Scottish & Southern Electricity Networks

# Sloy – Windyhill West 132kV OHL Works

# Engineering Justification Paper



## 1. Executive Summary

Our paper A Risk Based Approach to Asset Management[1] sets out our approach to network risk and how we subsequently identify assets that require intervention to limit the rise of risk over the RIIO-T2 period.

This paper identifies the need for intervention on the OHL asset between Sloy and Windyhill. The primary driver for the refurbishment works in this project is the asset condition of the existing OHL.

Following optioneering and detailed analysis, as set out in this paper, the proposed scope of works is:

- Full reconductoring of the phase conductor with Upas AAAC, as well reconductoring of the earthwire with Keziah OPGW ACSR;
- All tension insulator sets are to be replaced as well as any severely rusted insulator sets, and
- earthwire and phase conductor fittings are also to be replaced;
- Steelwork members on all towers are to be painted, all step bolts are to be replaced, and damaged steelwork identified at three towers is to be rectified; and,
- Foundation upgrade works will take place on all out of alignment towers, and concrete muffs and stubs identified as being damaged will be refurbished and painted.

This scheme will cost £16.8m to deliver the following outputs and benefits during the RIIO T2 period:

- A long-term monetised risk benefit of R£364.8m;
- A reduction of total network risk calculated at R£2m; and,
- Improved operational flexibility and resilience in line with our goal to aim for 100% transmission network reliability for homes and businesses.

The Sloy – Windyhill West 132kV OHL Works project is not flagged as eligible for early or late competition due to it being under Ofgem's £50m and £100m thresholds respectively.



[1]A Risk Based Approach to Asset Management

| | |
|---|---|
| **Name of Scheme/Programme** | Sloy – Windyhill West 132kV OHL Works |
| **Primary Investment Driver** | Asset Health (Non-Load) |
| **Scheme reference/ mechanism or category** | SHNLT201 |
| **Output references/type** | NLRT2SH201 |
| **Cost** | £16.8m |
| **Delivery Year** | RIIO T2 Period |
| **Reporting Table** | C0.7_Non_Load_Master_Data |
| **Outputs included in RIIO T1 Business Plan** | No |

## 2. Introduction

This Engineering Justification Paper sets out our plans to undertake refurbishment works of existing assets during the RIIO-T2 period (April 2021 to March 2026). The planned work is on the Sloy – Windyhill West 132kV OHL as shown on the map in Figure 1:

The Engineering Justification Paper is structured as follows:

**Section 3: Need**

This section provides an explanation of the need for the planned works. It provides evidence of the primary and, where applicable, secondary drivers for undertaking the planned works. Where appropriate it provides background information and/or process outputs that generate or support the need.

**Section 4: Optioneering**

This section presents all the options considered to address the need that is described in Section 3. Each option considered here is either discounted at this Optioneering stage with supporting reasoning provided or is taken forward for detailed analysis in Section 5.

**Section 5: Detailed Analysis**

This section considers in more detail each of the options taken forward from the Optioneering section. Where appropriate the results of Cost Benefit Analysis are discussed and together with supporting objective and engineering judgement contribute toward the identification of a selected option. The section continues by setting out the costs for the selected option.

**Section 6: Conclusion**

This section provides summary detail of the selected option. It sets out the scope and outputs, costs and timing of investment and where applicable other key supporting information.

