MSIP Re-opener Application – SPT-TOCO-2201 Kilmarnock BESS (Flexpower)		
Ofgem Scheme Reference/ Name of Scheme	SPT200481A / SPT-TOCO-2201 Kilmarnock BESS (Flexpower)	
Investment Category	Local Enabling (Entry)	
Primary Investment Driver	Connection of customer-driven battery energy storage system (BESS)	
Licence Mechanism/ Activity	Special Condition 3.14 Medium Sized Investment Projects Re-opener and Price Control Deliverable/ Clause 3.14.6 (a)	
Materiality Threshold exceeded (£3.5m)	Yes, as a single project due to the threshold for activity 3.14.6 (a)	
PCD primary Output	Generation: 350MW	
Total Project Cost (Price control, Direct) (£m)	£10.993m	
Total Community Benefits Cost (£m)	£0.138m	
Funding Allowance (£m)	To be confirmed	Requested - £10.993m (Project) - £0.138m (Community Benefits)
Delivery Year	2026/27	
Reporting Table	Annual RRP – PCD Table	
PCD Modification Process	Special Condition 3.14, Appendix 1	

Issue Date	Issue No	Amendment Details
31st January 2025	1	First issue of document.

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Table of Contents

1. Abbreviations / Terminology

Table 1: Table of Abbreviations

Abbreviation	Term
ACM	Asbestos Containing Material
AIS	Air Insulated Switchgear
BEIS	Department for Business, Energy & Industrial Strategy
CDM	Construction Design and Management
CEC	Connection Entry Capacity
CF	Customer Funded
CION	Connection and Infrastructure Options Note
CT	Current Transformer
DESNZ	Department for Energy Security and Net Zero
GSP	Grid Supply Point
GIS	Gas Insulated Switchgear
ITT	Invitation to Tender
km	Kilometre
kV	Kilovolt
LC	Licence Condition
LSpC	Licence Special Condition
MSIP	Medium Sized Investment Project
MW	Megawatt
NESO	National Energy System Operator
NETS SQSS	National Electricity Transmission System Security and Quality of Supply Standard
NGET	National Grid Electricity Transmission
NOA	Network Options Assessment
OHL	Overhead Line
PC	Price Control
PCD	Price Control Deliverable
PoC	Point of Connection
RIIO	Revenue = Incentives + Innovation + Outputs
SCADA	Supervisory Control and Data Acquisition
SGT	Supergrid Transformer
SPT	SP Transmission
SPEN	SP Energy Networks
STC	System Operator – Transmission Owner Code
VDUM	Volume Driver Uncertainty Mechanism
VT	Voltage Transformer

2. Reference Documents

Table 2: Table of Reference Documents

Document Reference	Title
SPEN-RIIO-T2_Business_Plan	SP Energy Networks RIIO T2 Business Plan 2021 - 2026

3. Introduction

This MSIP Re-opener application sets out SPT's plans to connect the Kilmarnock BESS development (SPT-TOCO-2201) with works commencing in the RIIO-T2 period (April 2021 – March 2026) and completing in the first year of RIIO-T3, comprising: (i) the installation of a new 400kV Gas Insulated Switchgear (GIS) bay including associated line disconnector at Kilmarnock South 400kV Substation; (ii) an approximate 2.6km 400kV cable circuit from Kilmarnock South Substation to a new substation namely Boydston 400kV Substation which is located at the User's site; and (iii) the establishment of Boydston 400kV Substation, equipped with one 400kV metering circuit breaker and associated disconnectors. These works will enable the connection of 350MW of contracted Battery Storage.

This MSIP Re-opener application is submitted in accordance with Licence Special Condition (LSpC) 3.14.6 and relates specifically to LSpC 3.14.6 activity (a):

"3.14.6 The licensee may apply to the Authority for a direction amending the outputs, delivery dates or associated allowances in Appendix1 in relation to one or more of the following activities:

(a) a Generation Connection project, including all infrastructure related to that project, the forecast costs of which are at least £4.24m more or less than the level that could be provided for under Special Condition 3.11 (Generation Connections volume driver)"

Applying the RIIO-T2 Generation Connections Volume Driver Uncertainty Mechanism (VDUM) to this project results in the estimated total project cost (£10.993m) being £4.389m higher than the £6.604m allowance provided by the VDUM. An MSIP Re-opener application is therefore required.

Full justification for the preferred investment option is presented within this MSIP Re-opener application document, together with a detailed description of the proposed solution. The costs presented in Section 7 are market-tested and have a high degree of cost maturity. The project delivery plan is detailed in Section 8.

3.1 Structure of Document

This MSIP Re-opener application is structured as follows:

Section 4 – Background and Needs Case

This section outlines the background to the proposed works and details the key project drivers.

Section 5 – Assessment of Options

This section sets out the approach taken to considering the distinct options available to address the need identified in Section 4. The results of an evaluation of the alternative options are presented and the reasoning behind the selection of the preferred investment option is summarised.

Section 6 – Proposed Works

This section provides a description of the proposed solution. It sets out the project scope and other key supporting information.

Section 7 – Project Cost Estimate

This section summarises the estimated cost of the selected option.

Section 8 – Project Delivery

This section outlines the approach which will be taken to deliver the project.

Section 9 – Community Benefits

This section outlines the community benefits funding that should be attracted by the proposed works .

Section 10 – Conclusions and Recommendations

This section summarises the conclusions and includes recommendations to be taken.

3.2 Requirements Mapping Table

Table 3 maps the requirements set out within Chapter 3 of the RIIO-T2 Re-opener Guidance and Application Requirements Document[1] against specific sections within this document.

Table 3: Requirements Mapping Table

Section	Description	Relevant Section(s) in RIIO-T2 Re-opener Guidance and Application Requirements Document
3	Introduction	3.3, 3.4
4	Background and Needs Case	3.8, 3.9, 3.10, 3.11
5	Assessment of Options	3.13, 3.14, 3.21, 3.22
6	Proposed Works	3.14
7	Project Cost Estimate	3.12, 3.19, 3.20
8	Project Delivery	3.15, 3.16, 3.17

[1] RIIO-2 Re-opener Guidance and Application Requirements Document: Version 3

4. Background and Needs Case

4.1 Statutory and Licence Obligations on SP Transmission plc

SP Transmission plc (SPT) is licenced under section 6(1)(b) of the Electricity Act 1989 ("the 1989 Act") to transmit electricity. The licence is granted subject to certain standard and special conditions. Under section 9(2) of the 1989 Act, SPT is required to fulfil the following duty:-

- *To develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and*
- *To facilitate competition in the supply and generation of electricity*.

