

Decision

RIIO-ED1 Reopener Decision – High Value Projects

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Context

The RIIO-ED1 price control sets the outputs that the electricity distribution network companies need to deliver for consumers and the associated revenues that they are allowed to collect for the eight-year period from 1 April 2015 until 31 March 2023.

For cost categories in respect of which there was a significant degree of uncertainty about expenditure requirements at the time of setting allowances, the price controls include a “reopener” mechanism. The mechanism allows network companies to propose adjustments to baseline expenditure allowances for these costs when there is more certainty. The reopener mechanism specifies a window in May 2019, during which adjustments to allowances may be proposed.

We have received reopener submissions in the following cost categories:

- High Value Project Costs
- Rail Electrification Costs
- Enhanced Physical Site Security Costs
- Specified Street Works Costs

This document sets out our decision on applications received under the “High Value Projects Costs” category of uncertain costs.

Associated documents

[Informal consultation on RIIO-ED1 price control reopeners \(May 2019\)](#)

[Consultation on RIIO-ED1 price control reopeners \(August 2019\)](#)

[RIIO-ED1 Price Control Financial Handbooks \(fast-track and slow-track licensees\)](#)

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1. Executive Summary

- 1.1 In the May 2019 reopener application window, we received four submissions from Distribution Network Operators (DNOs) requesting an adjustment to their expenditure allowances in relation to High Value Project Costs. We received three submissions from Scottish Power Energy Networks (SPEN): one submission was on behalf of its Scottish Power Distribution (SPD) licensee, another was on behalf of its Scottish Power Manweb (SPMW) licensee and the final submission was on behalf of both its SPD and SPMW licensees. We also received a submission from Scottish and Southern Electricity Networks (SSEN) on behalf of its Scottish Hydro Electric Power Distribution (SHEPD) licensee.
- 1.2 On 2 August 2019, we published a consultation document setting out our initial views on the submissions received in the May 2019 window and sought views from stakeholders on these minded to positions. We received five responses to this consultation.¹ We have reviewed the consultation responses we received and taken these into account in our final decision.

Summary of decisions

- 1.3 A brief summary of our decisions is set out below:

SPEN (SPD): Accelerated Electric Vehicle (EV) Investment

- 1.3.1 SPEN requested an additional £42m (2012-13 prices)² in funding for its SPD licence area to accommodate the accelerated uptake of EVs. We have decided to reject this proposal.

SPEN (SPMW): High Speed 2

- 1.3.2 SPEN requested an additional £35.13m in funding for its SPMW licence area to invest in capacity required on the network to meet increased energy demand as a result of High Speed 2 (HS2). We have decided to reject this proposal.

¹ Respondents were Centrica, Citizens Advice, ENWL, SPEN and SSEN.

² Unless otherwise stated, all prices are in 2012-13 prices.

SPEN (SPD and SPMW): 33kV Cable Systems

- 1.3.3 SPEN requested an additional £70.07m in funding across its SPD and SPMW licence areas to remove and replace approximately 3,192 33kV trifurcating cable joints installed between 2002 and 2011. We have decided to reject this proposal.

SSEN (SHEPD): Pentland Firth East Subsea Cable Replacement

- 1.3.4 SSEN requested an additional £30m in funding for its SHEPD licence area to replace the Pentland Firth East (PFE) cable. We have decided to reject this proposal.
- 1.4 This document summarises the responses we received in the consultation, sets out our updated view of the submissions and our final decision.

2. SPEN (SPD) Accelerated Electric Vehicle Investment

Background

2.1 We received a submission from SPEN requesting an increase of £42m to its allowed expenditure for its SPD licence area for the remainder of the RIIO-ED1 period. SPEN gave Notice of its proposal during the reopener window, which ran from 1 May to 31 May 2019.

2.2 In its submission, SPEN states³ that:

- “there has been a material change in circumstances since the SPD RIIO-ED1 submission was prepared pre-2015 due to the accelerated uptake (actual and predicted) of EVs and the associated necessity for charging infrastructure.”
- In July 2017, the UK Government confirmed a plan to block the sale of new petrol and diesel vehicles nationally by 2040⁴ and, in September 2017, the Scottish Government announced a commitment to removing the need for petrol and diesel vehicles by 2032.⁵ SPEN states that “EV uptake will impact Scotland first and that this must be managed.”
- “to accommodate this increase, significant reinforcement of distribution networks at all voltage levels will be required” and “if significant changes in electrical network infrastructure and management are not made, networks cannot facilitate this demand.”
- “wide-scale anticipatory network investment in the low voltage (LV) and high voltage (HV) system is required to enable a smooth EV transition and minimise economic disruption.”
- “by delaying investment until thermal, voltage or fault level limits are breached (thereby justifying load related expenditure) the magnitude and rate of required investment would be so large and sudden that delivery would be significantly hindered. This would create inevitable price shocks, cause long

³ SPD Accelerated EV Investment HVP reopener application, p.2. SPEN’s HVP submissions are available in the zip file [here](#).

⁴ [UK plan for tackling roadside nitrogen dioxide concentrations](#), paragraph 60.

⁵ [A nation with ambition the government’s programme for Scotland 2017-18](#), page 10.

delays through insufficient market capacity and drive inefficient business practices; inhibiting EV uptake and disadvantaging all customers.”

- That the expenditure set out in the submission is not additional expenditure, but accelerated investments that would otherwise have been required in RIIO-ED2 as part of a managed network investment profile had EV uptake forecasts remained stable.

2.3 The £42m requested by SPEN comprises funding for the following activities:

- The deployment of wide-scale monitoring of the LV network to test network constraints and enable smart charging⁶,
- The reinforcement of areas of the network where it is predicted that smart options are not capable or cost efficient solutions to accommodate EV uptake by the end of RIIO-ED2; and
- Associated labour costs.⁷

2.4 In our consultation, we set out our minded-to position, which was that the proposed adjustment be rejected.⁸ The reasons for our minded-to position were that we did not believe:

- a) SPEN’s proposal is a proposal for a relevant adjustment because it does not relate to a single scheme of works
- b) The submission complies with all of the requirements of CRC 3F, in particular 3F.8(f)
- c) The proposal by the licensee represents an efficient level of expenditure
- d) A need for the activity to be carried out has been established
- e) The submission proposes appropriate measurable outputs for the proposed activity.

⁶ ‘Smart Charging’ refers to the flexible use of the energy system to allow more electric vehicles to be charged from the existing grid and reduce the need for expensive new power stations and extra grid capacity to be built. This is facilitated by allowing electric vehicles to be charged when it is cheapest for the energy system.

⁷ Submission Paragraph 1 and Table 20.

⁸ [RIIO-ED1 Reopener Consultation – High Value Projects](#), Paragraph 3.49

Consultation responses

- 2.5 We received five responses to our consultation published on 2 August 2019. These were from SPEN, SSEN, ENWL, Centrica and Citizens Advice.
- 2.6 In its response, SPEN said that it did not agree with the minded-to position set out in our consultation and put forward reasons as to why it believes that Ofgem should change its position and approve the proposal. These are covered in more detail in the 'Our updated view' section below.
- 2.7 Centrica said it agreed with the position set out by Ofgem in the consultation. Centrica said that "the proposed adjustment does not relate to a scheme of works, is not compliant with licence requirements and has not been demonstrated to be efficient."⁹
- 2.8 SSEN said that it agreed with Ofgem's minded-to position set out in the consultation. In particular, SSEN said that it "agrees with Ofgem's assessment that the submission does not align with the criteria set out in Licence for a High Value Project" and that "it is not clear from the information provided that costs relate to a specific project or number of projects."¹⁰ Additionally, SSEN said that it "agrees with SPEN that there has been a 'material change in circumstances' in relation to the accelerated uptake of EVs." However, it said that it did not believe that the need for anticipatory investment, "is sufficiently well understood at this stage."¹¹
- 2.9 Both Citizens Advice and ENWL said that they agreed with the minded-to position set out in the consultation.¹² Citizens Advice said that it would expect to see substantial additional information and persuasive cases put forward for Ofgem to change from its minded to position set out in the consultation.

Our updated view

- 2.10 As described above, in the consultation document, we set out five reasons why we thought that the proposed adjustment should be rejected. In response, SPEN provided representations in respect of each of the five reasons. We discuss each reason including SPEN's representations and, where relevant, third party responses below.