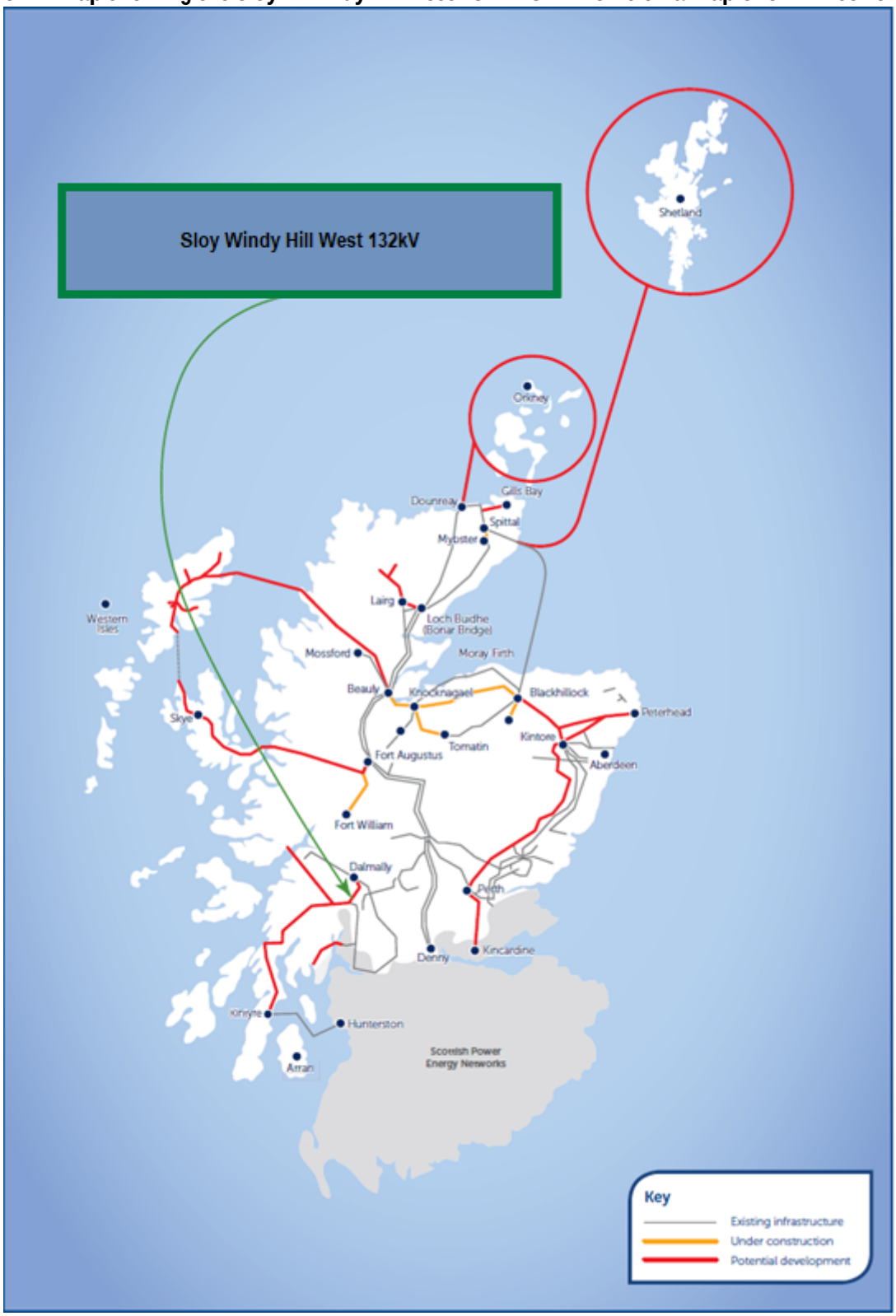
**Section.7 Price Control Deliverables and Ring Fencing**

This section provides a view of whether the proposed scheme should be ring-fenced or subject to other funding mechanism.

**Section 8: Outputs included in RIIO-T1 Business Plan**

This section identifies if some or all the outputs were included in the RIIO-T1 Business Plan and provides explanation and justification as to why such outputs are planned to be undertaken in the RIIO-T2 period.

**Figure 1 – Map showing the Sloy – Windyhill West 132kV OHL works on a map of SHET network.**



## 3. Need

This section provides an explanation of the need for the planned works. It provides evidence of the primary and, where applicable, secondary drivers for undertaking the planned works. Where appropriate it provides background information and/or process outputs that generate or support the need.

### 3.1. Background

There are two 132kV double circuit OHLs between Sloy substation and Windyhill substation. This justification paper considers the Sloy – Windyhill West OHL circuit. This is a 132kV double circuit formed of steel lattice towers in the south west region of our network. The circuits were constructed in 1951 connecting Sloy power station to Windyhill substation. We own part of the line and Scottish Power Transmission (SPT) own part of the line, with the ownership boundary being tower 51. This document only refers to proposed refurbishment works on our section of the line.

Our section of the circuit is 14.5km in length and consists of 51 PL16 type steel lattice towers. The circuit is strung with single Lynx ACSR phase conductors and a Horse ACSR earth wire conductor.

