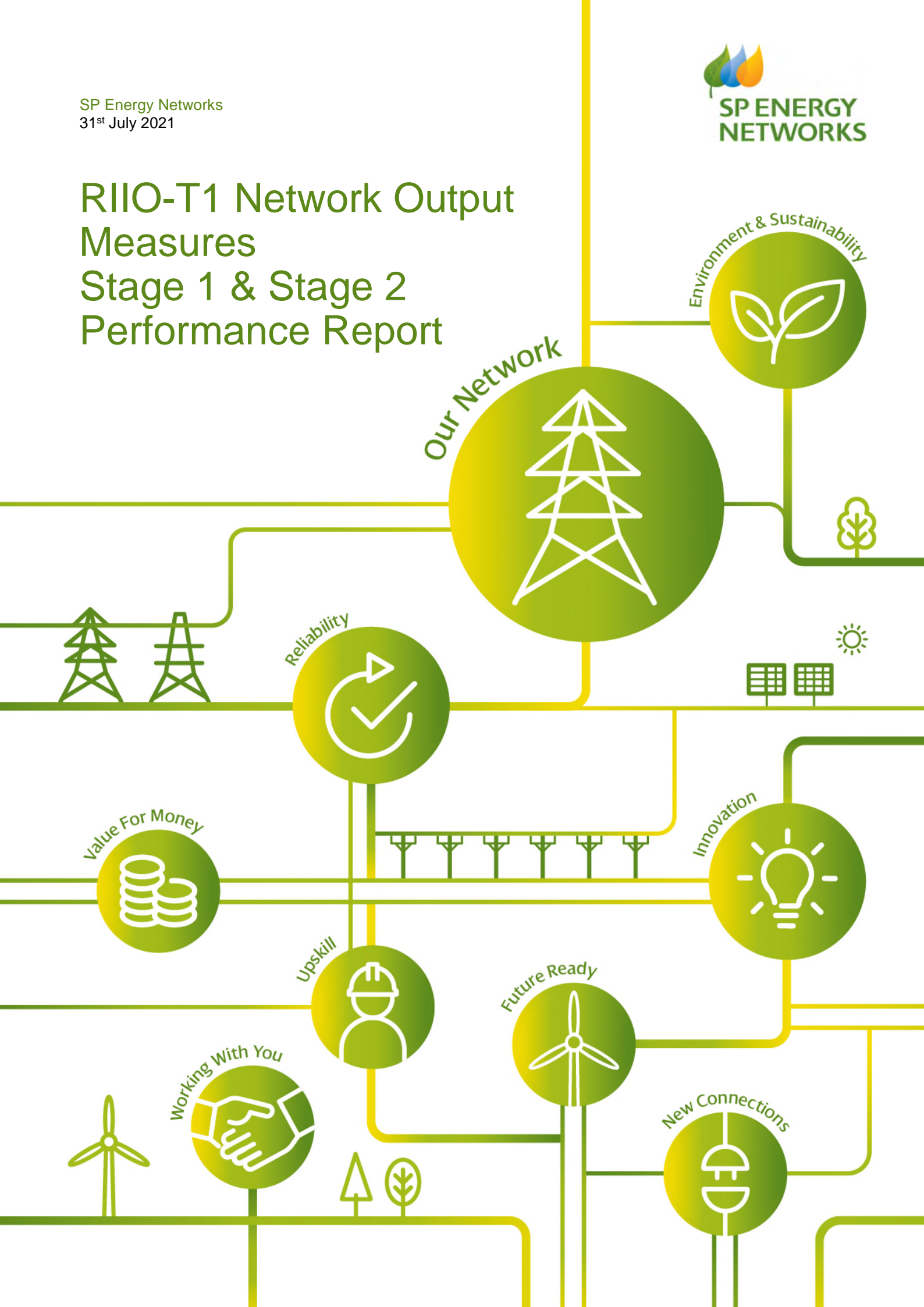


RIIO-T1 Network Output Measures Stage 1 & Stage 2 Performance Report



Structure of this document

This document has been structured with seven chapters complying with the requirements of Stage 1 and Stage 2 of the Network Output Measures (NOMS) Methodology version 2.2, 11th June 2021 (the Methodology). Each section is arranged in accordance with Appendix 1 of the Methodology

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Chapter 1: Executive Summary

This report is submitted by SP Transmission (SPT) in accordance with Special Condition 7.10.3 of SPT's RIIO-T2 Licence and so details Stage 1 (Relevant Risk Changes and Impact on Performance Against Targets) and Stage 2 (Performance Against Targets)

SP Transmission's NOMS targets are detailed in Table 1 in Part A of Special Condition 2M (Specification of Network Replacement Outputs) in SPT's RIIO-T1 licence (the Targets).

The purpose of the executive summary is to provide a summary of the most relevant risk changes that could have an impact on the network risk other than the NOMS related interventions and to set out SPT's overall RIIO-T1 performance against the Network Replacement Output targets.

The most relevant risk changes are *methodology change* (5.7%) and two other risk changes identified by SPT as *SPT methodology* (6.8%) and *Scheme corrections* (11%). *Data cleanse* represents 1.9% over the pre-normalised target. It should be noted that all relevant risk changes have been applied to the original target, reducing the risk remaining target by 25%. The normalised risk remaining target is £R3,707m for the total network risk. Figure 1 below represents the risk movements due to the relevant risk changes. Details of the composition of each element are provided in Chapter 2.

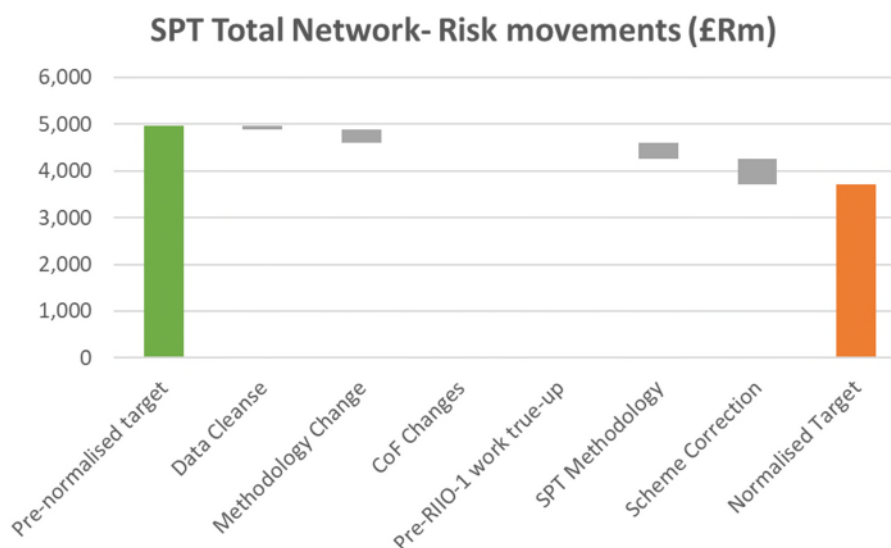


Figure 1 SPT Network Risk Movements

SPT's overall performance against the normalised target is 7.75% over-delivery when the deadband is set to 0.0% as instructed in the RIIO-1 Network Output Measures (NOMs) Closeout Submission Instructions and Guidance for Electricity Transmission, Gas Transmission, and Gas Distribution Sectors Version 1.2 in Appendix 6 of the RIIO-1 NOMs Incentive Methodology¹. Figure 2 below represents the total network risk after RIIO-T1 NOMS related interventions and the over-delivery in relation to the normalised target. For reference, there is an indication of the net risk associated with the sum of 'faster and slower deterioration of asset than previously assumed' which accounts for approximately 0.4% of the normalised risk target.

¹ https://www.ofgem.gov.uk/sites/default/files/2021-06/appendix6_riio1_noms_closeout_submission_guidance_v1.2_clean.pdf

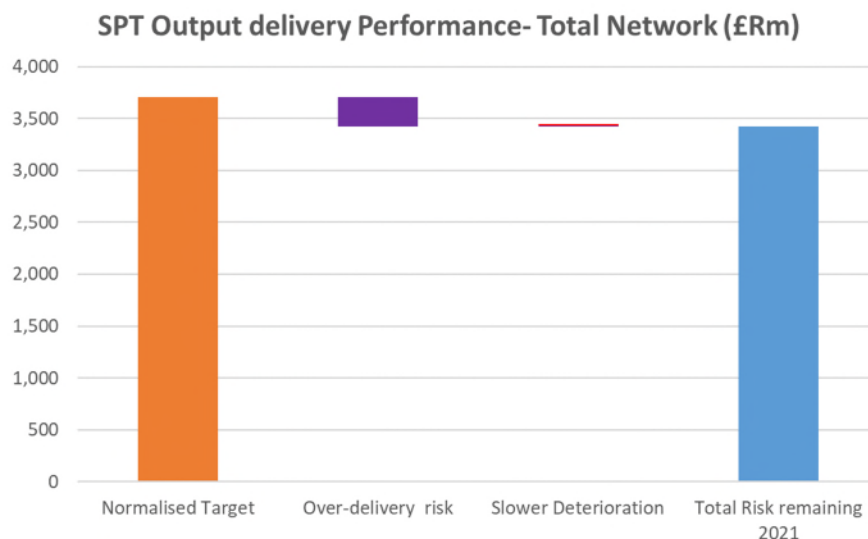


Figure 2 SPT NOMs Performance

At a voltage level, the largest over-delivery is observed in the 400kV network. The 132kV network has a marginal over-delivery while the 275kV network has a marginal under-delivery. Figures 3, 4 and 5 below show the distribution of the asset risk per asset category compared to the normalised target value at each voltage level.

