Project details

Application team

SCOTTISH HYDRO ELECTRIC POWER DISTRIBUTION PLC (Lead)

Organisation details

Type	Business

Team members

Full name	Email	EDI survey
SSEN-D Innovation	SIFDistribution@sse.com	Complete
Cori Critchlow-Watton	cori.critchlow-watton@sse.com	Complete

Imperial College London

Organisation details

Type	Research

Team members

Full name	Email	EDI survey
Samuel Mugodza	s.mugodza@imperial.ac.uk	Complete
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SIA PARTNERS UK PLC

Organisation details

Type	Business

Team members

Full name	Email	EDI survey
Sebastien Gerber	sebastien.gerber@sia-partners.com	Complete
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Application details

Competition name
Ofgem Strategic Innovation Fund Round 4 Alpha C3

Application name
Dynamic, data driven asset rating (3DAR)

When do you wish to start your project?
1 October 2025

Project duration in months
7 months

Has this application been previously submitted to Innovate UK?
No

Public description

Public description

As electricity networks face growing pressure for connections, the need for smarter, faster, and more flexible network solutions becomes essential. Dynamic Rating (DR) allows electricity network assets, particularly overhead lines, to operate closer to their real-time thermal capacity by accounting for environmental conditions. Dynamic, Data Driven Asset Rating (3DAR) will identify those circuits where DR could be deployed to release additional headroom, overlay future constraints with mapped additional capacity from DR to facilitate assessment at scale. 3DAR will allow DR to be scaled at distribution level, productising the solution to embed it within processes and accelerate network connections.

Innovation Challenge aim

Decide which Strategic Innovation Fund (SIF) Innovation Challenge that your Project is focusing on.

R4 Challenge 1: promote greater real-time awareness and operation of power networks

Innovation Challenge focus theme

Select the primary Strategic Innovation Fund (SIF) Innovation Challenge focus theme that your Project is targeting.

Innovation Challenge 1: Theme 1: novel methods to increase electrical capacity from existing assets or support faster and more efficient connection methods including using digital innovations

Application questions

1. Lead Network (not scored)

Lead Network (not scored)

Scottish and Southern Energy Power Distribution (SHEPD): Scottish Hydro Electric Power Distribution Plc

2. Animal testing (not scored)

Will your Project involve any trials with animals or animal testing?

No

3. International Collaboration (not scored)

Does your proposed work involve any international collaboration or engagement?

As per guidance from UKRI's SIF Team - Not applicable to SIF Projects

4. Trusted Research and Innovation (not scored)

Trusted Research and Innovation (not scored)

Not applicable.

5. Problem statement

You must provide a summary of the problem that you want to solve through your Project.

As UK electricity networks face growing pressure from increasing energy demand and renewable generation connections, the need for smarter, faster, and more flexible network solutions becomes essential. Dynamic Rating (DR) is an approach that allows electricity network assets, particularly overhead lines (OHL), to operate closer to their real-time thermal capacity by accounting for actual environmental conditions such as temperature, wind speed, and solar radiation. DR is used at transmission level to unlock additional capacity from existing assets using real-time weather data.

Although its application in distribution networks has been minimal due to the cost, complexity, and need for extensive field surveys, our sensor-less, pre-screening approach will accelerate the deployment of DR across distribution networks, improve network outage management, enhance long-term planning, optimise delivery of network investment and accelerate delivery of new connections. DR is especially valuable in regions with variable climates and high renewable activity, such as rural or coastal areas with significant wind generation. In such regions, DR can unlock substantial hidden capacity, reduce network congestion, and minimize renewable energy curtailment, thereby supporting local decarbonisation efforts.

Dynamic, Data Driven Asset Rating (3DAR) will allow DR to be scaled at distribution level, productising the solution to embed it within the network design and options assessment process, as well as ongoing operational decision making. 3DAR will use modelled weather and asset data to quickly identify those circuits where DR could be deployed to release additional headroom, overlaying future constraints with mapped additional capacity from DR to digitise the assessment and facilitate assessment at scale.