In 1978 reconductoring works were undertaken to replace the phase conductors on this line. The earth wire was replaced in 1994. By the end of RIIO T2 the conductors will be 48 years old, while the earth wire will be 32 years old.

### 3.2. Asset Need

An Asset Condition Report[2] (ACR) has been prepared for this circuit which identified a need for intervention. The ACR draws upon information from a variety of sources with the key points summarised below.

The ACR details that there is significant steelwork corrosion present throughout the line. The current paint has diminished to an extent where it is largely no longer providing any protection. The corrosion will now be actively reducing the remaining overall service life of the structures and without intervention will deteriorate beyond repair. Damaged steelwork members have been identified at three towers, consisting of a damaged leg member at one tower and bent leg bracings at the other two towers. In addition, step bolts have been identified to be heavily corroded throughout the circuit.

The most recent survey information available demonstrates that there are three towers where the condition of conductor fittings is showing signs of significant wear. A significant proportion of all fittings have been noted as grade 3 condition or worse which indicates that replacement should be

[2] Sloy – Windhill West 132kV OHL Works Asset Condition Report T2BP-ACR-0013

undertaken to prevent future failure of the fittings and any consequential damage to other components.

When considering the mechanical performance of insulator sets there is a high presence of rust evident on 45% of all insulator sets. At eight of the towers the rust levels are recorded as severe. Tension insulator sets in particular are showing the highest levels of corrosion and are recommended for replacement.

The conductor will be 48 years old by the end of the RIIO T2 period. This is within the industry mean asset life of 54 years, but it is over the component design life of 40 years. SPT have reconductored their section within the RIIO T1 period. It is likely that if reconductoring works are not undertaken in RIIO T2, then the work would need to be undertaken within RIIO T3.

SPT have undertaken refurbishment on their section of the OHL (tower 51 to Windyhill substation) within RIIO T1 period. Lessons learned from this work has highlighted a number of towers that are identified as being out of vertical alignment due to being constructed on steep slopes.

Following the completion of a detailed assessment using finite element analysis modelling tools, which were not available during the original design, it has been identified that there are potential clearance infringements present if the conductor reaches maximum operating temperature during the summer months. As such there is a requirement to propose mitigation of the potential infringements in 8 spans to ensure the line is fully compliant with ESQCR clearance requirements.

For the RIIO T2 period, the ACR recommends:

- Paint steelwork members on all towers, replace fittings and assemblies that have been identified as worn or corroded, and replace all degraded step bolts;
- Steelwork members identified as damaged at three towers should be rectified;
- Replace all tension insulator sets on the circuit and replace insulators sets identified as severely deteriorated;
- Refurbish any damaged concrete muffs and stubs, and paint those identified as having worn coatings; and,
- Work is also required to achieve increased ground clearances along the circuit to comply with current ESQC Regulations. The solutions to be adopted will be a combination of re-profiling the ground under the line, using panel extensions on the existing towers, or replacing the tower completely.

The network asset risk and the condition assessment report have shown the need to undertake refurbishment works on this OHL circuit to prevent further deterioration of the existing assets.

### 3.3. Growth Need

Currently there is no load related driver to increase the ratings of our section of the Sloy – Windyhill West circuit. The Future Energy Scenarios (FES) out to 2050 have shown very limited growth in embedded generation on Scottish Hydro Electric Power Distribution's (SHEPD) network at Sloy, Clachan, and Ardkinglas GSPs. It is the connection of generation to the network at these nodes that would have the biggest influence on the power flow through the circuits. The proposed long-term strategy for the Argyll and Kintyre network will see a decrease in power flows through the Inveraray – Sloy 132kV circuits, which will ultimately lead to a reduction in flows through the Sloy Windyhill double circuits.

## 4. Optioneering

This section presents all the options considered to address the need that is described in Section 3. Each option considered here is either discounted at this Optioneering stage with supporting reasoning provided or is taken forward for detailed analysis in Section 5. Table 1 lists each option and a brief summary.

