, enabled the contracting strategy detailed above to be developed. Adopting this approach has meant common risks can be managed at a programme level, rather than at a site level and this has minimised the potential risk impact and mitigation costs.

26. In addition to this, the programme approach has been key to facilitating a leaner client organisation due to the efficiency of resource required to manage a programme of works as opposed to multiple independent projects.

2.3 Efficiencies – Programme Delivery

27. We have continued to drive the 'Five Pillars of Success' throughout the delivery process; jointly establishing five 'Key Principles' of the programme with our third party suppliers to ensure safe and efficient delivery:

- Safety;
- Collaboration;
- Value;
- Time; and
- Quality and People

28. We have established a Joint Innovation Forum, involving all third party suppliers. The purpose of this collaborative forum is to review existing designs and installation methods in order to proactively find cost and time effective solutions that meet the required security criteria.

29. This approach is an extensive exercise requiring wide stakeholder engagement internally within National Grid, externally with our third party partners and with BEIS/CPNI.

Unit Costs

30. In order to deliver the PSUP within the agreed allowances National Grid is required to deliver solutions for less. To demonstrate National Grid is driving value in the PSUP solutions it has identified a number of unit cost variances between sites delivered in Phase I and Phase II. National Grid has compared these costs to demonstrate the output of the work it has done, and continues to do, to ensure it is able to deliver value to the customer and deliver within the allowances agreed in 2015.

31. Unit costs for the various elements of the PSUP solution will vary over time due to a number of factors including material market price changes (e.g. cost of steel). However there have been steps that National Grid has been able to take to mitigate these.

32. The efficiency savings and the delivery model we have developed for Phase II sites will be applied to the Shared Sites and Site Extensions to ensure we deliver this next phase of the PSUP at an efficient cost level.

3 Third Party Shared Sites

This chapter presents a request for funding for Shared Sites over the RIIO-T1 period.

3.1 Summary

33. As part of the BEIS review of sites in 2014/15, a number of Shared Sites were classified as requiring PSUP solutions. At the time of the May 2015 reopener submission the responsibility for delivering the PSUP solutions had not been finalised and therefore costs were not included in our submission.

34. Following clarification with BEIS National Grid is responsible for delivering PSUP solutions at a subset of these sites.

35. No allowance for opex costs is required as operational responsibilities lie with the GDNs as site owners.

36. The costs for the Shared Sites are based on the delivery model and efficiencies that we have driven into the Phase II PSUP sites. All contracting costs have been market tested.

3.2 Background

Why these are included in the 2018 submission

37. During 2014 BEIS instigated a review of National Grid sites against a revised set of assessment criteria. The scope of this review included sites classified as GDN offtakes, where these contained assets owned by National Grid.

38. These sites were generally constructed at a time when the entire network (from supply point to end user) was under single ownership. Subsequently ownership and operation of the network was divided between Transmission and Distribution functions, with the NTS remaining with National Grid and the Distribution function being split between five regionally based GDNs.

39. The outcome of this separation has been that there are a number of sites which are owned by the GDNs, but which also contain National Grid assets. For the purposes of this submission these sites are referred to as “Shared Sites.”

40. At the time of the May 2015 submission the responsibility for delivering the PSUP solution and the funding arrangements at the Shared Sites had not been finalised.

41. In November 2015 clarification on shared sites was provided, which gave National Grid the responsibility to deliver PSUP solutions at a number of the sites.

3.3 Sites to be delivered by National Grid

Approach Taken to Derive the Most Effective Solution

42. Following the clarification of responsibilities for PSUP investment at Shared Sites, we carried out a site level desktop assessment of the sites National Grid is responsible for. The aim of this desktop assessment was to investigate the most economical strategy for meeting the PSUP security requirements at each site.

43. In accordance with the principles of our Five Pillars strategy we looked at how efficiently we could scope the solutions for these sites.

44. Upon review of the Shared Site layout drawings it became clear that for all National Grid Shared Sites a single perimeter encompassing all site assets was found to be the only viable solution.

