Scottish & Southern Electricity Networks

SSEN Transmission

RIIO-T2 Business Plan – T2BP-EJP-0043 Rev 1.1

Keith 132kV Substation 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 132kV single busbar at Keith substation. The primary driver for the scheme is the asset condition & spares with a secondary driver of network resilience. Following the draft determination, we have reviewed the options and selected the revised option outlined below.

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

- The offline replacement of the two 132kV circuit bays;
- the offline replacement of one 132kV circuit bay with the sole exception of the CB;
- the relocation of one 132kV circuit bay to the other side of the substation;
- the in-situ replacement of two disconnectors and two busbar sections.

This scheme costs [redacted] and will deliver the following outputs and benefits during the RIIO T2 period:

- [redacted]A long-term monetised risk benefit of R[redacted]
- An immediate reduction of network risk calculated as R[redacted];
- A reduction in the volume of SF_6 on the network from the use of innovative non SF_6 equipment contributing to our goal of a one third reduction in greenhouse gas emissions.

This option does not resolve the network security issues with the existing single busbar (in terms of improved network security for customers, and the reduced scope of outages during routine maintenance or scheduled interventions). Since the GIS option, which would address this issue, has been deemed not value for money, this reduced scope solution has been selected.

The Keith scheme is not flagged as eligible for early or late competition due it being under Ofgem's £50m and £100m thresholds respectively.

[1] A Risk Based Approach to Asset Management

Name of Scheme/Programme	Keith 132kV Substation Works
Primary Investment Driver	Asset Health (Non-Load)
Scheme reference/ mechanism or category	SHNLT2022
Output references/type	NLRT2SH2022
Cost	[redacted]
Delivery Year	Within the 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 condition-related work during the RIIO-T2 period (April 2021 to March 2026). The planned work is at Keith substation, the location of which is shown in Figure 1 on the next page.

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.

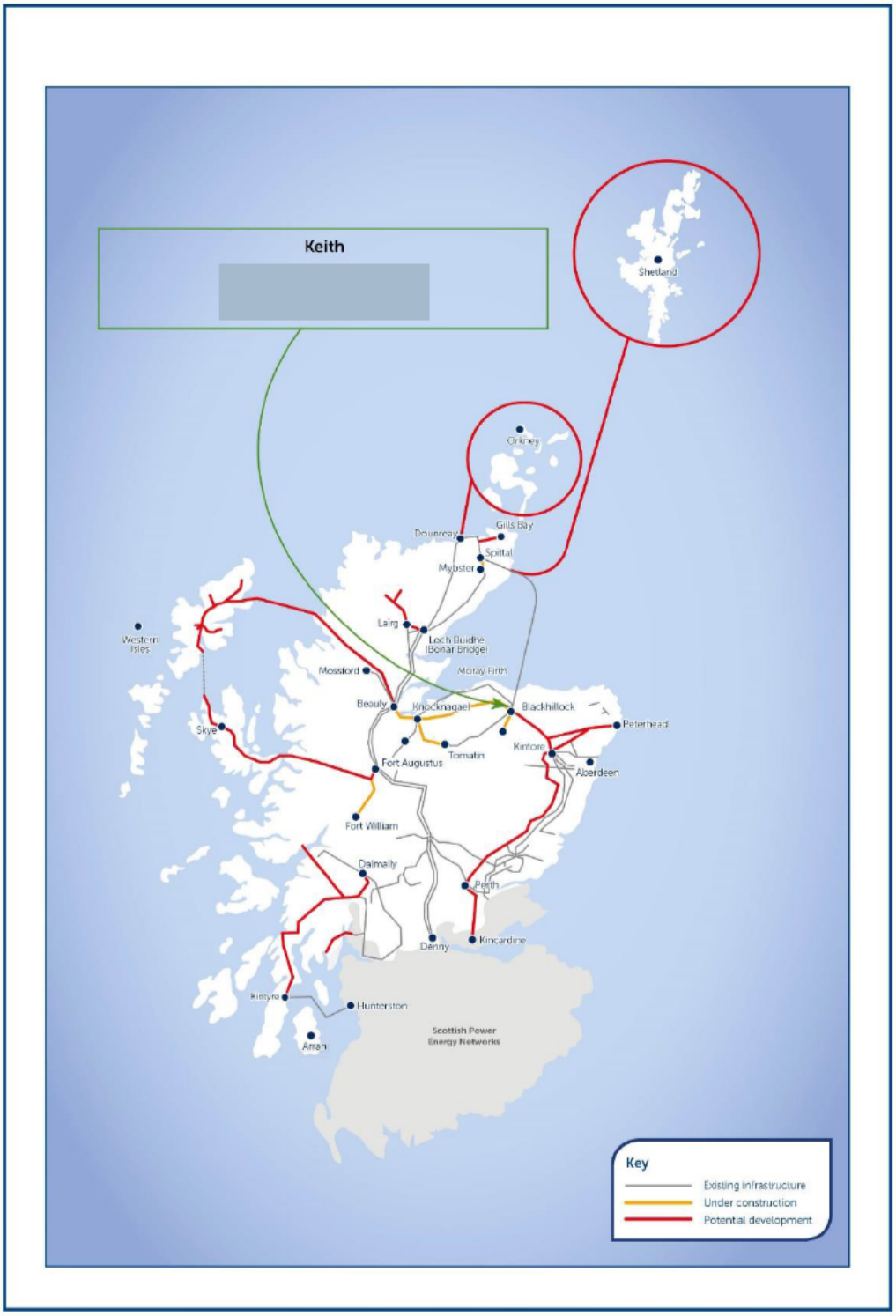
Section 7: Price Control Deliverables and Ring Fencing

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

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: Geographical Representation



2.1 Post Draft Determination Update

This document has been updated in response to the Draft Determination on the RIIO T2 Business Plan submission.