**Table 1 – Option summary table**

| Option | Option Detail | Taken Forward to Detailed Analysis |
|---|---|---|
| **Do Nothing Option** | Undertake no refurbishment work on the assets. | No |
| **1** | Replace tension insulator sets, rectify damaged steelwork, mitigate potential clearance infringements, steelwork members painted, and step bolts replaced. | Yes |
| **2** | Reconductor phase conductors and earth wire, tower foundation upgrades, replace tension insulator sets, rectify damaged steelwork. Steelwork members painted and step bolts replaced. | Yes |
| **3** | Reconductor phase conductors and earth wire, tower replacements for out of alignment towers, replace tension insulator sets, rectify damaged steelwork. Steelwork members painted and step bolts replaced. | No |

**Do Nothing Option**

The do nothing option does not undertake any refurbishment on the OHL circuit. This option has been discounted at this stage as the network asset risk and asset condition assessments have concluded a need to refurbish the assets.

**NOT PROGRESSED TO DETAILED ANALYSIS**

**Option 1**

This option considers;

- Following recent finite element analysis carry out tower upgrades and ground clearance mitigations to ensure compliance with minimum statutory clearances. Two tower replacements are required along with eight panel extensions;
- All tension insulator sets are to be replaced as well as any severely rusted insulator sets, and earthwire conductor fittings at identified towers are also to be replaced.
- Steelwork members on all towers are to be painted, all step bolts are to be replaced, and damaged steelwork identified at three towers is to be rectified.
- Concrete muffs and stubs identified as being damaged will be refurbished and painted.

This option will result in the existing route and structures being re-utilised. All of the recommendations from the condition assessment report will be completed. This option is progressed to detailed analysis to be included within the CBA.

**PROGRESSED TO DETAILED ANALYSIS**

**Option 2**

Option 2 is an option that seeks to bring forward works that could be completed beyond the RIIO T2 period and coordinate these with the asset intervention works identified by the Asset Condition Report as being required during RIIO T2. This option considers:

- Full reconductoring of the phase conductor with Upas AAAC, as well reconductoring of the earthwire with Keziah OPGW ACSR. As Upas conductor is stronger than Lynx conductor, this option requires tower and foundation strengthening as well as clearance infringement mitigations to ensure minimum statutory clearances are met. Four tower replacements are required along with ten panel extensions;
- A conductor assessment undertaken has identified Upas AAAC as the replacement for Lynx ACSR conductors. The replacement of ACSR conductors with AAAC is standard industry practice, as ACSR conductors are gradually being phased out by suppliers and are unlikely to become standard products in the future. Upas has been selected as the replacement for Lynx

ACSR as it has been widely used on the GB network and meets the electrical and mechanical requirements of the OHL;

- All tension insulator sets are to be replaced as well as any severely rusted insulator sets and earthwire and phase conductor fittings are also to be replaced;
- Steelwork members on all towers are to be painted, all step bolts are to be replaced, and damaged steelwork identified at three towers is to be rectified; and,
- Foundation upgrade works will take place on all out of alignment towers, and concrete muffs and stubs identified as being damaged will be refurbished and painted.

This option will result in the existing route and structures being re-utilised. All of the recommendations from the condition assessment report will be completed, and by completing the reconductoring works the potential requirement to return at a later date will be removed. This option is progressed to detailed analysis to be included in the CBA to determine if there are benefits to undertaking the reconductoring works in T2 rather than beyond T2.

Option 2 also presents the opportunity to reduce the exposure of operatives to a live network environment thus providing health and safety benefits through avoidance of additional work. Furthermore, the impact of the works to upgrade the network can be reduced through coordination of activities providing benefit to stakeholders and landowners through the reduction of potentially disruptive construction activities.

**PROGRESSED TO DETAILED ANALYSIS**

**Option 3**

This option considers:

- the full reconductoring of the phase conductor with Upas AAAC, as well reconductoring of the earthwire with Keziah OPGW ACSR. As Upas conductor is stronger than Lynx conductor, this option requires tower and foundation strengthening as well as clearance infringement mitigations to ensure minimum statutory clearances are met. Six tower replacements are required along with ten panel extensions.
- All tension insulator sets are to be replaced as well as any severely rusted insulator sets, and earthwire and phase conductor fittings are also to be replaced.
- Steelwork members on all towers are to be painted, all step bolts are to be replaced, and damaged steelwork identified at three towers is to be rectified.
- New towers will be constructed to replace all out of alignment towers, and concrete muffs and stubs identified as being damaged will be refurbished and painted.

