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Consultation

RIIO-ED1 Reopener Consultation – High Value Projects

Publication date:	Friday 2 August 2019	**Contact:**	RIIO-ED Team
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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 initial views on applications under the "High Value Project Costs" category of uncertain costs.

We welcome the views of interested parties on any of the issues set out in this document. Responses should be addressed to RIIO-ED1@ofgem.gov.uk no later than Friday 30 August 2019. Unless clearly marked as confidential, responses will be published on our website. We will consider responses as part of our final determination, which we intend to publish in October this year.

Associated documents

Informal consultation on RIIO-ED1 price control reopeners (May 2019)

RIIO-ED1 Price Control Financial Handbooks (fast-track and slow-track licensees)

Contents

1. Executive Summary

What are we consulting on?

1.1 When setting the first RIIO electricity distribution price control (1 April 2015-31 March 2023), Ofgem introduced a number of mechanisms for the recovery of uncertain costs. Those uncertainty mechanisms included reopeners, which enable adjustments to electricity distribution network operators' allowances to reflect efficient costs associated with specific uncertain cost categories and are set out in Special Condition CRC 3F[1] of the Electricity Distribution Licences.

1.2 One of the uncertainty mechanisms relates to costs associated with High Value Projects. It allows distribution network operators (DNOs) to apply for an adjustment to their expenditure allowances to reflect costs that have been incurred, or are expected to be incurred by them, on any investment project that is reasonably forecast to cost £25 million or more (in 2012/13 prices)[2] during the Price Control Period.

1.3 The High Value Projects reopener covers schemes of works that were not included in the original price control baselines due to uncertainties prevailing at the time of setting the price control allowances.

1.4 In the May 2019 application window, we received four submissions from DNOs requesting an adjustment to their expenditure allowances in relation to High Value Project Costs. We received one submission from Scottish and Southern Electricity Networks (SSEN) and three from SP Energy Networks (SPEN).

1.5 Brief summaries of the four submissions, the related licence condition and our minded to positions are set out below:

SPEN (SPD): Accelerated EV Investment

1.5.1 SPEN is requesting an additional £42m in funding for its Scottish Power Distribution (SPD) licence area to accommodate the accelerated uptake of electric vehicles (EVs). SPEN is proposing to invest in the deployment of wide-scale monitoring of the low voltage 'LV' network and in the accelerated reinforcement of the network, where innovative solutions are not able to accommodate EV uptake. We are minded to reject this proposal.

SPEN (SPMW): High Speed 2

1.5.2 SPEN is requesting an additional £35.13m in funding for its SP Manweb (SPMW) licence area to invest in capacity required on the network to meet increased energy demand as a result of High Speed 2 (HS2). The request covers additional capacity to meet HS2 demand and additional capacity to support regional economic growth described as resulting from improved transport links created by the HS2 projectWe are minded to reject this proposal.

SPEN (SPD and SPMW): 33kV Cable Systems

1.5.3 SPEN is requesting an additional £70.07m in funding across its SPD and SPMW licence areas to remove and replace approximately 3,192 33kV trifurcating cable

[1] Charge Restriction Condition 3F: Arrangements for the recovery of uncertain costs.
[2] Unless otherwise stated, all prices in this document are in a 2012-13 price base.

joints installed between 2002 and 2011. SPEN state that based on operational experience and forensic examination, these joints have been found to be susceptible to early life failures and SPEN considers that potential failure of these trifurcating cable joints presents an unacceptable risk to network reliability. We are minded to reject this proposal.

SSEN (SHEPD): Pentland Firth East Subsea Cable Replacement

1.5.4 SSEN have requested an additional £30m in funding for its Scottish Hydro Electric Power Distribution (SHEPD) licence area to replace the Pentland Firth East cable. The cable is a 36.2km 33kV subsea cable connecting Orkney to mainland Scotland, which SHEPD has identified as being in need of full replacement during the RIIO-ED1 price control. We are minded to accept this proposal, subject to conditions.

1.6 In this consultation, we set out our assessment and minded to positions on the above applications. These are our current views, which are subject to consideration of consultation responses.

Next steps

1.7 This consultation will close on Friday 30 August 2019. Please send in your response by emailing us at RIIO-ED1@ofgem.gov.uk.

1.8 In proceeding with a 28 day consultation we welcome engagement from interested stakeholders during the consultation period. We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations.

1.9 Our decision will be implemented through the 2019 Annual Iteration Process, which will mean that any adjustment to DNOs' allowed revenues will take place from 2020/2021.

2. Approach to assessment

2.1 We have assessed the submissions in accordance with the Special Licence Conditions and the RIIO-ED1 Price Control Financial Handbook.

Compliance with the Special Licence Conditions

2.2 The Special Licence Conditions set out what constitutes a proposal for a relevant adjustment by the licensee. The definition of High Value Project Costs is set out in Special Licence Condition CRC 1B, which should be read in conjunction with paragraph 7.21 of the Price Control Financial Handbook[3].

2.3 CRC 1B defines High Value Project Costs as *"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 £25 million or more (in 2012/2013 prices) during the Price Control Period, and for which clear outputs, a needs case and a statement of costs have been provided to the Authority".*

2.4 Chapter 7 of the Price Control Financial Handbook, states (at paragraph 7.21) that *"For the purposes of CRC 3F and this chapter, 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 £25 million or more (in 2012/13 prices) during the Price Control Period, and for which clear outputs, a needs case, and a statement of costs have been provided and in respect of which there is no other mechanism for the adjustment of allowed expenditure levels during the Price Control Period".*

2.5 Under CRC 3F, the licensee may propose a relevant adjustment to the allowed level of expenditure on High Value Project Costs, provided that the proposed change to the level of allowed expenditure:

- is based on information/auditable evidence about and justification[4] of the actual or forecast level of efficient expenditure on the uncertain cost activity that was either unavailable or did not qualify for inclusion when the licensee's Opening Base Revenue Allowance was derived;
- takes account of any relevant adjustments previously determined under CRC 3F;
- passes the tests set out in Appendix 1 of CRC 3F;
- relates to costs incurred or expected to be incurred after 1 April 2015; and
- constitutes an adjustment to allowed expenditure that (excluding any Time Value of Money Adjustment) cannot be made under the provisions of any other condition of the licence.

2.6 In addition, CRC 3F provides that a proposal must include statements setting out:

- The uncertain cost activities to which the proposal relates;

[3] Charge Restriction Condition 1B. Interpretation of Part 4.
[4] SHEPD's licence makes it clear that this requires auditable evidence and justification. SPD and SPMW's licences only refer to information.

- The changes to the licensee's allowed level of expenditure that are proposed and the Regulatory Years to which those changes relate; and
- The basis of calculation for the changes to the licensee's allowed level of expenditure.

2.7 In our assessment of the licensees' proposals, we have reviewed the Special Licence Conditions including CRC 3F and the RIIO ED1 Price Control Financial Handbook to ensure that relevant requirements have been met.

RIIO ED1 Price Control Financial Handbook considerations

2.8 In accordance with the RIIO ED1 Price Control Financial Handbook[5], we have assessed the proposals to determine whether:

- The proposal by the licensee represents an efficient level of expenditure;
- A need for the project to be carried out has been established; and
- Measurable outputs for the project have been identified.

2.9 We have then reached a minded to position in relation to rejection, acceptance or amendment of the adjustments proposed by the licensees.

Informal consultation

2.10 On 7 June 2019, we published an informal consultation seeking early views on all the ED1 reopener submissions received in the May 2019 window.[6] This informal consultation closed on 21 June 2019.