⁹ Centrica response, Appendix 1

¹⁰ SSEN response, pages 1-2

¹¹ Ibid

¹² Citizens Advice response page 1 and ENWL response page 1

- 2.11 The **first reason** was that we did not believe SPEN's proposal is a proposal for a relevant adjustment because it does not relate to a single scheme of works.¹³ We set out our view that the activity and costs proposed in SPEN's submission do not constitute a single scheme of works. We said that SPEN's submission does not identify any specific reinforcement or monitoring schemes that it intends to implement and that, to the extent SPEN may identify where it intends to make the monitoring and reinforcement investment, this is likely to consist of several separate projects on the SPD network.
- 2.12 In response, SPEN said that "The principle that combined projects across multiple network locations constitute a scheme of works was clearly established in DPCR5", citing the example of the BT 21st Century Network (BT21CN) project.¹⁴ SPEN said that "this portfolio of individual projects was accepted as a single scheme of works meeting the HVP criteria."¹⁵
- 2.13 In our view, the SPEN proposal differs from the BT21CN HVP example cited by SPEN in a number of ways. In reaching this decision on the SPEN proposal we are required to assess the proposal against the current framework. We note that, even though expenditure to deal with BT21CN was labelled as a HVP in the DPCR5 Final Proposals,¹⁶ this does not mean that the SPEN proposal is a HVP within the meaning of that term in the current framework.
- 2.14 The Price Control Financial Handbook¹⁷ states "the term High Value Project Costs means a scheme of works and the associated costs incurred, or expected to be incurred, by the licensee on any investment project with respect to its Distribution System that is reasonably forecast to cost the licensee £25million or more..." (emphasis added). This means that, in order for the proposed costs to be High Value Project Costs, they must relate to a scheme of works and the associated costs incurred. Conversely, at the time of DPCR5, Ofgem was not faced with the question of whether or not the expenditure to deal with BT21CN was for a 'scheme of works'. For

¹³ See paragraphs 3.14 and 3.15 of the consultation document

¹⁴ BT21CN refers to the roll-out of BT's next generation communications network which replaces Public Switched Telephone Network with a Digital Internet Protocol. Whilst effectively changing the communications protocol used on the existing network assets, it also accelerates the replacement of copper communications circuits with non-metallic optical fibre.

¹⁵ SPEN HVP consultation response, Appendix 1a, part a)

¹⁶ See [Electricity Distribution Price Control Review Final Proposals - Allowed revenue - Cost assessment](#), 7 December 2009. At paragraph 3.65 we refer to "expenditure to deal with BT21CN" as a HVP.

¹⁷ [ED1 Price Control Financial Handbook \(slowtrack licensees\)](#) Version 3, 22 August 2017, Paragraph 7.20

this reason, Ofgem does not consider that the labelling of expenditure to deal with BT21CN as a HVP in DPCR5 is relevant to the current decision.

2.15 As no other relevant information came to light in the course of the consultation, our view remains that the SPEN's proposal is not a proposal for a relevant adjustment because it does not relate to a single scheme of works.

2.16 The **second reason** was that we did not believe the submission complies with all of the requirements of CRC 3F.¹⁸ We said that, as the proposed reinforcement expenditure can be considered under the load related reopener mechanism (LRR) and as the remaining expenditure (ie any expenditure which may not be covered by the LRR, which may include the proposed expenditure on the deployment of monitoring equipment) does not exceed the £25m threshold for a High Value Project Cost, the proposal does not comply with condition 3F.8 and in particular 3F.8(f).¹⁹

2.17 In response, SPEN said that:

“If this HV reopener proposal is rejected, our current position is not to progress the proposal under the load related expenditure reopener mechanism. There are several reasons for this:

(i) The load related upward reopener mechanism would only provide funding for a proportion of investment incurred by SPEN.

(ii) This anticipatory investment is over and above the current ED1 price control settlement and exactly the type of investment the HVP mechanism was designed to accommodate.

(iii) Ofgem have not accepted the justification for anticipatory investment as part of this proposal indicating it would not be accepted under the load related expenditure reopener mechanism.

(iv) Under the definition of ‘Load Related Expenditure (LRE) Costs’ given in the Licence (CRC 1B.7) - “[LRE] does not include High Value Project Costs”. As such, where a scheme of works is load related in nature but meets the definition of HVP Costs (>£25m), it cannot be considered as Load Related

¹⁸ See paragraphs 3.16 to 3.27 of the consultation document

¹⁹ Licence condition CRC 3F.8(f) states that the proposed change to the level of allowed expenditure should constitute “an adjustment to allowed expenditure that (excluding any Time Value of Money Adjustment) cannot be made under the provisions of any other condition of this licence.”

Expenditure. SPEN consider the only available mechanism for a scheme of work of this size is the HVP reopener.”²⁰

- 2.18 In the following paragraphs, we address each of these four points in turn.
- 2.19 In relation to point (i), in Ofgem’s view, it is likely that LRR could only provide funding for certain aspects of the proposal (subject to the requirements of the LRR being met). The remaining expenditure would not constitute a relevant adjustment for the same reasons given in paragraphs 2.10 to 2.15 and also because it would not meet the relevant HVP expenditure threshold. However, this does not change our view that the LRR is the appropriate mechanism under which the additional funding requested should be considered. Where there is an uncertainty mechanism specifically designed for a particular type of cost, the thresholds and tests within that mechanism should determine whether the additional funding requested should be allowed.
- 2.20 In relation to point (ii), the fact that the proposal related to “anticipatory investment” was not one of the reasons for our minded to decision to reject the proposal. Furthermore, our decision in this case should not be interpreted as meaning that Ofgem is unsupportive of highly anticipatory investment. For example, in the RIIO-2 Sector Specific Methodology Decision, we note that highly anticipatory investments have the potential to deliver significant value to consumers.²¹ Furthermore, as set out in our August letter to Network Companies and System Operators,²² Ofgem has acknowledged that network companies will need to consider a range of plausible pathways in order to achieve the UK and Scottish Governments’ targets of net zero greenhouse gases by 2050 and 2045, respectively. In that letter we note that the type of long term planning that will need to take place will involve significant levels of uncertainty. Ofgem’s decision in this case is based on the relevant decision frameworks set out in the licence and the RIIO-ED1 Price Control Financial Handbook and the information provided in the proposal.
- 2.21 In relation to point (iii), Ofgem’s decision in respect of this reopener is based on the application of the decision framework for the HVP reopener to the specifics of this proposal. Although we have identified several reasons why we believe the additional funding requested should not be allowed in this particular case, we would consider each reopener application (including the LRR) on its merits. As such, our rejection of this application does not mean necessarily that an application made at a later stage

²⁰ SPEN HVP consultation response, Appendix 1a, part b)

²¹ [RIIO-2 Sector Specific Methodology – Core document](#), 24 May 2019, paragraph 9.56

²² [RIIO-2 response to Committee on Climate Change’s Net Zero Report](#), 8 August 2019

under a different price control mechanism would also be rejected. However, we are likely to take a similar position in relation to the level of evidence necessary to show that the needs case is made out and to justify an investment proposal as economic and efficient.

- 2.22 In relation to point (iv), we do not agree with SPEN's interpretation of the relevant licence condition. We reiterate our position as set out in the consultation:²³ within RIIO-ED1, there is a mechanism that was put in place for the specific purpose of funding additional load-related expenditure incurred by a DNO within the period - whether necessitated by the uptake of EVs or other sources of demand. This is the LRR, which is set out in Special licence condition CRC 3G.²⁴
- 2.23 Our view remains that the submission does not comply with all of the requirements of CRC 3F, in particular 3F.8(f).
- 2.24 The **third reason** we were minded to reject SPEN's proposal was that we did not believe that the proposal by the licensee represents an efficient level of expenditure.²⁵ We said that justification for the investment of the type and scale proposed by SPEN should be based on quantitative evidence demonstrating that the investment programme represents a better approach than other potential approaches and that, given the level of uncertainty surrounding the pace and nature of the uptake of EVs, it is especially important to ensure that investment is only made following a thorough analysis of the available options. We said that the absence of such analysis represented a significant omission from the proposal and that, without it, the submission did not provide sufficient evidence to demonstrate that the proposed costs represented an efficient level of expenditure.
- 2.25 In response, SPEN restated that "the investment proposed is an acceleration of LV reinforcement schemes and enhanced monitoring to accommodate EV technology. The proposal includes efficient unit costs and volumes for each activity which compare favourably against industry costs"²⁶ but did not provide any new evidence in support of its position. In particular, SPEN has not addressed the points raised in the consultation regarding the lack of quantitative analysis and thorough options appraisal.

