

**RIIO-T3 LRE:  
Pre-Construction  
T2BP-PAP-0017**

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## Introduction

This document provides further detail of the T3 Load Related Expenditure (LRE) schemes included within our Pre-Construction Methodology, ref T2BP-MET-0003. The total request in our plan is for six schemes totalling £11m baseline funding. Our proposal recognises there is a high level of uncertainty surrounding the scope and potential mix of schemes that we may need to develop in RIIO-T2 for delivery during RIIO-T3. We have recognised this with the following regulatory controls:

- The expenditure for these schemes will be subject to symmetrical logging up at the RIIO-T2 close out as described in our supporting paper – True Up, Logging Up and re-openers: SHE Transmission RIIO\_T2 Proposals, ref T2BP-DD-SHE-010; and
- There will be opportunity to substitute schemes within this category based on changes in generation commitments and developer programmes.

The schemes included within our baseline line proposal are summarised in the table below, with further scheme details outlined in the remainder of the document.

## Summary table

<b>Scheme</b>	<b>PCF Funding request</b>
Glean Eoghainn	£0.150m
Ben Sca	£0.600m
Coire Glas Connection	£2.850m
Invergarry – Fort Augustus	£3.012m
Red John Pumped Storage Scheme	£3.000m
Energy Isles Wind farm connection	£1.389m
<b>Total</b>	<b>£11.001m</b>

<b>Scheme:</b>	Glean Eoghainn (SHT20055) and Ben Sca Wind farm connection (SHT20052)
<p><b>Requirement and Driver(s)</b></p> <p>Ben Sca is a 40.8MW wind farm requiring connection at 33kV at Dunvegan GSP by May 2026 and Glean Eoghainn is a 25MW wind farm requiring connection at 33kV at Dunvegan GSP by May 2027. The transmission works at Dunvegan GSP required for both connections are to:</p> <ul style="list-style-type: none"> <li>• Replace the existing 33kV transformer circuit breaker (1T0) located within Dunvegan 132/33kV GSP substation compound. This is driven by the Glean Eoghainn connection but will be installed as part of Ben Sca and is due for connection in Q2 2026 before Glean Eoghainn in Q2 2027.</li> <li>• Install an additional 60MVA 132/33kV transformer, a 33kV transformer circuit breaker (2T0), and an intertrip system. A new 132kV busbar with two new 132kV circuit breakers bays (110 and 210) will be created to connect to this infrastructure along with their associated cabling/metering/protection equipment.</li> </ul> <p><b>Funding Request</b></p> <p>Within the Pre-Construction funding request of the RIIO-T2 Business Plan, Ben Sca and Glean Eoghainn was subject to a total Pre-Construction funding request of £0.75m. The funding provided will be utilised to undertake the Pre-Construction Activities set out in the Programme Section of this response during the RIIO-T2 Period.</p> <p><b>Scope</b></p> <p>The Transmission works required are as follows:</p> <p><b>Dunvegan GSP</b></p> <ul style="list-style-type: none"> <li>• Install a new 60 MVA 33/132kV grid transformer</li> <li>• Replace 33kV transformer circuit breaker (1T0)</li> <li>• Install a new 33kV transformer circuit breaker (2T0)</li> <li>• Install a 132kV single busbar</li> <li>• Install two 132kV circuit breaker bays (110 and 210)</li> <li>• Install an intertrip system</li> </ul> <p><b>Programme</b></p> <p>In order to deliver this project by 2026/27, it will be necessary for the project to be progressed through the Pre-Construction Phases within RIIO-T2. Key works which will have to be completed during RIIO-T2 to ensure the delivery of the works associated at Dunvegan GSP include:</p> <ul style="list-style-type: none"> <li>• Technical review of the existing substation site and 33kV switchboard, to confirm location of new transformer, and match type and confirm the correct rating</li> <li>• Review of the site layout to accommodate the 132kV busbar and associated circuit switchers</li> <li>• Environmental review to determine any potential constraints in the existing GSP and surrounding vicinity</li> <li>• Engineering Studies to inform busbar ratings and configuration, protection reconfiguration, circuit breaker replacement duration and confirm outage period</li> <li>• Consultation with stakeholders and the wider public at various points through the Pre-Construction Phases to gain their feedback on the proposals</li> </ul>	

Key dates for meeting both the contracted and proposed completion dates are shown below:

Stage	Timeline for 2026 Completion
Project start	Q1 2023
Engineering and environmental studies complete	Q1 2024
Public Engagement	Q1 2024
Appoint contractor(s)	Q3 2024
Complete Initial contractor design	Q1 2025
Construction Complete	Q2 2027
Energisation	Q2 2027

It is requested Pre-Construction Funding is made available within the RIIO-T2 Baseline Funding to allow the timely progression of these significant connection projects within the Price Control Period. Based on historical experience, we believe there is a high possibility the works for this scheme may be delayed further into the RIIO-T3 period.