This paper now includes the baseline minimum works option as one of the options that has been developed in the Detailed Analysis section.

The Background, Need, and Optioneering sections have been refined. This has been done to further clarify the main points of the Need section as highlighted in the associated Asset Condition Report. As part of the Optioneering section, the baseline minimum works option has been laid out in more detail and taken forward into the Detailed Analysis section to allow comparison with the other proposed solutions.

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

Keith Substation, which is situated approximately 65km north west of Aberdeen, is an important site on the SHE Transmission Main Interconnected Transmission System (MITS). Keith is connected to the 275kV MITS via two 275/132kV Supergrid Transformers (SGT1 & SGT2). The 132kV MITS has five outgoing 132kV circuits from the 132kV single busbar arrangement:

- Keith is one of two substations (the other being Beauly) that connects the local 132kV network along the Moray Coast to the wider system via three circuits on the 132kV single busbar:
    - This encompasses Inverness, Nairn, and Elgin Grid supply Points (GSPs) on two circuits;
    - The final circuit provides a point of connection between Glenfarclas, Boat of Garten and Farr GSPs.
- Keith is the only substation that connects Macduff substation via two circuits on the 132kV single busbar (although these will have been diverted to Blackhillock substation under the Keith to Blackhillock works to be completed by the end of the RIIO-T1 period).

This substation also supplies the local network through four 132/33kV Grid Transformers (GTs) all rated at 90MVA:

- GT1 & GT3 supplying the 33kV board 1;
- GT2 & GT4 supplying the 33kV board 2.

All circa 26,400 customers on both boards can be back fed in the event of loss of supply from Keith GSP (including the loss of both boards). An illustration of the network this substation sits within, as well as a diagram of the network configuration of Keith substation itself are shown in Appendix A & B respectively.

3.2. Asset Need

Ongoing site inspections provide detailed condition assessment of the plant along with the data gathered from testing and analysis. The resulting Asset Condition Report[2] provides, in detail, the condition of existing assets and recommendations for intervention in the RIIO-T2 period. A summary of the highlighted condition issues, all relating to the 132kV single busbar, are:

- 6 of the 20 disconnectors on the 132kV single busbar, originally installed in the 1960s, exhibit corrosion. These 6 disconnectors are part of the 10 disconnectors of this 1960s vintage that are considered to have exceeded their useful life for a mixture of condition and spares related issues;

[redacted]

- The busbar insulators exhibit a history of deterioration and various busbar joints are known to have a high resistance creating the risk of hotspots developing. This, in combination with their age and reduced spares means these are considered to have exceeded their useful lives.

These highlighted switchgear asset issues are on the FK, EKN, EKS and KMN circuit bays (please see Appendix B for the network diagram that illustrates the existing setup). the KMN circuit bay is being removed under Blackhillock diversion works in RIIO-T1, thus leaving three circuit bays that require intervention in RIIO-T2.

In addition to the condition-related issues outlined with various 132kV switchgear, there are multiple operational limitations on the existing single busbar setup that are worth noting:

- There is only one busbar that all the overhead line, GT, and SGT circuits can connect onto, thus there is no selector configuration available to allow the connection of circuits to another busbar: this is a requirement for new build marshalling substation design according to the Security and Quality of Supply Standard (SQSS);
- The 132kV single busbar configuration means a significant number of circuits need to be placed on outage to allow works to be carried out, especially when considering disconnectors that connect the circuits to the busbar;
- The existing single busbar configuration presents the following weaknesses under the following fault conditions:
    - A fault on the CB connecting bus sections 1 & 2 would leave only SGT2 supplying the two 33kV Boards at Keith; and,