²³ See consultation paragraphs 3.18-3.20

²⁴ Charge Restriction Condition 3G: Revising the allowed level of Load Related Expenditure.

²⁵ See paragraphs 3.28-3.37 of the consultation document

²⁶ SPEN HVP consultation response, Appendix 1a, part c)

- 2.26 Therefore, our view remains that SPEN has not demonstrated that its proposal represents an efficient level of expenditure.
- 2.27 The **fourth reason** was that we did not believe a need for the activity to be carried out has been established.²⁷ We said that, without the type of analysis referred to in paragraph 2.24, the proposal fails to establish that there is a need for the proposed expenditure to be incurred. For example, because there is no quantification of the costs and benefits expected under the proposed approach and a 'do minimum' approach. We said that, as the submission does not specify where the proposed reinforcement activity is to take place or which particular investment projects it intends to go ahead with, this indicates that SPEN's plans are not sufficiently well developed to establish the need for the proposed expenditure. Additionally, we said, although SPEN's submission states that the proposed expenditure represents "accelerated investments that would otherwise have been required in ED2", we cannot know that this is the case, as the process for setting the RIIO-ED2 price control has not yet begun. We have not had sight of SPEN's investment plans for RIIO-ED2 and have therefore not yet formed a view on the costs, volumes and outputs that will be appropriate for the RIIO-ED2 period.
- 2.28 In response, SPEN made a number of general observations supporting the need for anticipatory investment in the electricity networks²⁸ but did not seek to directly address the concerns that were raised by Ofgem in the consultation.
- 2.29 Therefore, our view remains that a need for the activity to be carried out has not been established.
- 2.30 The **fifth reason** was that we did not believe the submission proposes appropriate measurable outputs for the proposed activity.²⁹ SPEN proposes that delivery of the proposed activity be tracked volumetrically and that RIIO-ED1 closeout will be supported by a Performance Assessment Report with detailed analysis papers for each investment scheme demonstrating customer value. In the consultation, we said that, although the proposed investment is ostensibly linked to the uptake of EVs, the outputs proposed in SPEN's submission are not specifically linked to the uptake of EVs. Therefore, we said that it was possible that the outputs proposed by SPEN could be successfully met (ie the proposed volumes of activity are delivered) without actually facilitating EV uptake. This could happen because the demand from EVs does not arise

²⁷ See paragraphs 3.38-3.42 of the consultation document

²⁸ SPEN HVP consultation response, Appendix 1a, part d)

²⁹ See paragraphs 3.43-3.48 of the consultation document

as forecast, or because EV demand arises in locations other than where the reinforcement activity takes place, or alternatively because other sources of demand consume the additional capacity created as a result of investment.

- 2.31 In response, SPEN reiterated a number of points contained in its submission but did not provide any new evidence in support of its position.³⁰
- 2.32 Therefore, our view remains that the submission does not propose appropriate measurable outputs for the proposed activity.

Our decision: Reject

- 2.33 Following our assessment of SPEN’s application for additional allowances under the HVP Costs reopener, we have decided to maintain our minded-to position and reject the proposal. This is because Ofgem does not believe:
- a) SPEN’s proposal is a proposal for a relevant adjustment because it does not relate to a single scheme of works
 - b) The submission complies with all of the requirements of CRC 3F, in particular 3F.8(f)
 - c) The proposal by the licensee represents an efficient level of expenditure
 - d) A need for the activity to be carried out has been established
 - e) The submission proposes appropriate measurable outputs for the proposed activity.

³⁰ SPEN HVP consultation response, Appendix 1a, part e)

3. SPEN (SPMW) High Speed 2

Background

- 3.1 We received a submission from SPEN requesting an increase of £35.13m to allowed expenditure for its SP Manweb (SPMW) licence area for the remainder of the RIIO-ED1 period. SPEN gave Notice of its proposal during the reopener window, which ran from 1 May to 31 May 2019.
- 3.2 SPEN's submission relates to reinforcement work on SPMW's network in order to accommodate increased demand associated with High Speed 2 (HS2). In its submission, SPEN states that the increase in demand is attributable to (i) the construction works that will be needed to deliver the project and the enduring load of the project and (ii) the anticipated impact of HS2 on economic growth, stating that "HS2's vision is to be a 'catalyst for growth across Britain'".³¹ Together, the two parts are represented by fifteen individual reinforcement projects across the SPMW licence area.
- 3.3 In its submission SPEN states that:
- "The HS2 project will increase electrical demand within the SPMW licence area. This demand increase consists of the demand associated with HS2 (the construction works to deliver the project and the enduring load of the project) and the regional economic growth directly resulting from improved transport links created by the project. SPMW will need to create additional network capacity to accommodate this demand."³²
 - "The High Speed Two (HS2) rail project will be one of the largest infrastructure projects to ever be undertaken in the UK. When completed, HS2 will provide the new backbone of the national rail network - directly connecting London, Birmingham, the East Midlands, Leeds and Manchester via a dedicated new-build high speed rail route. HS2 will be delivered in multiple stages, two of these stages impact the SPMW licence area: HS2 Phase 2a and HS2 phase 2b".³³

³¹ SPEN reopener application

³² Ibid

³³ Ibid

- “The needs case is determined by the magnitude and location of the new demand. This new demand is the sum of HS2 demand and economic growth demand. Given this, the fixed HS2 demand projection was added in turn to the low and high economic demand projections to form low and high demand scenarios. These low and high scenarios represent the range of total demand growth that the distribution network would need to accommodate as a consequence of the HS2 rail project. The low demand scenario was used to develop this HVP”. SPEN states that: “this ensures the HVP reopener represents a conservative position and removes the risk of unnecessary network investment.”³⁴

3.4 In the consultation, we set out our minded-to position which was to reject the proposed adjustment.³⁵ We said that the reasons for our minded-to position were that we did not believe:

- a. SPEN’s proposal constitutes a proposal for a relevant adjustment in respect of High Value Project Costs, as defined, because it does not relate to a scheme of works
- b. The submission complies with all of the requirements of CRC 3F, in particular 3F.8(f)
- c. The proposal by the licensee represents an efficient level of expenditure
- d. A need for the activity to be carried out has been established.

Consultation responses

3.5 We received five responses to our consultation published on 2 August 2019. These were from SPEN, SSEN, ENWL, Centrica and Citizens Advice.

3.6 SPEN said that it did not agree with the minded-to position set out in the consultation and put forward reasons as to why it believes that Ofgem should change its position. These are covered in more detail in the ‘Our updated view’ section below.

3.7 Centrica said it agreed with the position set out by Ofgem in the consultation. Centrica said that “the proposed adjustment does not relate to a scheme of works, is not compliant with licence requirements and has not been demonstrated to be efficient.”³⁶

³⁴ Ibid

³⁵ [RIIO-ED1 Reopener Consultation – High Value Projects](#), paragraph 4.36

³⁶ Centrica response, Appendix 1

- 3.8 SSEN said that it agreed with Ofgem’s minded-to position set out in the consultation. In particular, they explained that their “experience of the HS2 project in the SEPD Distribution Services Area has been that all the work we have been required to undertake has been funded by the project and there has been no additional requirement for wider customer funding.”³⁷ Additionally, they added that their “assessment of proposals presented by SPMW indicate the need for investment following wider growth in demand, caused by increased economic prosperity as a result of HS2 is not sufficient[ly] certain and has not been sufficiently justified.”³⁸
- 3.9 Both Citizens Advice and ENWL said that they agreed with the minded-to position set out in our consultation.³⁹

Our updated view

- 3.10 As described above, in our consultation we set out five reasons why we thought that the request for a proposed adjustment should be rejected. In response, SPEN provided representations in respect of each of the five reasons. We discuss each reason including SPEN’s representations and, where relevant, third party responses, below.
- 3.11 The **first reason** was that we do not believe SPEN's proposal is a proposal for a relevant adjustment because it does not relate to a single scheme of works.⁴⁰ We set out our view that the activity and costs proposed in SPEN’s submission do not constitute a single scheme of works. We said that SPEN’s submission likely constitutes General Reinforcement work,⁴¹ and that there a multitude of drivers behind each of the proposed reinforcement projects, of which HS2 may be one.
- 3.12 In response, SPEN said that the principle that combined projects across multiple network locations constitute a scheme of works was established in DPCR5, citing the example of the BT 21st Century Network (BT21CN) project.⁴² SPEN said that this portfolio of individual projects was accepted as a single scheme of works meeting the HVP criteria.