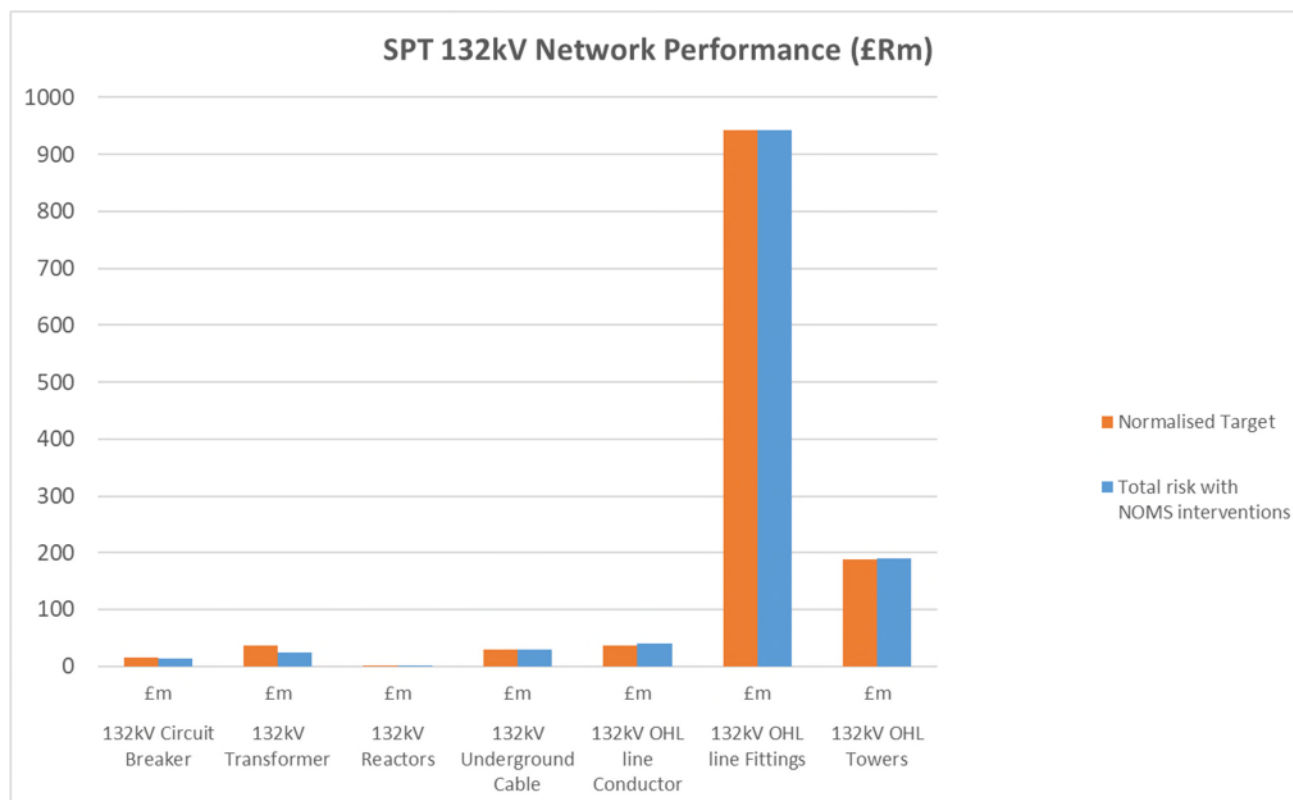


Figure 3 132 kV Network Performance

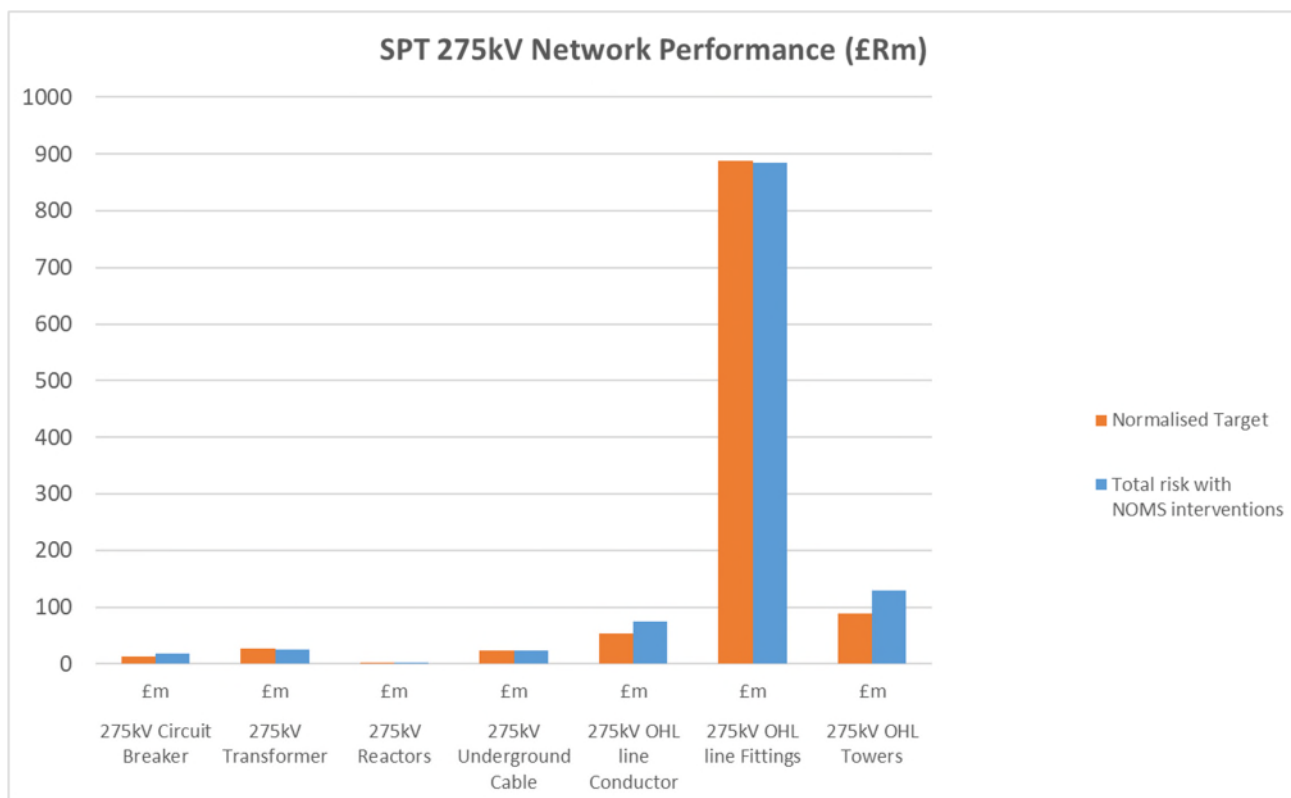


Figure 4 275 kV Network Performance

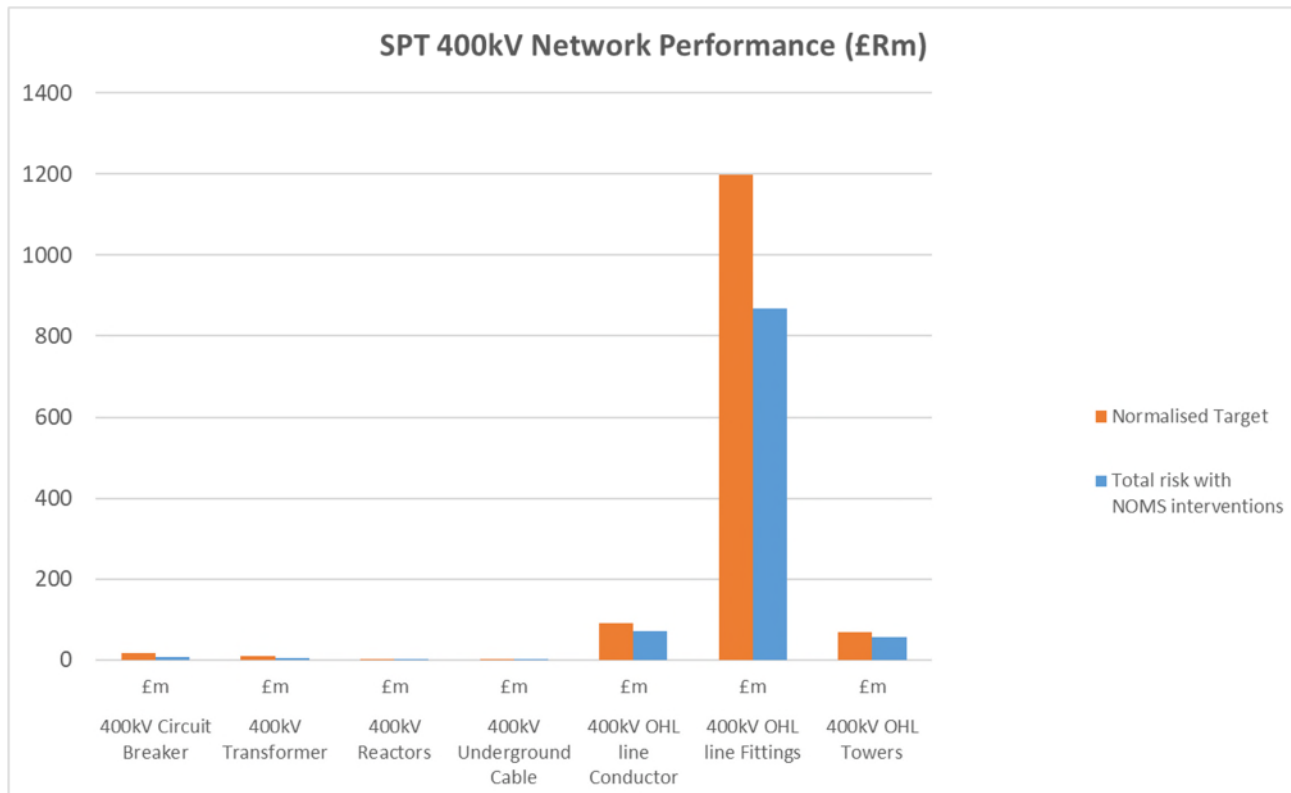


Figure 5 400 kV Network Performance

The final year of the RIIO-T1 price control has been heavily impacted by the global Covid-19 pandemic. Following announcement of lockdown in March-2020, an extensive exercise was undertaken to understand and mitigate the risk to SPT's activities. That exercise involved prioritisation of critical activities and special measures for the ongoing works. As a result, there is a small number of schemes that have been considered complete for the purposes of this performance report although they were not fully commissioned at the end of the RIIO-T1 period. This has been acknowledged by Ofgem during the continuous engagement through the pandemic.

Those schemes have been impacted by the special measures put in place to manage the risk through the Covid-19 pandemic and would have otherwise been complete by the end of March 2021. The schemes are:

- **Kaimes 275kV Switchgear Replacement**, all three scheduled 275kV circuit-breakers have been decommissioned and one of the new circuit-breakers has been commissioned. The commissioning of two of the new replacement units will be complete in October 2021. The planned outages for delivering this project were postponed due to network restrictions at the early stages of lockdown and were rescheduled to recommence in October 2020.
- **Chapelcross 132kV Switchgear replacement**, the full scope of works was complete in May 2021. The planned outages for delivering this project were postponed due to network restrictions at the early stages of lockdown.
- **St Andrews' Cross Transformer Replacement**, both original transformers at St Andrews Cross have been decommissioned and removed, however one of the units, T1A, has not yet been commissioned with the expectation that it will be completed in early August 2021. Resource availability of contractors and suppliers has been heavily impacted by Covid-19 in this project causing a significant delay in the programme of works. Furthermore, Network Rail related outage opportunities which were already limited, were further constrained due to the requirement of additional carriages to carry passengers to allow 2m social distancing and therefore increasing the rail network power demand.

Chapter 2: Asset definitions and Intervention Definitions

2.1 Asset definitions

The asset risk has been calculated in accordance with the latest approved NARM methodology². The methodology calculates asset risk for lead assets with voltages of 132kV and above. The seven lead assets are:

- Circuit Breakers
- Transformers
- Reactors
- Underground Cable
- Overhead lines:
 - Conductor
 - Fittings
 - Towers. Wood poles are not included in the methodology for derivation of asset monetised risk.

SPT Transmission's network operates at 3 voltage levels, 400kV, 275kV and 132kV therefore there are a total of 21 asset categories.

2.2 Intervention definitions

In order to deliver the Network Replacement Outputs as per licence RIIO-1 Special Condition 2M of SPT's electricity transmission licence³, SPT has undertaken three different types of intervention during the RIIO-T1 period, asset replacement, asset refurbishment and asset decommissioning. The interventions are defined below:

Asset Replacement, activities undertaken to remove an existing asset(s) and install a new (i.e. not refurbished) asset. The asset replacement activity includes:

- the installation of replacement assets
- the dismantlement of existing assets (at all voltage levels) where the dismantlement is undertaken as part of the asset replacement works.

Asset Refurbishment, activities undertaken to improve the condition and/or extend the life of an asset.

Decommissioning, activities undertaken to de-energise, disconnect or remove (where appropriate) network assets.

² [Decision to not reject the modified Network Asset Risk Annex \("NARA"\) for Electricity Transmission Network Output Measures \(NOMs\) Methodology Issue 18 | Ofgem](#)

³ [Decision to approve Rebased Network Replacement Outputs and to modify Special Condition 2M of the electricity transmission licences held by the onshore electricity transmission network operators | Ofgem](#)

Chapter 3: General Assumptions

In addition to the assumptions described in more detail in Chapters 2 and 6 of this report, there are additional assumptions made in the population of the RIIO-1 NOMs Closeout Data Template as follows:

- Criticality 'C' banding has been applied using the same limits for all asset categories as was used at SPT Rebasing Methodology submitted to Ofgem as part of the Electricity Transmission Network of the monetised risk targets⁴.
- Health 'AH' banding has been applied using the same banding for all asset categories as was used at SPT Rebasing Methodology submitted to Ofgem as part of the Electricity Transmission Network of the monetised risk targets.
- The "Refurbishment Intervention Volume" on the tab 3.2.1 is the sum of the "Pre-Refurbishment" asset volumes.
- The "Total intervention volumes" (Column AN) on tabs 3.1.1_Targets_Volumes_ET and 3.2.1_Delivery_Volumes_ET is equal to the average of 'Replacement_Off Intervention Volume' (Column AU) and 'Replacement_Off Intervention Volume' (Column BB) plus 'Refurbishment Intervention Volume' (Column BI) plus 'Removal Intervention Volume' (Column BU) as instructed by Ofgem. Note that this instruction results in column AN on tab 3.1.1_Targets_Volumes_ET being different from that submitted on Tab 2.1_RebasedTargets_Volumes of the SPT rebasing data workbook published by Ofgem.
- All Monetised Risk values in the RIIO-1 NOMs Closeout Data Template have been entered in millions (R£m) to one decimal place in accordance to the RIIO-1 Network Output Measures (NOMs) Closeout Submission Instructions and Guidance v1.2 however some of the RIIO-1 NOMs Closeout Data Template non-editable cells refer to £m.