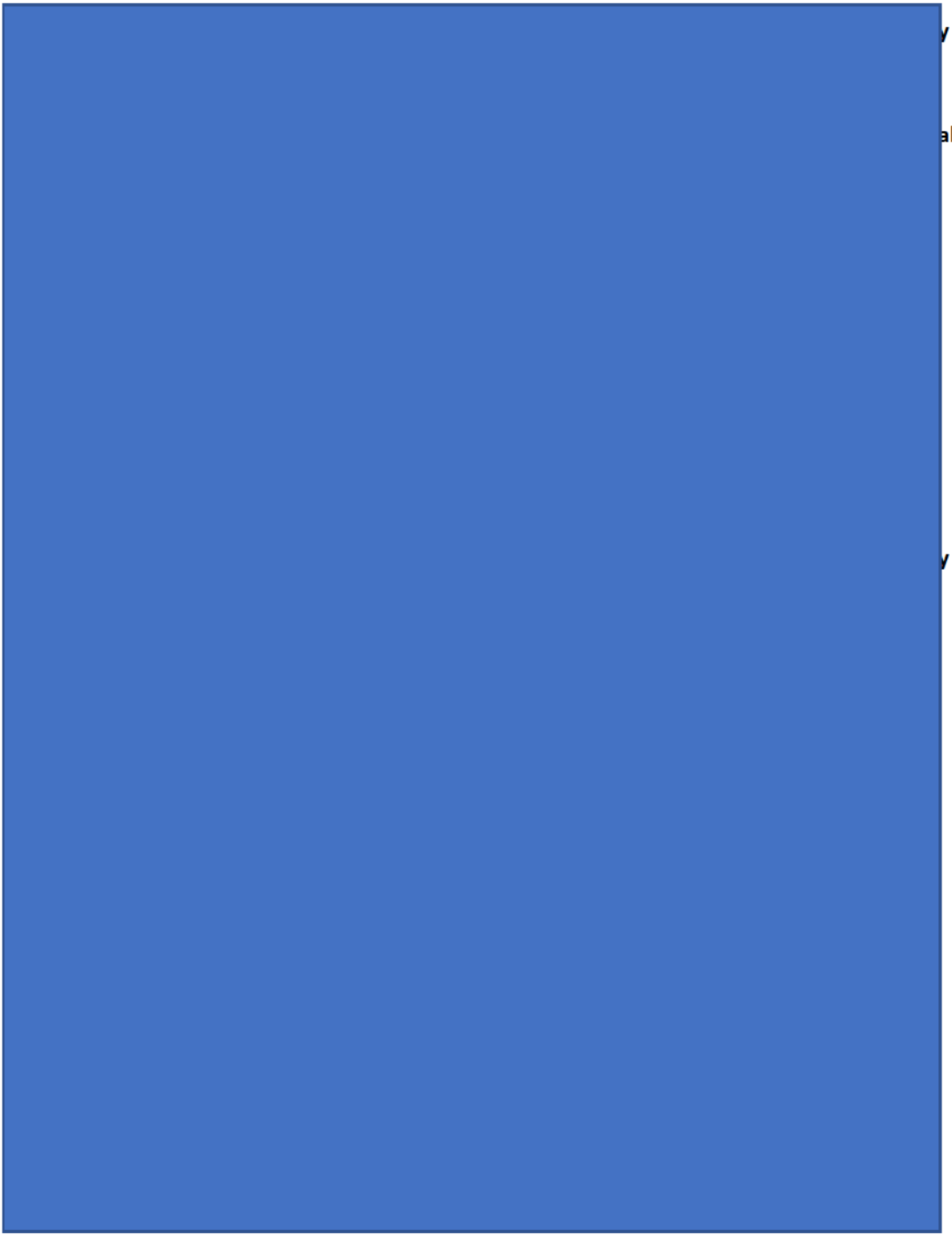
[2] Keith Substation Works Asset Condition Report T2BP-ACR-0006

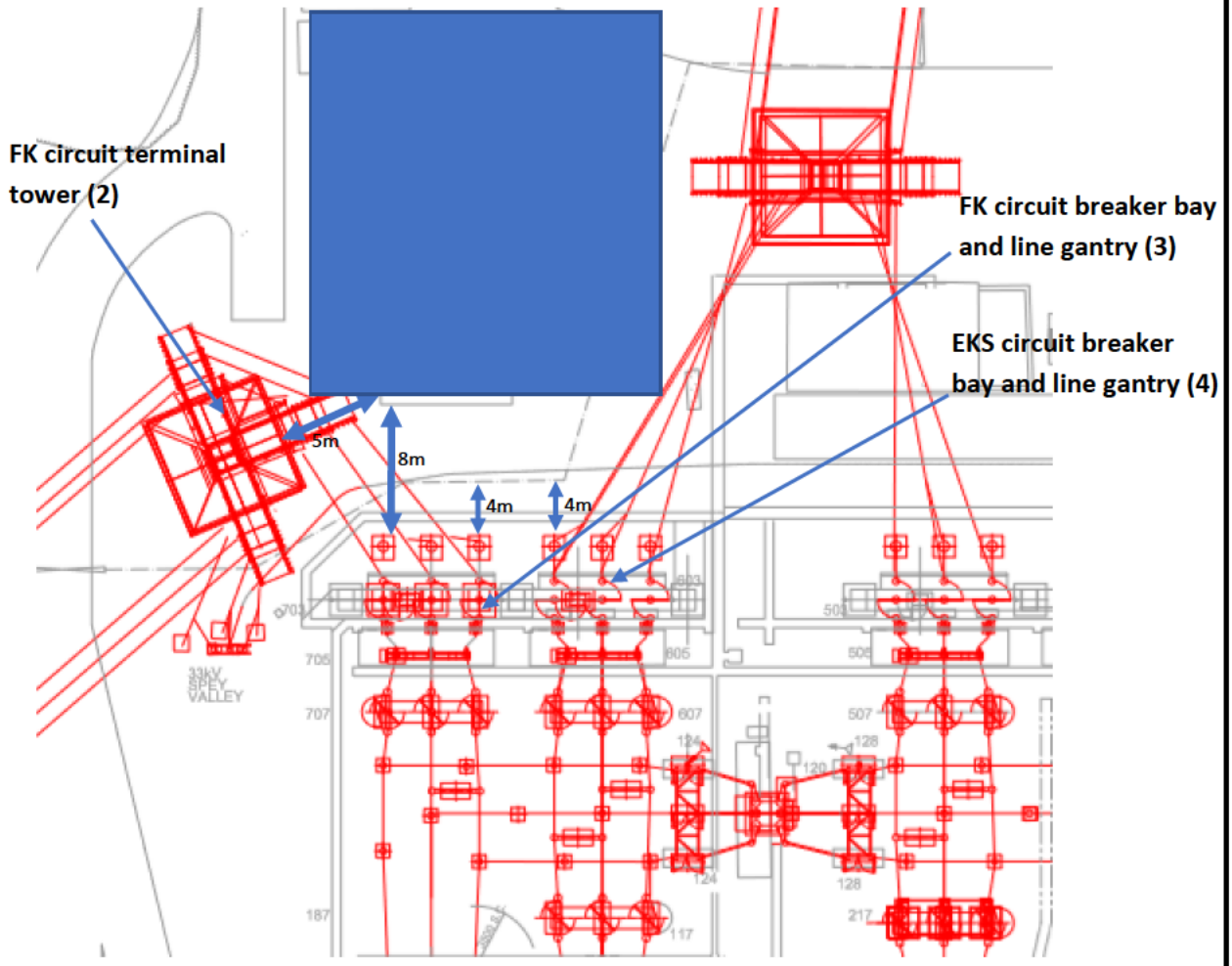
- A fault on the CB connecting bus sections 2 & 3 would disconnect both the GTs that supply 33kV board 2 at Keith.

