



## 4ZC Route 132kV Overhead Line Modernisation

ED2 Engineering Justification Paper Addendum

**ED2-NLR(A)-SPM-009-OHL-EJP-ADD**

Issue	Date	Comments
Issue 0.1	Aug 2022	Internal Draft for Review
Issue 0.2	Aug 2022	Internal Draft with Comments Addressed
Issue 1.0	Aug 2022	First Issue - Draft Determination Response

<b>Scheme Name</b>	4ZC Route 132kV Overhead Line Modernisation		
<b>Primary Investment Driver</b>	Asset Health		
<b>Activity</b>	Overhead Line Condition Modernisation		
<b>Reference</b>	ED2-NLR(A)-SPM-009-OHL-ADD		
<b>Output</b>	132kV Steel Tower Overhead Line Modernisation		
<b>Cost (20/21 Prices)</b>	£2.287m		
<b>Delivery Year</b>	2026/27		
<b>Reporting Table</b>	CV7a		
<b>Outputs Included in EDI</b>	Yes/No		
<b>Business Plan Section</b>	Ensuring a Safe and Reliable Electricity Supply		
<b>Primary Annex</b>	Annex 4A.14: SP Manweb 132kV Plant and Circuits Strategy		
<b>Spend Apportionment</b> (20/21 Prices)	RIIO-ED1 - £2.287m	RIIO-ED2 - -	RIIO-ED3+ - -

	<b>Proposed by</b>	<b>Endorsed by</b>	<b>Approved by</b>
<b>Name</b>	Shengji Tee	Ralph Eyre-Walker	Mark Chamberlain
<b>Signature</b>			
<b>Date</b>	23.08.2022	23.08.2022	23.08.2022



## I Purpose

This addendum has been prepared to provide additional information and justification to ED2-NLR(A)-SPM-009-OHL EJP 4ZC Route 132kV Overhead Line Modernisation following receipt of RIIO ED2 Draft Determination. The content of addendum is in response to comments and feedback provided by Ofgem as to the “Partially Justified” status of the EJP. The purpose of this document is to support Ofgem’s assessment for Final Determination including supporting any associated impact on engineering adjustments within Ofgem’s financial modelling

## 2 Ofgem Comments & Feedback

### 2.1 RIIO-ED2 Draft Determination SPEN Annex

The following comments are taken from Table 27 of “RIIO-ED2 Draft Determination SPEN Annex”.

**Ofgem Comment** Partially Justified. We agree with the needs case and optioneering presented by SPEN. However, previous discussions with NGET to upgrade the 132kV route to 400kV were driven by new nuclear power stations, which did not materialise. We consider there remains uncertainty in the optimum whole system solution

**Ofgem Identified Risks** - There is a deliverability risk in relation to this EJP due to the uncertainty associated with the whole system solution

## 3 Additional Justification

We have deferred the modernisation of the 4ZC Route for several years in anticipation of the works by NGET (associated with Wylfa). The condition of our conductors on the 4ZC Route have deteriorated and are now assessed as having reached the end of their safe and serviceable life so must be replaced during the RIIO ED2 period

An excerpt from a third-party condition assessment report (dated 20 July 2011) was provided in Section 9 of the EJP. This indicated an estimated remaining service life of 10-15 years for the conductors and fittings, suggesting the need for replacement by 2026 latest.

The poor condition of these assets is further evidenced by a more recent condition assessment completed by a different third-party on 22 October 2021. Excerpts from this report can be found below in Figure 1 and Figure 2.

 Babcock  
trusted to deliver™

4ZC Condition Assessment 50257

---

**1 Summary**

This report details the results of the condition assessment carried out on the 4ZC 132kV route from tower 4ZC005 to 4ZC070 a total of 55 towers. Tower 4ZC007 was not accessible and some part of the route has been undergrounded. The condition assessment has been carried out to ascertain the condition of tower steelwork, foundation muffs, step bolts, anti-climbing devices (ACDs), tower furniture, fittings, insulators and conductor.

In general, it is observed that tower steelwork is in reasonable condition with some bars requiring replacement. The fittings, insulators and conductor are in need of full replacement.

See Appendix A for details of step bolts, ACDs, muffs and tower signage conditions.

Figure 1: Summary from Babcock condition assessment report, 22 October 2021

 Babcock  
trusted to deliver™

4ZC Condition Assessment 50257

---

**7 General Conclusion**

The pictures taken during the survey show insulators and fittings in varying degrees of deterioration. Pictures from various points along the route have been inserted in this report from the survey to provide a representative illustration of the condition throughout.

From the pictures taken during the survey, many of the fittings appear to be in poor condition with little or no zinc protection remaining. There is considerable evidence that the asset is in need of full refurbishment. The ongoing worsening state of the materials overtime will accelerate as the current levels of zinc protection reduce.

Due to the severe condition of some fittings there would also be concern that extreme weather conditions may adversely impact the already fatigued components and may cause a catastrophic failure along the line.

Therefore it is recommended that full refurbishment works on this line be carried out within the next 12 months or sooner if possible in order to reinstate the original level of reliability of the asset.

Figure 2: Summary from Babcock condition assessment report, 22 October 2021

It is our view that we cannot justify the significant additional cost of reconductoring and re-insulating the route to a 400kV standard, therefore we have chosen a conductor system that satisfies our design specification for operation at 132kV, with a conductor rated to match the demand supply requirements of the load group the route serves.

We will continue to review this position in collaboration with NGET as the project progresses.