

SIF Round 5 Project Registration

Date of Submission

Aug 2026

Project Reference Number

10193298

Initial Project Details

Project Title

RISE - (ROBOTICS INTEGRATION FOR SUSTAINABLE ENERGY) SIF DISCOVERY R5

Project Contact

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Challenge Area

Consumer centric grid expansion

Strategy Theme

Optimised assets and practices

Lead Sector

Electricity Distribution

Project Start Date

01/05/2026

Project Duration (Months)

4

Lead Funding Licensee

SSEN - Scottish Hydro Electric Power Distribution Plc

Funding Licensee(s)

SSEN - Scottish Hydro Electric Power Distribution Plc

Funding Mechanism

Collaborating Networks

Scottish and Southern Electricity Networks Distribution

Technology Areas

Active Network Management

Health and Safety

Asset Management

Maintenance & Inspections

Overhead Lines

Fault Management

Project Summary

DNOs face the dual challenge of expanding network capacity for decarbonisation while maintaining the resilience and reliability customers expect. Without new approaches, they risk higher operational hazards, slower fault response, and rising costs. This project will explore how robotics can transform network management, maintenance, and operations, identifying where automation can support or replace high risk, labour intensive, or disruptive tasks. By enabling faster, safer working practices and more efficient operations, robotics can minimise customer disruption. RISE will define how automation can unlock new capabilities, strengthen resilience, and provide a clear roadmap for meeting future operational, regulatory, and decarbonisation goals.

Add Third Party Collaborator(s)

CENTRE FOR ENGINEERING EDUCATION & DEVELOPMENT

The National Robotarium

Project Budget

£161,985.00

SIF Funding

£145,787.00

Project Approaches and Desired Outcomes

Animal testing

- ☐ Yes
☒ No

Problem statement

Electricity distribution networks are facing growing operational pressures as they work to rapidly deliver additional capacity to support decarbonisation and economic growth, while maintaining the high levels of reliability and resilience that customers expect. Meeting these demands while navigating workforce changes and increasing productivity places significant strain on existing operational models and challenges the sector's ability to expand the network at the pace required.

Robotics introduces the opportunity to transform operations by performing tasks faster, more consistently, or in hazardous environments. However, the industry has not yet capitalised on this potential due to the complexity of identifying where and how robotics can deliver value in a safety-critical environment. As a result, innovation efforts risk becoming technology-led rather than problem-led, reducing the likelihood of achieving scalable impact.

RISE (Robotics Integration for Sustainable Energy) aims to address this gap by assessing readiness to adopt robotics and autonomous systems in a structured, evidence-based way. Rather than beginning with a specific technological solution, RISE focuses on understanding real operational challenges, organisational constraints, and the pathways required for successful adoption. This approach will identify barriers across the electricity network and highlight where robotics can genuinely transform operations.

NIA projects RAIDEDD and LISAS have demonstrated technical feasibility for specific tasks, but they do not address the broader system-wide challenges of scaling robotics across GB DNOs. RISE will fill this gap by generating a practical, transferable assessment and adoption framework that can be used by any GB DNO. By examining shared challenges and barriers across networks, RISE will create a foundation that supports consistent, confident, and scalable deployment of robotics across the sector.

Aligned with SIF Round 5 Challenge 4, RISE will examine barriers to robotics adoption and surface scalable technical innovations for later development, supporting faster and more reliable grid expansion by:

1. Developing an assessment of robotics solutions currently in the marketplace.
2. Conducting Robotic Readiness Reviews to assess technological, organisational, HR, and logistical factors affecting deployment.
3. Identifying and prioritising high-value, high-impact use cases.
4. Developing structured roadmaps and clear operational requirements.

Supported by the National Robotarium, the project will build on cross-sector learning to ensure robotics adoption becomes safe, strategic, and scalable across GB networks.

The primary users of the project are network operational teams, with support from innovation, governance, and procurement functions. Technology suppliers will benefit from clearer problem definition and stronger requirements.

International Collaboration (not scored)

N/A

Trusted Research And Innovation

N/A

Video Description

www.youtube.com/watch?v=bGuuUUusFA8

Innovation justification

RISE establishes the foundations for a scalable, distribution-wide approach to adopting robotics across GB networks. Discovery outputs will identify shared operational challenges that could be addressed by robotics and autonomous systems and translate them into a clear innovation roadmap and set of requirements.

Robotics and autonomous systems refer to a broad family of technologies capable of sensing, navigating, manipulating, and performing tasks with varying levels of autonomy. Examples already emerging in the sector are outlined in the innovation appendix.

DNOs are beginning to experiment with robotics incorporating them into core operations to drive resilience, efficiency and productivity, but the wider enablers—culture change, workforce skills, and scalable deployment—remain unaddressed and adoption remains fragmented and technology-led.

