Cost Assessment and Benchmarking Approach (including RPEs & OE) RIIO-T3 Business Plan SP Energy Networks

11/12/2024

SP Energy Networks

Index

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Executive Summary

S&C Electric Company ("S&C") was appointed in March 2024 to provide consulting support to SP Transmission ("SPT") in preparing its Cost Assessment and Benchmarking Approach Annex which is a requirement under paragraph 6.8 of Ofgem's RIIO-T3 Business Plan Guidance.[1] S&C has extensive experience of price controls, cost assessment, and related issues from members of its team previously working for Ofgem for a combined 35 years as well as providing support to DNOs on RIIO-ED2.

We have assessed the efficiency of SPT's forecast RIIO-T3 business plan expenditure in conjunction with SPT's other external consultants: Arcadis, Gartner, AECOM, and Oxera with the support of SPEN's internal team. SPT's approach has focused on ensuring good regulatory practice, transparency, and robustness, which ensures the credibility of the findings.

Collectively we have used a range of approaches for assuring and assessing the efficiency of SPTs' forecast RIIO-T3 business plan expenditure. This has included consideration of how SPT's cost forecasts have been built up, including the derivation and use of SPT's Manual of Standard Costs (MoSC), and challenging the SPT team on the key drivers, assumptions and justification for particular areas of costs. We have benchmarked costs against reference data from previous price controls, and benchmarked changes in costs against key cost drivers used by Ofgem, and information shared by other TOs. SPT's IT & Telecoms non-operational capex has been benchmarked by Gartner against their independent benchmarks for these activities.

In undertaking this assurance process, we had full access to the relevant SPT team members to seek further information and to address points of clarity. S&C met the core team on a regular basis throughout the period of the review which ensured we had a clear understanding of the material provided and also that the team understood our findings as these evolved. Taken together, this helped ensure a comprehensive and well-informed assurance process.

Key findings

- SPT's RIIO-T3 cost forecasts have been built up in a transparent and logical manner reflecting forecast changes in the level of activity between RIIO-T2 and RIIO-T3 and applying an efficient view of unit costs.
- Approximately 95% of SPEN's RIIO-T3 forecast load- and non-load related capital investment has been or will be competitively tendered, which provides direct market evidence of the efficiency of its costs. In aggregate over 82% of SPT RIIO-T3 totex will be competitively tendered. Ofgem has previously recognised that a large proportion of TO expenditure is competitively tendered and has reflected this in its proposed approach to the assessment of directs costs for RIIO-T3. Ofgem has noted that where there is evidence that an effective tender process has been followed, competitive tension has been maximised and unit rates are broadly consistent with expectations, it will consider that these costs represent a market level of efficiency.
- Both Arcadis and S&C have reviewed SPT's MoSC which is used for costing both its load and non-load related investment. We consider that SPT's MoSC provides a robust way of

[1] https://www.ofgem.gov.uk/publications/riio-3-business-plan-guidance

estimating the efficient cost of projects, with the information being built up in a granular and transparent way from competitive tender information.

- Arcadis has conducted an efficiency review of SPT's load and non-load related schemes through high-level analysis and reviewing samples of schemes. Arcadis has found that the costs are reasonable and in line with their efficiency benchmarks.
- S&C has conducted a review of SPT's forecast indirect expenditure for RIIO-T3 and it is clear that SPT is increasing efficiency between periods. Core Closely Associated Indirect (CAI) costs[2] as a percentage of capex is reducing from 17.1% in RIIO-T1 to 9.8% in RIIO-T3, while core CAI costs as a percentage of totex is falling from 13.2% to 7.9%. Similarly, Core Business Support costs[3] are reducing from 8.2% of capex in RIIO-T1 to 4.0% in RIIO-T3. Core Business Support costs are reducing from 6.3% of totex in RIIO-T1 to 3.2% in RIIO-T3.
- While there are limitations in the TO indirects data share, it illustrates the percentage growth in CAI costs between RIIO-T1 and RIIO-T3 for SPT is significantly below that for SHETL or NGET. Similarly, for Business Support costs the percentage growth for SPT is significantly less that for **[Redacted]**. The main difference for the other TOs is that the step change in activity occurred earlier, in RIIO-T2 rather than RIIO-T3.
- SPT conducted further challenge and review of its indirect costs between the draft BPDT submission and in advance of the finalisation of its RIIO-T3 forecasts, supported by S&C. In total, further efficiencies of £18m have been identified which are split equally across Business Support costs and Closely Associated Indirect costs.
- From Gartner's review of SPT's IT & Telecoms non-operational capex, SPT has embedded efficiencies of 9% in its programme which equates to around £9.2m. Separately, SPT's digitalisation programme is forecast to avoid an average of 80 additional FTEs in RIIO-T3. This is equivalent to an embedded cost saving of £31.4m over 5 years, an average of £6.3m a year.
- In aggregate, this amount to embedded efficiencies in baseline totex of £58.6m, which equates to 2.9% of baseline totex.

Efficient costs in RIIO-T3

Overall, reflecting the combination of factors highlighted above we have found SPT's forecast costs for RIIO-T3 to be efficient. The table below summarises the assessment of SPT's Totex and how we have established its efficiency.

[2] Core CAI costs for this purpose exclude Wayleaves and Operational Training.
[3] Core Business Support costs for this purpose exclude new Property, the Community Benefits Fund and associated administration costs and HVDC insurance costs.

Table ES1.1: SPT RIIO-T2 and T3 Gross Totex (£m, 2023/24 price basis)[4]

Cost Category (£m 23/24 prices)	RIIO-T2	RIIO-T3	% change	Efficiency evidence
Load-related capex	1,980	7,934	301%	Approximately 95% of costs will be competitively tendered work. Arcadis review of Costs.
Non-load related capex	545	523	-4%	Approximately 95% of costs will be competitively tendered work. Arcadis review of Costs.
Non-op capex	18	117	537%	Majority of costs are competitively tendered. Gartner review of IT & Telecoms.
Network Operating Costs (NOCs)	180	353	96%	Costs built up from historical RRP volumes, analysis of key variances and the latest unit costs or market rates. Qualitative assessment of separately justifiable costs.
Closely Associated Indirects (CAI)	425	1,039	144%	Benchmarking against historical costs, changes in cost drivers and against other TO costs. Qualitative assessment of separately justifiable costs.
Business Support (BS)	187	481	158%	Benchmarking against historical costs, changes in cost drivers and against other TO costs. Qualitative assessment of separately justifiable costs.
Other costs within the price control[5]	98	105	8%	The costs are competitive tendered and subject to separate review processes by Ofgem.
Total costs within price control[6][7]	**3,433**	**10,552**	**207%**	**Overall, around 82% of costs are competitively tendered, 12% benchmarked and 6% separately justified.**
Baseline	1,627	2,033	25%	
Uncertainty Mechanisms (UMs)	1,806	7,951	340%	
RIIO-T2 Carry Over	N/A	568	N/A	

[4] All the costs tables presented in this Annex include pension costs.
[5] **[Footnote Redacted]**
[6] This excludes Non-Activity Based Costs (NABC). E.g., Directly Remunerated Services (DRS), Innovation, Pass Through (rates etc) costs which SPT is also required to submit as part of its Business Plan. It also includes £8m of other costs only included in RIIO-T2.
[7] SPT consider that the Cost Assessment and Benchmarking Approach annex presents a fair, balanced, and understandable view of our Business Plan for RIIO-T3. The numerical values stated herein whilst fully representative of the plan remain subservient to the values presented in the RIIO-T3 Business Plan Data Template (BPDT) submitted to the UK energy regulator, Ofgem on 11th December 2024.

1. An introduction to this annex

1.1. Scope

This Cost Assessment and Benchmarking Approach Annex provides an overarching assessment of the efficiency of SPT's best view forecast costs for RIIO-T3. This is based on work by S&C and SPT's other consultants, the key assumptions and drivers underpinning SPT's forecast costs, and the methods that have been used to ensure SPT's Business Plan is efficient.

The Annex provides detail on how SPT has continuously challenged the Totex within its RIIO-ET3 Business Plan through cost assessment and benchmarking analysis and evidence of the efficiency of its costs both on an individual category level and in aggregate.

- **This section** provides a high-level summary of S&C's assessment as well as signposting how it meets Ofgem's business plan requirements and its interaction with other parts of SPT's RIIO-T3 business plan.
- **Sections 2 & 3** detail Ofgem's approach to cost assessment in RIIO-T3 and how SPT has used cost assessment to develop the Totex within its Business Plan. It sets out the processes SPT has followed to ensure the efficiency of its business plan using a range of approaches.
- **Sections 4 to 8** provide a detailed overview of costs for each of its key activities, the assumptions underpinning them and analysis of the efficiency of those costs, which demonstrate that SPT's RIIO-T3 plan is efficient.
- **Section 9** provides a summary of the assessment of real price effects (RPEs) and ongoing efficiency.
- **Section 10** sets out our overall findings regarding the efficiency of SPT's best view forecast costs for RIIO-T3. This includes baseline costs, expected costs in RIIO-T3 uncertainty mechanisms, and costs continuing into RIIO-T3 from RIIO-T2 uncertainty mechanisms.
- **Appendices 1 – 4** set out further details of RIIO-T2 efficiency, the cost drivers for assessment of indirect costs and the indirect cost allocation, separately assessed costs, and a proposed approach for the Totex Incentive Mechanism (TIM).

1.2.Key highlights

SPT is acutely aware of the financial pressures on consumers, particularly in the current economic climate. Consequently, its plans have been developed to balance the needs of customers, stakeholders, and distribution networks that are connected to its system, whilst ensuring efficiency is embedded in its proposals. SPT has developed its plan to minimize the impact on bills, whilst efficiently meeting the needs and ambitions of all users.

Efficiency can be measured by the ability to avoid having to incur additional expenditure in producing or delivering a desired output. These outputs are defined by the activities SPT is

proposing in its T3 Business Plan. The RIIO-T3 cost assessment analysis includes a mix of costs that have been or will be competitively tendered, benchmarked costs, costs subject to internal and external review, and bottom-up justification of separately assessed costs. For forecast load and non-load related projects, SPT has used tendered cost information through its MoSC.

We have summarised Ofgem's approach to cost assessment as set out in the Sector Specific Methodology Decision in section 2.1. The table below summarises the assessment of SPT's Totex and how we have established that the forecast costs for each of the cost categories is efficient.

Table 1.1: SPT RIIO-T2 and T3 Gross Totex (£m, 2023/24 price basis)

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Load-related capex	1,980	7,934	301%	Approximately 95% of costs will be competitively tendered work. Arcadis review of Costs.
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Business Support (BS)	187	481	158%	Benchmarking against historical costs, changes in cost drivers and against other TO costs. Qualitative assessment of separately justifiable costs.
Other costs within the price control[8]	98	105	8%	The costs are competitive tendered and subject to separate review processes by Ofgem.
Total costs within price control[9]	**3,433**	**10,552**	**207%**	**Overall, around 82% of costs are competitively tendered, 12% benchmarked and 6% separately justified.**
Baseline	1,627	2,033	25%	
Uncertainty Mechanisms (UMs)	1,806	7,951	340%	
RIIO-T2 Carry Over	N/A	568	N/A	

[8] **[Footnote Redacted]**

[9] This excludes Non-Activity Based Costs (NABC). E.g., Directly Remunerated Services (DRS), Innovation, Pass Through (rates etc) costs which SPT is also required to submit as part of its Business Plan. It also includes £8m of other costs only included in RIIO-T2.

The Autumn Budget, published on 30 October 2024, set out an increase in the National Insurance contributions to be made by employers. SPT's RIIO-T3 plan was prepared in advance of this decision, and therefore does not reflect the impact of this increase in employment costs. A regulatory mechanism is required to adjust allowances appropriately to reflect the new National Insurance requirements on TOs. SPT will look to engage with Ofgem on the appropriate route to funding these costs, however it requests that an uncertainty mechanism is developed to address changes in government policy that have cost implications for regulated TOs, given these are outside the TOs' reasonable control and can have a material impact on costs during the price control period.

1.3. Sign posting to Ofgem's business plan requirements

Ofgem's updated Business Plan Guidance for RIIO-3 published in September 2024[10] provides details of the information network companies are expected to provide in their business plans. The following table provides an overview of those requirements as well as confirmation of where the required information can be found within either this annex or as part of a separate submission.

Table 1.2: Overview of Ofgem's Business Plan Guidance Requirements

BP Guidance Ref (Paragraph)	Core requirement	Relevant section of Cost Assessment Annex
6.2	Explain costs/workload forecasts, particularly where these diverge from historical trends. With information on: • Cost drivers • Consideration of options • Justification of costs (including profiling) • How efficiency improvements and innovation will reduce costs/ provide value for money	Chapters 4-8 Outlined for each individual cost category
6.3	Complete the BPDT and tab-by-tab commentary	Separate submissions cross-referenced
6.4	Key drivers of expenditure in RIIO-T3 period	Chapters 4-8 Outlined for each individual cost category
6.5	Justify the need for new investment: • Levels of network utilisation and changes in utilisation based on FES pathways and other requirements • Information on current and forecast network capacity published in accordance with Data Best Practice Guidance • Options considered for meeting future network requirements, including the cost of "doing nothing" and "deferral" and the associated CBA and should include whole system solutions	Separate EJP and CBA Annexes cross-referenced in the relevant parts of the document

[10] RIIO-3 Business Plan Guidance – Ofgem, 30 September 2024, https://www.ofgem.gov.uk/publications/riio-3-business-plan-guidance

	• Options discounted with reasoning, detailing key assumptions and selection criteria • Reasons for the timing of investment including expected outputs and year of delivery	
6.6	Any investment proposed that was previously funded under RIIO-1 or RIIO-2 but not delivered, details should be provided why it was not delivered, why it would be in the customers' interest to fund such investments again and assurances it can be delivered during RIIO-3	Covered by the EJPs for relevant schemes. The non-load portfolio templates require all T1 and T2 investment to be recorded at an asset level.
6.7	Evidence costs are efficient when compared to historical benchmarks and/or benchmarking with national and international comparators	Set out in Chapters 4 to 8 for each of the core cost categories and in Annex 3 for separately justifiable costs.
	Supported by a Workforce and Supply Chain Resilience Strategy	The Workforce and Supply Chain Resilience Strategy is a Separate Annex referenced in the relevant Chapters
	Details of assumptions and justification for projected changes in the efficient levels of unit costs over time e.g., project delivery approach, technological innovation, procurement efficiencies, innovation etc	Set out in Chapters 4 to 8 and Main Business Plan Narrative
	Clear rationale for any assumptions when assessing costs e.g. impact of regional/ company specific factors on costs	No regional/company specific factors have been applied.
	Details of activities and indicative costs to be directly funded through totex allowances and that will be associated with achieving the required service levels	Chapters 4 to 8 all have discussions of risk and uncertainty. Best view costs are also split between baseline costs and uncertainty mechanisms
	Details of which categories of expenditure are more uncertain and more difficult to forecast including risk of underutilisation/stranding; risk an alternative solution may be the most efficient means of addressing the requirement; risk investment is premature. Demonstrate consideration of mechanisms that mitigate risk associated with uncertainty	
6.8	Section on Frontier Risk Shift Ongoing Efficiency	Chapter 9
6.9	Risk of underutilisation: • monitoring and mitigation to reduce this risk • evidence of need	Addressed as part of EJPs and CBA and Core Business Plan Narrative
6.10	Where an investment is considered certain under all scenarios - justification for this view	Covered in EJPs and CBAs which are cross referenced
6.11	How network companies' expenditure forecasts map onto relevant ODIs and PCDs	Covered in Core Business Plan which is cross-referenced
6.12	The input costs for which CPIH is a poor proxy along with justification The expenditure categories to which these input costs relate, and to what extent Evidence as to what extent SPT's existing RIIO-2 approach is not appropriate for RIIO-3 Evidence to support all RPEs and their proposed weighting Proposed indices for any proposed RPEs, along with supporting evidence and justification for their selection	Chapter 9

	An explanation of any RPE cost profiling effects proposed through the price control	
6.14	The ongoing efficiency assumptions for each expenditure category, along with evidence of how these assumptions have been derived	Chapter 9

1.4. References to other Business Plan documents

This annex is part of a suite of documents being submitted to Ofgem as part of its RIIO-3 Business Plan. A number of these are directly referenced by S&C at various points in this annex. For ease of reference, the relevant documents are listed below.

Table 1.3: Reference to other related SPT Business Plan documents

Number	Relevant Associated document
1	Main Business Plan Narrative Document
2	SPT Business Plan Data Template (BPDT)
3	BPDT Commentary
4	SPT Supply Chain Strategy
5	SPT Workforce Resilience Strategy
6	EJP and CBA Summary Annex
7	Arcadis Load- and Non-Load Related Capital Programme Assurance
8	Technical Justification Papers for IT and Telecoms Non-Op Capex and indirect
9	Gartner Consulting RIIO-T3 Assurance Report – Capital IT Programmes
10	Oxera Report on Real Price Effects and Ongoing Efficiency
11	AECOM – SPT Climate Resilience Strategy – Transmission Networks
12	WSP Report on Disaggregated Closely Associated Indirect Costs – Phase 2 and 3

2. Cost Assessment & Benchmarking in RIIO-T3

2.1. Summary of Ofgem's approach to cost assessment

As set out in the RIIO-T3 Sector Specific Methodology Decision (SSMD), published in July 2024, Ofgem will use a toolkit approach to establish and set an efficient view of Totex for all TOs.

For CSNP-F projects Ofgem will apply the Accelerated Strategic Transmission Investment (ASTI) approach, or a modest evolution of it, for the assessment of costs. Direct costs will be set by the market. Where there is evidence that an effective tender process has been followed, competitive tension has been maximised and unit rates are broadly consistent with expectations, Ofgem has indicated that it will consider that these costs represent a market level of efficiency. Indirects will continue to be benchmarked and assessed on a project-by-project basis.

A key part of Ofgem's approach to the assessment of load-and non-load related expenditure will be the use of Project Assessment Models (PAMs), including unit cost benchmarking, but the final form of these has not been determined. The approach to the assessment of risk and contingency costs is also still being developed by Ofgem and therefore was not finalised when we undertook our review, and this annex was developed.

We do not consider that the RIIO-T2 process is a suitable starting point for the assessment of the efficiency of load-related projects as there were significant issues with the mechanics and principles of the PAM. Breaking down projects into extremely granular asset-level costs, benchmarking and reassembling this information is not a robust methodology for providing efficient allowances. We consider that the RIIO-T3 approach should place more focus on an engineering review of the needs case and optioneering to ensure that licensees bring forward the necessary investments which are developed to a level of maturity and presented with sufficient transparency. This should also be supplemented by information from TOs' cost books such as SPT's MoSC to ensure that the costs are efficient. If the PAM is retained, its application should be limited in the RIIO-T3 cost assessment toolkit to those cost categories for which sufficient, statistically robust benchmarks are available.

For Network Operating Costs (NOCs), Ofgem has noted that it considers that there will be value in unit cost benchmarking where historical and forecast volumes are available and benchmarking average annual unit costs where volumes are not available. It is considering combining this with an expert review of the most material categories. Ofgem is still considering the level of aggregation in the modelling.

Ofgem notes that Long-term Service Agreements (LTSAs) and Service Level Agreements (SLAs) costs might warrant a separate assessment and will test this based on data reported in a separate Business Plan Data Template (BPDT) table. For Faults, Repairs and Maintenance, Ofgem's current thinking is that reporting will match the level of aggregation of the RIIO-T2 NOCs model but that asset classes will be more aggregated than in RIIO-T2.

Ofgem has noted that it may be appropriate to move to a more granular analysis of indirects than was applied in RIIO-T2. It intends to apply regression benchmarking, although the grouping of indirects, the form of the models, exclusions and weightings have not been

decided at this stage. Regression benchmarking may focus on not so Closely Associated Indirect (CAI) costs and Business Support costs (BSC).

Ofgem is minded to retain the RIIO-T2 approach for assessing non-operational capex with historical run-rate and ratio benchmarking, supplemented by Engineering Justification Papers (EJPs) for Property. It will use historical trend analysis and volume assessment for Vehicles and Transport. It plans to use expert review for Information Technology and Telecoms.

Ofgem has noted that it will finalise many aspects of the cost assessment framework post business plan submission.

2.2. High-level summary of approach to assessing cost efficiency

We have assessed the efficiency of SPT's business plan in conjunction with SPT's internal team and its other external consultants. SPT's approach has focused on good regulatory practice, transparency, and robustness, which ensures the credibility of its findings.

We have taken a structured and holistic approach to reviewing the efficiency of SPT's plan. The results from benchmarking analysis and qualitative analysis have been used to continuously iterate SPT's thinking, and to challenge its plan as it was developed.

For load-related expenditure and non-load related expenditure approximately 95% of SPT's costs has been or will be competitively tendered which provides direct evidence of the efficiency of those costs. Further, the RIIO-T3 costs that have not yet been tendered have been estimated using SPT's MoSC, which derives costs associated with different assets from previous competitive tenders.

SPT has also commissioned work from Arcadis to assess the overall efficiency of its investment programme and carry out benchmarking for samples of load and non-load related projects. The majority of SPT's load-related investment is funded through RIIO-T3 uncertainty mechanisms or the continuation of RIIO-T2 uncertainty mechanisms and is therefore subject to further scrutiny and review by Ofgem.

For NOCs, over 56% of SPT's RIIO-T3 costs have been or will be competitively tendered. For core NOCs, we have carried out benchmarking of SPT's RIIO-T3 forecast volumes and costs against its historical volumes and costs. The costs associated with vegetation management, service agreements and Operational Technology are all market tested.

Approximately 54% of SPT's BSC and 29% of SPT's CAI costs have been or will competitively procured. For core CAI and BSC, we have benchmarked SPT's RIIO-T3 forecast costs against its costs in RIIO-T1 and T2, against key cost drivers such as Full Time Equivalent Staff (FTEs), capex and totex, and against other TOs' costs provided as part of a data share.

For non-operational capex, approximately 92% of SPT's capex has been or will competitively procured, either directly by SPT or indirectly at a global group level. Gartner has assured SPT's IT & Telecoms capital programme including its data and digitalisation work.

For other costs, all expenditure has been or will be competitively tendered.

In total more than 82% of SPT's forecast costs have been or will be competitively tendered.

Oxera has carried out the assessment of SPT's forecast RPEs and ongoing efficiency for RIIO-T3.

SPT's draft Business Plan Totex expenditure had been through eight stages over a 15-month period of review, benchmarking, and robust internal and external challenge. Following submission of its draft BPDTs, SPT undertook an additional review to ensure its plan is reflective of the latest guidance from Ofgem, as well as to any emerging findings. This final iteration was also subject to further benchmarking, challenge, and a robust internal sign-off process.

Table 2.1: Business Plan Development Stages

Stage	Date	Milestone
1	Oct-23	Commence discussions regarding Totex requirements for RIIO-T3
2	Apr-24	First Iteration of Totex, Benchmarking Assessment, and internal review and challenge
3	May-24	Second Iteration of Totex, Benchmarking Assessment, and internal review and challenge
4	Jun-24	Third Iteration of Totex, Benchmarking Assessment, and internal review and challenge
5	Jul-24	Draft BPDT Submission
6	Aug - Oct 2024	Fourth and final iteration of Totex, Benchmarking, Assessment, and internal feedback
7	Nov-24	Sign Off of Totex
8	Dec-24	Final Business Plan and BPDT Submission

3. Approach to Cost Assessment and Benchmarking

The starting point for the Cost Assessment and Benchmarking Annex was to review the precedent from previous Price Controls. Given the ongoing development of analysis, together with SPT's other consultants, we have ensured that SPT is following best practice by reviewing SPT's assessment of costs and SPT refining its approach for each of the cost activities.