This statutory duty is reflected in SPT's transmission licence. In addition, SPT has the following obligations pursuant to its licence conditions (LCs):-

- To at all times have in force a System Operator-Transmission Owner Code (STC) which, amongst other things, provides for the co-ordination of the planning of the transmission system (LC B12);
- To at all times plan and develop its transmission system in accordance with the National Electricity Transmission System Security and Quality of Supply Standard (NETS SQSS) and in so doing take account of National Grid Electricity System Operator's (NGESO's), now the National Energy System Operator (NESO's) obligations to co-ordinate and direct the flow of electricity on, to and over the GB transmission system (LC D3);
- To make available those parts of its transmission system which are intended for the purposes of conveying, or affecting the flow of, electricity so that such parts are capable of doing so and are fit for those purposes (LC D2); and
- To offer to enter into an agreement with the system operator on notification of receipt of an application for connection, or for modification to an existing connection (LC D4A).

Section 38 and Schedule 9 of the 1989 Act also impose duties on SPT when formulating any relevant proposals. In response to statutory and licence obligations upon it, SPT therefore requires to ensure that the transmission system is developed and maintained in an economic, co-ordinated and efficient manner, in the interests of existing and future electricity consumers, balancing technical, economic and environmental factors.

4.2 Key Project Drivers

In June 2019, the UK parliament passed legislation introducing a binding target to reach net zero greenhouse gas emissions by 2050. In Scotland, the Scottish Parliament has committed Scotland to becoming a net-zero society by 2045. The timely connection of low carbon generation, such as onshore wind, will play a vital role in reaching these legislated net zero targets. Further commitments, by the UK Government in October 2021, to decarbonise the power system by 2035, further support the requirement for investment in the existing electricity transmission system to enable the timely connection and integration of the required renewable generation sources. In December 2022 the Scottish Government published its Onshore Wind Policy Statement, setting out its ambition deploy 20GW of onshore wind capacity by 2030.

On 9th September 2021, the Department for Business, Energy & Industrial Strategy (BEIS) announced a £265m[2] budget per year for the Contracts for Difference (CfD) Allocation Round 4, which launched on 13th December 2021 and concluded on 7th July 2022. For the first time since 2015, established technologies, including onshore wind, were able to bid. Given lowering technology costs and a

[2] Biggest ever renewable energy support scheme backed by additional £265 million - GOV.UK (www.gov.uk)

favourable subsidy regime, this will support a considerable number of onshore renewables projects to successfully transition from project inception and development through to energisation[3].

The next CfD auction, Allocation Round 7, is due to open in 2025 (to be confirmed by DESNZ[4]), with annual auction rounds expected thereafter.

4.3 Kilmarnock BESS (Flexpower)

Kilmarnock BESS is a proposed Battery Energy Storage System (BESS) development by Kilmarnock Flexpower Ltd, located approximately 5km southeast of the town of Kilmarnock in the South Ayrshire council area. It is approximately 2km south of SPT's existing Kilmarnock South 400/275kV Substation. The location of the proposed BESS development and the surrounding generation technology is indicated in Figure 1.

Figure 1: Location of Kilmarnock BESS

The status of the proposed development is summarised as follows:

- A connection agreement is in place for the proposed development, with 350MW Connection Entry Capacity and Connection Exit Capacity and one Point of Connection (PoC) to be located at the User's identified location, namely, Boydston 400kV Substation.
- The BESS site secured consent under Section 36 of the Electricity Act for a 350MW BESS development in January 2024.

Further detail regarding the Kilmarnock BESS can be found on the developer's website [5].

[3] BEIS Electricity Generation Costs (2020) - GOV.UK (www.gov.uk)
[4] Supply Chain Plan Guidance - Allocation Round 7
[5] Kilmarnock BESS (Flexpower Ltd)

4.4 Connection of Kilmarnock BESS (Flexpower)

An application for connection in respect of the proposed 350MW Kilmarnock BESS (Flexpower) development was first received in September 2021.

The transmission works required to accommodate the connection of the Kilmarnock BESS (Flexpower) development entail: (i) installing a new 400kV Gas Insulated Switchgear (GIS) bay at Kilmarnock South 400kV Substation; (ii) constructing approximate 2.6km 400kV circuit from Kilmarnock South to the User's site (Boydston Substation); (iii) the establishment of Boydston 400kV Substation, equipped with one 400kV metering circuit breaker and associated disconnectors; and (iv) undertaking all required civil, environmental, and protection and control (P&C) works. Kilmarnock BESS will be connected via this 400kV point of connection at Boydston 400kV Substation.

There is currently 1150MW of BESS capacity contracted to connect at Kilmarnock South 400kV Substation. This is summarised in Table 4 below:

Table 4: Contracted Generation at Kilmarnock South 400kV Substation

Site	Connection Status	Consent Status	Capacity (MW)
Kilmarnock BESS (Flexpower)	Contracted	Consented	350
[redacted]			
[redacted]			
Total Capacity (MW)			**1150**

A Bilateral Connection Agreement is in place between NESO and the developer of the sites in Table 4. Corresponding Transmission Owner Construction Agreements are in place between NESO and SPT.

The establishment of Boydston 400kV Substation is necessary to accommodate the 350MW contracted capacity from the Kilmarnock BESS (Flexpower) development. Discussion of the alternative reinforcement options considered can be found in Sections 5.

4.5 NESO Connections Reform

As Ofgem is aware, a period of significant industry-wide connections reform activity is currently underway, led by the NESO. The NESO submitted its final connections reform recommendations to Ofgem for approval on 20th December 2024. With recent publication of the UK Government's Clean Power 2030 Action Plan, the signal from the UK Government is clear in that connections reform must align with the ambitions of the Clean Power 2030 Action Plan, and that over-capacity of BESS, solar and onshore wind projects in the current connections queue must be addressed.

At the time of submitting this MSIP application, Ofgem has yet to opine on its connections reform decision, and it is unclear which connecting projects will meet the necessary Connections Criteria for securing a Gate 2 connection offer by the end of May 2025, given the recent grandfathering provisions which have been announced.

This uncertainty could have an impact on the investment figures sought within this MSIP application. Where any contracted connecting parties fail to secure a Gate 2 connection offer following the Gate 2 to Whole Queue connections reform exercise, their securities and allocation of costs will also fall away. Where this is the case, this will impact the current capital expenditure requested by SPT in this MSIP application, albeit this will not affect the works as stated in this submission. Therefore, following

completion of the Gate 2 to Whole Queue exercise, SPT will review the contracted parties due to connect into Kilmarnock South 400kV substation and will endeavour to inform Ofgem (i) where there is a change to the contracted connecting parties seeking to connect, and (ii) where there is any revision to the requested MSIP investment figures to reflect this change in the contracted background, for further Ofgem review.