- The 10 older disconnectors (as mentioned previously on the FK, EKS, EKN, and KMN circuit bays) lack telecontrol capability which restricts the resilience and speed of network response to faults and increases the safety risk to staff who need to operate the plant manually and within proximity.

- Spares for these 10 older disconnectors and associated 4 earth switches of the 1960s vintage are unavailable. This would result in the need to have spares manufactured at significant cost and lead time thus making such an option operationally unfeasible;

[redacted]





In summary, with the removal of the KMN bay under Blackhillock diversion works in RIIO-T1, this still leaves the FK, EKS and EKN circuit bays presenting a significant issue from a spares perspective. The FK and to a large extent the EKS bay also face proximity issues to the nearby residence that constrains rebuild options in this part of the substation.

3.3. Growth Need

A summary of the latest demand and generation capacity connected via the GTs to the wider network is summarised in the tables below:

Table 1: Keith GSP Board 1 Demand & Generation Summary

Demand		Generation		
Winter Peak (MW)	Summer Min (MW)	Connected (MW)	Contracted (MW)	Total (MW)
19.92	5.78	84.76	15.65	100.41

Table 2: Keith GSP Board 2 Demand & Generation Summary

Demand		Generation		
Winter Peak (MW)	Summer Min (MW)	Connected (MW)	Contracted (MW)	Total (MW)
30.64	7.47	67.07	54.60	121.67

On review of the demand and generation profiles of this site:

- Demand is not projected to significantly rise in the medium term to require intervention on the GTs or 33kV boards;
- While generation is projected to rise to a level that will exceed the individual rating of one of the GTs (should the other be disconnected through planned or unplanned outage), the use of intertrips to curtail generation as appropriate as well as the diversion of 26.74MW of generation to the new Rothienorman substation will mitigate the need for intervention on the GTs or 33kV boards.

In summary, there is no growth need to be considered for the site.

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 the Optioneering stage with supporting reasoning provided or is taken forward for Detailed Analysis in Section 5.

The need section identified only the 132kV single busbar as requiring intervention.

A summary of the options is presented in the table below:

Table 3: Options Summary

Option	Option Detail	Cost (£m)	Taken forward to Detailed Analysis?
0	Do Nothing	N/A	No
1	Base line option minimum works: replacement of busbars sections 1& 2, in situ replacement of disconnectors 117 & 317, replacement of the FK, EKN, EKS, and synchronous compensator circuit bays	[redacted]	Yes
2	Offline Gas Insulated Switchgear (GIS) Build	[redacted]	Yes
3	Offline Air Insulated Switchgear (AIS) Build	[redacted]	Yes

With regards to interfacing projects that need to be considered when reviewing these options, any outages taken at Keith for proposed works must be coordinated with the outages under the Beauly scheme in order to secure the connection of customers on the 132kV MITS.

Option 0 – Do Nothing

The Asset Condition Report does not support a "do nothing" scenario. Leaving the installed assets in their current condition is not an option due to poor asset health of the remaining Brush CBs, the lack of spares or practical substitute components for the 1960s disconnectors and earth switches, [redacted]

It is considered that the asset replacement works must occur within the RIIO-T2 period (April 2021 to March 2026) since any interventions carried out to date on the 132kV switchgear has proven to be ineffective and will not solve the issues highlighted in the Asset Condition Report.

