Worst Served Customers

ED2 Engineering Justification Paper

ED2-NLR(O)-SPEN-001-WSC-EJP

Issue	Date	Comments
Issue 0.1	March 2021	Prepared for SRG Review
Issue 0.2	April 2021	Updated following SRG Review
Issue 1	30th June 2021	Draft Submission
Issue 2	30th November 2021	Final Submission

Scheme Name	SPEN Worst Served Customers			
PCFM Cost Type	Non-Load Related – Non-Asset			
Activity	Worst Served Customers			
Primary Investment Driver	Network Reliability			
Reference	ED2-NLR(O)-SPEN-001-WSC-EJP			
Output Type	Worst Served Customers			
Cost	**SPD** £5.973m		**SPM**	£8.658m
Delivery Year	2023-2028			
Reporting Table	CV19			
Outputs included in ED1	~~Yes~~/No			
Business Plan Section	Ensuring a Safe and Reliable Electricity Supply			
Primary Annex	Annex 4A.5: Network Performance Strategy			
Spend Apportionment	**ED1**	**ED2**		**ED3**
	£m	**£14.631m**		**£m**

Technical Governance Process
Project Scope Development
IP1(S)

To be completed by the Service Provider or Asset Management. The completed form, together with an accompanying report, should be endorsed by the appropriate sponsor and submitted for approval.
IP1 – To request project inclusion in the investment plan and to undertake project design work or request a modification to an existing project
IP1(S) – Confirms project need case and provides an initial view of the Project Scope
IP2 – Technical/Engineering approval for major system projects by the System Review Group (SRG)
IP2(C) – a Codicil or Supplement to a related IP2 paper. Commonly used where approval is required at more than one SRG, typically connection projects which require connection works at differing voltage levels and when those differing voltage levels are governed by two separate System Review Groups.
IP2(R) – Restricted Technical/Engineering approval for projects such as asset refurbishment or replacement projects which are essentially on a like-for-like basis and not requiring a full IP2
IP3 – Financial Authorisation document (for schemes > £100k prime)
IP4 – Application for variation of project due to change in cost or scope

PART A – PROJECT INFORMATION

Project Title:	**Worst Served Customers**
Project Reference:	**ED2-NRL(O)-SPEN-001-WSC-EJP**
Decision Required:	**To give concept approval for the use of the WSC funding in RIIO-ED2 to deliver a 33% improvement of WSC targeted with the proposed schemes.**

Summary of Business Need:
The number of WSC has increased due to a change in the criteria, and this presents a significant opportunity to improve quality of supply by making the best use of this funding. The funding is a way of improving customer service and ensuring the network is performing at a level that is acceptable to customers. The WSC funding will assist in improving the service via named schemes during the RIIO-ED2 period.

Summary of Project Scope, Change in Scope or Change in Timing:
The investment of £14.631 in WSC will improve performance by 33% for 7,857 customers who are classed as worst served. This will comprise of 11 schemes in SP Distribution that will improve the performance for 3,680 customers and 4,177 customers over 11 schemes in SP Manweb over the RIIO-ED2 period.

Expenditure Forecast (2020/21 prices)

Recommended Scheme Investment Profile	Total (£m)	Incidence (£m)				
		2023/24	2024/25	2025/26	2026/27	2027/28
CV19 WSC SP Distribution	**£5.973**	£3.683	£0.772	£0.677	£0.416	£0.424
CV19 WSC SP Manweb	**£8.658**	£3.380	£1.270	£2.184	£0.975	£0.849
This Proposal	**£14.631**					

PART B – PROJECT SUBMISSION

Proposed by	Charlie Dodds	Signature	Charlie N Dodds	Date:	30/11/2021
Endorsed by	Matthew Jones	Signature		Date:	30/11/2021

PART C – PROJECT APPROVAL

Approved by	Malcolm Bebbington	Signature		Date:	30/11/2021

Contents

1 Introduction

The Worst Served Customer (WSC) funding is an ex-ante allowance given to both SP Distribution and SP Manweb to improve the performance of the network feeding these WSCs. The allowance per customer and the percentage improvement is set by each licence, and in RIIO-ED1 the definition of WSC was one who has experienced 12 or more higher voltage interruptions in the previous 3 years with a minimum of 3 in each of the 3 years the allowance was set at £1,000 per WSC to achieve a 25% improvement in performance in the 3 years after the investment was completed.