⁴ [Statutory consultation on a proposal to approve Rebased Network Replacement Outputs and to modify Special Condition 2M of the electricity transmission licences held by the onshore electricity transmission network operators | Ofgem](#)

Chapter 4: RIIO-1 Targets

The population of the intervention risk values on tab 3.1 of the RIIO-1 NOMs Closeout Data Template and the underlying asset and intervention volumes reported on tab 3.1.1 have been populated in accordance with the SPT Rebasing Data submitted to Ofgem as part of the Electricity Transmission Network of the monetised risk targets. The only exception is the “Total intervention volumes” (Column AN) on tab 3.1.1_Targets_Volumes_ET. This calculation has been changed as per Ofgem instruction received by email the 23rd of July 2021. It is now equal to the average of ‘Replacement_Off Intervention Volume’ (Column AU) and ‘Replacement_Off Intervention Volume’ (Column BB) plus ‘Refurbishment Intervention Volume’ (Column BI) plus ‘Removal Intervention Volume’ (Column BU).

Chapter 5: RIIO-1 Delivery

5.1 Introduction

SPT has over-delivered against the Targets as detailed in the completed RIIO-1 NOMs Closeout Data Template which forms Appendix 1 of this report.

SPT's overall performance against the normalised target is 7.75% over-delivery when the deadband is set to 0.0%.

The threshold for determining the materiality of over-delivery and under-delivery has been set at 0.0% of the Target value of network risk remaining as instructed in the RIIO1 NOMS Closeout Submission Guidance v1.2.

The following sections provide details of the main changes in the business plan that make up SPT's overall performance resulting in over-delivery.

5.2 Business plan changes impacting the overall asset risk performance

This section provides detailed information on the business plan changes and how they have impacted the asset risk performance during RIIO-T1. For each scheme category, there is a table with the schemes planned at the business plan submission including the expected NOMs outputs. There are further tables with the details of the schemes delivered and a narrative explaining the changes implemented within the period. The tables provide information to enable the accurate identification of the scheme in accordance with the latest RIIO-T1 Electricity Transmission Price Control- Regulatory Instructions and Guidance v8.1 as follows:

- *Ofgem scheme reference*
- *Scheme name*
- *Scheme category*
- *NOMS Outputs per asset category*

The table also provides the intervention volumes as planned and/or as delivered. The intervention volumes are broken down into the following categories:

- Planned asset replacement volumes on and off, noted as *P_Repl_On* and *P_Repl_Off*. Similarly, delivered or actual asset replacement volumes on and off are noted as *A_Repl_On* and *A_Repl_Off*
- Planned asset refurbishment volumes pre- and post-intervention, noted as *P_Ref_Pre* and *P_Ref_Post*. Similarly, delivered or actual asset refurbishment volumes pre- and post-intervention are noted as *A_Ref_Pre* and *A_Ref_Post*
- Planned volume of assets disposed, noted as *P_Displ_POff*. Similarly, delivered or actual volume of assets disposed are noted as *A_Displ_POff*

Additionally, the monetised risk value of the assets impacted by the scheme are stated before and after intervention including the resultant risk reduction from any planned and/or actual scheme.

Circuit Breakers

The table below refers to the Circuit Breaker schemes planned at the business plan submission. The only scheme that was not delivered has been highlighted. This is the Windyhill 275kV switchgear replacement project. After an initial project development stage, the outages required to deliver the proposed scope within the RIIO-T1 period were very challenging and would have created additional difficulties in the network operation. There were additional system implications than had been anticipated in the context of wider works, generation connections and associated reinforcement, and the rest of modernisation works in the plan. This resulted in the deferral of the project to RIIO-T2. In order to manage the risk and condition of the remaining population of air-blast and bulk-oil circuit breakers, the deferral of the eleven units at Windyhill 275kV was offset by the units brought forward at other sites, eight units at Wishaw 275kV, two units at Strathaven 275kV and two units at Currie 275kV.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes						Impact of Intervention in Asset Risk (ER)		
				P_Repl_On	P_Repl_Off	P_Ref_Post	P_Ref_Pre	P_Displ_Off		Planned Risk Before Intervention	Planned Risk After Intervention	Planned Risk Delta
SP-00128	Dalmally 275kV Switchgear Replacement (5) Incl reconfiguration	Circuit Breaker	275kV Circuit Breaker	5	3	0	0	0		180,461	24,296	156,166
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Circuit Breaker	7	7	0	0	0		2,900,922	217,007	2,683,915
SP-00130	Windyhill 275kV Switchgear Replacement (13)	Circuit Breaker	275kV Circuit Breaker	13	11	0	0	0		8,164,492	153,494	8,010,998
SP-00131	Wishaw 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Circuit Breaker	3	3	0	0	0		177,509	22,488	155,020
SP-00132	Kaimes 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Circuit Breaker	3	3	0	0	0		559,519	42,820	516,699
SP-00133	Lambhill 275kV Switchgear Replacement (8)	Circuit Breaker	275kV Circuit Breaker	8	8	0	0	0		962,818	80,419	882,400
SP-00134	Bonnybridge 132kV switchgear replacement (19)	Circuit Breaker	132kV Circuit Breaker	19	16	0	0	0		6,108,685	1,866,089	4,242,596
SP-00135	Windyhill 132kV Switchgear Replacement (13)	Circuit Breaker	132kV Circuit Breaker	15	15	0	0	0		2,212,743	181,323	2,031,420
SP-00136	Chapelcross 132kV Switchgear Replacement (9)	Circuit Breaker	132kV Circuit Breaker	9	13	0	0	0		696,328	123,771	572,557
SP-00137	Currie 132kV Switchgear Replacement (12)	Circuit Breaker	132kV Circuit Breaker	12	11	0	0	0		794,432	112,902	681,530
SP-00138	Strathaven 275kV Switchgear Replacement (4)	Circuit Breaker	275kV Circuit Breaker	4	4	0	0	0		346,543	31,693	314,850
SP-00139	Currie 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Circuit Breaker	3	3	0	0	0		3,113,467	14,220	3,099,247
										26,217,920	2,870,522	23,347,398

Figure 6 SPT Circuit Breakers Planned schemes

The table below refers to the Circuit Breakers schemes actually delivered. The schemes' elements delivered that were not part of the original business plan have been highlighted.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes						Impact of Intervention in Asset Risk (ER)		
				A_Repl_On	A_Repl_Off	A_Ref_Post	A_Ref_Pre	A_Displ_Off		Actual Risk Before Intervention	Actual Risk After Intervention	Actual Risk Delta
SP-00128	Dalmally 275kV Switchgear Replacement (5) Incl reconfiguration	Circuit Breaker	275kV Circuit Breaker	5	3	0	0	0		180,461	24,296	156,166
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Circuit Breaker	0	0	0	0	7		2,900,922	-	2,900,922
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Conductor	0	0	0	0	58		9,570,618	-	9,570,618
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Conductor	0	0	0	0	27		4,348,441	-	4,348,441
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Fitting	0	0	0	0	58		220,486,763	-	220,486,763
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Fitting	0	0	0	0	27		97,648,065	-	97,648,065
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Support	0	0	0	0	93		398,919	-	398,919
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Retiral	Circuit Breaker	400kV Support	0	0	0	0	44		1,020,147	-	1,020,147
SP-00131	Wishaw 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Cable	1	0	0	0	0		-	145	145
SP-00131	Wishaw 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Circuit Breaker	11	11	0	0	0		8,359,555	738,700	7,620,855
SP-00132	Kaimes 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Circuit Breaker	3	3	0	0	0		613,686	77,789	535,897
SP-00133	Lambhill 275kV Switchgear Replacement (8)	Circuit Breaker	275kV Cable	0	0	0	0	0		-	1,196	1,196
SP-00133	Lambhill 275kV Switchgear Replacement (8)	Circuit Breaker	275kV Circuit Breaker	7	8	0	0	0		962,818	75,679	887,490
SP-00133	Lambhill 275kV Switchgear Replacement (8)	Circuit Breaker	275kV Conductor	0	0	0	0	0		1,242	149	1,093
SP-00134	Bonnybridge 132kV switchgear replacement (19)	Circuit Breaker	132kV Cable	2	0	0	0	0		-	479	479
SP-00134	Bonnybridge 132kV switchgear replacement (19)	Circuit Breaker	132kV Circuit Breaker	15	16	0	0	0		6,108,685	1,844,360	4,264,325
SP-00135	Windyhill 132kV Switchgear Replacement (13)	Circuit Breaker	132kV Cable	4	1	0	0	0		232,902	182	232,720
SP-00135	Windyhill 132kV Switchgear Replacement (13)	Circuit Breaker	132kV Circuit Breaker	15	15	0	0	0		2,212,743	181,323	2,031,420
SP-00136	Chapelcross 132kV Switchgear Replacement (9)	Circuit Breaker	132kV Circuit Breaker	11	13	0	0	0		696,328	171,208	525,120
SP-00136	Chapelcross 132kV Switchgear Replacement (9)	Circuit Breaker	132kV Cable	3	1	0	0	0		268,541	792	267,750
SP-00137	Currie 132kV Switchgear Replacement (12)	Circuit Breaker	132kV Circuit Breaker	12	11	0	0	0		794,432	112,902	681,530
SP-00137	Currie 132kV Switchgear Replacement (12)	Circuit Breaker	132kV Cable	0	0	0	0	0		74	16	58
SP-00138	Strathaven 275kV Switchgear Replacement (4)	Circuit Breaker	275kV Circuit Breaker	6	6	0	0	0		2,177,770	49,194	2,128,576
SP-00139	Currie 275kV Switchgear Replacement (3)	Circuit Breaker	275kV Circuit Breaker	6	6	0	0	0		3,389,987	533,530	2,856,456
SP-00293	DEVOL MODOR X120 REPLACEME	Circuit Breaker	400kV Circuit Breaker	1	1	0	0	0		11,882,984	873,770	11,009,214
SP-00672	Mossman 132kV switchgear replacement	Circuit Breaker	132kV Circuit Breaker	2	2	0	0	0		138,090	119,086	119,004
										374,395,369	4,703,598	369,691,770

Figure 7 SPT Circuit Breaker delivered schemes

Inverkip

The most significant change in the schemes delivered corresponds to Inverkip substation. The Inverkip scheme changed from a planned replacement of seven 400 kV circuit breakers at Inverkip to the decommissioning of the substation and necessary reconfiguration of the network in the area following the termination of a User's connection agreement.

Inverkip substation was constructed in 1974 to enable the connection of Inverkip power station. While the station had been mothballed prior to the submission of the RIIO-T1 business plan, it retained its connection agreement until termination in March 2012, one month prior to the publication of the RIIO-T1 Final Proposals. SPT have an obligation to ensure that connecting parties' connections are suitable for service.

Following the termination by the User of its Bilateral Connection Agreement, SPT examined the options for the substation and associated 400kV overhead line routes (ZO & ZN). The substation and associated overhead lines became redundant when no longer required for the connection to the power station and the most economical option to manage the condition of the circuit-breakers was to reconfigure the network, allowing the substation and 84 cct-km of overhead lines to be decommissioned. This option also had a visual impact benefit and avoided the major refurbishment of the associated sections of ZO and ZN routes which would have been necessary in the RIIO-T2 period.

Other additional delivery

In addition to the units brought forward in Wishaw, Strathaven and Currie sites, there are other interventions delivered that were not in the business plan submission. These are:

- Mossmorran 132kV Switchgear replacement, two outdoor SF₆ 132kV circuit breakers were disposed at Mossmorran. These were no longer supported by the original equipment manufacturer and had to be replaced to provide strategic spares to manage the remaining population of this type. The new circuit breakers are SF₆-free utilising 'clean air' as the insulating and interrupting gas.
- Devol Moor X120 was replaced, the 400kV air blast circuit breaker had significant condition related problems and high criticality.