NOT PROGRESSED TO DETAILED ANALYSIS

Option 1 Base Line Option Minimum Works

This option considers the replacement of the following assets:

- FK, EKN, EKS circuit bays (replacement of all assets with the exception of CB 605 that has been replaced under recent emergency works);
- Replacement of busbar sections 1 & 2;
- In-situ replacement of disconnectors 117 & 317;
- There is a synchronous compensator scheduled to connect to the 305 circuit breaker bay in February 2021. On commencement of proposed RIIO-T2 works this cable connection will have to be removed to create space for the new EKN circuit bay, thus the bay will have to be shifted over to other side of the substation;
- Installation of three 132kV cable sealing ends, three short section of cable circuit and two cable sealing end & terminal tower compounds. The cable sealing end compound for the FK circuit will also include a diverted SHEPD 33kV line that at present resides on the other side of the FK tower route;
- [redacted]
- With regards to the protection schemes for these circuit bays there is not enough space in the existing control building to accommodate them, thus a separate control building needs to be constructed.

This work for the RIIO-T2 period covers what is considered the bare-minimum requirements that are needed to remedy the issues outlined in the Asset Condition Report. However, this option fails to address the following risks outlined in the Needs section:

- The lack of a double busbar and associated selector configuration to allow the switching of circuits between the reserve and main busbars (a requirement for new build marshalling substation design according to the SQSS);
- The significant outages required for future maintenance and other intervention activities and associated higher risk to the 26,400 customer supplies connected on the existing single busbar arrangement.

PROGRESSED TO DETAILED ANALYSIS

Option 2: Offline GIS Build

This option considers the offline replacement of the 132kV single busbar with a GIS solution. This approach would enable the offline build of the new substation at a nearby location, potentially within the existing site boundaries. The outage implications of this option are relatively minimal, with only some outages required for cable construction works to transfer substation circuits over to the new GIS board. It is also one of the options that would address both the condition and operational needs identified by delivering a modern double busbar solution. Based on these factors this option has been progressed to detailed analysis.

The solution addresses all the risks outlined in the Needs case.

PROGRESSED TO DETAILED ANALYSIS

Option 3: Offline AIS Build

This option considers the possibility for Keith 132kV substation to be replaced with a new AIS solution. The outage implications of this option are minimal, with few outages required for cable construction works to transfer substation circuits over to the new AIS board. It is an option that would address both the condition and operational needs identified, by delivering a modern double busbar solution. Based on these factors this option is progressed to detailed analysis.

The solution addresses all the risks outlined in the Needs case.

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

We have carried out a Cost Benefit Analysis (CBA) using counterfactual Net Present Value (NPV) analysis to demonstrate the potential benefits of each of the shortlisted options, with Option 1 presented as the baseline option for comparison purposes. Our CBA Methodology[3] sets the process and mechanics of our approach to CBA.

The results for this CBA, including relevant calculated Net Present Values (NPVs), are summarised below:

Table 4: CBA Options Summary

CBA reference	Description of Option	Total Forecast Expenditure (£m)	Total NPV	Delta (Option to Baseline)	Total NPV (inc. monetised risk)
Baseline (Option 1)	Base line option minimum works	[redacted]	[redacted]		[redacted]
Option 2	Offline 132kV GIS	[redacted]	[redacted]	[redacted]	[redacted]
Option 3	Offline 132kV AIS	[redacted]	[redacted]	[redacted]	[redacted]

The results of the CBA indicate that Option 1 is the best option when reviewing the total NPV values (excluding monetised risk). This option does not resolve the following issues:

- The need for a fully selectable double busbar (to improve network security and reduce size of outages for routine maintenance and planned interventions);

[3] Cost Benefit Analysis Methodology

- The ability to remedy the above issues during future 132kV CB interventions (estimated to be required for other CBs on this busbar from 2045 onwards).

Including monetised risk, Option 2 returns a better NPV value and addresses all known issues. However, given that the feedback from Ofgem was that this option was not accepted in the draft determination, we have decided to propose what we consider to be the second-best solution technically, namely Option 1. This is to ensure that critical plant failure does not occur in the RIIO-T2 period as a minimum.

5.2. Project Sensitivity

As outlined in our core RIIO-T2 business plan document, A Network for Net Zero[5], 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[1] 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 5: Project Sensitivities

Sensitivity	Test and impact observed – switching inputs
Asset Performance / deterioration rates	Switching deterioration assumption: 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, both options move in parallel and have no impact on ordering within CBA.
Demand variations	No demand at this site and none forecast

Energy scenarios	Sensitivity considered in need already. 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	Any works at this site will require a whole station outage and planning consent. This is the case for either option considered
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

The scope of the selected solution is to build four new circuit bays (this will encompass two bays where the assets are completely replaced, one bay where everything apart from the CB will be replaced, and the final bay being moved from its existing location to create space for the other works). A copy of the Single Line Diagram (SLD) is shown in Appendix C. The project will be energised within the RIIO-T2 period. The table below details the outputs.

This option fails to address the following risks outlined in the Needs section:

- The lack of a double busbar and associated selector configuration to allow the switching of circuits between the reserve and main busbars (a requirement for new build marshalling substation design according to the SQSS);
- The significant outages required for future maintenance and other intervention activities and associated higher risk to the 26,400 customer supplies connected on the existing single busbar arrangement.

Table 5: Outputs from preferred option

Plant	Size of new plant	Replacement for
132kV AIS bay replacements	4 x 132kV circuit bays (AIS); 2 x 132kV terminal towers; 1.1km 132kV cable;	4 x 132kV circuit bays (AIS); 2 x 132kV terminal towers;

5.4. Competition

The Keith scheme is not flagged as eligible for early or late competition due the project cost being under Ofgem's £50m and £100m thresholds respectively.