The approaches used for each of the key cost categories are as follows:

- For load-related expenditure, the vast majority of the projects included within SPT's plan are existing "Live Projects" either consisting of generation and demand connections driven by developers, or wider system reinforcements informed by the National Electricity System Operator (NESO) via the Holistic Network Design (HND) or where the needs case is driven by the transitional Centralised Strategic Network Plan 2 (tCSNP2). Optioneering has been carried out as part of EJPs and Cost-Benefit Analysis (CBAs). SPT's approach and the efficiency of costs has been reviewed by Arcadis.
- For non-load related expenditure, the needs case has been based on a bottom-up assessment of information in the Network Asset Risk Metrics (NARM), fault rates and other engineering evidence. SPT's approach and the efficiency of costs has been reviewed by Arcadis.
- SPT's capex unit costs are based on its MoSC, which is derived from historical tender information. This has separately been assured by Arcadis.
- SPT's NOCs have been built up on a bottom-up basis considering both historical data and trends and future changes in requirements. We have reviewed SPT's approach to determining the costs and the key cost drivers explaining the change in expenditure.
- SPT has forecast its indirects using a mixture of bottom-up and top-down assessment, which we have then benchmarked against key activity drivers and other TOs' costs.
- SPT's non-operational capex has been based on a bottom-up assessment with input and assurance from IBM and Gartner.

Overall, more than 82% of SPT's totex has been or will be competitively tendered, and therefore subject to market pressures that drive innovation and efficiencies. Approximately 12% has been benchmarked against historical costs, cost drivers and information from other TOs. Approximately 6% is separately justified using other types of evidence.

Embedded efficiencies of £58.6m have been identified over RIIO-T3. This represents 2.9% of baseline totex.

3.1. Step 1: Totex inside the price control

Before undertaking the Cost Assessment, we established the expenditure that we would assess and benchmark. Totex inside the price control refers to all costs in SPT's baseline Totex which is net of any non-price control allocations (NPCAs). In total, SPT's best view is that it will spend £10.55 bn during RIIO-T3. This is made up of around £2.0bn in baseline expenditure, and around £8.5bn in uncertainty mechanisms including RIIO-T2 uncertainty mechanisms which will carry over into RIIO-T3.

The table below shows SPT's full best view forecast for gross Totex for RIIO-T3 before any exclusions are applied for separately justifiable activities.

Table 3.1: SPT Gross Totex for RIIO-T3 (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	RIIO-T3	Annual average
Load-related capex	7934.2	1586.8
Non-load related capex	522.8	104.6
Non-op capex	116.8	23.4
Network Operating Costs (NOCs)	353.4	70.7
Closely Associated Indirects (CAI)	1038.8	207.8
Business Support (BS)	481.3	96.3
Other costs within the price control	105.2	21.0
Total costs within price control	**10552.5**	**2110.5**
Baseline	2032.2	406.4
UMs	7951.8	1590.4
RIIO-T2 Carry-Over	568.8	113.8

3.2. Step 2: Identify cost areas unsuitable for benchmarking

Not all expenditure can be benchmarked across TOs. Ofgem has recognised this in previous price controls and used a defined set of criteria to determine whether a specific cost area can be benchmarked effectively, and which costs should be excluded from the benchmarking.[11] We believe that these criteria are still appropriate to determine which costs are benchmarked in RIIO-T3.

[11] Ofgem's RIIO-ED2 Final Determinations Core Methodology document in paragraph 7,21 notes these criteria for exclusions to the comparative benchmarking.

Table 3.2: Criteria for costs excluded from the benchmarking and cost assessment (£m, 2023/24 price basis)

Criteria	Ofgem Criteria	SPT Proposal RIIO-T3 Activities	SPT Cost T3
1	Where there is a substantial change in the nature of costs between periods (i.e. RIIO-T2 to RIIO-T3)	Community Benefits. Small Tools, Equipment, Plant and Machinery (STEPM), Biodiversity Net Gain (BNG) and Carbon Costs, Climate Resilience (including Flooding), and Substation Electricity.	**£650.1m**
2	Where the majority of TOs do not incur the costs over the full period (i.e. bespoke activity to SPT)	Substation Electricity (HVDC related costs). While all TOs have HVDC stations the costs for SPT are significantly higher and depend on the utilisation (which is directed by the NESO) and the negotiated price from a supplier.	**[Redacted]**
3	The costs cannot be explained by the cost driver used, or areas of investment where a robust cost driver cannot be identified (i.e. where a qualitative assessment would be more robust)	Contractor Indirects, Service Agreements, Operational Technology, New Property, HVDC Insurance Costs, Regulatory/Price Control Development and UMs, Wayleave costs, and Operational Training.	**[Redacted]**
		Total	**[Redacted]**

The table below demonstrates in detail the cost areas that we believe should be excluded from comparative modelling and benchmarking and justification for the exclusions (i.e. the criteria satisfied from the list above).

Table 3.3: Cost areas excluded from Benchmarking/Modelling (£m, 2023/24 price basis)

Criteria	BPDT	Area	Justification	SPT Cost T3
1. Substantial change in the nature of costs between periods	**9.5**	**Community Benefits Admin and Funds (Business Support)**	This is a new Government requirement for RIIO-T3, and the final guidance is yet to be published. As such we consider that these costs should be subject to separate qualitative review.	**£111.1m**
	8.7	**STEPM (NOCs)**	These costs were part of Non-Operational Capex in RIIO-T2 and therefore we consider that these should be assessed separately from core NOCs. Further details are provided in Appendix 3.	**£5.0m**
	6.1	**Biodiversity and Carbon costs (load-related capex)**	New Biodiversity and Carbon Cost requirements represent a significant increase in the costs for load-related projects driven by new requirements.	**£490.1m**
	8.7	**Biodiversity Net Gain maintenance costs (NOCs Other)**	The costs associated with BNG and carbon costs are new costs arising in RIIO-T3 and have been assessed by specialist consultants. Further details are provided in Appendix 3.	**£5.9m**

Criteria	BPDT	Area	Justification	SPT Cost T3
	8.7 and 8.8	**Climate Resilience Costs including Flooding (NOCs)**	As part of RIIO-T3 Ofgem has requested TOs produce a Climate Resilience Strategy. This Strategy has been solely focused on SPT's Transmission network highlighting the key climate risks it faces. The costs included in RIIO-T3 are currently high-level costs covering a variety of network risks. Further details are set out in Appendix 3.	**£37.9m**
2. Minority of TOs incur cost	**8.7**	**Substation electricity (NOCs)**	The vast majority of these costs relate to the cost of electricity to run the facilities for both the Western Link and Eastern Green Link 1 (EGL1), as well as other substations. The increase is due to EGL1 coming online. SPT incurs significantly more of such costs that other TOs due to having a greater proportion of onshore HVDC assets and substations. The costs depend on the utilisation (which is directed by the NESO) and the negotiated price from a supplier.	**[Redacted]**
3. Costs cannot be explained by cost driver	**8.5**	**Service agreements (NOCs)**	Long-term Service Agreement work is tendered, involves advanced technologies such as HVDC and will vary on a project-by-project basis. Service level agreements are tendered, and work will vary on a project-by-project basis. Cost drivers such as MEAV would not work in these cases.	**[Redacted]**
	8.9	**Operational Technology (OT) (NOCs)**	The systems and data networks used to protect, control, and monitor SPT's network are known collectively as Operational Technology (OT), these are primarily capex and treated separately to other NOCs. The equivalent RIIO-T2 capex was in the non-load tables. The scopes of work are mostly bespoke and non-repeating meaning that superficially similar projects are not directly comparable. We consider these costs should be subject to qualitative review.	**£123.8m**
	9.5	**New Property (Business Support)**	These are new costs associated with the growth in the investment programme in RIIO-T3 and the associated growth in support staff.	**£12.3m**
	9.5	**HVDC Insurance costs (Business Support)**	The insurance costs for HVDC projects are based on more complex projects and differences in the environment in which they operate. These costs should be subject to a separate qualitative review rather than included as part of the main BS	**[Redacted]**

Criteria	BPDT	Area	Justification	SPT Cost T3
			insurance costs. Cost drivers such as MEAV would not work in this case.	
	9.5	**Regulatory / Price Control Development & Uncertainty Mechanisms (Business Support)**	To facilitate the enhanced requirements in RIIO-T3, SPT's regulation function plays a key role in ensuring Ofgem is provided with the necessary information in a timely manner while providing key assistance and advice to SPT's internal engineering teams. The increased volume and complexity of the RIIO-T3 reopener uncertainty mechanisms together with the collecting, processing, assuring, and communicating of the relevant data will inevitably result in both activity and resource requirements increasing for both parties. These processes would be above and beyond the existing 'business as usual' regulation requirements which already represents a substantial request for data.	**£3.6m**
	9.4	**Wayleave costs (CAI)**	The level of Wayleave activity is driven by factors outside of TO control. Scale drivers such as MEAV have little correlation on the cost of a required wayleave payment, which is more correlated to differing regional rates and the type of agreement in place. For this reason, we believe this area should be 100% qualitatively assessed.	**£8.4m**
	9.4	**Operational Training (CAI)**	Operational training requirements are heavily dependent on workforce make-up, anticipated retiral rates, current and anticipated skills and capabilities, and the view of deliverability of a significantly expanding SPT work programme. All of which will differ significantly across TOs and is not explained by Cost Drivers such as MEAV, or Customer Numbers. Workforce requirements will vary depending on past resourcing decisions and RIIO-T3 requirements will be specific to each TO and not suitable for comparative assessment. For this reason, we believe this area should be 100% qualitatively assessed.	**£37.9m**
			Total	**[Redacted]**

3.3. Step 3: Cost Assessment and Benchmarking

Together with SPT's other external consultants and internal staff, we have reviewed SPT's core best view expenditure through a range of approaches including:

- **External qualitative review and assurance –** For example, Arcadis has reviewed the efficiency of SPT's load- and non-load related capex and Gartner has reviewed the majority of SPT's IT & Telecoms Non-Opex Capex.
- **Volume and unit cost benchmarking –** SPT has assessed its forecast volumes of activity against its own historical data and adjusted for changes in requirements. SPT has used its MoSC to establish unit costs for load-and non-load related investment and used historical unit costs for assessing costs for other activities, with adjustments for changes in market rates for labour and materials.
- **Ratio benchmarking –** We have carried out ratio benchmarking for indirect activities against key cost drivers such as FTEs, totex, capex and relevant composite scale variables (CSVs).

3.3.1. Modelling assumptions

Choice of data

In an ideal world, we would carry out benchmarking against other TOs' historical and forecast data in their RIIO-T3 plans for a broader range of activities. However, in practice we do not have this information, and this will not be received until after the business plan submission. Instead, SPT has a more limited TO data share for indirect costs, and associated cost drivers including totex, capex and FTEs which we have used to benchmark its indirect costs. We will carry out further benchmarking based on the further TO data share which will happen in January after the submission of the RIIO-T3 Business Plans and BPDTs.

Cost Drivers

We have used several cost drivers for benchmarking SPT's indirect costs, building on the analysis that Ofgem carried out in RIIO-T2 and has proposed for RIIO-T3. The cost drivers are summarised in the following table. These cost drivers are further discussed in Appendix 2.

Table 3.4: Summary of cost drivers for cost benchmarking

Cost Driver	Description
Modern Equivalent Asset Value (MEAV)	TO data share 4.48 System Characteristics table SPT RIIO-T3 unit costs (23-24 prices)
Totex	TO data share 11.6 References File
Capex	TO data share 11.6 References File
Full Time Equivalents (FTEs)	TO data share FTEs (from BPDT table 9.15)
Composite Scale Variables (CSVs)	Using MEAV, totex and capex as above with different weightings

3.3.2. Volume and Unit Cost Analysis

SPT has applied volume benchmarking for a range of its activities such as core NOCs including fault volumes, inspections, repair, and maintenance. Together with unit cost information and information on the latest market rates, this has been used to forecast overall costs associated with these activities.

3.3.3. Expert review/external assurance

SPT has used a range of external consultants to carry out benchmarking and assure its forecast costs for RIIO-T3 across a broad range of activities. Details are set out in the table below.

Table 3.5: Summary of external consultants

Cost Category	Consultancy Review/ Assurance
Load and non-load related expenditure	Arcadis review of efficiency of costs for load- and non-load related expenditure both at a high-level and through deep dives for samples of projects
Network Operating Costs	AECOM for Climate Resilience and Biodiversity Net Gain
Business Support Costs	S&C review
Closely Associated Indirects	S&C review
Non-Operational Capex	Gartner review of IT& Telecom Costs. A large proportion of property and vehicle costs have been/will be competitively retendered
Other Costs [Redacted]	**[Redacted]**
RPEs and Ongoing Efficiency	Oxera assessment of RPEs and Ongoing Efficiency
Contractor Indirects	WSP

3.3.4. Econometric modelling

While we plan to carry out econometric modelling for Indirect activities, the information provided through the TO data share is not yet sufficiently consistent to enable this. We plan to conduct such analysis post Business Plan submission based on further TO data sharing. The estimation technique we intend to adopt is Pooled Ordinary Least Squares (POLS) consistent with RIIO-ED2 and RIIO-T2. This method estimates the line of best fit (the cost function) through the data points. The Pooling term means that all of the relevant years of data for the 3 TOs will be combined into a single data set for the regressions and a single slope parameter will be derived for each cost driver.

Also aligned with RIIO-T2 and RIIO-ED2, we intend to use a Cobb-Douglas function. In other words, we will use a logarithmic model specification for our regression analysis.

3.4. Step 4: Separately Assessed Expenditure

For the areas we believe should be assessed qualitatively, or at this time where we are unable to undertake quantitative analysis (i.e., there are no benchmarks available), further justification is set out in Appendix 3. There is also further justification in SPT's supporting

EJPs, CBAs, and other associated documents such as the other Business Plan Annexes which provide detailed justification of the forecasts provided. A summary of this expenditure is set out in the table below.

Table 3.6: Separately Justified Costs

Cost Category	RIIO-T3 Total (£m)
Community Benefits Admin	111.1
STEPM	5.0
Biodiversity Net Gain and Carbon Costs (Load)	490.1
Biodiversity Net Gain (NOCs)	5.9
Climate Resilience including flooding	37.9
Substation Electricity	[Redacted]
Service Agreements	[Redacted]
Operational Technology	123.8
New Property	12.3
HVDC Insurance Costs	[Redacted]
Reg Price Control Development & UMs	3.6
Wayleave costs	8.4
Op Training	37.9
Total	[Redacted]

Further details and justification of these costs is provided in Appendix 3.

3.5. Step 5: RPEs

Oxera has carried out an assessment of the forecast RPEs and ongoing efficiency for SPT's network for RIIO-T3. This is summarised in Chapter 9.

A summary of the forecast RPEs is set out in the table below.

Table 3.7: Forecast RPEs to be included in overall totex

Cost Category	RIIO-T3 Total (£m)
Load-related capex	0.8
Non-load related capex	14.8
Non-op capex	3.7
Network Operating Costs	10.3
Closely Associated Indirects	11.1
Business Support	11.0
Other costs within the price control	2.5
TOTEX	54.2

3.6. Step 6: Bringing it all back together

The table below brings back together the efficient cost for each of SPT's core transmission activities, the separately assessed costs, and applies RPEs to set out the view of SPT's efficient net totex for RIIO-T3. The following table shows the best view totex with separately justified costs, and RPEs.

Table 3.8: Best view gross totex with Separately Justified Costs and RPEs split out

Cost Category (£m 23/24 prices)	RIIO-T3
Load-related capex	7604.9
Non-load related capex	532.9
Non-op capex	116.8
Network Operating Costs	103.7
Closely Associated Indirects	821.6
Business Support	333.0
Other costs within the price control	105.2
Separately Justified Costs	[Redacted]
Total costs within price control excluding RPEs	**10552.5**
Baseline	2032.2
UMs	7951.8
RIIO-T2 Carry-Over	568.8
Real Prices Effects	54.2
Total costs within price control including RPEs	**10606.7**

4. Efficiency of load and non-load related expenditure

4.1. Load-related Expenditure

4.1.1. Summary of Costs

SPT's load-related expenditure comprises a range of targeted investment to support the needs for additional transmission capacity by building new routes/ sites or uprating and extending existing infrastructure.

In total there are 220 load-related projects in SPT's Business Plan with a total gross forecast cost of £7,604.9m excluding biodiversity net gain and carbon costs. This represents a 277% increase on the RIIO-2 period but there is a significant change in the balance of those costs between baseline costs and uncertainty mechanisms. There is a 313% increase in forecast net costs.

SPT is forecasting net baseline costs of £28.6m in RIIO-T3, which represents a 92% reduction on RIIO-T2. However, load related projects associated with uncertainty mechanisms are growing by a factor of 374% to £7,387.8m, while an additional £429.6m will be carried over to RIIO-3 from RIIO-T2 uncertainty mechanisms.

SPT's actual and forecast load costs for the remaining years of RIIO-T2 and the forecasts for RIIO-T3 are summarised in in the table below. The gross costs stated below include contractor indirects but exclude Biodiversity Net Gain and Carbon costs which have been assessed separately. The net costs are adjusted to include Biodiversity Net Gain and Carbon Costs and deduct contractor indirects and capital contributions.

Table 4.1: SPT RIIO-T3 Load-related expenditure compared to RIIO-T2 (£m, 2023/24 price basis) – showing both gross expenditures excluding BNG and carbon costs and net costs including BNG and carbon costs.

Cost Category (£m 23/24 prices)	T2 RRP Best View	Business Plan Submission		
	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
Local Enabling (Entry)	524.9	1645.7	1120.8	214%
Local Enabling (Exit)	56.9	51.5	-5.5	-10%
LRE - Local Enabling (Entry - Sole Use)	228.6	224.0	-4.6	-2%
LRE - Local Enabling (Exit - Sole Use)	53.9	47.8	-6.2	-11%
Wider Works	1153.9	5636.0	4482.2	388%
TSS Infrastructure	1.6	0.0	-1.6	-100%

Total Gross Load Related Costs excluding BNG and Carbon Costs and including contractor indirects	**2019.8**	**7604.9**	**5585.1**	**277%**
Contractor Indirects	-40.1	-160.9	-120.7	301%
Capital Contributions	-78.5	-88.2	-9.7	12%
Biodiversity Net gain and Carbon Costs	0.0	490.1	490.1	N/A
Total Net Load Related Costs including BNG and Carbon costs and excluding contractor indirects	**1901.1**	**7846.0**	**5944.8**	**313%**
Baseline	343.6	28.6	-315.0	-92%
UMs	1557.5	7387.8	5830.3	374%
RIIO-T2 Carry-Over	0	429.6	429.6	N/A

As part of the BPDT requirements, SPT is required to split out contractor indirects for Project Management and Network Design & Engineering in the pre-construction phase of works. SPT has estimated these costs based on analysis by WSP for 516 of its schemes, of which 80 were selected for detailed review. WSP found that 2.96% of SPT's contract costs are contractor indirects which relate to the preconstruction phase of work (split with 82.1% of these costs relating to ND&E and 17.9% to Project Management.) Further, 67.1% of the scheme costs relate to contractor work. We have therefore shown the contractor indirect costs of £160.9m as a separate item in tables 4.1 and 4.2. (These costs are split between £132.0m for Network Design and Engineering and £28.8m for Project Management). However, we consider that these costs are most appropriately assessed with the direct cost of the schemes rather than as part of CAI.

The annual breakdown of load-related expenditure is summarised in the following table.

Table 4.2: SPT RIIO-T3 annual load-related expenditure (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	2027	2028	2029	2030	2031	TOTAL
	(£m)	(£m)	(£m)	(£m)	(£m)	(£m)
Local Enabling (Entry)	457.7	421.2	321.9	237.3	207.6	1645.7
Local Enabling (Exit)	25.2	16.6	8.0	1.7	0.0	51.5
LRE - Local Enabling (Entry - Sole Use)	95.7	60.5	32.1	23.2	12.5	224.0
LRE - Local Enabling (Exit - Sole Use)	10.5	8.0	7.0	11.1	11.1	47.8
Wider Works	800.7	1014.5	1269.3	1446.8	1104.6	5636.0
TSS Infrastructure	0.0	0.0	0.0	0.0	0.0	0.0

Total Gross Load Related Costs excluding BNG and Carbon Costs and including contractor indirects	**1,389.8**	**1,520.8**	**1,638.4**	**1,720.1**	**1,335.8**	**7,604.9**
Contractor Indirects	-29.4	-32.1	-34.6	-36.4	-28.3	-160.9
Capital Contributions	-28.6	-24.5	-14.0	-10.5	-10.7	-88.2
Biodiversity Net gain and Carbon Costs	90.6	96.0	105.0	111.2	87.4	490.1
Total Net Load Related Costs including BNG and Carbon costs and excluding contractor indirects	**1,422.5**	**1,560.1**	**1,694.8**	**1,784.4**	**1,384.2**	**7,846.0**
Baseline	7.2	7.5	6.5	6.0	1.4	28.6
UMs	1114.9	1442.0	1672.2	1776.0	1382.7	7387.8
RIIO-T2 Carry-Over	300.4	110.6	16.1	2.4	0.1	429.6

The sole-use entry and exit local enabling works are funded through connections charges but are included here for completeness.

Ten projects comprise £4,646m (59%) of these costs. This includes three HVDC links:

- West Coast Offshore HVDC – **[Redacted]** in RIIO-T3
- TGDC Eastern Subsea HVDC Link – **[Redacted]** in RIIO-T3; and
- E2DC Onshore Eastern Subsea Link – **[Redacted]** in RIIO-T3.

4.1.2. Key assumptions and drivers

There are a wide range of factors driving the increase in SPT's transmission capacity and thus its costs. These include the need to support new build renewables onshore and offshore, growth in electricity demand, addressing network constraints, and supporting the UK and Scottish Government decarbonisation targets. Ofgem has rightly recognised that supporting these objectives will require the build out of network infrastructure "at a pace not seen for decades." This has implications for SPT's investment requirements.

What is less clear is the exact timing, scale, and location of these developments. These will be impacted by a range of factors including the timing and implementation of connections policy reform. In light of this uncertainty, SPT needs to plan on the basis of credible scenarios. As part of the SSMD, Ofgem confirmed that transmission companies should base their Business Plans on the 2024 Future Energy Scenarios (FES) Leading the Way[12] scenario. This has fundamental implications for the profiling of load-related expenditure which is reflected in SPT's "best-view" of these costs for RIIO-T3 and beyond. A key feature of its

[12] Future Energy Scenarios (FES), National Grid ESO, July 2024

profiling is less load-related cost in the baseline than in previous price control periods, but significantly more being envisaged to proceed under uncertainty mechanisms.

Reflecting the clear interactions with the current regulatory period, there is also a significant portion of SPT's load-related costs that will carry over from the RIIO-T2 period requiring investment for the completion of these projects during RIIO-T3, as well as projects starting in RIIO-T3 which will carry over into the RIIO-T4 period.

Recognising both the scale of the build required but also the significant uncertainty around the timing of elements of that investment, SPT has sought to develop its load-related investment plan based on categorising investment according to levels of need and degrees of certainty. Some needs are more pressing than others while some solutions are more clearly defined.

Based on a comprehensive review of all new generation and demand connections, including a recognition that the current scale of the generation pipeline is uneconomic and inefficient to deliver, a probability has been assigned to each project to inform SPT's portfolio view. Only projects with "High" and "Medium" probabilities have been included to inform a view on investment for the RIIO-T3 period and beyond.

The vast majority of the projects included within SPT's load plan are existing "Live Projects" either consisting of generation and demand connections driven by developers, or wider system reinforcements informed by the NESO via the Holistic Network Design (HND) or transitional Centralised Strategic Network Plan 2 (tCSNP2). All live connection projects are cross referenced with NESO's TEC Register and the 2024 Future Energy Scenarios.