³⁷ SSEN response, page 2

³⁸ Ibid

³⁹ Citizens Advice response page 1 and ENWL response page 1

⁴⁰ See paragraphs 3.14 and 3.15 of the consultation document

⁴¹ The RIGs Annex A Glossary defines General Reinforcement as “Work carried out on the network to enable new load growth (both demand and generation) which is not attributable to specific customers.”

⁴² BT21CN refers to the roll-out of BT’s next generation communications network which replaces Public Switched Telephone Network with a Digital Internet Protocol. Whilst effectively changing the communications protocol used on the existing network assets, it also accelerates the replacement of copper communications circuits with non-metallic optical fibre.

- 3.13 This is the same argument SPEN raised in their EV Investment HVP consultation response, and our position on this point is given above in paragraphs 2.12–2.14.
- 3.14 We believe that the SPEN HS2 proposal differs from the BT21CN HVP in a number of ways. BT21CN was ordered by a single entity (BT) and the works were for the sole benefit of that single entity (BT). By comparison, and as we set out in our minded-to position, SPEN’s proposed reinforcement works that relate to economic growth are, at best, only partially attributable to HS2 and are not requested by any particular customer (ie general reinforcement). They are instead expected to be utilised by any number of customers as a result of regional economic growth.
- 3.15 We note that in their SQ response SPEN themselves state that the economic growth forecasts are a result of the development strategies that regional authorities enacted, that are in part due to the opportunities created by HS2. This supports our view, as set out in the consultation, that HS2 is just one of many drivers and so the overall proposed works do not constitute a single scheme, but rather an amalgamation of various schemes.
- 3.16 In their SQ response, SPEN also acknowledge that there is increased uncertainty over whether HS2 will proceed. SPEN propose that we accept their funding request conditionally, such that any unspent/unused funding is returned. Ofgem are not convinced that this proposed action would be in agreement with the overarching principle of uncertainty mechanisms. As set out in our Strategy Decision for the RIIO-ED1 price control, “We expect network companies to manage the uncertainty they face. The regulatory regime should not protect network companies against all forms of uncertainty. The use of uncertainty mechanisms should be limited to instances in which they will deliver value for money for existing and future consumers while also protecting the ability of networks to finance efficient delivery.”⁴³
- 3.17 The **second reason** was that we did not believe the submission complies with all of the requirements of CRC 3F. We set out our view that the activity and costs proposed in SPEN’s submission qualify for consideration under the LRR mechanism and therefore cannot be considered a HVP.⁴⁴

⁴³ [Strategy Decision for the RIIO-ED1 electricity distribution price control](#): Uncertainty mechanisms, paragraph 2.8

⁴⁴ Alternatively, SPEN ask that if the “level of uncertainty prevents Ofgem from awarding conditional funding” we recognise the potential risk to SPMW and agree to revisit any incurred efficient costs at the end of the ED1 price control. As Ofgem remain of the opinion that the proposed works constitute LRE that falls under the LRR mechanism, for which there is the option to trigger at the end of the price control, we believe this ask has already been met.

- 3.18 SPEN mention that the LRR mechanism does not include HVP costs, but fail to acknowledge that the HVP definition also precludes the inclusion of reinforcement that qualifies under LRR. As the general reinforcement work does not meet the qualifying criteria for HVP (not a single scheme of works) and does constitute the precise type of reinforcement work that the LRR was expanded to include in RIIO-ED1, we remain convinced that SPEN’s proposed regional economic growth-related works can only be considered under the LRR mechanism.
- 3.19 While the Hybrid Bills setting out the terms of Phase 2a and 2b have not yet been passed by Parliament, HS2 Ltd have informed us that there are already agreements in place with utilities, including SPEN, whereby any works will be reimbursed by HS2. HS2 Ltd also believe that the Phase 2a and 2b Hybrid Bills will be similar to Phase 1, whereby all third parties will have reasonable costs reimbursed. Ofgem believe these existing and planned agreements cover the HS2 construction element of the proposal and therefore we are unconvinced that SPEN will be incurring these costs.
- 3.20 Additionally, we do not believe that the HS2 construction element of the proposal relates to High Value Project Costs, as defined, as the £7.84m value of the element is below the HVP threshold of £25m.
- 3.21 The **third reason** was that we did not believe that the proposal by the licensee represents an efficient level of expenditure.
- 3.22 SPEN do not respond to some of the key points made under this heading. One point made by us, and by Citizens Advice in their response to the informal consultation, was that by accepting SPEN’s proposal and the associated costs now, we would be locking in solutions that may not be economic and efficient at the time of delivery (potentially decades away). SPEN do not address this point in their consultation response.
- 3.23 SPEN requested funding for new network assets and stated that flexibility solutions in place of new network assets cannot be utilised where there isn’t additional network capacity available. SPEN subsequently confirmed that they did intend to review the market for flexibility solutions closer to the time of delivery for nine of the fifteen individual reinforcement schemes, but this did not change their overall funding requested.
- 3.24 Ofgem do not consider that SPEN’s response allays concerns that more efficient and economic solutions than those proposed in their submission may be available, and which have not been sufficiently explored by SPEN in its application and subsequent provision of information.

- 3.25 Our view remains that SPEN has not demonstrated that the potential efficiencies delivered as a result of SPEN’s proposed holistic investment would be outweighed by the risks of locking in traditional network solutions now. This would involve funding reinforcement projects, in many cases, many years ahead of need.
- 3.26 The **fourth reason** was that we did not believe that the needs case for the activity had been established.
- 3.27 As addressed previously in this section, the only points SPEN make here are that they know there is increased uncertainty around HS2 and that we should either award them conditional funding or a closeout mechanism. Additionally, SPEN reiterate that their holistic plan would be £34.85m less expensive than carrying out the construction and regional economic growth elements separately. SPEN are of the opinion that the work can be planned and carried out holistically without the funding needing to be up front decades ahead of need.

Our decision: Reject

- 3.28 Following our assessment of SPEN’s application for additional allowances under the HVP Costs reopener, we have decided to maintain our minded-to position and reject the regional economic growth-related element of the proposal. This is because Ofgem does not believe that:
- a) This is a proposal for a relevant adjustment in respect of High Value Project Costs, as defined, because it does not relate to a scheme of works
 - b) The submission complies with all of the requirements of CRC 3F, in particular 3F.8(f)
 - c) The proposal by the licensee represents an efficient level of expenditure
 - d) A need for the activity to be carried out has been established.
- 3.29 Following our assessment of SPEN’s application for additional allowances under the HVP Costs reopener, we have decided to maintain our minded-to position and reject the HS2 construction-related element of the proposal. This is because Ofgem does not believe that:
- a) This is a proposal for a relevant adjustment in respect of High Value Project Costs, as defined, because the value is below £25m
 - b) The submission complies with all of the requirements of CRC 3F, in particular 3F.8(d).

4. SPEN (SPD and SPMW) 33kV Cable Systems

Background

- 4.1 We received a submission from SPEN requesting an increase of £70.07m to allowed expenditure for its SPD and SPMW licence areas for the remainder of the RIIO-ED1 period. SPEN gave Notice of its proposal during the reopener window, which ran from 1 May to 31 May 2019.
- 4.2 SPEN's submission relates to the removal and replacement of approximately 3,192 33kV trifurcating cable joints installed on the SPD and the SPMW licence areas between 2002 and 2011. SPEN is requesting £70.07m in funding for activities associated with the removal and replacement of these joints. The £70.07m requested equates to £38m for the SPD licence area and £32.07 for the SPMW licence area.
- 4.3 In its application, SPEN states that:
- Since the start of ED1, SPEN have experienced an "increasing trend of seasonal 33kV cable faults in both the SPD and SPMW licence areas. This is attributed to the failure of a particular type of cold-shrink 33kV cable joint, manufactured by British Insulated Callender's Cable (BICC) and procured by SPEN between 2002 and 2010."⁴⁵
 - Based on operational experience and forensic examination, these 33kV trifurcating cable joints have been found to be susceptible to early life failures. SPEN considers that potential failure of these 33kV trifurcating cable joints presents an unacceptable risk to network reliability
 - These defective trifurcating cable joints are exhibiting unprecedented failure rates. For example, "In DPCR5, SPD experienced an average of 5.2 trifurcating joint failures/annum and SPMW experienced an average of 14.0 failures/annum. In RIIO-ED1 this has increased to 30.3 failures/annum in SPD and 62.3 failures/annum in SPMW, an increase of 582% and 445% in SPD and SPMW respectively."⁴⁶
 - In their submission, SPEN sets out their intervention strategy, SPEN propose three major activities to replace the 33kV trifurcating cable joints, (i) joint

⁴⁵ Section 3.1 SPEN 33kV Cable Systems HVP Reopener Application – CRC 3F May 2019

⁴⁶ Ibid

replacement via cable overlay, (ii) targeted joint replacement and (iii) replacement on failure.