3DAR Alpha will focus on overhead lines and may expand to other assets based on suitability and potential to:

- Remove barriers to assessment and selection of circuits for DR
- Enable frequent assessment of the large areas of network * allowing DR to become a credible option for DSOs alongside reinforcement and flexibility.
- Leverage existing data sets to allow DR to be scaled and ubiquitous

How 3DAR has evolved during Discovery

Stakeholder engagement during the Discovery Phase established 3DAR should focus on using weather data to rapidly assess the network, determining which lines/assets are most appropriate to install DR on -- either with sensors or sensorless solutions.

How our Project meets the primary Innovation Challenge

3DAR will enable deployment of DR at scale across networks, enhancing network investment planning, reducing costs and ensuring long-term resilience for faster, more efficient connections. By digitising the assessment process and leveraging new and existing data (including include weather/climate, topographical and circuit routes and load profiles), a digital tool will be created allowing planners to relieve congestion via DR and empower network planners to understand the opportunities of DR for each asset class.

The end-to-end solution will shape DNO long-term investment strategies, optimise flexibility products, increase available capacity and support faster, more efficient connections.

Potential users

Through stakeholder engagement, we have a broader understanding of potential users and their needs. The final output will provide accessible tools to all DNOs, for use by:

- Strategic Investment Planners - allowing at scale assessments of additional capacity.
- Network Planners - providing readily accessible circuit by circuit assessment on application of DR.
- Designers - providing information to undertake detailed DR design and implementation.

3DAR will make the rapid and global deployment of DR an affordable and effective solution.

Other public or network innovation funded work

To date DR has primarily been deployed on Transmission. This project draws on learnings from REVISE (updating line ratings using new environmental data), P4R (sophisticated weather modelling and forecast engine) and wider research including DR, to create a new offering.

6. Innovation justification

How does your Project demonstrate novel and ambitious innovation in the energy networks? Why is it suitable to be funded by SIF rather than other sources?

3DAR continues to address Challenge 1, faster network development, in particular novel methods to increase electrical capacity from existing assets and support more efficient connection methods.

The capacity of a conductor is influenced by its temperature which in turn is largely governed not only by ambient temperature but significantly by the airflow. To take advantage of headroom we need to consider any object natural or manmade that might impact air movement and so the temperature and ampacity of the conductor. Data-Driven Dynamic Asset Rating (3DAR) will not provide a DLR solution, instead it will assess the network to determine which OH lines are most appropriate to install DR.

In the Alpha Phase, 3DAR will integrate OHL data, demand forecasts, and advanced weather modelling (including a novel "sheltering index") to develop a digital framework for use by Distribution Network Operators (DNOs). Initially focused on 33kV overhead lines, this framework will allow planners to assess potential headroom and determine whether DR could offer a viable alternative to reinforcement or flexibility procurement. Ultimately, 3DAR aims to create a system-wide tool that digitises asset rating assessment, offering:

- Wide-scale network assessment for DR suitability
- Integration of DR into the strategic planning process
- Faster, more cost-effective customer connections
- Avoidance of missed opportunities by enabling repeatable, time-sensitive assessments

In future, the tool could be expanded modularly to include additional network assets, such as transformers, eventually providing an entire system rating.

Previous work

During the Discovery Phase, learnings from relevant DR projects such as REVISE (updating line ratings with environmental data), P4R (forecasting weather impacts on infrastructure), and others were reviewed. These projects demonstrated the value of DR at transmission level, but did not offer a scalable method for pre-assessing suitability at distribution level. Our review confirmed that 3DAR's sensor-less, pre-screening approach has not been previously attempted.

Lessons learned

Through discussions with stakeholders the need for work on DR is to optimise the network was apparent. Exploring possible methodology showed the importance of including a sheltering index in any algorithm. In order to validate findings regarding OHLs, during Alpha a specialist engineering consultant will be subcontracted. This is also to ensure that lines operated dynamically continue to operate within safe limits.

3DAR has a current TRL of 4, and CRL2. We aim to progress this to TRL 5 in Alpha and higher in Beta. The need for SIF funding has crystallized during Discovery.

Given the cross-sector collaboration required, the novelty of the approach, and the lack of any current commercial proposition to integrate such data, 3DAR is not suitable for BAU or price control funding mechanisms. The risk, complexity, and cross-network value of the project make SIF the ideal vehicle for support.