This option will result in the existing route and structures being re-utilised. All of the recommendations from the condition assessment report will be completed, and by completing the reconductoring works the potential requirement to return at a later date will be removed.

However, there is additional costs, associated with the new towers which replace out of alignment towers, compared to Option 2 with no discernible benefits. As a result, this option is not recommended to proceed to detailed analysis.

**NOT PROGRESSED TO DETAILED ANALYSIS**

## 5. Detailed Analysis

This section considers in more detail each of the options taken forward from the Optioneering section. Where appropriate the results of Cost Benefit Analysis are discussed and together with supporting objective and engineering judgement contribute toward the identification of a selected option. The section continues by setting out the costs for the selected option.

### 5.1. Cost Benefit Analysis

Option 1 and Option 2 have been taken forward to detailed analysis and have been included in the Cost Benefit Analysis (CBA). The non-load asset condition requirement is addressed through the baseline option – Option 1. The CBA is being undertaken to help determine if it is beneficial, from a cost benefit perspective, to advance the reconductoring of the OHL in to the T2 period.

NPV's for the both options were calculated and compared against each other. The output from the CBA is shown in Table 2.

**Table 2 – CBA results for the Sloy – Windyhill West 132kV OHL Works.**

| CBA Reference | Total Forecast Expenditure (£m) | Total NPV (£m) | Delta (Option to baseline £m) | Total NPV (Incl. Monetised Risk £m) |
|---|---|---|---|---|
| **Baseline** (Option 1) | -£31.65 | -£22.67 | | £116.86 |
| **Option 2** | -£29.26 | -£23.12 | -£0.45 | £143.78 |

The CBA has shown that in the analysis of the two options both options are comparable, with the NPV being very marginally better for Baseline Option 1 by £0.45m. When taking account of monetised risk within the total NPV, Option 2 has a higher comparable NPV. The proposed solution is Option 2.

In line with the stakeholder feedback presented in A Risk Based Approach to Asset Management, bringing forward the phase conductor replacement works to align with the RIIO T2 tower refurbishment and fitting replacement is demonstrated to be a cost-effective solution

that brings value to stakeholders and consumers. The stakeholder benefits are centered around the reduction of SHE Transmission construction activity in the region, security of supply through the optimisation of construction outages and the reputational and safety aspects associated with only accessing the OHL structures once.

Based on the evidence presented in the Asset Condition Report, engineering assessments, consideration of future load requirements and CBA; the preferred solution is Option 2, full refurbishment of existing circuit and reconductoring with Upas conductor.

### 5.2. Project Sensitivity

As outlined in our core RIIO-T2 business plan document, "A Network for Net Zero", we believe we have a critical role to play in delivering Net Zero ambitions in both the UK and Scotland. Therefore our plan has been carefully designed with the flexibility to deliver pathways to Net Zero. Our policy paper "A Risk-Based Approach to Asset Management" outlines our approach to monitoring and assessing the condition of our assets to maintain the reliable and resilient network that is expected by our stakeholders. Where asset condition deteriorates, we undertake a programme of cost-effective, risk-based interventions to maintain the longevity and performance of the transmission network. Each of our non-load related projects for T2 is underpinned by Asset Condition Reports which clearly outline that the works are necessary and driven by reliability.

**Table 3 – Sensitivity Analysis table.**

| Sensitivity | Test and impact observed – switching inputs |
|---|---|
| **Asset Performance / deterioration rates** | Switching deterioration assumption:<br>The asset performance / deterioration rates can only improve or deteriorate. As the need for this project is driven by an asset condition report (as outlined in Section 3), the asset condition will not improve in the intervening period. The second option is for the asset performance to deteriorate and therefore the need remains, and the project would be considered for advancement within available outages. |
| **Ongoing efficiency assumptions** | Switching efficiency assumption: increased or decreased. Test would have no impact on (feasible) option selection, as the options move in parallel and have no impact on ordering within CBA. |
| **Demand variations** | No significant demand forecast. |
| **Energy scenarios** | Sensitivity considered in Section 3 (Need) already.<br>As this is a non-load project and the need is driven by the asset condition, the work would be required regardless of any changes to the energy scenarios. |