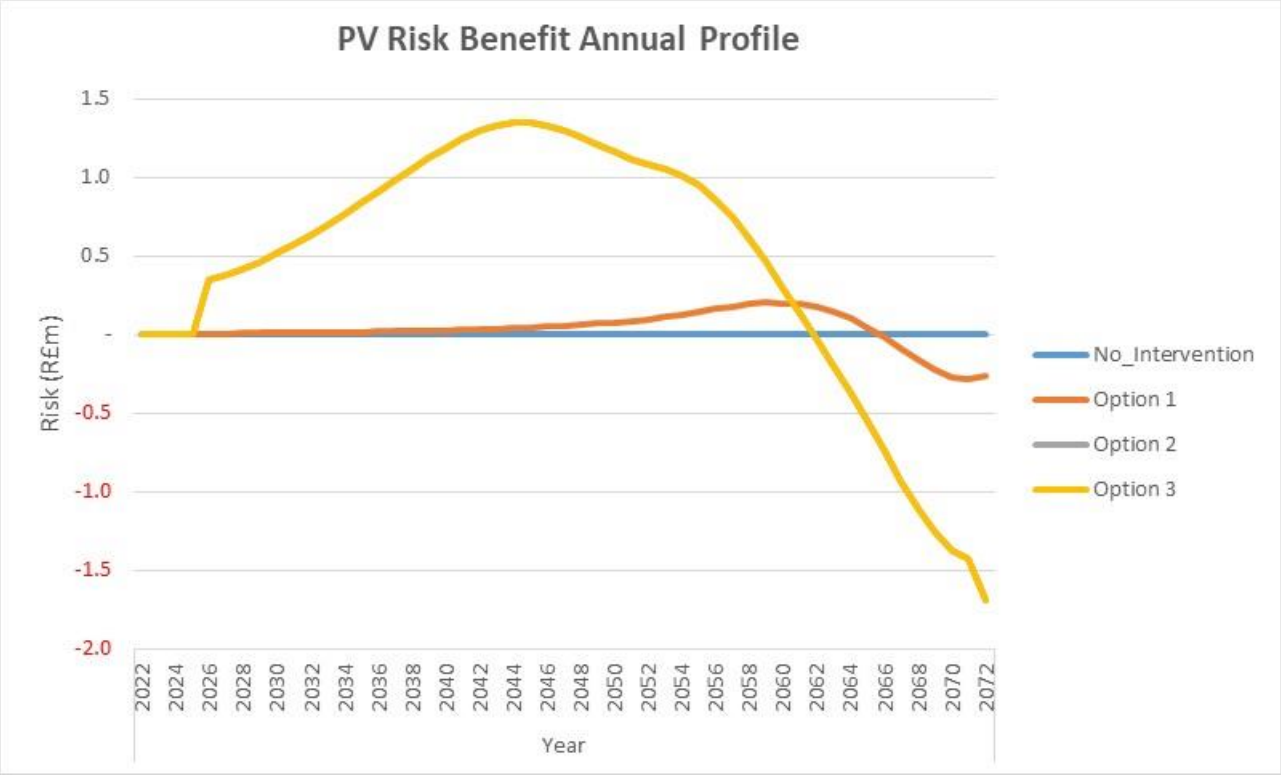
5.5. Risk Benefit

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[4]).

[4]A Risk Based Approach to Asset Management

The long-term monetised risk benefit which would be realised through the completion of this project is R[redacted]. 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 Interventions – Offline Build of the Base Line Option Minimum Works (Option 1) the GIS Build (Option 2), and the AIS Build (Option 3)



In addition to assessing the long-term risk benefit, an immediate monetised risk benefit has also been determined. The immediate monetised risk benefit which would be realised through the completion of this project is [redacted].

5.6. Innovation & Sustainability

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.

The installation of new AIS circuit breakers at Keith will employ a non-SF_6 filled solution in support of our Sustainability and Environmental policies.

5.7. 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.

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, the baseline option delivers the lowest comparative carbon footprint, which does align with our option selection in the CBA.

Table 6: Carbon Calculation Summary

	Project Information	Baseline (Option 1)	Option 2	Option 3
Project info	Project Name/number	0	0	0
	Construction Start Year	2026	2026	2026
	Construction End Year	2028	2028	2028
Cost estimate £GBP	Embodied carbon	£119,961	£224,766	£480,469
	Construction	£295,471	£204,434	1,164,956
	Operations	£238,524	£705,127	£240,103
	Decommissioning	£136,548	£93,595	£533,347
	Total Project Carbon Cost Estimate	£790,503	£1,227,922	2,418,876
Carbon footprint tCO2e	Embodied carbon	1,602	3,001	6,416
	Construction	3,957	2,689	15,323
	Operations	1,101	3,083	1,050
	Decommissioning	472	269	1,532
	Total Project Carbon (tCO2e)	7,131	9,042	24,321
Project Carbon Footprint by Emission Category	Total Scope 1 (tCO2e)	457	2,898	495
	Total Scope 2 (tCO2e)	644	185	555
	Total Scope 3 (tCO2e)	7,382	5,959	23,271
SF_6 Emissions	Total SF_6 Emissions 3 (tCO2e)	411	2,848	445

5.8. Cost Estimate

The cost of the preferred option for works at Keith has been developed using rates from existing substation framework contracts and benchmarks from delivered RIIO-T1 projects. The total cost for delivering the scope of works for the proposed solution is [redacted].