Counterfactual

DNOs will continue to miss opportunities to include DR as they currently use a one-time assessment methodology. Traditionally, DNOs have either reinforced networks or procured network flexibility services to provide additional capacity both requiring significant capital or operational costs. 3DAR brings together the data to signpost these missed opportunities. If ineffectively delivered, DR can have safety implications. It is therefore critical to ensure that lines operated dynamically continue to operate within safe limits.

[3DAR - Q6 Alpha Appendix.pdf (opens in a new window) (/application/10166301/form/question/47959/forminput/135591/file/833375/download)](/application/10166301/form/question/47959/forminput/135591/file/833375/download).

7. Impacts and benefits selection (not scored)

Impacts and benefits selection (not scored)

- Financial: future reductions in the cost of operating the network
- Financial: cost savings per annum for users of network services
- Environmental: carbon reduction, indirect CO2 savings per annum
- New to market: processes

8. Impacts and benefits description

Impacts and benefits description

Financial - future reductions in the cost of operating the network

- **Avoided cost of Flexibility Dispatch:** Currently, DNOs rely on flexibility dispatch, financially incentivising consumers to adjust their electricity usage during periods of network constraint as a key tool for managing demand. DLR increases the real-time capacity of power lines during favourable weather conditions, so reducing the frequency and scale of flexibility dispatch events. This leads to lower operational costs over time, as DNOs can rely more on existing infrastructure and less on costly consumer incentives to manage constraints.
- **Optimising Delivery of Network Reinforcement:** When parts of the electricity network become constrained, operators invest in upgrading infrastructure to increase capacity involving significant capital expenditure. By deploying DLR operators can enhance the real-time capacity of existing lines. This may, in some cases, involve deferring activities which allows networks to work more efficiently within the constraints of the supply chain, yielding savings. This leads to savings in capital investment and reduces the overall cost of operating the network, as existing assets are used more efficiently and for longer periods.
- **Releasing Capacity more Quickly Accelerates Connections**: To meet Net Zero targets there is a need for network capacity to support and increasing number of connections. Connections delays result in costs to the networks and to society. By employing DLR across the network, constraint can be eased and additional network capacity released earlier than it might have been. This reduces connections delays.

Financial - cost savings per annum for users of network services

- **Social benefit of accelerated connections with DLR:** Many renewable energy projects in the UK experience significant delays in connecting to the grid, hampering progress towards net zero targets and incurring costs for generation projects. By alleviating network constraints, DLR facilitates quicker integration of renewable generation connections. This not only prevents the loss of profits due to connection delays but also reduces the reliance on backup generators used by customers waiting for grid connections.

Environmental - carbon reduction -- indirect CO2 savings per annum

- **Indirect Carbon Savings through Accelerated Renewable Connections with DLR**: Many renewable energy projects in the UK experience significant delays in connecting to the grid, which hampers progress towards national net zero targets and incurs costs for generation projects. DLR increases the real-time capacity of existing power lines, helping to ease network constraints and enabling faster integration of renewable generation. By accelerating these connections, DLR reduces reliance on fossil fuel-based generation that would otherwise fill the gap, leading to indirect but measurable carbon savings each year. This enhanced ability to bring clean energy online more quickly supports a more sustainable energy mix and contributes meaningfully to the UK's decarbonisation goals.

New to market -- processes

- **Enabling New-to-Market Processes through a DLR Assessment Tool:** Identifying the most suitable lines for DLR has traditionally been a slow, resource-intensive process. To address this 3DAR will streamline and automate the assessment of line suitability for DLR deployment. By leveraging network data, weather patterns, and system constraints, the tool will efficiently prioritise lines where DLR can deliver the greatest operational and economic benefit. This innovation will be integrated into standard network planning workflows, offering an alternative to traditional network reinforcement or flexibility dispatch. It is expected to be a valuable asset for system planners, whole system planners, and potentially within the Distribution Network Options Assessment (DNOA) process. With sufficiently granular forecasts and data, the tool could support real-time decision-making at the control room level, marking a significant step forward in digitalising and optimising network operations.

9. Team and resources

Who will be involved with the delivery of the Project during the Alpha phase? Are there any changes in team or resource requirements from your previous SIF Discovery Phase, or Innovation Project funded through other routes?