This justification paper will define the RIIO-ED2 allowance and the percentage improvement per WSC in the following 3 years post investment. In addition, the rationale for the projected number of WSC schemes and the number of WSC customers who will benefit from this funding mechanism will also be explained.

The primary driver for the WSC program is to improve the performance of these WSC via dedicated schemes with detailed designs for each scheme along with an expected improvement based on the previous interruption history. This investment will also improve the resilience of the network as part of the schemes.

The works profile and outputs of this programme can be seen in section 5 of this document.

2 Background Information

The criteria that defines what is considered a worst served customer in RIIO-ED2 is different to that in RIIO-ED1. This change increases the volume of WSCs that SP Energy Networks has in both licence areas.

The updated criteria for a WSC are:

1. A customer who has experienced 12 or more unplanned interruptions in the previous 3-year period.
2. A customer who has experienced at least 2 unplanned interruptions in each of the 3 years.

Previously, in RIIO-ED1, the requirement was for a minimum of 3 unplanned interruptions each year. This change from 3 to 2 generates changes in volumes of WSCs as seen in Table 1. The information is provided via PowerOn on an annual basis for the RRP submission as the WSCs vary year to year.

Licence	Methodology		2016	2017	2018	2019	2020	2021
SP Distribution	WSC RIIO-ED1	#	4,416	1,098	743	1,993	1,994	1,472
	WSC RIIO-ED2	#	7,436	3,878	1,926	2,735	2,761	3,219
SP Manweb	WSC RIIO-ED1	#	4,387	2,396	2,171	2,452	2,094	2,239
	WSC RIIO-ED2	#	7,975	3,188	2,703	3,580	3,377	3,469

Table 1. WSC Numbers in RIIO-ED1 and RIIO-ED2

As a result of the change in definition, the number of WSCs increases by 84% in SP Distribution and by 54% in SP Manweb. The variation is due to several different factors including exceptional events and the other storms that did not meet the criteria to be classed as an exceptional event.

The allowance per customer and the percentage improvement target are set by each licence area. The percentage improvement in RIIO-ED1 was set at 25% for each WSC in the following 3 years after the intervention is to be completed. In RIIO-ED2, the target of 33% improvement will be pursued.

The RIIO-ED1 allowance was £1,000 per WSC, this being the figure set by each licence and agreed with Ofgem. In RIIO-ED2, the intention is to increase this figure in each licence area, with the SP Distribution figure being £1.53k per WSC and the SP Manweb figure being £2.00k per WSC.

The method employed to calculate the allowance per WSC is the same for each licence area. The calculation is based on the customer interruption (CI) and customer minutes lost (CML) costs and the average time off supply for each licence. A fault forecast was developed on a circuit-by-circuit level and, combined with the average time off supply, generated a forecast cost of interruption. This cost was then divided by the number of WSCs on that circuit, and the average of all circuits was multiplied by 12 (the maximum number of years before that circuit would be modernised), giving the allowance per WSC.

This calculation is summarised in Table 2, with the average fault duration being 103 minutes in SP Distribution and 123 minutes in SP Manweb.

Licence	Total cost p.a. for a 33% improvement	Cost per customer over a 12-year period	RIIO-ED2 Number of Targeted Customers	RIIO-ED2 Allowance
SP Distribution	£0.13k	£1.53k	3680	£5.644m
SP Manweb	£0.17k	£2.00k	4177	£8.333m

Table 2. Allowance Calculations

The RIIO-ED2 number of targeted customers from Table 2 above are based on a percentage intervention of approximately 100% of yearly forecasted WSCs. Investigation using a 4-year Pareto analysis found that WSC clustering is largely constant year-on-year, as shown in Figure A1 for SP Distribution and Figure A2 for SP Manweb. This means that the number of WSCs across HV circuits, ranked from highest to lowest, remains the same despite shifts in where these WSCs are located.

This approach has received support from a range of stakeholders, as is explored in more detail in section 7.1.

3 Needs Case

SP Energy Networks must continue to improve the service provided to the entire customer base, and more so those considered as worst served. The increase in the number of WSCs in each licence needs to be addressed, and the development of schemes on either a circuit or section of spur line to ensure a performance improvement of 33% needs to be embedded into the overhead line design criteria.

As explored in more detail in section 7.1, reliability is one of the top priorities as identified by customers and key stakeholders. During stakeholder engagement sessions, the majority of stakeholders agreed with the focus SP Energy Networks places of customers classed as worst served, and the responses echoed this in saying that reliability should be improved for all.