<b>Scheme:</b>	Coire Glas Connection (SHT20053) and Invergarry – Fort Augustus (SHT20057)
<p><b>Requirement and Driver(s)</b></p> <p>The Coire Glas Pumped Hydro Scheme, proposed by SSE Renewables, is subject to a signed Connection Agreement for the connection of 660MW of generation capacity in October 2025 and is in the process of completing a Modification Application for this to be increased to a phased connection of 660MW in December 2027 and a further 636MW of generation capacity in December 2029. The Modification Application is to be completed within 2020. SHE Transmission is currently contracted to provide for the 2025 connection date and anticipate this being amended to delivery for December 2027, early within the RIIO-T3 Price Control Period, as per the Modification Application.</p> <p>This driver triggers two SHE Transmission Projects - Coire Glas Connection and Invergarry-Fort Augustus.</p> <p><b>Funding Request</b></p> <p>Within the Pre-Construction funding request of the RIIO-T2 Business Plan, Coire Glas was subject to a Pre-Construction Funding Request of £2.85m and Invergarry – Fort Augustus a Pre-Construction Funding Request of £3.012m. The funding provided will be utilised to undertake the Pre-Construction Activities set out in the Programme Section of this response during the RIIO-T2 Period.</p>	



## **Scope**

The Transmission works which are required as a result of the 2025 connection are as follows:

### **Invergarry – Fort Augustus**

- Establishment of a new 400/132kV Substation North of Invergarry, consisting of two 400/132kV transformers, a 132kV Busbar and 400kV and 132kV circuit breakers
- A new 400kV overhead line from the Invergarry Substation to the 400kV busbar at Fort Augustus, circa 20km in length
- Removal of the 132kV overhead Line between Fort Augustus and Invergarry (the section to Fort William will be left in situ)

### **Coire Glas**

- From the above, installation of 10km of new 400kV Overhead Line and 3km of 400kV underground cable into the Developer's site, where SHE-Transmission will establish a 400kV GIS substation comprising 4 no. GIS circuit breakers and bays.

Additional works required to facilitate this connection are:

- Construction of the Kinardochy Reactive Compensation Substation

The additional/amended scope associated with the current Modification Application is as follows:

### **Invergarry – Fort Augustus**

- Establishment of a new 400/132kV Substation North of Invergarry, consisting of two 400/132kV Transformers, a 132kV Busbar and 400kV and 132kV Circuit Breakers
- A new 400kV Overhead Line from the Invergarry Substation to the 400kV Busbar at Fort Augustus, circa 20km in length.
- Removal of the 132kV Overhead Line between Fort Augustus and Invergarry (the section to Fort William will be left in situ)

### **Coire Glas**

- Establish 13km of Overhead Line to the Developer's site, where SHE-Transmission will establish a 400kV AIS Substation consisting of 2 no. bays

Additional works required to facilitate this connection are:

- Construction of the Kinardochy Reactive Compensation Substation
- Construction of the Eastern HVDC Link for the 2029 connection
- Upgrade of the Beaully-Denny Overhead Line to full 400kV operation for the 2029 connection

## **Programme**

In order to deliver this project either within RIIO-T2 or early within the RIIO-T3 period, it will be necessary for the project to be progressed through the Pre-Construction Phases within RIIO-T2. Key works which will have to be completed during this RIIO-T2 to ensure the delivery of the works associated with the Coire Glas connection and Invergarry – Fort Augustus works include:

- Substation site optioneering and selection and overhead line route optioneering and selection

- Environmental surveys (including assessments on protected species, noise, landscape and visual, impact on watercourses and ground types) to inform the Site and Route Selection and support the necessary consents required for this project
- Engineering Studies to establish the required footprint and earthworks volumes for the substation platforms, impact of construction traffic and required road improvements, flood risk assessments, positioning of overhead line towers, layouts and design of equipment and buildings for the substations, site and ground investigations to inform site and route selection
- Negotiation of land purchases, leases, servitudes and wayleaves required for the construction of the substations and overhead lines
- Submission of Town and Country Planning applications for the substations and section 37 applications for the overhead lines to gain consent to construct and operate these
- Consultation with stakeholders and the wider public at various points through the Pre-Construction Phases to gain their feedback on the proposals
- Detailed design and surveys to inform the commencement of the construction phase