4.6 Alignment with RIIO-T2 Strategic Goals

As described in our RIIO-T2 plan[6] for the five-years to the end of March 2026, to mitigate the impacts of climate change and achieve a low-carbon energy system requires a level of focused effort and commitment never seen before. The mass electrification of transport and heat has only started and there is a huge amount required to build on the timely progress already made in the electricity sector.

Energy networks are critical to achieving the wider Net Zero emissions targets and with continued engagement with consumers, network users and our wider stakeholders, we've set a progressive plan in place to facilitate a Net Zero future. Our RIIO-T2 plan sets out four strategic goals – informed by our stakeholder priorities – that will keep us moving towards this sustainable future.

These goals and their alignment with the Boydston 400kV substation project, are summarised below:

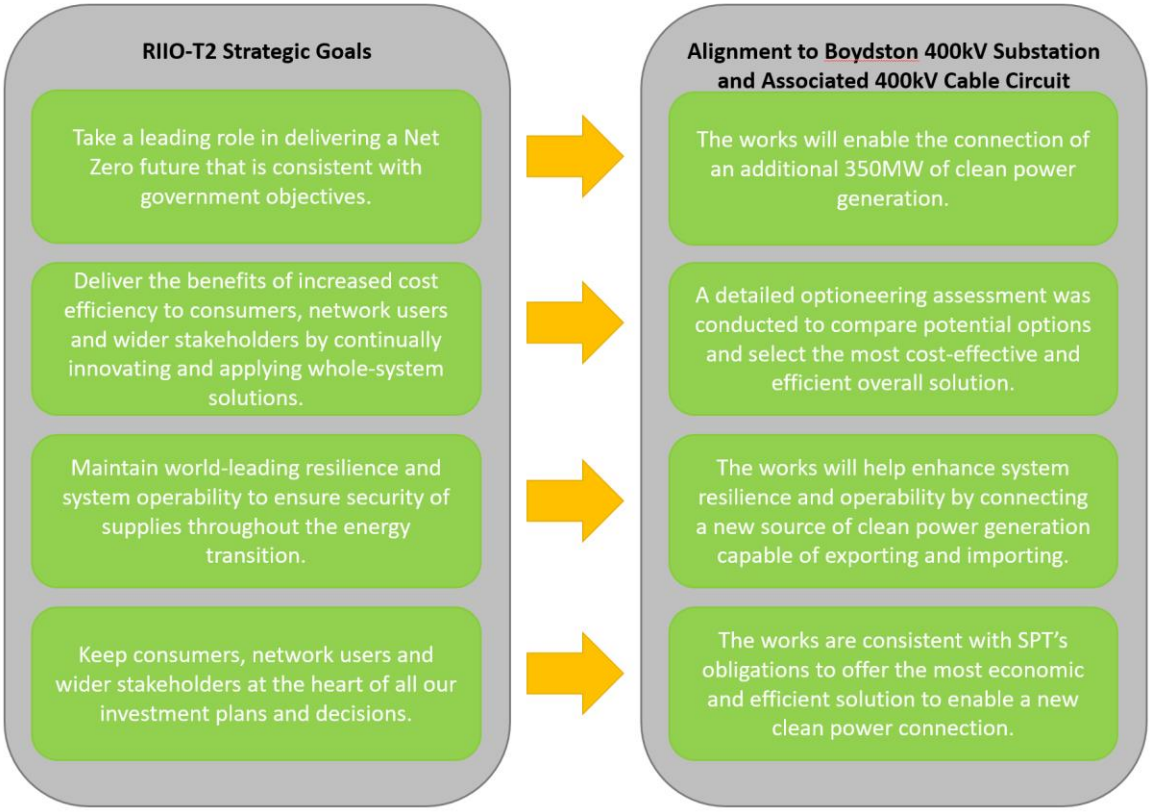

Figure 2: Alignment of the Boydston Substation Project with SPT RIIO-T2 Strategic Goals

[6] SP Energy Networks RIIO-T2 Business Plan

Further detail regarding how this proposal aligns to our four Strategic Goals is outlined below:

Take a leading role in delivering a Net Zero future that is consistent with government objectives.

Providing the connection to the 350MW Kilmarnock BESS (Flexpower) will contribute towards a reduced reliance on fossil fuel electricity generation sources.

Deliver the benefits of increased cost-efficiency to network users and consumers by continually innovating and applying whole system solutions.

Following receipt of application for connection, SPT has worked with NESO throughout the connection offers process to issue a connection offer which reflects the most cost-effective connection solution on a whole systems basis, compliant with the relevant technical standards.

Maintain world-leading resilience and system operability to ensure security of supplies throughout the energy transition.

The establishment of Boydston 400kV substation will help maintain system resilience and operability by enabling the connection of a new source of generation.

Keep network users and consumers at the heart of all our investment plans and decisions.

The completion of Boydston 400kV substation will allow SPT to satisfy network users request for connection and is consistent with SPT's statutory and licence responsibilities, including Licence Condition D4A.

Key stakeholders have been consulted during the development of the proposed solution and engagement with stakeholders will continue throughout the project development and delivery process. More detail on stakeholder engagement can be found in Section 8.4.

The completion of the Boydston 400kV Substation and the connection of the associated Kilmarnock BESS development will continue to align with our future strategic ambitions.

5. Assessment of Options

Various alternative options were considered to accommodate the additional contracted generation. This included a 'Do Nothing' option.

5.1 Existing System Configuration at Kilmarnock South 400kV Substation

Kilmarnock South 400kV Substation is located southeast of Kilmarnock in East Ayrshire Council. The substation connects into the ZP and XV route overhead lines to Hunterston 400kV Substation (HUER) and Strathaven 400kV Substation (STHA) respectively. Figure 3 below illustrates the current layout of the substation.