The following table provides a more detailed overview of SPT's more material load-related projects costing greater than £50m in RIIO-T3 as well as a summary for other projects below this threshold.

Table 4.3: Overview of load-related projects including Contractor Indirects (£m, 2023/24 price basis)

Project	Licence Mechanism	RIIO-T2 gross cost (£m)	RIIO-T3 gross cost (£m)	> RIIO-T3 gross cost (£m)
Local Enabling (Entry)				
COYLTON TO MAYBOLE 132 CIRCUIT TORI-3062	GCE	0.3	64.1	27.4
ZV ROUTE EXT TO WYSEBY 400KV SS TORI2320	GCE	0.2	55.5	11.2
Dunlaw Extension to Galashiels Reinforcements (TORI 2080) H1	LRR	2.2	103.9	0.0
Gala North H1	LRR	0.4	51.8	0.0
TORI-151B GALASHIELS TO ECCLES 132KV H1	LRR	1.7	64.6	0.0
TORI-236 GLENMUCKLOCH TO ZV ROUTE REINF. H1	LRR	11.1	128.3	0.0
Total Other Projects (<50m in RIIO-T3)	-	508.8	1,177.4	378.9
Total Local Enabling (Entry)	-	**524.9**	**1,645.7**	**417.5**

Local Enabling (Entry - Sole Use)				
Total Local Enabling (Entry - Sole Use)	**-**	**228.6**	**224.0**	**3.8**
Local Enabling (Exit)				
Total Local Enabling (Exit)	**-**	**56.9**	**51.5**	**0.0**
Local Enabling (Exit - Sole Use)				
Total Local Enabling (Exit - Sole Use)	**-**	**53.9**	**47.8**	**66.5**
Wider Works				
DWNO Denny to Wishaw 400kV Rein TORI-003	ASTI	5.7	211.3	0.0
E2DC - Onshore - Eastern Subsea HVDC Link from Torness to Hawthorn Pit - Output	ASTI	**[Redacted]**	**[Redacted]**	**[Redacted]**
TGDC-Eastern Subsea HVDC Link from Westfield to South Humber	ASTI	**[Redacted]**	**[Redacted]**	**[Redacted]**
TKUP (TORI-2073) Kincardine N Tealing	ASTI	22.3	318.4	4.8
CMN3 - Scotland to England Rein TORI-1795	LRR	4.2	202.9	150.4
WCN2-West Coast Onshore B6 reinforcement	LRR	0.5	84.5	555.1
West Coast Offshore HVDC (WCD4)	LRR	**[Redacted]**	**[Redacted]**	**[Redacted]**
DLUP (TORI 2085) Windyhill Lambh. Denny N	LRR	8.0	123.3	0.0
DWUP Kincardine North, Wishaw TORI-2083	LRR	15.3	62.0	0.0
EHRE Elvanfoot to Harker Uprt (TORI 231)	LRR	0.7	121.5	0.0
Harburn Substation (TORI 3002/TORI 3168)	LRR	1.0	103.4	10.6
LWUP Kincardine North 400kV Rei TORI2095	LRR	41.8	81.6	0.0
VERE(TORI 1797) STHA to ELVA 400kV Rein.	LRR	0.2	90.1	0.0
VSRE XH & XJ Routes 400kV Major Refurb	LRR	41.1	78.9	0.0
Synchronous Compensators	LRR	1.4	310.3	0.0
Other Wider Works (<£50m in RIIO-T3)	-	1152.5	5325.8	2125.9
Total Wider Works	**-**	**1,153.9**	**5,636.0**	**2,125.9**
TSS Infratructure				
Total TSS Infrastructure	-	**1.6**	**0.0**	**0.0**
Total Gross Load Related		**2,019.8**	**7,604.9**	**2,613.6**
Capital contributions	-	**-78.5**	**-88.2**	**-28.6**
Net Load Related	**-**	**1,941.3**	**7,516.7**	**2,585.0**

4.1.3. Efficiency evidence

Procurement approach

The vast majority (approximately 95%) of SPT's forecasts RIIO-T3 costs associated with transmission construction activities, covering both load-related and non-load related expenditure, has been or will competitively tendered during RIIO-T3 and are therefore subject to market pressures for efficiency. Costs that have not yet been competitively

tendered have been forecast using SPT's MoSC, which is based on tendered rates from previous competitive tenders and are therefore based on an efficient level of costs.

Only a small proportion of the load-related expenditure falls is in SPT's baseline, the remainder falls under uncertainty mechanisms including the generation volume driver, the load-related reopener or is expenditure being carried over under RIIO-T2 uncertainty mechanisms. Expenditure under the reopeners mechanisms is subject to separate review by Ofgem.

SPT is using eight times more contractors than in the past – its shift to a disaggregated contracts model has helped it move from using just 5 contractors in RIIO-T1 to awarding contracts with a value of greater than **[Redacted]** to 45 contractors (excluding framework arrangements) for works and equipment since the start of RIIO-T2. The process involves separate contracts for individual disciplines including:

- Civils
- Building works
- Cable supply and installation
- Balance of Plant
- Overhead line works
- Overhead line access
- Enabling works
- Demolition works; and
- Equipment Supply.

The disaggregated procurement model has significantly increased competition in tenders, with typically between 4 and 8 suppliers tendering for each package of works. This lets SPT drive ongoing efficiencies in the market.

SPT's structure promotes purchasing independence. Its procurement team sits apart from senior management and makes purchasing decisions based on transparent and objective criteria.

SPT is continually working to drive further competition and efficiency savings by closely monitoring the supply chain and continuing to build its existing supplier base. SPT achieves this by measuring the trends of suppliers tendering for particular contracts, identifying gaps in its supplier lists, and engaging directly with the supply chain to address such gaps for future tendering exercises.

Manual of Standard Costs

The scheme costs for each load-related scheme included in SPT's best view plan has been developed using SPT's MoSC net of any of the following amounts:

- Risk and contingency allowances
- Return allowances

- SPT development and delivery costs; and
- Other on-costs.

We have reviewed SPT's approach in the MoSC, which is a cost estimation tool derived from information in historical, competitive tenders. It is subject to regular review and update by SPT's Cost Estimation team based on of the latest tender information. It provides extremely granular average (standard) costs for a comprehensive list of assets, civils, and miscellaneous costs for the estimation of the costs of capital projects.

There are several steps within the MoSC:

- Firstly, detailed data for Balance of Plant (BOP) and Civils volumes and costs is extracted from the schedules for recent relevant tenders. Typically, a time window of 2-3 years is used to ensure the information represents recent costs while ensuring there is a sufficient sample of tenders. The data is mapped to a very granular list of assets and associated cost types. Some statistical analysis has been carried out to identify outliers and ensure that the costs are representative.
- Secondly, the information is used to compile a library of standard (average) unit costs for each asset category and type of cost. For some costs such as insurance, welfare costs and storage, there is no way of directly mapping these to specific items of plant, so a percentage of the contract costs is applied. Further, for some sub-categories of asset there may be insufficient information to calculate a representative average. In this case a wider grouping is used. The unit rates are regularly updated as new contract information becomes available. SPT's database includes unit rates for every item of plant, civils and miscellaneous costs such excavation costs, fill, cable ducts, and steel structures etc.

SPT has pulled together costs for standard substation design based on site plans so that typical projects can be costed. However, the cost estimation tool allows full flexibility for the costing engineer to vary the substation design and the associated costs. The tool generates a summary of all the volumes and costs associated with a project.

SPT's MoSC was provided to Ofgem as part of its RIIO-T2 Business Plan submission and has undergone further development since then to update it for more recent tenders and to provide closer linkages and traceability to tendered contracts. A revised version of the AIS substation elements of the MoSC has been completed and has been used for the estimation of costs for non-load related AIS substation projects. SPT is currently working to extend this latest version of the MoSC to GIS substations, overhead line and cable projects.

We consider that SPT's MoSC provides a robust way of estimating the efficient cost of projects, with the information being built up in a granular and transparent way from competitive tender information.

Innovation

In RIIO-T3, SPT proposes to invest £380m in deploying past innovation into Business-As-Usual. Around £338m of this is to deploy High Temperature Low Sag (HTLS) overhead line conductor which will deliver increased overhead line capacity much more efficiently than alternative historical reinforcement approaches (e.g., new build overhead lines), resulting in materially lower totex requirements and environmental impact. The scheme-by-scheme

benefits of this deployment are captured within the SPT's Cost Benefit Analysis and Engineering Justification Papers that accompany its RIIO-T3 plan.

Arcadis review

Arcadis has undertaken a high-level review of SPT's project portfolio. Top-down techniques were applied to segregate expenditure by investment driver and also by asset category.

Arcadis has compared the costs of similar schemes in the investment portfolio by asset type, e.g. switchgear, transformers, reactors, overhead line (OHL), and cables projects. For selected schemes, they derived comparator cost benchmarks to identify potential outlier costs and sought to identify scope of work variations between projects to understand any material cost variations. Totex variations can be attributable to the following factors:

- Scope of proposed overhead line works (full refurbishment vs. fixtures & fittings) and the management of deteriorated fibre wrap;
- The highly urbanised or rural nature of overhead line and cable routes;
- Approach to substation renewal, e.g. circuit breaker-only schemes vs. full bay replacements; or
- The varying scope of transformer replacement projects related to civil works.

Arcadis adopted a broad scope for the load-related review looking at the appropriateness of SPT's needs case assessment, optioneering and costs, as well as a review of cost estimates for a sample of 8 load-related schemes.

The EJP needs case summaries provided a clear rationale for each intervention. The EJPs demonstrated that a range of options have been considered for each intervention compared to counterfactual options. Options selection was supported by Cost Benefit Analysis for most EJPs recognising that some interventions were being driven by external factors. The preferred invention options were observed to be developed to a greater level of detail than alternative options which Arcadis consider is a reasonable approach to take. A standard approach to deliverability has been adopted across all EJPs addressing Schedule, Quality Management, Environmental Planning, Land Rights and Sustainability.

In parallel with the EJP reviews, Arcadis also undertook reviews of the cost estimates corresponding with each project. This involved a review of the overall estimation process adopted and checks relating to the data sources applied. The checks undertaken by Arcadis included:

- Confirmation of base year adjustments to ensure all costs were presented as 2023-24 values.
- Alignment of EJP summary cost data with cost estimates with matching values presented in data tables.
- Arithmetic checks and absence of cost duplication.
- Review of implied unit costs per asset category.
- Assessment of additional cost included in each project, e.g. prelims, civils, access etc.

- Extent of reliance of historical cost information.

For the load-related schemes the key findings on costs were as follows:

Arcadis reviewed 8 cost estimates for load-related projects to increase capacity on SPT's transmission system and to connect new renewable generation to the network. Each EJP included two or more asset categories within the proposed scope, e.g. overhead lines, substations, cables and protection and control. The key load-related cost estimate observations were as follows.

- Overhead line - interventions at 132kV and 400kV circuits were reviewed covering a mix of new build circuits and reconductoring projects. The reconductoring projects typically achieved higher circuit ratings through the use of HTLS conductors. Three 132kV new build OHL projects and one 132kV reconductoring project was reviewed. At 400kV, two new build OHL projects were reviewed and one reconductoring project was reviewed. Feedback on each estimate was provided to SPT and the resulting unit costs for all interventions fell within Arcadis' expected ranges.
- Substation interventions included new build projects and substation extensions at both 132kV and 400kV. The scope of the 400kV extension at Denny North was relatively modest involving the addition of 1 Bay whereas the Wyesby 400kV new build involved the construction of an 11 Bay substation within a building capable of accommodating up to 22 Bays in future. The 132kV projects ranged in size from a 2 Bay GIS extension within an existing building at Glenglass to an 11-Bay AIS new build project at Glenmuckloch. In all cases, the resulting unit costs per switchgear bay fell within expected ranges after normalisation of civil engineering costs.
- Cable interventions were few in number, only comprising short-run 132kV substation entries and 'duck-under' crossings beneath overhead lines, e.g., Coylton – Maybole. Therefore, the unit costs associated with these short runs were at the higher end of range expectations although the absolute cost of these sections was relatively low.
- Protection and Control related investment was a feature of all OHL and substation projects and the associated costs were aligned with expectations. One innovative scheme ('Project REPOWER') to establish Distribution Restoration Zones was highly bespoke requiring deployment of 'Point on Wave' switching protection and remote tap changer control for multiple sites. The unique nature of this £16.2m project meant that suitable benchmarks were not readily available for comparative purposes. However, the switchgear and shunt reactor costs within this EJP, representing greater than 50% of the total project cost, were regarded as reasonable.

The implied unit costs of overhead lines, switchgear and transformers have been found to align with 2024 cost benchmarks after normalisation, e.g. removal of abnormal civil engineering costs. Some unit cost variations were identified although these could largely be explained by scope variations between projects. For bespoke Protection and Control projects over multiple sites, it was difficult to benchmark such projects due to a lack of comparator projects although the bottom-up cost estimation methodology applied was regarded as robust.

4.1.4. Key risks and uncertainties

There remains a significant amount of risk and uncertainty for load-related projects post-tender. This includes risks relating to ground conditions, civils weather delays, changes in scope, cost certainty of contact prices, outage delays, and delays in consents, among others. We have carried out work to review SPT's historical planned and actual released risk and contingency costs for a sample of projects including RIIO-T1 projects and RIIO-T2 projects. In total we reviewed SPT's IP5 documentation for a sample of 33 load-related projects excluding 6 outliers.

As part of this analysis, we looked at both the types of risk being released and the overall risk and contingency percentages as a proportion of the scheme or programme costs. We then conducted statistical analysis of the costs using a range of different statistical metrics. The unweighted mean planned risk, and contingency was 10.9% for load-related expenditure, whereas the unweighted mean for released costs was 12.9%. On this basis, we consider than an appropriate allowance for risk and contingency costs for load-related expenditure is 12.9% of direct costs. SPT have applied this for all load-related schemes apart from several named schemes under ASTI and LOTI where specific Risk and Contingency allowances of c. 19% and 10% respectively had already been applied in RIIO-T2. The weighted average Risk and Contingency allowance including these schemes is 12.8%.

Another element of potential uncertainty is the impact the new Competitively Appointed Transmission Owner (CATO) process will have on the market. Whilst competition can contribute to consumer benefit, competition in electricity transmission networks also compounds the uncertainty faced during the RIIO-T3 period.

4.2. Non-load related Expenditure

4.2.1. Summary of Costs

SPT's non-load related expenditure comprises investment in a range of replacement and refurbishment activities to ensure it has a resilient network for a Net Zero future. Managing risk means prioritising investment where it is needed most in order to meet the requirements of the homes, businesses and communities SPT's services as well as its customers and wider stakeholders. SPT's strategy and proposed investment plans build on its experience in previous price control periods but also recognise the evolving challenges faced and puts forward an approach to address these.

SPT's actual and forecast non-load costs for the remaining years of RIIO-T2 and the forecasts for RIIO-T3 are summarised in the table below.

Table 4.4: SPT RIIO-T3 non-load related expenditure compared to RIIO-T2 (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	T2 RRP Best View	Business Plan Submission		
	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
Replacement	476.9	364.3	-112.6	-24%
Refurbishment	76.0	141.5	65.4	86%
Non-Load Other	3.5	27.1	23.6	670%
Total Non- Load Related Costs	**556.4**	**532.9**	**-23.6**	**-4%**
Contractor Indirects	-11.0	-10.1	-0.5	4%
Total Non- Load Related Costs excluding Contractor Indirects	**545.5**	**522.8***	**-22.6**	**-4%**
Baseline	545.5	522.8	-22.6	-4%

*This includes £446.7m of RIIO-T3 costs and £76.1m of baseline costs carried over from RIIO-T2.

SPT is forecasting to spend £532.9m over the 5 years of RIIO-T3 across its non-load activities including contractor indirects which compares with £556.4m in RIIO-2. This represents a decrease of 4%. The non-load related capex funding requested is all baseline expenditure.

As part of the BPDT requirement, SPT is required to split out contractor indirects for Project Management and Network Design & Engineering in the pre-construction phase of works. We have therefore shown the contractor indirect costs of £10.1m as an adjustment item in tables 4.4 and 4.5. (These costs are split between £8.3m for Network Design and Engineering and £1.8m for Project Management). However, we consider that these costs are most appropriately assessed with the direct cost of the schemes rather than as part of CAI costs and we have therefore left these costs in tables 4.4 and 4.5. The annual breakdown of these costs is summarised in the following table.

Table 4.5: SPT RIIO-T3 annual non-load related expenditure (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	2027	2028	2029	2030	2031	TOTAL
	(£m)	(£m)	(£m)	(£m)	(£m)	(£m)
Replacement	80.5	95.4	91.0	62.8	34.6	364.3
Refurbishment	40.2	28.3	28.2	24.3	20.5	141.5
Non-Load Other	26.5	0.2	0.2	0.1	0.0	27.1
Total Non-Load Related Costs	**147.2**	**123.9**	**119.5**	**87.2**	**55.1**	**532.9**
Contractor Indirects	-2.4	-2.5	-2.4	-1.7	-1.1	-10.1
Total Non-Load Related costs excluding contractor indirects	**144.8**	**121.4**	**117.1**	**85.5**	**54.0**	**522.8***
Baseline	144.8	121.4	117.1	85.5	54.0	522.8

*This includes £446.7m of RIIO-T3 costs and £76.1m of baseline costs carried over from RIIO-T2.

4.2.2. Key assumptions and drivers

The key driver of SPT's proposed non-load related investment is the need to ensure a secure and resilient supply of electricity in the context of rapidly growing demand and generation capacity as part of the energy transition. At the heart of this focus is driving up standards for existing network users and customers which will be critical to meeting the future reliance of those users on the electricity grids.

Reflecting the regulatory framework, SPT's assets are grouped into lead and non-lead asset categories. SPT's key focus for non-load expenditure is assets that are at or nearing end-of-life (EoL) with decisions on replacement and refurbishment based on risk values.

A scope evaluation has been produced for each of the non-load schemes which has been informed by SPT's internal tendering processes on projects of the same nature.

4.2.3. Efficiency evidence

SPT has used NARM and other related engineering evidence to determine the efficient level of volumes for non-load related expenditure. On the same basis as used for load-related schemes, Arcadis has carried out an efficiency review of SPT's non-load related schemes.

Arcadis review

The scheme costs for each of the non-load related schemes included in SPT's best view plan has been developed using the same Manual of Standard Costs as for load-related projects net of any of the following:

- Risk and contingency allowances
- Return allowances
- SPT development and delivery costs; and
- Other on-costs.

Arcadis adopted a broad scope for the load-related review looking at the appropriateness of SPT's needs case assessment, optioneering and costs, as well as a review of cost estimates for a sample of 10 non-load related schemes.

The EJP needs case summaries provide a clear rationale for each intervention. The EJPs demonstrated that a range of options have been considered for each intervention including refurbishments (minor/major), asset replacements, capacity enhancements (future proofing) compared to counterfactual options. It was apparent that there was an increased focus on maximising long-term network capability with examples of higher capacity transformers and conductors to be installed in some non-load related EJPs.

Options selection was supported by Cost Benefit Analysis for most EJPs recognising that some interventions were being driven by external factors such as equipment obsolescence and licence compliance. The preferred investment options were developed in a greater level of detail than alternative options, which Arcadis considers is a reasonable approach.

A standard approach to deliverability has been adopted across all EJPs addressing Schedule, Quality Management, Environmental Planning, Land Rights and Sustainability.

In parallel with the EJP reviews, Arcadis also undertook reviews of the cost estimates corresponding with each project. This involved a review of the overall estimation process adopted and checks relating to the data sources applied. The checks undertaken by Arcadis included:

- Confirmation of base year adjustments to ensure all costs were presented as 2023-24 values.
- Alignment of EJP summary costs data with cost estimates with matching values presented in data tables.
- Arithmetic checks and absence of cost duplication.
- Review of implied unit costs per asset category.
- Assessment of additional cost included in each project, e.g. prelims, civils, access etc.
- Extent of reliance on historical cost information.

For non-load related schemes, the key findings on costs were as follows:

- **Overhead lines:** The costs reported for both minor and major overhead line refurbishments at 132kV and 275kV were regarded as reasonable. Some variations were apparent across projects although these were justified by the scope of each intervention (e.g. inclusion/ exclusion of earth wire and/or insulator replacement), condition of tower steelwork and foundations, route complexity (urban, rural, proportion of tension: suspension towers - direction changes), and a number of crossings etc. Overhead line project costs aligned with Arcadis' expectations.
- **Cable projects:** One 132kV fluid filled cable replacement project was reviewed in the west of Glasgow and the resultant unit cost was regarded as realistic for replacement with 1200mm2 XLPE cable.
- **Switchgear replacements**: Two switchgear replacement projects were reviewed, which involved the efficient reuse of existing civils assets. Therefore, the scope of these interventions was relatively modest (effectively circuit breaker only replacements), which resulted in low costs relative to full bay replacements.
- **Transformer replacements**: The cost of two 132kV transformer replacement projects were reviewed. The cost of these replacements and associated substation interventions was regarded as reasonable after considering all civil refurbishment works being undertaken, e.g. plinths, bunds and noise enclosures. The unit costs for each replacement transformer were aligned with Arcadis' expectations.
- **Protection & Control**: The bespoke nature of proposed interventions to replace a population of Voice Frequency (VF) Intertrip protection devices at various sites due to equipment obsolescence and unsupported technology made it challenging to identify equivalent benchmarks for this EJP. However, it was confirmed that the original 2011 cost estimate had been cross-referenced with other more recent protection and control projects and quotations. Therefore, Arcadis regards the cost estimate provided for the package of VF Intertrip replacements as reasonable.

Overall, the costs of non-load related schemes were found to be reasonable and aligned with Arcadis' benchmarks.

4.2.4. Key risks and uncertainties

There remains a significant amount of risk and uncertainty for non-load related projects post-tender. This includes risks relating to weather delays, changes in scope, cost certainty of contract prices, outage delays, delays in consents, environmental costs, and storage costs, among others. We have carried out work to review SPT's historical planned and actual released risk and contingency costs for a sample of projects including RIIO-T1 projects and RIIO-T2 projects. We reviewed SPT's IP5 documentation for a sample of 30 non-load related projects excluding 1 outlier. As part of this analysis, we looked at both the types of risk being released and the overall risk and contingency percentages as a proportion of the scheme or programme costs. We then carried out statistical analysis of the costs using a range of different statistical metrics. The unweighted mean planned risk, and contingency was 8.9% of the project costs, whereas the average released costs are 9.2%.

We consider than an appropriate allowance for risk and contingency costs for non-load related expenditure is 9.2% of direct costs. SPT has applied this to all of its non-load related schemes apart from 5 RIIO-T2 NARM baseline schemes where no risk and contingency allowance has been applied as there was already an allowance for risk and contingency in RIIO-T2 and some risk and contingency costs have now been realised as actual costs. The weighted average risk and contingency allowance for non-load related expenditure including these schemes is 7.0%.

We consider that based on our overall sample of 63 load and non-load projects we have reviewed (excluding outliers), there should be separate risk and contingency rates for load- and non-load related schemes. However, if Ofgem decides to adopt a single rate covering both load and non-load related expenditure, we consider that this should be a rate of 12.5%. This has been calculated by taking the individual rates for load and non-load respectively, including the different percentages that have been applied for a few schemes discussed above and in Section 4.1.4 and weighting them by the costs that SPT is forecasting for load and non-load related capex.

5. Efficiency of Network Operating Costs

5.1. Scope

SPT's network is going through a period of significant change. The size and complexity of the network is growing year by year to help achieve the volume of new connections and to enable increasing power flows across network boundaries. The UK's drive to Net Zero is resulting in a reduction in gas usage but an increase in electrical demand because of increased numbers of electrical heat pumps, electric vehicles, and air conditioning units. This increased electrification requires exceptional network reliability.

