Easterhouse 275kV Disconnector Replacement - OFGEM Justification Paper	
Name of Scheme/Programme	Easterhouse 275kV Disconnector Replacement
Primary Investment Driver	Asset Health
Scheme reference/ mechanism or category	SPNLT2098 / Disconnector
Output references/type	NLRT2SP2098 / Non-Lead
Cost	£0.2m
Delivery Year	2024
Reporting Table	C0.7 / C2.2a
Outputs included in RIIO T1 Business Plan	No

Issue Date	Issue No	Amendment Details
July 2019	Issue 1	First issue of document
December 2019	Issue 2	Costs updated, general editorial changes.

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1 Introduction

This document is part of SPT's strategy for non-lead asset intervention in substations for the RIIO-T2 price control period. Following the summary of condition assessments carried out at Easterhouse 275kV substation, intervention options have been generated.

Commissioned in 1965, Easterhouse 275kV substation has been in continual service and subject to several modernisation and reinforcement projects. SGT2 was replaced in 2003 and circuit breaker S10 was replaced in 2008 including the associated disconnectors and earth switches. SGT1 and the associated disconnector and earth switch were also replaced in 2014. This report highlights the needs case for intervention on the remaining original line disconnector. It is expected that this disconnector replacement will be replaced during outage year 2024 as per the business plan.

- 275kV Disconnector addition: 1 unit
- 275kV Disconnector disposal: 1 unit

2 Background Information

Intervention has been determined to be necessary following a condition assessment to determine the remaining life of the asset.

The SPT strategy for disconnectors and earth switches will be a parallel process of replacement based on condition assessment and increased maintenance intervention to ensure an optimal level of performance.

At Easterhouse there are 7 disconnectors, one of these (F23) has been in service since the site's commissioning in 1965 the others were replaced as part of the activities described in section 1. The remaining original disconnector is exhibiting electrical and mechanical component deterioration that has required continual assessment and minor intervention.

Following condition assessments, the disconnectors that have been replaced are in good condition. The F23's control relays and contactors are prone to failure resulting in the disconnector becoming non-operable or only operable by hand. Hand operation requires two persons to carry this out. Additionally, F23 has a fault with the interlocking circuit and can only be operated by on-site personnel. It has been determined that the disconnector F23 requires intervention.

Specific Asset	General Condition	Electrical Component	Mechanical Component
F23 Disconnector	2 – Slight pitting	4 – Deterioration, consider intervention	3 – Requires assessment and monitoring

3 Optioneering

A summary of the options considered for interventions for the disconnector were as follows:

	Option	Status	Reason for rejection
1	No Intervention	Rejected	Does not manage the network risks from the condition assessment or the presence of the electrical failure.
2	Refurbishment in RIIO-T2	Rejected	A cost comparison between refurbish and replacement (taken from previous project costs) demonstrates that refurbishment is not cost effective.
3	Replacement in RIIO-T2	Proposed	-
4	Refurbishment in RIIO-T3	Rejected	The disconnector is set to reach end of life by the end of the RIIO-T2 period (2026). Due to the network risk and approaching end of life, RIIO-T3 intervention is not viable.
5	Replacement in RIIO-T3	Rejected	The disconnector is set to reach end of life by the end of the RIIO-T2 period (2026). Due to the network risk and approaching end of life, RIIO-T3 intervention is not viable.

4 Detailed analysis

A summary of the options considered for interventions for the disconnector were as follows:

Option 1 – No Intervention

Option 2 – Refurbishment in RIIO-T2

Option 3 – Replacement in RIIO-T2

Option 4 – Refurbishment in RIIO-T3

Option 5 – Replacement in RIIO-T3

Option 1: No Intervention

The option to do nothing was considered but the results from the condition assessment and the presence of the electrical failure it was discounted and feasible options to refurbish or replace were taken forward.

Option 2: Refurbishment in RIIO-T2

There was a previous disconnector refurbishment carried out at Giffnock 275kV Substation. Refurbishment and costs are comparable with the replacement cost of a Disconnector.

Option 3: Replacement in RIIO-T2

Replacement of the disconnector would include complete removal and like for like replacement. This option is proposed.

Options 4 & 5: Intervention in RIIO-T3

The disconnector is set to reach end of life by the end of the RIIO-T2 period (2026). Due to the network risk and approaching end of life, RIIO-T3 intervention is not viable.

5 Conclusion

The options considered were: No intervention, RIIO-T2 refurbishment, RIIO-T2 replacement, RIIO-T3 refurbishment and RIIO-T3 replacement with the RIIO-T2 replacement of the F23 disconnector being the preferred option:

- Cost: £0.2m
- Timing of investment: RIIO T2 period, construction during 2024.
- Declared outputs: Addition – 1 unit, Disposal – 1 unit.

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

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