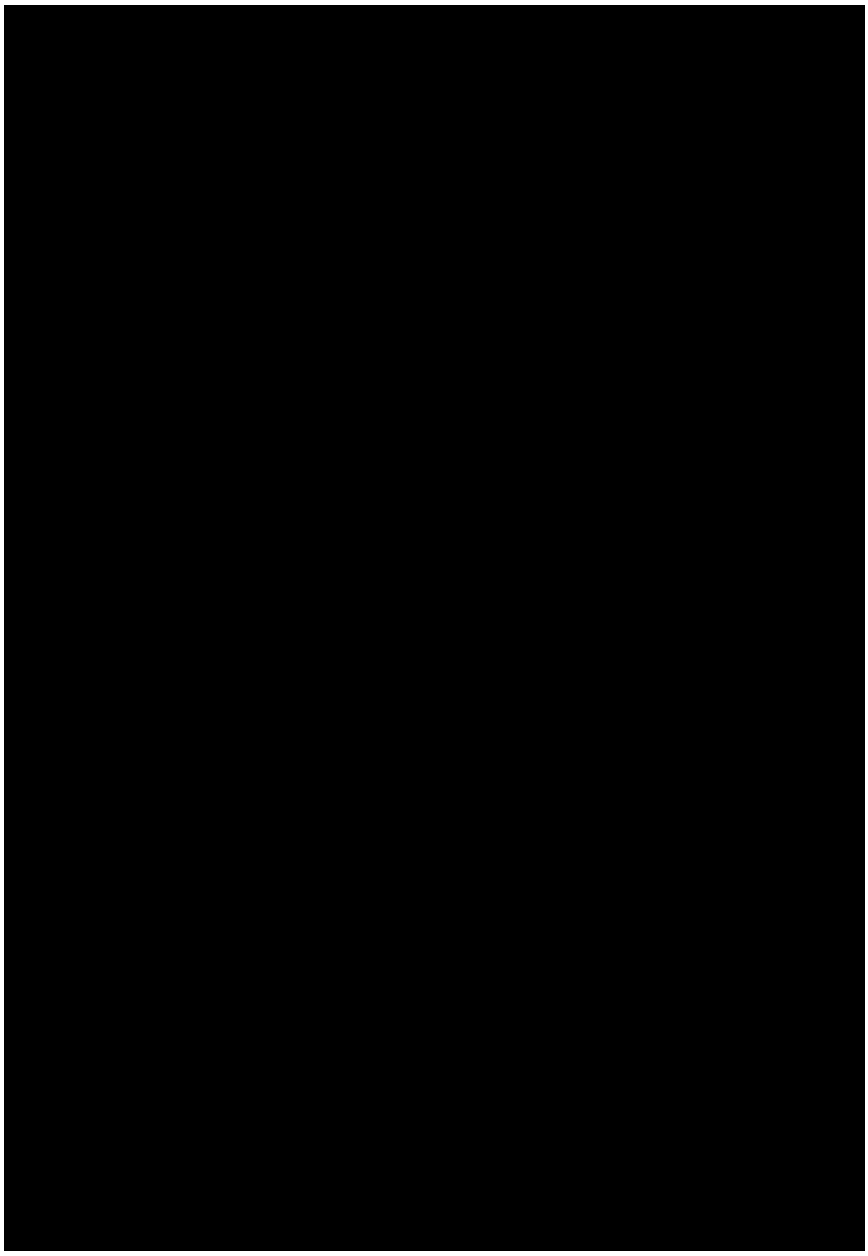

Figure 3: Single Line Diagram of Existing Kilmarnock South 400kV Substation

Figure 4 shows the Kilmarnock South 400kV double busbar GIS substation and the current contracted connections as referenced in Table 4. The diagram also depicts the proposed connection arrangement

for the Kilmarnock BESS (SPT-TOCO-2201) and the proposed Boydston 400kV Substation located at the User's end. Please note that this paper relates only to the assets highlighted in blue in Figure 4.

Detail of the proposed solution (ref. Option 4) is provided further in the next section of this document.

Figure 4: Kilmarnock BESS (Flexpower) 400kV Connection Single Line Diagram

5.2 Overview of Options

This section presents a narrative of the options that were considered at the conceptual planning phase of this project. The environment, network users and the communities we serve are at the forefront of SPT's business decisions. SPT's network upgrade priority is on no-build or low-build options which deliver network capacity improvement sooner, and with the least impact to our communities and customers. These options are developed to accommodate the rapid generation developments in the regions under review.

5.2.1 Option 1 – Do Nothing or Delay

A 'Do Nothing' or 'Delay' option is not credible in relation to this project and would be inconsistent with SPT's various statutory duties and licence obligations, including Licence Conditions D3 and D4A, which require SPT to comply with the NETS SQSS and to offer to enter into an agreement with the system operator upon receipt of an application for connection. The proposed works are identified as Enabling Works in the connection agreements relating to the projects in Table 4.

5.2.2 Option 2 – New Substation to Turn in Kilmarnock South – Coylton 275kV circuit

This option seeks to meet this customer request by establishing a new substation to turn in the existing Kilmarnock South to Coylton 275kV double circuit overhead line (XY Route No.1 and No.2) at a location within close proximity to the customer's identified point of connection. This would be achieved by means of a new substation with a double busbar arrangement with the Kilmarnock South to Ayr/Coylton 275kV No.1 and No.2 circuits turned in. This option neither reflects an economic, efficient,

nor co-ordinated operation of the transmission network, and has been discounted for the following reasons:

- XY route is currently constrained by renewable generation output from southwest Scotland. A new connection to turn in on to this route will significantly impact the overhead line transfer capacity back to Kilmarnock South (see Figure 5).
- This option would provide the User with a 275kV PoC as opposed to the User's requested 400kV PoC.
- This option is the least cost effective, with an estimated cost of £40.38 (2018/19 prices).

Figure 5: XY Route, Showing Constraint

5.2.3 Option 3 – Achieve a 400kV Connection via Overhead Line

The prospect of connecting via an overhead line circuit was assessed between Kilmarnock South 400kV substation to the Kilmarnock BESS site. This option would require new 400kV double busbar GIS switchgear and associated equipment to be installed at Kilmarnock South 400kV Substation, a new Cable Sealing End compound as well as new overhead tower structures installed between Kilmarnock South 400kV Substation and the User's site. A short section of an underground cable would also be required out of Kilmarnock South 400kV Substation to connect to the Cable Sealing End compound and to allow the circuit to cross under ZP (Kilmarnock South to Hunterston East 400kV) and XV (Kilmarnock South to Strathaven 400kV) Routes. At the User's site, a new 400kV substation would be established, including a new 400kV (metering) circuit breaker and associated disconnectors to provide the User a PoC. As part of this option, utilising an overhead line would have extended the project completion date due to Section 37 consent being required. This option would cost £14.82m (2018/19 prices). This option was discounted on grounds of cost.

5.2.4 Option 4 – Achieve a 400kV Connection via Underground Cable

This option assessed achieving the customer connection via an underground cable circuit of approximately 2.6km route length from Kilmarnock South 400kV Substation to the Kilmarnock BESS site, running along the route shown in Figure 6 below. The option presented here, has been proposed.

Figure 6: Connection Route - Option 4

This options costs £10.993m (2018/19 prices) and mainly entails the following works:

- Install a 400kV GIS feeder bay and an associated equipment at Kilmarnock South 400kV Substation.
- Install a 400kV cable circuit, approximately 2.6km in length, to the User's site (Boydston substation).
- All civil and environmental works.
- All protection and control works.