Core Network Operating Costs (NOCs) cover a range of costs necessary to ensure the efficient operation of the transmission network including expenditure on faults, inspections, maintenance, repairs, and vegetation management. The growth of SPT's network combined with the installation of increasingly technologically advanced equipment and threats from the climate are putting upward pressure on these costs in RIIO-T3.

As set out in section 3.2, we have separated out costs relating to Service Agreements, Small Tools & Equipment, Plant and Machinery (STEPM), Biodiversity Net Gain (BNG) and Carbon related costs, Climate Resilience (including Flooding), Operational Technology, and substation electricity costs associated with the Western Link and EGL1. These costs are better suited to qualitative review, have new requirements relative to RIIO-T2 or are covered in different BDPT tables than those for RIIO-T2. These separately justified costs are addressed in Appendix 3.

5.1.1. Summary of Costs

SPT's actual and forecast core NOCs for the remaining years of RIIO-T2 and the forecasts for RIIO-T3 are summarised in in the table below.

Table 5.1 - SPT RIIO-T3 Core NOCs expenditure compared to RIIO-T2 (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	T2 RRP Best View	Business Plan Submission		
	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
Faults	26.2	25.5	-0.7	-3%
Inspections	8.1	8.3	0.2	3%
Maintenance	30.4	35.1	4.7	16%
Repairs	12.9	17.3	4.4	34%
Veg. Management	2.025	4.950	2.9	144%
NOCs Other	12.4	12.5	0.1	1%
Core NOCs	**92.0**	**103.7**	**11.7**	**12.7%**
Baseline	92.0	103.7	11.7	12.7%
UMs	-	-	-	-

SPT is currently forecasting to spend £103.7m over the 5 years of RIIO-T3 across its core NOCs activities which compares with £92.0m in RIIO-T2. This is all baseline expenditure and represents a 12.7% total increase over RIIO-T2.

The increases in NOCs are in inspections maintenance, repairs, vegetation management, and NOCs other, which are explained further in the following section. The annual breakdown of these costs is summarised in the following table.

Table 5.2: SPT RIIO-T3 annual NOCs expenditure (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	2027	2028	2029	2030	2031	TOTAL
	(£m)	(£m)	(£m)	(£m)	(£m)	(£m)
Faults	5.1	5.1	5.1	5.1	5.1	25.5
Inspections	1.6	1.6	2.1	1.6	1.6	8.3
Maintenance	7.6	7.5	6.8	6.7	6.7	35.1
Repairs	3.5	3.5	3.5	3.5	3.5	17.3
Veg. Management	1.0	1.0	1.0	1.0	1.0	5.0
NOCs Other	2.2	2.3	2.5	2.7	2.9	12.5
Core NOCs	**20.8**	**20.9**	**20.9**	**20.4**	**20.7**	**103.7**
Baseline	20.8	20.9	20.9	20.4	20.7	103.7

5.1.2. Key assumptions and drivers

Given the range of different categories of cost under NOCs, the key drivers for the required expenditure as well as the assumptions used in determining that expenditure, vary. The following table captures the key points for each category.

Table 5.3: Summary of drivers of NOCs expenditure (£m, 2023/24 price basis)

Cost Category	Drivers of cost	Underlying assumptions
Faults	**Substations**: Breakdowns happen from time to time, and SPT needs to be able to repair its equipment promptly to ensure maximum availability. For older assets with limited availability of parts, SPT ensures it keeps a store of selected spares to support breakdowns, ensuring as high an asset availability as possible. **OHL**: Climate Change is increasingly playing a bigger part in the reliability of SPT's overhead lines. With increased temperatures and precipitation being experienced in its licence area, SPT is seeing increased growth rates of vegetation which can be a hazard for overhead lines.[13] **Cables**: SPT's 132kV XLPE cable population has suffered from failures of terminations, so it has begun to carry out routine partial discharge monitoring of all such	Based on current T2 fault activity with interpretations made on plant removal for T3 such as older circuit breakers.

[13] See SPT Climate Resilience Strategy

	terminations in addition to visual inspection and sheath testing to detect issues as they develop. Fault costs are falling by 2.7% from RIIO-T2 levels.	
Inspections	SPT carries out monthly inspections of its substation sites and assets. As part of this, it undertakes visual checks of cable terminations. In addition, it ensures no unauthorised access to its substations occurs to protect public safety as well as the safety of its staff. On an annual basis it inspects all overhead line assets either by foot patrol or by helicopter. SPT's volumes and costs are based on its historical information including the last 3 years' RRP data. Costs are increasing by £0.23m (2.8%) from RIIO-T2 levels.	Circuit volume data and substation numbers stay the same during RIIO-T3. The number of substation inspectors has been increased to take account of the expected increase in the number of substations during RIIO-T3. SPT is also forecasting an increase in staff for overhead line inspections.
Maintenance	SPT's volumes are based on activity levels to maintain compliance with policy and are planned with the goal of keeping its assets in an appropriate condition and operating to meet the required specifications. They have been assessed using historical information from the last 3 years' RRP data. **Substations**: For RIIO-T3 SPT has identified the need to enhance how it looks after its substation civil assets. This requires a strong focus on assets such as transformer bunds and oil water separators and in addition creating an expanded programme of Civil Surveys to ensure buildings and structures are fit for service and identifying any potential interventions required. **OHL:** On an annual basis, SPT carries out condition assessment of 10% of its overhead lines including towers, conductors, insulators, fixtures and fittings which may lead to a more detailed climbing inspection if required. It now uses unmanned aerial vehicles, or drones, because it avoids people working at height and it is more effective. It carries out additional testing on its conductors, dependent on their type. It is increasing its condition assessment frequency in T3 from 10% to 20%. **Cables:** Two key cable tests are carried out on each cable every 3 years which verify the integrity of the cable sheaths and bonding systems. Fluid-filled cable systems require additional maintenance compared to other types of cables like XLPE. Fluid-filled cable systems have additional equipment associated with them such as oil tanks, pipework, and pressure gauges which need to operate reliably. SPT has achieved efficiencies from removing older and more complex assets from its system. There is a reduction of £7.5m for Flexible Alternating Current Transmission Systems (FACTS). There are significant increases in costs for RIIO-T3 for wound plant such as AIS switchgear +£3.5m, Civils +£6.6m, and OHL +£1.2m. There are smaller increases in other areas as well.	Volumes have been derived from the 3-year RIIO-T2 RRP report. Certain maintenance costs have been revised to reflect current rates.

	For Civil maintenance, SPT has also included costs for environmental civil maintenance which covers the costs of maintaining plant like oil water separators, bund pumps and drainage system which are all key to the correct functioning of our substations. SPT estimate these costs for environmental civil maintenance to be some £0.481m per year. It has also included costs obtained from T2 RRP for civil maintenance to cover general site care costs. Overall, this means an increase of £4.7m (15.6%) from RIIO-T2.	
Repairs	Overall Repair costs are forecast to increase from £12.9m to £17.3m – 34%. Key changes between T2 and T3 are: Civils will increase by £0.9m, OHL by £1.3m and cables by £1.4m. The increases in costs and volumes in Civils recognises the growing importance and criticality of these assets in overall substation reliability and availability. In addition to using RIIO-T2 data, additional costs have also been included in the RIIO-T3 forecast in the region of £0.3m to cover repairs to Environmental Civils such as Transformer Bunds, Oil Leaks and Spills, and Drainage Systems. It is worth noting that so far in RIIO-T2 SPT is experiencing low 275kV cable repair activity. Forecast cost for 275kV cables in RIIO-T3 are £0.32m compared with a RIIO-T2 forecast of £0.16m. The increases in 132kV and 275kV costs reflects the increase in costs we are experiencing with external cable contractors and cable system accessories. The 400kV cost and volume forecast has been based on a combination of the RIIO-T2 RRP data and best estimates from SPT's Operations Department due the low volume of 400kV repair activity. Based on SAP and also from the last 3 years' RRP data.	Based on current RIIO-T2 repair activity with interpretations made for the removal of older, more repair intensive plant for RIIO-T3.
Vegetation Management	Costs have been assessed using information from current tender processes being undertaken for Vegetation Management. This information has indicated at least a doubling of this expenditure when compared with RIIO-T2 forecast costs and actuals. With increased temperatures and precipitation being experienced in SPT's licence area, it is seeing increased growth rates of vegetation which can be a hazard for overhead lines. For RIIO-T3 its vegetation management policy will be focusing on increased visual inspections by foot and helicopter. Each year it inspects 50% of routes on foot and 50% by helicopter. These visuals inspections are used to monitor growth rates of vegetation, changes	Revised volumes represent a change in the inspection to 35% of route length and a change in cut to 30% of route lengths every 3 years.

	in land use and conductor and fitting damage that might have occurred to ensure exceptional network reliability. If growth rates risk infringing OHL clearances, action will be taken to clear the vegetation.	
NOCs Other	**[Redacted]**	The costs of substation site security cover the maintenance elements described opposite which are carried out annually at all SPT transmission substations. The number of transmission sites has increased during the RIIO-T2 period, and this will continue into the RIIO-T3 period. Due to the increase in Security level across the business additional security assets have been installed at SPT's sites increasing the associated maintenance costs. The increase in sites required to be maintained coupled with the increase in security assets at each site, all factor into the cost forecast for Substation Site Security in RIIO-T3.

5.1.3. Efficiency evidence

The expenditure in the main areas of core NOCs – Faults, Repairs, Maintenance, Inspections, and Vegetation Management – has not changed dramatically from RIIO-T2 (when compared from same price base). Efficiencies have been achieved as SPT removes assets that historically were more expensive to maintain and would also drive higher fault and repair costs.

For example, the replacement of oil and air blast circuit breakers has reduced fault, repair and maintenance costs as the replacement equipment is significantly less complex and cheaper to maintain. They also have significantly lower fault rates. The removal of oil circuit breakers also has contributed to reduced environmental risk.

All bulk oil circuit breakers will have been removed from the transmission network and only a small proportion of Air Blast Circuit Breakers will remain on the network at the start of RIIO-T3 with the plan for all Air Blast Circuit Breakers to be removed by 2029. The replacement of oil circuit breakers and Air Blast Circuit breakers has reduced costs as the replacement equipment is significantly less complex with a lower risk of failure.

The use of modern equipment such as drones and Partial Discharge Detection systems has helped achieve efficiencies in inspection costs and assisted in identifying issues early before a more serious failure occurs. This is key to reducing potential repair and fault costs.

As part of its RIIO-T3 Business Plan, SPT has produced its first Transmission Climate Resilience Strategy. This Strategy assesses the key risks that will impact its network during T3 but also up to 2050. It is intended during the RIIO-T3 period to submit costs which will

focus on the high-risk areas such as flooding, landslides, high temperature, erosion as well as to trial nature-based solutions that will have an impact on the wider environment. This proactive work is essential to avoid much higher reactive operational costs to recover from such events in future.

5.1.4. Key risks and uncertainties

Overall, the core activities of faults, maintenance, inspections, and repairs are not seeing huge changes in costs which is positive when considering the macro-economic environment of high inflation, interest rates, and wage inflation. These activities are relatively low risk and are mainly the costs of staff and equipment/ parts required.

The cost of electricity for an HVDC link is high risk due to the variability of electricity costs. The RIIO-T3 forecast costs are based on current market prices but this is no guarantee for the future.

There is always the risk of a particular item of plant developing a type fault (which would affect other TOs). This could have an adverse effect on Repair and Fault costs and is a high risk. These costs would be more significant if there were a high volume installed on SPT's network.

6. Efficiency of Indirect Costs

This section covers the assessment and review of the efficiency of both SPT's core Closely Associated Indirect (CAI) costs and core Business Support costs. CAIs are those activities that are directly involved in co-ordinating and supporting the operational activities of SPT such as the delivery of capex schemes. These can be split broadly into two types: Engineering Activities and General operational support:

- Engineering Activities include project management and delivery, engineering design, and planning of the network on a day-to-day basis via the control room.
- General operational support includes Stores and Logistics, Vehicle Management, Operational IT, as well as Health & Safety and Training functions.

SPT's Business Support costs cover activities that are further removed from the running of the network but are integral to any business. These include corporate functions like IT & Telecoms, Finance, Property Management, and Human Resources as well as Regulation which is the main interface with Ofgem.

We are excluding several areas of costs from SPT's costs in this Chapter which are separately assessed and justified in Appendix 3. For CAI, we have separated out wayleave costs and operational training costs as these are more suitable for qualitative justification rather than benchmarking.

For Business Support costs we are excluding costs for new property for support staff associated with the step change in the investment programme in RIIO-T2. We have also excluded HVDC insurance costs as the costs reflect more complex technology. We have excluded Community Benefits Administration and Fund costs as they are new government requirements for RIIO-T3.

6.1. Closely Associated Indirect Costs

6.1.1. Summary of Costs

SPT's actual and forecast costs for RIIO-T2 and the forecasts for RIIO-T3 for core CAIs are summarised in in the table below.

Table 6.1: Forecast RIIO-T2 and T3 CAI expenditure (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	T2 RRP Best View	Business Plan Submission		
	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
Project Management	113.4	269.1	155.7	137%
Network Design and Engineering	80.5	172.7	92.2	115%
System mapping	6.4	16.1	9.7	153%
Engineering Management & Clerical Support	105.4	248.8	143.4	136%

Network Policy (incl. R&D)	14.1	29.3	15.2	108%
Health, Safety & Environment	11.8	24.7	13.0	110%
Stores & Logistics	4.5	10.1	5.6	123%
Vehicles & Transport	4.8	20.5	15.7	328%
Market Facilitation	0.0	0.0	0.0	-
Network Planning	14.2	30.3	16.2	114%
Core CAI Costs	**355.0**	**821.6**	**466.6**	**131%**

SPT is currently forecasting to spend £821.6m over the 5 years of RIIO-T3 across its core CAI activities which compares with £355.0m in RIIO-T2. This represents a 131% total increase.

The following tables summarise SPT's RIIO-T3 CAI forecast by year.

Table 6.2: SPT RIIO-T3 annual CAI expenditure (£m, 2023/24 price basis)

Cost Category (£m 2023/24 prices)	2027	2028	2029	2030	2031	TOTAL
	(£m)	(£m)	(£m)	(£m)	(£m)	(£m)
Project Management	52.6	53.8	54.2	54.3	54.1	269.1
Network Design and Engineering	33.7	34.4	34.8	35.0	34.8	172.7
System mapping	3.0	3.1	3.2	3.4	3.4	16.1
Engineering Management & Clerical Support	48.3	49.4	50.3	50.6	50.3	248.8
Network Policy (incl. R&D)	5.7	5.8	5.9	6.0	6.0	29.3
Health, Safety & Environment	5.4	5.0	4.8	4.8	4.8	24.7
Stores & Logistics	2.0	2.0	2.0	2.0	2.0	10.1
Vehicles & Transport	5.9	5.9	4.9	2.5	1.2	20.5
Market Facilitation	0.0	0.0	0.0	0.0	0.0	0.0
Network Planning	5.6	5.2	6.0	6.7	6.7	30.3
Core CAI Costs	**162.2**	**164.6**	**166.2**	**165.3**	**163.3**	**821.6**

6.1.2. Key assumptions and drivers

The level of growth in the CAI forecast is the result of increased indirect activities required to support the increased volume of work for SPT from connections, ASTI, the HND, tCNSP2, the Strategic Spatial Energy Plan and other RIIO-T3 investment. To deliver the scale of the physical works required, directly driven by the increased volume and complexity of the projects to be delivered, SPT's front-end delivery needs to more than double in size, with the associated increased in salary costs. To enable this, SPT's business planning and enabling functions also need to grow proportionately and in a timely manner. For example, SPT will need to grow its teams that secure land rights for substations, cables and overhead lines in proportion to the planned volume of network construction. It is essential that support

functions are in place at the right time to support the project delivery timescales expected by SPT's customers and stakeholders, with most of these required far in advance of project delivery. For example, detailed project planning, equipment procurement and securing land rights and planning permissions all commence several years in advance of physical site works.

Internal salaries represent the majority of SPT's total CAI costs. There are also increases in costs associated with external services, which in total represent approximately 29% of the costs, which are competitively tendered.

An important factor in the growth in costs is the increasing complexity of processes with connection reform including additional interactions between SPT and the Department of Energy Security and Net Zero (DESNZ), their Mission Control department, the National Electricity System Operator (NESO), and Ofgem. SPT is already starting planning work on schemes in the late 2030s and 2040s which means associated indirect costs are being incurred.

To satisfy the requirements of its stakeholders, funding of CAI cost activities not currently covered by Ofgem's proposed uncertainty mechanisms have been included in SPT's baseline plans to ensure that these resources can be in place at the right time. Appendix 2 sets out further details on the requirements for this.

The table below sets out further details of key drivers of the growth in CAI Costs.

Table 6.3: Further details on key drivers for areas of CAI Costs

Cost Category	Drivers of cost	Underlying assumptions
Engineering Design and Standards (including Innovation and Sustainability)	FTE growth is driven by T3 investment growth and increasing volumes of equipment. There is a small number of external services for the Sustainability Team which is competitively tendered. The increases are driven by new regulatory or legislative requirements, increases in volumes of activity or new areas of work driven by past experience.	Increase of 8 FTEs, based on 35% allocation to SPT. The prevalence of new-build infrastructure requires significant additional engineering design activity compared to upgrading existing infrastructure: more detailed engineering work is necessary to establish substation designs and overhead line routes to support site identification, routing and consenting activities.
Delivering technology	In-housing critical dependences in telecoms as well as scaling digitalisation support for the business. Key areas include telecoms work for which all external services are competitively tendered and real time systems. The increases are driven by new regulatory or legislative requirements, increases in volumes of activity or new areas of work driven by past experience.	Increase of 20 FTEs, based on 35% allocation to SPT.
Network Land Planning and Rights Resilience	The majority of costs are permanent FTEs and have been forecast bottom-up reflecting the growth in projects in RIIO-T3. External services associated with planning decisions and environmental assessments are competitively tendered.	The security of land rights was previously included in RIIO-T2 under a 'use it or lose it' initiative. This required the identification and mapping of gaps in land rights. As the gaps have been mapped, the

	SPT has a network held on varying formats of land rights from secure rights (servitudes) to unsecure (wayleave/lapsed wayleaves). The unsecure assets mean significant risks to SPT in terms of notices to remove assets and access refusals when it plans to commence refurbishment activities. In order to maintain an efficient, coordinated, and economical system, SPT has moved to a more proactive model to secure land rights with secure land rights always being initiated as a contingency.	requirement to continue to fill gaps has been included as a land rights cost to seek servitudes.
Customer debt	**[Redacted]**	**[Redacted]**
Control room	SPT has forecast increases in its Operational Control Centre staff as the networks expand and there is an increase in complexity involved in managing the increasing system access requirements of maintenance reinforcement and connections. Almost all primary electrical assets added in RIIO-T2 will have maintenance cycles requiring system access in RIIO-T2. Each added customer, network reinforcement or energy source makes the future burden on the control room more onerous as SPT responds to NESO and customer demands. The control room will do outage planning both on a longer-term basis and for the year ahead, which is regularly updated. Changes to the System Operator Transmission Codes and Evolution of the Transmission Network to meet Clean Power 2030 also drive an increase in staff with the integration to new Electricity System Restoration Standards and an increasingly complex and extensive outage plan.	Incremental growth means managing an increasing volume of maintenance, defects and faults, which in turn means more outages for the control room to switch and manage. Reinforcement and Connections requires support from the Operational Control Centre in terms of scheme representation, creation of operational documentation, stakeholder engagement and system access and control room switching. Increasing network complexity requires increased FTEs as outage assessments become more complex, additional customers need to be added, and there are more load management schemes and interfaces. It also means outages take longer to switch, and the outage plan becomes more finely balanced to reduce constraint costs and impacts on customers while maintaining system security. Changes to the outage plan routinely requires complex reassessment and revision of conflicting outages in greater numbers.
Engineering	The growth in volume of activity with the HND, CNSP, Connections reform, and the increasing complexity of work is driving the need for increased FTEs. Cybersecurity requirements are driving growth in FTEs needed for system design and planning including telecoms and real time systems activities, and smart grid operations.	System planning functions will need to adapt to the increasing complexity caused by the significance of network reinforcements and to design and study system operability requirements. The new activities related to the CSNP, SSEP and reformed connections processes require additional system planning and engineering resources.

		The step-change in project volumes and investment is reflected in FTE growth in project engineering, supporting the range of contracting models in SPT's deliverability strategy.
Market Development and Commercial Operations	We consider that a significant increase in FTEs is required to manage the increased number and the commercial complexity of connections applications which has been driven by government policy. This is reflected in nearly 80 GW in contracts within the SPT area. SPT needs additional FTEs to support: • new contestability provisions • reworking of the current connections queue and associated industry codes and contractual changes. Changes are taking place within accelerated timescales • managing changes to contractual arrangements driven by the NESO or customers including changes in scope and timing • managing other commercial contractual risks in delivering connections • providing additional support to connections customers • supporting the whole system transmission strategy and delivery; and • the development of transmission flexibility products.	In total 10 new FTEs are required for the network planning element and an additional 3 for the development of transmission flexibility products, the interaction between the TO and DSO, and whole system planning.
Security	The majority of the additional work from greater volumes of transmission projects is covered by project support contracts which are competitively tendered.	**[Redacted]**
Vehicles & Transport	Market rates for the lease of vehicles. Significantly increased investment activity necessitates increased FTEs as well as supply chain demands and external services. Significant impact on Operations FTEs focused on increased activity and support required to deliver the planned programmes of work in Fleet Management.	The delivery model and the current insourcing/ outsourcing model remains the same. Additional commercial vehicles will be required for field staff aligned with Scottish Power's Vehicle Allocation Policy. Additional cars will be required for Engineers who meet the criteria for Essential Users under Scottish Power's policy & the split between trade out users/ vehicle users.

6.1.3. Efficiency evidence

Approximately 29% of SPT's forecast CAI costs is externally sourced and competitively tendered and therefore subject to market pressure which provides an efficient level of costs at the time the tenders are undertaken.

SPT carried out further challenge and review of its CAI costs between the draft BPDT submission and in advance of the finalisation of its RIIO-T3 forecasts, supported by S&C. In total we have identified further efficiencies of £9m for CAI costs over RIIO-T3.

Its forecast CAI costs are falling as a percentage of both capex and totex and are significantly below both RIIO-T1 and RIIO-T2 levels as illustrated in the table below.

Table 6.4: Historical and forecast CAI expenditure as a % of capex and totex (£m, 2023/24 price basis)

	RIIO-T1	RIIO-T2	RIIO-T3
	(%)	(%)	(%)
Core CAI as a % of Capex	17.1%	14.5%	9.8%
Core CAI as a % of Totex	13.2%	10.6%	7.9%

This demonstrates that SPT is achieving further economies of scale as the organisation is growing and delivering greater volumes of capex and totex activity. Table 6.5 below illustrates that, for all core CAI activities, CAI is falling as a proportion of capex in RIIO-T3.

Table 6.5: Historical and forecast CAI expenditure by activity % of capex (£m, 2023/24 price basis)

Cost Category % of Capex	RIIO-T1	RIIO-T2	RIIO-T3	Variance (T2 to T3 %)
Project Management	6.5%	4.6%	3.2%	-1.4%
Network Design and Engineering	5.1%	3.3%	2.1%	-1.2%
System mapping	0.2%	0.3%	0.2%	-0.1%
Engineering Management & Clerical Support	3.6%	4.3%	3.0%	-1.3%
Network Policy (incl. R&D)	0.4%	0.6%	0.4%	-0.2%
Health, Safety & Environment	0.0%	0.5%	0.3%	-0.2%
Stores & Logistics	0.1%	0.2%	0.1%	-0.1%
Vehicles & Transport	0.5%	0.2%	0.2%	0.0%
Market Facilitation	0.0%	0.0%	0.0%	0.0%
Network Planning	0.7%	0.6%	0.4%	-0.2%
Core CAI Costs	**17.1%**	**14.5%**	**9.8%**	**-4.7%**

The forecast overall level of growth of SPT's CAI expenditure between RIIO-T1 and RIIO-T3 is well within the level of growth for SHETL and NGET as shown in the table below. The main

difference is that the growth in CAIs occurred earlier for both SHETL and NGET i.e., in RIIO-T2.