45. During the design and development phase of the Shared Sites, following the completion of site surveys, National Grid and CPNI undertook a review of the sites technical solutions, which led to a further review of the drivers for inclusion in the PSUP.

46. Subsequent to this review it was National Grid's view that one of the sites should no longer be included in the PSUP.

47. We confirmed this understanding with BEIS who agreed with our view. Consequently, we are not including a funding request for the site in this reopener.

How we determine the scope for these sites

48. The costs and scope for a PSUP solution for a given site are dependent on a range of factors such as asset quantities and site characteristics.

49. To capture the site specific asset quantities and site characteristics the Shared Sites have been visited by our internal team of Technical Security Engineers, Corporate Security Advisors and Development Engineers. Following these visits we worked with the GDNs to ensure our solutions adhere to the CPNI guidance, and are compatible with the GDNs expectations.

50. Our third party suppliers have priced the sites based on the site requirements and supplementary information where available. We have developed a good understanding of the scope requirements based on our own site visits and our existing programme of sites.

Delivery Strategy and Efficiency Measures

51. The costs for these Shared Sites were obtained from our current third party suppliers. This route was deemed to provide the most accurate and efficient price available on the market, due to the foundation laid by the success of the Five Pillars contracting strategy and the time constraint of meeting National Grid's 2021 delivery commitment.

52. The third party suppliers were asked to price in line with the existing framework rates, applying any uplifts they deemed necessary to counterbalance market rate fluctuations and

inflationary uplifts. The third party suppliers were also asked to include the benefits of any learning they had benefitted from in the delivery of the current programme.

53. The Shared Sites were split to ensure geographical efficiencies of the current model could be realised where possible.

54. For all comparable items (with exceptions where unit costs have decreased due to advancements in technology) increases in unit costs have been seen.

55. The increase in costs has been driven by factors outside of the control of National Grid, including increases in raw material costs. National Grid has been able to mitigate these increases through programme efficiencies and innovative solutions.

3.4 Sites to be delivered by a third party

Overview of Site – driver for works

56. Of the remaining shared sites there is one site where National Grid is not required to deliver the solution but is liable for a share of the costs, in line with Ofgem guidelines.

4 Site Extensions

This chapter presents a request for funding for PSUP site extension activities over the RIIO-T1 period.

4.1 Summary

57. At the time of the May 2015 reopener National Grid was aware of a number of sites where PSUP extensions would be required as a result of an increase in the site footprints. The funding request was not included as solutions had not been sufficiently developed at the time of submission.

58. A number of design options were considered for each site to establish the most effective and efficient solution.

4.2 Background

59. There are occasions when National Grid sites need to be extended, for example to accommodate additional assets. If this is required at a site at which physical security has already been upgraded through the PSUP, the existing solution must then be modified and extended to ensure that the revised site perimeter meets the PSUP specification, as agreed with BEIS.

60. The PSUP site extension works are required to accommodate additional assets due to another programme of works and therefore a PSUP consideration is required as part of this project.

61. We are including a funding request in this submission for the PSUP extensions.

4.3 Approach taken to derive the most effective solution

62. The sites have been visited by our internal team of Technical Security Engineers, Corporate Security Advisors and Development Engineers. Our third party suppliers have priced the sites based on the site requirements and supplementary information where available. They have also had the opportunity to visit these sites to ensure that the approach is workable.

Summary of Scope

63. We have used a common design approach at the sites.

64. Conceptual Front End Engineering Design (FEED) has been completed for the PSUP site extensions. The site extension works are expected to be completed at the sites by March 2021.

4.4 Programme Efficiencies

65. Prices were received from the prospective supplier but on review of the prices it was not deemed to provide sufficient value to progress down this delivery route.

66. Our existing PSUP third party suppliers were asked to submit prices for the Site Extension works in line with the site requirements. These projects have additional challenges due to their integration with the other programme of works.

67. We identified that there are opportunities for cost reductions by removal of the site establishment and specific surveys from the PSUP element of the works, as these will be provided via the other scheme of works. This element of the review has reduced the total main works contractor costs by £1.3m across the sites.