Under the Interruptions Incentive Scheme (IIS), it is possible that addressing the needs of certain groups of customers will be deemed uneconomical as the CI and CML incentive rates will not fund the required works to improve performance. As a result, these customers may be placed at a disadvantage and never experience any better supply than current levels. The WSC mechanism exists to address the needs of these customers by providing an incentive to improve the level of performance they experience.

The measure of success of the WSC schemes will be monitored starting once the intervention is completed, with the logging of all unplanned interruptions from that date for 3 years. The calculation of the percentage improvement will be based on the 3 years prior (as specified in the WSC mechanism described in section 2) to investment and the 3 years post investment.

4 Optioneering

A range of options has been considered for this programme, covering the entire range of interventions, from none at all to addressing the entirety of the WSC population. Table 3 gives the breakdown of options considered for the WSC funding mechanism:

#	Options	Decision	Comment
1	Do nothing (minimum intervention)	Rejected	This is the minimum intervention, under which scenario network performance benefits are derived from other programmes. Rejected because it presents unacceptable network performance risks.
2	Target all worst served customers	Rejected	The investment required to address all WSCs during the RIIO-ED2 period is not realistic as there are several sites where this would not be economical or technically feasible.
3	Targeted scheme development	Adopted	The development of 22 target schemes to improve performance for 7,857 of WSCs by 33%.

Table 3. Options Summary

5 Detailed Analysis

The WSCs are identified firstly by transformer and secondly by circuit in each licence area. The volume of WSC varies year-to-year, however as a starting point the average number of WSCs from the 4 years from 2017 to 2021 has been used. A Pareto analysis was carried out, the results shown for SP Distribution and SP Manweb respectively in Figure A1 and Figure A2. This proves that, while the population of WSCs can move from year to year, the number of WSCs on each circuit ranked from highest to lowest, remains constant on average. For example, a circuit with a high number of WSCs in one year might not requalify as worst served in the following year, but it will be replaced by another circuit with a similar number of WSCs.

A fault forecast was calculated on a circuit-by-circuit basis, as a weighted average of 40% three-year historical fault performance and 60% network average fault performance. This approach has balanced short-term with long-term performance, smoothening any spikes in the number of faults and acknowledging that a circuit that has been either performing well or poorly in recent history will not necessarily continue to do so. Forecast CIs were based on the number of forecast faults and the number of WSCs connected. Forecast CMLs were also calculated based on WSC average fault

duration. However, because the WSC mechanism is driven by the number of interruptions, CMLs did not represent a factor in the investment decision-making process. Similarly, CI and CML benefits for connected customers that are not worst served were calculated as incidental benefits but were not used in any decision-making process.

In the context of this paper, a scheme encompasses all works delivered with the intent of improving the performance for WSCs connected to a single HV circuit. This can cover any measures such as vegetation clearance, undergrounding, asset modernisation and the addition of network controllable points (NCPs). The improvement of 33% represents an improvement in the number of interruptions experienced by the customers over the three-year period following intervention. This improvement does not take into account time off supply, as this is not a factor in the WSC mechanism. It is also possible that a customer will still be classed as worst served after the delivery of the works despite the 33% improvement having been delivered.

5.1 Targeted Scheme Development

Through the targeted scheme development, SP Energy Networks plan to improve performance for 7,857 of WSCs by a minimum of 33% through the delivery of 22 dedicated network performance improvement schemes. In this context, a scheme is an entire HV circuit and therefore all WSCs connected to that circuit must see a minimum improvement of 33% in the following 3 years post-intervention. As WSCs are determined based only on the number of interruptions they experience, this 33% improvement targets only reductions in CI, with CML being an incidental benefit. More information on RIIO-ED2 Quality of Supply works can be found in ED2-NLR(A)-SPEN-QOS-EJP, and on the overall network performance strategy in Annex 4A.4: Network Performance Strategy.

Analysis shows that the optimum level of investment is at 100% of the yearly average WSCs, and this equates to 11 schemes in SP Distribution and 11 schemes in SP Manweb. The work involved for each scheme will vary both in time and complexity, as a full in-depth review of the interruptions will be undertaken as well as a condition review of the network feeding the WSC. Each scheme will be subject to a design review and an estimation of the percentage improvement the scheme will bring about. This will be logged and be used for the baseline improvement year-on-year for the following 3 years after the intervention is completed. This approach will also take into consideration the modernisation and Quality of Supply schemes that will be delivered as part of the RIIO-ED2 portfolio of projects.