Key dates for meeting both the contracted and proposed completion dates are shown below:

Stage	Timeline for 2025 Completion	Timeline for 2027 Completion
Public consultations	Present – Q1 2022	Q4 2021 – Q4 2023
Optioneering and Route/Site Selection Completion	Q1 2021	Q3 2022
EIA start	Q4 2020	Q3 2022
Planning and Section 37 Submission	Q1 2022	Q4 2023
Appoint contractor(s)	Q1 2022	Q1 2024
Planning and Section 37 Consent	Q3 2022	Q3 2024
Complete Initial contractor design	Q4 2022	Q4 2024
Construction Start	Q1 2023	Q1 2025
Energisation	Q3 2025	Q3 2027

From the above it is noted on either date the Pre-Construction works are being undertaken within RIIO-T2, with construction also scheduled to being within RIIO-T2 under either scenario. On this basis it is requested Pre-Construction funding is made available within the RIIO-T2 baseline allowance to allow the timely progression of these significant connection projects within the Price Control Period. Given our experience with the developer in the RIIO-T1 period, our expectation is there is a high possibility the connection dates and program will be delayed back further into the RIIO-T2 period. There is also a substantial risk of a Public Inquiry for the new 400kV overhead between Invergarry – Fort Augustus.

<b>Scheme:</b>	Red John Pumped Storage Scheme (SHT20056)
<p><b>Requirement and Driver(s)</b></p> <p>The Red John Pumped Hydro Scheme, proposed by Intelligent Land Investments, is in the process of completing a Connection Agreement, due to be signed in Quarter 4 of 2020, for the connection of 450MW of generation capacity in October 2026.</p> <p><b>Funding Request</b></p> <p>Within the December 2019 RIIO-T2 Business Plan, Red John was subject to a Pre-Construction funding request of £3m. The funding provided will be utilised to undertake the Pre-Construction activities set out in the Programme section of this response during the RIIO-T2 Period</p> <p><b>Scope</b></p> <p>The Transmission works which are required as a result of the 2026 connection are as follows:</p> <ul style="list-style-type: none"> <li>• Provision of two separate 275kV Points of connection at the Red John 275kV switching station. The Red John 275kV switching station consists of a new 4-bay 275kV Gas Insulated Switchgear (GIS) double busbar switching station complete with bus section and two bus couplers</li> <li>• 9km of 275kV Underground Cabling (UGC) from the Red John switching station to the Knocknagael 275kV substation, with cable selected at the developer's request.</li> <li>• The works will also include the extension of the existing Knocknagael 275kV Air Insulated Switchgear (AIS) double busbar to create two new 275kV AIS bays to connect the 275kV UGC from the Red John 275kV Switching Station. The removal and subsequent replacement of the existing 275kV bus couplers is required to facilitate the connection.</li> </ul> <p>Additional works required to facilitate this connection are:</p> <ul style="list-style-type: none"> <li>• Beaulieu – Blackhilllock 275kV Overhead Line High Temperature Reconductoring</li> </ul> <p><b>Programme</b></p> <p>In order to deliver this project early within the RIIO-T3 period, it will be necessary for the project to be progressed through the Pre-Construction phases within RIIO-T2. Key works which will have to be completed during this RIIO-T2 to ensure the delivery of the works associated with the Red John Connection include:</p> <ul style="list-style-type: none"> <li>• Substation/Switching station site optioneering and underground cable route optioneering and selection</li> <li>• Environmental surveys (including assessments on protected species, noise, landscape and visual, impact on watercourses and ground types) to inform the site and route selection and support the necessary consents required for this project</li> <li>• Engineering studies to establish the required footprint and earthworks volumes for the substation/switching station platforms, impact of construction traffic and required road improvements, flood risk assessments, underground cable routeing, layouts and design of equipment and buildings for the substation/switching station, site and ground investigations to inform site and route selection</li> <li>• Negotiation of land purchases, leases, servitudes and wayleaves required for the construction of the substations/switching stations and underground cables</li> </ul>	



- Submission of Town and Country Planning applications for the substation/switching station as required
- Consultation with stakeholders and the wider public at various points through the Pre-Construction phases to gain their feedback on the proposals
- Detailed design and surveys to inform the commencement of the construction phase