4.5 Unit Costs

68. For all comparable items, with one exception, increases in unit costs have been seen. The increase in costs has been driven by factors outside of the control of National Grid, most notably increases in raw material costs. National Grid has taken steps to mitigate the size of these increases through programme efficiencies.

5 Changes to the PSUP List since 2015 Submission

Existing programme awarded costs to be reduced by £18.11m through site removals.

5.1 Summary

69. National Grid has worked with BEIS to update the collective understanding of threat to National Grid assets and the impact of this on the National Transmission System (NTS), with this understanding clarified with BEIS in December 2016. This revised understanding required us to undertake a wholesale re-assessment of all the sites on the network.

70. Additional sites were identified. In view of our enduring commitments to deliver Phase II sites before the end of the RIIO-T1 period it is our expectation that these additional sites will be delivered in RIIO-T2 (Phase III).

71. In agreement with BEIS a number of National Grid sites have been removed from the PSUP and thus require no physical build for protection, resulting in a totex saving of £18.11m

72. In order to facilitate completion early in RIIO-T2 of the Phase III sites, design and development activities are planned to be completed prior to the period starting.

5.2 What has prompted the changes?

73. Changes in our current and future network requirements have the potential to decrease the classification of sites as well as increase it. The view taken by BEIS of threats to our network and of the appropriate measures we should take to mitigate such threats is also subject to change.

74. Since the formal BEIS confirmation of PSUP sites in May 2015, there have been two key areas of change;

- For several sites included on BEIS list from 2015, the drivers for inclusion have been challenged for a variety of reasons; and
- Our understanding of the threat has changed, and this change has prompted a wholesale re-assessment of the risks to our network.

75. We met with BEIS to confirm that our understanding of the current threat was correct.

76. BEIS verified our understanding of the threat and also confirmed that the scope of our assessment of the NTS should now be extended

77. The change in threat assumption did not affect any of the existing PSUP sites.

5.3 Site Withdrawals

78. Following initial discussions with BEIS, the development of physical security enhancement solutions at several of the Phase II PSUP sites was placed on hold pending further discussions. National Grid and BEIS met to discuss the detail behind the change in driver at each of these sites to determine whether they should be removed from the PSUP.

79. Formal confirmation of the site withdrawals from the PSUP was subsequently provided by BEIS.

80. Following removal from the PSUP as part of this submission we propose to return in full the allowance awarded from the May 2015 reopener for each of these sites.

81. Allowances for these sites have been calculated based on the decision letter received in response to our May 2015 reopener. The difference between the allowances requested and those received reflects a reduction in the general items and preliminaries and project management costs. In calculating the allowances to be returned for these sites we have applied the reduction on a pro rata basis, to the capex costs of all projects that were included in the reopener.

5.4 Additional Sites identified (Phase III)

Background

82. Following discussions with BEIS it was agreed that National Grid would carry out further analysis to determine whether any additional sites on the NTS should be included in the PSUP.

83. The aim of the analysis was that the output would provide a comprehensive review of the implications that the threat scenarios, as defined by BEIS / CPNI, would have for our network today and into the foreseeable future.

Final Results and BEIS engagement

84. Our analysis identified additional sites across our network as candidates for inclusion in the PSUP.

85. National Grid has worked closely with CPNI to help develop innovative new cost effective security solutions. This has greatly minimised the cost to consumers.

86. We presented our view to BEIS on sites that should be incorporated into the PSUP. The outcome was that a number of sites were added into the PSUP. These PSUP sites will make up Phase III of the programme.

5.5 BEIS Confirmation of PSUP Changes

87. We received formal confirmation from BEIS confirming the changes to the PSUP list.

5.6 Phase III Site Investment Proposals

88. Due to our ongoing commitment to delivering the remainder of the Phase II sites included in the May 2015 reopener across the remainder of the RIIO-T1 period we are not proposing to undertake any construction activities on the three Phase III PSUP sites in the RIIO-T1 period.

89. In order to deliver these projects early in RIIO-T2, to reduce the vulnerability from threat in a timely manner, it is necessary to undertake the design and development stage of the PSUP project lifecycle by the end of the RIIO-T1 period.