It should be noted that the risk associated with consequential interventions such as small sections of cable/conductor additions and/or removals in circuit-breaker replacement projects had not been previously considered in the business plan NOMS targets but are a consequential intervention of those planned and have been accounted for in the risk outputs delivered.

Transformers

The table below refers to the Transformer schemes planned at the business plan submission. The schemes that were not delivered have been highlighted.

Oliver Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes						Impact of intervention in Asset Risk (R)		
				P_Repl. On	P_Repl. Off	P_Repl. Posi	P_Repl. Inc	P_Repl. Off	P_Repl. Off	Planned Risk Before Intervention	Planned Risk After Intervention	Planned Risk Delta
SP-00111	Bainsford Transformer Replacement (2) 132kV	Transformer	132kV Circuit Breaker	1	1	0	0	0	0	75,205.35	71,330.4	-6,806.831
SP-00111	Bainsford Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	9,089.66	88,151	-83,061.5
SP-00111	Bainsford Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	9,089.66	88,151	-83,061.5
SP-00112	Easthouse Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	2,002.998	179,258	-182,371.1
SP-00113	Enkine Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	93,274	38,541	-54,733
SP-00113	Enkine Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	295,296	38,541	-256,755
SP-00114	Giffnock Transformer Replacement (2) 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	5,158.84	78,360	-437,534
SP-00114	Giffnock Transformer Replacement (2) 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	5,158.84	78,360	-437,534
SP-00115	Gungahlin Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	1,071.872	21,919	-85,283
SP-00116	Johnstone Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	1,104,851	102,552	-1,002,298
SP-00116	Johnstone Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	667,051	102,552	-564,498
SP-00117	Kilnmead Transformer Replacement (1) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	773,630	69,237	-704,393
SP-00118	Kilnmead Town Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	5,768.60	87,621	-88,920
SP-00119	Paisley Transformer Replacement (1) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	1,246,519	11,433	-1,132,166
SP-00120	Portobello - 2x 275kV 120MVA transformer replacement 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	2,884,058	258,112	-2,625,946
SP-00122	Sighthill Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0	0	5,293.51	107,168	-42,083
SP-00123	St Andrews Cross T1 & T2 Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	406,544	167,219	-239,325
SP-00123	St Andrews Cross T1 & T2 Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	1,040,793	167,219	-873,574
SP-00124	Strathaven Town Transformer Replacement (1) 132kV	Transformer	132kV Transformer	1	1	0	0	0	0	1,214,542	169,243	-1,045,299
										34,427,657	2,898,462	-21,569,196

Figure 8 SPT Transformers Planned schemes

The table below refers to the Transformer schemes delivered. The delivered schemes that were not part of the original business plan have been highlighted. There were three units deferred, two at Giffnock

275kV and one Kilmarnock Town 275kV. This deferral has been offset by the replacement of one unit at each of Charlotte St 275kV, Shrubhill 275kV and Devonside 132kV substations.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes						Impact of Intervention in Asset Risk (ER)		
				A_Repl_On	A_Repl_Off	A_Repl_Pos	A_Repl_Pre	A_Displ_Off		Actual Risk Before Intervention	Actual Risk After Intervention	Actual Risk Delta
SP-00111	Bainsford Transformer Replacement (2) 132kV	Transformer	132kV Circuit Breaker	0	0	0	0	1		7,520,635	-	7,520,635
SP-00111	Bainsford Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		9,08,966	88,151	-89,815
SP-00111	Bainsford Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		9,08,966	88,151	-89,815
SP-00112	Easterhouse Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0		2,002,969	179,258	-1,823,711
SP-00113	Enslie Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		9,12,74	18,541	-54,733
SP-00113	Enslie Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		28,294	18,541	-25,673
SP-00115	Grangemouth Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0		1,071,872	21,901	-85,283
SP-00116	Johnstone Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		1,104,851	102,552	-1,002,298
SP-00116	Johnstone Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		667,051	102,552	-564,498
SP-00117	Kilmarnock Transformer Replacement (1) 132kV	Transformer	132kV Transformer	1	1	0	0	0		773,630	68,237	-705,393
SP-00119	Paisley Transformer Replacement (1) 132kV	Transformer	132kV Transformer	1	1	0	0	0		1,246,519	114,353	-1,132,166
SP-00120	Portobello - 2x 275kV 120MVA transformer replacement 275kV	Transformer	275kV Transformer	1	1	0	0	0		2,884,058	258,112	-2,625,946
SP-00122	Sagehill Transformer Replacement (1) 275kV	Transformer	275kV Transformer	1	1	0	0	0		5,28,251	107,168	-422,083
SP-00123	St Andrews Cross T1 & T2 Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		406,544	167,219	-239,325
SP-00123	St Andrews Cross T1 & T2 Transformer Replacement (2) 132kV	Transformer	132kV Transformer	1	1	0	0	0		1,090,793	167,219	-923,574
SP-00124	St Andrew's Town Transformer Replacement (1) 132kV	Transformer	132kV Transformer	1	1	0	0	0		1,784,542	160,243	-1,624,299
SP-00206	Devonside Faulted Transformer Replacement	Transformer	132kV Transformer	1	1	0	0	0		448,574	107,443	-338,131
SP-00207	Shrubhill 275kV SGT 2 Transformer Replacement	Transformer	275kV Transformer	1	1	0	0	0		1,385,919	280,034	-1,105,285
SP-00311	Charlotte Street Transformer Replacement	Transformer	275kV Transformer	1	1	0	0	0		1,913,167	374,114	-1,539,052
										26,404,669	2,662,508	-23,942,161

Figure 9 SPT Transformers Delivered schemes

Additionally, there is a change in the intervention type for the circuit breaker component of the Bainsford scheme. The existing single switch configuration at Bainsford that allowed interconnection between the two circuits was no longer required, therefore the circuit breaker was decommissioned instead of replaced.

Reactors

The table below refers to the Reactor programme planned at the business plan submission. The programme elements that were not delivered have been highlighted.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes					Impact of Intervention in Asset Risk (ER)		
				P_Repl_On	P_Repl_Off	P_Ref_Post	P_Ref_Pre	P_Displ_Off	Planned Risk Before Intervention	Planned Risk After Intervention	Planned Risk Delta
SP-00194	Reactor Modernisation Programme - GIFF R1	Reactor	275kV Reactor	1	1	0	0	0	212,161	26,467	-185,695
SP-00194	Reactor Modernisation Programme - NEIL R1	Reactor	275kV Reactor	1	1	0	0	0	212,161	26,467	-185,695
SP-00194	Reactor Modernisation Programme - SHRU R2	Reactor	275kV Reactor	1	1	0	0	0	233,820	26,467	-207,353
SP-00194	Reactor Modernisation Programme - SIGH R1	Reactor	275kV Reactor	1	1	0	0	0	202,742	26,467	-176,275
SP-00194	Reactor Modernisation Programme - WGE0 R1	Reactor	275kV Reactor	1	1	0	0	0	173,691	26,467	-147,225
SP-00194	Reactor Modernisation Programme - WGE0 R2	Reactor	275kV Reactor	1	1	0	0	0	174,822	26,467	-148,355
SP-00194	Reactor Modernisation Programme - WISH R7	Reactor	275kV Reactor	1	1	0	0	0	174,822	26,467	-148,355
SP-00194	Reactor Modernisation Programme - WIYH R3	Reactor	275kV Reactor	1	1	0	0	0	101,207	26,467	-74,741
									1,485,427	211,732	-1,273,695

Figure 10 SPT Reactor Planned schemes

All shunt reactors identified for replacement except for Windyhill R3 have been decommissioned. However, the strategy for the replacement units was amended and they have not been replaced on a like-for-like basis. The table below provides the details of the units removed and replaced in each site together with the impact of those interventions on the asset risk.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes					Impact of Intervention in Asset Risk (€R)		
				A_Repl_On	A_Repl_Off	A_Ref_Post	A_Ref_Pre	A_Displ_Off	Actual Risk Before Intervention	Actual Risk After Intervention	Actual Risk Delta
SP-00194	Reactor Modernisation Programme_BONN R1	Reactor	275kV Reactor	1	0	0	0	0	-	26,467	26,467
SP-00194	Reactor Modernisation Programme_BONN R2	Reactor	275kV Reactor	1	0	0	0	0	-	26,467	26,467
SP-00194	Reactor Modernisation Programme_CURR R1	Reactor	275kV Reactor	1	0	0	0	0	-	26,467	26,467
SP-00194	Reactor Modernisation Programme_GIFF R1	Reactor	275kV Reactor	0	1	0	0	0	212,161	-	212,161
SP-00194	Reactor Modernisation Programme_NEIL R1	Reactor	275kV Reactor	1	1	0	0	0	212,161	26,467	185,695
SP-00194	Reactor Modernisation Programme_NEIL R2	Reactor	275kV Reactor	1	0	0	0	0	-	26,467	26,467
SP-00194	Reactor Modernisation Programme_SHRU R2	Reactor	275kV Reactor	0	1	0	0	0	233,820	-	233,820
SP-00194	Reactor Modernisation Programme_SIGH R1	Reactor	275kV Reactor	0	1	0	0	0	202,742	-	202,742
SP-00194	Reactor Modernisation Programme_SMEA R1	Reactor	275kV Reactor	1	0	0	0	0	-	23,816	23,816
SP-00194	Reactor Modernisation Programme_WGEO R1	Reactor	275kV Reactor	0	1	0	0	0	173,691	-	173,691
SP-00194	Reactor Modernisation Programme_WGEO R2	Reactor	275kV Reactor	0	1	0	0	0	174,822	-	174,822
SP-00194	Reactor Modernisation Programme_WISH R7	Reactor	275kV Reactor	0	1	0	0	0	174,822	-	174,822
SP-00194	Reactor Modernisation Programme_SHRU R1	Reactor	275kV Reactor	0	1	0	0	0	176,702	-	176,702
SP-00194	Reactor Modernisation Programme_SMEA R2	Reactor	400kV Reactor	1	0	0	0	0	-	23,816	23,816
SP-00194	Reactor Modernisation Programme_WISH R9	Reactor	400kV Reactor	1	0	0	0	0	-	23,816	23,816
									1,560,921	203,782	- 1,357,139

Figure 11 SPT Reactor Delivered schemes

Operational experience highlighted that the pre-intervention arrangement of 60MVAR shunt reactors connected to the 33kV terminals of 275/33kV transformers via a 33kV circuit-breaker created a number of issues.

- The voltage step which resulted from the switching in and out of service of the reactors exceeded SQSS planning and operational limits unless the reactor was on bottom tap.
- The frequency of switching over the life of the reactors resulted in excessive wear of the tapchanger mechanisms which required frequent intervention.
- The reactive switching duty of the 33kV circuit-breakers is particularly onerous which, when combined with the frequency of switching, resulted in excessive deterioration.

Further analysis was undertaken to determine alternative connection arrangements which would alleviate the issues identified above while providing effective reactive compensation. The strategy was developed to connect the replacement 60MVAR shunt reactors to the 60MVA rated, 33kV tertiary windings of inter-bus autotransformers. This approach has a number of benefits.

- The voltage step which results from the switching in and out of service of the reactors does not exceed planning or operational limits under any conditions, obviating the need for a tapchanger.
- Because a tap changer is not required, air-cored (or dry-type) reactors are feasible. While there are additional design considerations related to magnetic fields and electrical clearances, there are substantial environmental benefits when compared to oil-filled reactors.
- The design incorporated circuit-breakers rated at 145kV, operating at 33kV. This allowed standard circuit-breakers to be procured, avoiding the need for special design 36kV units which simplifies spare-holding requirements.

Noting that voltage control requirements have changed substantially since the reactors were originally installed due to significant changes in load profiles and characteristics, transmission connected and distribution connected generation, the analysis determined the optimum locations for the replacement reactors. Please note that the original Neilston R1 was tertiary-connected and the connection arrangement was retained for the replacement air-cored reactor.

Underground Cables

There was a reactive programme to replace sections of oil filled cables with excessive leakage. During the development of the RIIO-T1 projects, small sections of oil filled cable have been replaced mainly

associated with main switchgear projects. Those have been identified as NOMs outputs in the corresponding main projects.