6. Conclusion

This paper identifies the need for intervention on the 132kV single busbar at Keith substation. The primary driver for the scheme is the asset condition & spares with a secondary driver of network resilience.

Three intervention options were identified for this scheme and were taken forward and considered for detailed analysis. Following the draft determination, we have reviewed the options and selected the revised option outlined below.

The proposed scope of work selected (Option 1) is:

- The offline replacement of the two 132kV circuit bays;
- the offline replacement of one 132kV circuit bay with the sole exception of the CB;
- the relocation of one 132kV circuit bay to the other side of the substation;
- the in-situ replacement of two disconnectors and two busbar sections.

This scheme costs [redacted] and will deliver the following outputs and benefits during the RIIO T2 period:

- A long-term monetised risk benefit of [redacted]m;
- An immediate reduction of network risk calculated as R£[redacted]m;
- Use of innovative non-SF_6 solutions to reduce the volumes of SF_6 on the network contributing to our goal of one third reduction in greenhouse gas emissions.

This option does not resolve the network security issues with the existing single busbar (in terms of improved network security for customers, and the reduced scope of outages during routine maintenance or scheduled interventions). Since the GIS option, which would address this issue has been deemed not value for money, this reduced scope solution has been selected.

The Keith scheme is not flagged as eligible for early or late competition due 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.

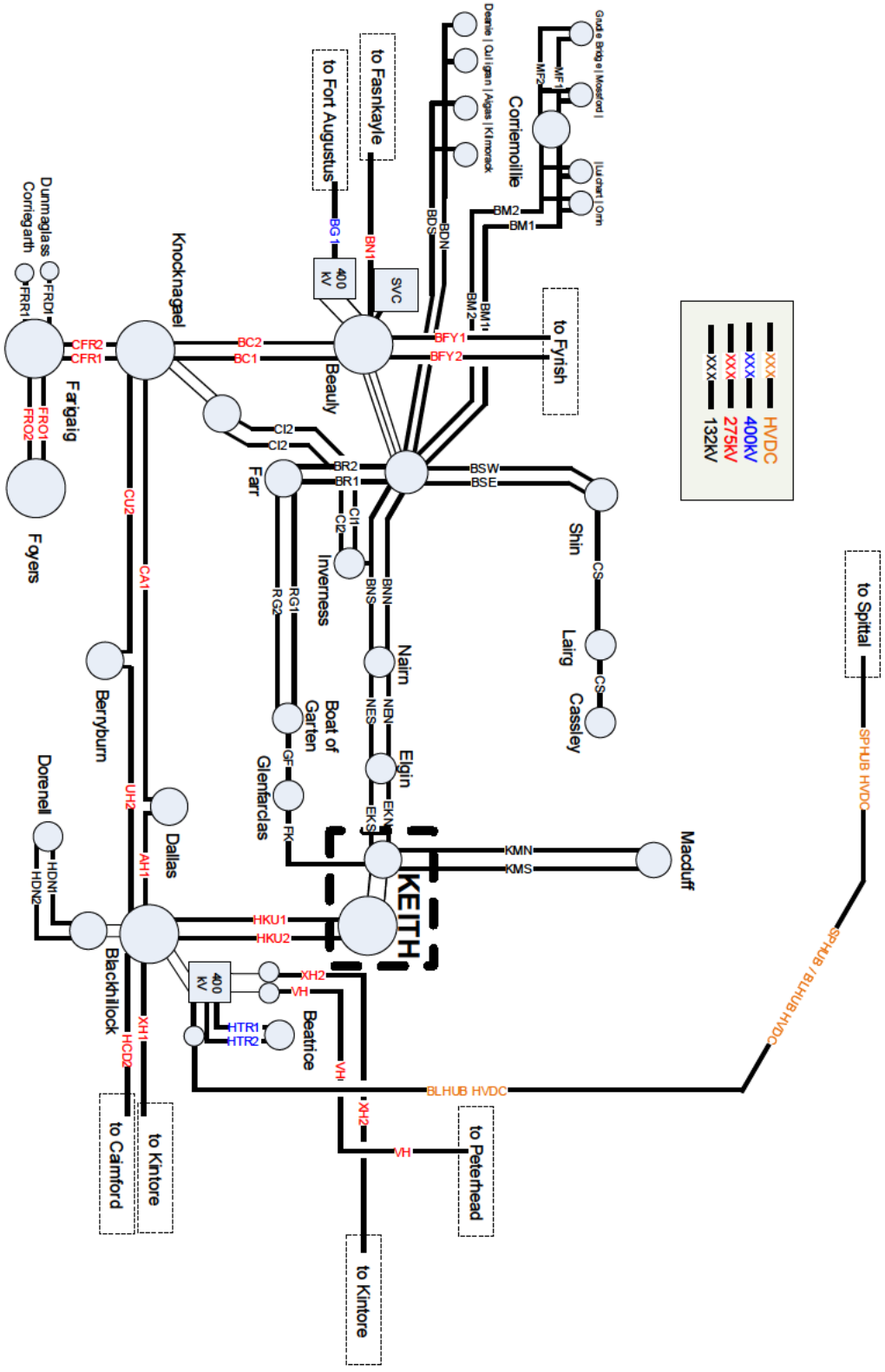
For our core non-load projects this means that we commit to delivering our overarching NARMs target. If we do not deliver the NARMS target, or a materially equivalent target, then we should be subject to a penalty. Equally, if we over-deliver against our target and can justify that the over-delivery 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.

