

SPD Driven 33kV Switchboard Change Programme - OFGEM justification paper	
Name of Scheme/Programme	SPD Driven 33kV Switchboard Change Programme
Primary Investment Driver	Asset Health
Scheme reference/mechanism or category	SPNLT2046 / SPNLT20115 Non-Lead Asset
Output references/type	NLRT2SP2046 / NLRT2SP20115 Non Lead
Cost	£ 8m / £3.95m
Delivery Year	RIIO-T2
Reporting Table	C0.7 Non-load Master / C2.2a Scheme Summary
Outputs included in RIIO T1 Business Plan	No

Issue Date	Issue No	Amendment Details
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1 Introduction

SP Transmission’s (SPT) interfaces with the SP Distribution (SPD) system are the 33kV connections at Grid Supply Points (GSPs). The 33kV switchgear and the cables to the associated grid or supergrid transformers are owned by SPT. The SPT switchgear is, in most cases, an integral part of a jointly owned switchboard with SPD.

SPD have a programme of works in RIIO-ED1 to replace 33kV switchboards due to asset condition or load related network requirements (e.g. fault level). This paper supports the requirement for SPT to co-ordinate with SPD to replace its assets associated with these works. The proposal includes works forecast by SPD to be part of their RIIO-ED2 plans for the period to the end of RIIO-T2.

2 Background Information

SPD are responsible for the management and replacement programme of the 33kV GSP asset base. SPD have a programme of works of 33kV board replacements for RIIO-ED1 and a proposed volume for RIIO-ED2. While these boards are predominantly SPD assets, the Grid Incomer circuit-breakers and the associated cabling are SPT assets. This paper proposes £11.95M for to replace the 33kV circuit-breakers and the associated transformer cables.

3 Optioneering

The following is a summary of the options considered for this project.

	Option	Status	Reason for rejection
1	Do nothing:	Rejected	Rejected on the basis that SPD have an agreed programme of work for RIIO-ED1 and that the associated transmission works are an inherent requirement. A proposal for RIIO-ED2 is based on the same principle.
2	Proposed SPT circuit-breaker and cable works:	Proposed	Undertake works to facilitate the delivery of the RIIO-ED1/ED2 programmes.

4 Detailed analysis

4.1 Selected option

The interfaces between SPT and SPD are the joint user 33kV switchboards at GSPs. As part of SPD’s established programme of works for RIIO-ED1 and the proposed programme of works for RIIO-ED2, SPD have identified the 33kV switchboards that they intend to replace.

In this arrangement, typically [REDACTED] circuit-breakers and the associated transformer cables are SPT owned assets. The SPT assets are included in the assessment of the condition or load-related driver for the SPT works. Additionally, due to the nature and construction of the fixed-pattern switchgear solution delivered by SPD, the SPT could not be retained in any case. To allow the delivery of these works, the SPT elements of the project are included in SPT’s RIIO-T2 business plan.

4.2 CB Costing

The [REDACTED] has been used as [REDACTED] for a transmission owned circuit-breaker in the RIIO-T2 submission.

SPD have identified the following sites for RIIO-ED1 and RIIO-ED2, with associated target delivery dates.

	Site	Business Plan	Yr	CB Vol
1	[REDACTED]	ED1 Planned	2021	[REDACTED]
2	[REDACTED]	ED1 Planned	2021	[REDACTED]
3	[REDACTED]	ED1 Planned	2021	[REDACTED]
4	[REDACTED]	ED2 Proposal	2024	[REDACTED]
5	[REDACTED]	ED2 Proposal	2024	[REDACTED]
6	[REDACTED]	ED1 Planned	2022	[REDACTED]
7	[REDACTED]	ED2 Proposal	2022	[REDACTED]
8	[REDACTED]	ED2 Proposal	2022	[REDACTED]
9	[REDACTED]	ED2 Proposal	2023	[REDACTED]
10	[REDACTED]	ED2 Proposal	2023	[REDACTED]
11	[REDACTED]	ED2 Proposal	2023	[REDACTED]
12	[REDACTED]	ED2 Proposal	2023	[REDACTED]
13	[REDACTED]	ED1 Planned	2022	[REDACTED]
14	[REDACTED]	ED2 Proposal	2024	[REDACTED]
15	[REDACTED]	ED1 Planned	2021	[REDACTED]
16	[REDACTED]	ED2 Proposal	2024	[REDACTED]