90. This stage of the project generally includes the following activities:

- Identification of site requirements, with input from BEIS/CPNI;
- Site surveys; and
- Environmental studies.

91. Historically there has been a requirement to consult with third parties in the development of Front End Engineering Design (FEED) studies as part of the scoping and design development stage of the PSUP solution. For our Phase III sites we are developing an 'enhanced design' process based on our experience of undertaking design and development activities in previous phases.

92. Our budgetary estimate of costs for this stage of delivery is based upon our now considerable experience, gained from undertaking design and development activities on our portfolio of existing PSUP sites.

93. It is our intention to commence construction activities on these sites early in the RIIO-T2 period in order to reduce the vulnerability to our assets from threat as soon as our existing programme of works allows. In order to deliver to this timeline it is necessary to commence scoping and design development of these on these sites during the RIIO-T1 period.

94. The remaining costs to cover physical delivery of the PSUP solutions for these Phase III sites will be included in our RIIO-T2 submission.

6 Procurement

6.1 Shared Site Procurement Strategy

95. National Grid's current procurement strategy is to further engage our current third party suppliers to develop the most effective contracting and delivery strategy for the Shared Sites, taking into account their current programme commitments and capabilities. An optimum strategy will look to balance value for money with ensuring delivery of a challenging programme.

96. The existing third party suppliers are National Grid's current preferred route to deliver against challenging timeframes. This is due to their knowledge, experience and expertise regarding National Grid PSUP projects, the value their strategic relationships with key suppliers provide and their buy-in to the five strategic values (the Five Pillars of Success) which ensures all parties are aligned to the same goal - "To collaboratively deliver to time, cost and with safety at the heart of everything we do".

97. Our current contract includes the provision to include additional scopes of work (projects) through a variation to the current contracts. This was a conscious, proactive decision that National Grid took at the original tender in order mitigate the risk of prolonged and costly procurement events should additional sites be added to the PSUP.

98. National Grid will work with our third party suppliers to ensure a robust price and programme is produced using further information, such as surveys, prior to entering any formal contractual agreement.

99. The award of the contract for Shared Sites will progress through the National Grid procurement governance process to ensure value has been achieved. This will include a robust evaluation process involving an experienced National Grid PSUP commercial and technical team to demonstrate value from both a cost and a delivery perspective. Negotiations with the third party suppliers, from project team level to senior level, will be undertaken to ensure the most realistic price available is offered.

7 Risk Mitigation and Opportunity Realisation

7.1 Risk Identification Process

100. The aim of the risk identification process is to identify all risks that might affect the project objective over its lifetime. This includes the following risk types:

- Risks intrinsic to the nature of the work being undertaken;
- Risks associated with the management of the environment;
- External risks that could affect the project or the assumptions on which the project is based;
- Risks associated with the implementation approach; and
- Risks associated with the contractual relationship with stakeholders, suppliers and other parties.

7.2 Existing Programme Risks and Mitigations

101. There are a number of inherent risks that have been encountered on previous PSUP projects that National Grid have managed to mitigate over the course of the Phase I and II programme. These will continue to be managed in collaborative approach with the GDN Shared Site owner, using technology to undertake quantitative risk analysis and utilising the knowledge and experience of our people to monitor, manage and mitigate the risks.

102. The risk amounts included in our cost submission are benchmarked to those on other schemes and are allocated by the estimating tool using Monte Carlo analysis. This tool allows National Grid to add the actual market tested costs of schemes to its database and uses this updated information to forecast cost and risk values. The amount of risk allocated to the additional sites is in line with other schemes of a similar type.

103. Key risks identified from previous PSUP projects will still be a factor in the delivery of the Shared Sites and Site Extensions. Of these risks the most prominent, and costly, have historically been around coordination of the schemes with day to day operational commitments, unknown ground conditions, and scope changes.

