

SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC
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Date: 25 September 2023

Dear Scottish Hydro Electric Transmission Plc,

SIF Project Direction ref: SHET/INSIGHT/SIFPNZPS/Rd2 Alpha

Scottish Hydro Electric Transmission Plc submitted INSIGHT (the Project) to be considered for funding through the Alpha Phase of round 2 of the Strategic Innovation Fund (SIF). As explained in greater detail below, this Project previously received SIF Funding and completed a Discovery Phase for round 2 of the SIF. In our¹ SIF Funding Decision issued on 22 September 2023, we selected the Project² for conditional funding for the round 2 Alpha Phase and as a result we are now issuing this SIF Project Direction to implement that decision.

Scottish Hydro Electric Transmission Plc must comply with the conditions contained in this SIF Project Direction as a condition of the Project receiving funding through the SIF. These conditions can be found in the Schedule to this document.

Progression through SIF Phases

The SIF consists of a multi-phase approach for Projects in order to mitigate the risk associated with innovations. The Discovery Phase focuses on feasibility, the Alpha Phase on experimental development, and the Beta Phase on deployment and demonstration.

The Project previously received SIF Funding for the round 2 Discovery Phase³ and submitted an Application for the Project to be considered for SIF Funding for the round 2

¹ The terms 'we', 'us', 'our' refer to the Gas and Electricity Markets Authority. Ofgem is the office of the Authority.

² Unless otherwise specified, defined terms in this SIF Project Direction have the meaning given to them in Appendix 1 of the SIF Governance Document.

³ The Project Directions for round 2 of the Discovery Phase are available at: <https://www.ofgem.gov.uk/publications/strategic-innovation-fund-round-2-discovery-projects-approved-funding>

Alpha Phase of the SIF. As stated above, the Project has been selected by Ofgem to receive SIF Funding for the Alpha Phase of round 2.

Role of UK Research & Innovation (UKRI)

As per Chapter 1 of the SIF Governance Document⁴ the role of UKRI is to deliver the SIF in line with the SIF Governance Document - administering the funding programme, monitoring the delivery of Projects, collating data from Projects on benefits, making recommendations to Ofgem on operational matters, supporting third-party innovators and, where possible, successful Projects to become 'business as usual' activities. To support the success of the Projects and the SIF programme, we expect that the Funding Party and Project Partners collaborate with Ofgem and UKRI.

SIF Project Direction

Paragraph 5.14 of the SIF Governance Document states that a SIF Project Direction will:

- Set out the Project-specific conditions, to which the Funding Party is committing in accepting SIF Funding.⁵
- Require the Funding Party to undertake the Project in accordance with the commitments made in the Application. Where appropriate, the SIF Project Direction may therefore include extracts from the Application or refer to specific sections of the SIF Application.⁶
- Where applicable, set out conditions (such as Project stage gates) linked to milestones and deliverables, which Projects must meet.⁷
- Set out the SIF Approved Amount for the Project, that will form part of the calculation contained in the SIF Funding Direction issued by the Authority under chapter 7 of the SIF Governance Document.⁸
- Set out the Project budget that the Funding Party must report against and how variations in the Project budget will be reported.⁹
- Where applicable, set out special information sharing requirements applicable to the Project.¹⁰
- Set out the mechanism for the Funding Party receiving the SIF Approved Amount as set out in the SIF Funding Direction.¹¹

⁴ <https://www.ofgem.gov.uk/publications/sif-governance-document>

⁵ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

⁶ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

⁷ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

⁸ 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

⁹ Annex 1 – Project Budget.

¹⁰ 'Project specific conditions' detailed under Point 3 – 'Condition President' of this SIF Project Direction.

¹¹ 'SIF Funding Amount' detailed under Point 5 – 'Condition President' of this SIF Project Direction.

All SIF Project Direction requirements are detailed in the Schedule to this SIF Project Direction.