As explained above, each HV circuit was analysed and a fault forecast, together with a forecast number of interruptions was calculated. Each circuit was assigned a score by multiplying the number of connected WSCs by the number of (non-consecutive) years those customers have requalified as worst served. The circuits were ranked by score from highest to lowest, and the top circuits were included in the programme until the total number of WSCs matched the average yearly number of WSCs. This approach balances investment on circuits with a large number of WSCs with circuits with a small number of customers that are consistently worst served.

The Pareto analyses in the Appendix give confidence that, while the top 11 circuits in each licence will not necessarily be the same in RIIO-ED2, nevertheless the profile of WSCs will remain constant. Therefore, while particular schemes have not been identified, the analysis offers certainty that there will be 11 schemes in each licence area and that they will cover 3,680 WSCs in SP Distribution and 4,177 WSCs in SP Manweb. It is impossible to predict which particular schemes will be delivered in RIIO-ED2, due to a number of uncertainty factors: where the WSCs will be located on the network,

the types of faults that will be affecting them, and the types, extent and complexity of works required to deliver the improvement.

5.2 Target All Worst Served Customers

The alternative considered to remove all WSCs in both licence areas was not adopted. This is due to the level of investment and improvement required being unjustifiable, because of the high number of sites where there is a single WSC. It would require uneconomical investment to improve the performance of that circuit, and it is possible that a 33% could not be delivered.

In such cases, those customers will be covered by the IIS and any investments to improve performance would be justified under that mechanism rather than the WSC mechanism. Furthermore, the performance of that circuit will also be addressed by ongoing asset modernisation programmes.

5.3 Expenditure Profile

Table 4 shows the projected expenditure profile for the RIIO-ED2 WSC funding mechanism.

Pensions contribution derived from SP Treasury and included in total expenditure profile.

	23/24	24/25	25/26	26/27	27/28	Total
SP Distribution	£3.477m	£0.730m	£0.640m	£0.394m	£0.403m	£5.644m
SP Distribution Pensions	£0.206m	£0.042m	£0.038m	£0.022m	£0.021m	£0.329m
SP Distribution Total	£3.683m	£0.772m	£0.677m	£0.416m	£0.424m	£5.973m
SP Manweb	£3.248m	£1.223m	£2.103m	£0.940m	£0.820m	£8.333m
SP Manweb Pensions	£0.132m	£0.047m	£0.081m	£0.035m	£0.029m	£0.325m
SP Manweb Total	£3.380m	£1.270m	£2.184m	£0.975m	£0.849m	£8.658m

Table 4. RIIO-ED2 Expenditure Profile

6 RIIO-ED1 Performance

The RIIO-ED1 use of the WSC funding mechanism has been limited due partly to restrictions in the funding mechanism and partly to the uncertainty of the return on investment. However, with the RIIO-ED2 funding mechanism SP Energy Networks will be able to improve the performance for a substantial proportion of the Worst Served Customers. The RIIO-ED1 to RIIO-ED2 performance is shown in Figure 1 and Figure 2 for SP Distribution and SP Manweb respectively below:

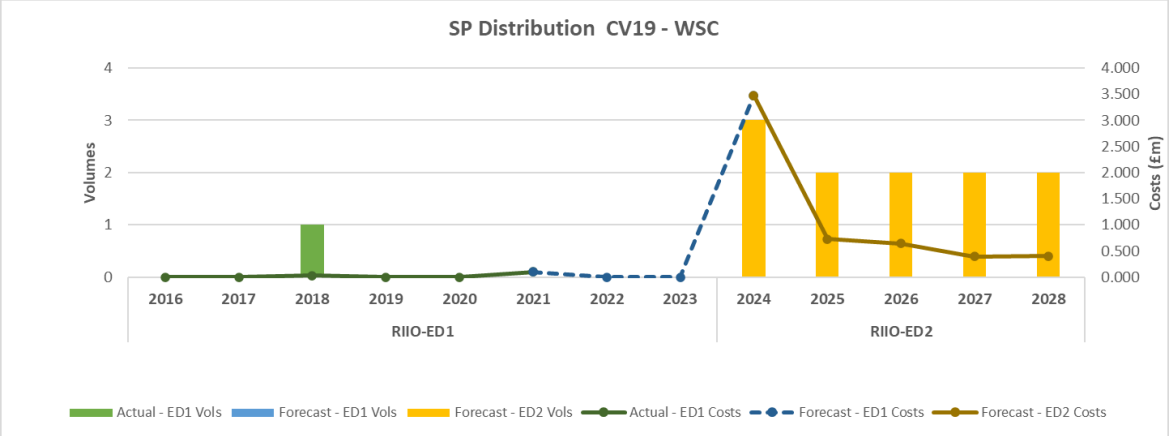

Figure 1. SP Distribution RIIO-ED1 Performance

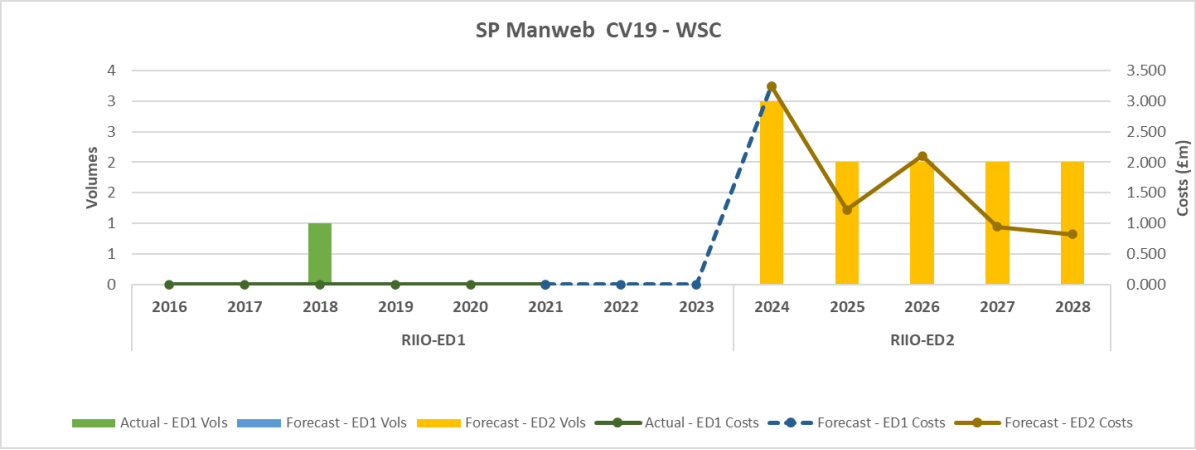

Figure 2. SP Manweb RIIO-ED1 Performance

In RIIO-ED1, WSC funding was provided in the form of a Use-It-or-Lose-It (UIOLI) Logging-Up mechanism. This means that DNOs were allocated a maximum allowance for improving network reliability for WSCs, any unspent allowance would be returned in full to customers at the end of the period. To qualify for receiving allowance for work undertaken, DNOs had to achieve a minimum of a 25% improvement in network reliability for WSCs in the 3 years after completion of the activity. The maximum that could be spent per customer as part of a WSC scheme is £1,000 (12/13 prices).

The above approach has proved complex and created limited opportunity for DNOs to deliver improvements in RIIO-ED1. As a result, expenditure in this area has been low and correspondingly WSC have not benefitted.

For RIIO-ED2, Ofgem are proposing to change the WSC mechanism to make funding for improving reliability more accessible. As of RIIO-ED2 Final Submission, Ofgem are continuing to review options which will likely be in the form of an ex-ante allowance i.e. funding will be allocated up-front with DNO expenditure governed and monitored by Regulatory Instruction & Guidance. Ofgem are considering if additional elements are required as part of the mechanism e.g. an evaluative Price Control Deliverable (PCD) but are keen to reduce complexity.

7 Deliverability and Risk

The WSC schemes planned for RIIO-ED2 are deliverable by the current workforce, and SP Energy Networks have the in-house skills and knowledge to develop the most suitable individual designs for each of the WSC schemes in both SP Distribution and SP Manweb.

The key outputs from the WSC funding mechanism are:

- Improving the service for 3,680 customers by at least 33% in SP Distribution;
- Improving the service for 4,177 customers by at least 33% in SP Manweb;
- This improvement will be achieved by 11 WSC schemes in SP Distribution and 11 Schemes in SP Manweb.

The only risk identified is the fluid nature of the WSC that keep moving in and out of the criteria for a WSC. SP Energy Networks will, as part of the WSC programme, monitor the performance of each of the schemes on completion to ensure that all the WSCs experience a better level of service.