104. In order to mitigate these risks National Grid has undertaken a number of actions as follows:

Operational Staff Engagement and Constraints

105. National Grid has engaged with its Operations staff to ensure:

- a fit for purpose solution; and
- that the necessary resources are available to assist in the delivery of the projects at the correct time;

Unknown ground conditions

106. Unknown ground conditions have been managed on the Phase II projects through early surveys and contractor site visits by our suppliers. This will be replicated for Shared Sites.

Recent surveys have been completed as part of other works being undertaken at the Site Extension sites and will be available to be shared with our delivery partners.

Scope Changes

107. Scope changes have been kept to a minimum throughout the current Phase II projects due to the inclusion of FEED within our supplier scope and early engagement of our delivery partners in the investment process. This has also realised a number of opportunities, which have led to efficiencies being shown across the programme (Chapter 2). Collaboration with the site owner for Shared Sites will be key in mitigating any potential scope changes and identifying opportunities to deliver an economic and efficient solution.

7.3 General Procedures for Mitigating Risk

108. Monthly project risk reviews are undertaken for all National Grid PSUP projects, with risk registers being updated accordingly and a quantitative risk analysis being run on each project. Any high impact or urgent risks are cascaded from a project level to the management level through monthly performance meetings, where both National Grid and the third party supplier management teams collaboratively work to mitigate risk.

109. Lessons learnt sessions are undertaken by National Grid and its third party suppliers at regular intervals within each project. This ensures that any experiences can be passed on to other projects and enables the mitigation of risks, or the realisation of potential opportunities, as soon as reasonably possible.

8 Stakeholder Engagement

8.1 Stakeholder Engagement

110. Key stakeholders for the PSUP are BEIS, CPNI and the GDNs.

111. We have maintained a working relationship with these stakeholders throughout the programme to date and throughout the individual PSUP project lifecycle on a number of topics including the scale of the programme (number of sites) and the scope of the physical security upgrade programme.

112. We have worked in collaboration with the GDNs to ensure our solutions meet the CPNI requirements and National Grid policies, and are compatible with the GDNs expectations.

113. Following a comprehensive review of GTO assets against the current threat, National Grid approached BEIS with a request to update the list of sites. A robust challenge and review process was conducted, with National Grid recommending changes to the list. National Grid, BEIS and CPNI agreed a practical approach to assess the need for each site to be added or removed.

114. National Grid have worked closely with CPNI to help guide the PSUP process and continue to innovate new cost effective security solutions with the help of CPNI.

115. Through engagement with BEIS, National Grid has recommended that an in-house Technical Audit team, operating within an agreed independent assurance model using appropriate information barriers, would complete Independent Technical Audits on behalf of BEIS. This has led to the role of the auditor being redefined as that of ensuring that the vulnerability of sites to the threat of terrorism has been sufficiently reduced. This innovative solution reduces the need for external contractors, which can add risk and cost to the program.

9 Conclusion

116. Under License condition 5E.1 National Grid is requesting £23.79m of totex funding for the delivery of PSUP solutions at sites that were not covered by the 2015 reopener submission.

117. The efficiency savings and the delivery model we have developed for Phase II sites have been applied to proposals developed for the Shared Sites and Site Extensions to ensure we deliver this next phase of the PSUP at an efficient cost level.

118. Within this submission the forecasts costs have been provided for the following PSUP activities:

- Delivery of PSUP solutions to a number of Shared Sites, and funding to cover a solution to a further shared site, the solution for which is being delivered by the GDN.
- Delivery of PSUP extensions at sites affected by site extension activities driven by the other programmes of works onsite.
- Design & development of PSUP solutions to a number of sites with an output of approval of site requirements in RIIO-T1.

119. Table 2, below, presents a summary of the reopener financial request.

Reopener financial request breakdown

120. Total forecast costs for Site Extension and Shared Sites solutions over the remainder of the RIIO-T1 period: £41.90m (09/10 prices), return of allowances from site withdrawals: £18.11m (09/10 prices).

Table 2 Summary of Funding Request

Submission Totex Costs (09/10 price base)	Actuals					Forecast			
	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	Total
Funding Request for Additional Sites	0	0	0	0	0.06	1.53	18.85	21.46	41.90
Allowances to be returned due to site removals									(18.11)
Total Funding Request									**23.79**

Appendices

Appendix I: Context for the PSUP and Programme to Date

Summary

121. A national programme, initiated by the Home Secretary, and now governed by BEIS was established to deliver physical security upgrade solutions to sites.