There will be two changes to the project team. Pierre Pinson from Imperial College London will join, and a specialist OHL engineering consultancy with will be subcontracted. Details are below.

As the license holder, **SSEN** will lead and manage the project. SSEN have successfully managed a number of SIF projects through Alpha and Discovery. Subject matter experts will be drawn from across Distribution to offer data and guidance to this project, i.e. constraint management, planning and whole systems. A wide range of subject matter experts were engaged during Discovery and will be included again in Alpha.

Sia Partners, a global consultancy company with expertise in business solution development, was a partner during Discovery and will help to design and build the solution with SSEN (and other network users) responsible for its integration and operation.

Sia Partners is well-positioned to be a delivery partner for this project having already demonstrated their capability in other SIF projects such as Predict4Resilience which is currently in the Beta Phase and planned for adoption to BAU. They continue to cultivate expertise from its ongoing R&D activities and has demonstrated a commitment to innovation through several key initiatives:

1. **AI-Powered R&D Centre**: Sia Partners operates an AI-powered R&D centre and studio, which underscores its commitment to innovation. This centre focuses on leveraging artificial intelligence to drive business-centric solutions
2. **AI & Data Business Unit**: The firm's AI & Data Business Unit is a significant driver of innovation, combining cutting-edge data science, generative AI, and advanced digital solutions. This unit is involved in projects ranging from proof-of-concept to large-scale deployment, consistently pushing the boundaries of AI capabilities
3. **Heka AI Ecosystem**: Sia Partners has developed Heka, an ecosystem of AI solutions. These solutions are the result of years of development and collaboration with clients, aimed at addressing recurring business issues and supporting value creation across various sectors.

The team at **Imperial College London** (ICL) has internationally leading expertise in data science and analytics for power and energy systems, including problems at the interface between meteorology, power system operation and energy markets. This expertise will be of relevance for the proposal and validation of methods for asset rating, simulation and validation.

The team regularly develop methods and code for industry partners, e.g., recently for NESO to analyse the drivers of balancing costs (using causal inference and high-dimension statistical analysis) and to predict balancing costs on a day-to-day basis.

The lead expert at Imperial College London started working on dynamic rating of assets (the core focus of the 3DAR project) in 2010, when he was the first to introduce probabilistic and data-driven approaches to do so. At the time, emphasis was placed on transmission lines, e.g. in Belgium. While the team is based in the Dyson School at Imperial College London, it has excellent connections to other relevant experts in power system engineering, meteorology and analytics, which could be valuable for this project.

Subcontractors

The University of Glasgow will continue to be a valuable subcontractor, to help validate project outcomes, provide support on weather related risk management and help define future testing needs.

An expert **engineering consultancy** with expertise in OHL will be subcontracted to provide peer review and engineering assurance at defined points throughout the project. This will enable the project to prepare for Beta in a confident manner keeping in mind safety considerations.

10. Project management and delivery

How will you manage your Project effectively? What is your Project plan? What are your milestones? What are the risks associated with your Project?

SSEN-D will lead on Project Management activities using tools provided by UKRI (Risk Register, Project Plan), as well as tools developed internally (Gantt Chart, Project Costs, Finance Tracker) to regularly monitor project performance.

The Project Team will meet weekly to review progress and collaborate. The PM will support team sessions focussing on work package collaborations, as well as face-to-face sessions (if/when required) to stimulate thinking and provide effective performance while developing outputs. This approach will enable the project team to monitor across milestones and deliverables' dependencies, ensuring key outcomes complement each other.

As shown in the Gantt Chart, all Work Package have their own distinct targets and support other Work Package deliverables. For example: D2.2 (user stories) and D2.3 (scoring criteria) form the basis for many other deliverables in later work packages.

Significant milestones include:

- D2.2 user stories and epics (used to inform technical and user interface)
- D2.3 scoring criteria (used to inform the scoring methodology)
- D3.1 data model (used to log all the data collected)
- D3.3 scores and ranking of selected circuits (used to inform expected DLR uptake rates for D_5.2)

Several risks have been identified with examples shown below. A full list of risks and mitigations identified are available in the PM Book.