Decision

Provided the Funding Party complies with the SIF Governance Document and with the Schedule to this SIF Project Direction, the Project is deemed to be an Eligible SIF Project¹².

This SIF Project Direction constitutes notice pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

Marzia Zafar

Deputy Director, Decentralisation & Digitalisation

For and on behalf of the Authority

¹² The meaning 'Eligible SIF Project' is described in Chapter 2 of the SIF Governance Document.

Schedule to SIF Project Direction

1. PROJECT DETAILS

SIF Project Direction reference: SHET/INSIGHT/SIFPNZPS/Rd2_Alpha

Application number: 10079053

Project title: INSIGHT

Innovation Challenge/Project Phase: Preparing for a net zero power system / Alpha
Phase round 2

Project start date: 01 October 2023

Project end date: 31 March 2024

SIF Approved Amount for SIF Funding: £227,093.00

2. PREAMBLE

This SIF Project Direction is issued by the Gas and Electricity Markets Authority (the "Authority") to Scottish Hydro Electric Transmission Plc (the "Funding Party") pursuant to the SIF Governance Document issued pursuant to Special Condition 9.19 of the Electricity Transmission Licence (the "Licence"). It sets out the conditions to be complied with in relation to INSIGHT (the "Project") as a condition of it being funded under the SIF Funding Mechanism.¹³

Unless otherwise specified, defined terms in this SIF Project Direction have the meaning given to them in the Licence or Appendix 1 of the SIF Governance Document.

References to specific sections of the Funding Party's Application in this SIF Project Direction are, for ease of reference, made by referring to the section number in the Funding Party's Application.

3. PROJECT SPECIFIC CONDITIONS

In accepting funding for the Project, the Funding Party is subject to the following Project-specific condition(s):

Condition 1

The Funding Party must not spend any SIF Funding until contracts are signed with the Project Partners named in Table 1 for the purpose of completing the Project.

¹³ The SIF Funding Return Mechanism is defined in the SIF Governance Document.

Table 1. Project Partners

NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED
UNIVERSITY OF STRATHCLYDE

Condition 2

The Funding Party must report on the financial contributions made to the Project as set out in its Application. Any financial contributions made over and above that stated in its Application should also be reported and included within the Project costs template.

Condition 3

The Funding Party must make reasonable endeavours to participate in all meetings related to the Project that they are invited to by Ofgem, UKRI and DESNZ during the Alpha Phase.

4. COMPLIANCE

The Funding Party must comply with Special Condition 9.19 of the Electricity Transmission Licence (the "Licence"), the SIF Governance Document and with this SIF Project Direction.

5. SIF APPROVED AMOUNT

The SIF Approved amount of £227,093.00 (as detailed under Section 1: Project details of this Project Direction) will be recovered by National Grid Electricity System Operator from GB customers and transferred to the Funding Party. The Funding Party is responsible for notifying National Grid Electricity System Operator of the bank account details to which transfers must be made, in addition to completing Annex 2 of this SIF Project Direction. If a Funding Party is required to return funding to National Grid Electricity System Operator, the reverse applies. The Funding Party must provide bank account details to National Grid Electricity System Operator within two weeks of accepting this SIF Project Direction.

6. PROJECT BUDGET

The Project Budget is set out in Annex 1 of this SIF Project Direction.

The Funding Party must report on expenditure against each line under the category total in the Project Budget and explain any projected variance against each line as part of its detailed report which will be provided, in accordance with Chapter 7 of the SIF

Governance Document. The Funding Party must report variations in the Project budget as outlined in Chapter 6 of the SIF Governance Document.

7. PROJECT IMPLEMENTATION

The Funding Party must undertake the Project in accordance with the commitments it has made in the Application and with the conditions of this SIF Project Direction. These include (but are not limited to) the following:

- (i) undertake the Project in accordance with its Application,
- (ii) complete the Project on or before the Project completion date as detailed under section 1 of the schedule of this SIF Project Direction, and
- (iii) disseminate the learning from the Project at least to the level described in chapter 3 of the SIF Governance Document. Dissemination of learning must be carried out whether the Project was concluded successfully or otherwise.