122. In 2015 a number of National Grid sites were identified by BEIS as requiring enhanced physical security solutions and were therefore included in the PSUP. On several of these sites an "operational solution" could be utilised, leaving a reduced number of sites requiring physical PSUP solutions.

123. Sites were split into phase I and phase II for delivery purposes.

124. PSUP solutions for Phase I sites were completed by 31st March 2018. A PSUP solution is deemed completed when all site construction activities have been completed and the solution is operational.

125. Of the Phase II sites, as of May 2018 all sites remaining in PSUP have been placed under contract with our third party suppliers with construction activities having commenced. Phase II sites are on track for completion in 2021. The remaining sites are included in the site withdrawals chapter of this submission.

126. In addition to the National Grid sites, a number of additional sites were identified by BEIS as requiring a PSUP solution. These sites are owned by a third party but contain National Grid assets (referred to as "Shared Sites" for the purposes of this submission).

The Needs Case and Evolution of the Site List and Scope

127. Following a series of attempted terrorist attacks on some of the UK's major energy infrastructure assets in the 1990s and early 2000s, the Government recognised the need to review and improve the physical security at key infrastructure locations.

128. A national programme, initiated by the Home Secretary, overseen by the CONTEST Board and led by the Department of Trade and Industry (as was), involving all the major utilities, was established to identify sites that require delivery of physical security enhancements. BEIS is now the government lead for this programme.

129. BEIS and their security advisors, CPNI, are the relevant parties for stakeholder engagement.

130. National Grid has worked with BEIS and CPNI to identify sites based on BEIS' pre-defined criteria. These criteria have been agreed at ministerial level. The asset and network data that informs the decision making has been provided by National Grid.

131. BEIS maintains and regularly reviews the list of sites

132. In addition to the review carried out by BEIS, National Grid regularly reviews the list of sites based on changing operational conditions and guidance from BEIS and CPNI. The process of this review is expanded on further in Chapter 2.

133. The site list was reviewed in 2005, 2009, 2010/11, 2014 and 2017. At each review, the net number of sites on the list has increased, however some sites have been removed as a consequence of these reviews.

134. The net result is that the programme to date has been characterised by continuous evolution of site scope and volumes.

135. These sites then become eligible for the Physical Security Upgrade Programme (PSUP) to increase their resilience to security threats.

136. BEIS sets the overall guidance for the scope of physical security enhancement works.

137. National Grid has worked closely with BEIS to develop and define the programme.

A Typical PSUP Security Solution.

138. CPNI guidance sets out the elements to consider when protecting assets

139. National Grid's PSUP includes a range of different operational site types, most of which have challenging process safety working environments.

140. There is also significant associated temporary infrastructure required for the duration of the project.

141. Technical Audits are carried out throughout the project stages, including during the 'Scoping and Design Development' stage to validate that the design meets the CPNI guidelines

The Operational Solution

142. In some cases investment in a physical upgrade can be avoided where an "Operational Solution" is viable. Where it has been confirmed that a site meets the criteria to be included in the PSUP we have given careful consideration to whether there is an operational alternative to a physical security upgrade.

143. In each case the Gas Network Control Centre (GNCC), the function of National Grid which manages within day operation of the NTS, assesses whether, in the event of an incident, alternative network pathways can be used.

The PSUP Project Lifecycle

144. National Grid's PSUP projects follow a standard sanction and controls process. Table 3 illustrates the key activities undertaken during a PSUP project lifecycle:

Table 3 Key activities during PSUP project lifecycle

Scoping and Design Development	Detailed Design and Construction	Closure
• Site Requirements • Site surveys • Environmental studies • Contract award process	• Detailed Design and planning • Mobilisation of subcontractors • Site set up activities • Construction • Commissioning	• Technical closure (e.g. snagging, defect resolution) • Final Drawings and asset register update. • Financial Closure • Ongoing assurance

145. After the site works have been completed, depending on site ownership and operational responsibilities, PSUP specific operational and maintenance activities may be required on an ongoing basis, with associated opex costs. These costs primarily relate to the monitoring, maintenance and repair of PSUP technology assets.