7.1 Stakeholder Engagement

Robust stakeholder engagement has been completed to identify what is important for customers in RIIO-ED2, and to gain insights from key stakeholders such as manufacturers, community energy groups, water and transportation companies, business groups, academia and asset managers from a range of industry. This ensures that the views and needs of all key stakeholders, as well as customer acceptability, are reflected in the proposed costs and volumes in this paper.

As part of stakeholder engagement for RIIO-ED2, SP Energy Networks have developed a commitment of improving the reliability for around 7,850 (approximately 100% of the annual average) Worst Served Customers, by reducing their number of interruptions by 33%. The views of the stakeholders can be explored in more detail in Annex 3.1: Co-creating our RIIO-ED2 Business Plan with our Stakeholders, and in Annex 4A.5: Network Performance Strategy.

Customer Feedback

- "Network resilience, not having a power cut" was ranked the second most important priority by both domestic and commercial customers.

Investing in resilience and reliability is key to reducing the likelihood of customers experiencing an interruption. This programme of works supports this by targeting the worst served customers and improving the performance for these customers by at least 33% following the completion of the intervention.

Manufacturers

- Manufacturers provided the following views:
    - Modernisation is essential to ensuring network resilience;
    - Given customers' increasing reliance on electricity, it is important to have a focus on reducing fault rates as well as reducing the extent of impact of faults on customers;
    - Increasing grid dynamic response capabilities has allowed many utilities worldwide to improve existing infrastructure performance and quality of supply.

This programme of works will improve network resilience and reduce the impact of faults by developing a scheme-based design based on the investigation into the nature of the faults and the component failures that have caused these customers to become worst served. This information will

be used to design the optimum solution for each scheme so that the maximum improvement can be achieved.

Energy Consultants

- Energy consultants agreed that SP Energy Networks should continue to utilise proven interventions on network assets, and there has been clear support for SP Energy Networks to continue investing in network resilience [to reduce faults].

This paper sets out a range of proven interventions including the use of telecontrollable plant and systems monitoring. SP Energy Networks have also sought to adopt proven innovative alternatives wherever possible such as the application of the latest protection equipment.

8 Future Pathways – Net Zero

8.1 Primary Economic Driver

The primary driver for this funding is the improvement in performance of the transformers and the associated network for the customers who are categorised as being worst served, a factor of at least 33% over the subsequent 3 years following the investment.

8.2 Payback Periods

A CBA was not undertaken for this EJP, the driver behind this investment is to improve the service for the worst served customers in both SP Distribution and SP Manweb during and post the RIIO-ED2.

8.3 Pathways and End Points

The network capacity and capability that result from the proposed option is consistent with the network requirements determined in line with the section 9 of the Electricity Act and Condition 21. Additionally, the proposed option is consistent with the SP Energy Networks' DSO Strategy and Distribution Future Energy Scenarios.

8.4 Asset Stranding Risks

Electricity demand and LCT uptake are forecast to increase under all scenarios. The stranding risk is therefore considered to be very low.

8.5 Losses / Sensitivity to Carbon Prices

Losses have been considered in accordance with License Condition SLC49 and the SP Energy Networks Losses Strategy and Vision to "consider all reasonable measures which can be applied to reduce losses and adopt those measures which provide benefit for customers". Reasonable design efforts have been taken to minimise system losses without detriment to system security, performance, flexibility or economic viability of the scheme. This includes minimising conductor lengths/routes, the choice of appropriate conductor sizes, designing connections at appropriate voltage levels and avoiding higher impedance solutions or network configurations leading to higher losses. Solution selection was not found to be sensitive to the impact of the carbon cost of losses.

Losses have been considered as part of this design solution and it has not been necessary to carry out any Losses justified upgrades.

8.6 Future Asset Utilisation

It has been assessed that the preferred option is consistent with the future generation and demand scenarios and that the risk of stranding is very low.

8.7 Whole Systems Benefits

Whole system solutions have been considered as part of this proposal. No alternatives have been identified that could be provided through a whole systems solution. The completion of this scheme will maintain the integrity of the distribution network and its enduring ability to facilitate wider whole system benefits.

8.8 Environment and Sustainability

8.8.1 Operational and Embodied Carbon Emissions

The Worst Served Customers programme has the potential to result in embodied carbon emissions from the delivery of network performance improvement schemes, primarily from the manufacture and supply of replacement assets and from associated civil engineering works. There is likely to be little or no impact on SP Energy Networks' Business Carbon Footprint (BCF).