1. **Data**: a large amount of data is required from SSEN and we are unsure what form this data will be delivered. Time has been built into WP3 to collect, process and clean data.
2. **Alignment**: DNOA and common evaluation methodology are expansive and may require alignment with other DNOs. Through Alpha other DNOs will be engaged to ensure applicability across GB.
3. **Validation**: using sensors to validate 33kV OHL during Alpha is not practicable. This will be carried out in Beta. We will employ an engineering consultancy with skills in OHLs to validate that part of the model.

Regular review of risks will take place during weekly meetings and actioned appropriately.

No regulatory changes will be required for Alpha phase. The project will, however, as an output of Alpha, deliver a recommendation on any regulatory change required to see the application of DR at scale on the distribution network.

The Project is not expected to impact on customers reliability of supply or have any direct or adverse impact on existing or future energy consumers and their premises during the Alpha Phase.

3DAR_PMBook.xlsx (opens in a new window) (/application/10166301/form/question/47963/forminput/135615/file/833374/download).

11. Key outputs and dissemination

What are the expected key outputs of your Project and your plan for disseminating them along with any lessons learned?

The 3DAR Project has been designed around five main work packages. Each work package has a set of clear outcomes and key activities, which result in an agreed set of deliverables. A named owner has been allocated to lead each package, as well as delivery of individual key activities based on their skills, experience and strengths.

Full detail can be viewed in the attached PM book -- please see the Gantt Chart and the Project Plan tab, however, below summarises the Project Structure:

WP1 -- Project management
Lead: SSEN

Outcomes:

- O1.1UKRI engagement
- O1.2 Project delivery and management
  Deliverables:

- D1.1 UKRI kick off slides
- D1.2 UKRI mid-point slides
- D1.3 UKRI EoP and S&T slides
- D1.4 Updated PM book
- D1.5 Any project specific conditions identified in the Project delivery document

WP2 -- Current and future process identification*Lead: Sia Partners*
Support: SSEN

Outcomes:

- O2.1 Understand where 3DAR fits within the DNO process.
- O2.2 Understand all use cases and functionalities required for 3DAR for all relevant teams
- O2.3 Gauge the key criteria to prioritise the best lines for DR
- O2.4 Understand scope to applying the methodology to other assets

Deliverables:

- D2.1 Report: application of 3DAR in DNO process
- D2.2 User stories and epics
- D2.3 Gauge key criteria to prioritise best lines for DR
- D2.4 Report: Application of 3DAR in DNO process

WP3 - Prototype building and data collection*Lead: Sia Partners*
Support: SSEN, University of Glasgow, Imperial College London and an Engineering Consultancy

Outcomes:

- O3.1 Data collection
- O3.2 Refine and test methodology on selected circuits for enhanced ratings
- O3.3 Establish scoring methodology
- O3.4 Validation of methodology

Deliverables:

- D3.1 Data model
- D3.2 Enhanced rating algorithm implemented
- D3.3 Scores and ranking for selected circuits
- D3.4 Validation execution report

WP4 - 3DAR Solution Design*Lead: Sia*
Support: SSEN

Outcomes:

- O4.1 Identify what the end product could look like
- O4.2 Articulate technical design requirements for 3DAR and associated infrastructure

Deliverables:

- D4.1 Mock ups
- D4.2 Report: technical considerations and requirements for 3DAR in the planning process

WP5 - Commercial Justification for 3DAR*Lead: Sia*
Support: SSEN

Outcomes:

- O5.1 Engagement with other DNOs about the approach
- O5.2 Engagement with network modelling and reporting gleam to update CBA

Deliverables:

- D5.1 Recommended approach on how to move to BaU
- D5.2 Updated CBA

The Alpha phase will document a prototype methodology and understand how and where within DNO annual optioneering processes it will be deployed. Alpha will also result in a stakeholder engagement plan and start looking at a commercialisation justification. The outputs of these activities will inform our decision to progress to Beta Phase. The project will be disseminated through deliverable 5.1 and to the SIF community at the end of project Show and Tell as well as at the ENA Innovation Summit.

We will promote the work using a multi-channel and multi-party approach, depending on the intended audience. Examples include:

- Amplification of UKRI, IUK and Ofgem official SIF communications
- Press releases, Energy Innovation Summit, websites and social media

3DAR will provide an important tool for network investment planning, faster connections and long-term resilience. It will bring a new product to an existing (albeit disjointed and nascent) market, and far from undermining the development of a competitive market, it will stimulate it by injecting fresh approaches and processes. Given there is not an existing comparable product on the market, the intention is for this to be rolled out across all GB DNOs to the benefit of all consumers.