2015 PSUP Confirmation

146. Following the 2014 review, BEIS issued formal confirmation of the PSUP sites.

147. For a number of these sites operational solutions had been identified.

148. In addition to the National Grid sites, a number of additional sites were identified by BEIS as requiring a PSUP solution. These sites are owned by a third party but contain National Grid assets (referred to as "Shared Sites" for the purposes of this submission).

149. Of the gas transmission sites, a number were identified by BEIS prior to the site review in 2014. These formed Phase I of our programme of works. The remaining sites included by BEIS constituted our Phase II programme of works.

150. The operational, commercial and funding arrangements for physical security upgrades at the Shared Sites had yet to be finalised at the time of the May 2015 reopener so these were excluded from the submission. Subsequently, guidance was provided by Ofgem on delivery and funding responsibilities for these sites.

151. National Grid is responsible for funding and delivering PSUP solutions to a number of sites by 31st March 2021 and has a partial responsibility for funding a further site. Further details, including our funding request, are contained in Chapter 3.

May 2015 Submission and progress to date

What we requested in May 2015

152. In May 2015 National Grid made a reopener submission to recover costs incurred and forecast over the RIIO-T1 period as a result of the PSUP and in accordance with the Gas Transmission Licence July 2014 (v10.2), Special Condition 5E: Arrangements for the recovery of uncertain costs.

153. The submission outlined proposals for PSUP solutions to be delivered at a number of National Grid sites across the RIIO-T1 period. Totex funding totalled £187.6m (in 2009/10 prices) over the RIIO-T1 period of which £160m of allowances were agreed.

What has been delivered as part of RIIO-T1 to date

154. This section discusses the progress of work on the National Grid sites included within the May 2015 reopener. These PSUP sites are being delivered in two phases. Phase I includes all sites agreed with BEIS prior to the 2015 PSUP review and Phase II comprises all additional PSUP sites included in the 2015 reopener submission.

Phase I

155. By the end of the 2014/15 Financial Year PSUP solutions had been delivered at a number of sites, with work at other sites continuing in the construction phase. Implementation of PSUP solutions at all Phase I sites was completed as of 31st March 2018.

Phase II

156. We held a tender event in 2016 for the Phase II sites. This resulted in a contracting strategy whereby works were awarded in two lots.

157. Lot 1 sites were developed using Front End Engineering and Design (FEED) by our in house team. The remaining sites (Lot 2) were developed jointly between National Grid and their delivery partners. The scoping activities were jointly developed between ourselves and our suppliers and ensured ownership of the survey information and responsibilities for the design from an early stage.

158. In our Regulatory Reporting Pack (RRP) in 2016/17 we reported that our forecast costs for these sites had reduced from £102.05m to £82.65m (09/10 price base) due to a number of factors including the implementation of lean project management solutions, site requirements having been determined for each site, confirming scopes of works and the work being delivered in two lots, providing programme contracting savings. This reduction does not include reductions associated with the removal of sites from the PSUP since this submission. Details of these savings can be found in Chapter 4.

159. Subsequent to the agreement of the site list by BEIS in February 2015 National Grid identified that for a number of sites the rationale for inclusion in the PSUP was no longer valid. We identified sites where clarification on the drivers was required. Following discussion with BEIS it has been confirmed that no physical security enhancements are

required at these sites. Further information is provided in Chapter 2 of this reopener submission.

160. There are occasions when National Grid sites are extended, for example to accommodate additional assets. If this happens at a site where a PSUP solution has already been deployed there will be costs associated with modifying and extending the PSUP solution. At the time of the May 2015 reopener we were aware of a number of sites where this would happen over the RIIO-T1 period. The funding request for these extensions was not included in the 2015 reopener as the PSUP solution and hence costs were not sufficiently developed at the time of preparing this submission.