8. REPORTING

Ofgem and UKRI may issue guidance (and amend it from time to time) about the structure and content of the Project reporting required by Chapter 6 of the SIF Governance Document. The Funding Party must follow this guidance in preparing the reports.

As set out in chapter 6 of the SIF Governance Document, the Funding Party may be required to submit an end of Phase report to the UKRI monitoring officer for the round 2 Alpha Phase. An end of Phase report is required for the round 2 Alpha Phase if the Project is not planning on submitting an Application to the round 2 Beta Phase and, if the Funding Party submits an Application for the Project for the round 2 Beta Phase but is not successful. Within this report, the Funding Party must submit information related to questions on Project delivery as detailed in chapter 6, table 6 of the SIF Governance Document.

9. MONITORING

The Funding Party must comply with any reasonable request for information by its monitoring officer at UKRI and related deadlines. Ofgem, with the support of UKRI, will together monitor Project delivery, impacts and benefits. Throughout the term of the Project, progress is monitored by UKRI through a monitoring officer. The monitoring officer is the first point of contact for official notifications, queries and correspondence with UKRI and the Authority, unless otherwise required by this SIF Project Direction.

As detailed in Chapter 6 of the SIF Governance Document, meetings with the monitoring officer will take place at regular intervals, as advised by Ofgem or the monitoring officer during the delivery of the Project, and at the end of each Project Phase.

10. EVALUATION

The Funding Party has acknowledged when it submitted its Application for this Project, that reporting information and data gathered during the Project's timescales (as detailed in Section 1 of this SIF Project Direction) will be used to evaluate Project performance. In addition, the Funding Party may be required to provide requested information outside of the Project timescales and, in particular, for the period from the Project end date to the end of the SIF Programme. Further data and reporting information may be requested (frequency and method based on requirement) outside of standard monitoring and reporting requirements as deemed necessary. Further data and information requirements must be complied with by the Funding Party and Project Partners.

11. DATA SHARING

As set out in Chapter 3 of the SIF Governance Document, the Funding Party must follow Data Best Practice Guidance with regards to all data gathered or created in the course of a Project. We expect the Funding Party to document any reasons, such as commercial sensitivities, for desensitising data. As defined by, and in accordance with, Data Best Practice Guidance, Funding Parties must have a data triage process. Where multiple Project Partners are collaborating on a Project, the consortium must adopt a consistent Open Triage Process for the data related to the Project. Ofgem may require that Project information and data is also shared with other specified parties, such as parties working on complementary innovation funding programmes (subject to redaction of sensitive data).

12. CYBER SECURITY

It is the responsibility of the Funding Party and all Project Partners to implement and maintain appropriate security measures to protect personal data in accordance with The GDPR (General Data Protection Regulation)¹⁴ and DPA (Data Protection Act) 2018¹⁵. Protection of computer systems from unauthorised access or being otherwise damaged or made inaccessible must be in place alongside effective working practices. These must be maintained in line with the Funding Party's IT Management Strategies and policies.

¹⁴ https://ec.europa.eu/info/law/law-topic/data-protection/data-protection-eu_en

¹⁵ <https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted>

13. PROJECT MILESTONES

The Funding Party must provide an outline in its end of Project Phase meeting with its UKRI monitoring officer that verifies the Project milestones have been achieved or explains why they have not.

Project milestones are outlined below in Table 3, based upon details contained within Question 7 and Appendix Question 9 in the Funding Party's.