8.8.2 Supply Chain Sustainability

For SP Energy Networks to take full account of the sustainability impacts associated of the Worst Served Customers programme, there is need for access to reliable data from suppliers. The need for carbon and other sustainability credentials to be provided now forms part of SP Energy Networks' wider sustainable procurement policy.

8.8.3 Resource Use and Waste

The Worst Served Customers programme will result in the consumption of resources and the generation of waste materials from civil engineering activities to delivery flood mitigation measures.

Where waste is produced it will be managed in accordance with the waste hierarchy which ranks waste management options according to what is best for the environment. The waste hierarchy gives top priority to preventing waste in the first instance, then preparing for re-use, recycling, recovery, and last of all disposal (e.g. landfill).

8.8.4 Biodiversity/Natural Capital

The Worst Served Customers programme will primarily affect developed sites containing existing assets. In these cases, the impact on, and the opportunity to improve, biodiversity and natural capital is expected to be minimal.

8.8.5 Preventing Pollution

SP Energy Networks will always follow all relevant waste regulations and will make sure that special (hazardous) waste produced or handled by the business is treated in such a way as to minimise any effects on the environment.

8.8.6 Visual Amenity

SP Energy Networks continually seeks to reduce the landscape and visual effects of networks and assets but recognises that the nature of the networks and assets can make it challenging to minimise their visual impact.

8.8.7 Climate Change Resilience

In addition to efforts to minimise the direct carbon emissions in line with Net Zero ambitions, SP Energy Networks are also conscious of the need to secure the resilience of assets and networks in the face of a changing climate. SP Energy Networks have also modified the policy on vegetation control in the face of higher temperatures and longer growing seasons.

9 Conclusion

The level of investment has been set out for RIIO-ED2 at a level where performance will be improved by 33% for the targeted worst served customers through 22 schemes across both licence areas. Each scheme will have a bespoke solution based on the condition of the network and the interrogation of the fault history to establish the underlying causes.

The worst served customers that are part of any scheme will be monitored from the completion of the scheme for a further 3 years to establish if the intervention has met or exceeded the required 33% improvement. The outputs of this programme are summarised in Table 5.

WSC RIIO-ED2To	2023/24		2024/25		2025/26		2026/27		2027/28		Total	
	Schemes	Cost £m	Schemes	Cost £m	Schemes	Cost £m	Schemes	Cost £m	Schemes	Cost £m	Schemes	Cost £m
SP Distribution	3	£3.683	2	£0.772	2	£0.677	2	£0.416	2	£0.424	11	£5.973
SP Manweb	3	£3.380	2	£1.270	2	£2.184	2	£0.975	2	£0.849	11	£8.658
Total	6	£7.063	4	£2.042	4	£2.861	4	£1.391	4	£1.273	22	£14.631