2.11 We received five responses and have taken these and other relevant factors into consideration in our assessment of the proposals. The informal consultation responses have been published alongside this consultation.[7]

[5] RIIO ED1 Price Control Financial Handbook (slow track): https://www.ofgem.gov.uk/system/files/docs/2017/08/ed1_handbook_v3_slowtrack_0.pdf
[6] Informal consultation on RIIO-ED1 price control reopeners (May 2019): https://www.ofgem.gov.uk/publications-and-updates/informal-consultation-riio-ed1-price-control-reopeners-may-2019
[7] https://www.ofgem.gov.uk/publications-and-updates/decision-our-informal-consultation-riio-ed1-price-control-reopeners-may-2019

3. SPEN (SPD) Accelerated Electric Vehicle Investment

Section summary

This section sets out our assessment and minded to position on the submission from SP Energy Networks (SPEN) for High Value Project Costs relating to accelerated Electric Vehicle ("EV") investment.

Application

3.1 We have 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.

3.2 In its submission, SPEN states[8] 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 2040[9] and, in September 2017, the Scottish government announced a commitment to removing the need for petrol and diesel vehicles by 2032.[10] 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 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-

[8] Submission paragraph 1. The SPEN submission is available in the zip file here.
[9] UK plan for tackling roadside nitrogen dioxide concentrations, paragraph 60
[10] A nation with ambition the government's programme for Scotland 2017-18, page 10

ED2 as part of a managed network investment profile had EV uptake forecasts remained stable.

3.3 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 charging[11],
- 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.[12]

Informal consultation responses

3.4 We received five responses to the informal consultation we published on 7 June 2019, four of which responded specifically to this application.

3.5 The Scottish Government said that it supported "the principle of investing ahead of need, where appropriate, in order to facilitate the growth of EV numbers." It said that it "was conscious of the need for innovative approaches to reduce the need for investment in grid upgrades" but "was equally conscious of the potential damage to consumer confidence that any network reliability issues could cause and which could arise if the grid is not fit-for-purpose and is unable to support real-time increased demand for electricity as a result of electric vehicles." The Scottish Government encouraged Ofgem to take account of the accelerated timetable for the rollout of EVs in Scotland when assessing proposals from Scottish network owners.

3.6 In its response, Centrica said that it did not believe SPEN's submission met the criteria to qualify as a High Value Project. This is because the proposal does not relate to a specific scheme but rather to a portfolio of load-related investment projects to increase network capacity. Centrica said that it "did not believe treating a portfolio of load-related activities equivalently to an individual scheme aligned with the underlying policy intent of this mechanism or the wording in the RIIO ED1 Price Control Financial Handbook."[13]

3.7 Centrica also said that consideration of the proposed adjustment "may be premature at this stage since no other DNO has yet proposed an adjustment despite all being exposed to the UK and Scottish Governments' policies SPEN identified in its submission."

3.8 Centrica noted that provision of additional ex-ante funding for investment to accommodate the uptake of electric vehicles had been addressed in Ofgem's Decision on a Mid-Period Review (MPR) for RIIO-ED1.[14] Centrica said that it agreed with Ofgem's position in that document that consumers' electricity use could change during the ED1 price control and that reopeners, including the reopener for load related costs (LRR), can accommodate these changes. Centrica added that the

[11] '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.
[12] Submission paragraph 1 and table 20.
[13] ED1 Price Control Financial Handbook (slowtrack licensees)
[14] Decision on a Mid-Period Review for RIIO-ED1

LRR is "clearly the appropriate mechanism through which SPEN should propose adjustments".

3.9 Citizens Advice said that it was not convinced by the evidence provided regarding the immediacy of the need for the investment and questioned why monitoring of the kind proposed has not been a priority to date and part of business as usual activity.

3.10 Citizens Advice said that it expected to see more of a consideration of the risk of stranded or underutilised assets arising from the proposals.

3.11 Citizens Advice said that it would have liked to have seen a cost benefit analysis of delaying action and commented that there are intermediate implementation options that sit between the activity proposed in SPEN's submission and delaying any action until thermal, voltage or fault level limits are breached.

3.12 Citizens Advice proposed an alternative approach under which Ofgem would provide SPEN with a load related allowance, incorporating a "well evidenced and independently observable system constraint threshold, at which point specific works could commence".

3.13 One respondent, who requested for their consultation response to remain confidential, said the fact that the submission does not indicate the specific locations of the proposed activity suggests that the project has not reached a sufficient level of certainty to be funded at this stage.

Our assessment

<u>High Value Project Costs definition</u>

3.14 As set out in section 2 of this consultation, the definition of High Value Project Costs requires the proposal to relate to an investment project that is a single scheme of works.

3.15 In our view, the activity and costs proposed in SPEN's submission do not constitute a scheme of works. SPEN's submission does not identify any specific reinforcement or monitoring schemes that it intends to implement, though it does outline a process through which it would determine candidate areas for investment. To the extent SPEN may identify where it intends to make the monitoring and reinforcement investment, in our view this is likely to consist of several separate projects on the SPD network. Ofgem also notes Centrica's characterisation of the proposed activity as a "portfolio of load-related schemes". Therefore, our view is that the costs proposed by SPEN are not High Value Project Costs and are not for a relevant adjustment, as they do not meet the definition set out above.

<u>Compliance with CRC 3F</u>

3.16 Notwithstanding our view that the proposal is not for a relevant adjustment, we do not believe that SPEN's submission complies with all of the requirements of CRC 3F. Specifically, we do not believe that condition CRC3F.8(f) has been satisfied.

3.17 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."

3.18 In the *Decision on a Mid-Period Review for RIIO-ED1*[15], in response to stakeholders raising the potential accelerated uptake of EV as an issue for consideration in the mid-period review, we said:

> "We recognise that there are always uncertainties about what will happen during the price control period, including the number of EVs that will connect. The existing RIIO framework includes a number of uncertainty mechanisms to deal with this**, including the load-related expenditure re-opener that provides funding for investment required to accommodate new and changing patterns of customers' electricity use above or below what was included up front.** As a result, we do not consider this issue warrants an MPR"[16] (emphasis added).

3.19 It remains our view that additional load-related expenditure incurred by a DNO within the RIIO-ED1 period - whether necessitated by the uptake of EVs or other sources of demand - can be considered under the mechanism that was put in place for this specific purpose: the LRR, which is set out in Special Licence Condition CRC 3G[17] of SPEN's licence.[18] Therefore, we do not believe that condition 3F.8(f) has been satisfied, as we do not believe that the SPEN submission demonstrates that the proposed adjustment to allowed expenditure is one that cannot be made under the provisions of another condition in SPEN's licence.[19]

3.20 Specifically, we consider that the proposed reinforcement expenditure can be considered under the LRR and that the remaining expenditure does not exceed the £25m threshold for a High Value Project Cost.

3.21 We asked SPEN to explain why it considered it more appropriate to make a submission under CRC 3F, given the existence of the LRR reopener. In response, SPEN said that "The distinction between HVP uncertain cost reopener and the LRR reopener is to ensure the DNO is not exposed to the unreasonable risk (of a material value >£25m) arising from a single common uncertainty and resolved through a common scheme of works, even where works are of a network reinforcement nature."

3.22 However, as stated above, we do not believe that the activity proposed by SPEN constitutes a scheme of works but instead several (not yet identified) load-related investment projects on the SPD network and the installation of monitoring equipment on some parts of its LV network.