Table 3. Project milestone¹⁶

Reference	Project milestone	Deadline	Overall objectives and key tasks	Summary of milestones	SIF Funding Request
Milestone 1	Work package 1: Project Management: Alpha Phase	31 March 2024	<p>Overall objective: The successful delivery of the INSIGHT Alpha project to budget, time, and quality, in compliance with the SIF governing documentation.</p> <p>Key tasks:</p> <ul style="list-style-type: none"> * Maintain and track project schedule, action register, deliverables & actual expenditure against forecast. * Monitor and manage the project risk register with regular reviews to track & maintain their mitigation. 	<p>M1.1: Successful Mid-point Project Review: The project has been reviewed favourably by the UKRI team: Monitoring Officer and Innovation Lead; Task list generated that captures any future actions. (£9,265.54).</p> <p>M1.2: Internal stage-gate to agree on whether to proceed with Beta phase application: A well-articulated justification for proceeding to Beta is</p>	£18,531.08

¹⁶ As outlined in in the Application or Project Plan appendix.

			<ul style="list-style-type: none"> * Organise regular (at least fortnightly) review meetings with all partners. * Lead the planning of the Beta phase & secure agreement on whether to proceed with the application. * Produce a conclusion report for the UKRI monitoring officer & any other specific documentation required or requested. 	presented to the SSEN-T Innovation Governance Board. A decision is made confirming if the project should proceed. (£9,265.54).	
Milestone 2	Work package 2: Engagement: Stakeholders and Technology Providers	31 March 2024	<p>Overall objective:</p> <ul style="list-style-type: none"> • To engage with stakeholders, technology providers and other interested parties to share with them the overall proposal/trajectory for the project. • Understand the appetite across the industry for delivering such a tool/project, and the ability to be used by the proposed tool/system. 	<p>M2.1: Network-related stakeholder meetings held: Comprehensive list of stakeholders compiled; Knowledge-sharing events organised and executed; Findings summarised. (£31,284.33).</p> <p>M2.2: Completion of a strategy to evaluate technology solution provider</p>	£62,568.66

		<ul style="list-style-type: none"> • Understand how potential technology providers could be assessed. • Develop a means of assessing solution providers in the following phases of the project. <p>Key tasks:</p> <ul style="list-style-type: none"> * Brainstorm within project team to build a comprehensive list of stakeholders, technology providers, end users and participants * Plan, organise and deliver stakeholder engagement events * Approach potentially interested technology providers to obtain a fuller understanding of their appetite to participate in a potential Beta phase of the project * In anticipation of the Beta phase of the project, develop a means of assessing provider's solutions against defined success criteria to 	<p>offerings: A clear and consistent approach for engagement with technology providers and means of assessing their technology offering and any gaps against what is required; Documentation capturing this approach and assessment methodology.</p> <p>(£31,284.33).</p>	
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			be able compare their performance against others		
Milestone 3	Work package 3: Oscillation Events Modelling and Simulation Studies	31 March 2024	<p>Overall objective:</p> <ul style="list-style-type: none"> * Create representative network models for representing and replicating IBR-induced oscillation events. * Develop a comprehensive understanding of IBR-induced oscillation events via modelling and simulation. * Develop suitable technical specifications for measurements and monitoring system for adequately detecting and analysing oscillation events. * Investigate and experiment potential control actions that are feasible to be deployed to mitigate the oscillation events. 	<p>M3.1: Approach for modelling IBR-induced system oscillations defined: Approach has been documented and discussed and agreed with the project partners. (£17,859.21).</p> <p>M3.2: Network model for replicating oscillation events developed and simulation studies completed: A model is developed on the RTDS real time simulation platform with the details and ability to represent IBR-induced oscillation events, and simulation results adopted for understanding a</p>	£118,291.66