Table 6.6: Comparison of the change in CAI expenditure across TOs from RIIO-T1 to RIIO-T3 (£m, 2023/24 price basis)

CAI (£m)	T1	T2	T3	T2 vs T1	T3 vs T2	T3 vs T1
	Average	Average	Average	% Increase	% Increase	% Increase
SPT	52.0	85.1	207.8	63%	144%	299%
[Redacted]	[Redacted]	[Redacted]	[Redacted]	277%	48%	457%
[Redacted]	[Redacted]	[Redacted]	[Redacted]	431%	-5%	403%

We have covered contractor indirects in the load and non-load related sections. In total we have estimated that there are £170.9m of Project Management and Network Design and Engineering contractor indirects in RIIO-T3 which fall with pre-construction activities. These are split between £140.3m for Network Design and Engineering and £30.6m for Project Management. We consider that these indirects should be assessed separately from internal CAIs as they will be incurred by SPT's contractors and will be market tested as part of the competitive tendering process carried out for load- and non-load related schemes. This ensures that these costs are efficient.

6.1.4. Key risks and uncertainties

There are key risks associated with recruiting the necessary skilled staff in an environment where other network companies and related industries are also scaling up their activities. SPT is working to mitigate this risk through focused recruitment campaigns to bring in skilled staff as well as using appropriate internal staff to free up more experienced staff in certain areas.

There are a range of uncertainties with regards to SPT's General Services costs associated with vehicles including market price fluctuations for vehicle lease costs.

There is considerable uncertainty regarding the pace and scope of emerging EV technologies. This includes the ability to transition from Internal Combustion Engine (ICE) electric vehicles dependant on manufacturers' offerings compared to operational needs (e.g. range, towing capacity, and the price differential of ICE versus electric vehicles. SPT's transition is also dependent on car manufacturers' capacity to meet its increasing requirements.

The asset life of SPT's buildings is assumed to align with historical lifecycles, but these may change, and we have made no allowance for catastrophic events. Complex land negotiations may require the use of compulsory acquisitions.

6.2. Business Support Costs

6.2.1. Summary of Costs

SPT's actual and forecast BSC for RIIO-T2 and the forecasts for RIIO-T3 are summarised in the table below.

Table 6.7: Forecast RIIO-T2 and T3 Business Support expenditure (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	T2 RRP Best View	Business Plan Submission		
	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
IT & telecoms	35.3	84.5	49.2	140%
Property management excluding new property	32.0	72.5	40.5	126%
HR & non-operational training	21.1	50.7	29.5	140%
Finance, audit & regulation	56.6	74.6	18.0	32%
Insurance excluding HVDC insurance costs	4.5	2.6	-1.9	-42%
Procurement	7.0	12.7	5.8	83%
CEO & group management excluding community benefits	29.8	31.3	1.4	5%
Pension scheme admin & PPF Levy	2.7	4.2	1.5	56%
Insurance claims paid out	-2.2			
Core BS Costs	**186.8**	**333.0**	**144.0**	**78%**

SPT is currently forecasting to spend £333.0m over the 5 years of RIIO-T3 across its core Business Support activities which compares with £189.0m in RIIO-T2. This represents a 78% total increase. All of the costs are within baseline. Approximately 54% of SPT's Business Support costs are external services which have been or will be competitively tendered.

6.2.2. Key assumptions and drivers

To deliver the scale of the physical works required, directly driven by the increased volume and complexity of projects to be delivered, SPT's business planning and enabling functions need to grow proportionately and in a timely manner. There are a wide range of enabling business functions including (but not exclusively) planning, regulation, equipment standards, procurement, environmental, human resources, training, finance, legal, treasury, pensions, IT, land rights and statutory planning, facilities management and fleet management. For example, SPT's human resources, recruitment, training, facilities and fleet management team's growth is directly related to the forecast numbers and types of employees required,

SPT's business enabling functions are wide ranging in nature and its forecast growth in these functions has been derived bottom-up and based on drivers relevant to its activities.

To satisfy the requirements of its stakeholders, funding of Business Support cost activities not currently covered by Ofgem's proposed uncertainty mechanisms have been included in

SPT's baseline plans to ensure that these resources can be in place at the right time. Appendix 2 sets our further details on the requirements for this.

Key drivers of the growth in Business Support costs include the following:

1. Growth in SPT activity

There is a large headcount increase in SPT's general services needed to manage the growth in volume of work from connections, the HND and ASTI, the tCNSP2 and other projects in RIIO-T3. This also means that more people are required in HR and non-operational training for recruitment and training activities as well as implementing new and additional skills that are required within the business. SPT has used volume of projects as a driver where that is applicable as part of the cost base.

SPT's overall total FTEs are forecast to increase from 1,277 in 2023-24 to 2,300 by 2030-31, an increase of 80%. Further details are set out in Appendix 2 and Table A2.4.

SPT has also assessed the likely impact of the growth in activity on supply chain support and external services that are used as part of the indirect activities. It is assumed that the delivery model and current insourcing/outsourcing models remain the same.

2. Competitive tendering

Where costs have been derived from external contracts, they will typically have been competitively tendered and are therefore efficient at the time of tendering.

3. Digital Business Transformation

SPT's RIIO-ED2 Digitalisation progress in the last 15 months has given it a solid platform which allows its RIIO-T3 programme to make use of the same proven delivery model. Its RIIO-T3 programme includes an investment of approximately £90m over the 5-year period. This includes all costs for project delivery, licenses, hardware, and infrastructure. The annual spend will peak in years 2 and 3 at approximately £17m. This programme will require 28 FTEs for a specific staff split across SPT's 5 core disciplines of Solution Delivery, Application Support and Maintenance, Architecture and Strategy, Business Change, and the Project Management Office (PMO), plus an allocation of 44% for managers' time.

4. Property management costs increasing to support additional office/depot requirements

On a bottom-up basis, SPT has assessed the necessary land requirements for each project across new connections, ASTI, the HND, and tCSNP2, and other load-related work, as well as the increase in office space required given its forecast growth in FTEs.

5. Increased finance & regulation costs

There are increased requirements for FTEs to support connections, competition, and regulatory compliance.

The following information sets out further detail of the cost drivers for specific areas with more material cost increases.

Table 6.8: Further details on drivers for Business Support costs (£m, 2023/24 price basis)

Cost Category	Drivers of cost	Underlying assumptions
IT & Telecoms	Growth in users will drive an increase in IT operational costs such as systems monitoring, helpdesk provision etc. The digitalisation programme is approximately £17m per year. The resource requirement has been built on a bottom-up basis forecasting specific skill types and capacity volumes for each project. The total FTE resource for digitalisation is 28.	End user refresh of IT equipment based on the global model of 4 years for existing transmission staff. New End user equipment for growth based on SPT projections for FTEs. Networking equipment refreshed every 4 years and to ensure compliance with Cybersecurity requirements. Infrastructure provision for growth in business applications. Additional licensing for growth in FTEs. SPT has forecast **[Redacted]** of costs associated with the Data Platform, Data Sharing and Data Governance of which approximately **[Redacted]** is internal costs and **[Redacted]** is external costs, which have either been indirectly competitively tendered at group level or will be competitively tendered by SPT.
Data	SPT has forecast **[Redacted]** of costs associated with the Data Platform, Data Sharing and Data Governance.	Approximately **[Redacted]** is internal costs and **[Redacted]** is external costs, which have either been indirectly competitively tendered at group level or will be competitively tendered by SPT.
Training (also covers Operational Training for CAIs which are set out in Appendix)	A large growth is required in training activities with the increase in scale of the organisation and increase in the capital programme. This requires a broad range of technical, engineering and leadership skills including contract management, project management, data analytics, and cyber skills. Operational training includes on the job training to refresh and enhance skills as well as the training of apprentices.	Growth in costs is a mixture of internal FTEs and external services. Any contracts over **[Redacted]** in value goes through a comprehensive purchasing process and robust financial governance.
Recruitment and other HR costs	The main driver for recruitment costs is volume related. The more people that are required to be recruited, the more people are required as recruitment resources. In addition, resources are required to ensure that SPT can recruit and retain staff by analysing and setting an appropriate rewards package.	The organisation will be sized to satisfy the substantial FTE growth forecast to enable SPT's RIIO-T3 best view delivery at pace.
Securing land rights	Key drivers include growth in the number of substations as part of load-related capex and associated requirements for additional land.	Increased FTEs required to secure the land rights to enable SPT's RIIO-T3 best view delivery.

6.2.3. Efficiency evidence

Review between draft and final BPDT submission

SPT carried out further challenge and review of its Business Support costs between the draft BPDT submission and in advance of the finalisation of its RIIO-T3 forecasts, supported by S&C. In total further efficiencies of £9m have been identified for Business Support costs over RIIO-T3.

FTEs

SPT's resourcing strategy is well considered and delivers a balance in terms of internal and external skills[14] reflecting the following points:

- Skills anticipated to be required over a short-term peak will be externally sourced as temporary scaling up roles only.
- Skills not chosen to be held within the team will be externally sourced.
- Skills held as part of SPT's core competence will be internally sourced.
- Salaries and associated on-cost per FTE are benchmarked at market rates.

SPT is confident in its ability to recruit and grow as forecast. Its new business structure was established in early 2023 and was designed with future scalability in mind. SPT has an approach in place to recruit incremental FTE next year (2025) for T3 enablers so the growth would come in two phases making it more manageable.

Market Testing

Approximately 54% of SPT's Business Support costs are market tested through competitive tendering:

- Procuring vehicles through established lease hire contracts that are competitively tendered. The current contract will run from July 2024 to December 2026 when it will be re-let with a new tender process commencing around August 2025. This includes all service, maintenance and repair activities associated with its commercial fleet.
- SPT's property leases are market tested for efficiency and economic viability.
- Building services are procured through an established Building Fabric (including Roofing & HVAC) contract, Technical Support contract and Electrical contract.
    - The Building Fabric contract expires March 2025, with a new tender process in progress.
    - The Technical Support contract expires December 2024, new tender process in progress.

[14] SPT Supply Chain and Resource Annex.

- The Electrical contract expires December 2026, with a new tender process commencing October 2025.
- Internal electricity is repriced annually.

- SPT competitively tenders any outsourced support and utilises this when required; and
- SPTs investment and external service costs follows robust financial, commercial & operational challenge before approval that is independently audited by SPT's external auditors.

Benchmarking

SPT's forecast Business Support costs are falling as a percentage of both capex and indirects as illustrated in the table below and are significantly below both RIIO-T1 and RIIO-T2 levels.

Table 6.9: Historical and forecast Business Support expenditure as a % of capex and totex (£m, 2023/24 price basis)

	RIIO-T1 (%)	RIIO-T2 (%)	RIIO-T3 (%)
Core BS as a % of Capex	8.2%	7.7%	4.0%
Core BS as a % of Totex	6.3%	5.6%	3.2%

This demonstrates that SPT is achieving further economies of scale as it is growing as an organisation and delivering greater volumes of capex activity. The table below illustrates that all SPT's core Business Support activities are falling as a proportion of totex between RIIO-T2 and RIIO-T3.

Table 6.10: Historical and forecast Business Support expenditure by activity and % totex (£m, 2023/24 price basis)

Cost Category % of Totex	RIIO-T1	RIIO-T2	RIIO-T3	Variance (T2 to T3 %)
IT & telecoms	1.60%	1.05%	0.81%	-0.24%
Property management excluding new property	1.05%	0.95%	0.69%	-0.26%
HR & non-operational training	0.50%	0.63%	0.48%	-0.15%
Finance, audit & regulation	2.14%	1.69%	0.71%	-0.98%
Insurance excluding HVDC insurance costs	0.14%	0.13%	0.02%	-0.11%
Procurement	0.24%	0.21%	0.12%	-0.09%
CEO & group management excluding community benefits	0.66%	0.89%	0.30%	-0.59%
Pension scheme admin & PPF Levy	0.00%	0.08%	0.04%	-0.04%
Total Gross Costs	**6.32%**	**5.64%**	**3.18%**	**-2.45%**

Cross-TO Benchmarking

The forecast overall level of growth of SPT's Business Support expenditure between RIIO-T1 and RIIO-T3 is significantly less than level of growth for SHETL as shown in the table below based on the TO data share. The main difference is that the growth in Business Support costs occurred earlier for **[Redacted]** i.e., in RIIO-T2.

Table 6.11: Comparison of the change in Business Support expenditure across TOs from RIIO-T1 to RIIO-T3 (£m, 2023/24 price basis)

BSC(£m)	T1	T2	T3	T2 vs T1	T3 vs T2	T3 vs T1
	Average	Average	Average	% Increase	% Increase	% Increase
SPT	24.4	37.4	98.5	53%	164%	303%
[Redacted]	**[Redacted]**	**[Redacted]**	**[Redacted]**	217%	45%	359%
[Redacted]	**[Redacted]**	**[Redacted]**	**[Redacted]**	-2%	14%	12%

There are a number of inconsistencies in how different TOs have completed the data share tables, so we will update this analysis post Business Plan submission once the TOs have carried out a further data share.

6.2.4. Key risks and uncertainties

There are key risks associated with recruiting the necessary skilled staff in an environment where other network companies and related industries are also scaling up their activities both domestically and internationally. Another key risk is the regulatory treatment and timing of funding for Business Support and CAI costs which is critical to ensure the efficient delivery of SPT's investment program. To satisfy the requirements of SPT's stakeholders, funding of business support and indirect cost activities not currently covered by Ofgem's proposed uncertainty mechanisms have been included in its baseline plans to ensure that these resources can be in place at the right time.

7. Efficiency of Non-Operational Capex

7.1. Scope

Non-operational (non-op) capex covers SPT's expenditure on new and replacement assets which are not system assets. This includes IT and telecoms, vehicles and transport, and property. Non-op capex will be critical in RIIO-T3 to:

- deliver the digital transformation required to support SPT's business goals and enable the delivery of network investments at the scale and pace required for the UK's Net Zero ambitions
- expand SPT's land and estates, operations, and commercial teams to address the significant increase in activity associated with a rapid expansion of the capital programme and reflecting the increased complexity and scale of that programme; and
- enhance physical security requirements to support SPT's growing resilience requirements.

7.1.1. Summary of Costs

Reflecting these requirements, SPT's actual and forecast non-op capex costs for the remaining years of RIIO-T2 and the forecasts for RIIO-T3 are summarized in the table below.

Table 7.1: SPT RIIO-T3 non-op capex compared to RIIO-T2 (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	T2 RRP Best View	Business Plan Submission		
	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
Non-Op IT & Telecoms	10.4	94.0	83.7	808%
Non-Op Property (e.g. Office equipment)	8.0	22.7	14.8	185%
Vehicles	0	0.0	0.0	N/A
Total Non-op capex	**18.3**	**116.8**	**98.4**	**537%**
Baseline	18.3	116.8	98.4	537%

Note: as SPT leases its vehicles, the associated costs are covered in CAI costs rather than in non-operational capex.

SPT is forecasting it will spend £116.8m over the 5 years of RIIO-T3 across its non-op capex activities which compares with £18.3m in RIIO-T2. This represents a 537% total increase. This increase in costs is largely driven by investment associated with SPT's digitalisation strategy and the growth in FTEs.

The annual breakdown of these costs is summarised in the following table.

Table 7.2: SPT RIIO-T3 annual non-op capex (£m, 2023/24 price basis)

Cost Category (£m 2023/24 prices)	2027	2028	2029	2030	2031	TOTAL
	(£m)	(£m)	(£m)	(£m)	(£m)	(£m)
Non-Op IT & Telecoms	25.8	23.0	16.7	17.3	11.2	94.0
Non-Op Property (e.g. office equipment)	13.2	2.2	2.1	3.1	2.0	22.7
Vehicles	0.0	0.0	0.0	0.0	0.0	0.0
Total Non-op capex	**39.0**	**25.3**	**18.8**	**20.4**	**13.2**	**116.8**
Baseline	39.0	25.3	18.8	20.4	13.2	116.8

7.1.2. Key assumptions and drivers

There are a range of assumptions and drivers underpinning the different components of the non-op capex proposals. These are summarised in the following table.

Table 7.3: Summary of drivers of non-op capex (£m, 2023/24 price basis)

Cost Category	Drivers of cost	Underlying assumptions
IT & Telecoms	SPT is consolidating and building on core digital platforms introduced in RIIO-2. Material increases in costs from £12.1m in RIIO-T2 to £80.3m in RIIO-T3. This is largely focused on the first half of RIIO-T3 recognising the importance of early delivery to support other components of the Business Plan. Reflects customers and stakeholder requirements. Reflects regulatory drivers - Data Best Practice (DBP) Guidance and Digitalisation Strategy and Action Plan Guidance.	Developed in line with the baseline forecast growth scenario for RIIO-T3 totex submissions across Load, Non-Load, Connections, and FTEs. It also considers new requirements from customers and stakeholders including the major changes in connections activity. SPT commissioned an independent digital maturity assessment and created a future digital vision aligned with its business goals. Costs for modernising regulatory reporting assume the application of SPT's data governance principles aligned with the DBP Guidance and the DSI. SPT has forecast **[Redacted]** associated with the data platform, data governance and data sharing. Approximately **[Redacted]** is internal costs, while the remainder is external costs, which have either been indirectly competitively tendered at a global group level or will be competitively tendered by SPT.
Property	Market rates for buildings or leases. Significant impact on Land & Estates FTEs given additional land requirements for a range of large-scale projects.	The delivery model and the current insourcing/ outsourcing model remains the same. New buildings to accommodate increased FTEs.

	Significant impact on Commercial FTEs focused on increased contract placement and management, budget and reporting, environmental compliance, and operational management. Complex land negotiations requiring initiation of compulsory acquisition. Significant impact on Operations FTEs focused on increased activity and supporting increase of Estates including maintenance and Facilities Management. SPT will be incurring additional property and staff costs associated with relocating the new Alarm Receiving Centre (ARC). Costs are increasing from extending the existing substation site security system to a greater number of sites, with an associated increase in complexity.	
Vehicles & Transport	Significantly increased investment activity necessitates increased FTEs as well as supply chain demands and external services. Significant impact on Operations FTEs focused on increased activity and support required to deliver the planned programmes of work in Fleet Management.	The delivery model and the current insourcing/ outsourcing model remains the same.

7.1.3. Efficiency evidence

The resource requirement for SPT's RIIO-T3 Non-Op IT&T and Digitalisation plans have been built using a bottom-up methodology. SPT's Business Transformation team (BT) has taken each project (documented in an EJP) and identified specific skill types and capacity volumes for the delivery of each project based on extensive benchmarking of similar project deliveries utilising the expertise and benchmarking database of IBM technology consultants. In total this involved the development of 14 EJPs. BT then aggregated this view (accounting for the profiles over time, concurrent capacity, sourcing strategy, volume of growth roles and when these are required).

IBM has assisted BT in costing the majority of the initiatives using its benchmark cost data. BT's bottom-up resource requirement has been built into a full resource sourcing strategy, organisational design, capability and team structure, and a supporting timeline to deliver the programme of work. To ensure SPT's benchmarking costs were efficient, it has engaged an independent 3rd party assurance partner (Gartner Consulting) who has assured this delivery model using its industry leading expertise in this area and extensive benchmarking records to

validate that the proposed programme costs fall within the expected range for these types of digital and data projects.

Further, SPT used information from its successful delivery model including tenders to determine the appropriate unit costs and apportionments.

The key efficiencies from the digitalisation plan and IT & Telecoms expenditure will be an average of 80 avoided FTEs across the SPT business. This is equivalent to an embedded cost saving of £31.4 over 5 years, an average of £6.3m a year.

External assurance of capital efficiency of IT programmes

Gartner was engaged by SPT to conduct assurance of the estimated cost to implement its RIIO-T3 IT initiatives. This work involved a review of 34 individual initiatives in order to identify any under or over-estimation of investments with a view to determining how costs could be further optimised in safely completing the proposed activities.

The data sources available to Gartner included 14 Engineering Justification Papers (EJPs), Cost Benefit Analyses for each individual project, SPT published information, qualitative information based on calls with SPT stakeholders, and additional supporting information where available.

Individual line items were assessed using comparative data to conduct a verification of SPT's plans based on what is known today. In doing so, Gartner applied its price benchmarking database and well-established Market Price Assessment (MPA) methodology.

Overall, Gartner concluded that 29 of the 34 initiatives were in the expected range. For three areas, Document & Management Tool, SAP Asset Management System Optimisation and Resource Use and Waste, the costs were found to be below the expected range. For two areas, Cloud Cost Management Solution and Network Modelling IT Environment Review, the costs were found to be above the expected range but, in both cases, within 2% of Gartner's "high" range.

The following table summarises Gartner's findings. These are numbered in accordance with the relevant EJP.

Table 7.4: Gartner assessment of RIIO-T3 IT initiatives (£m, 2023/24 price basis)

EJP	SPT Investment Initiatives		Gartner Ranges		Variance vs. Investment
	Investment Title	SPT Total Investment	Gartner "Low" Range	Gartner "High" Range	
EJP01	Customer & Stakeholder Heat Map	[Redacted]	[Redacted]	[Redacted]	In-range
	Customer & Stakeholder Design & Costing Tool	[Redacted]	[Redacted]	[Redacted]	In-range
	AI Generated Offers	[Redacted]	[Redacted]	[Redacted]	In-range
EJP02	Customer Facing Maintenance & Outage Schedule	[Redacted]	[Redacted]	[Redacted]	In-range
	CRM Enhancement	[Redacted]	[Redacted]	[Redacted]	In-range
EJP03	Contract Lifecycle Management System	[Redacted]	[Redacted]	[Redacted]	In-range
	Supplier Performance Management	[Redacted]	[Redacted]	[Redacted]	In-range

	Procurement Process Automation	[Redacted]	[Redacted]	[Redacted]	In-range
EJP04	Single Project & Portfolio View	[Redacted]	[Redacted]	[Redacted]	In-range
	Document Management Tool	[Redacted]	[Redacted]	[Redacted]	41% Below
EJP05	BIM	[Redacted]	[Redacted]	[Redacted]	In-range
EJP06	Network Modelling IT Environment Review	[Redacted]	[Redacted]	[Redacted]	2% Above
	SAP Asset Management System Optimisation	[Redacted]	[Redacted]	[Redacted]	35% Below
	GIS	[Redacted]	[Redacted]	[Redacted]	In-range
	Employee Assistant for Project or Asset Information	[Redacted]	[Redacted]	[Redacted]	In-range
	T-CNAIM (NARM for Civil Assets)	[Redacted]	[Redacted]	[Redacted]	In-range
EJP07	Inspection & Maintenance Management Platform	[Redacted]	[Redacted]	[Redacted]	In-range
	Field Staff Efficiency Improvements	[Redacted]	[Redacted]	[Redacted]	In-range
	Technology-Enabled Inspections	[Redacted]	[Redacted]	[Redacted]	In-range
EJP08	Environment Compliance & Biodiversity	[Redacted]	[Redacted]	[Redacted]	In-range
	Biodiversity	[Redacted]	[Redacted]	[Redacted]	In-range
	Carbon Management	[Redacted]	[Redacted]	[Redacted]	In-range
	Resource Use and Waste	[Redacted]	[Redacted]	[Redacted]	11% Below
EJP09	Digitalisation & Reporting	[Redacted]	[Redacted]	[Redacted]	In-range
	System Development and Integration	[Redacted]	[Redacted]	[Redacted]	In-range
EJP10	Move to Cloud	[Redacted]	[Redacted]	[Redacted]	In-range
	Implementation of Multi Cloud Management with AIOps	[Redacted]	[Redacted]	[Redacted]	In-range
	Implementation of FinOps	[Redacted]	[Redacted]	[Redacted]	2% Above
EJP11	Data Governance	[Redacted]	[Redacted]	[Redacted]	In-range
EJP12	Data Sharing and Security	[Redacted]	[Redacted]	[Redacted]	In-range
EJP13	Data Sharing Infrastructure	[Redacted]	[Redacted]	[Redacted]	In-range
EJP14	Data Analytics & Reporting Platform	[Redacted]	[Redacted]	[Redacted]	In-range
EJP15	Devices	[Redacted]	[Redacted]	[Redacted]	In-range
EJP16	Network Hardware Refresh	[Redacted]	[Redacted]	[Redacted]	In-range
TOTAL (34 PROJECTS IN SCOPE)		**94.0**	**78.3**	**126.7**	**IN-RANGE**

Following the initial analysis and publication of draft results of Gartner's analysis, SPT worked with Gartner to further assess any exceptions (investments falling outside, either above or below the benchmark range) to understand and/or identify any mitigating factors,

misunderstandings, or other factors to adjust the benchmark range, or refine the estimates to align with the benchmark range. The table above is after that review. For projects still outside the Gartner range, SPT has noted possible reasons for the variances.