Key dates for meeting both the contracted and proposed completion dates are shown below:

Stage	Timeline for 2026 Completion
Public consultations	Q2 2021
Optioneering and Route/Site Selection Completion	Q2 2021
EIA start	Q3 2021
Planning and Section 37 Submission	Q3 2022
Appoint contractor(s)	Q2 2023
Planning and Section 37 Consent	Q3 2023
Complete Initial contractor design	Q1 2024
Construction Start	Q1 2024
Energisation	Q4 2026

From the above it is noted the Pre-Construction works are being undertaken within RIIO-T2, with construction noted to start within RIIO-T2. On this basis it is requested Pre-Construction funding is made available within the RIIO-T2 baseline funding to allow the timely progression of this significant connection projects within the Price Control Period. Based on historical experience, we believe there is a high possibility the works for this scheme may be delayed further into the RIIO-T3 period.

<b>Scheme:</b>	Energy Isles Wind farm connection (SHT20054)
<p><b>Requirement and Driver(s)</b></p> <p>Energy Isles Wind Farm is a 120.3MW onshore wind farm requiring connection at 132kV at The Energy Isles Wind Farm Substation by 1<sup>st</sup> April 2026. The transmission works are:</p> <p>Establish a new 132kV wind farm substation to be located on site at Energy Isles Wind Farm development.</p> <p>Install a new 132kV metering circuit breaker, 132kV disconnector and all associated battery and relay equipment, to be located in a new 132kV switchroom within the substation compound. This single 132kV metering circuit breaker (105) will be owned and operated by SHE Transmission. The 132kV disconnector (107) represents the ownership boundary between SHE Transmission and the User.</p> <p>Establish a new 132kV circuit breaker and disconnector connected within the new Yell Substation (constructed under SHET-RI-116).</p> <p>Establish approximately 34km of 132kV overhead trident line rated at a minimum of 140MVA from the new Yell Substation at the South end of Yell to the new 132kV Energy Isles substation at the North end of Yell. The 132kV overhead trident line will terminate on a 132kV line disconnector (103) to be installed within the Energy Isles Wind Farm substation compound. The 132kV disconnector will be connected to the 132kV metering circuit breaker 105 and a 132kV disconnector 107.</p> <p><b>Funding Request</b></p> <p>Energy Isles was subject to a total Pre-Construction Funding Request of £1.3875m in our December Business plan. The funding provided will be utilised to undertake the Pre-Construction activities set out in the programme section of this response during the RIIO-T2 Period.</p> <p><b>Scope</b></p> <p>The Transmission works required are as follows:</p> <p><b>Energy Isles Wind Farm</b></p> <ul style="list-style-type: none"> <li>• Install a 132kV metering circuit breaker and disconnector at the Energy Isles Wind Farm</li> <li>• Develop and construct a 34km 132kV overhead line circuit between a 132kV disconnector located at Energy Isles Wind farm substation and the Yell Switching Station.</li> <li>• Installation of an indoor 132kV switchbay to provide connection to the Yell 132kV switching station.</li> </ul> <p><b>Programme</b></p> <p>In order to deliver this project by 2026, it will be necessary for the project to be progressed through the Pre-Construction phases within RIIO-T2. Key works which will have to be completed during RIIO-T2 to ensure the delivery of the works associated the Energy Isles Wind Farm include:</p> <ul style="list-style-type: none"> <li>• Technical review of the proposed 132kV substation site equipment at Energy Isles substation and Yell switching station.</li> <li>• Review of the site layout to accommodate the 132kV equipment at Energy Isles substation and Yell switching station.</li> </ul>	

- Site selection, environmental assessment and route corridor assessment of the 34km overhead line.
- Consultation with statutory consultees on the 132kV overhead line
- Engineering Studies to inform circuit ratings and configuration, protection configuration and integration with Shetland projects including the Yell Switching Station and Yell to Kergord 132kV circuit.
- Consultation with stakeholders and the wider public at various points through the Pre-Construction phases to gain their feedback on the proposals

Key dates for meeting both the contracted and proposed completion dates are shown below:

Stage	Timeline for 2026 Completion
Project start	Q1 2023
Engineering and environmental studies complete	Q1 2024
Public Engagement	Q1 2024
Appoint contractor(s)	Q4 2024
Complete Initial contractor design	Q1 2025
Construction Complete	Q2 2026
Energisation	Q2 2026

It is requested Pre-Construction funding is made available within the RIIO-T2 Baseline Funding to allow the timely progression of this project.