The innovative aspect of RISE lies in its creation of a structured bridge between operational need and robotics innovation. Rather than developing a bespoke solution for a single use case, RISE establishes a repeatable, transferable model for identifying, shaping, and de-risking robotics innovations network-wide. This supports scalability, reduces duplication, and increases the likelihood that future robotics solutions can be adopted consistently across DNOs.

The transformative impact of strategic robotics adoption is observed in car manufacturing where it has become an established part of day-to-day production, attracting significant benefits in cost efficiency, productivity and safety.

Robotic welding cells deliver near-perfect precision and dramatically reduce defects; AI-enabled robotic vision systems improve inspection accuracy and collaborative robots reduce strain and improve safety for technicians. These examples only moved from pilots to core operational tools when supported by organisation-wide readiness, clear requirements, and structured deployment pathways. RISE aims to enable the same shift within networks.

As robotics plays a growing role in how infrastructure is built, inspected, and maintained, networks require a structured, evidence-based approach to ensure investment is targeted at the right technologies and operational functions. This creates an opportunity for networks to become increasingly capable and cost-effective as they target investment in robotics in more strategic and coordinated ways.

RISE will deliver a Robotic Readiness Review to assess technological, organisational, governance and integration challenges, providing a holistic view of where robotics can add value and what barriers must be addressed. This will feed into structured road-mapping and requirements definition, creating viable robotics innovation opportunities and clear adoption pathways.

The TRL of individual robotics solutions is use-case specific, however, RISE focuses on increasing the CRL and IRL for robotics to 4 increasing the potential for widespread adoption.

[RISE Innovation Appendix.pdf \(opens in a new window\)](#)
[\(/application/10193298/form/question/51986/forminput/150130/file/913919/download\)](https://application/10193298/form/question/51986/forminput/150130/file/913919/download).

Impacts and benefits selection (not scored)

- Financial - future reductions in the cost of operating the network
- Financial - cost savings per annum on energy bills for consumers
- Financial - cost savings per annum for users of network services
- New to market – products

Impacts and benefits description

RISE Discovery will assess the technical feasibility, scalability and costs and benefits of applying high-value robotics applications to enhance safety, efficiency and resilience in field operations, ensuring DNOs target investment at the right technologies and operational functions.

Financial Benefit -- Reducing the Cost of Operating the Network

Robotics could deliver major benefits for electricity distribution, including safer operations, improved productivity, higher reliability, lower costs, richer data insights, improved environmental compliance and stronger support for decarbonisation and renewable integration. These benefits position robotics as a cornerstone technology for the next generation of electricity networks. These efficiencies directly support future reductions in the overall cost of running the network.

Financial Benefit -- Annual Savings on Consumer Energy Bills

Operational savings can be achieved through robotics—such as fewer customer interruptions, reduced fault response costs, and more efficient maintenance—can flow through to consumers under regulatory mechanisms. By enabling safer, faster and more reliable field operations, robotics can help reduce annual energy bills for households and businesses, supporting affordability alongside decarbonisation.

Financial Benefit -- Annual Savings for Users of Network Services

Customers benefit from reduced connection delays, fewer planned outages, and more predictable maintenance windows. Robotics can minimise disruption, and improve reliability, lowering the indirect and direct costs faced by network users and enabling faster grid expansion.

New to Market Products and Supply Chain Growth

Robotics adoption creates opportunities for suppliers to develop new tools, platforms and services tailored to electricity distribution. RISE will help shape a clearer, problem-led market signal, enabling innovators to design solutions that meet real operational needs. This strengthens the UK robotics supply chain and accelerates commercialisation of new to market products that can be deployed across GB networks.

An illustrative example of an initial test of the framework is **Live Line Working**. DNOs rely on highly trained staff, specialist tools and adapted vehicles to carry out work on live electrical networks and avoid outages. Automating this would bring benefits to DNOs, including:

- Radical safety improvements: Prevent exposure to shock or arc-flash hazards; Reduced number of falls
- Enhanced precision and repeatability of key tasks
- Increased live line working capability -- delivering a broader range of tasks: Avoiding more customer interruptions; Perform broader range of tasks
- Maintenance costs and efficiency gains by augmenting capability of existing workforce
- Improved network reliability
- Upskilling (supplement human-labour): Evolving training and skills modernisation; Supports an ageing workforce and improves recruitment appeal

Teams and resources

SSEN Distribution is the DNO, delivering power to over 3.9 million homes and businesses across central southern England and the north of Scotland. With extensive assets distributed across wide geographical areas, SSEN is well-positioned to lead a project on how robotics can be applied to support field operations—whether through inspection, maintenance, or operating the network. By investigating how robotics can enhance safety at site and reduce the frequency and duration of customer interruptions, SSENID can ensure its workforce is better protected, its network is more resilient, and its service to customers continues to improve.

SSENID's strong operational engineering capability and deep understanding of regulatory requirements will ensure that robotic deployments are safe, compliant, and aligned with industry standards. With established field operations and asset management teams, SSENID can support large-scale implementation of robotics such as live-line working and drive sustainable innovation across the network.