5.3 Option Assessment

As described in our RIIO-T2 Business Plan Annex 8[7], while most engineering justification papers have a Cost Benefit Analysis (CBA) aligned with the RIIO-T2 CBA model, projects in the following categories do not:

- Live projects rolling over from RIIO-T1, since they have already initiated, with decisions made during the previous price control.
- Customer connection projects, as the proposed approach is based on agreement with the connecting party as they will bear a sizeable proportion of the costs incurred.
- TO Reinforcements associated with new connections, where the options considered are evaluated purely based on the lowest cost solution, which meets the project objectives, as the benefits are all comparable.
- Projects justified through the Network Options Assessment Process as these are subject to an extensive and rigorous CBA process by the Electricity System Operator who can consider market options, and different options which may be offered by Transmission Owners.

[7] Annex 8 - Cost Benefit Analysis Methodology (spenergynetworks.co.uk)

Projects in the four categories above have an associated document (this MSIP Re-Opener application in respect of the Kilmarnock BESS connection) explaining the feasible options and the reasoning behind the selection of the preferred investment option.

The options relating to the connection of an additional 350MW of contracted BESS capacity from the Kilmarnock BESS (Flexpower) development are described in Section 5.2 above, while Table 5 below summarises the key benefits and disadvantages of each option, together with an indication of estimated cost.

Table 5: Option Benefits, Drawbacks and Selection Outcome

No.	Option	Estimated Capital Cost[8]	Key Advantage	Key Disadvantage	Option Outcome
1	Do Nothing or Delay	-	None	Failure to comply with statutory duties and licence obligations.	Rejected
2	New Substation to Turn in Kilmarnock South – Coylton 275kV circuit	£40.378m	Provides the necessary additional capacity.	Would require a new double busbar substation to be established. Would require significant outages on the Kilmarnock South to Coylton 275kV which is one of the key double circuit overhead lines currently serving Southwest Scotland. Would incur higher cost compared to Option 4.	Rejected
3	A 400kV Connection via Overhead Line	£14.818m	Provides the necessary additional capacity.	Would result in later completion date due to Section 37 being required. Would incur higher costs compared to Option 4.	Rejected
4	A 400kV Connection via Underground Cable	£10.993m	Provides the necessary additional capacity whilst achieving an earliest possible completion date, at lowest capital cost.	-	**Proposed**

Option 4 is therefore the preferred investment option, delivering the additional transmission capacity required at minimum overall capital cost.

[8] All values are in 2018/19 prices.

6. Proposed Works

6.1 Project Summary

As discussed above, the connection will be provided by installing a new 400kV Gas Insulated Switchgear (GIS) bay at Kilmarnock South 400kV substation. From here a new 400kV cable circuit will be installed from Kilmarnock South 400kV substation towards the Flexpower battery storage site. At the Kilmarnock BESS site (Boydston 400kV Substation), SPT will install a 400kV metering circuit breaker which will form the Point of Connection between SPT and the User.

The construction project will be carried out by SPT and will include all works associated with the project elements indicated below.

6.1.1 Kilmarnock South 400kV Substation Works

The proposed configuration of Kilmarnock South 400kV Substation is indicated in Figure 7.

Figure 7 Single Line Diagram – Kilmarnock South 400kV Substation

As part of the Kilmarnock BESS (Flexpower) project, works at Kilmarnock South 400kV Substation involve:

- Installation of one new 400kV double busbar GIS bay at Kilmarnock South 400kV substation including a 400kV circuit breaker and associated equipment (note, the remaining three 400kV GIS bays indicated in red in Figure 7 form part of separate projects).
- All associated protection and control works.
- Associated civil, environmental, miscellaneous and minor works.

6.1.2 Civil Engineering Works

The BESS developer is responsible for design and construction of an access road from the public highway to SPT metering substation at the BESS site. The developer is also responsible for the provision of a suitable access for construction, temporary welfare and laydown area as well as a free draining substation platform of suitable bearing capacity.

6.1.3 400kV Cable Works

A 400kV cable circuit of approximate length 2.6km and capacity 388MVA will be installed between the existing Kilmarnock South 400kV Substation and the Boydston 400kV Substation at the BESS site. The proposed cable route is indicated in Figure 8.

Figure 8: Proposed 400kV Cable Route, KILS 400kV Substation to Boydston 400kV Substation

The underground cable circuit will be ducted for most of the route with only the ends close to the cable sealing end terminations being direct buried. The new cable system will be rated for 388MVA. The proposed cable for this project is 800mm^2 Aluminium.

6.1.4 Boydston 400kV Substation Works

At Boydston 400kV Substation , SPT will install a new 400kV SPT owned (metering) substation including switchgear and associated disconnectors to provide a PoC for the battery storage connection.

The proposed configuration of Boydston 400kV Substation is indicated in Figure 9.