			<p>Key tasks:</p> <ul style="list-style-type: none"> * Task 1: determine a suitable approach for modelling IBR-induced system oscillation events and collection of required data. * Task 2: Development of network models for representing and recreating various IBR-induced system oscillation events. * Task 3: Simulation studies to investigate the impact of various factors (e.g. control parameters, system strength) on oscillation behaviour. * Task 4: Investigate and understand the IBR-induced oscillation events (e.g. frequency range) to support the development of technical specifications of the INSIGHT monitoring and control solution. 	<p>wide range for oscillation events. (£71,436.83).</p> <p>M3.3: Completion of technical specification: Oscillation Measurement and Monitoring System: Documentation available that describes the top-level requirements that technology providers should be able to demonstrate in Beta should they become a partner</p> <p>Note: Requires input from SSEN-T. (£28,995.62).</p>	
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			* Task 5: Experiment with different mitigating actions (e.g. change control modes, tune control parameters, switch on/off certain devices) via simulation studies.		
Milestone 4	Work package 4: GB System Monitoring Roadmap	31 March 2024	<p>Overall objective:</p> <p>* To create a thorough understanding and record of the available system monitoring systems already present within GB and worldwide and planned future upgrades and improvements.</p> <p>* To understand the available telecoms within GB TOs, requirements of the telecoms, and implications of imperfect data transmission for real-time systems.</p> <p>* To align learnings from the project with the current GB operational and design standards for TOs and ESO for management of oscillations and identify any improvements that can be suggested.</p>	<p>M4.1: Completion of Review of Oscillation obligations in STCPs and Grid Code: Thorough review of STCPs and Grid Code completed; Report issued detailing obligations and new knowledge. (£3,624.45).</p> <p>M4.2: GB System Monitoring Roadmap first version available: Roadmap developed through engagement with all project partners; Content of roadmap agreed with key stakeholders. (£10,873.36).</p>	£14,497.81

			<p>Key tasks:</p> <ul style="list-style-type: none"> * Task 4.1, State of Art Technology Gap Analysis Review. * Task 4.2, Data and Telecoms Requirements - the impact of data quality. * Task 4.3, Review of current GB industry oscillation management practice, obligations in design and operation, and impacts on industry codes and operational practices. * Task 4.4, Review of learnings and possible useful impacts on GB and international design standards. 		
Milestone 5	Work package 5: Development of CBA	31 March 2024	<p>Overall objective:</p> <p>Maturing of the CBA through the phase based on the stakeholder activities forming the basis of WP2 such that there is greater confidence in the data.</p>	<p>M5.1: CBA updated to reflect Alpha learnings: Documentation drafted, internally reviewed and circulated to the project partners. (£13,203.97).</p>	£13,203.97

		<p>An updated version of the CBA that was submitted as part of the Alpha Application.</p> <p>Key tasks:</p> <ul style="list-style-type: none">* Working group meetings (SSEN-T / NG ESO) to review the existing current CBA and identify where refinement is possible and agree on the necessary action steps.* Provision of tailored data from NG ESO in support of a robust CBA.* Work with NG ESO to revise the CBA based on the knowledge gained within the Alpha Phase to date.* Validation of updated CBA by key stakeholders in SSEN-T and NG ESO.		
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14. USE OF LOGO

The Funding Party and the Project Partners, External Funders and Project Supporters or subcontractors¹⁷ must not use the Innovate UK/UKRI and/or Ofgem logo for purposes associated with the Project in any circumstances.

As an alternative for use of both Ofgem and UKRI logos, all external Project communications must include the following standard form of wording:

- (i) "this project is funded by network users and consumers under the Strategic Innovation Fund, an Ofgem programme managed in partnership with UKRI."

For additional guidance, refer to the communications and media guidelines for competition winners, detailed as part of your delivery pack. These guidelines are designed to help with some suggestions and encourage you to take a proactive approach to communicating about your Project.

15. SHARING OF LESSONS LEARNED

The Funding Party is required to ensure that the sharing of lessons learned and the facilitation of knowledge transfer is conducted as effectively as possible, to ensure that all parties, and therefore all consumers including future consumers, can benefit from Projects.