Appendix VIII: Regulatory Position

This appendix describes how the PSUP costs incurred or forecast during the RIIO period are outside of the RIIO allowances, demonstrates that the submission meets the conditions for the recovery of the PSUP costs, and provides the relevant adjustments in respect of the Enhanced Physical Site Security Costs.

RIIO-T1 Allowances

The RIIO-T1 settlements provided a framework for dealing with the PSUP costs in the RIIO period and make it clear that the PSUP costs are outside of the agreed allowances, as summarised below:

Enhanced Physical Site Security Costs (i.e. PSUP costs) "means costs incurred, or expected to be incurred, by the licencee for the purposes of implementing any formal recommendation of the Secretary of State to enhance the physical security of any of the sites used in connection with the pipeline system to which this licence relates."

The PSUP costs do not form part of the capex or opex ex-ante baseline allowances (see RIIO-T1 Final Proposals: Cost assessment and Uncertainty Supporting Document P.62-64 P.106-108 for National Grid opex).

Instead, all PSUP costs are the subject of an uncertainty mechanism, which provides National Grid the opportunity to recover additional costs through a reopener (see Final Proposals: Cost assessment and uncertainty Supporting Document P.14-18).

Recovery of PSUP Costs

The specific requirements of the relevant licences are shown in the tables below along with commentary on how the requirements have been met.

The special conditions for the recovery of PSUP costs are set out in the relevant licences:

- *National Grid:* Special Condition 5E.6

The wording for the conditions is shown in the table below along with commentary on how the requirements have been met.

The proposed change to Allowed Expenditure:	**Comment**
(a) is based on information about actual or forecast levels of efficient expenditure requirements for an uncertain cost category that was not available when the licencees Opening Base Revenue Allowance was derived;	The costs presented in this document represent actual and forecast costs that relate to the PSUP programme. Information about the scope of the programme was not available at the time of the RIIO-T1 final proposals and hence was not used in the setting of the Opening Base Revenue Allowances.
(b) takes account of any relevant adjustments previously determined under this condition;	No previous adjustments have been made under these conditions.

(c) in aggregate constitutes a material amount within the meaning of paragraph 5E.7 of this condition	The table in the Executive Summary, Section 1, and below demonstrates that the materiality thresholds have been met.
(d) relates to costs incurred or expected to be incurred after 1 April 2013;	All costs contained within this proposal have been incurred or are expected to be incurred after 1 April 2013.
(e) constitutes an adjustment to Allowed Expenditure which cannot be made under the provisions of any other Special Condition of this licence.	All the costs contained within this proposal relate to Enhanced Physical Site Security Costs and adjustments cannot be made under the provisions of any other Special Conditions.

Submission Totex Costs (09/10 price base)	Actuals					Forecast			
	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	Total
Additional funding request					0.06	1.53	18.85	21.46	41.90
Allowances to be returned due to site removals									(18.11)
Total Funding Request									**23.79**

Appendix IX: Glossary

This glossary contains abbreviations and terms used throughout the document.

Terms, abbreviations and acronyms	Meaning
BEIS	Department for Business Energy and Industrial Strategy
CONTEST	CONTEST is the name of the United Kingdom counter-terrorism strategy. The aim of CONTEST is to reduce the risk to the UK from terrorism
CPNI	Centre for the Protection of National Infrastructure
ETO	Electricity Transmission Operator
GDN	Gas Distribution Network
GNCC	Gas Network Control Centre
GTO	Gas Transmission Operator
NTS	National Transmission System; the high pressure gas network which transports gas from the entry terminals to users (e.g. Gas Distribution Networks, Power stations)
PSUP	Physical Security Upgrade Programme
Operational Solution	A solution which avoids the need for a physical build e.g. Where alternative network pathways can be used in the event of a failure or incident at a given site, which obviates the need for any physical security upgrade at the site
PDSA	Post Delivery Service Agreements
RRP	Regulatory Reporting Pack. The annual report to Ofgem each July detailing spend, outputs, and allowances. PSUP capex costs are shown in table 4.8 and Opex in 3.15