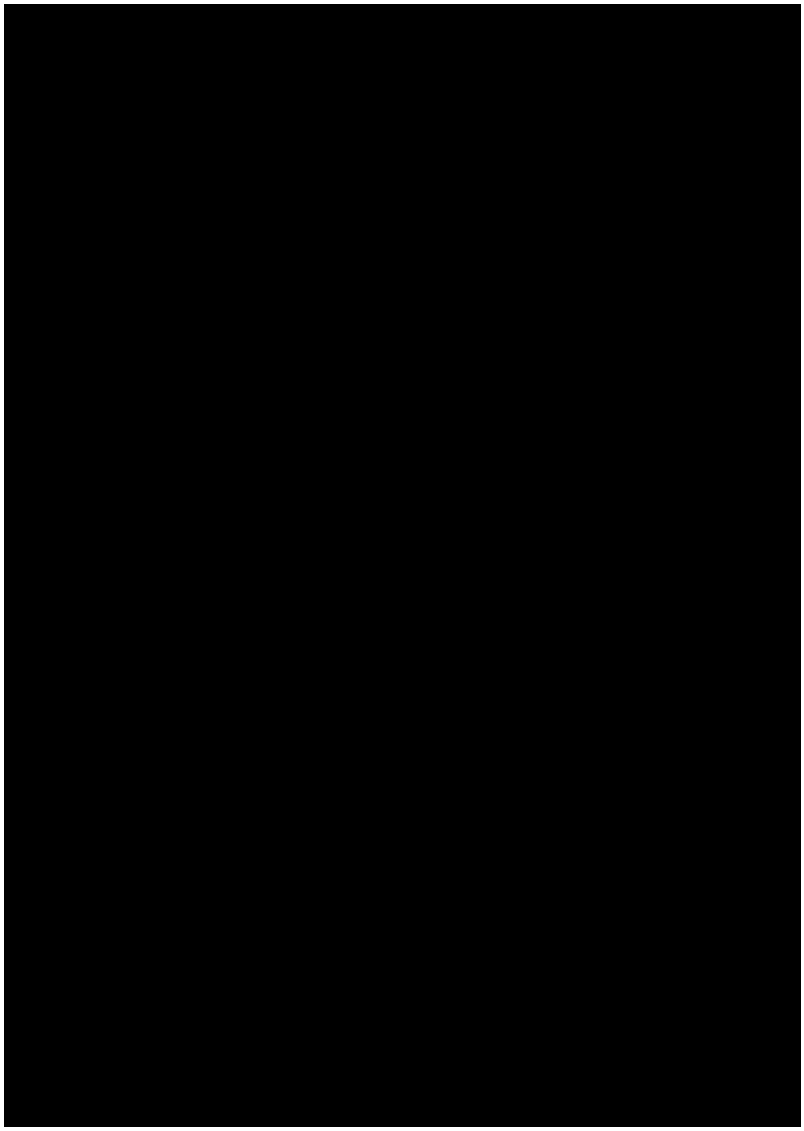

Figure 9: Single Line Diagram – Boydston 400kV Substation

6.1.5 Environmental and Consent Works

The BESS developer is responsible for all necessary planning consents for constructing the BESS site, including the SPT built metering substation at this location.

No consents are required for all other works required for the connection with the local authority confirming these all come under permitted development status.

6.2 Benefits of the Proposed Works

The primary benefit of this proposal is that it allows the connection of an additional 350MW of contracted BESS to Kilmarnock South 400kV Substation.

7. Project Cost Estimate

The cost estimates below include all contracts required for completion of the project.

7.1 Potential Volume Driver Allowance

Applying the RIIO-T2 Generation Connections VDUM to this project results in a £6.604m allowance being provided. The allowance is calculated as per Table 6 below. Please note that this excludes the further allowance permitted under Licence Special Condition 3.36 Opex escalator.

Table 6: Volume Driver Allowance

Volume Driver (*2018/19 price base*)		£m/unit	Unit	Volume Driver Allowance (£m)
Project	Fixed Cost	1.700	1.00	1.700
Shared Use	New Build Substation, MVA	0.010	350	3.500
	Cable >=1km	0.540	2.60	1.404
Total				**6.604**

7.2 Estimated Total Project Cost (A1, H1 and One-Off contributions)

Table 7 below details our current view of contribution values based on latest contract position.

Table 7: Estimated A1, H1 and One-Off contributions

Potential direct capex value per year, £m, 18/19 price base										
Cost Contributions	Pre-RIIO-T2: direct capex	Yr. 21/22: direct capex	Yr. 22/23: direct capex	Yr. 23/24: direct capex	Yr. 24/25: direct capex	Yr. 25/26: direct capex	Yr. 26/27 (T3): direct capex	Yr. 27/28 (T3): direct capex	RIIO-T2 Total: direct capex	Total: direct capex
[redacted]										
*H1 Shared (PC)	0.000	0.000	0.000	0.658	3.209	4.314	2.812	0.000	8.181	10.993
One-Off (CF)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
[redacted]										

*H1 Shared refers to infrastructure assets which are funded through the Price Control (PC)

7.3 Estimated Total Project Infrastructure Cost

Aligned with the format of the Re-Opener Pipeline Log, Table 8 details the expected energisation year and our current view of potential direct capital expenditure in RIIO-T2 to be funded via the MSIP Re-opener mechanism.

Table 8: Estimated Incidence of Expenditure

	Potential direct capex value per year, £m, 18/19 price base									
Energisation Year	Pre-RIIO-T2: direct capex	Yr. 21/22: direct capex	Yr. 22/23: direct capex	Yr. 23/24: direct capex	Yr. 24/25: direct capex	Yr. 25/26: direct capex	Yr. 26/27 (T3): direct capex	Yr. 27/28 (T3): direct capex	RIIO-T2 Total: direct capex	Total: direct capex
2026/27	0.000	0.000	0.000	0.658	3.209	4.314	2.812	0.000	**8.181**	**10.993**

As described in Section 4.5, it should be highlighted that where any contracted connecting parties fail to secure a Gate 2 connection offer following the Gate 2 to Whole Queue connections reform exercise, their securities and allocation of costs will also fall away. This could have an impact on the current capital expenditure requested by SPT above, albeit this will not affect the works as stated in this submission. Therefore, following completion of the Gate 2 to Whole Queue exercise, SPT will review the contracted parties due to connect into Kilmarnock South 400kV substation and will endeavour to inform Ofgem (i) where there is a change to the contracted connecting parties seeking to connect, and (ii) where there is any revision to the requested MSIP investment figures to reflect this change in the contracted background, for further Ofgem review.

7.4 Detailed costs

Table 9 below provides a cost breakdown representing the latest view of the Price Control Direct costs for the proposed investment, including details of the procurement strategy and the cost maturity for each contract:

Table 9: Price Control Direct Costs, Procurement Strategy and Cost Firmness

Contract Name	Contract Start	Contract Finish	Direct (PC) Cost (£m)	Procurement Strategy	Cost Firmness
[redacted]					

Contract Name	Contract Start	Contract Finish	Direct (PC) Cost (£m)	Procurement Strategy	Cost Firmness
[redacted]					
Total			**10.993**		

7.5 Procurement Strategy

The SPT Procurement strategy follows a disaggregated model, within which, contracts are disaggregated and competitively tendered separately to maximise cost efficiencies. On this project the major contracts awarded are for 400kV GIS/GIB Supply and installation, 400kV Cable Ducting installation, 400kV Cable Supply and installation works, Main Civil works and electrical installation/commissioning Balance of Plant works. Further smaller scale competitive tenders were also actioned for some plant and equipment where existing framework agreements weren't available. This includes the GIS enabling civil works, Cable route trial holes, SCADA system, 110V DC Battery system and Standby Diesel Generator to be installed at Boydston Substation.

SPT also procure several items of equipment directly with manufacturers, utilising ongoing frameworks SPT have in place with various suppliers. These frameworks are tendered competitively to achieve the best market rates and are valid for a period of 2 years, giving cost certainty.

7.6 Cost Maturity

Aligned with the classification outlined within the "OFGEM Class of Estimate" tab included in the "ET2 UM Submission Template" the table below includes the assessment of cost firmness:

Table 10: Cost Firmness Assessment

Cost Firmness as per OFGEM classification	Direct (PC) Cost (£m)	Direct (PC) Cost (%)
[redacted]		
TOTAL	**10.993**	**100%**

As it can be seen in Table 10, [redacted] of the total costs are either incurred already or have been contracted, giving high confidence in our cost submission.