Ensuring efficiency of expenditure for property

Among the key measures taken to ensure the efficiency of the expenditure in relation to vehicles and property are:

- Building services are procured through an established Building Fabric (including Roofing & HVAC) contract which is due to expire in March 2025 and for which a new tender is in progress
- New tenders are in progress for Technical Support and Electrical works; and
- Property leases will be market tested for efficiency and economic viability.

The following process summarises SPT's contracting approach for external services and capex.

Table 7.5: Tendering cycle for Property and Vehicles

Non-op capex	Contracting Approach
Building Capex	Tendered
Buildings Capex for new sites	Tendered
ROU Buildings - New Sites	Tendered/lease - market rate
ROU RPI for McNeil/Edinburgh Park	Lease - market rate
Fleet ROU	Tendered

General Services investment and external service costs follow robust financial, commercial & operational challenge before approval that is independently audited by SPT's external auditors.

7.1.4. Key risks and uncertainties

There are a range of uncertainties with regards to SPT's General Services costs associated with property. These include building lease costs and buildings raw materiality costs.

The asset life of SPT's buildings is assumed to align with historical lifecycles, but these may change. SPT has made no allowance for the impact of catastrophic events on the basis that such events are very difficult to predict and any associated costs could not be justified at this time. However, SPT will prepare as best possible to mitigate the associated impact. In addition, complex land negotiations may require the use of compulsory acquisitions.

The uncertainties from IT & Telecoms are likely to arise from the rapid pace of technological advancements and their impact on the digitalisation solutions implemented throughout the course of RIIO-T3. This dynamic environment may lead to a scarcity of specific technical skills, resulting in higher costs to secure these skills or potential delays in project timelines.

8. Other Costs

[Chapter redacted]

9. Assessment of RPEs and Ongoing Efficiency

9.1. Real Price Effects

Using robust benchmarking methods, latest market evidence and engineering assessments, SPT has developed a robust view of the efficient costs for delivering the commitments outlined in its business plan. The efficient cost level facing any company is expected to evolve over time, driven, in part, by changes in input prices relative to inflation (real price effects (RPEs)) and productivity improvements (ongoing efficiency).

The RIIO-2 approach to RPEs

RPEs are intended to reflect the difference between CPIH (the inflation index that is used to update revenues each year) and the input prices that SPT actually faces across the goods and service it relies on as a transmission business. Regulated companies across all sectors face cost pressures with respect to their input prices. These cost pressures are the result of various factors including but not limited to, supply chain disruptions, lagged inflationary effects, the bargaining power of the labour force and macro-economic factors. Moreover, TOs may face changes in input prices (in peak terms) that may not be captured by general information measures such as CPI or CPIH.

Given that SPT typically purchases inputs from competitive markets, the input prices it faces are largely 'exogenous' in the medium term (i.e. it is a 'price-taker'), although it may be able to manage fluctuations in the prices of some inputs in the short term through planning. At RIIO-2, Ofgem constructed SPT-specific RPE indices, based on a weighted average of input price indices intended to capture the costs associated with labour and materials. Ofgem provided SPT with an ex-ante allowance for RPEs at the final determination, and indexed c. 70% of its revenues to these RPEs such that its revenues would be higher (lower) than the ex-ante allowance if the outturn RPEs were higher (lower) than anticipated. Ofgem proposed to true up RPEs based on outturn differences.

Ofgem's current approach to adjust for RPEs is based on cost indexation using a composite index ('RPE index'), where broad input categories receive different weights. These weights are fixed ex-ante and determined based on a rough split of the high-level input cost categories of each TO (e.g., materials, labour, plant and equipment) above Ofgem's materiality threshold of 10% of Totex.

In principle, Ofgem's RIIO-T2 approach of indexing revenues to RPEs could offer some protection to companies and consumers for input price volatility relative to Ofgem's approach at RIIO-T1. If input prices rise by more than expected during the price control, companies will be underfunded to deliver on their commitments; meanwhile, if input prices rise by less than expected, bills may be unnecessarily high.

While the methodology underpinning Ofgem's RPE indexation mechanism is well-understood, there are material concerns regarding Ofgem's application of this methodology during RIIO-T2. SPT's principal concern is that the RPE index has not adequately tracked the prices its pays on the competitive market for key inputs, including transformers, labour, and civil works. In the majority of the projects that SPT has examined, the RPE index has fallen

significantly short of the price pressures that SPT faces, resulting in substantial underfunding without any mechanism to address these shortfalls.

Further, the TO-specific price indices constructed by Ofgem assume fixed weightings across the component indices. This does not allow for changes in the proportion of out-turn costs for different inputs.

SPT evidence and methodology

Given these issues, the current RPE framework is failing to protect companies and consumers from input price pressures, and companies remain exposed to input price risk. To address this issue, Oxera has forecast input prices for SPT using more relevant and granular input price indices that are better able to reflect the prices that SPT faces. The premise is that these alternative RPE estimations will better and more viably predict price increases which are not in line with general inflation.

The detailed, granular analysis Oxera has used as an input to SPT's plan is based on a breakdown of each of SPT's input categories (materials, labour) and better reflects its input price composition. The evidence supports the adoption of the following indices and weights, by major cost category, as the proposed RPE index for RIIO-T3.

Table 9.1: Proposed index selection and weightings

Input category	Proposed index	Proposed weight
Labour		**100%**
Management; Business and administration	BCIS management and admin	27.0%
Engineering and technical; field-based; specialist	BCIS PAFI civil engineering	36.5%
Engineering and technical; field-based; specialist	BCIS Electrical Engineering Labour Index	18.25%
Engineering and technical; field-based; specialist	BEAMA: electrical engineering	18.24%
Materials		**100%**
Transformer	ONS Electric motors, generators and transformers	35%
Reactors	ONS Electric motors, generators and transformers	25%
Switchgears	ONS Electricity distribution & control apparatus	15%
Circuit Breakers	ONS Electricity distribution & control apparatus	12.5%
Cables	ONS Other electronic and electric wires and cables	12.5%

A summary of Oxera's forecasts for RPEs based on these indices is set out below for RIIO-T3.

Table 9.2: RPE forecasts (Real percentage growth above CPIH)

Input	26/27	27/28	28/29	29/30	30/31	Average
Materials	1.6%	1.6%	1.6%	1.6%	1.6%	1.6%
Labour	0.4%	1.3%	0.2%	0.2%	0.2%	0.5%
Total RPEs	0.6%	1.0%	0.6%	0.6%	0.6%	0.7%

Source: Oxera analysis.

This method of adjusting for real price effects constitutes, empirically, a significant improvement over the method being adopted currently for the RIIO-T2 period. The prevailing RPE index has not adequately tracked the prices SPT pays in the competitive market for key inputs, including transformers, labour and civil works

Using Oxera's RPE forecasts, the table below sets out the additional totex from RPEs.

Table 9.3: Forecast RPEs to be included in overall totex

Cost category	26/27	27/28	28/29	29/30	30/31	RIIO-T3 Total
	£m	£m	£m	£m	£m	£m
Load-related capex	0.1	0.2	0.2	0.2	0.1	0.8
Non-load related capex	2.3	3.0	3.6	3.4	2.6	14.8
Non-op capex	0.8	0.8	0.7	0.9	0.7	3.7
Network operating costs	1.1	2.0	2.4	2.2	2.6	10.3
Closely Associated Indirects	0.9	2.2	2.5	2.6	2.8	11.1
Business Support costs	0.9	1.9	2.4	2.7	3.2	11.0
Other costs	0.4	0.6	0.5	0.5	0.5	2.5
TOTEX	6.4	10.7	12.3	12.4	12.4	54.2

The forecast RPEs in the table above feeds into the efficient cost estimates in SPT's plan.

Oxera and SPT are suggesting two main changes to the real price effects methodology, which are explained in detail in SPT's Finance Annex:

- There is a refresh for the proxies used as the basis of the real input price increases SPT faces – this would allow RPEs to track the true increases in SPT's costs; and
- A refresh on the weighting of these costs – in order to better track costs, weightings should be realigned and should also be frequently updated.

It is also important to note that these forecasts are intrinsically uncertain, and it is likely that the outturn development of input prices will differ from these assumptions. Many of the

underlying factors that have driven input price increases and volatility over recent years will continue to be present in the near-medium term. Further, we expect the sector to face additional uncertainty regarding supply chain challenges, including a constrained labour market, given that energy networks in GB, across Europe and internationally are simultaneously increasing investment in the networks in order to reach Net Zero commitments.

In this context, and looking at responses in other jurisdictions, Oxera notes that other uncertainty mechanisms should be adopted as a complement to indexation. This is particularly important for aspects of SPT's cost base that do not track robust, exogenous price indices, given the specialist nature of the inputs and the supply chain issues outlined above. Oxera has explored how regulators across Europe have sought to account for the input price pressure facing energy networks, particularly for cost areas that are highly uncertain.

We propose several key elements to ensure that RPEs are appropriately and fairly addressed for both TOs and customers:

1. The recommended indices for RPEs that more accurately reflect SPT's input composition should be adopted with the proposed weightings to construct improved overarching indices for labour and material RPEs. The true-up mechanism should be refined including dynamic updates to weightings to reflect the actual mix of inputs.

2. There should be a symmetric reopener mechanism for RPEs if actual RPEs exceed or are below the new indices by more than a threshold value; and

3. The proposed tiered/stepped TIM mechanism should be applied as set out in Appendix 4 whereby the strength of the TIM incentive is progressively reduced for higher levels of under or overspend.

We consider that these mechanisms together will effectively manage the risk associated with RPEs for both customers and TOs.

9.2. Ongoing Efficiency

Ongoing efficiency refers to the productivity gains (frontier shift) that Ofgem expects efficient companies to be able to make year-on-year, as they get more productive at producing the same goods/delivering the same services. Theoretically, this means that Ofgem can observe similar industries and estimate an appropriate level of efficiency savings for TOs.

SPT is committed to being efficient as a business and recognises that a fair but challenging rate of ongoing efficiency should be factored into its allowed revenues as a regulated monopoly. However, ongoing efficiency should also reflect the context within which its plan is delivered. Specifically, the step-change in scale and pace of investment inherent in its

plan, combined with the regulator's emphasis on "pace over perfection."[15] Both of these factors would tend to reduce the scope for capturing "learning by doing" benefits, which are one of the main drivers of efficiency savings.

It should also be recognised that a high proportion of SPT's overall cost base is procured through competitive tendering. This enables SPT to access and lock in the benefits of efficiency improvements over time delivered through its contractors. While this captures significant benefits (e.g. in energy), it also constrains the scope for further efficiencies beyond those realised through its contracts. This all-encompassing market pricing may, therefore, be inappropriate for regulatory mechanisms directly prescribing the productivity improvements.

The RIIO-2 approach to ongoing efficiency

Ongoing efficiency relates to the ability of the most efficient companies in a sector to make productivity improvements through improved management practices, adopting more advanced technologies and 'learning-by-doing' effects. At RIIO-2, Ofgem examined productivity growth achieved in (sectors of) the wider economy to inform a range of feasible ongoing efficiency targets (c. 0.5–1% p.a.) and applied qualitative arguments to support a point estimate at the top end of its range (c. 1% p.a.), plus an uplift to account for the additional productivity growth available to energy networks due to innovation funding (0.2% p.a.). The uplift for innovation funding was subsequently reversed at the CMA appeal, resulting in a target of c. 1% p.a. Ongoing efficiency was applied to the entire cost base, other than costs that were deemed to be uncontrollable. Unlike with RPEs, there was no indexation mechanism to adjust revenues if outturn ongoing efficiency differed from that anticipated at the start of the price control.

British regulators such as Ofgem, Ofwat, the ORR and Ofcom, have typically examined the productivity growth achieved by relevant sectors of the UK economy to inform ongoing efficiency targets, with recent decisions (including RIIO-2 and PR19) settling a target of c. 1% p.a. Notwithstanding the specific issues regarding how this target has been determined in the past, the latest version of the EU KLEMS dataset (covering 42 sectors or sector aggregated) shows that productivity growth has declined relative to those decisions.

Evidence shows that energy networks are not immune from economy-wide slowdowns in productivity. The EU KLEMS dataset suggests that the decline in productivity growth has affected multiple sectors, including those that are closely comparable to the activities conducted by energy networks (such as the Construction sector). Moreover, across Europe, countries that have experienced large declines in economy-wide productivity growth also experienced large declines in productivity growth within the energy networks sector (and vice versa).

Oxera has examined the rate of productivity changes across closely comparable sectors of the UK economy to inform SPT's ongoing efficiency target. As noted by the CMA in the RIIO-

[15] Ofgem. (2024). Jonathan Brearley's speech to Infrastructure Investor Network Investor Forum. [Available at: https://www.ofgem.gov.uk/publications/jonathan-brearleys-speech-infrastructure-investor-network-investor-forum].

2 appeals, the selection of comparators and weighting approach involves a degree of value judgement.[16] Based on a careful review of regulatory precedent, Oxera considers the comparator sectors should fulfil the following criteria:

- Relevance – The comparator sectors must undertake similar activities to TOs. Although no sector is perfectly comparable, there are sectors that undertake similar activities to TOs which would influence the scope of productivity.
- Competitiveness – The comparator sector must be competitive to mitigate the risk that the estimated TFP is 'tainted' by the sources of productivity growth unrelated to ongoing efficiency, such as catch-up efficiency and scale effects.[17]
- Exogeneity – The comparator sector should not contain the companies being assessed (i.e. TOs) to ensure an independent assessment of the scope for ongoing efficiency aimed at TOs.
- Data quality – The comparator sectors' data relating to input and output volumes must be clear and robust.

Based on these criteria, Oxera considers three comparator sets to inform the target, as follows:

1. Singular set – This is formed by the Construction sector only given the similarity to the investments SPT makes in large infrastructure projects. It is also often seen as the key comparator for regulated utilities' capital expenditure and its IT intensity is similar to that of the TO sector, such that the productivity growth associated with digitalisation is captured by Construction.
2. Broad set – This set includes three operationally relevant sectors: Construction (as above), Transportation and Storage, and Repair and Installation of machinery and equipment. These activities also capture some indirect activities.
3. Granular set – This is a wider set than the broad list, and rather than looking at our industry as a whole, it assesses individual activities to similar industries. The granular set therefore includes a larger group of industries.

Oxera also includes an assessment of overall productivity since the Global Financial Crisis, and the extent to which TOs were affected by productivity slowdowns in the market at large.

Based on the targeted comparator sectors adopted at RIIO-2, this would suggest an ongoing efficiency target of c.0% or lower. However, many of the sectors selected at RIIO-2 are not

[16] Competition and Markets Authority (2021), 'Cadent Gas Limited, National Grid Electricity Transmission plc, National Grid Gas plc, Northern Gas Networks Limited, Scottish Hydro Electric Transmission plc, Southern Gas Networks plc and Scotland Gas Networks plc, SP Transmission plc, Wales & West Utilities Limited vs the Gas and Electricity Markets Authority Final Determination Volume 2B: Joined Grounds B, C and D', October, para 7.231 to 7.239.

[17] Note that no sector is perfectly competitive, such that the TFP estimates will always capture (to varying extents) other sources of productivity improvements. In the absence of full decomposition of TFP into its components, this issue may need to be dealt with qualitatively.

sufficiently comparable to the activities that SPT undertakes, and that more comparable sectors (such as Construction) should be given a higher weighting in the assessment.

The weights Oxera has applied for the different comparator sets for RIIO-T3 are summarised in the table below.

Table 9.5: Weightings for the Comparator Industries

Comparator Industry	Singular set	Broad set	Granular set
Construction	100%	33%	30.4%
Transportation and storage	-	33%	10.5%
Repair and installation of machinery and equipment	-	33%	30.0%
Financial and insurance activities	-	-	9.9%
Professional, scientific, technical, administrative and support service activities	-	-	9.9%
IT and other information services	-	-	9.3%

Source: Oxera analysis

The following table sets out Oxera's estimate for ongoing efficiency using different time periods, metrics, and comparator data sets.

Table 9.6: Estimates for Ongoing Efficiency

Productivity measure	TFP estimates (% p.a.)	
Time period	2010-2019	1996-2019
Singular comparator set	0.5%	-0.2%
Broad comparator set	0.2%	0.2%
Granular comparator set	0.1%	0.1%
RIIO-T2 economy-wide	0.2%	0.3%
RIIO-T2 targeted comparators	0.0%	-0.3%

Based on the approach and target comparator sectors adopted at RIIO-T2, the updated dataset would suggest an ongoing efficiency target of c. 0.0% p.a. This is clearly lower than the RIIO-T2 estimate of around 1%.

Based on the various comparator sets as described above, Oxera suggests that a robust ongoing efficiency target would lie between 0.0% p.a. and 0.5% p.a. SPT considers that a feasible and stretching ongoing efficiency target for TOs is c. 0.4% p.a. This aligns with placing more weight on the productivity growth achieved by the Construction sector, as well

as on the most recent business cycle. We do not consider that there is sufficient evidence to justify a different target for opex or capex as applied at RIIO-2 and given that costs are determined on a totex basis, a single rate would be most appropriate.

SPT has already delivered efficiencies of 0.55% of totex in RIIO-T2, which are built into its forecast baseline expenditure (equating to around £12m) in RIIO-T3. SPT will be delivering the 0.4% ongoing efficiencies through efficiencies in some specific areas. These efficiencies are embedded in SPT's BPDT as for practical reasons it has not been possible to separate them out from the tables. This includes around £9.2m of efficiencies identified as part of the non-op capex IT & Telecoms program based on Gartner's analysis and a further £31.4m of efficiencies from an average of 80 avoided FTEs over the RIIO-T3 period as a result of the digitalisation program. These efficiencies are discussed further in the Chapter 7. Together they amount to around 2% of SPT's forecast RIIO-T3 baseline totex or an ongoing efficiency of around 0.4% per annum. These should be deducted by Ofgem in its application of ongoing efficiency savings to baseline totex to avoid double counting.

In RIIO-T3, there are certain categories of costs where ongoing efficiency is realisable. These are in relation to BAU costs and routine capital expenditure, where efficiency gains and productivity improvements should be a focus of SPT's in its continued aspiration to be an efficient operator. However, in RIIO-T3 there are also more "one-off" large projects where ongoing efficiency targets may ignore the following elements:

- Volumes are likely prescribed and signed off by Ofgem in advance (plan and deliver); and
- Prices are more likely to be set based on market forces, and expected productivity gains, and as alluded to earlier in this section these are likely to already be enveloped in the price.

As such, Oxera suggests that the ongoing efficiency is at the level that its estimates would suggest, but also that they only apply to those projects and investments that are generally likely to be repeatable and ongoing, instead of one-off large projects.

10. Overall Findings

We have assessed the efficiency of SPT's forecast RIIO-T3 business plan expenditure in conjunction with SPT's other external consultants: Arcadis, Gartner, AECOM, and Oxera with the support of SPEN's internal team. SPT's approach has focused on ensuring good regulatory practice, transparency, and robustness, which ensures the credibility of the findings.

Collectively we have used a range of approaches for assuring and assessing the efficiency of SPTs' forecast RIIO-T3 business plan expenditure. This has included consideration of how SPT's cost forecasts have been built up, including the derivation and use of its MoSC, and challenging the SPT team on the key drivers, assumptions and justification for particular areas of costs. We have benchmarked costs against reference data from previous price controls, and benchmarked changes in costs against key cost drivers used by Ofgem, and information shared by other TOs. SPT's IT & Telecoms non-operational capex has been benchmarked by Gartner against their independent benchmarks for these activities.

Key findings

- SPT's RIIO-T3 cost forecasts have been built up in a transparent and logical manner reflecting forecast changes in the level of activity between RIIO-T2 and RIIO-T3 and applying an efficient view of unit costs.
- Approximately 95% of SPEN's RIIO-T3 forecast load- and non-load related capital investment has been or will be competitively tendered, which provides direct market evidence of the efficiency of its costs. In aggregate over 82% of SPT RIIO-T3 totex will be competitively tendered. Ofgem has previously recognised that a large proportion of TO expenditure is competitively tendered and has reflected this in its proposed approach to the assessment of directs costs for RIIO-T3. Ofgem has noted that where there is evidence that an effective tender process has been followed, competitive tension has been maximised and unit rates are broadly consistent with expectations, it will consider that these costs represent a market level of efficiency.
- Both Arcadis and S&C have reviewed SPT's MoSC which is used for costing both its load and non-load related investment. We consider that SPT's MoSC provides a robust way of estimating the efficient cost of projects, with the information being built up in a granular and transparent way from competitive tender information.
- Arcadis has carried out an efficiency review of SPT's load and non-load related schemes through high-level analysis and reviewing samples of schemes.
- S&C has carried out a review of SPT's forecast indirect expenditure for RIIO-T3 and it is clear that SPT is increasing efficiency between periods. Core Closely Associated Indirect (CAI) costs[18] as a percentage of capex is reducing from 17.1% in RIIO-T1 to 9.8% in RIIO-T3, while core CAI costs as a percentage of totex is falling from 13.2% to 7.9%. Similarly, core

[18] Core CAI costs for this purpose exclude Wayleaves and Operational Training

Business Support costs[19] are reducing from 8.2% of capex in RIIO-T1 to 4.0% in RIIO-T3. Core Business Support costs are reducing from 6.3% of totex in RIIO-T1 to 3.2% in RIIO-T3.

- While there are limitations in the TO indirects data share, it illustrates that the percentage growth in CAI costs between RIIO-T1 and RIIO-T3 for SPT is significantly below that for SHETL or NGET. Similarly, for Business Support costs the percentage growth for SPT is significantly less than for **[Redacted]**. The main difference for the other TOs is that the step change in activity occurred earlier, in RIIO-T2, rather than RIIO-T3.
- SPT carried out further challenge and review of its indirect costs between the draft BPDT submission and in advance of the finalisation of its RIIO-T3 forecasts, supported by S&C. In total, further efficiencies of £18m have been identified and are split equally across Business Support costs and Closely Associated Indirect costs.
- From Gartner's review of SPT's IT & Telecoms non-operational capex, SPT has embedded efficiencies of 9% in its programme which equates to around £9.2m. Separately, SPT's digitalisation programme is forecast to avoid an average of 80 additional FTEs in RIIO-T3. This is equivalent to an embedded cost saving of £31.4m over 5 years, an average of £6.3m a year.
- In aggregate, this amount to embedded efficiencies in baseline totex of £58.6m, which equates to 2.9% of baseline totex.