Table 5. RIIO-ED2 Costs and Volumes Summary

10 Appendix A

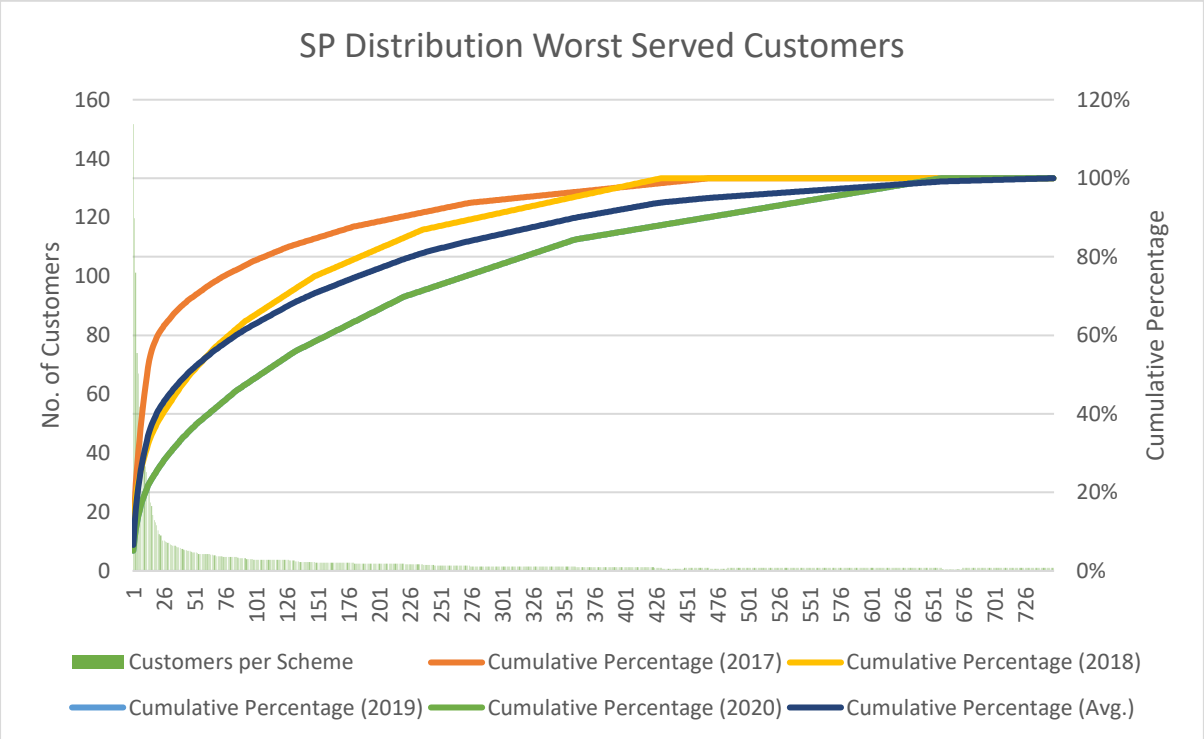

Figure A1. SP Distribution Pareto Analysis Results

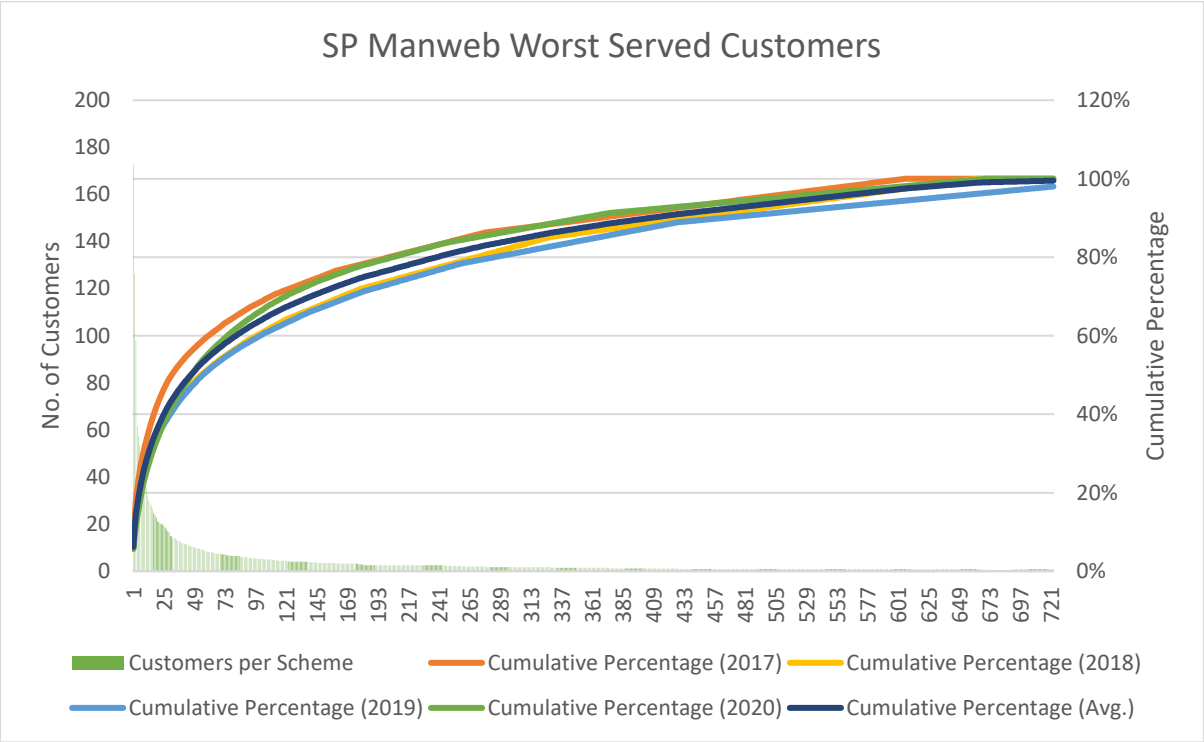

Figure A2. SP Manweb Pareto Analysis Results