Overhead Lines

The table below refers to the Overhead Line schemes planned at the business plan submission. The schemes or scheme elements that were not delivered have been highlighted.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes					Impact of Intervention in Asset Risk (ER)		
				P_Repl On	P_Repl Off	P_Ref Post	P_Ref Pre	P_Displ Off	Planned Risk Before Intervention	Planned Risk After Intervention	Planned Risk Delta
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Cable	6	0	0	0	0	-	867	867
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Conductor	0	0	0	0	6	59,803	-	59,803
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Fitting	0	0	0	0	6	1,765,157	-	1,765,157
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Support	0	0	0	0	10	2,099,156	-	2,099,156
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Cable	1	0	0	0	0	49,600	1,746	1,746
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Conductor	0	0	0	0	1	859,995	-	859,995
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Fitting	0	0	0	0	5	35,943	-	35,943
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Support	0	0	0	0	5	35,943	-	35,943
SP-00158	XV - Kilmarnock South to Strathaven OHL modernisation	OHL Conductor	400kV Fitting	70	70	0	0	0	571,855,825	21,819,598	550,036,227
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	132kV Conductor	138	138	0	0	0	1,019,851	379,693	640,158
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	132kV Fitting	138	138	0	0	0	18,012,588	4,537,904	13,474,684
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	132kV Support	283	283	0	0	0	1,333,540	170,386	1,163,154
SP-00160	XD - Lambhill to Denny Major Refurbishment (Recond 64cctkm)	OHL Conductor	275kV Conductor	64	64	0	0	0	1,747,256	374,399	1,372,857
SP-00160	XD - Lambhill to Denny Major Refurbishment (Recond 64cctkm)	OHL Conductor	275kV Fitting	64	64	0	0	0	3,372,187	3,019,761	352,426
SP-00160	XD - Lambhill to Denny Major Refurbishment (Recond 64cctkm)	OHL Conductor	275kV Support	0	0	102	102	0	1,240,557	185,513	1,055,044
SP-00161	XE - Windyhill to Lambhill Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Conductor	35	35	0	0	0	2,853,172	207,860	2,645,312
SP-00161	XE - Windyhill to Lambhill Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Support	0	0	57	57	0	707,547	103,669	603,878
SP-00162	YG/QJ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Conductor	40	40	0	0	0	4,613,796	350,412	4,263,384
SP-00162	YG/QJ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Conductor	30	30	0	0	0	1,874,573	262,043	1,612,530
SP-00162	YG/QJ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Fitting	40	40	0	0	0	59,935,480	2,800,959	57,134,521
SP-00162	YG/QJ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Fitting	30	30	0	0	0	45,555,721	2,133,613	43,422,108
SP-00162	YG/QJ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Support	0	0	60	60	0	1,416,728	209,936	1,206,792
SP-00162	YG/QJ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Support	0	0	46	46	0	1,108,435	160,398	948,037
SP-00163	XH - Strathaven to Wishaw Major Refurbishment (Recond 23cctkm)	OHL Conductor	275kV Conductor	12	12	0	0	0	8,368,756	2,979,812	5,388,943
SP-00163	XH - Strathaven to Wishaw Major Refurbishment (Recond 23cctkm)	OHL Conductor	400kV Conductor	11	12	0	0	0	1,872,003	358,611	1,513,392
SP-00163	XH - Strathaven to Wishaw Major Refurbishment (Recond 23cctkm)	OHL Conductor	400kV Fitting	12	12	0	0	0	3,450,294	1,694,712	1,755,582
SP-00163	XH - Strathaven to Wishaw Major Refurbishment (Recond 23cctkm)	OHL Conductor	275kV Fitting	12	12	0	0	0	832,392	617,198	215,195
SP-00163	XH - Strathaven to Wishaw Major Refurbishment (Recond 23cctkm)	OHL Conductor	400kV Support	0	0	38	38	0	4,041,221	593,553	3,447,668
SP-00164	XJ - Wishaw to Smeaton OHL modernisation Major Refurbishment (Recond 123cctkm)	OHL Conductor	400kV Conductor	62	62	0	0	0	10,573,128	1,940,421	8,632,706
SP-00164	XJ - Wishaw to Smeaton OHL modernisation Major Refurbishment (Recond 123cctkm)	OHL Conductor	275kV Conductor	62	62	0	0	0	15,428,751	3,052,627	12,376,124
SP-00164	XJ - Wishaw to Smeaton OHL modernisation Major Refurbishment (Recond 123cctkm)	OHL Conductor	275kV Fitting	62	62	0	0	0	22,577,948	20,139,852	2,438,095
SP-00164	XJ - Wishaw to Smeaton OHL modernisation Major Refurbishment (Recond 123cctkm)	OHL Conductor	400kV Fitting	62	62	0	0	0	16,997,155	9,059,119	7,938,036
SP-00164	XJ - Wishaw to Smeaton OHL modernisation Major Refurbishment (Recond 123cctkm)	OHL Conductor	400kV Support	0	0	183	183	0	20,357,161	2,887,946	17,469,214
SP-00164	XJ - Wishaw to Smeaton OHL modernisation Major Refurbishment (Recond 123cctkm)	OHL Conductor	275kV Support	0	0	1	1	0	111,733	15,877	95,857
SP-00165	XP - Currie to Kaimas Major Refurbishment (Recond 19cctkm)	OHL Conductor	275kV Conductor	19	19	0	0	0	726,305	258,187	468,118
SP-00165	XP - Currie to Kaimas Major Refurbishment (Recond 19cctkm)	OHL Conductor	275kV Fitting	19	19	0	0	0	70,380,442	4,018,137	66,362,304
SP-00165	XP - Currie to Kaimas Major Refurbishment (Recond 19cctkm)	OHL Conductor	275kV Support	0	0	28	28	0	27,057,339	3,852,534	23,204,805
SP-00166	XS - Kaimas to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Conductor	37	37	0	0	0	2,740,365	631,536	2,108,829
SP-00166	XS - Kaimas to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Fitting	37	37	0	0	0	55,608,573	5,687,876	49,920,696
SP-00166	XS - Kaimas to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Support	0	0	58	58	0	1,937,391	278,476	1,658,915
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Conductor	8	8	0	0	0	132,700	14,923	117,777
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Fitting	8	8	0	0	0	4,772,293	103,722	4,668,570
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Support	0	0	18	18	0	1,049,770	153,017	896,753
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	275kV Conductor	16	16	0	0	0	5,430,775	821,587	4,609,188
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	275kV Fitting	16	16	0	0	0	132,859,798	7,312,520	125,547,277
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	275kV Support	0	0	24	24	0	75,752,909	10,465,205	65,287,704
SP-00169	YK Lambhill to Port Dundas Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Conductor	8	8	0	0	0	562,637	127,572	435,065
SP-00169	YK Lambhill to Port Dundas Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Fitting	8	8	0	0	0	1,920,149	1,402,645	517,504
SP-00169	YK Lambhill to Port Dundas Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Support	0	0	15	15	0	14,489,043	2,000,094	12,488,949
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	132kV Conductor	79	80	0	0	0	7,795,498	646,940	7,148,558
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	132kV Fitting	80	80	0	0	0	133,519,495	8,225,612	125,293,882
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	132kV Support	0	0	152	152	0	1,403,703	214,649	1,189,054
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	132kV Conductor	80	80	0	0	0	18,296,292	1,482,233	16,814,059
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	132kV Fitting	80	80	0	0	0	312,254,218	16,520,971	295,733,246
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	132kV Support	0	0	151	151	0	7,922,521	1,200,597	6,721,924
									1,702,739,666	145,477,521	1,557,262,145

Figure 12 SPT OHL Planned Schemes

The table below shows the Overhead line schemes delivered during the RIIO-T1 period, the schemes or scheme elements that were not part of the business plan have been highlighted.

Ofgem Scheme Reference	Scheme Name	Scheme Category	NOMS Output per asset category	Intervention volumes					Impact of Intervention in Asset Risk (ER)		
				A_Repl_On	A_Repl_Off	A_Ref_Post	A_Ref_Pre	A_Displ_Off	Actual Risk Before Intervention	Actual Risk After Intervention	Actual Risk Delta
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Cable	8	0	0	0	0	-	1,174	1,174
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Conductor	0	0	0	0	6	59,803	-	59,803
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Fitting	0	0	0	0	6	1,765,157	-	1,765,157
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	132kV Support	0	0	0	0	10	2,099,156	-	2,099,156
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Cable	1	0	0	0	0	-	1,475	1,475
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Conductor	0	0	0	0	1	49,600	-	49,600
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Fitting	0	0	0	0	1	859,995	-	859,995
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	132kV Support	0	0	0	0	5	35,943	-	35,943
SP-00158	XV - Kilmarnock South to Strathaven OHL modernisation	OHL Conductor	400kV Conductor	70	70	0	0	0	18,684,633	2,352,338	16,332,296
SP-00158	XV - Kilmarnock South to Strathaven OHL modernisation	OHL Conductor	400kV Fitting	70	70	0	0	0	570,680,202	21,757,339	548,927,863
SP-00158	XV - Kilmarnock South to Strathaven OHL modernisation	OHL Conductor	400kV Support	0	0	100	100	0	14,374,605	1,211,358	13,163,247
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	132kV Conductor	138	138	0	0	0	1,019,851	379,609	640,241
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	132kV Fitting	138	138	0	0	0	18,012,588	4,537,904	13,474,684
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	132kV Support	0	0	283	283	0	1,333,556	206,216	1,127,340
SP-00161	YE - Windyhill to Lambhill Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Conductor	35	35	0	0	0	2,853,172	207,860	2,645,312
SP-00162	YG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Conductor	40	40	0	0	0	4,613,796	350,412	4,263,384
SP-00162	YG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Conductor	30	30	0	0	0	1,874,573	262,043	1,612,530
SP-00162	YG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Fitting	40	40	0	0	0	59,935,480	2,849,857	57,085,622
SP-00162	YG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Fitting	30	30	0	0	0	45,555,721	2,133,613	43,422,108
SP-00162	YG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Support	0	0	60	60	0	1,416,728	209,936	1,206,792
SP-00162	YG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 59cctkm)	OHL Conductor	275kV Support	0	0	46	46	0	1,108,435	160,398	948,037
SP-00165	XP - Currie to Kames Major Refurbishment (Recond 19cctkm)	OHL Conductor	275kV Conductor	19	19	0	0	0	726,305	258,105	468,201
SP-00165	XP - Currie to Kames Major Refurbishment (Recond 19cctkm)	OHL Conductor	275kV Fitting	19	19	0	0	0	70,380,442	4,018,137	66,362,304
SP-00166	XS - Kames to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Conductor	37	37	0	0	0	2,740,365	631,301	2,109,064
SP-00166	XS - Kames to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Fitting	37	37	0	0	0	55,608,573	5,687,876	49,920,696
SP-00166	XS - Kames to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	275kV Support	0	0	58	58	0	1,937,391	278,476	1,658,915
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Conductor	8	8	0	0	0	132,700	14,494	118,206
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Fitting	8	8	0	0	0	4,772,293	103,722	4,668,570
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	275kV Support	0	0	15	15	0	885,147	126,153	758,994
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	275kV Conductor	16	16	0	0	0	5,430,775	821,877	4,608,898
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	275kV Fitting	16	16	0	0	0	132,859,798	7,312,520	125,547,277
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	275kV Support	0	0	23	23	0	72,612,227	10,029,155	62,583,072
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	132kV Conductor	79	80	0	0	0	7,795,498	646,940	7,148,558
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	132kV Fitting	80	80	0	0	0	133,519,495	8,329,361	125,190,133
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	132kV Support	0	0	144	144	0	1,339,381	203,351	1,136,030
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	132kV Conductor	80	80	0	0	0	18,296,292	1,482,233	16,814,059
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	132kV Fitting	80	80	0	0	0	312,254,218	16,834,501	295,419,716
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	132kV Support	0	0	145	145	0	7,606,810	1,152,891	6,453,919
SP-00201	YW Route Dalmally to Windyhill Major Refurbishment (Recond 153cctkm)	OHL Conductor	275kV Conductor	153	153	0	0	0	263,929	37,470	226,459
SP-00201	YW Route Dalmally to Windyhill Major Refurbishment (Recond 153cctkm)	OHL Conductor	275kV Fitting	152	153	0	0	0	5,960,594	378,076	5,582,518
SP-00202	YX Route Dalmally to Cruachan Major Refurbishment (Recond 16cctkm)	OHL Conductor	275kV Conductor	16	16	0	0	0	11,861	1,445	10,416
SP-00202	YX Route Dalmally to Cruachan Major Refurbishment (Recond 16cctkm)	OHL Conductor	275kV Fitting	16	16	0	0	0	239,123	11,522	227,601
									1,581,696,208	94,981,139	1,486,715,069

Figure 13 SPT OHL Delivered Schemes

SPT's long-term asset management strategy for overhead lines focuses on optimising the replacement programme of ACSR core-only greased conductors. During the RIIO-T1 period there have been a small number of route substitutions resulting in a marginally higher volume of conductor replaced than the original plan. The substitutions were driven by wider network considerations, such as interaction with load related work, outage optimisation and resource availability. Routes XD, YK, XH and XJ have been substituted by routes XV, YW and YX.