Efficient costs in RIIO-T3

Overall, reflecting the combination of factors highlighted above we have found SPT's forecast costs for RIIO-T3 to be efficient. The table below summarises the assessment of SPT's Totex and how we have established its efficiency.

[19] Core Business Support costs for this purpose exclude new Property, the Community Benefits Fund and associated administration costs and HVDC insurance costs.

Table 10.1: SPT RIIO-T2 and T3 Gross Totex (£m, 2023/24 price basis)

Cost Category (£m 23/24 prices)	RIIO-T2	RIIO-T3	% change	Efficiency evidence
Load-related capex	1,980	7,934	301%	Approximately 95% of costs will be competitively tendered work. Arcadis review of Costs.
Non-load related capex	545	523	-4%	Approximately 95% of costs will be competitively tendered work. Arcadis review of Costs.
Non-op capex	18	117	537%	Majority of costs are competitively tendered. Gartner review of IT & Telecoms.
Network Operating Costs (NOCs)	180	353	96%	Costs built up from historical RRP volumes, analysis of key variances and the latest unit costs or market rates. Qualitative assessment of separately justifiable costs.
Closely Associated Indirects (CAI)	425	1,039	144%	Benchmarking against historical costs, changes in cost drivers and against other TO costs. Qualitative assessment of separately justifiable costs.
Business Support (BS)	187	481	158%	Benchmarking against historical costs, changes in cost drivers and against other TO costs. Qualitative assessment of separately justifiable costs.
Other costs within the price control[20]	98	105	8%	The costs are competitive tendered and subject to separate review processes by Ofgem.
Total costs within price control[21]	**3,433**	**10,552**	**207%**	**Overall, around 82% of costs are competitively tendered, 12% benchmarked and 6% separately justified.**
Baseline	1,627	2,033	25%	
Uncertainty Mechanisms (UMs)	1,806	7,951	340%	
RIIO-T2 Carry Over	N/A	568	N/A	

[20] **[Footnote Redacted]**

[21] This excludes Non-Activity Based Costs (NABC). E.g., Directly Remunerated Services (DRS), Innovation, Pass Through (rates etc) costs which SPT is also required to submit as part of its Business Plan. Also includes £8m of other costs only included in RIIO-T2

Appendix 1: RIIO-T2 Efficiency

As part of developing its RIIO-T2 forecast, SPT has sought to ensure that it embeds innovation and efficiency in all areas of its expenditure. This includes learning from previous price controls and building in efficiencies achieved during RIIO-T2.

This appendix sets our latest view of SPT's performance in RIIO-T1 and the latest assessment of efficiencies which have been achieved. SPT's latest actual and forecast performance in RIIO-T2 is summarised in the table below. This includes adjustment for the connections volumes drivers (i.e. the removal of low probability schemes and adjustments for the removal of MSIP schemes that are not being put forward). There are no adjustments for RPEs or ongoing efficiency which are accounted for in the PCFM.

Table A1.1: RIIO-T2 Performance against allowances

		2021/22	2022/23	2023/24	2024/25	2025/26	Total
Allowances	**Total Load-related Costs**	101.3	149.8	262.1	447.4	571.9	**1532.5**
	Total Non-Load related Costs	98.7	103.0	87.2	87.6	66.1	**442.5**
	Total Non-Operational Capex	2.7	2.0	1.6	1.9	1.5	**9.7**
	Total Network Operating Costs	23.6	22.0	21.5	20.0	18.3	**105.4**
	Total Indirect & Other Costs	64.0	72.4	92.7	122.9	133.4	**485.5**
	Total Totex Allowances	290.3	349.2	465.1	679.7	791.2	**2575.5**
Expenditure	**Total Load-related Costs**	51.1	73.5	246.5	468.7	622.6	**1462.4**
	Total Non-Load related Costs	86.5	72.1	91.9	134.6	83.1	**468.4**
	Total Non-Operational Capex	1.7	2.5	2.1	3.2	5.2	**14.7**
	Total Network Operating Costs	20.7	16.6	20.1	21.0	17.7	**96.2**
	Total Indirect & Other Costs	62.3	70.5	61.3	139.7	148.1	**481.9**
	Total Totex Expenditure	222.4	235.3	421.9	767.3	876.7	**2523.5**
Performance	**Total Load-related Costs**	50.2	76.3	15.6	-21.3	-50.6	**70.1**
	Total Non-Load related Costs	12.1	30.8	-4.7	-47.1	-17.1	**-25.9**
	Total Non-Operational Capex	1.0	-0.6	-0.4	-1.3	-3.6	**-5.0**
	Total Network Operating Costs	2.9	5.4	1.4	-1.0	0.6	**9.2**
	Total Indirect & Other Costs	1.8	2.0	31.4	-16.8	-14.7	**3.6**
	Total Variance	67.9	113.9	43.2	-87.5	-85.5	**52.0**
	Under/Overspend £m	**67.9**	**113.9**	**43.2**	**-87.5**	**-85.5**	**52.0**
	Under/Overspend %	**23%**	**33%**	**9%**	**-13%**	**-11%**	**2%**

SPT had significant underspends in 2021-22 through to 2023-24 but is forecasting overspends in both 2024-25 and 2025-26. Overall, SPT is forecasting a £52m (2%) underspend across the full RIIO-T2 period.

SPT has carried out analysis in response to Ofgem's supplementary questions to separate out the outperformance/underperformance into 3 separate categories of efficiency, external factors and changes in assumptions. Overall, in the first 3 years of RIIO-T2, SPT has identified efficiency savings of £14m, which equates to an efficiency of 1.3% of allowed totex, which are built into its forecast baseline expenditure.

Appendix 2: Cost Drivers for Assessing Indirect Costs and Indirect Cost Allocations

This Appendix sets out further information and thinking on the key cost drivers that are used for the assessment of indirect costs. It also sets out our further thinking on the approach to the allocation and assessment of indirect costs.

MEAV

The Modern Equivalent Asset Value (MEAV) is a key metric for assessing the overall scale of TOs' networks and for benchmarking and assessing the appropriate levels of indirect costs. The MEAV is calculated by multiplying the volumes of asset for each asset category by appropriate unit costs and then summing across all asset categories. The unit costs effectively create a set of weighting across the different asset categories.

We consider that there are several key principles in establishing appropriate MEAV metrics across all TOs for comparative purposes.

1. The assets volumes used across the TOs must be on a consistent basis.
2. There must be a standard set of unit costs across all TOs that represent a fair and reasonable set of weightings across the asset categories and reflect the latest available information. It is important that robust and consistent analysis is used to set these unit costs considering the number of observations, different statistical measures such as the mean, median, upper quartile, lower quartile, and the presence of any outliers. A consistent time period should also be used.
3. The MEAV metrics being used should be consistent with the set of costs that is being assessed. For example, if a comparison of best view indirects is being considered, MEAV should include the impact of all capital expenditure including forecast expenditure under all uncertainty mechanisms.
4. There should be careful consideration of the lag between capital expenditure and the volumes in the MEAV. We consider that an Offset MEAV should be applied in RIIO-T3 to address this, which brings forward the value of MEAV by a number of years to offset the lag.

The table below shows the average MEAV for RIIO-T3 using both the unit costs that Ofgem has required for population of the MEAV in the BPDTs and using an SPT set of unit costs. It includes estimates of both regular and Offset MEAV.

There are some important differences in the unit costs. For example, there needs to be further clarity on the basis of calculation for the circuit breaker unit costs, whether they just include the cost of the circuit breakers or the full bay.

Table A2.1 shows our MEAV estimates for both the SPT and Ofgem unit costs but using the same volumes in each case. It is important to note that the use of an Offset MEAV increases the MEAV by 16% and 14% in RIIO-T3 for the SPT and Ofgem unit costs respectively. This is due to the high level of capital investment expected during the period.

Table A2.1: MEAV estimates

Asset category	Voltages etc	Metrics	SPT UC (£m)	Ofgem UC (£m)	Average MEAV SPT UC (£m) 2026-2031	Average MEAV Ofgem UC (£m) 2026-2031
Circuit Breaker numbers	400 kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	275 kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	132 kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	<132kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Transformers numbers	Transformer 132kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Transformer 275kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Transformer 400kV	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Reactive compensation numbers	Reactors all	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Mechanically switched shunt capacitors	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Mechanically Switched Capacitors with Damping Networks (MSCDNs)	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Series Capacitors (SCs)	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Static Var Compensators	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	400 kV	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	275 kV	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	132 kV	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	<132kV	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	underground cable (onshore) - (average)	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
HVDC	Number	#	[Redacted]	[Redacted]	[Redacted]	[Redacted]

	Length owned by TO: Onshore	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
	Length owned by TO: Offshore	km	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Total MEAV (Including HVDC links)					**8113.3**	**3497.2**
Total MEAV (excluding HVDC links)					**[Redacted]**	**[Redacted]**
Offset MEAV (3 year offset including HVDC links)					**9440.3**	**3993.6**
Offset MEAV (3 year offset excluding HVDC links)					**[Redacted]**	**[Redacted]**

Capex Driver

SPT has included best view Business Support costs and not so Closely Associated Indirects as part of the baseline costs. We consider this to be most appropriate approach as it needs to scale its organisation to be able to deliver its full best view capex programme in RIIO-T3. The growth of indirect functions will need to occur earlier than the direct activities to carry out the design, planning, procurement and management of the capex programme.

However, this means that care needs to be taken as to the measure of capex that is used as the capex driver in regression analysis for indirect costs. We consider that the following adjustments should be made to SPT's capex for the purposes of construction a capex driver for the indirects assessment. This will help ensure that the driver is a more meaningful explanatory variable for indirect costs.

Table A2.2: Unadjusted best view load-related capex by mechanism

	Final BPDT		**Draft BPDT**
Mechanism Category	**RIIO-T3**	**Variance**	**RIIO-T3**
Baseline	28.55	8.27	20.28
Uncertainty Mechanism	7,387.79	5,145.04	2,242.75
T2 Carryover	429.63	-4,217.63	4,647.26
Total	**7,845.98**	**935.68**	**6,910.30**

Table A2.3: Adjusted best view load-related capex by mechanism for use as a capex driver

After Adjustment			
	Final BPDT		Draft BPDT
Mechanism Category	**RIIO-T3**	**Variance**	**RIIO-T3**
Baseline 'plus'	2,330.54	606.05	1,724.48
Uncertainty Mechanism	5,114.88	533.26	4,581.61
T2 Carryover	400.56	-203.65	604.21
Total	**7,845.98**	**935.67**	**6,910.31**

Table Notes

1. "After Adjustment" presents a more representative view of "RIIO-T3" baseline direct costs (load) for comparison to the proposed RIIO-T3 indirect cost forecast.
2. A review of the codification of Project Flags and Carryover Type was conducted after the Draft BPDT submission (July 2024) due to the very high level of T2 Carryover (c£4.6 bn).
3. The review concluded that schemes were incorrectly identified as T2 carryover (mainly, due to costs in T2) when the intent of such schemes was to deliver outputs in T3 (beyond). This was addressed in Table 6.1 for the Final BPDT submission.
4. Whilst the outcome removes many of the adjustments applied to the draft BPDT, there are two that remain pertinent:
    - Treatment of T3 Use-it-or-lose-it (UIOLI)/ T3 Volume Driver Uncertainty Mechanism (VDUM) schemes as "Baseline" for assessment of Indirect Costs (as their outcome is determined through the baseline RIIO-T3 process) e.g. UIOLI schemes identified as Total Cost <£25m, & T3 VDUM Unit cost rates established based on all (relevant) schemes listed in Best View forecast for RIIO-T3 BPDT submission (Dec 2024) (+£1,744m).
    - Funding already agreed for ASTI scheme EGL1 (+£558m).

FTEs

It will be important that Ofgem uses the appropriate metric for FTEs which is relevant to the costs being considered. For example, if Ofgem is carrying out regression on not so Closely Associated Indirect costs and Business Support costs, it should consider the FTEs for these activities. We consider that the best view FTEs would be most appropriate for this assessment.

The table below shows SPT's current and forecast FTEs.

Table A2.4: SPT actual and forecast FTEs

Total SPT FTE @ 31st March	T2 FTE					T3 FTE				
	Actuals			Forecast		Forecast				
	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
SPT Service Provider	486	540	620	770	1,238	1,358	1,430	1,437	1,437	1,438
Trainees	-	5	43	74	115	145	163	160	147	141
Network Planning & Regulation	54	58	77	147	193	206	212	216	216	216
Customer Service	30	33	29	59	68	96	96	96	96	96
Process & Technology	51	48	49	65	78	88	88	88	88	88
Cyber*	-	-	-	-	-	-	-	-	-	-
Business Transformation	1	9	12	13	20	40	40	40	40	40
Land & Planning	19	18	23	36	44	62	62	62	62	62
EN Executive	1	1	1	1	1	1	1	1	1	1
Corporate	51	62	62	84	103	110	111	111	112	112
Dual Posted	18	22	17	28	47	106	106	106	106	106
Total	**711**	**796**	**933**	**1,277**	**1,907**	**2,212**	**2,309**	**2,317**	**2,305**	**2,300**

*Note: Cyber is subject to separate assessment.

Overall, FTEs are forecast to increase from 1,277 in 2024-25 to 2,300 in 2030-31.

The definitions of each of the Directorate descriptions is set out in Table A2.5 below

Table A2.5 – SPT directorate descriptions

Directorate	Description
SPT Service Provider	Responsible for the transmission network and operations including major projects and HVDC links
Trainees	All employees on defined training schemes
Network Planning & Regulation	Responsible for management of regulatory contract, system planning, policy, stakeholder engagement & communications, and data & digitalisation
Customer Service	Responsible for customer contact, connections and control room
Process & Technology	Responsible for engineering design and standards, future networks, sustainability, and operational technology
Cyber	Responsible for the network's cyber plan
Business Transformation	Responsible for business change and IT projects

Land & Planning	Provide support to SPT projects in the gaining of relevant land rights and planning consents
EN Executive	SPT share of CEO and PA
Corporate	Corporate costs incurred at the SP Group or Iberdrola level and allocated to SPT through recharge model
Dual Posted	Corporate costs allocated directly to SPT

Allocation of Indirects

An important consideration for the cost benchmarking and assessment of efficient indirect costs is the allocation of best view costs between baseline and uncertainty mechanisms.

Ofgem has been clear that transmission owners planned network growth is critical due to:

- The societal impact not achieving net zero
- The reduction in customer bills resulting from connecting more generators; and
- The impact on UK economic growth.

To deliver the scale of the physical works required, directly driven by the increased volume and complexity of the projects to be delivered, SPT's front-end delivery team needs to more than double in size. To enable this SPT's business planning and enabling functions also need to grow proportionately and in a timely manner. There are a wide range of enabling business functions including (but not exclusively) planning, regulation, equipment standards, procurement, environmental, human resources, training, finance, legal, treasury, pensions, IT, land rights and statutory planning, facilities management, and fleet management.

It is essential that support functions are in place at the right time to support the project delivery timescales expected by SPT's customers and stakeholders, with most of these required far in advance of physical project delivery. For example, detailed project planning, equipment procurement and securing land rights and planning permissions all commence several years in advance of physical site works.

To satisfy the requirements of its stakeholders, funding of Business Support and very CAI activities not currently covered by Ofgem's proposed uncertainty mechanisms have been included in SPT's baseline plans to ensure that these resources can be in place at the right time. This includes both SPT's best view not so CAI activity costs and Business Support costs. Very CAIs costs should be split between baseline and uncertainty mechanisms with the application of an updated Opex Escalator. SPT has derived the split of not so CAI costs between baseline and uncertainty mechanisms on a bottom-up basis and then cross-checked this based on the split of direct capex.

The alternative approach of splitting Business Support costs and not so CAIs costs between baseline and uncertainty mechanisms risks arbitrary splits and inconsistencies in the benchmarking and treatment of costs when, by definition, these costs are not closely related to individual capex schemes. The potential delayed timing of uncertainty mechanisms would create risks for delivery of the investment programme.

To provide further protection to both customers and TOs, we consider that there should be a symmetric reopener for Business Support costs and not so CAI costs where costs fall below or exceed a certain threshold value.

Appendix 3: Separately Assessed Costs

This appendix sets out the separately assessed and justified costs for each of the BPDT categories.

Load-related capex

Table A3.1: Justification of separately assessed load-related capex costs (£m, 2023/24 price basis)

Cost Category	Justification	Underlying assumptions	Cost (£m)
Biodiversity and Carbon costs	New Biodiversity and Carbon cost requirements represent a significant increase in the costs for load-related projects driven by new requirements. The appropriate level of these costs has been assessed by AECOM and then applied as a percentage uplift.	SPT has applied a 6% uplift to load-related schemes associated with Biodiversity Net Gain costs and 1.4% uplift associated with Carbon costs. These costs were calculated using a combination of biodiversity loss data from T2 Project Actuals and predicted biodiversity loss data from T3 projects. A likely cost per unit for replacements and a 10% enhancement to the project loss data were applied. To predict the biodiversity impacts for the RIIO-T3 projects, SPT engaged Natural Capital and Biodiversity consultants, AECOM. They utilized their automated Natural Capital platform, EcoUplift, which integrates publicly available datasets and custom data models to estimate ground conditions at specific sites. This platform generates biodiversity baselines using the SSE Adapted Biodiversity Metric. AECOM's methodology involved several key steps: 1. **Data Integration**: Existing tower locations, new substation coordinates, and new route lines were provided by SPT and integrated into EcoUplift. 2. **Habitat Mapping:** EcoUplift used the Habitat Map of Scotland to classify habitats and estimate their condition. 3. **Impact Assessment**: The impacts of each development type, including access routes, substation extensions, and new overhead line (OHL) routes, were calculated. This	£490.1m

		included assumptions about habitat loss and restoration potential. 4. **Biodiversity Unit Calculation**: Biodiversity units were calculated by considering habitat area, distinctiveness, condition, and strategic significance. 5. **Cost Estimation**: The cost per biodiversity unit was estimated based on recent market data, with adjustments for the Scottish context. SPT used a unit price of **[Redacted]**. The percentage of overall project costs was then calculated for the likely biodiversity impact costs, and this percentage was used to uplift. A percentage uplift of 6% was settled on based on an average between the T3 data and T2 actuals. Analysis of previous innovation T2 projects ('Truly Sustainable Substations' and 'Truly Sustainable Circuits') by consultants WSP allowed SPT to identify the potential cost and benefit of applying low carbon materials during construction. The use of known materials such as HVO and green steel will result in a cost increase of 0.3% and allow SPT to reduce the associated carbon emissions by 15%. The implementation of emerging low carbon technologies will further allow SPT to reduce associated carbon by 35% at a cost uplift of 1.1%. In total, the embodied carbon associated with SPT's construction can therefore be reduced by 50% at a cost uplift of 1.4%.	

Table A3.2: Justification of separately assessed NOCs (£m, 2023/24 price basis)

Cost Category	Justification	Underlying assumptions	Cost (£m)
STEPM	STPEM is Small Tools, Equipment, Plant and Machinery. It covers SPT's expenditure on equipment like ladders, stores handling equipment, tests sets and test equipment, gas handling equipment, partial discharge testing equipment, cost for recalibrating equipment, and any one-off specialist equipment Transmission Operation staff may need These costs were part of Non-Operational Capex in RIIO-T2 and therefore we consider that these should be assessed separately from core NOCs.	SPT expects the costs to increase each year as the number of Transmission Operations staff increases and SPT needs to supply them with equipment to do their jobs.	£5.0m
Service Agreements	During RIIO-T3 SPT will continue installing new assets and technologies that will help to facilitate the governments' Net Zero commitments. These include HVDC links, Mechanically Switched Capacity with Damping Network (MSCDNs), STATCOMs, Synchronous Compensators, Series Compensation, and Harmonic Filters. These technologies are changing SPT's Operations Business and the models SPT uses for inspecting and maintaining its assets. Due to the technology involved, these new plant items require service agreements with external parties to ensure the maintenance is carried out correctly and does not affect SPT's warranty conditions. To ensure cost efficiency these service agreements have been negotiated as part of the original tender process for the equipment with the original vendors and can be priced at market rates. The most significant proportion of costs are associated with the HVDC Service Agreements covering the current Western Link HVDC and the future EGL1 project. SPT's first HVDC system at Western Link is entering a new phase in its life.	SPT's forecast represents a combination of actual contract costs or estimates based on SPT's current forecasts of new/revised contracts. All of this work will be competitively tendered.	**[Redacted]**

	The plant and equipment are now moving out of warranty and, in some cases, approaching mid-life or end-of-life. This will result in increased costs to ensure these assets which are vital for the bulk transfer of energy remains reliable.		
Biodiversity Net Gain	The Biodiversity Net Gain costs are based on the results of consultancy work carried out for SPT by AECOM. They used GIS, habitat maps, route data for OHLs undergoing refurbishment, and the SSE Biodiversity Metric to calculate the loss of biodiversity units (BDU) and natural capital that would occur along the OHL routes during refurbishment. Costs were calculated for the restoration of these BDUs, including a 10% enhancement of BDUs over the initial assessment.	A price of **[Redacted]** per unit was used. Natural Capital value was calculated from a number of factors based on the type and location of habitats (carbon, air pollution removal, crops, visual amenity, recreation, water pollutant removal, and water storage) and the estimated loss of these via the refurbishment works.	£5.9m
Climate Resilience (including Flooding)	Climate change is creating more extreme weather events and climate hazards are expected to increase and worsen in the coming decades. It is important for SPT to ensure that it has a climate resilient energy network. There are new climate resilience costs measures in RIIO-T3 including heat resistant painting for substations, gabion baskets for ground stabilisation, crib walls for steel towers and wood poles, and pilots for nature-based solutions. This activity also includes the costs of additional Flood Mitigation beyond SPT substations to wider Nature Based Solutions reflecting SPT's Climate Resilience Strategy. This accounts for a further £1.2m. There is also an additional £3.1m of cable erosion mitigation costs.	Climate Resilience activities are based on SPT's Climate Resilience Strategy. This includes a detailed risk assessment, assessment of the baseline level of resilience, and adaptation measures to address specific climate risks from the climate change risk assessment. (See Appendix C) of the Climate Resilience Strategy. SPT's Climate Resilience Strategy has produced several mitigation measures including hard solutions such as permanent bunding and soft solutions such as Rewetting Peat Bogs, Riparian Buffer Zones, Leaky Barriers on their own or paired with targeted Rock Armour, restoring river channels. The 4 solutions are termed Nature Based Solutions which look beyond our substations to the wider landscape.	£37.9m

Substation electricity (NOCs Other)	These costs are forecast to increase by 6.0m (57%) between RIIO-T2 and RIIO-T3 due to increases in unit rates for electricity and the addition of EGL1. The vast majority of these costs are the costs of electricity to run the facilities for both the Western Link and EGL1.	Current rates for Western Link have been used and then applied based on the current estimate of demand for EGL1.	**[Redacted]**
Operational Technology (NOCs)	The main investment driver is reducing the risk within the service, as well as enhancing the monitoring and controllability of SPT's 24x7 operational service, increasing operational resilience and redundancy across the network. SPT has forecast £57.7m to refresh, replace and repair existing infrastructure, with an additional £30.2m in support and maintenance contracts to ensure optimum resilience and redundancy. £70m to enhance monitoring, controllability, and operability of the service.	The area of Operational Technology is expanding reflecting greater customer demand for an improved, more efficient Net Zero service. Although costs have increased as a result of the expansion of the network and increasing market costs for material and support services, all SPT's major support contracts are awarded via a regulatory controlled open market tender process that ensures the right service is being provided to SPT for the right price. SPT's strategy looks to future proof its network, replacing legacy single supplier services with SPT owned and controlled services, allowing for more accessible and flexible delivery options.	£123.8m

We have set out further details of SPT's forecast for Operational Technology for RIIO-T3 below relative to the actual and forecast spend in RIIO-T2.