7.7 Project Risk and Mitigation

Table 11 below provides a breakdown of the individual project risks followed by further detailed explanation regarding mitigation and likelihood. The provision for risk at [redacted] of the project cost is proportionate and justified.

Table 11: Risk Quantification

Risk	Description	Probability	Value (£m)
[redacted]			

[redacted]

[redacted]

[redacted]

[redacted]

7.8 Comparison of Volume Driver Allowance and Estimated Cost

As calculated in Section 7, Table 6, applying the RIIO-T2 Generation Connections VDUM to this project results in a £6.604m allowance provided by the VDUM. Table 12 outlines the comparison between the RIIO-T2 Volume Driver Allowance and the estimated cost of the project (H1 shared).

Table 12: Comparison of Volume Driver Allowance and Estimated Price Control Direct Cost

	Potential Price Control Direct capex value per year, £m, 18/19 price base									
Description	Pre-RIIO-T2: direct capex	Yr. 21/22: direct capex	Yr. 22/23: direct capex	Yr. 23/24: direct capex	Yr. 24/25: direct capex	Yr. 25/26: direct capex	Yr. 26/27 (T3): direct capex	Yr. 27/28 (T3): direct capex	RIIO-T2 Total: direct capex	Total: direct capex
Allowance	0.000	0.000	1.651	1.651	1.651	1.651	0.000	0.000	6.604	**6.604**
Cost	0.000	0.000	0.000	0.658	3.209	4.314	2.812	0.000	8.181	**10.993**
Variance	0.000	0.000	1.651	0.993	-1.558	-2.663	-2.812	0.000	-1.577	**-4.389**

The potential VDUM allowance for the project is lower than the estimated cost by £4.389m. This is more than £4.24m, which is the threshold set in LSpC 3.14.6(a) for consideration under this uncertainty mechanism.

7.9 Total Allowance Request

SPT requests that the following allowance is provided through the MSIP Re-opener mechanism to deliver the works described within Section 6. The requested MSIP allowance will be subject to the Opex escalator mechanism:

Table 13: Total Allowance Request

	Price Control Direct allowance requested per year, £m, 18/19 price base						
Year	**Yr. 21/22:**	**Yr. 22/23:**	**Yr. 23/24:**	**Yr. 24/25:**	**Yr. 25/26:**	**Yr. 26/27:**	**Total (£m)**
Direct Allowances Requested	0.000	0.000	0.658	3.209	4.314	2.812	**10.993**

An aggregated view of the total cost is outlined in Table 14 below:

Table 14: Total Price Control Project Cost Aggregated view

Category	Total Price Control Project Cost (£m)	Price Control Direct Cost (£m)	Contractor Indirects* (£m)	SPT Indirects (£m)
[redacted]				

* Contractor Indirects costs are only shown for reference and have been excluded from the potential direct capital expenditure to be funded via the MSIP Re-opener mechanism.

SPT also requests that the following allowance is provided for Community Benefits associated to the project as described in Section 9, calculated according to latest draft Government guidance:

Table 15 - Requested Direct Allowance – Community Benefits

OSR	Scheme Name	Allowance (£m)
SPT200481	SPT-TOCO-2201 Kilmarnock BESS (Flexpower)	0.138

7.10 Regulatory Outputs

It is proposed that the associated Price Control Deliverable is defined as follows:

Table 16: Price Control Deliverable

OSR	Scheme Name	Output*	Allowance** (Oncosted)	Delivery Date
SPT200481A	SPT-TOCO-2201 Kilmarnock BESS (Flexpower)	Commissioning of Kilmarnock South GIS Bay to feed TOCO-2201 Kilmarnock BESS facility and successful testing of 400kV Cable to the remote End (Boydston 400kV) Substation	£12.446m	31st March 2027

*Ultimate connection will be dependent upon successful completion of the remote end Developer works.

**Includes Indirect costs calculated using the Opex Escalator uplift (13.4%) on Price Control Direct costs

8. Project Delivery

SPT will apply a project management approach that will ensure that this project work is delivered safely, and in line with the agreed time, cost and quality commitments. We have a proven track record of delivering essential transmission network upgrade projects and will draw upon this knowledge and experience to effectively manage this project. We have assigned a dedicated Project Manager to this project who will be responsible for overall delivery of the scope and is the primary point of contact for all stakeholders.

8.1 Delivery Schedule

A standard approach has been applied to the planning phase of this project and this will continue for the reporting and the application of processes and controls throughout the project lifecycle. Table 17 summarises the key project milestones within the delivery schedule.

Table 17: Key Project Milestone

Milestone	Project Phase	Estimated Completion Date
1	ITT Main Substation Civil Works	Jan 23 - Complete
2	Award Main Substation Civil Works	Jul 2023 - Complete
3	Commence Main Site works	Dec 24 – Complete
4	Consents Obtained, Land Servitude being concluded	Mar 25
5	Complete Site works	Mar 27

Regular meetings with the Project and Construction Management Teams shall be undertaken to assess the ongoing effectiveness of the Project Management interfaces.

The Project Manager will facilitate internal Project Team Meetings, in which project progress and deliverables will be reviewed and any arising risks or issues will be discussed and addressed.

8.2 Alignment with other projects

This scheme aligns with several other projects that are being delivered at Kilmarnock South in a similar time frame. These projects are interrelated, both by design and with respect to the coordination of works.

- [redacted] Installation of an additional 400kV GIS bay at Kilmarnock South 400kV Substation, and associated works, to facilitate the connection of a third-party BESS.
- [redacted] Installation of an additional 400kV GIS bay at Kilmarnock South 400kV Substation, and associated works, to facilitate the connection of a third-party BESS
- Kilmarnock South 400kV GIS Bus Coupler (SPT-TORI-1854) – Installation of a Bus Coupler at Kilmarnock South 400kV Substation, which is required to facilitate new connections and maintain operational flexibility.

The works for this scheme will be co-ordinated with these other projects. The capital expenditure estimated in Section 7.2, Table 7, is incremental to the projects detailed above.

8.3 Quality Management

SPT adopts a "life cycle" approach to Quality Management in major project delivery. Our Management Systems are certified to ISO 9001, ISO 14001 and ISO 45001. Various areas applicable to these standards ensure a quality product is delivered. The significant areas detailed below:

8.3.1 Quality Requirements During Project Development

Any risk or opportunity that may affect the quality of the product are detailed in the Project Risk Register, summarised in section 7.7, Table 11.

The suppliers of main equipment may also receive a Factory Acceptance Test Inspection when the asset is being built.