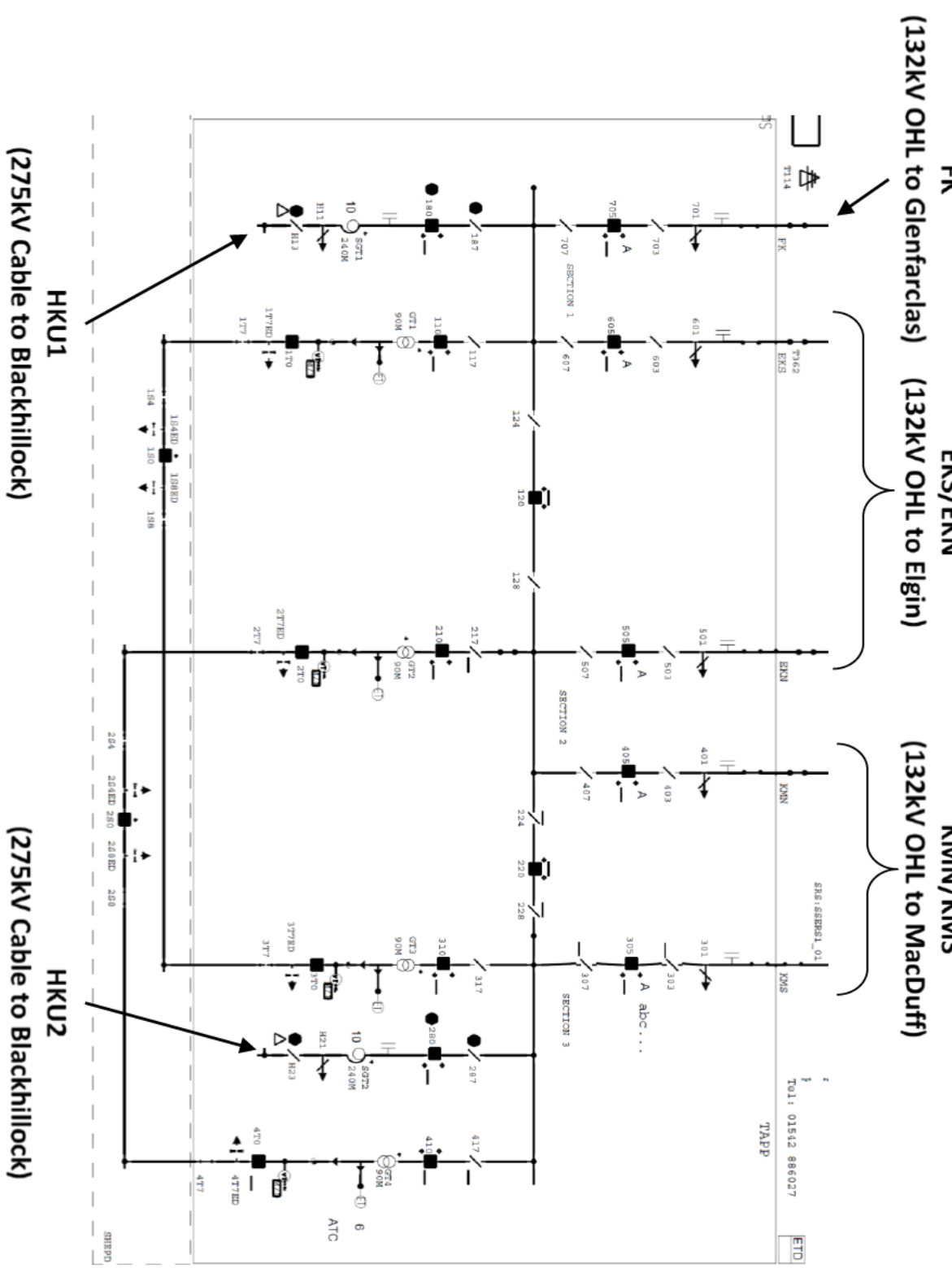
8. Outputs included in RIIO-T1 Plans

There were four 132kV CBs from this scheme originally included in our baseline for delivery in the RIIO-T1 period. One of these CBs has been replaced during the RIIO-T1 period due to significant SF_6 leaks making deferral of replacement unfeasible. One of these four is also scheduled to be removed under Keith to Blackhillock diversion works. We were able to defer two of the 132kV CBs following preventative maintenance which has arrested the immediate problem and has allowed us to substitute with other works to ensure we met our required absolute output target in line with our licence obligation. An assessment will be undertaken at the end of the RIIO-T1 period to validate our performance against our licence target and associated Rewards and Penalties guidelines.

Appendix A: Overall MITS Network Diagram



Appendix B: Keith Substation Network Configuration



Appendix C: SLD for Keith Works