4.4 The £70.07m requested by SPEN comprises:

- £47.5m to install 200km of 33kV cable overlay to bypass cable joints
- £6.28m for the targeted replacement of joints
- £8.4m for ongoing fault costs
- £7.89m for project management, delivery and partial discharge monitoring.

4.5 Our initial view, as set out in our consultation document, was to reject the request for adjustments proposed by SPEN for the SPD and SPMW licence areas. This was because we did not consider that in its application, SPEN had demonstrated that:

- a) A need for the project to be carried out has been established
- b) Measurable outputs for the project are appropriate
- c) The proposal represents an efficient level of expenditure.

Consultation responses and additional information received

Consultation responses

4.6 We received five responses to our consultation published on 2 August 2019. These were from SPEN, SSEN, ENWL, Centrica and Citizens Advice.

4.7 SPEN did not agree with the minded-to position set out in our consultation and challenged our assessment of the needs case, network risk, measurable outputs and economic efficiency of the proposal. These are covered in more detail in the 'Our updated view' section below. SPEN also provided additional information in support of their submission, which is set out in more detail in the 'Additional information received' section below.

4.8 ENWL, Citizens Advice, Centrica and SSEN all agreed with our minded to position to reject SPEN's request for an adjustment to allowances.

4.9 Centrica said that it is not appropriate for consumers to be required to pay to replace "assets that have lasted no more than a third of their expected life given SPEN

adopted a procurement strategy that appears to preclude it from approaching the supplier for remediation”, which it states is within SPEN’s control.⁴⁷

- 4.10 SSEN stated that “the salient point in this case is that this appears to relate to a contractual matter and therefore it is not apparent that the full risk should be borne by customers. The fundamental regulatory principle is usually that some risk should sit with those best able to manage it.”⁴⁸

Additional information received

- 4.11 In their submission, and as set out in our consultation, SPEN proposed three major activities to replace the 33kV trifurcating cable joints. These were (i) joint replacement via cable overlay, (ii) targeted joint replacement and (iii) replacement on failure. The volumes and costs for each of these activities are shown in Table 4.1.

Table 4.1: Replacement Type, Costs, Volumes and Outputs

Replacement Type	No. Joints	SPD Cost (£m)	SPMW Cost (£m)	Output
Cable Overlay	1824	27.18	20.32	km of Cable
Targeted Replacement	614	2.73	3.55	No of Joints
Replacement on Failure	678 ⁴⁹	4.04	4.36	No of Joints

- 4.12 As part of their consultation response, SPEN provided additional information in support of the economic case for targeted replacement. SPEN state that the 614 targeted joint replacements within this proposal at a unit cost of £10.22k compare favourably against the equivalent replacement on failure unit cost of £12.39k. This would realise a £1.3m benefit to consumers compared with deferring to replacement on fault and avoids the additional risks associated with fault activity.
- 4.13 Further, in support of the economic case for cable overlay, SPEN state that the exact quantification of the benefits can only be accurately determined on a case-by-case basis as such a value cannot be reliably provided, though SPEN consider the economic argument to be clear, ie the replacement of cable joints reduces the fault probability of

⁴⁷ Centrica response, Appendix 1

⁴⁸ SSEN response, page 2

⁴⁹ SPEN state that the total forecast joints replaced on fault (754) includes a volume of 76 that could have reasonably been forecast within ED1 and have been excluded from the scope of the proposed adjustment.

circuits. SPEN consider a circuit with joints as more than 2.5 times as likely to experience a fault than one without.

Our updated view

4.14 As described above, in our consultation we set out three principal reasons why we thought that the request for a proposed adjustment should be rejected. In its consultation response, SPEN provided representations in respect of each of these reasons. We discuss each reason including SPEN's representations and, where relevant, third party responses, below.

Needs case and network risk

4.15 The **first reason** we were minded to reject SPEN's proposal was because we did not believe a need for the activity to be carried out had been established.

4.16 In its application, SPEN's core justification for the need for the project is that the 33kV trifurcating cable joints "are exhibiting unprecedented failure rates, creating intolerable levels of system risk".⁵⁰ In its consultation response, SPEN set out concerns that various factors supporting the needs case had not been considered in our assessment. In particular, SPEN argued that we had not considered the fact that the root cause of the failure of the asset is a manufacturing and design deficiency, common to all joints of this particular type and date range. SPEN highlighted that while environmental factors may exacerbate the ageing of the cable joints, this is not the primary cause of failure.

4.17 In its consultation response, SPEN challenged our assessment of the needs case on the basis that we had placed undue weight on the loss of supply incidents. SPEN stated that the fault rate should be the primary factor, as the 33kV trifurcating cable joints are experiencing an increasing and unexpected trend in asset failures. SPEN stated that "against an expected service life of 40-45 years, these joints exhibit a high failure rate after only 10-15 years of service with 6% of the entire population failing in the summer of 2018, and a 3-year average of over 3%. This is compared with a non-type issue joint failure rate of around 0.2%."⁵¹

4.18 As set out in our consultation, we acknowledge that these specific 33kV trifurcating cable joints installed on the SPD and SPMW networks are susceptible to early life

⁵⁰ Section 1 of SPEN 33kV Cable Systems reopener application

⁵¹ SPEN response, Appendix 1b

failures, and that there has been an increase in the number of faults in the RIIO-ED1 period when compared to the DPCR5 period.⁵² The failure mechanism is consistent with a type fault issue for the BICC 33kV trifurcating cable joints.

- 4.19 A 3%, 3-year failure average, based on the current population of joints (3194) would be the equivalent to 96 failures per annum. This is high compared to a typical failure rates for 33kV cable joints. Compared to the historic failure rates (19.2 per annum)⁵³ of the BICC 33kV trifurcating joints, it has increased but remains within the same order of magnitude. Whilst we acknowledge an increased risk of failure of the BICC 33kV trifurcating joints, it is not clear that network risk has increased in the same manner.
- 4.20 In evaluating network risk, it is appropriate to consider the loss of supply incidents that occur as a result of the cable joint failures. Consideration of the consequences of failure is essential to reach a balanced judgement on the risk to consumers. This assessment must consider the redundant nature of the 33kV system and the likelihood of concurrent faults on the same supply systems.
- 4.21 With regard to loss of supply, the joint failures manifest as a single year (2018) of above trend data. In our consultation, we set out our view that it is not sufficiently clear that the above trend loss of supply incidents experienced in 2018 are not a one-off. Therefore, based on the actual loss of supply incidents to date, it was our view that the risk to security to supply had been overstated. SPEN had not demonstrated that the presence of the 33kV trifurcating cable joints within the network areas has had a significant detrimental impact on consumers or that it presents a risk that cannot be managed.⁵⁴
- 4.22 In its consultation response, SPEN rejected our view that the risk to security of supply is overstated and stated that these specific 33kV trifurcating cable joints are the highest ranking Extra High Voltage (EHV) networks risk on the SPEN asset risk register. SPEN also provided examples of the risks of loss of supply to consumers as a result of multiple cable joint faults. However, SPEN did not demonstrate why the risk of joint failures could not be managed operationally, ie why the fault response process deployed in 2018 could not be used in the remaining RIIO-ED1 years, nor why limited targeted replacement would not reduce the risk to sufficiently tolerable levels.

⁵² See para 5.10 and 5.11 of the consultation document

⁵³ Section 3.1 of SPEN 33kV Cable Systems reopener application

⁵⁴ See para 5.21 of the consultation document

- 4.23 In the additional response provided by SPEN in relation to managing the risk in 2018, they state that, “For a period of several weeks in both SP Manweb and SP Distribution, the network operational status was escalated to Level 1 (normally reserved for short extreme storms) and Head Office Emergency Action Centres were established to operationally plan and co-ordinate all resource requirements. During this period SPEN used the NEWSAC agreement and were supported by other DNOs and ESB.”⁵⁵ Although this operational arrangement is onerous, it supports the argument that the risk can be managed.
- 4.24 In consideration of the SPEN submission and the additional information, we consider that it demonstrates that although the risk from the trifurcating joints is apparent, it can be managed via operational procedures, and the consequences with regards to loss of supply incidents remain within historic norms.
- 4.25 Although average failure rate of over 3% is significant with regards to the specific reliability of the BICC 33kV trifurcating joints, it is not clear that this justifies the complete replacement of all joints in the RIIO-ED1 period or that it is an economic and efficient intervention; this aspect is discussed further below. We therefore maintain our view that a need for the project of the proposed scope to be carried out has not been established.