3.23 Furthermore, we do not agree that information in the SPEN submission shows that a need for the proposed activity arises from a single common uncertainty (ie the uptake of EVs). In relation to the proposed installation of monitoring equipment,

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[15] Decision on a Mid-Period Review for RIIO-ED1, 30 April 2018
[16] Paragraph 2.10
[17] Charge Restriction Condition 3G: Revising the allowed level of Load Related Expenditure.
[18] The SPEN submission states 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". Further, the submission states that, in 2017, the Scottish government announced its aim to phase out the need for petrol and diesel vehicles by 2032. SPEN previously raised this point its response to Ofgem's December 2017 Consultation on a potential RIIO-ED1 Mid-Period Review. Ofgem's April 2018 decision not to include the potential accelerated uptake of EVs within the scope of a Mid-Period Review was therefore taken in the knowledge of this development.
[19] Licence condition 3F.8(f)

we note that, in 2017, SPEN made an unsuccessful application under the Innovation Roll-out Mechanism ("IRM") for funding for Enhanced Secondary Substation Monitoring ("ESSM").[20] Similar to its HVP application, SPEN had requested funding for the installation of monitoring devices at substations in the SPEN (and in that case it is SPMW) licence area. However, unlike the HVP application, SPEN did not specify at that time that the ESSM activity was required specifically in connection with the uptake of EVs but that it was instead related more generally to the uptake of low carbon technologies and changing customer consumption patterns.[21]

3.24 We believe this supports our view that, to the extent any need for the installation of additional monitoring equipment may exist, it does not arise from a single common uncertainty. However, our view is that the SPEN submission does not establish that such a need exists, as set out in the 'Needs case' section below.

3.25 Also, even if the work did arise from a single common uncertainty and exceeds £25m where there is a specific uncertainty mechanism such as LRR designed to address that uncertainty, our view is that mechanism is the appropriate one for considering any changes to expenditure.

3.26 Ofgem notes that Scottish government's commitment to phase out the need for new petrol and diesel cars and vans by 2032. If SPEN believes that additional investment should be made in its network as a result of forecast accelerated load growth arising from EV uptake (whether that load growth is anticipated in either the ED1 or ED2 price controls), SPEN can choose to make those investments. We will consider whether it would be appropriate to allow any additional revenue for any such additional costs incurred under the LRR, subject to the satisfaction of the conditions relevant to the LRR, including meeting the relevant expenditure threshold and demonstrating that expenditure was efficiently incurred.

3.27 As a result, our view is that that the proposal does not meet the requirements of CRC 3F.

RIIO ED1 Price Control Financial Handbook considerations: Cost efficiency assessment

3.28 In accordance with the RIIO ED1 Price Control Financial Handbook[1], we are required to assess SPEN's proposals to determine whether it represents an efficient level of expenditure.

3.29 As SPEN states that the proposal relates to accelerated investment in monitoring hardware and reinforcement of SPD's distribution network, we requested that SPEN provide a quantification of the benefits of accelerating the investment set out in the proposal ahead of the RIIO-2 period. SPEN's submission did not contain such an analysis.

[20] Distribution Network Operator Innovation Roll-Out Mechanism (IRM) Submission Pro Forma (SPEN application)

[21] Paragraph 2.2 of the ESSM submission ('The Requirement for Change') states: "Increasing uptake of low carbon technologies such as heat pumps, electric vehicles, photovoltaics and storage, along with changing customer consumption patterns are influencing load profiles. In addition, high density clustering of these technologies due to electric vehicle charging points for example will lead to rapid, localised load increases".

3.30 In response, SPEN said that it has "not directly quantified the benefits of avoided delays and the efficiency achieved through smooth investment profiles, due to the complexity in completing this analysis."

3.31 In our view, 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. For example, we would expect the licensee to have carried out a quantitative comparison of the costs and benefits associated with the accelerated investment profile and other investment profiles (taking into account the uncertainty around the uptake of EVs and the risk of stranded or underutilised assets arising from the investment). Ofgem notes that Citizens Advice raised a similar concern in its response to the informal consultation.

3.32 We set out in our draft Investment Decision Pack guidance documents for the RIIO-2 price controls[22] that, where licensees propose significant investments in RIIO-2 business plan submissions, they should include a cost benefit analysis of the proposed solution and other options that were considered to meet the stated aim of the project. The guidance says that the "baseline" scenario against which options are assessed is the scenario which involves the minimum level of intervention that would be required to remain compliant with all relevant safety regulations.

3.33 Though this guidance is for the RIIO-ED2 process, it does set out our current position on the type of analysis we expect to see in the justification of significant investments by network companies. Ofgem considers that a cost benefit analysis of the type set out in that document would have been appropriate in relation to SPEN's submission. SPEN's submission states that delaying investment "will create inevitable price shocks, cause long delays through insufficient market capacity and drive inefficient business practices; inhibiting EV uptake and disadvantaging all customers". In our view, such potential impacts should have been considered as part of a thorough quantitative cost benefit analysis.

3.34 Furthermore, we note that SPEN did provide a more detailed options appraisal (including cost benefit analysis) alongside its ESSM proposal to the IRM in 2017.[23] It is unclear why equivalent analysis has not been provided alongside this proposal.

3.35 SPEN's submission states that "EV uptake is increasing although there is still uncertainty over the speed and style of uptake. The pace of technology take-up and cost variations are difficult to forecast, which is reflected in the range of EV uptake forecasts Ofgem is supportive of network companies making"[24]. Ofgem agrees that there is a high level of uncertainty associated with the uptake of EVs.

3.36 We asked SPEN to provide information on EV uptake forecasts that it used in preparing its RIIO-ED1 business plan submissions and any forecasts made since then for the RIIO-ED1 period, in order to understand how its forecasts have evolved over this time. There have been significant changes in forecasts provided to us by SPEN[25]. In our view, this is indicative of the high level of uncertainty

[22] See https://www.ofgem.gov.uk/system/files/docs/2019/04/bpdt_materials.zip
[23] https://www.ofgem.gov.uk/system/files/docs/2017/06/03b_redacted_spen_enhanced_secondary_substation_monitoring_-_irm_appendices_v2.0.pdf
[24] Submission paragraph 3.3.1
[25] These changes in forecasts were provided to us in response to supplementary questions we issued.

surrounding the uptake of EVs.[26] We acknowledge that investing ahead of need has the potential to deliver longer-term benefits to network users. However, there is a risk that expected demand will not materialise, leaving consumers to pay for the investment without receiving the benefits. In these circumstances, we believe it is even more important to ensure that investment is only made following a thorough options appraisal.

3.37 This is a significant omission and in the absence of such analysis, our view is that SPEN's submission does not provide sufficient evidence to demonstrate that the proposed costs represent an efficient level of expenditure.

RIIO ED1 Price Control Financial Handbook considerations: Needs case

3.38 As set out in the section above, SPEN's submission does not include a quantification of the anticipated benefits of the proposed activity. In our view, without such a quantification 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.

3.39 Additionally, in its submission, SPEN sets out a methodology through which it will identify candidate areas for reinforcement, but has not specified where it expects this activity to take place or which particular investment projects it intends to go ahead with. In our view, this indicates that SPEN's plans are not sufficiently well developed to establish the need for the proposed expenditure. Ofgem notes one party's response to the informal consultation that the proposal is not sufficiently well developed to receive funding at this point.

3.40 Our view is that there is a significant level of uncertainty over solutions that SPEN has identified in its proposal. The submission states that "It has been assumed that 25% of identified reinforcement will not be required due to the deployment of smart solutions. A deferral of 25% is optimistic given experience of previous smart solutions."[27] However, no evidence has been provided to support this 25% figure. We consider this to be a shortfall in the submission.

