

SF6 repair works – OFGEM Justification Paper	
Name of Scheme/Programme	SF6 repair works
Primary Investment Driver	Asset Health
Scheme reference/mechanism or category	SPNLT20140/ Circuit Breaker
Output references/type	NLRT2SP20140 / (33kV CB OD / 132kV CB OD / 275kV CB OD / 275kV CT / 400kV CB OD / 400kV CB ID)
Cost	£4.77m
Delivery Year	2026
Reporting Table	C0.7 / C2.2a_CI / C2.2a_AP / C2.3 / C2.4b / C2.5a / C2.5
Outputs included in RIIO T1 Business Plan	No

Issue Date	Issue No	Amendment Details
December 2019	Issue 1	First issue of document

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1 Introduction

SPT identified a number of SF₆ circuit-breakers and SF₆ current transformers which required SF₆ leakage repairs in the past, and it is anticipated that further efforts to prevent leakage will be undertaken during the RIIO-T2 period. The proposed repair, refurbishment and replacement works identified are specific to the site and exclusive to the type of electrical equipment and are those which would be undertaken in the event of new faults developing.

Both refurbishment and replacement are deemed to be effective measures to prevent SF₆ leakage and the most efficient option will be selected. Based on a detailed technical review, some of the units have been considered for refurbishment as the most effective means of minimising SF₆ leakage, while for some units, considering the source and nature of the leakage, replacement is the proposed solution.

The number of units for which intervention has been proposed is as follows:

	400kV CB ID	400kV CB OD	275kV CB OD	275kV CT	132kV CB OD	33kV CB OD
Asset addition / activity units	4	9	2	6	4	1
Asset disposal units	0	4	1	0	4	1

Please note that interventions are also being considered on a number of non-lead SF₆ filled GIS components viz. GIS disconnectors and earthing switches at Torness 400kV substation and the SF₆ switching disconnectors at Hunterston 400kV substation. Please refer to Annex A for details.

2 Selection criteria:

The intervention for each asset has been engineered based on the type of electrical equipment and historical specific SF₆ leakage issues. If maintenance through repairs would not be possible and/or effective, the options are refurbishment or replacement. As noted above, both of these options are considered to be effective measures to prevent leakage, so the option considered to be the most efficient has been selected.

The list of circuit-breakers which may require intervention along with the site details and type of intervention involved are set out in Annex A.

3 Optioneering

As reduction in SF₆ leakage on the SP Transmission network is one of the key priorities for SPT in RIIO-T2, no options to defer works which may be necessary has been considered. The works are considered to be those that will be required during the RIIO-T2 period.

In case of 132kV Circuit breaker replacements, the units are proposed to be replaced with a 132kV SF₆-free alternative in line with SPT's environmental strategy for RIIO-T2.

4 Cost Benefit Analysis (CBA) results

No CBA has been carried out considering that intervention for the units in Annex A in RIIO-T2 is necessary in the event of recurrence of SF₆ leaks.

5 Conclusion

Please find below the total cost for this programme. Please note that this programme forecasts the necessary interventions throughout the RIIO-T2 period.

- Total cost: £ 4.77m
- Delivery year: 2026

6 Future Pathways – Net Zero

6.1 Primary Economic Driver

We have reviewed the activities discussed in this justification paper against the criteria set out within Ofgem’s Business Plan Guidance and have assessed that they do not prevent achievement of our Net Zero plans or lead to stranded assets.

7 Outputs included in RIIO T1 Plans

This scheme does not contain any outputs or costs included in the RIIO-T1 business plan.

8 Annexes:

Annex A: RIIO-T2 SF6 repair works

8.1 Annex A: RIIO-T2 SF6 repair works

Substation	Asset	RIIO-ET2 planned intervention
Eccles 400kV substation	Eccles 400kV-X1005	Replace
Torness 400kV substation	Torness 400kV-X120	Refurbish
Torness 400kV substation	Torness 400kV-X220	Refurbish
Torness 400kV substation	Torness 400kV-X320	Refurbish
Torness 400kV substation	Torness 400kV-X420	Refurbish
Longannet 275kV substation	Longannet 275kV -W60 - W64 CT Yellow	Refurbish
Torness 400kV substation	Torness 400kV-X520	Refurbish
Torness 400kV substation	Torness 400kV-X620	Refurbish
Fallago 400kV substation	FALLAGO 400-X410	Maintain
Longannet 275kV substation	Longannet 275kV -F75-F74 Blue CT	Refurbish
Longannet 275kV substation	Longannet 275kV -F44 Bφ CT	Refurbish
Longannet 275kV substation	Longannet 275kV -F35-F36 YELLOW	Refurbish
Longannet 275kV substation	Longannet 275kV -W86 Red Phase	Refurbish
Longannet 275kV substation	Longannet 275kV -L40/L44CT Y PHASE	Refurbish
Grangemouth 275kV substation	Grangemouth 275kV-S10	Maintain
Strathaven 400kV substation	Strathaven 400kV-X1110	Maintain
Torness 400kV substation	Torness 400kV-X720	Refurbish
Torness 400kV substation	Torness 400kV-X820	Refurbish
Eccles 400kV substation	Eccles 400kV-X805	Replace
Hunterston 400kV substation	Hunterston 400kV-X318	Maintain until replacement ¹
Hunterston 400kV substation	Hunterston 400kV-X518 Pole 5	Maintain until replacement ²
Strathaven 400kV substation	Strathaven 400kV-X905	Maintain
Torness 400kV substation	Torness 400kV-X140	Maintain
Torness 400kV substation	Torness 400kV-X340	Maintain
Eccles 400kV substation	Eccles 400kV-X130	Replace
Smeaton 275kV substation	Smeaton 275kV-S40	Replace
Glenluce 33kV substation	Glenluce 33kV-Grid 2 CB	Replace
Eccles 400kV substation	Eccles 400kV-X405	Replace
Mossmoran 132kV substation	Mossmorran 132KV-120	Replace
Devonside 132kV substation	Devonside 132kV	Replace
Eccles 132kV substation	Eccles (GALA 2) 132kV	Replace
Eccles 132kV substation	Eccles (SGT2W) 132kV	Replace

¹ This asset is proposed for decommissioning. Please refer to EJP_SP_NLT2036

² This asset is proposed for decommissioning. Please refer to EJP_SP_NLT2036