| | |
|---|---|
| **Asset utilisation** | Our policy paper "A Risk-Based Approach to Asset Management" outlines our approach to monitoring and assessing the condition of our assets to maintain the reliable and resilient network that is expected by our stakeholders. Where asset condition deteriorates, we undertake a programme of cost-effective, risk-based interventions to maintain the longevity and performance of the transmission network. Each of our non-load related projects for T2 is underpinned by Asset Condition Reports which clearly outline that the works are necessary and driven for reliability. |
| **Timing / delivery** | We have considered timing of investments as part of our CBAs. |
| **Consenting / stakeholders** | Where applicable we have considered consenting and stakeholder engagement as part of section 5 (Detailed Analysis) and the impact which this has had on the selection of the preferred solution. |
| **Public policy / Government legislation** | We have considered the impact of public policy, government legislation and regulations as part of the need (Section 3), optioneering (Section 4) and detailed analysis (Section 5) and the impacts this has on the selection of the preferred solution. For example the projects have considered the impact of the UK Governments' Net Zero emission by 2050 target, SQSS and ESQCR. |

### 5.3. Proposed Solution

Based on the output of the CBA the proposed solution we propose to proceed with in RIIO T2 is Option 2 as detailed in Section 4 Optioneering of this justification report. The NPV within the CBA was comparative for Option 1 and Option2. However, the requirement to reconductor at a later date would result in re-mobilising and returning to site for a second time to carry out the reconductoring and tower foundation works. This requirement to re-mobilise would be removed by undertaking the works within the RIIO T2 period. Therefore, the proposed option for this project is Option 2.

This option is the full reconductoring of the phase conductor with Upas AAAC, as well reconductoring of the earthwire with Keziah OPGW ACSR. As Upas conductor is stronger than Lynx conductor, this option requires tower and foundation strengthening as well as clearance infringement mitigations to ensure minimum statutory clearances are met. All tension insulator sets are to be replaced as well as any severely rusted insulator sets, and conductor fittings. Steelwork members on all towers are to be painted, all step bolts are to be replaced, and damaged steelwork identified at three towers is to be rectified. Concrete muffs and stubs identified as being damaged will be refurbished and painted.

The cost of the preferred option for works on Sloy – Windyhill West scheme has been developed using rates from existing overhead line framework contracts and benchmarks delivered RIIO-T1 projects. The total cost for delivering the scope of works for the preferred solution is £16.79m. The works are planned to be completed within the RIIO T2 period.

**Table 4 – Outputs from Preferred Solution**

| Plant | Size of new plant | Replacement for |
|---|---|---|
| **132kV overhead line** | 14.5km Upas AAAC<br>14.5km Keziah OPGW<br>4 x towers<br>10 x panel extensions | 14.5km Lynx ACSR<br>14.5km Horse ACSR earthwire<br>4 x towers<br>- |