12. Intellectual Property Rights (IPR), procurement and contracting (not scored)

Intellectual Property Rights (IPR), procurement and contracting (not scored)

To ensure clarity is provided to the Project partners, UKRI and Ofgem regarding the intellectual

property (IP) landscape, the Project is using an IP register to track the Background IP provided to

the Project, the Foreground IP the Project generates, and the use and access rights to all this IP. The main contract governing the Project (the Collaboration Agreement) will include detailed, mutually agreed terms governing IP that are in line with the SIF Governance Document. For the Discovery Phase, all the IPR arrangements will follow the default recommendations of Chapter 9 SIF Governance Document.

13. Commercialisation, route to market and business as usual

How will your idea become business as usual within your network and across the other networks? What strategy do your Project Partners have for commercialisation of the innovation?

Commercial Plan

The consortium will consider a range of potential commercial models during Alpha, dependent on the outcome of WP4. This may result in a decision to develop a web-based tool that is licenced to users on an ongoing basis (such as a SaaS). The solution design will be further developed during the Beta Phase when the platform is expected to undergo Pilot Trials within the business to assess its effectiveness, enable refinement and gain broader buy-in from wider stakeholders including all GB DNOs.

The 3DAR project team will utilise their collective involvement in Predict4Resilience (a first round SIF Beta Phase project), bringing experience of commercialising an innovation solution and ensuring it complies with the procurement regulations of a network licence operator, the possible royalty arrangements of an academic institution and the business interests of a corporation who will need to cover the ongoing costs of managing the solution, making improvements / amendments, onboarding new networks and training users etc.

Integration into BAU

It is expected that a second GB DNO would join for the Beta Phase of this project to help refine the solution and ensure its interoperability beyond SSEN and future institutionalisation within any DNO.

As part of the Alpha Phase, all DNOs will be engaged to understand both their appetite for a solution such as 3DAR, as well as ensuring the requirements and perspectives of other DNOs are incorporated into the prototype during its development, as well as identifying a suitable partner for the Beta Phase.

Throughout project delivery we will ensure the project has met several criteria before the innovation solution transfers to BaU. Criteria include a positive business case, internal buy-in, compatibility with the wider system and integration with internal processes and existing solutions. Through the final stage of the project the solution will be trialled within the business to ensure uptake. Alongside this, considerations about procurement and agreements will be explored to ensure a timely and seamless integration.

Route to Market

The inclusion of 3DAR in the network design and options assessment process will facilitate an increase in the capacity of electricity networks, enabling the integration of renewable energy onto the network, reducing emissions and driving the transition to Net Zero.

The issues 3DAR addresses are not unique to GB. Therefore, while the solution is initially expected to be adopted by all GB electricity network operators, we anticipate 3DAR will also have an international reach.

Members of our consortium work closely with all GB DNOs and most European DSOs and TSOs, as well as some in North America, providing a direct route to local and international markets.

Project Partners

The consortium has enough reach and will not require support to form new partnerships to take the solution to market. Sia has a presence in key locations across the globe and already operates in the industries targeted, given its strong focus on Energy & Utilities. As such, the consortium are ideally placed to package the solution, develop the appropriate go-to-market strategy and be the driving commercial force of the fully developed solution.

Competition

We do not foresee our solution undermining competitive markets. Instead, we anticipate that 3DAR It will create significant commercial opportunities for existing and future market participants who can offer DR solutions and services to DNOs. As a result, we envisage a stimulation of markets rather than an inhibition.

14. Policy, standards and regulations (not scored)

Do you consider there to be any barriers with respect to meeting the requirements of regulations, policy or standards?

Research regarding current policy, standards and regulations relevant to DR was undertaken during the Discovery phase.