Table A3.3: Total Operational Technology (£m, 2023/24 price basis)

	T2 RRP Best View	Business Plan Submission		
Cost Category (£m 23/24 prices)	RIIO-T2	RIIO-T3	Variance	Variance
	(£m)	(£m)	(£m)	(%)
Advanced Energy Management Systems	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Infrastructure	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Real Time Systems	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Telecommunications	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Total Operational Technology	**68.4**	**123.8**	**55.5**	**81.1%**

The key components are as follows:

- The AEMS involves deploying Smart Grid Solutions to provide visibility, controllability, and intelligent orchestration of the Transmission Network.
- The infrastructure investment is in an Integrated Smart Grid Operational network architecture providing increased resilience and security while maintaining an efficient core network.
- The Real Time Systems investment is improving the efficiency of SPT's network controls and monitoring by consolidating and standardising its systems, protocols, and functionality across its network to enhance the value to customers, integrate with National Grid, and allow SPT to take forward its net zero proposals.
- The Telecoms investment provides continual modernisation, replacement and repair such as the deployment of fibre which provides maximum operational flexibility and scalability to meet the future demands of consumers, as well as increasing resilience and redundancy across the network.

In total, the actual expenditure is increasing by £55.5m (81.1%) The main areas of increase are for infrastructure, real time systems and telecommunications. As noted above, all of SPT's spend on Operational Technology will be competitively tendered and is needed to meet greater customer demands for an improved, efficient Net Zero service and to future proof its network.

Closely Associated Indirect costs

Table A3.4: Justification of separately assessed CAI costs (£m, 2023/24 price basis)

Cost Category	Justification	Underlying assumptions	Cost (£m)
Wayleaves	Wayleaves are annual payment which is increasing year and year. Agricultural rates increase by approximately 6% per year. The rates are set through the ENA.	The rates for all TOs are based on the same principles.	£8.4m
Operational Training	Operational training requirements are heavily dependent on workforce make-up, anticipated retiral rates, current and anticipated skills and capabilities, and the view of deliverability of a significantly expanding SPT work programme.	SPT has built up the requirement for operational training on a bottom-up basis reflecting the overall headcount increase required for the RIIO-T3 programme of work.	£37.9m

Business Support costs

Table A3.5: Justification of separately assessed Business Support costs (£m, 2023/24 price basis)

Cost Category	Justification	Underlying assumptions	Cost (£m)
New Property	These are new costs associated with the growth in the investment programme in RIIO-T3 and the associated growth in support staff.	The costs cover the lease and maintenance costs of new buildings to reflect the growth in SPT's organisation and associated FTEs.	£12.3m
Regulatory / Price Control Development & Uncertainty Mechanisms	To facilitate the enhanced requirements in RIIO-T3, SPT's regulation function plays a key role in ensuring Ofgem is provided with the necessary information in a timely manner while providing key assistance and advice to its internal engineering teams.	The increased volume and complexity of the RIIO-T3 reopener uncertainty mechanism together with the collecting, processing, assuring, and communicating of relevant data will inevitably result in activity and resource requirements increasing for both parties. These processes would be above and beyond the existing business as usual regulation requirements which already represent a substantial request for data. SPT has estimated these costs using a bottom-up approach based on the FTE salary costs associated with the price control team.	£3.6m
Community Benefits Administration and Fund (Business Support)	This is a new Government requirement for RIIO-T3, and the final guidance is yet to be published. As such we consider that these costs should be subject to a separate qualitative review	For the funding element of Community Benefits, SPT has projected a reasonable estimate of what it believes they could entail based on the application of the draft DESNZ guidance for Community Benefits. The UK Government's draft guidance provides allowances per km cable, km of overhead line and per substation. SPT has applied these to its RIIO-T3 strategic projects and high- and medium-confidence connections. For the administration element of Community Benefits, SPT has leveraged its experience of running large-scale community funds in RIIO-T1 and RIIO-T2. Its costs include provision for extensive local Community Engagement and Community Facilitation work, essential elements of the current Community Benefits Guidance.	£111.1m

Appendix 4: Totex Incentive Mechanism

Introduction

The Totex Incentive Mechanism (TIM) sets out the proportion of any underspend or overspend that is borne by the network company. This is a key mechanism for incentivising efficiency for TOs and managing the risks associated with overspending or underspending against allowances. Following engagement with Ofgem, this Appendix sets out a range of cross-sector and international research on approaches to cost sharing mechanisms, and SPT's proposal for the RIIO-T3 TIM methodology.

The proposed stepped TIM approach ensures strong incentives to maintain efficiency during the price control, whilst protecting against windfall gains and losses due to greater cost uncertainty and the increased risk of material overspend in RIIO-T3. SPT has developed outcome modelling and scenario analysis to support this Appendix, detailed in the final section.

Principles for Effective TIM Design

Economic theory suggests that there are three factors in determining the appropriate power of cost incentives: sensitivity of demand to prices (price elasticity); the cost of achieving efficiency improvements; and the degree of cost uncertainty. With more inelastic demand, higher powered incentives can be used with a smaller reduction in consumer surplus. With a higher cost of achieving efficiency improvements, higher powered incentives are important for productive efficiency. With higher levels of uncertainty lower powered incentives are needed to achieve allocative efficiency and manage risk. The optimal level of incentive rates will depend on a balance of these factors.

We have set out below Ofgem's two key objectives for the TIM, plus a further objective focused on managing risk and uncertainty in RIIO-T3:

- Effectively driving efficient delivery – The TIM should provide strong enough incentives to drive the right behaviours from TOs, seeking efficiency savings to be shared with consumers.
- Sharing benefits/risks from out/underperformance – The TIM should share outcomes in a way that contributes to addressing information asymmetry.
- Managing risk and uncertainty – Given global supply chain pressure, delivery challenges and cost uncertainty, the TIM and the wider regulatory framework should be designed to avoid excessive penalty and potential financeability/credit rating issues in large overspend scenarios. The TIM should also facilitate a realistic possibility of reward for achieving efficiencies.

We welcome Ofgem's recognition in RIIO-T3 Working Groups of the role of the TIM in managing risk, and we share Ofgem's concerns in RIIO-T3 around the relatively higher likelihood of overspend in RIIO-T3, with Ofgem noting:

"*The uncertainty surrounding network activity in the future makes it difficult to predict the allowances necessary for a range of different activities. Forecasts could be wrong to a significant degree, and this could harm consumers or investors.*"

Evidence – GB and other countries

The table below sets out historical information on totex and other cost incentive rates for Ofgem over time and in other comparator countries. There has been a central tendency for Ofgem and other regulators to set incentive rates around 50%, though this peaked around the time of the RIIO-ED1 and RIIO-GD1 price controls, and incentive rates have been declining more recently.

The lowest incentive rates we have identified are 15% in New Zealand for larger projects costing more than NZ $30m (£13.9m), as well as the lower confidence costs as part of Ofgem's RIIO-2 Confidence Dependent Incentive Rate Mechanism. Incentive rates around the 20% level have also been used in New Zealand for electricity distribution utilities and are part of the 'Bright-Line' approach used in Australia.

Table A4.1: Evidence from other countries on cost incentives

Country/Regulator	Price control	Incentive rates
Ofgem	TPCR4	25% capex incentive rate
	DPCR5	49% to 55%
	RIIO-T1	46.9% (NGET) 44.4% (NGGT) 50% (SHETL & SPTL)
	RIIO-GD1	63.0% to 64%
	RIIO-ED1	53.3% to 58.1% (slow track) 70% (fast track)
	RIIO-T2	33% (NGET) 39% (NGGT) 49% (SPT) 36% (SHETL)
	RIIO-GD2	49% Scotland GDN, 50% all other GDNs
	RIIO-ED2	49.3% to 50%
	RIIO-2 CDIR	15% low confidence costs 50% higher confidence costs
UREGNI (Northern Ireland)	RP6	50%
CRU (Ireland)	PR5	No totex or capex rolling incentive. Capex adjustment mechanism allows for reopener if more than a 20% underspend and more than a 10% overspend
Ofwat	PR19	Ofwat underperformance sharing rate was higher if the company had a higher business plan totex to Ofwat allowed totex, with the rate ranging from 50% to 65%. The outperformance sharing rate was lower if the company had a higher business plan to Ofwat allowed totex, ranging from 65% to 35%.
	PR24	For Outstanding and Standard companies, the Cost Sharing Rate is 50% on overspend and underspend. For Lacking Ambition companies, the Cost Sharing Rate is 55% of overspend and 45% on underspend. For Inadequate companies the cost sharing rate is 60% on overspend and 40% on underspend
AER (Australia)	Cost incentives were updated in 2023	Bright-Line tiered test for capex: -30% for any underspend up to 10% of allowance -20% for any underspend that exceeds 10% of allowance
Commerce Commission (New Zealand)	Distribution	-30% for any overspend For opex the incentive rate is approximately 20%

		23.5% (equalized incentives for opex and capex)
	Transmission	Previously a standard base capex incentive rate of 33% was applied. This was replaced by a formula based on 67th percentile of Vanilla WACC. For the current period = 24%. In addition, for base capex projects above NZ$30m there is a base capex low incentive rate of 15%. For major enhancement and development projects costing more than $30m there is also a default incentive rate of 15%.
ARERA (Italy)	Enel	50%
ACM (Netherlands)	Options being discussed	Considering a totex approach (FOCs mechanism) where a proportion of all totex is capitalised.

Options and Recommendations

There are a range of potential options for the totex mechanism to both maintain a strong incentive for efficiency and address increasing cost uncertainties that are reflected in global supply chain shortages and price volatility. We have set out six main options for TIM development below:

1. **The current TIM could be retained as-is but with lower incentive rates to reflect increasing levels of uncertainty related to the supply chain for electrical equipment**

Higher-powered TIM incentive rates can amplify systematic risks associated with global supply chain risks whereas lower levels of TIM can mitigate such uncertainties. Addressing risk must be balanced with the need for appropriate incentives that provide benefits to the TOs for improving efficiency. With increasing levels of risk associated with global supply chains and higher proportions of TO expenditure associated with large capital projects, there would be benefits in reducing the TIM incentive rates significantly relative to RIIO-T2. Cost incentive rates of around 20-30% are relatively common across a range of jurisdictions.

2. **The current TIM could be retained as-is, with issues around risk and uncertainty managed through other price control mechanisms, including RPEs**

If well-calibrated RPEs, allowances and uncertainty mechanisms can be used to manage the risk and uncertainty in RIIO-T3, resulting in neutral expectations for over/underspend outcomes, a strong TIM could remain an effective efficiency incentive without risking excessive exposure. Historically, RPEs have not tracked well with cost increases for TOs, and whilst Ofgem is yet to determine a methodology in RIIO-T3, it is unlikely that RPEs and uncertainty mechanisms will address all residual downside risk for TOs due to global supply chain cost pressures.

3. **Asymmetric incentives with a higher incentive rate for underspends and a lower incentive rate for overspends**

There could be an asymmetrical TIM with a higher incentive rate to drive efficiency for underspends and a lower incentive rate for overspends to manage risk. For example, a 30% incentive could be applied to underspends and a 15% incentive rate for overspends. A

potential risk here for consumers is that this could provide incentives to over-forecast totex so that there are significantly greater opportunities to underspend.

4. **Banded totex incentive mechanism with higher incentive rates to drive efficiency within a deadband and lower incentives to manage risk symmetrically outside the deadband**

An approach to retain strong incentives for efficiency but mitigate the risks associated with larger overspends is to have a banded or stepped TIM. For example, within a 5% band around the totex allowance, a 25% incentive rate would apply. For overspends outside this central band, a lower-powered incentive rate of 15% would apply.

The Bright-Line test approach in Australia uses a 10% central band, whereas the RIIO-ED1 load-related uncertainty mechanism has a 20% band, and the CRU's capex adjustment mechanism in Ireland has a 10% band for underspends and a 20% band for overspends.

5. **Hybrid approach – higher incentives within an initial range, lower incentives beyond this, and a cap and collar beyond which either pass-through or a reopener applies**

Another potential variant for TIM could be a mechanism which has both a stepped incentive rate and a backstop of a reopener mechanism.

For example, a 25% incentive rate could apply to totex overspends or underspends within a 5% deadband around the totex allowance, a 15% incentive rate could then apply to totex overspends or underspends of over 5% and less than 10% around the allowance. Beyond 10% a reopener mechanism could apply (ex-post assessment) or a cost pass-through.

This would build on examples such as the Bright-Line approach in Australia, the load-related reopener for electricity distribution, and the CRU's capex adjustment mechanism.

6. **Separate totex incentives for major projects and core totex**

A further potential approach to refining the totex incentives could be to have differential rates for totex incentives or major projects and the remainder of totex. Given that major projects will be tendered, the market price would be a revealed level of efficiency, reducing the need for strong incentives around this. For example, a 25% incentive rate could apply to general totex and 15% for major projects similar to the approach in New Zealand. This could be supplemented by a backstop cap. At this stage there still needs to be much greater clarity on Ofgem's approach to cost assessment, benchmarking, and major projects to understand which types of projects are likely to carry greater risk.

To identify a preferred option, we can consider the above options against the objectives set out in the section on Principles for Effective Risk Design (effectively driving efficiency; sharing benefits/risks from out/ underperformance; and managing risk and uncertainty).

To ensure protection from significant overspend scenarios, given cost uncertainty and upward cost pressure, the TIM should protect consumers and TOs from excessive windfall gains or losses. Options with a banded or capped TIM (options 4 and 5) provide the greatest protection from excessive over/underspend scenarios, especially where costs are passed through beyond a cap. These approaches can be considered a 'least-regret' option if a material overspend, or underspend is considered a potential outcome.

To preserve incentive strength options with a higher TIM rate may be preferrable. Whilst any of the above methodologies could have a 'high' TIM strength applied, the banded and hybrid

approaches (options 4 and 5) above have the added benefit of including a strong headline initial TIM rate, preserving incentive strength, with subsequent lower rates that limit exposure to excessive overspend scenarios. This could also be achieved through an asymmetric TIM (Option 3), however Ofgem has indicated that it will not consider asymmetric approaches for RIIO-T3.

Finally, Option 6 considers separate treatment of major and core projects, with lower rates for major tendered schemes. Ofgem is still developing the major projects regime for RIIO-T3, which we expect to include significant risk mitigation measures for major projects, including low thresholds for cost re-openers. We do not consider this approach appropriate at this time, ahead of the further development of the major projects' regime, the design of which should directly address cost uncertainty and broader delivery risks.

To strike a balance between the competing objectives of the TIM mechanism and recognise the higher likelihood of overspend than underspend in RIIO-T3, we have developed a 'Stepped TIM Methodology', building on Options 4 and 5 set out above. This approach is detailed below and is supported by regulatory precedent drawing on the Australian approach and the RIIO-ED1 major projects regime.

Proposal: Stepped TIM Methodology

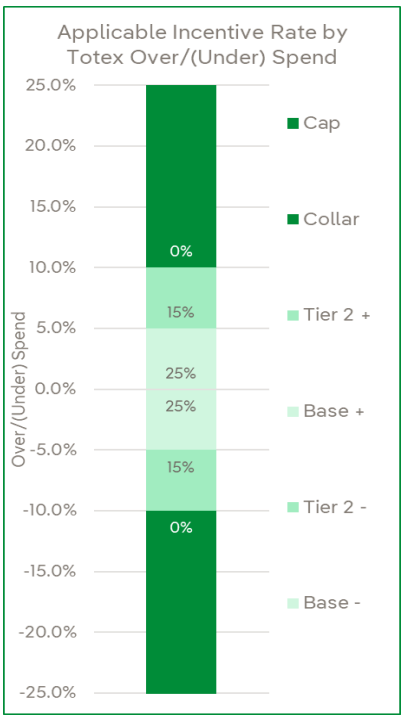
We propose a stepped TIM mechanism, shown adjacent, which applies a higher TIM rate for an initial portion of over-spend, with reduced rates for subsequent 'steps. A cap can also be applied, beyond which additional costs or savings are fully passed through to consumers.

To illustrate the approach, we have applied Ofgem's indicative range of TIM rates for ET (15%-25%), which reduce over the 'steps' of 5% and 10% over/underspend respectively, reaching a cap at 10% over/underspend. Beyond this cap, additional costs/savings would effectively be treated as pass-through.

The resulting weighted average TIM rates, modelled across a range of scenarios, result in significantly lower exposure to excessive underspend or overspend scenarios, whilst maintaining strong incentive rates around the margin.

This proposal is focussed on the methodology, whilst the caps and rates can be adjusted as the TIM is developed as part of the wider risk and financing package for RIIO-T3. Current rates are indicative only, illustrating the role that a stepped incentive could play in managing cost uncertainty.

Figure A4.1 – TIM Rate



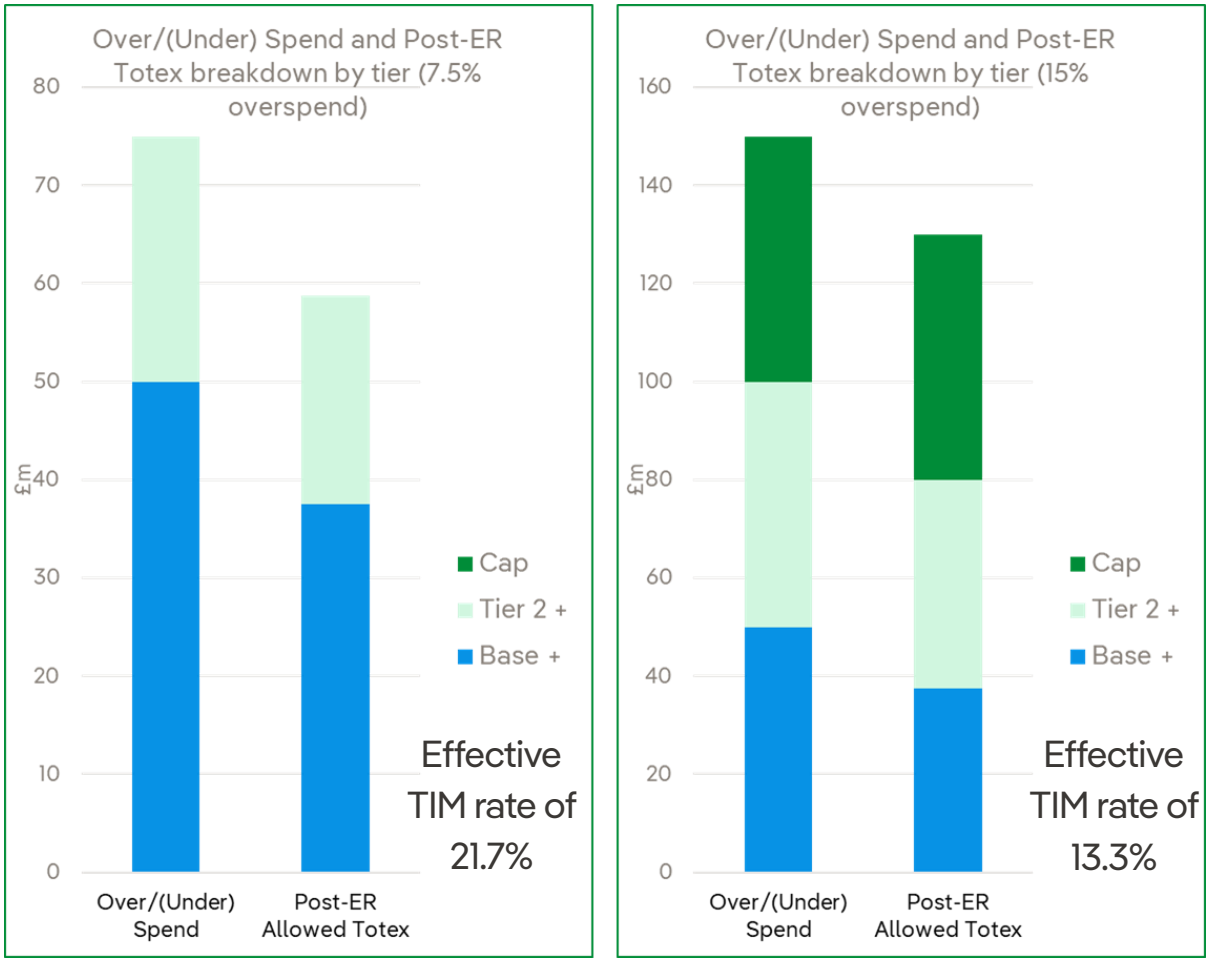
This approach ensures strong incentives to maintain efficiency in-period, whilst protecting consumers and TOs against windfall gains and losses due to exogenous supply chain and

delivery challenges. This approach could reduce the need for additional uncertainty mechanisms for RPEs over and above RPE indexation.

We also propose a simple end-of-period close-out process to ensure the average TIM across the period is equivalent to the in-year rates, avoiding any gaming of the TIM.

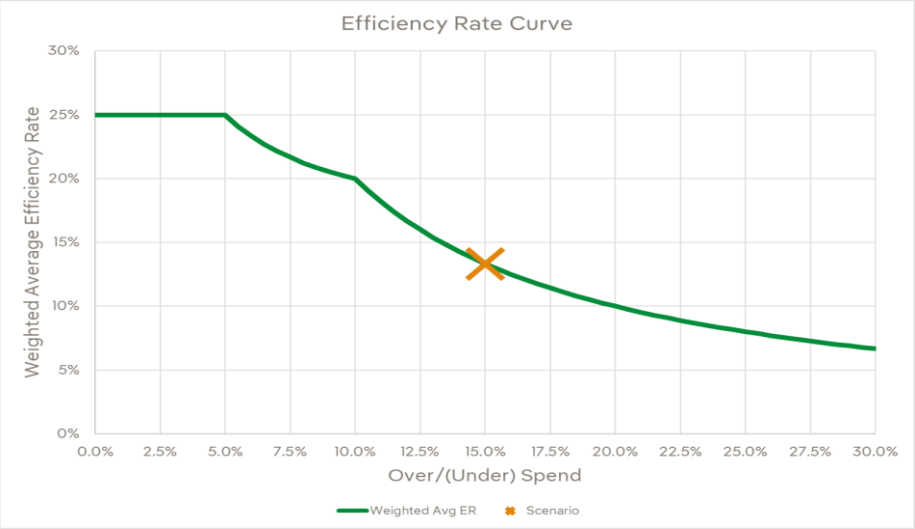
When setting a TIM with variable rates, the weighted average TIM rate during a period will depend on the level of totex and the size of the over/underspend. To illustrate this, the graphs below show the overspend and incentive outcomes in a 7.5% and a 15% overspend scenario respectively:

Figure A4.2 and A4.3 Example of TIM incentive rates for overspend scenarios



As the over/underspend increases, the weighted average TIM rate decreases. This is shown graphically for a range of TIM rates. In the 15% overspend scenario above, this is associated with a weighted average TIM rate of 13.3%. In a larger overspend scenario, this would be associated with very low weighted average TIM rates. E.g., 30% overspend -> 6.7% weighted average TIM rate.

Figure A4.2 and A4.3 TIM efficiency incentive curve



The importance of having a tiered TIM mechanism in place to mitigate risk is illustrated in the following example. Assume that SPT's totex allowance for RIIO-T3 is equal to it best view forecast of £10.6bn and the TIM incentive rate is a flat 50% for any level of overspend or underspend and applies to all of totex. If SPT overspends its totex allowance by 10% due a mixture of higher-than-expected input prices that are not adequately covered by the RPE mechanisms and cost escalation due to increasing project complexity. SPT would be exposed to £528m of the overspend with the rest funded by customers.

By contrast, with a tiered TIM incentive mechanism as discussed above with an incentive rate of 25% within the first +/- 5% band, a 15% incentive rate for the band between 5% and 10%, and a 0% incentive rate beyond 10%, SPT would be exposed to £211m of the overspend.