### 5.4. Competition

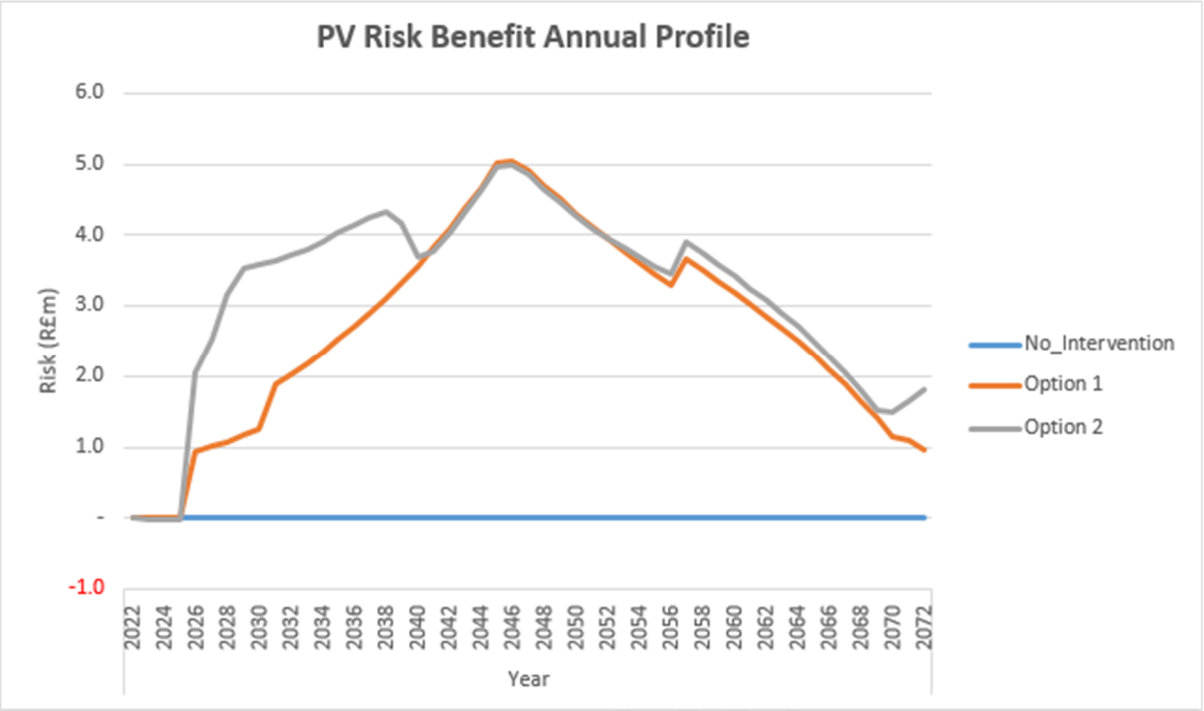
The Sloy – Windyhill West 132kV OHL Works project is not flagged as eligible for early or late competition due to it being under Ofgem's £50m and £100m thresholds respectively.

### 5.5. Risk Benefit

A Risk Benefit Analysis has been carried out in order to compare "no intervention" against the selected "with intervention" option. Please note that while monetised risk is denoted as a financial figure, it is important to note that it is not "real" money and does not correspond to the cost that SHE Transmission would incur if an asset was to fail and these values are thus identified with R£ prefix (for more details please refer to A Risk Based Approach to Asset Management[1]).

The long-term monetised risk benefit which would be realised through the completion of this project is R£364.8m. The long-term benefit is derived by consideration of the risk of the asset experiencing a catastrophic failure weighted by the probability that the asset will survive for the Options and "no intervention" scenarios. The long-term benefit is an aggregation of the risk of all assets being considered within the option. The risk of each Option is then compared with the "no intervention" scenario. The "no intervention" scenario assumes that when the asset experiences a catastrophic failure the asset is replaced.

**Figure 2 – Long Term Benefit of Proposed Intervention – Option 2: Full Reconductor**




In addition to assessing the long-term risk benefit, an monetised risk benefit has also been determined. The monetised risk benefit which would be realised through the completion of this project is R£2m.

### 5.6. Carbon Modelling

We are committed to managing resources over the whole asset lifecycle – i.e. including the manufacturing of assets, construction, operations and decommissioning activities – to reduce our greenhouse gas emissions in line with climate science and become a climate resilient business. It is our aspiration that the carbon lifecycle cost of investment options plays a key role within our project development and is considered in the selection of a preferred solution. We have therefore developed an internal carbon pricing model that estimates a carbon cost for each option considered in our CBA through deriving values for:

1. Embodied carbon, which relates to the carbon emissions associated with the manufacturing and production of the materials use in production of the lead assets (transformer, reactors, underground cables and Overhead lines. Overhead line is made up of tower/wood pole/composite pole, conductor and fittings) procured and installed as part of the project.

2. The carbon emissions associated with the main stages of the project lifecycle (construction, operations and decommissioning).

It is our vision to embed carbon considerations within our strategic optioneering and project development processes, which will require us to determine a way of flagging high carbon options within our CBA outputs. We will continue to develop our thinking in this space, which will involve our model being validated by a third party, so the results included in this EJP are indicative and subject to change.

In terms of the results of analysis for this project, which are captured in the carbon footprint results table, Option 1 is the option that delivers the lowest comparative carbon footprint, which does not align with our option selection in the CBA. We are still developing our carbon modelling, and through this we hope to be able to identify methods to reduce the carbon impact as the project moves through the development process.