Additionally, after a detailed engineering study, V route originally planned as a full replacement with rebuild of its towers has been substituted by an extensive refurbishment of the towers, as well as replacement of conductors and fittings.

Chapter 6: Relevant Risk Changes and Impact on Performance Against Targets

6.1 Introduction

The original licence targets were set and quantified with the best information available at the time of rebasing and reflected only the expected impact of NOMs related interventions as defined in the business plan. For the definition of the monetised risk targets, SPT used the data available in regulatory year 2018/19 as a reference point to determine the asset data corresponding to the start and end risk position of the RIIO-T1 price control by adopting a roll back and forward methodology. There were assets that had been decommissioned at the time of rebasing and had to be added back to allow the calculation of the risk at the start and end of the RIIO-T1 without intervention. On the other hand, assets that had been added with a load related driver were not considered in the setting of the targets and were removed.

Relevant risk changes described below include non-intervention movements in risk values which can be positive or negative with respect to the current levels of asset risk. It should be noted that risk changes associated with non NOMs-related interventions have not been included in this report, as agreed with Ofgem. The corresponding narrative providing full details of those risk changes together with load related activities' risk changes will be submitted to Ofgem together with the updated RIIO-T1_NOMs_CloseOut_SPT template in both sections A and B of the 3.2_Delivery_ET tab by 14th September 2021 as agreed with Ofgem.

6.2 Data Cleansing

Any inaccurate or missing records that could imply a change relative to the asset data used at the time of business plan preparation are reported as data cleansing in this submission. Most of these errors or omissions were identified at the Rebasing submission in 2019 however there are additional items that have been identified during the preparation of this report. These mainly correspond to condition information that was not fully populated, small changes in volume or system errors. It should be noted that the data cleansing risk changes can have an impact on the risk position with and/or without intervention, depending on their nature. The following Figure 14 describes the nature of the data cleanse identified in the preparation of this report, providing the asset category and risk value impacted.

Asset Category	Risk change relative to the target (£Rm)	Change in volume (Y/N)	Change in condition (Y/N)	Change in criticality (Y/N)	Data cleansing description
132kV Circuit Breaker	0.031	NO	YES	NO	The circuit breaker new units WHTL132GCB105 and WHTL132GCB205 were not removed and the old units were not added back in at the start of the period. These units had been replaced before rebasing with a non-NOMS intervention.
132kV Transformer	1.237	NO	YES	NO	The transformer new unit T2A unit at Strathleven was not removed and the old unit was not added back in at the start of the period. This unit had been replaced before rebasing with a non-NOMS intervention.
132kV Underground Cable	5.195	NO	NO	NO	A system error was identified that prevented the equations calculating the risk values from being run for all assets at the time of rebasing the targets.
132kV OHL Towers	-17.037	NO	YES	NO	Some elements of condition information (dated before 31st March-2019) had not been considered at the time of rebasing in routes AC, AY, BG, BZ, CK, CL, N and V route.
275kV Circuit Breaker	1.863	NO	YES	NO	SF6 data (dated before 31st March-2019) not included at the time of rebasing for circuit breaker CBMOSM275GCB510
275kV Underground Cable	-0.003	NO	NO	NO	A system error was identified that prevented the equations calculating the risk values from being run for all assets at the time of rebasing the targets.
275kV Conductor	0.001	NO	YES	NO	The new conductor span XD-001 of XD_LAMBHILL route was not removed and the old conductor span was not added back in at the start of the period.
275kV OHL line Fittings	-13.081	NO	NO	NO	A system error was identified that prevented the equations calculating the risk values from being run for YQ route fittings at the time of rebasing the targets.
275kV OHL line Fittings	-4.739	NO	YES	NO	Some elements of condition information (dated before 31st March-2019) had not been considered at the time of rebasing in routes XD and YF.
400kV OHL line Conductor	0.000	YES	NO	NO	Span 212 of ZA Route has been data cleanse as it is not owned by SPT
275kV OHL Towers	-48.463	NO	YES	NO	Some elements of condition information (dated before 31st March-2019) had not been considered at the time of rebasing in routes XD, XE, XP, YF, YH, YK and ZG.
400kV Circuit Breaker	0.390	NO	YES	NO	SF6 data (dated before 31st March-2019) not included at the time of rebasing for several CBs at Torness and Eccles substations.
400kV Underground Cable	-0.010	NO	NO	NO	A system error was identified that prevented the equations calculating the risk values from being run for all assets at the time of rebasing the targets.
400kV OHL Towers	-18.819	NO	YES	NO	Some elements of condition information (dated before 31st March-2019) had not been considered at the time of rebasing XH, XJ, ZO and ZR.

Figure 14 SPT T1 Close Out Data cleansing

The monetised risk value impacted is positive when the risk remaining target had been underestimated and therefore needs to be normalised by increasing the risk value. This value is negative when the risk remaining target had been overestimated. Overall, the SPT data cleanse value is negative (i.e. resulting in a more challenging risk remaining target) and represents 1.9% over the pre-normalised target.

6.3 Methodology change

Although there have been no methodology changes since the rebased targets were established, there is a different understanding of the treatment of asset risk for pole structures in overhead lines. The rebased monetised risk values for 132 kV OHL towers included monetised risk values for 132 kV pole structures. Following engagement with Ofgem during the RIIO-T2 Business Plan preparation process, pole structures are not included in the NARM methodology for the derivation of the Monetised Asset Risk. The poles structure risk represented 5.7% of the pre-normalised target. According to the current interpretation of the NARM methodology, this risk value has been normalised out of the target values. The relevant risk change is therefore negative, reducing the normalised risk remaining target by a value of £R285m.

6.4 COF Changes

There are no COF changes to report. There have been no COF value updates applied to those used in the rebasing submission.

6.5 Pre-RIIO1 work true-up

There are no changes to report in this category. All risk changes related to the pre-RIIO1 work were trueed up in the rebasing submission.

6.6 Any Other Relevant Risk Changes: SPT Methodology

As acknowledged by Ofgem⁵ during the RIIO-T2 submission phase, SPT's NARM methodology forecasts the deterioration of the assets into the future using the EOL values as a reference. The EOL value can be a value between 0.5 and 15 in a continuous scale, however the asset's actual EOL value measured at any point in time can only be a value between 0.5 and 10 and in most assets that would increase in steps when updating the condition inputs' values. This peculiarity of the methodology creates a misalignment between the forecasted EOL value into the future and the actual value even when the condition has just deteriorated as expected. The following Figure 15 illustrate this issue:

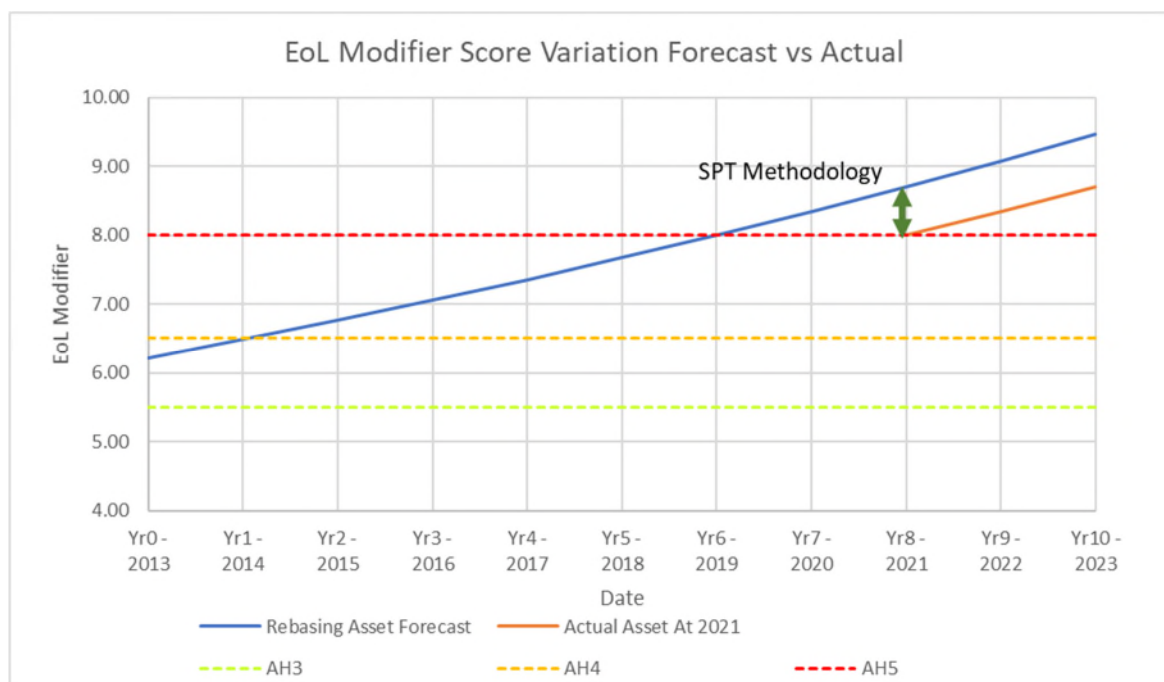


Figure 15 SPT Asset health score forecast vs actual

SPT has developed a method to quantify the risk changes due to the forecasting methodology as explained above so they can be normalised out of the target. Those risk changes should be separated from the genuine faster-slower deterioration observed in some assets. The expected deterioration of the asset at the time of forecast has been considered by examining the HI band used to define the original targets in RIIO-T1. When the forecasted EOL value in 2021 and the actual EOL value in 2021 are in the same HI band, the risk changes are considered to be solely due to the methodology. These have been included in the RIIO-T1_NOMs_CloseOut_SPT template in one of the 'free text normalisation' relevant risk changes columns under the nomenclature of "SPT Methodology". When the forecasted EOL value in 2021 and the actual EOL value in 2021 are in different HI bands, the risk changes are considered to be faster or slower deterioration.

The risk changes due to the forecasting methodology are detailed in the Figure 16 below for each asset category; these are presented with and without intervention. The risk change value is very similar since it is mainly driven by the assets that have not been subject to intervention. The risk without intervention for the assets that had been intervened on ahead of March 2019 considered the asset condition as the best view at the time which was forecasted to the end of the RIIO-T1 period. These assets won't have any updated condition information since they are no longer in the network. The small variation corresponds to the assets intervened on in the last two years of the RIIO-T1 period. For those where

⁵ RIIO-2 Final Determination – NARM Annex (paragraph 4.37)

there is a risk variation that would correspond to the forecasted and actual risk value at the end of the period considering the most recent condition information available.