3.41 Furthermore, SPEN's submission states that the proposed expenditure "is not additional expenditure, but accelerated investments that would otherwise have been required in ED2".[28] However, we cannot know that this is the case. 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.[29] In our view, SPEN has not established the need for the reinforcement activity it has proposed – whether this is carried out in RIIO-ED2 or in RIIO-ED1 under the proposed accelerated activity profile.[30]

[26] We note that these forecasts relate to the RIIO-ED1 period, whereas SPD states that the additional funding is required in order to address EV uptake in RIIO-ED2.
[27] Submission paragraph 4.1
[28] Submission paragraph 4
[29] We intend to start the consultation process for RIIO-ED2 via an open letter, due to be issued in Q3 2019
[30] Submission Tables 1 & 2, respectively.

3.42 For these reasons, our view is that the need for the additional expenditure has not been established.

RIIO ED1 Price Control Financial Handbook considerations: Proposed outputs

3.43 The majority of the cost totals proposed by SPEN in its submission are made up of proposed unit costs multiplied by proposed volumes of activity. SPEN proposed that, at RIIO-ED1 close-out, a review of actual delivered volumes is used to apply any adjustment using the unit costs proposed in its submission, with the caveat that there would be no adjustment to the allowed costs unless the total value of such adjustments exceed £6.47m.[31]

3.44 SPEN proposes in its submission that delivery of the proposed activity be tracked volumetrically and that RIIO-ED1 close-out will be supported by a Performance Assessment Report with detailed analysis papers for each investment scheme demonstrating customer value.[32]

3.45 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. Through supplementary questions, we asked SPEN to explain how it will ensure that the additional capacity created by these projects will accommodate additional EV demand, rather than demand growth driven by other sources. In response to this, SPEN stated that "The electricity connection charging regulations (ECCR) do not allow us to reserve capacity; however, the prioritisation built within the model targets network areas where EV uptake is forecast to occur quickly and does not include HV and EHV reinforcements. This limits risk of demand growth from other sources accessing the created capacity."

3.46 In our view, it is 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 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.

3.47 Having reviewed the submission, we asked SPEN whether it had considered a set of outputs that reflected benefits to EV customers, rather than the delivery of activity volumes. SPEN responded that "As the reopener is for anticipatory investment to enable EV adoption in ED2, this measure could be 'Additional number of EVs which are able to connect.'" However, as stated by SPEN, it is not able to reserve capacity for EVs. As such, a measure of how many EVs could connect would in reality be a measure of the additional capacity available for any source of demand brought about by the reinforcement activity. The concern we set out in the paragraph above would therefore still be valid.

3.48 For these reasons, in our view, SPEN's proposal should also be rejected because it does not include clear outputs related to the proposal's purpose.

Minded to position: Reject

3.49 Ofgem proposes to reject the adjustment proposed by SPD. This is because Ofgem **does not** believe:

[31] £6.47m being an amount equal to the "material amount" set out in the SPD licence.
[32] Submission paragraph 6

a) This 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.

Do you agree with Ofgem's assessment and our proposal to reject SPEN's request for an adjustment?

4. SPEN (SPMW) High Speed 2

Section summary

This section sets out our assessment and minded to position for SPEN's High Speed 2 High Value Project Cost submission.

Application

4.1 We have received a submission from SPEN requesting an increase of £35.1m in its allowed expenditure for its 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.

4.2 SPEN's submission consists of two parts. The first part of SPEN's submission is to do with the construction works that will be needed to deliver the project and the enduring load of the project. The second part of its submission is to do with the anticipated impact of HS2 on economic growth: "HS2's vision is to be a 'catalyst for growth across Britain'". Together, the two parts are represented by fifteen individual reinforcement projects across the SP Manweb licence area.

4.3 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."

- "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".

- "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."

Informal consultation responses

4.4 We received five responses to the informal consultation that was published on 7 June, three of which responded specifically regarding SPEN's application for an adjustment to allowances for its High Speed 2 High Value Project. One respondent requested their response to remain confidential.

4.5 Centrica questioned whether the submission met all of the qualifying criteria. In particular, it felt that SPEN's proposed adjustments did not relate to a scheme of works and so did not qualify for consideration under the High Value Project reopener mechanism. Further, Centrica did not agree that the submission provided adequate evidence that the planned expenditure was economic or efficient. It observed that SPEN's claim for funding fully covered traditional reinforcement solutions, with a commitment to investigate flexibility services later, so that SPEN's currently proposed plans might not be efficient from the consumer's perspective. Finally, Centrica disagreed with SPEN about whether the reopener for load related reopener costs (LRR) was the correct mechanism, arguing instead that it was appropriate.

4.6 Citizens Advice felt that it was prevented from adequately assessing the submission due to the level of redacted information and was thus unable to determine whether the proposed expenditure could be deemed economic and efficient. However, Citizens Advice did enquire whether other solutions, such as improved system management, were considered instead of new network infrastructure. Citizens Advice had concerns that awarding the funding and agreeing to particular network solutions for schemes that extended as far as 2040 could be locking in technological solutions that might be considered inefficient by the time they were required to be in place. Finally, Citizens Advice believed that the HS2 project would be covering the costs of major works required for HS2, including additional capacity, so that public funding was not needed.

Our assessment

<u>High Value Project Costs definition</u>

4.7 The definition of High Value Project Costs is discussed in paragraphs 2.2-2.4 above.

4.8 In our initial view, the adjustment proposed in SPEN's submission does not relate to a scheme of works.

4.9 In the case of the adjustment proposed in relation to the construction of HS2, there remains uncertainty over who will be funding these works. If HS2 will bear the costs, those costs are not within the definition of High Value Project Costs discussed in paragraphs 2.2-2.4 above and we note that, as per its response to our supplementary questions, SPEN has indicated that this element accounts for only £7.84m of the adjustment requested, well below the £25 million required to qualify as a High Value Project.

4.10 In our initial view, reinforcement works relating to the regional economic growth element of SPEN's application do not constitute a scheme of works. The application does not suggest a direct causal connection between HS2 on the one hand and the economic growth-related component of SPEN's application on the other. On the contrary, it appears that the connection between the two may conceivably be very tenuous and, therefore, inconsistent with a "scheme of works".

4.11 Ofgem notes the varying and long timelines associated with the two Phases of HS2 which will impact on SPEN. For Phase 2a, which will impact on SPMW's licence area in the Crewe region, main civil construction works are not due to begin until mid-2021, with the first passenger train not due to run until 2027. For Phase 2b, which will impact on a greater proportion of SPMW's licence area than Phase 2a, especially in and around Manchester, main civil construction works are not due to begin until mid-2023, with the first passenger train expected in 2033.

4.12 In the case of the economic growth-related component of the application, SPEN provides a table that details capacity requirements by year. The table reveals that 40% of capacity is projected to be in demand before construction on Phase 2a is due to begin, with 90% projected to be in demand before the first passenger train runs in the SPMW licence area. The full ten years of forecast regional economic capacity demand growth contained within SPEN's submission extends until 2028, five years before the first passenger trains are due to operate in the majority of SPMW's licence area.

4.13 In its submission SPEN identifies multiple city development plans and regional growth strategies, one of which is the Greater Manchester Spatial Framework (GMSF), which outlines development opportunities around Manchester Airport and the surrounding area. At the centre of the plan is a £1bn investment in Manchester Airport, with a view to nearly doubling the annual capacity of passengers from 28m to 50m a year. The GMSF also includes plans to improve local transport links by extending the Metrolink tram and enhancing other public transport, along with the delivery of 500,000m^2 of commercial space and 2,400 new homes in the area around the airport.