As contained within Chapter 3 of the SIF Governance Document, we require the Funding Party to work collaboratively to maintain the ENA Smarter Networks Portal so that all reporting and dissemination of learnings on Projects (as required by chapter 6 of the SIF Governance Document) is available via the ENA Smarter Networks Portal.

16. COLLABORATION

The Funding Party must collaborate with third-party innovators as Project Partners, as well as work closely with other parties in the energy supply chain, as set out in Chapter 3 of the SIF Governance Document.

The Funding Party must collaborate with other parties and with UKRI to organise an annual conference in a format appropriate to enabling the building of consortiums and disseminating learning widely. The conference may be a single event for gas and electricity, or more than one event, as appropriate.

¹⁷ As detailed in the Application.

17. AMENDMENT OR REVOCATION

As set out in Chapter 7 of the SIF Governance Document, this SIF Project Direction may be amended or revoked under the following circumstances:

- (i) if the Funding Party considers that there has been a material change in circumstance that requires a change to the SIF Project Direction, and the Authority agrees; or
- (ii) to reflect amendments made to the Licence.

18. HALTING OF PROJECTS

This SIF Project Direction is subject to the provisions contained in Chapter 7 of the SIF Governance Document relating to the halting of Projects. By extension, this SIF Project Direction is subject to any decision by the Authority to halt the Project to which this SIF Project Direction relates and to any subsequent relevant SIF Funding Direction issued by the Authority pursuant to Special Condition 9.19 of the Electricity Transmission Licence (the "Licence").

Further to the requirements in Chapter 7 of the SIF Governance Document, in the event the Authority decides to halt the Project, to which this SIF Project Direction relates, the Authority may issue a statement to the Funding Party clarifying the effect of that halting decision as regards to the status and legal force of the conditions contained in this SIF Project Direction.

NOW THEREFORE:

In accordance with the SIF Governance Document issued pursuant to Special Condition 9.19 of the Electricity Transmission Licence (the "Licence") of the Licence the Authority hereby issues this SIF Project Direction to the Funding Party in relation to the Project.

This constitutes notice of reasons for the Authority's decision pursuant to section 49A (Reasons for decisions) of the Electricity Act 1989.

Failure to comply with the conditions of this SIF Project Direction means that Ofgem may treat all or part of the SIF Approved Amount received by the Funding Party as SIF Disallowed Expenditure.

ANNEX 1: PROJECT BUDGET

SIF Project Direction costs	
Cost Category	Total Project costs (£)
Labour	185,193
Materials	0
Subcontracting	0
Travel and subsistence	10,150
Other costs	57,210
Total	£252,553

Project Partner	Total project costs (£)	Project contribution (£)	Total SIF Funding requested (£)	Project contribution (%)
SCOTTISH HYDRO ELECTRIC TRANSMISSION PLC	£83,587.00	£8,359.00	£75,228.00	
NATIONAL GRID ELECTRICITY SYSTEM OPERATOR LIMITED	£69,521.00	£6,952.00	£62,569.00	
University of Strathclyde	£99,445.00	£10,149.00	£89,296.00	
Total	£252,553.00	£25,460.00	£227,093.00	11%

ANNEX 2 TO SCHEDULE: TEMPLATE OF BANK ACCOUNT DETAILS TO BE PROVIDED TO EITHER NGT (BOX.GSOSETTLEMENTS@NATIONALGRID.COM) OR NG ESO (revenue.invoice@nationalgrideso.com)

Company name:

Primary Contact Details (only one contact permitted)

First Name:

Last Name:

Email address:

Mobile phone number:

Work phone number:

Address details

Address name:

Street address:

City:

State / region:

Post code:

PO box: (if applicable)

PO box post code: (if applicable)

Banking details

These should be evidenced in non-editable format. The evidence provided must show company name and bank details and it should be dated within the last 6 months.

Any of the below documents will suffice:

- Bank statement (scanned document)
- Void cheque
- Paying in slip
- Screenshot of online banking (showing a logged in account with bank account and sort code, with browser visible)