Asset Category	Units	Relevant Risk changes	
		SPT Methodology - Without Intervention	SPT Methodology - With Intervention
132kV Circuit Breaker	£Rm	-1.41	-1.41
132kV Transformer	£Rm	-3.50	-3.50
132kV Reactors	£Rm	-0.06	-0.06
132kV Underground Cable	£Rm	-3.25	-3.25
132kV OHL line Conductor	£Rm	-4.40	-4.40
132kV OHL line Fittings	£Rm	-48.01	-47.59
132kV OHL Towers	£Rm	-13.13	-13.13
275kV Circuit Breaker	£Rm	-1.79	-1.79
275kV Transformer	£Rm	-3.47	-3.47
275kV Reactors	£Rm	-0.05	-0.05
275kV Underground Cable	£Rm	-3.87	-3.87
275kV OHL line Conductor	£Rm	-13.99	-13.99
275kV OHL line Fittings	£Rm	-67.23	-67.18
275kV OHL Towers	£Rm	-6.63	-6.63
400kV Circuit Breaker	£Rm	-0.56	-0.56
400kV Transformer	£Rm	-1.26	-1.26
400kV Reactors	£Rm	-0.05	-0.05
400kV Underground Cable	£Rm	0.00	0.00
400kV OHL line Conductor	£Rm	-13.84	-13.84
400kV OHL line Fittings	£Rm	-140.92	-140.92
400kV OHL Towers	£Rm	-11.66	-11.66
Total	£Rm	-339.07	-338.61

Figure 16 SPT Methodology relevant risk changes

The overall impact of the SPT forecast methodology in the risk remaining value is -£R339m which has been normalised out of the target. It should be noted that if the risk changes associated with the SPT Methodology were not normalised out of the target, it would have increased SPT's over-delivery performance by an additional approximately 7.7%.

6.7 Any Other Relevant Risk Changes: Scheme Correction

SPT has used another 'free text normalisation' column in the RIIO-T1_NOMs_CloseOut_SPT template to highlight the risk impact associated with the correction of the risk modelling of two schemes. They have been reported under the nomenclature of "*Scheme Corrections*". Since the both schemes were part of the business plan, they have been identified distinctly from other minor data cleanse to improve transparency when analysing data returns. These are two overhead line route schemes that were not risk modelled in accordance with the intended scope at the business plan submission.

- **XV route**, although the fittings were intended to be replaced, as noted in the Business Plan submission, this intervention was not modelled in the original target and therefore not in the rebased target. The risk remaining target was therefore much higher than it should have been (£548Rm). [REDACTED] not making this correction would have resulted in substantial over-delivery.
- **XE route**, in this route the fittings replacement had been modelled into the original target in error and therefore in the rebased target. In this case, the intention was never to replace the fittings since they were in good condition. The risk remaining target was therefore lower than it should have been. This correction is not material (£1Rm).

6.8 Slower/ Faster Deterioration (ET, GT)

The risk changes corresponding to differences in asset deterioration profiles as compared to those expected at the time of the preparation of the rebased monetised T1 NOMS targets are identified as faster or slower deterioration. The latest condition information available in SPT's asset management systems at the time of preparing this report has been used to derive the asset risk in 2021. This figure has been compared with the 2021 forecast risk value when preparing the rebased risk remaining targets. As explained in the *Any Other Relevant Risk Changes: SPT Methodology* above, where the assets are currently in a different health band than forecast, their deterioration is considered to be faster (if they are in a higher band) or slower (if they are in a lower band). The risk movements are reported in the RIIO1_NOMs Close out template, column AI in tab 3.3.1_Normalisations_Targets. They have a positive value if the asset has deteriorated faster or negative if it has deteriorated slower than expected.

SPT's overall deterioration is marginally slower than expected, representing 0.4% of the normalised risk remaining target. It should be noted faster/slower deterioration is not normalised in the target since it is at the company's risk to manage these variations in order to achieve a risk remaining target.

6.9 Covered by Other mechanisms

This has been populated as 0 for the purposes of the first version of this report with the intention to provide full details of all risk changes covered by other mechanisms in the next version of the report to be submitted no later than 14th of September 2021 as agreed with Ofgem. As part of that submission, section A in tab 3.2_Delivery_[ET, GT, or GD] will also be populated in full compliance with the requirements of RIIO-1 NOMs Incentive Methodology: Appendix 6 v2.2. These risk changes may include load-related replacements and other interventions funded by other non-NOMs mechanisms.

Chapter 7: Methodology for deriving associated costs

SPT has in the past proposed that the ideal approach to deriving the costs associated with under-delivery and over-delivery is a scheme-by-scheme assessment. This remains SPT's view however, there are two aspects of the NOMS targets and the incentive methodology that prevent this ideal approach from being applied.

- The RIIO-T1 target is the risk remaining on the network at the end of RIIO-T1. Therefore, there is no direct association between variance from the target and costs of individual schemes. This is exacerbated by those assets which were not subject to intervention deteriorating faster or slower than forecast.
- The NOMS Incentive Methodology's technique of measuring over-delivery and under-delivery from the materiality threshold completely decouples the costs of schemes delivered from the risk values associated with over-delivery or under-delivery.

SPT therefore propose that a Unit Cost of Risk (UCR) technique is applied to the over or under delivery element; the final value of risk remaining above or below the materiality threshold cannot be determined until the deadband is set however it is assumed to be 0.0% for the purpose of this submission.

SPT's reservations regarding the general application of UCR techniques remain, however given the form of the targets and Ofgem's decision to measure performance from the edge of the deadband, in this particular circumstance, it represents a reasonable approximation when using the methodology described below.

Derivation of the UCR

It is proposed to derive the Unit Cost of Risk delivered at a scheme category level using the risk delta delivered by the schemes containing the NOMs interventions. The scheme risk delta delivered by a specific scheme is defined as the difference between the risk with and without intervention at the end of the RIIO-T1 period, 31st of March 2021. The proposal consists of assigning all monetised risk outputs achieved by each scheme to its scheme category. Similarly, the cost associated with each scheme is proposed to be assigned to the scheme category. This would allow the determination of the UCR value per scheme category. This methodology can be applied to derive the baseline UCR and the outturn UCR.

$$\text{Baseline UCR, } UCR_b = \frac{\sum EA}{\sum DR_b}$$

$$\text{Outturn UCR, } UCR_o = \frac{\sum EO}{\sum DR_o}$$

Where;

- EA (£m) is the Expenditure Allowed per each scheme in that scheme category in the business plan submission (in 2020/21 prices)
- DR_b (£Rm) is the Delta risk planned per each scheme in the business plan submission
- EO (£m) is the Expenditure Outturn per each scheme delivered in that scheme category (in 2020/21 prices)
- DR_o (£Rm) is the Delta risk actually delivered per each scheme

This technique is similar to that which Ofgem have proposed in the RIIO-T2 Network Asset Risk Workbook for scheme allocation to Risk Sub-Categories where the scheme category allocation is defined by the highest risk contribution asset category. Using the RIIO-T1 data set, only two schemes

have been identified where the highest risk contribution is driven by a different asset category, in those cases, the scheme category has been assigned to highest risk contributor in order to obtain consistent UCR values.

SPT's scheme categories within the Asset Replacement and refurbishment allowance associated with monetised risk targets in RIIO-1 are as follows:

- Circuit Breaker
- Transformer
- Reactor
- Underground Cable
- Overhead Line conductor

It should be noted that the Overhead Line conductor category also includes all interventions related to fittings and/or towers on the same route. All Overhead Line NOMS interventions delivered during the RIIO-T1 period had the conductor replacement as the main driver.

Cost associated with over or under delivery

Once the over or under delivery risk element has been defined, it is proposed to calculate the associated cost by applying the derived UCR values to the over or under-delivery risk value of the corresponding asset class. This requires the assessment of the over or under-delivery risk value to be carried out at asset class level and therefore the over or under-delivery cost associated with each asset class can be derived. The asset classes considered are:

- Circuit Breaker
- Transformer
- Reactor
- Underground Cable
- Overhead Line (aggregating all lead asset NOMS outputs associated with overhead lines: conductor, fittings and towers)

For each asset class the cost of over or under-delivery is calculated as follows:

- Over-delivery case, the cost associated with the over-delivery will be calculated using the UCR_o previously derived.

$$ODC = NOD * UCR_o$$

Being;

ODC the cost associated with the Over-delivery (£m)

NOD the normalised over-delivery as determined by Ofgem in Stage 4 of the assessment (£Rm)

- Under-delivery case, the cost associated with the under-delivery will be calculated using the UCR_b

$$UDC = NUD * UCR_b$$

Being;

UDC the cost associated with the Under-delivery (£m)

NUD the normalised over-delivery as determined by Ofgem in Stage 4 of the assessment (£Rm)

It should be noted that the sum of the values of the over and under-delivery risk values portion outside the deadband may be different to the over or under delivery portion at a network level, due to the independent application of the deadband to each individual asset class. The individual over and under delivery portions per asset class are only relevant for the derivation of the associated cost. The overall network performance against the targets is derived from the application of the deadband to the total network risk remaining in accordance with the NOMS methodology.

An alternative to the approach detailed above is a similar but simplified methodology whereby the calculation of the costs associated with over or under-delivery is applied to the total network risk, using the UCR_b and UCR_o values at a network level. Due to the significant differences in risk values between asset classes, the overall network level UCR will not provide a representative cost to the over or under-delivery risk value. SPT's overhead lines risk accounts for 95% of the total network risk but only 45% of the total cost incurred. The disaggregation of the UCR value into asset classes provides a more representative cost and therefore a fairer outcome for consumers. Further disaggregation into asset categories would not be possible since the cost allocation in the RIIO-T1 RIGs does not provide sufficient granularity.

The following tables in Figure 17 and Figure 18 provide the preliminary UCR analysis for SPT. The risk outputs are accurate and consistent with the performance report however the cost data used in this draft methodology is preliminary at this stage and will be confirmed at Stage 5 should SPT be required to proceed to this stage as per the outcome of Ofgem's assessment in stage 4.