4.14 The development of Manchester Airport is already well underway and is scheduled for completion in 2024, nine years before the first HS2 passenger train is due to begin service in Manchester. Moreover, the January 2019 revised draft of the GMSF, which runs to 443 pages, contains just one paragraph directly on HS2. Ofgem is not currently convinced that HS2 forms the centrepiece of the GMSF and that GMSF growth can be categorised as HS2-related growth.

4.15 Consequently, Ofgem's initial view is that the multiple reinforcement projects attributable to economic growth in the Manchester area are primarily driven through the GMSF, of which HS2 is a small part, rather than directly by HS2.

4.16 More broadly, Ofgem is not currently convinced that any of the ten individual reinforcement projects associated with regional economic growth in SPEN's submission can be attributed to HS2 in such a way as to constitute a scheme of works for the purpose of CRC 3F. Nor is it currently convinced that the reinforcement projects combined constitute a scheme of works.

4.17 In our supplementary questions we asked SPEN for evidence that the delay or non-completion of HS2 would lead to the abandonment of any of the proposed reinforcement projects. SPEN was unable to provide any such evidence. SPEN recognised that the development around Manchester Airport was being driven by multiple large infrastructure projects, including the investment in the airport itself as well as the proposed Northern Powerhouse Rail project.

4.18 In our initial view therefore, the evidence presented to us suggests that the economic growth–related element of SPEN's application consists of multiple unrelated reinforcement projects on SPMW's networks, only one of which is HS2 and we consider that state of affairs to be inconsistent with the existence of a scheme of works of the type contemplated by the licence.

4.19 Therefore, in our initial view, neither element of SPEN's application relates to "High Value Project Costs" as defined.

Compliance with CRC 3F

4.20 We do not currently believe that SPEN's submission complies with all of the requirements of CRC 3F. Specifically, we do not currently believe that the requirement in condition 3F.8(f) has been satisfied.

4.21 Licence condition 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."

4.22 Our initial view is that additional load-related expenditure incurred by a DNO within the RIIO-ED1 period, whether necessitated by higher than expected economic growth or any other sources of demand, can be considered under the mechanism that was put in place for this specific purpose: the LRR, which is set out in Special licence condition CRC 3G of SPEN's licence. .

4.23 In response to our additional supplementary questions, for each of the fifteen proposed reinforcement projects, SPEN provided a breakdown of the costs that had been included in the HVP submission and the costs being recovered directly from consumers. In the case of the regional economic growth element of SPEN's application, the full amount of the costs was included in the HVP submission with none being recovered directly from consumers. In our initial view, that would tend to indicate that that these works constitute general reinforcement. That is because 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."

4.24 Moreover, as per Table 3.2 of the ED-1 Strategy Decision (Uncertainty Mechanisms) which sets out the areas of expenditure to be covered by the LRR, general reinforcement is specifically included.

4.25 Further, the ED-1 Strategy Decision (Uncertainty Mechanisms) document details the intent of the LRR. In recognition of the fact that there was expected to be greater uncertainty around load related expenditure in ED-1, when compared to DPCR5, the scope of the LRR was expanded to include other categories of reinforcement.

4.26 Ofgem's initial view is that some part of the reinforcement works that form SPEN's submission fall into these new categories of load related expenditure that the LRR was specifically broadened to include.

RIIO ED1 Price Control Financial Handbook considerations: Cost efficiency assessment

4.27 Our initial view is that the proposed solution is potentially inefficient and therefore fails to offer good value to consumer. The capacity requirements that form this submission extend up to 2028 and we might expect some of the regional economic growth in areas affected by Phase 2b to extend beyond this, considering that the first passenger trains are not scheduled to be in operation until 2033. The traditional network solutions proposed by SPEN now might not represent the most efficient option available by the time the demand is required. This point was also made by a respondent to the informal consultation. Our initial view is that that the

risks of locking in traditional network solutions now are not outweighed by the potential efficiencies of SPEN's proposed holistic investment (assuming for the purposes of this paragraph only that the adoption of such a holistic approach is consistent with the requirements of the licence) that involves funding reinforcement projects, in many cases, many years ahead of need.

4.28 Furthermore, in response to further supplementary questions, SPEN provided a more detailed technical breakdown of the fifteen proposed reinforcement projects. For nine of the fifteen projects, SPEN has indicated that it would undertake a review of the market for flexibility solutions before undertaking detailed designs for the projects. Ofgem does not currently consider that SPEN's submission can, therefore, represent efficient expenditure for consumers, as flexibility solutions have not yet been considered, nor have detailed plans of the reinforcement projects been compiled.

4.29 In the absence of further evidence – such as a detailed quantitative assessment of the benefits of SPEN's proposed solution when compared to other alternative approaches – that SPEN's proposals are efficient or represent good value for consumers, Ofgem's initial view is that the submission fails to pass the test set out in the RIIO ED1Price Control Financial Handbook, paragraph 7.24(ii)c.

RIIO ED1 Price Control Financial Handbook considerations: Needs case

4.30 As mentioned in the previous section, SPEN's submission did not include a quantification of the anticipated benefits of the proposed activity. In our initial view, without such a quantification, the proposal fails to establish that there is a need for the proposed expenditure to be incurred.

4.31 In our initial view, SPEN has failed to justify how uncertainty around HS2 has been adequately resolved since the setting of the RIIO ED-1 price control, such as to justify the adjustment proposed.

4.32 There remains uncertainty over the funding of HS2. As Ofgem understands it, there are obligations and agreements in place as a result of the Phase 1 Hybrid Bill that determine which party is liable for costs associated with the construction of HS2, including capacity requirements and diversionary works. These agreements stipulate that HS2 Ltd will pay the full costs associated with any utility works required for the construction of HS2. There remains uncertainty over who will fund some of these costs in the case of Phase 2a and 2b, as the corresponding Hybrid Bills have still to be passed by Parliament and for that reason SPEN's submission includes funds associated with the Phase 2a and Phase 2b construction of HS2. Ofgem is minded to defer making a decision on those phase 2a and 2b costs pending the passage of the related Hybrid Bills.

4.33 Secondly, there remains a level of uncertainty around the HS2 project more broadly. Any changes to the schedule of delivery of the project, or to the route, could lead to significant alterations to required work. Ofgem's initial view is that these risks have not been resolved to such a degree as to warrant an adjustment at this time.

RIIO ED1 Price Control Financial Handbook considerations: Proposed outputs

4.34 In its submission, SPEN proposes measuring delivery volumetrically against the costs and volumes set out in Table 3.7. However, we note that SPEN has not provided a justification for the unit costs used in their submission.

4.35 Further, Ofgem is not currently convinced that volumetric tracking is a more appropriate output measure than outturn MVA increases, which is more typical of reinforcement projects. However, we have yet to reach a decision on the most appropriate output measure.

Minded to position: Reject

4.36 Ofgem proposes to reject the adjustment proposed by SPEN. This is because Ofgem **does not** currently 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.
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.

Do you agree with Ofgem's assessment and our proposal to reject SPEN's request for an adjustment?

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

Section summary

This section sets out our assessment and minded to position for SPEN's 33kV cable systems High Value Project Cost submission.

Application

5.1 We have 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.

5.2 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.

5.3 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."

- 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."

- In their submission, SPEN sets out their intervention strategy, SPEN propose three major activities to replace the 33kV trifurcating cable joints, (i) joint replacement via cable overlay, (ii) targeted joint replacement and (iii) replacement on failure.