8.3.2 Quality Requirements in Tenders

Each contract that SPT issues has a standard format. Specifically in relation to quality, this will include a Contractors' Quality Performance Requirement (CQPR). This CQPR represents a specification that details roles and responsibilities for all parties during the works, frequency and format of reporting. It will also specify the document management process to be adhered to during the delivery of the project. In addition to the CQPR, each project has a contract specific Quality Management Plan, detailing the inspection and testing regime for works as well as the records to be maintained.

8.3.3 Monitoring and Measuring During Project Delivery

SPT Projects undertake regular inspections on projects and contractors to monitor and measure compliance with SPT Environmental, Quality and Health and Safety requirements, as detailed in the contract specifications for the work. All inspections are visual, with the person undertaking the inspection ensuring that evidence of the inspection and any actions raised are documented.

The following inspections are completed:

- Quality Inspections (monthly)
- Environmental Inspections (monthly)
- Safety Assessments & Contractor Safety Inspection (daily, with full time Site Manager)
- Project Management Tours (monthly)

The scope of audits and Inspections is to determine compliance with:

- Procedures & Guides
- Planned arrangements for ISO 9001, 14001 & 18001
- Legal and other requirements.

8.3.4 Post Energisation

SPT Projects and SPT Operations carry out a Defect Liability Period Inspection prior to the expiry of the contract Defects Liability Periods. This ensure any defects that come to light after commissioning are identified and rectified buy the Contractor.

8.4 Stakeholder Engagement

SPT is committed to delivering optimal solutions in all the projects we undertake. A key part of this is engaging with relevant stakeholders throughout the project development and delivery process.

Stakeholders can include customers, regulatory bodies and other statutory consultees, national and local government, landowners, community groups, and local residents and their representatives (e.g. MPs, MSPs and councillors).

Community impacts associated with construction activities are considered at project initiation by completion of a Community Communications Plan, which details the stakeholders relevant to the project, the communication channels that will be used to engage with them, the information that will be provided to and sought from them, and the timescales over which this will happen. It considers any sensitivities that may require increased stakeholder consultation and details specific events that will be held with stakeholders during the development of the project.

As part of this project, SPT have engaged with the local road's authority, the third-party landowner, and private landowners to secure the land rights required for proposed cable route. We have also engaged with the other stakeholders, including community councils and local residents where works in the area may impact on them (e.g. traffic management). All consents are in place and the final stages of the servitude are expected to be completed by March 2025.

We have also engaged with SEPA, and secured the necessary registrations, for elements of the works which require their consultation, namely the works across the two river crossings which are located within the cable route.

9. Community Benefits

SPT projects delivering new infrastructure will attract a sum of Community Benefits funding proportional to the new works carried out. As there has been a general level of interest from the community regarding this project there will be an expectation that Community Benefits will be available once Government guidance has been published.

Community Benefits, in the context of network infrastructure, refer to an additional mechanism, **separate from the planning process**, aimed at enabling communities to directly benefit from hosting electricity infrastructure. They aim to enhance the local economy, society, and environment, and can also drive growth in the local area by investing in local priorities such as infrastructure, supply chains, and skills.

SP Energy Networks has a great deal of experience and are recognised as industry leaders in delivering Community Benefits, having already dispersed almost £25m of funding to our communities through our Transmission Net Zero Fund and Green Economy Fund. We have created draft Community Benefit Principles for new infrastructure host communities.

SPT will:

- Work in partnership with communities to understand their needs, ambitions and plans for social, economic and environmental sustainability
- Provide tailored support for communities to get the right skills, knowledge, capability and structures in place
- Put in place clear independent assessment of funding allocation with fair and straightforward governance
- Deliver lasting outcomes for communities, aligned to their ambitions

- Evaluate the benefits that funding has delivered to communities, develop case studies, and share learnings publicly

Community Benefit investment

Government guidance has not been released but the latest draft guidance indicates the following:

[redacted]

The inclusion of underground cables is still under discussion with DESNZ. We therefore propose that the previous draft guidance figure of [redacted] until the final guidance is published.

Draft guidance is restricted to new infrastructure, discussions with DESNZ and the other TOs propose the inclusion of:

- Sections of existing transmission routes that require voltage uprating and are screened as requiring an Environmental Impact Assessment; and
- Substation extension projects that increase the footprint of an existing substation beyond the original boundary by at least one hectare

SPT will appoint an independent administrator to support communities and provide fair and transparent assessment of funding allocation. In line with latest draft guidance, we propose [redacted] d to the Community Benefits cost for individual MSIPs.

As detailed in Section 6, project works involve new underground cable and should attract the following community benefits:

Table 18: Community Benefits

Works	Km	Cost
[redacted]		
TOTAL		**£138,000**

[redacted]

10. Conclusion and Recommendations

This MSIP Re-opener application demonstrates the need to carry out infrastructure work and establish Boydston 400kV Substation and associated 400kV underground cable circuit to facilitate the connection of the consented Kilmarnock BESS (Flexpower) development, with works commencing in the RIIO-T2 period (April 2021 – March 2026) and completing in the first year of RIIO-T3, to enable the timely and efficient connection of 350MW of contracted BESS.

The main conclusions of this submission are:

- The timely connection of low carbon generation and BESS will play a vital role in reaching legislated net zero targets, and is aligned with SPT's RIIO-T2 strategic goals.

- It is necessary to invest in transmission infrastructure to install a new 400kV GIS double busbar bay at Kilmarnock South 400kV Substation, and c2.6km of underground cable circuit between Kilmarnock South and Boydston 400kV Substations, to facilitate the connection of the contracted 350MW Kilmarnock BESS development, this having been identified as the most economic and efficient connection option.

- Applying the RIIO-T2 Generation Connections Volume Driver Uncertainty Mechanism (VDUM) to this project results in the estimated total project cost of £10.993m, being £4.389m higher than the £6.604m allowance provided by the VDUM. An MSIP Re-opener application is therefore required. Submission of this MSIP Re-opener application is aligned with the contracted connection programme.

- This submission is made in compliance with instruction included within RIIO-T3 Sector Specific Methodology Decision for the Gas Distribution, Gas Transmission and Electricity Transmission Sectors[9] ET Specific Annex, Paragraph 2.277, which states that projects with 50% or more expenditure within RIIO-T2 price control period should submit full project allowance request within January 2025 MSIP re-opener window.

SPT, respectfully, request Ofgem's agreement to the following:

- The option being progressed addresses a clear customer need and represents value to GB consumers, therefore, the works should proceed based on the preferred solution (Option 4).

- By virtue of being founded on market-tested costs, the proposed allowance value represents the real efficient cost of the works and should be fully funded.

[redacted]

[9] RIIO-3 Sector Specific Methodology Decision for the Gas Distribution, Gas Transmission and Electricity Transmission Sectors | Ofgem