Regulations on distribution networks using Dynamic Line Ratings (DLR) ensure that the implementation of DLR maintains safety, reliability, and compliance with existing standards. Distribution networks using DLR must comply with existing regulations such as the Electricity Safety, Quality and Continuity Regulations 2002 (ESQCR). This includes maintaining minimum clearances and ensuring that the dynamic adjustments do not compromise safety, when employing risk-based, or probabilistic ratings, with the requirement to maintain a minimum clearance at a line's maximum likely temperature. This ensures that dynamic adjustments do not lead to unsafe conditions. The ESQRC helps ensure that the use of DLR in distribution networks enhances efficiency and capacity without compromising safety or regulatory compliance.

Minimum clearances specified in the ESQRC from ground, buildings, roads & railways and other lines ensure the safety and reliability of power lines under varying conditions.

Work carried out in Alpha will not impact line clearance. During Beta sensors will be used to validate the solution and standards will be adhered to throughout the project.

No derogation or exemption will be required.

15. Value for money

What are the Alpha Phase Project costs and how are they proportionate to the project delivery? How do they represent value for money for the consumer?

Total project cost has been set at £567,506 of which £67,726 will be met through compulsory contribution (12%). We are requesting **£499,780** of SIF funding.

The balance of costs and SIF funding requested is as follows:

SSEN -- Distribution:

- Full Cost: £91,901
- Funding: £82,712
- Contribution £9,190 (10%)

SSEN Full Costs include £14,400 allocated for the subcontracting costs for University of Glasgow and £30,000 for a specialist engineering consultancy.

Sia Partners:

- Full Cost: £374,650
- Funding: £326,210
- Contribution £48,440 (13%)

Imperial College London:

- Full Cost: £100,955
- Funding: £90,859
- Contribution £10,095 (10%)

Funding will be allocated to deliverables and work packages in the following way:

- **WP1 -- Project Management:** Funding: £54,114 (11% of total)
- **WP2 -- Current and future process identification:** Funding: £95,413 (19% of total)
- **WP3 -- Prototype building and data collection:** Funding: £135,484 (27% of total)
- **WP4 -- Solution design:** Funding: £112,131 (22% of total)
- **WP5 -- Commercial justification:** Funding £102,638 (21%)**Value for money**

The spread of costs across project participants is proportional to the work they will deliver. SSEN-D and Sia's rates are competitive and consistent with previous SIF projects.

Deliverables and work packages have been prepared using experience gained from previous successful SIF projects to ensure 3DAR delivers a high-quality output and value for money for the consumer. Through further development post discovery this project will:

- Enable more efficient connections
- Provide a cost-effective tool for investment network planning ensuring long-term resilience
- Bring together key stakeholders to avoid duplication

SSEN have carefully considered partner selection and have partnered with Sia Partners who are essential to the success of the project. Sia Partners are suppliers on SSEN's consultancy framework and were appointed following a competitive procurement exercise which included rates negotiations, a benchmark against comparative consultancies and an assessment of value for money. Additionally, Sia Partners have discounted their rates for this project and SSEN are satisfied that the rates provided are appropriate for the expertise they will be providing, and that these skills are not available within SSEN's resource pool.

Specifically:

- Deep sector expertise via Energy consultants, and Data Scientists who bring together sector together knowledge, open data expertise and technical capability with digital tools and techniques.
- Subject matter expertise of advanced climate and weather data modelling solutions for DNOs within innovation project
- Having recently supported Ofgem and Innovate UK (UKRI) with a review of their benefits assessment framework for the Strategic Innovation Fund (SIF), they also bring a strong understanding of the SIF CBA process and will ensure all outputs from WP5 from 3DAR are aligned to best practice guidance

Imperial College London come with strong skills and experience in data science and analytics for power and energy systems, including challenges at the interface between meteorology, power system operation and energy markets.

16. Associated Network Innovation project(s) (not scored)

Associated Network Innovation project(s) (not scored)

Not applicable.

The finances of all project partners are included in the milestones summary (/application/10166301/milestones-summary).

	Total costs (£)	Funding sought (£)	Contribution to project (%)	Contribution to project (£)	Other funding (£)
SCOTTISH HYDRO ELECTRIC POWER DISTRIBUTION PLC Lead organisation	**91,901**	82,711	10.00%	9,190	0
Imperial College London Partner	**100,955**	90,859	10.00%	10,096	0
SIA PARTNERS UK PLC Partner	**374,650**	326,210	12.93%	48,440	0
Total	**£567,506**	499,780		67,726	0