5.4 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.

Informal consultation responses

5.5 We received five responses to the informal consultation we published on 7 June 2019, three of which responded specifically to SPEN's application for an adjustment to allowances for the proposed 33kV Cable Systems High Value Project.

5.6 Centrica stated that portfolios of asset management activities do not meet the qualifying criteria for High Value Project Costs. This is because SPEN are funded to manage assets as part of the RIIO ED1 price control and faults due to 33kV trifurcating joints were present in the DPCR5 price control and therefore the risks were known.

5.7 Centrica, Citizens Advice and one other respondent, who requested for their consultation response to remain confidential raised concerns on the balance of risk, specifically highlighting that the RIIO ED1 Strategy Decision Overview states that risks should be borne by the party best able to manage them efficiently.

5.8 Centrica, Citizens Advice and one other respondent raised concerns relating to the procurement strategy adopted by SPEN such that it is unable to recover costs relating to the joint failure from the supplier.

Our assessment

Compliance with CRC 3F

5.9 We consider that SPEN has complied with the requirements under CRC 3F.

RIIO ED1 Price Control Financial Handbook considerations: Needs Case

5.10 Forensic analysis undertaken by SPEN has identified that there is a common mode failure associated with the specific 33kV trifurcating cable joints installed on the SPD and SPMW 33kV Network. Based on operational experience and forensic examination, these joints have been found to be susceptible to early life failures. The fault mechanism is consistent with moisture ingress to the joint.

5.11 The analysis presented by SPEN has shown that the faults are coincident with high ambient temperature and high day to night temperature variations and demonstrate a strong seasonal bias with faults most prevalent in May to August.

5.12 The analysis presented by SPEN postulates that environmental conditions accelerate the ageing of the joints. However, a direct correlation between environmental factors and failure has not been proven. This interaction of factors (moisture ingress and temperature) means forecasting future failure rates is difficult, as it is a function of the ageing of the joints which will be location specific.

5.13 As detailed by SPEN in their submission, both network areas have seen an increase in the number of failures over and above the DPCR5 average faults per annum.

Table 5.1 shows the number of faults due to 33kV trifurcating joints, an increase in the number of failures in RIIO-ED1 years can be observed.

Table 5.1: 33kV Trifurcating Joint Failures

	SPD	SPMW
Year	Number of Failures	Number of Failures
2010	3	11
2011	4	5
2012	5	17
2013	5	14
2014	9	23
2015	10	21
2016	18	43
2017	12	62
2018	81	123

5.14 Fault allowances set by Ofgem at the beginning of RIIO-ED1 were calculated based on the historic fault performance of the network. SPEN consider the cost associated with the failures rates above the average faults per annum to be uncertain cost activities.

5.15 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

5.16 SPEN's stated position is that Extra High Voltage (EHV) faults rarely result in the loss of supply to consumers, but that in recent years' interruptions arising from joint faults have become routine. The lost supply incidents associated with 33kV trifurcating cable joints are presented in Table 5.2.

Table 5.2: Loss of Supply Incidents

	SPD	SPMW
	Lost Supply Incidents	Lost Supply Incidents
2015	1	0
2016	4	1
2017	3	0
2018	25	1

5.17 SPEN state that the presence of concurrently and coincidentally failing 33kV trifurcating cable joints, in particular under outage conditions, where circuits are out of service for maintenance, may lead to loss of supply to multiple network groups at the same time.

5.18 For the SPMW licence area, joint failure rates are not reflected in Loss of Supply incidents. This is because of the meshed nature of the SPMW EHV network, which offers increased reliability (with increased operating costs). For the SPD licence area increased joint failure rates coincide with increased Loss of Supply incidents for one year only: 2018.

5.19 It is our view, however, that a single year of above trend data does not provide robust justification for the scale of investment proposed by SPEN in their submission.

5.20 SPEN have provided evidence in their submission that increased operational readiness combined with voltage reduction could be used to mitigate against the risk of cable joint failure[33]. From Appendix 1 of the SPEN submission evidence is presented that shows, with the application of voltage reduction, the failure rate reduces by 50% from 4.37 failures per day to 2.13 failures per day.

5.21 Based on actual loss of supply incidents to date we consider that the risk to security of supply has been overstated. SPEN have 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. As such, it is our view that the needs case for this project has not been established.

5.22 As per the RIIO-ED1 Strategy Decision on Uncertainty Mechanisms[34], "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."

5.23 We agree with the informal 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[35] which states that risks should be borne by the party best able to manage them efficiently.

5.24 In light of the above, we consider 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.

5.25 We consider that long-term efficient and economic solutions to 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.

RIIO ED1 Price Control Financial Handbook considerations: Proposed outputs

5.26 SPEN propose three major activities to replace the 33kV trifurcating cable joints, (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 5.3.

[33] SPEN 33kV Cable Systems HVP Table 1 Additional Mitigation (Voltage Reduction)
[34] https://www.ofgem.gov.uk/sites/default/files/docs/2013/02/riioed1decuncertaintymechanisms_0.pdf
[35] https://www.ofgem.gov.uk/sites/default/files/docs/2013/03/riioed1decoverview.pdf

Table 5.3: Replacement Type, Costs, Volumes and Outputs

Replacement Type	No. Joints	SPD Cost (£m)	SPMW Cost (£m)	Output
Replacement on Failure	678[36]	4.04	4.36	No of Joints
Cable Overlay	1824	27.18	20.32	km of Cable
Targeted Replacement	614	2.73	3.55	No of Joints

5.27 SPEN extrapolate the failure rates of the 33kV trifurcating cable joints to determine the on fault replacement figures of 678. The remainder of the replacements are then split between targeted replacement and cable overlay activities.

5.28 For on fault replacement and the targeted replacement methods SPEN have proposed the following output: the volume of targeted cable joints that must be efficiently replaced to deliver intervention.

5.29 For the cable overlay method SPEN propose that the output measure is the volume of km of cable that must be efficiently replaced to deliver intervention. This is indirectly related to the number of joints to be removed.

5.30 SPEN are proposing to install 200km of 33kV cable to achieve the required cable overlay solution. As part of our assessment of SPEN's proposal, we asked the DNO to provide a robust methodology for estimating cable volumes and to provide a confidence interval due to the uncertainty of final cable lengths.

5.31 In their response SPEN have stated that the cable volume required is a function of joint cluster density and circuit length. SPEN propose that in the majority of cases, which are circuits with a length greater than 1km, an average of 575m per circuit will be replaced. The figure of 575m is derived from the mean minus one standard deviation of circuit lengths between 500m and 1km.

5.32 The derived figure of 575m is then multiplied by the number of circuits greater than 500m (339 circuits) to give a volume of 194.9km. This represents the majority of the proposed 200km, with the balance from the circuits with lengths under 500m. SPEN argue scaling in this manner is appropriate as joint and cluster density of these categories is similar across the circuits.

5.33 In our view 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.

5.34 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

[36] 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.

investment, we consider that SPEN should have greater certainty of joint cluster densities and have measured cable lengths to support volume estimates.

5.35 We consider the level of uncertainty associated with the proposed volume of cable to be a significant shortfall in their proposal. As the methodology used to estimate cable volumes is not clear the proposed outputs are not robust.