**Table 5 – Carbon Footprint Modelling for the Sloy – Windyhill West 132kV OHL Works.**

| | Project Information | Baseline | Option |
|---|---|---|---|
| **Project info** | Project Name/number | Option1 | Option2 |
| | Construction Start Year | 2026 | 2026 |
| | Construction End Year | 2028 | 2028 |
| | | | |
| **Cost estimate £GBP** | Embedded carbon | £ 160,004 | £ 166,832 |
| | Construction | £ 288,629 | £ 288,934 |
| | Operations | £ 771 | £ 771 |
| | Decommissioning | £ 132,142 | £ 132,282 |
| | **Total Project Carbon Cost Estimate** | **£ 581,546** | **£ 588,819** |
| | | | |
| **Carbon footprint tCO2e** | Embedded carbon | 2,136 | 2,228 |
| | Construction | 3,796 | 3,800 |
| | Operations | 3 | 3 |
| | Decommissioning | 380 | 380 |
| | **Total Project Carbon (tCO2e)** | **6,316** | **6,412** |
| | | | |
| **Project Carbon Footprint by Emission Category** | Total Scope 1 (tCO2e) | 3 | 3 |
| | Total Scope 2 (tCO2e) | - | - |
| | Total Scope 3 (tCO2e) | 6,313 | 6,408 |
| | | | |
| **$SF_6$ Emissions** | Total $SF_6$ Emissions 3 (tCO2e) | - | - |

## 5.7. Cost Estimate

The cost of the preferred option for works on the Sloy-Windyhill West 132kV OHL has been developed using rates from existing overhead line framework contracts and benchmarks from delivered RIIO-T1 projects. The total cost for delivering the scope of works for the proposed solution is £16.8m.

## 6. Conclusion

This paper identifies the need for intervention on the OHL asset. The primary driver for the refurbishment works in this project is the asset condition of the existing OHL. Three intervention options were identified for this scheme. Of these, two options were taken forward and considered for detailed analysis.

The CBA concluded that both options had a comparative NPV. Option 2 has been chosen as the best option, which sees the requirement to reconductor at a later date being brought forward to T2 to avoid the requirement to re-mobilise and return to site to undertake works.

The proposed scope of works is:

- Full reconductoring of the phase conductor with Upas AAAC, as well reconductoring of the earthwire with Keziah OPGW ACSR;
- All tension insulator sets are to be replaced as well as any severely rusted insulator sets, and earthwire and phase conductor fittings are also to be replaced;
- Steelwork members on all towers are to be painted, all step bolts are to be replaced, and damaged steelwork identified at three towers is to be rectified; and,
- Foundation upgrade works will take place on all out of alignment towers, and concrete muffs and stubs identified as being damaged will be refurbished and painted.

This scheme will cost £16.8m to deliver the following outputs and benefits during the RIIO T2 period:

- A long-term monetised risk benefit of R£364.8m;
- A reduction of total network risk calculated at R£2m;
- Improved operational flexibility and resilience in line with our goal to aim for 100% transmission network reliability for homes and businesses.

The Sloy – Windyhill West 132kV OHL Works project is not flagged as eligible for early or late competition due to it being under Ofgem's £50m and £100m thresholds respectively.

## 7. Price Control Deliverables and Ring Fencing

As set out in our Regulatory Framework paper (Section 1.12 and Appendix 3) we support a key principle from Citizens Advice – one that guarantees delivery of outcomes equivalent to the funding received - to ensure that RIIO-T2 really deliver for consumers.

For our core non-load projects this means that we commit to delivering our overarching NARMs target. If we do not deliver the NARMS target, or a materially equivalent target, then we should be subject to a penalty. Equally, if we over-deliver against our target and are able to justify that the over-delivery is in the consumers interests and could not have been reasonably factored into our business plan at the time of target setting then we should be made cost neutral for this work.

Core non load projects should not be ring fenced. This is to allow for substitution of projects in order to meet that NARMs target. We need flexibility to respond to up to date asset data information or external influences on our network during the price control; this information might drive us to substitute one project for another in order to ensure a reliable and resilient network. Ring fencing projects may result in sub-optimal decisions, having adverse consequences for the health of our network, which will ultimately be reflected in the NARMs target.

## 8. Outputs included in RIIO T1 Business Plan

There are no outputs associated with this scheme included in our RIIO T1 plans.

## Appendices

### Appendix A: Network Diagram Sloy – Windyhill West Circuit

CONTENT DELETED