Project/ Asset Category Detail		Delta Risk Output (R£m)		Expenditure (£m)	
Ofgem scheme reference	Scheme name	Scheme category	Planned	Delivered	Allowed Outturn
SP-00111	Bainsford Transformer Replacement (2) 132kV	Circuit Breaker	8.478	9.192	
SP-00112	Easterhouse Transformer Replacement (1) 275kV	Transformer	1.824	1.824	
SP-00113	Erskine Transformer Replacement (2) 132kV	Transformer	0.311	0.311	
SP-00114	Giffnock Transformer Replacement (2) 275kV	Transformer	0.875	-	
SP-00115	Grangemouth Transformer Replacement (1) 275kV	Transformer	0.853	0.853	
SP-00116	Johnstone Transformer Replacement (2) 132kV	Transformer	1.567	1.567	
SP-00117	Killermont Transformer Replacement (1) 132kV	Transformer	0.704	0.704	
SP-00118	Kilmarnock Town Transformer Replacement (1) 275kV	Transformer	0.489	-	
SP-00119	Paisley Transformer Replacement (1) 132kV	Transformer	1.132	1.132	
SP-00120	Portobello - 2x 275kV 120MVA transformer replacement 275kV	Transformer	2.626	2.626	
SP-00122	Sighthill Transformer Replacement (1) 275kV	Transformer	0.422	0.422	
SP-00123	St Andrews Cross T1 & T2 Transformer Replacement (2) 132kV	Transformer	1.163	1.163	
SP-00124	Strathleven Town Transformer Replacement (1) 132kV	Transformer	1.124	1.124	
SP-00128	Dalmally 275kV Switchgear Replacement (5) Incl reconfiguration	Circuit Breaker	0.156	0.156	
SP-00129	Inverkip 400kV Switchgear Replacement (7) Incl reconfig: INKI PS Re	OHL Conductor	2.684	336.374	
SP-00130	Windyhill 275kV Switchgear Replacement (13)	Circuit Breaker	8.011	-	
SP-00131	Wishaw 275kV Switchgear Replacement (3)	Circuit Breaker	0.155	7.621	
SP-00132	Kaimes 275kV Switchgear Replacement (3)	Circuit Breaker	0.517	0.536	
SP-00133	Lambhill 275kV Switchgear Replacement (8)	Circuit Breaker	0.882	0.889	
SP-00134	Bonnybridge 132kV switchgear replacement (19)	Circuit Breaker	4.243	4.264	
SP-00135	Windyhill 132kV Switchgear Replacement (13)	Circuit Breaker	2.031	2.264	
SP-00136	Chapelcross 132kV Switchgear Replacement (9)	Circuit Breaker	0.573	0.793	
SP-00137	Currie 132kV Switchgear Replacement (12)	Circuit Breaker	0.682	0.682	
SP-00138	Strathaven 275kV Switchgear Replacement (4)	Circuit Breaker	0.315	2.129	
SP-00139	Currie 275kV Switchgear Replacement (3)	Circuit Breaker	3.099	2.856	
SP-00154	AF - Currie to Livingstone OHL modernisation (double cct 3.1km)	OHL Conductor	3.923	3.923	
SP-00155	BZ - Renfrew to Red Smiddy OHL modernisation (single cct 1.2km)	OHL Conductor	0.944	0.944	
SP-00158	XV - Kilmarnock South to Strathaven OHL modernisation	OHL Conductor	550.036	578.418	
SP-00159	V - NGC boundary to Galashiels OHL Rebuild (137 cctkm)	OHL Conductor	15.278	15.242	
SP-00160	XD - Lambhill to Denny Major Refurbishment (Recond 64cctkm)	OHL Conductor	2.780	-	
SP-00161	XE - Windyhill to Lambhill Major Refurbishment (Recond 37cctkm)	OHL Conductor	3.249	2.645	
SP-00162	XG/XQ Neilston/ Busby/ East Kilbride Major Refurbishment (Recond 79cctkm)	OHL Conductor	108.587	108.538	
SP-00163	XH - Strathaven to Wishaw Major Refurbishment (Recond 23cctkm)	OHL Conductor	12.321	-	
SP-00164	XI - Wishaw to Smeaton OHL modernisation Major Refurbishment	OHL Conductor	48.950	-	
SP-00165	XP - Currie to Kaimes Major Refurbishment (Recond 19cctkm)	OHL Conductor	90.035	66.831	
SP-00166	XS - Kaimes to Cockenzie Major Refurbishment (Recond 37cctkm)	OHL Conductor	53.688	53.689	
SP-00167	YG Longannet to Kincardine Major Refurbishment (Recond 8cctkm)	OHL Conductor	5.683	5.546	
SP-00168	YH Dalkeith to Portobello Major Refurbishment (Recond 15cctkm)	OHL Conductor	195.444	192.754	
SP-00169	YK Lambhill to Port Dundas Major Refurbishment (Recond 8cctkm)	OHL Conductor	13.442	-	
SP-00170	CK - Windyhill to Helensburgh Major Refurbishment (Recond 79cctkm)	OHL Conductor	133.631	133.465	
SP-00171	CL - SSE Boundary to Windyhill Major Refurbishment (Recond 80cctkm)	OHL Conductor	319.269	318.688	
SP-00179	Underground cable Modernisation Programme (Reactive)	Underground cable	0.539	-	
SP-00194	Reactor Modernisation Programme	Reactor	1.274	1.354	
SP-00201	YW Route Dalmally to Windyhill Major Refurbishment (Recond 153cctkm)	OHL Conductor	-	5.809	
SP-00202	YX Route Dalmally to Cruachan Major Refurbishment (Recond 16cctkm)	OHL Conductor	-	0.238	
SP-00206	Devonside Faulted Transformer Replacement	Transformer	-	0.339	
SP-00207	Shrubhill 275kV SGT2 Transformer Replacement	Transformer	-	1.105	
SP-00293	DEVOL MOOR X120 REPLACEMENT	Circuit Breaker	-	11.009	
SP-00331	Charlotte Street Transformer Replacement	Transformer	-	1.579	
SP-00672	Moss Moran 132kV switchgear replacement	Circuit Breaker	-	0.119	
			1,603.992	1,881.718	

Figure 17 SPT preliminary scheme outputs and expenditure

The two schemes highlighted in Figure 17 have been allocated a different scheme category from that reported in the RIIO-T1 RIGs only for the purpose of the derivation of the UCR as explained before. These have been assigned to the scheme category of the highest risk contributor in order to obtain consistent UCR values.

The table in Figure 18 below contains the UCR values per scheme category and total network level, both baseline and outturn values.

Scheme Category	Delta Risk Output (R£m)		Expenditure (£m)		Unit Cost of Risk	
	Planned	Delivered	Allowed	Outturn	UCRb	UCRo
Circuit Breaker	29.142	42.510	141.681		4.861797	
OHL Conductor	1,559.946	1,823.103	312.792		0.200515	
Reactor	1.274	1.354	16.852		13.23084	
Transformer	13.091	14.750	51.084		3.90224	
Underground cable	0.539	-	9.750		18.08104	
Total Network	1,603.992	1,881.718	532.160		0.331772	

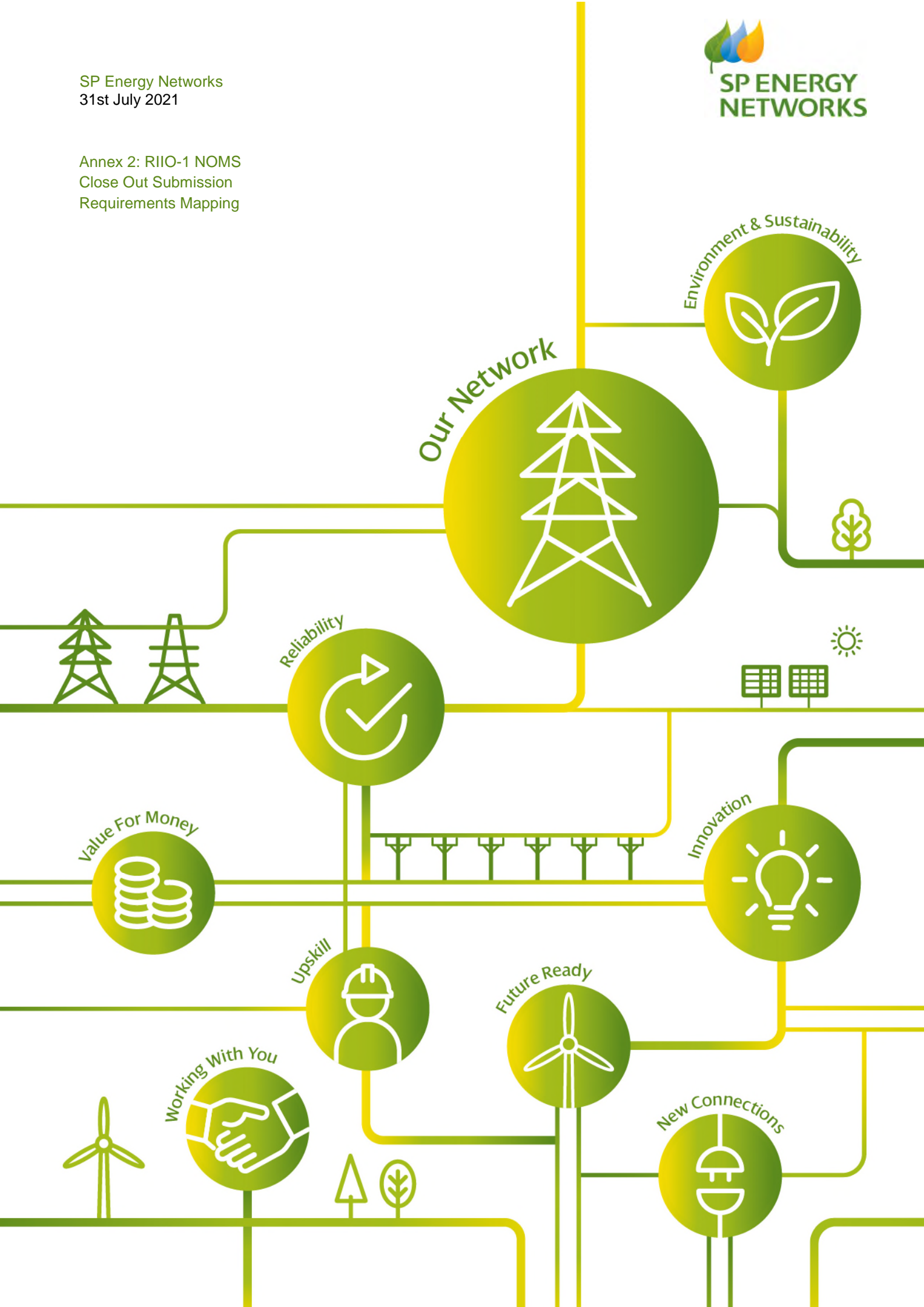
Figure 18 SPT preliminary UCR values

Applying the cost derivation methodology at asset category level as explained before, the cost associated with SPT over-delivery is indicated in the Figure 19 below:

Asset Class	Units	Normalised Target (£Rm)	Risk with intervention (£Rm)	OD-risk portion (0% deadband)	%	Cost associated (£m)
Circuit Breaker	£m	45.754	40.222	5.533	13.8%	21.14
Transformer	£m	69.380	68.927	0.452	0.7%	1.59
Reactors	£m	1.814	1.733	0.081	4.7%	0.97
Underground Cable	£m	55.845	55.867	-	0.023	0.41
OHL line	£m	3,535.111	3,253.811	281.300	8.6%	31.89
						55.17

Figure 19 SPT preliminary cost associated with Over-delivery

Annex 2: RIIO-1 NOMS
Close Out Submission
Requirements Mapping



NOMS Closeout Submission Guidance Requirement	Mapping to Section	Mapping to Page Number
Executive Summary	Chapter 1	2
Asset definitions and intervention definitions	Chapter 2	6
General assumptions	Chapter 3	7
RIIO-1 Targets	Chapter 2	8
RIIO-1 Delivery	Chapter 5	9
(i) a narrative describing the licensee's overall asset risk performance during RIIO-1, explaining whether the licensee has delivered its target of monetised network risk;	Chapter 5	9
(ii) a narrative explaining how trade-offs between different asset categories/schemes have impacted the overall asset risk performance;	Not applicable. Planned interventions not delivered or interventions introduced have been decided on their own merits	
(iii) a narrative explaining how trade-offs between different types of intervention have impacted the overall asset risk performance (for example: how the licensee has traded off between asset replacement and refurbishment work);	Chapter 5	9
(iv) a narrative of the specific schemes that have either not been delivered or have been delivered in addition to the original programme to show how they have impacted the overall asset risk performance	Chapter 5	9
(v) a narrative of activities on other non-NOMs intervention activities (such as Legal and Safety in ED or HSE-driven gas mains replacement in GD) that have impacted the overall asset risk performance.	Not applicable.	
Relevant Risk Changes – explanation of each of the Relevant Risk Changes (normalisations) reported on worksheet 3.3.1. Each Relevant Risk Change should be addressed separately. This must include, as a minimum:	Chapter 6	16

rationale for any 'free text normalisations' reported,	Chapter 6	16
details of the methodological approach used to derive values,	Chapter 2	16
rationale for choosing the derivation approach. This applies even when zero values are entered	Chapter 6	16
explanation of any assumptions applied.	Chapter 6	16
a. Methodology for deriving, or allocating, allowances by asset category – to be reported on worksheet 4.1.1. Application of the methodology must result in allowances that are consistent with RIIO-1 Final Proposals and related to the funded asset intervention volumes.	Chapter 7	21
b. Methodology for deriving, or allocating, expenditure incurred by the licensee in delivering relevant asset interventions over the RIIO-1 period – to be reported on worksheet 4.1.2.	Chapter 7	21
c. Methodology for identifying the specific delivery elements (e.g. asset categories, asset sub-categories, interventions, projects) that have contributed to over-delivery or under-delivery.	Chapter 7	21
d. Step-by-step Methodology for calculating the costs (or unspent allowances) related to the specific delivery elements identified through the methodology (point c above) and how the effect of any deadband will be accounted for.	Chapter 7	21
e. Worked examples to illustrate the application of points a to d above.	Chapter 7	21
Relevant risk changes relate to non-intervention risk changes subdivided into the following categories:	Chapter 6	16
□ Data cleansing	Chapter 6	16

□ NOMs Methodology changes which have not triggered a rebasing of targets	Chapter 6	16
□ Consequence of failure changes	Chapter 6	16
□ Differences in asset deterioration (as compared with forecast deterioration underpinning the rebased targets)	Chapter 6	16
□ Pre-RIIO-1 work true-up (Pre-RIIO-1 work changes where these have not already been addressed through rebasing)	Chapter 6	16
□ Impact of Change in Asset Base over RIIO-1	To be provided by 14/09/2021	
□ Changes covered by other mechanisms.	To be provided by 14/09/2021	