Measurable outputs

- 4.26 The **second reason** we were minded to reject SPEN’s proposal was the uncertainty over measurable outputs, specifically that volumes of cable overlay (‘km of cable replaced’) was proposed as an output measure. In simple terms the relationship between the proposed length cable to be installed and the volume of joints replaced was not clear. In its response to our consultation, SPEN challenged our view that measurable outputs proposed for the project are not appropriate.
- 4.27 In regards to justification of cable volumes as an output, we set out in our consultation that it is not clear how the mean minus one standard deviation of circuit lengths, of a small number of circuits, provides a robust basis to estimate the required average volume replaced. It is not clear how the derived figure of 575m relates to actual physical joint clusters. In our consultation we set out that “It is our view that SPEN have not provided a robust methodology for calculating the cable volume or uncertainties in volumes. For the level of proposed investment, we consider that SPEN

⁵⁵ Section a) Appendix 1b SPEN Response to RIIO-ED1 HVP Reopener Consultation

should have greater certainty of joint cluster densities and have measured cable lengths to support volume estimates.”⁵⁶

- 4.28 In the additional material provided SPEN claim that the proposed statistical measures are appropriate and that it had not been possible to complete detailed design assessments of each affected circuit. The activity to undertake this analysis (numbering several hundred circuits) would be delivered over the next year as part of the delivery programme. Moreover, SPEN argued that “In recognition of the inherent uncertainty in proposed cable lengths...SPEN propose to mitigate the risk to consumers through a volumetric closeout assessment. This would utilise an agreed efficient unit cost and actual volumes delivered to determine if ‘clawback’ using an equivalent method is required at close-out.”⁵⁷
- 4.29 It remains our view that cable unit costs are the key driver of the overall costs of the proposal. The estimation of the proposed lengths should be as robust as possible. The uncertainty associated with the volumes remains and therefore we consider that unacceptable uncertainty associated with measured outputs remains.

Economic and efficient

- 4.30 The **third reason** we were minded to reject SPEN’s proposal was because we did not believe the approach was economic and efficient. There are two aspects to this, (i) the scope of the proposed works, ie the replacement of all 33kV cable joints in the RIIO-ED1 period and (ii) the cost of the cable overlay method when compared to other, cheaper, methods.
- 4.31 In their response, SPEN challenged our view that the proposed activity does not represent an efficient level of expenditure. SPEN said that although risk to security of supply is a component of the justification and motivation for the programme, it should not be considered alone. In its submission, SPEN set out that replacement of the 33kV trifurcating cable joints is the only available mitigation and this must be done in RIIO-ED1.
- 4.32 In additional material provided by SPEN, they argued that it would be unusual to unduly delay beginning intervention activity and that assets with a high probability of failure should be removed as soon as practicable. Furthermore SPEN argue that

⁵⁶ See paragraphs 5.33 and 5.34 of the consultation document

⁵⁷ Section b) Appendix 1b SPEN Response to RIIO-ED1 HVP Reopener Consultation

additional benefit will accrue to customers in terms of network reliability from a reduced circuit failure rate.

- 4.33 In regards to the complete replacement of all cable joints, our consultation position was that: “Where a circuit with 33kV trifurcating cable joints is of strategic significance to network operation or presents a quantifiable risk to security of supply, SPEN should adopt a risk based approach to replacing these cable joints as part their business as usual approach in RIIO-ED1”.⁵⁸ In addition, we set out that long-term economic and efficient solutions to address the joint failures should be developed as part of the SPD and SPMW RIIO-ED2 business plans and be developed in consideration of the wider asset and reinforcement works.⁵⁹
- 4.34 In its response, SPEN did not demonstrate why the complete replacement in RIIO-ED1 provides value for money for consumers, when compared to a base case of SPEN mitigating the risk via operational procedures and targeted replacement in RIIO-ED1.
- 4.35 In regards to justification of cable overlay, we set out a series of concerns that this method was expensive compared to other methods proposed by SPEN and asked SPEN to justify the additional cost. We set out that, “The replacing of a single joint via a cable overlay solution includes an average of 110m of replacement 33kV underground cable per joint, at a cost rate £237.54k per km. For joints replaced by cable overlay, this is equivalent to a cost of £26.1k per joint removed. This is more than double the cost of replacing a joint on failure and it is our view that this additional cost has to be fully justified.”⁶⁰
- 4.36 In the additional material provided, SPEN state that the exact quantification of the benefits can only be accurately determined on a case-by-case basis and, as such, a value cannot be reliably provided. However, SPEN set out that they consider the economic argument to be clear insofar as the replacement of cable joints reduces the fault probability of circuits. SPEN estimate that a circuit with joints is more than 2.5 times as likely to experience a fault, as compared to a circuit without joints. While we do not disagree that the replacement of cable joints reduces the fault probability of circuits, SPEN has not demonstrated why the majority of joints must be replaced via the more expensive cable overlay method.

⁵⁸ See paragraphs 5.24 and 5.25 of the consultation document

⁵⁹ Ibid

⁶⁰ See paragraphs 5.41 and 5.42 of the consultation document

- 4.37 It is our view that, in their submission and additional material, SPEN has not justified the volume of joints to be replaced by cable overlay or quantified the network benefits associated with the cable overlay aspects of the joint replacement program when compared to other methods.
- 4.38 It remains our view that justification for the investment of the type and scale proposed by SPEN should be based on quantitative evidence demonstrating that the investment programme represents a better approach than other potential approaches. The absence of such analysis represents an omission from the proposal and that, without it, the submission does not provide sufficient evidence to demonstrate that the proposed costs represent an efficient level of expenditure.
- 4.39 We share Centrica’s concerns with SPEN’s strategy for procuring the trifurcating cable joints. As part of the assessment we sought assurances that their procurement process was in line with industry norms.
- 4.40 As part of the assessment process we asked SPEN to provide specifications, evidence of type testing and procurement testing as well as a copy of the contractual terms under which trifurcating cable joints were bought. SPEN were unable to provide exact copies of type testing and procurement testing or a copy of the contractual terms.
- 4.41 We also asked SPEN to provide any correspondence between them and the trifurcating cable joint supplier and/or manufacturer regarding the failure mechanism and liabilities. SPEN state that the original manufacturer, BICC, is no longer in business and they were unable to solicit formal responses from successor companies. We consider that SPEN has not been able to provide evidence that, via the procurement processes, they have taken all reasonable steps to control the risk.
- 4.42 We agree with the consultation respondents who said that risks should be borne by the party best able to manage them. This is consistent with the RIIO-ED1 Strategy Decision Overview which states that risks should be borne by the party best able to manage them efficiently. The RIIO-ED1 Strategy Decision on Uncertainty Mechanisms sets out that “We expect network companies to manage the uncertainty they face. The regulatory regime should not protect network companies against all forms of uncertainty. The use of uncertainty mechanisms should be limited to instances in which they will deliver value for money for existing and future consumers while also protecting the ability of networks to finance efficient delivery.”⁶¹

⁶¹ https://www.ofgem.gov.uk/sites/default/files/docs/2013/02/riioed1decuncertaintymechanisms_0.pdf

- 4.43 We also stated in the Guide to the RIIO-ED1 Price Control, that whilst uncertainty mechanisms allow a DNO's allowed revenues to change to reflect specific unforecastable elements during the price control period, we expect companies to bear their own business risk.⁶²
- 4.44 In their submission and supporting additional material provided, it is our view that SPEN have not made the case for the transfer of risk from SPEN to the consumer. It is not apparent that risk associated with 33kV trifurcating cable joints should be borne by consumers via a programme of joint replacement, as opposed to ongoing management by SPEN.

Our decision: Reject

- 4.45 Following our assessment of SPEN's application for additional allowances under the High Value Projects Costs reopener, we have decided to maintain our minded-to position and reject the proposal. This is because Ofgem does not believe:
- a) A need for the project to be carried out has been established;
 - b) Measurable outputs as proposed for the project are appropriate;
 - c) The proposal represents an efficient level of expenditure.