5.36 In accordance with the PCFH, we do not consider that SPEN have shown that the outputs proposed are appropriate.

RIIO ED1 Price Control Financial Handbook considerations: Cost efficiency assessment

5.37 In accordance with the RIIO ED1 Price Control Financial Handbook, we are required to determine whether the proposed project represents an efficient level of expenditure. In our assessment, we have considered the network risk reduction that would be delivered as a result of this project alongside the level of investment proposed by SPEN in order to deliver it. We have also considered any efficiencies SPEN propose to achieve and have carried out a comparison of unit cost rates where possible.

5.38 SPEN's preference is to replace all of the of 33kV trifurcating cable joints between 2019 and 2023 to minimise the risk to security of supply. However, the current risk to security of supply due to 33kV trifurcating cable joints has not been quantified, nor has the benefit to system security after investment and removal.

5.39 We consider that total replacement of all the 33kV trifurcating cables affected in the current Price Control Period is a very conservative position with regards to network risk. Furthermore, it is not likely to be economic or efficient to replace all 33kV trifurcating cable joints in the current price control period, without due consideration of the wider asset replacement and reinforcement schemes.

5.40 As per Table 5.3, SPEN's preference is that the majority of the 33kV trifurcating cable joints are replaced with a cable overlay. SPEN are proposing to install 200km of 33kV cable at a cost of £27.18m for SPD and £20.32m for SPMW to achieve the required cable overlay solution.

5.41 The cost to replace the joints on failure or via targeted replacement is comparable and for replacement of a 33kV joint replacement SPEN present a cost of £10.22k.

5.42 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.

5.43 SPEN argue that a cable overlay solution will remove multiple joints per intervention with the addition of only two new trifurcating joints. SPEN argue that this avoids multiple new joints, removes any intermediate joints, leaving a 'clean' circuit in its place and ensures improved overall network resilience.

5.44 As part of our assessment we challenged SPEN to provide evidence or supporting analysis to support the proposition that cable overlay provides an efficient and economic investment and justification for the additional costs associated with the cable overlay via supplementary questions.

5.45 In their responses SPEN have not justified the additional cost associated with cable overlay solutions via analysis. Replacing 33kV trifurcating cable joints via a cable

overlay is more expensive than a replace on fault/targeted replacement program. Given the additional cost of the cable overlay solutions we consider this a shortfall in the proposal.

5.46 We do not consider that SPEN's proposal has demonstrated that the investment of £70.07m is efficient expenditure.

Minded to position: Reject

5.47 Ofgem proposes to reject the adjustments proposed by SPEN for both the SPD and SPMW licence areas. We **do not** consider that in its application, SPEN has 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.

Do you agree with Ofgem's assessment and our proposal to reject SPEN's request for an adjustment?

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

Section summary

This section sets out our assessment and minded to position for SHEPD's Pentland Firth East subsea cable replacement High Value Project Costs proposal.

Application

6.1 SSEN is requesting an additional £30m of funding for its SHEPD licence area to replace the Pentland Firth East (PFE) subsea cable. This is a 36.2km subsea cable connecting Orkney to mainland Scotland, which SHEPD has identified as being in need of full replacement during the current Price Control Period.

6.2 It is proposing to replace the existing PFE 240mm^2 cable with a 400mm^2 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.

6.3 SSEN gave Notice of its proposal during the High Value Project Costs application window, which ran from 1 May to 31 May 2019.

6.4 In its application, SSEN state 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 the cable was reclassified as Asset Health Index category 5 (HI5), ie end of serviceable life and that replacement is required.
- Following a review of several replacement options, the 400mm^2 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.
- It expects the cable to be installed in April 2020 and the full replacement project to be completed by August 2020.
- The main benefit of the project is retaining security of supply to Orkney.

6.5 The £30m requested by SSEN is made up of:

- indirect costs
- regulatory consent and engineering costs
- plant and materials costs
- onshore and offshore construction costs.

Informal consultation responses

6.6 We published an informal consultation on 7 June 2019, seeking early views on submissions received in the May 2019 window. We published SSEN's non-confidential version of their proposal alongside the informal consultation. We received five responses, three of which responded specifically to SSEN's application

for an adjustment to allowances for its PFE subsea cable replacement High Value Project. These respondents were Centrica, SPEN and Citizens Advice.

6.7 While acknowledging that the confidential version of the proposal, which was not published, may have contained further justification, Centrica stated that the non-confidential reopener submission did not evidence that the proposed solution is "necessary or is economic and efficient". They also encouraged Ofgem to consider both the PFE project and Scottish Hydro Electric Transmission Limited's (SHETL) Orkney transmission project holistically.[37] Both projects connect Orkney to mainland Scotland and Centrica argue that Ofgem's assessment should consider whether both "if undertaken, provide value for money for consumers".

6.8 In SPEN's response, they stated that any risk reduction[38] achieved under this project should not be included in SSEN's RIIO-ED1 output target under SLC 51. SHEPD have stated that the project will achieve a Risk Index Reduction Output of 453,752, but that it will not contribute towards meeting their RIIO-ED1 Risk Points target. We agree with this position.

6.9 In SPEN's response, they also stated that the project unit costs should be benchmarked against industry outturn and Ofgem's RIIO-ED1 expert view of unit costs, given that it is principally the replacement of a subsea cable asset.

6.10 Citizens Advice stated that disaggregated costs and access to all non-confidential parts of the Appendices, would have given them more opportunity to take a view on whether the approach and costs are economic and efficient.

Our assessment

Compliance with CRC 3F

6.11 We consider that SSEN has complied with the requirements under CRC 3F.

RIIO ED1 Price Control Financial Handbook considerations: Needs Case

6.12 The existing PFE cable is a 36.2km cable connecting Orkney to mainland Scotland. It was installed in 1982 with a circuit rating of 23.4MVA. SSEN did not include the replacement of this cable in their RIIO-ED1 business plan.

6.13 SSEN set out in their submission that, following on from their RIIO-ED1 Business Plan submission in 2013 and 2014, inspection campaigns have provided more detailed and more recent information regarding the condition of the PFE subsea cable. The 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 the cable was reclassified as Asset Health Index category 5 (HI5), ie end of serviceable life and that replacement is required.

6.14 SSEN stated in their submission that the PFE cable has also experienced faults in recent times, the first of which was in January 2019. In order to secure demand during this fault, the Pentland Firth West (PFW) cable and on-island generation,

[37] SHETL are proposing to connect Orkney to the transmission network on mainland Scotland. Further information is available here: https://www.ofgem.gov.uk/electricity/transmission-networks/critical-investments/strategic-wider-works/scottish-island-links

[38] At the beginning of the RIIO-ED1 price control, DNOs provided forecasts of their asset health and criticality positions for the end of the price control. These forecasts were used to set targets for improvement for the end of the price control and DNOs are funded to deliver these targets.

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.

6.15 Cable fault location tests and repairs were subsequently carried out. Since then, however, three further faults have occurred on the PFE cable.[39]

6.16 For the reasons stated above, we are satisfied that a needs case for work to be carried out has been established.

RIIO ED1 Price Control Financial Handbook considerations: Proposed outputs

6.17 SSEN propose a replacement project which will see the PFE 240mm^2 cable replaced with a 400mm^2 cable in a similar submarine position. The remaining subsea cable on the circuit, between Orkney and Hoy, is planned for replacement as part of SHEPD's submarine cables project portfolio.

6.18 In their submission, SSEN have not explicitly confirmed the rating of the 400mm^2 cable, but from our calculations we believe the capacity to be ~32.8MVA. The increase in cable diameter is driven by fault level increases, with the 3 second fault level rating of the 400mm^2 cable being 33kA.

6.19 SSEN identify a main benefit of the cable replacement project as retaining security of supply on Orkney. To achieve P2/7 compliance, a second operational cable alongside PFW is required and SSEN state that their proposed solution will ensure demand on the island is met.