17		ED2 Proposal	2025	
18		ED2 Proposal	2025	
19		ED2 Proposal	2025	
20		ED2 Proposal	2025	

This paper presents funding costs based on [REDACTED], but acknowledges that at present the [REDACTED] cannot yet be confirmed, but has been assumed to be the [REDACTED].

The proposal is based on the agreed RIIO-ED1 and proposed ED-2 programme of works. In total [REDACTED] units are proposed for replacement in the RIIO-T2 price control period.

As there are four sites per year planned for replacement, the proposed costs are therefore £1.6m per year for the SPT element of 33kV switchboard changes through the RIIO T2 period.

4.3 Underground Cables

Associated with the 33kV switchgear change is cabling to the SPT transformer. As part of the works, these cables will require to be replaced to facilitate the installation of the new SPD 33kV Switchboard.

A review of the affected sites has determined that [REDACTED] of cable per transformer is required for each of the [REDACTED] transformers per site. This translates into [REDACTED], and [REDACTED] of cable over all sites in the RIIO-T2 period.

The [REDACTED] these cable replacements were agreed as part of the [REDACTED] and as such, [REDACTED] is assumed for the [REDACTED] elements of the RIIO-T2 works. As before, proposals are based on [REDACTED] replacing 4 sites per year with [REDACTED] transformers at each site.

This paper proposes funding based on the [REDACTED], but acknowledges that at present the [REDACTED] cannot yet be confirmed, but has been assumed to be the [REDACTED].

The proposed costs are therefore £790k per year budget for the SPT element of 33kV cable changes through the RIIO T2 Period associated with the 33kV switchboard changes.

4.4 Delivery Strategy

The delivery of these works will all be undertaken by SPD to maximise the efficiency of the programme. SPT remain responsible for the design and acceptance of its protection, plant, civil and cabling aspects of each project.

4.5 Environment & Sustainability

The SPT sustainability approach is to prioritise reuse, then refurbish and finally replace if there is no other option. Where there are opportunities to reuse or refurbish equipment they will be taken. Each site will be assessed on its individual nature and proposed solution to deliver the most sustainable, economic solution.

4.6 Innovation

Innovation is a key component to deliver developments in all aspects of work. A prime example of this is with SPD where they have applied the IEC 61850 standard for to deliver smaller, smarter switchboards. While the technology used in these projects will be standard, with a proven track record and the topology adopted in line with industry standards, SPT and SPD will explore the

market for new technologies and innovative means of project delivery and installation to deliver the works required.

5 Conclusion

SPD have agreed outputs in RIIO-ED1 to deliver 33kV switchboard changes which contain SPT assets. This paper proposes to progress the SPT elements of these works and in the proposed RIIO-ED2 volumes that fall into the RIIO T2 Price control period.

The cost of the SPT elements is £11.85m over the price control period RIIO T2 (£2.37m per year) and these works that will be delivered by SPD on behalf of SPT. SPT remain responsible for the design and acceptance of its protection, plant, civil and cabling aspects of each project.

- Costs: £ 11.85 m
- Timing of investment: RIIO-T2 period
- Declared outputs: 40 33kV CBs
 3.0km 33kV Cable

6 Future Pathways – Net Zero

We have reviewed this project against the criteria set out within the business plan guidance and have assessed that it does not prevent achievement of our Net Zero plans or lead to stranded assets

7 Outputs included in RIIO T1 Plans

N/A