⁶² https://www.ofgem.gov.uk/system/files/docs/2017/01/guide_to_riioed1.pdf

5. SSEN (SHEPD) Pentland Firth East Subsea Cable Replacement

Background

- 5.1 We received an application from SSEN requesting an additional £30m of funding for its SHEPD licence area to replace the Pentland Firth East (PFE) subsea cable. SSEN gave Notice of its proposal during the reopener window, which ran from 1 May to 31 May 2019.
- 5.2 The proposal relates to a 36.2km subsea cable connecting Orkney to mainland Scotland, which SSEN has identified as being in need of full replacement during the current Price Control Period. SSEN is proposing to replace the existing PFE 240mm² cable with a 400mm² cable in a similar submarine position. This cable has been selected to manage a fault level issue following transmission network reinforcement in the Thurso area. It also provides a rating uplift from the 23.4MVA of the existing cable to 30MVA. SSEN did not include the replacement of this cable in its RIIO-ED1 business plan.
- 5.3 In its application, SSEN stated that:
- The PFE cable underwent a partial inspection in 2016 and a full inspection in 2017, through which SSEN identified it “as having degraded to a greater extent than expected and PFE was reclassified as Asset Health Index category 5 (HI5), ie end of serviceable life, replacement required”⁶³
 - “Following a review of several replacement options, a 400mm² cable option was identified as the preferred solution due to project costs and ability to deliver the required outputs associated with replacing the existing cable”⁶⁴
 - It expects the cable to be installed in April 2020 “with the full replacement project being completed by August 2020”⁶⁵
 - The main benefit of the project is retaining security of supply to Orkney.
- 5.4 The £30m requested by SSEN is made up of:
- indirect costs
 - regulatory consent and engineering costs

⁶³ SSEN HVP submission, page 12

⁶⁴ SSEN HVP submission, page 13

⁶⁵ SSEN HVP submission, page 16

- plant and materials costs
- onshore and offshore construction costs.

5.5 Our initial view, as set out in our consultation, was that we were satisfied that a needs case for work to be carried out had been established and were minded to accept the High Value Project. However, this acceptance was subject to SSEN providing further information to demonstrate that their proposed solution was economic and efficient.

5.6 The supply of electricity from mainland Scotland to Orkney is currently provided by two subsea cables, the PFE and Pentland Firth West (PFW). The PFE cable was recently reclassified as being at the end of serviceable life and has experienced numerous faults in recent times, the first of which was in January 2019. In order to secure demand during this fault, the PFW cable and on-island generation, including backup power supply from Kirkwall Power Station (KPS), had to be used. Standby generation was also in place as part of SSEN's contingency plan.

5.7 The PFW cable has a rating of 30MVA and the existing PFE cable has a rating of 23.4MVA. KPS has a connected capacity of 15MW. Due to inconsistent figures set out in SSEN's submission it has been difficult to establish what current demand is on Orkney. However, we understand demand to be approximately 33.2MW.⁶⁶ On review of this information, our view is that if the PFE cable were to fail, the rating of PFW would not be sufficient to meet the necessary requirements for security of supply as set out in engineering recommendation P2/7. P2/7 is a distribution network planning standard, which sets the minimum levels of supply that distribution licensees must achieve on GB distribution networks. It requires the licensee to meet maximum demand on Orkney in the event of one source of supply failing. We therefore agree that in the event of the PFE cable failing, a second operational cable would be required to ensure P2/7 compliance. We do not consider that KPS is capable of supplying the entirety of the Orkney demand on its own; without the second cable, a single failure of either the lone cable or of KPS would leave at least part of the island group off supply. This would not be compliant with P2/7.

5.8 In our consultation, we set out our concern that there may be foreseeable circumstances in which SSEN's proposed solution would not be capable of enabling P2/7 compliance in either the short, medium or longer term. In its submission, SSEN stated that its proposed solution will ensure demand on Orkney is met, however the DNO did not provide consistent data to us regarding current and future demand on

⁶⁶ As per SSEN's response to our consultation, note this includes no estimate for embedded generation

Orkney. This limited our ability to carry out a thorough assessment of SSEN’s proposed solution, in order to determine whether their proposal represented an efficient level of expenditure. The different figures provided by SSEN and the sources in which these values were stated are set out in Table 5.1 below.

Table 5.1 Demand Ratings quoted by SSEN

Demand Rating	Source	Comments
23.4MW	Common Network Asset Indices Methodology (CNAIM) PFE maximum demand entered data. ⁶⁷	Referenced in the CNAIM input data – later recognised by SSEN as the circuit rating of the PFE cable (in MVA).
30MW	CNAIM Pentland Firth West (PFW) maximum demand entered data.	Referenced in the CNAIM input data – later recognised by SSEN as the rating of the PFW cable (in MVA).
31.4MW	2017/18 Long Term Development Statement (LTDS) ⁶⁸ – forecast for 18/19 demand.	Used for analysis when originally undertaking pre submission reviews.
33.2MW	2018 LTDS.	Used for analysis after submission.
34MW	PFE HVP supplementary questions.	Presently indicated demand value.
35MW	PFE HVP Technical Approval Paper.	Later redacted as an error.
36MW	SSEN technical response to the Orkney Transmission link supplementary questions.	Presently the SSEN presented demand to SHETL.
7MW	The SSEN calculated (using Ofgem approved methods) non-metered micro, non-metered generation on Orkney.	Presented by SSEN interface meeting to SHETL.
5-8MW⁶⁹	The level of micro, non-metered embedded generation on Orkney.	Ofgem’s estimation of levels of G83 (or equivalent) generation on Orkney.

5.9 We therefore requested the following further information⁷⁰ from SSEN:

- An options assessment, demonstrating that the rating of the cable to be installed is economic and efficient, including analysis on the sensitivity of

⁶⁷ We have concerns that the demand figures used in the CNAIM data entry are not representative of the demand observed. This will be addressed separately to this HVP Reopener.

⁶⁸ <https://www.ssen.co.uk/LTDS/>

⁶⁹ It is noted that the embedded non metered generation is onerous to accurately quantify. Please note, SSEN has not indicated, nor forecast, any values of the masked demand by embedded generation.

⁷⁰ See paragraph 6.35 of the consultation document

the option of least regret with respect to plausible scenarios regarding the potential development of the Orkney Transmission Link

- Robust and evidenced values for present and future demand forecasts, including analysis on headroom afforded by the proposed cable solution for demand growth
- SSEN demonstrating how they will comply presently and in the future with SLC 43B⁷¹ with regards to KPS.

5.10 We also set out in our consultation that a decision to accept would be subject to conditions. Our principal objective requires us to protect the interests of existing and future consumers. We do not expect consumers to have to pay twice for a solution to replace the PFE cable, when an efficient solution delivered now would provide for a reasonable degree of headroom.

5.11 Therefore, we stated in our consultation that, should SSEN seek further funding in relation to demand on Orkney in RIIO-ED2, we would reassess the allowances provided for SSEN's proposed solution and would seek to return allowed funding to consumers. We detailed that any external drivers for load reinforcement on Orkney would be considered against the present opportunity afforded to SSEN to provide additional headroom in the cable capacity.

Consultation responses and additional information received

Consultation responses

5.12 We received five responses to our consultation published on 2 August 2019, four of which responded specifically to this submission. Respondents were SSEN, ENWL, Centrica and Citizens Advice.

5.13 In its response, Centrica broadly agreed with our minded to position, including our request for further information from SSEN to demonstrate that the proposed solution is economic and efficient.