6.20 We are not currently satisfied with the outputs provided by SSEN. We agree that in order to ensure P2/7 compliance and to ensure group demand on Orkney, the PFE cable needs to be replaced. However, as we set out in our efficiency assessment below, we are not convinced that the proposed solution is economic and efficient and therefore that these outputs will achieve the stated aim of securing demand on Orkney.

RIIO ED1 Price Control Financial Handbook considerations: Efficiency assessment

6.21 As mentioned above, we are satisfied that a needs case for work to be carried out has been established. In accordance with the RIIO ED1 Price Control Financial Handbook[1], we are required to assess SSEN's proposals to determine whether the proposal by the licensee represents an efficient level of expenditure.

6.22 In their submission, however, SSEN have not provided consistent data to us regarding current and future demand for the Orkney Group. This has limited our ability to carry out a thorough assessment of SSEN's proposed solution in order to determine whether their proposal represents an efficient level of expenditure.

6.23 In order to be P2/7 compliant[40], DNOs must secure group demand in the event of a fault. Due to inconsistent figures set out in SSEN's submission, it has been difficult to establish what the demand is on Orkney. However, from the figures provided by SSEN we understand demand to be approximately 34MW.

6.24 Based on the information provided in SSEN's submission, in particular the demand figures, it is our view that replacing the PFE cable may need to be carried out to ensure P2/7 compliance is not breached in the future.

[39] A second fault occurred in March 2019. Upon completion of the repair in May 2019, two faults were found on testing.
[40] P2/7 is a distribution network planning standard, which sets the minimum levels of supply that Distribution licensees must achieve on GB distribution networks

6.25 While there are several potential load and generation scenarios for the Orkney Group consideration of these scenarios and how SSEN's proposed solution interacts with them is not addressed in SSEN's submission. For example it is likely that, within the lifetime of the proposed cable, a decision will need to be made on the future of KPS; whether to retain, re-power or remove. However, this is not addressed in SSEN's submission.

6.26 The different figures provided by SSEN and the sources in which these values were stated are set out in Table 6.1 below. The figures show the various demand figures provided to Ofgem through the course of engagement with SSEN regarding the PFE replacement project.

Table 6.1 Demand Ratings quoted by SSEN

Demand Rating	Source	Comments
23.4MW	Common Network Asset Indices Methodology (CNAIM) PFE maximum demand entered data[41]	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)[42] – 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.
5-8MW[43]	The level of micro, non-metered embedded generation on Orkney	Ofgem's estimation of levels of G83 (or equivalent) generation on Orkney.

6.27 From our analysis of the above figures, should there be any demand increase from the presently indicated demand level of 34MW (and any hidden demand via embedded generation), P2/7 compliance may be compromised.

6.28 We would expect an economic and efficient solution to be capable of enabling P2/7 compliance to be met on Orkney for current and future consumers. For future consumers, we would expect this to apply for the duration of RIIO-ED2[44].

6.29 To show that the proposed solution is economic and efficient, we would expect SSEN to demonstrate how the replacement cable will enable the current and future group demand on the island to be met, in the event of a failure on PFW. As can be

[41] 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.
[42] https://www.ssen.co.uk/LTDS/
[43] It is noted that the embedded non metered generation is onerous to accurately quantify. Please note, SHEPD has not indicated, nor forecast, any values of the masked demand by embedded generation.
[44] Based on our working assumption that the RIIO-ED2 price control will last for 5 years, we would expect this solution to be capable of ensuring P2/7 compliance until April 2028. A decision on the length of RIIO-ED2 will be subject to further consultation.

seen from Table 6.1, SSEN have not provided a clear and consistent view on the current level of demand and there is no forecast for future demand increases.

6.30 As well as a clear statement of current and forecast levels of group demand, we would expect SSEN to have considered a number of potential factors that could affect their ability to meet group demand. These should include, but not be limited to:

- how SSEN would meet future demand should KPS be decommissioned
- how SSEN would meet future demand should the proposed Transmission link not be built
- the extent to which flexibility solutions may be able to support the delivery of these outputs.

6.31 Neither SSEN's submission, nor their responses to our supplementary questions, provide us with evidence that the above factors have been considered in the design of their proposed solution.

6.32 We are therefore concerned that there may be foreseeable circumstances in which SSEN's proposed solution is not capable of enabling P2/7 compliance to be met on the island. This may be because group demand is higher than they have anticipated and/or other means of managing demand on the island are not available.

6.33 Given all of the above, we cannot presently be satisfied that the proposed option is economic and efficient.

Minded to position: Accept subject to conditions

6.34 On the basis of the needs case, we are minded to accept the SSEN PFE subsea cable replacement High Value Project. This acceptance is, however, subject to SSEN providing further information to us to demonstrate that their proposed solution is economic and efficient.

6.35 This further information must consist of:

- An options assessment, which demonstrates that the rating of the cable to be installed is economic and efficient for present and future consumers. This will include analysis on the option of least regret with regards to proposals for the proposed SHETL Orkney Transmission Link.
- Robust and accurate figures used to calculate both the present and future demand on Orkney, as well as the values and justification for forecasting increases in demand. This will include analysis demonstrating the headroom for demand growth afforded by the cable rating and thus the circuit rating selected.
- SHEPD demonstrating how they will comply presently and in the future with SLC 43B[45] with regards to KPS. This includes any present or future plans for KPS.

6.36 Our final determination will be subject to SSEN clearly fulfilling the requirements of the above criteria and subject to our analysis of that information in accordance with the Special Licence Conditions and the PCFH. This information must be provided to us by the close of this consultation on Friday 30 August 2019.

[45] Standard Licence Condition 43B Prohibition on Generating by Licensee.

6.37 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 would provide for a reasonable degree of headroom. Therefore, if further funding is sought in relation to demand on Orkney in RIIO-ED2, we will reassess the allowances provided for SSEN's proposed solution and seek to return the allowed funding to consumers. It may also impact our decision on allowances for any subsequent load reinforcement works on Orkney.

6.38 Should there be external, and currently unanticipated, drivers for load reinforcement on Orkney (such as environmental or wider government policy changes), this will be considered against the present opportunity afforded to SSEN to provide additional headroom in the cable capacity.

Do you agree with Ofgem's assessment and our proposal to accept SSEN's request for an adjustment, subject to conditions?

Appendix 1 - Feedback on this consultation

How to respond

1.1 We want to hear from anyone interested in this consultation.

1.2 Please send your response to the person or team named on this document's front page. We've asked for your feedback in each of the questions throughout. Please respond to each one as fully as you can.

1.3 We will publish non-confidential responses on our website at www.ofgem.gov.uk/consultations and put it in our library.

Your response, data and confidentiality

1.4 You can ask us to keep your response, or parts of your response, confidential by clearly marking it confidential and providing reasons. We'll respect this, subject to obligations to disclose information, for example, under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004.

1.5 However, we would like to publish as much of your response as we can. To help us achieve this goal we would appreciate it if confidential material could be provided in a separate appendix to your response. This should also be clearly marked and reasons provided.

1.6 If the information you give in your response contains personal data under the General Data Protection Regulations 2016/379 (GDPR) or domestic legislation on data protection, the Gas and Electricity Markets Authority will be the data controller. Ofgem uses the information in responses in performing its statutory functions and in accordance with section 105 of the Utilities Act 2000. Please refer to our Privacy Notice on consultations.[46]

[46] https://www.ofgem.gov.uk/consultations/our-consultation-policy