5.14 Centrica argued that a decision on the Orkney Transmission Link is likely to materially affect the efficiency of any proposed demand solution put forward by SSEN. However, Centrica said it was not clear whether the progression or not of the Orkney Transmission Link could mitigate the risk of SSEN's solution being inefficient. For example, should the Orkney Transmission Link go ahead, Centrica argued that it would

⁷¹ Standard Licence Condition 43B Prohibition on Generating by Licensee.

be appropriate for Ofgem to consider the extent to which the progression of the project could satisfy the network needs that the PFE subsea cable aims to meet. Centrica therefore suggested that the PFE decision should be delayed until there is clarity on the proposed Orkney link.⁷²

- 5.15 ENWL agreed with the needs case and with our position that further analysis to “establish the correct rating of the cable” was required.⁷³
- 5.16 Citizens Advice agreed with our minded to position but argued that it could not take a full view on SSEN’s proposal until the information we requested had been provided. Citizens Advice highlighted that SSEN’s information “should be both persuasive and complete”.⁷⁴
- 5.17 We also received one response to our June informal consultation, which we have not addressed to date. In SPEN’s response to the June informal consultation, it argued that the project unit costs should be benchmarked “against industry out-turn” and Ofgem’s RIIO-ED1 expert view of unit costs, given that it is principally the replacement of a subsea cable asset.⁷⁵
- 5.18 SSEN supported our minded to position, stating that it was pleased we had recognised the need to replace a critical part of its distribution network infrastructure. SSEN also provided further information and analysis in response to the request set out in our consultation and argued that this additional information shows that “the proposed option...is the most economic and efficient solution overall, when compared to the 5 other options” analysed. In its response, SSEN highlighted that its proposed solution meets all the necessary criteria, particularly in relation to delivery timescales to maintain security of security.⁷⁶ Further detail on the information and analysis provided by SSEN is set out below.

Additional information received

- 5.19 During the 28 day consultation period SSEN provided us with additional information which sought to satisfy the conditions set as part of our minded to position. Parts of SSEN’s response to us were marked as confidential and therefore the full details of the

⁷² Centrica response, page 2

⁷³ ENWL response, page 1

⁷⁴ Citizens Advice response, page 2

⁷⁵ SPEN informal consultation response, page 2

⁷⁶ SSEN response, page 2

information provided is not detailed below. However, a summary of what was provided is set out:

- SSEN provided values for present and future demand forecasts. SSEN's data calculates present maximum demand as 33.2MW and sets a forecast maximum demand until 2028. SSEN's forecast maximum demand is based on a number of assumptions, most notably that embedded generation was operating at the time of recording at peak demand. This would have the effect of reducing the net value of peak demand
- SSEN provided analysis on demand growth, forecasting a constant per annum growth rate until 2028. SSEN forecast load growth to be in line with historical trends
- SSEN provided an options assessment, which compared SSEN's proposed solution (Option 1) against five other cable options. SSEN's Option 1 was shown to be the lowest cost option when compared to the other five cable options assessed, which all had a higher cable rating. When combined with PFW, the combined capacity was shown to be 60MVA, which is sufficient to meet SSEN's forecast for maximum future demand (until 2028) while providing additional headroom. However, should one of the cables fault, neither cable alone could meet current demand and KPS would be relied upon to meet current and future demand
- Regarding present and future compliance with SLC 43B⁷⁷ with regards to Kirkwall Power Station (KPS), SSEN explained that given its expectation that KPS will operate until 2035, it does not see it as a risk or as detracting from the cable replacement solution proposed.

Our updated view

5.20 We have reviewed the information submitted by SSEN in detail. The following paragraphs set out our views on the information provided by SSEN, specifically in regard to whether we consider the solution presented to have been demonstrated to be economic and efficient.

⁷⁷ Standard Licence Condition 43B Prohibition on Generating by Licensee.

Values for present and future demand forecasts

- 5.21 Regarding the provision of values for present and future demand forecasts, SSEN provided figures for the Orkney Group; however, no range was provided and there was limited detailed analysis supporting the figures provided.
- 5.22 As set out above, from the information provided by SSEN, we understand current demand to be approximately 33.2MW. However, we also understand from information provided by SSEN that there could be as much as 8MW of non-metered embedded generation on Orkney. Due to the difficulty in quantifying embedded non-metered generation SSEN has not been able to confirm how much of the potential 8MW of embedded generation is masking demand. This, combined with limited analysis or forecasting, leaves us to conclude that the current maximum demand could be as much as 41.2MW. If this is the case, SSEN's proposed solution may be too small and not be capable of enabling P2/7 compliance in the short term, let alone the medium and long term.
- 5.23 We note that SSEN based its demand forecasts exclusively on historical growth data and that scenario analysis around the impact of the uptake of electric vehicles or net zero targets did not affect the growth rate. While we understand that historical data may be an appropriate starting point when forecasting demand growth, we would expect SSEN's consideration of future looking scenarios to have impacted their analysis. We are therefore not convinced that the forecasts provided by SSEN clearly demonstrate that the selected rating is suitable.
- 5.24 In addition, as set out above, there is a lack of clarity on the impact of embedded generation on demand, and in particular the impact on demand in the event that embedded generation was unavailable. This limits the robustness of both the current and forecast demand figures provided. It also limits the robustness of the conclusion that sufficient headroom would be provided by the proposed solution, particularly given that SSEN's values for peak current and forecast demand assume that embedded generation is operating. We consider embedded generation to have a significant influence on Orkney's future demand profile, but this is not reflected in the present or future demand values, or the underlying analysis, provided by SSEN.
- 5.25 SSEN mention socio-economic and wider government policy initiatives which may influence demand, but there are no values placed on this analysis, further limiting the extent to which available demand forecasting can be considered as robust.
- 5.26 In our consultation, we asked SSEN to include in their options assessment analysis of a least regret option, in the event that the Scottish Hydro Electric Transmission

Limited (SHETL) Orkney link did not go ahead. However, SSEN stated in their consultation response, and subsequently confirmed to us, that its scenario analysis does not rely on the Transmission link to support any distribution demand, so it was unnecessary to include a least regret option in their analysis. We are content with this position.

Options assessment

- 5.27 SSEN evidenced the assessment of a wide range of potential solutions. These solutions highlight the cost of the cable procurement, installation and protection but there is no evidence that wider cost benefit analyses on the suitability of the cable replacement options have been undertaken.
- 5.28 There is limited evidence to back up that a number of the costs provided are holistically developed. We would require further information to justify the values given, similar to the supporting data submitted by SSEN in their application to evidence the option 1 costs. This includes a detailed breakdown of all costs incurred, as well as tender contracts and invoices.
- 5.29 While option 1 is shown as the lowest cost option, it also has a lower cable rating than any of the other options assessed. At 30MVA, the cable rating is lower than both SSEN's current maximum demand and forecast for future maximum demand on Orkney. Should PFW fault, it would rely on KPS to meet demand.

Compliance with 43B

- 5.30 SSEN do not see KPS as a risk to security of supply at present but we have concerns for future requirements. No costs, or any associated intervention plan, have been provided on the ongoing operation of the diesel powered generation station up to 2035. Furthermore, the retention of a diesel generator up to 2035 is likely to become increasingly uneconomic in an energy system that is targeting a goal of decarbonisation.

Consultation responses

- 5.31 Centrica's position, which seeks deferral of the decision on PFE replacement until we have made a decision on the Orkney Transmission Link, is sensible in principle. More information is always better than less. However, based on information we reviewed during our assessment of the Orkney Transmission Link, and our ultimate conditional approval of that link, it is unlikely that we would have clarity on the progression of Orkney Transmission Link until mid/late 2021 at the earliest. Furthermore, in SSEN's

options analysis, all of the options provided to us in which the Orkney Transmission Link is built, the transmission link is not used to meet demand on Orkney, but for generation purposes only. It is our understanding, based on the information provided by SSE, that a decision on the Orkney Transmission Link will not materially affect the option chosen for replacing the PFE.

- 5.32 While SPEN's position on benchmarking appears sensible, we have not carried out a cost assessment of the project costs, given that we have still to be convinced that it is an economic and efficient solution.
- 5.33 In summary, we consider that there are realistic and probable load growth scenarios, in which SSEN's preferred solution may not be capable of meeting demand and for which SSEN have not demonstrated sufficient consideration. It is probable that under some of these scenarios the chosen solution for PFE may be inadequate to meet demand and quality of supply requirements for Orkney-based consumers, potentially resulting in a future intervention on the PFE route corridor. The failure to demonstrate consideration of these scenarios means we are unable to determine that the case for the chosen solution being economic and efficient has been made.

Our decision: Reject

- 5.34 Following our assessment of SSEN's application for additional allowances under the High Value Projects Costs reopener, we have decided to reject the proposal.
- 5.35 We consider that SSEN has complied with most of the requirements under CRC 3F and that the needs case has been established. The rejection of SSEN's application is because Ofgem does not believe that SSEN has demonstrated through their application and supporting evidence that its proposed cable replacement solution is an economic and efficient solution.
- 5.36 We expect licensees to comply with licence conditions and codes at all times. If SSEN believe that compliance with the relevant conditions and codes drives an intervention to the PFE and Orkney demand groups, we expect these actions to be undertaken as required within existing allowances. We will continually monitor SSEN's P2/7 compliance against the Orkney group demand.