As lead DNO, SSENID will provide an experienced Innovation Project Manager and subject matter experts in legal and policy, BAU integration, data and IT, and finance.

The National Robotarium, a Global Research Institute at Heriot-Watt University, provides a multidisciplinary engineering team spanning mechanical design, soft robotics, electrical and electronic engineering, control systems, software, and robotics. Supported by dedicated project management and business development functions, the Robotarium can assess operational challenges, evaluate existing and emerging robotic technologies, and translate network needs into realistic innovation pathways. Within the Project, its specialists will review the relevance of current robotic and autonomous systems, contribute technical insight to readiness assessments and use case development, translate operational pain points into technical requirements, and inform technology roadmapping and integration considerations.

CeeD Scotland brings cross industry expertise in robotics adoption, organisational change and supply chain development. With a network of around 200 manufacturing and engineering businesses, CeeD provides insight from sectors already advanced in automation. It enables early ecosystem development through direct access to SMEs and automation suppliers, and ensures strong visibility and engagement through their events programme, newsletter and wider network. This involvement helps ensure the Project's outputs reflect real operational practice and support scalable robotics deployment across complex environments.

These Partners are essential to ensuring the Project's outputs reflect real world practice and are grounded in a broader understanding of how robotics can be scaled effectively across complex operations.

Project Plans and Milestones

Project management and delivery

SSEN-D will lead Project Management (WP1) activities for RISE. We will use 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. Team sessions will be supported with focused 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 milestones and deliverables' dependencies, ensuring key outcomes complement each other.

As shown in the Gantt Chart, all work packages have their own distinct targets, but at the same time, they are supporting other work package deliverables.

The risk register, including mitigating actions identified, is available in the PM Book. The most significant risks at this Discovery stage are:

R1: Internal Stakeholder Engagement Challenges Driven by Job Security Concerns and Misconceptions About Robotics

Mitigation: Engage with SMEs early through targeted outreach, co-design workshops and clear communication of project benefits. Emphasise how robotics enhances safety and skills rather than replacing roles.

R2: Availability to key SSEN and Partner SMEs

Mitigation: Pre-agree time commitments with SSEN teams, provide clear agendas and preparation requirements and escalate early if access to SMEs becomes restricted.

R3: Insufficient Internal Stakeholder Input on Pre-Workshop Self-Assessment Materials

Mitigation: Have internal SSEN colleagues in charge of issuing out and collecting the pre-work assessments and have set deadlines of when we need to receive the pre-workshop self-assessment and escalate with SSEN team if those attending have not completed it in time for the workshop. Have weekly touch points to confirm update.

No regulatory changes will be required for Discovery/Alpha phases. The project will, however, as an output of Alpha, deliver a recommendation of any regulatory change needed to make any new approaches a success.

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 Discovery or Alpha Phase.

[RISE_PMBook_FINAL.xlsx \(opens in a new window\)](#)
(/application/10193298/form/question/51990/forminput/150154/file/913959/download).

Key outputs and dissemination

The RISE project aims to understand how robotics can be safely and effectively integrated into electricity distribution operations, identifying where automation can improve safety, efficiency, and network resilience. By the end of Discovery, the team will have a clear set of priority use cases, technical and functional requirements, and a realistic roadmap outlining how robotics could be adopted and scaled across DNO environments.

The project RISE is comprised of four work packages, each outlining key objectives and activities that drive the delivery of intended outcomes and deliverables. Full details can be viewed in the attached PM book -- please see Gantt Chart and Project Plan tab, however, below summarises the project structure:

***WP1 -- Project Management ***

Lead: SSEN - Distribution

Outcomes:

- O_1.1_UKRI Engagement
- O_1.2_Project Delivery Management

Deliverables:

- D_1.1.1_UKRI Kick Off slides
- D_1.1.2_UKRI End of Phase slides
- D_1.1.3_UKRI Show & Tell slides
- D_1.2.2_PM Book

WP2 -- Research and Readiness Review

Lead: The National Robotarium

Outcomes:

- O_2.1_Stakeholder Identification and Engagement
- O_2.2_Robotics Capability Review
- O_2.3_Identification of Robotics projects across DNOs

Deliverables:

- D_2.1_Stakeholder Engagement Summary listing internal stakeholders' feedback on robotics applicability within their roles and identify the most suitable job functions for initial robotic deployment.
- D_2.2_Robotics readiness review and findings report for other DNOs
- D_2.3_Desktop review exercise identifying any past/ongoing robotics projects for future engagement to understand key findings and/or facilitate future collaboration

WP3 -- Adoption Assessment and Robotics Recommendations

Lead: The National Robotarium

Outcomes:

- O_3.1_Developing initial use cases
- O_3.2_Barriers and constraints to Robotics

Deliverables:

- D_3.1_DNO robotics use case catalogue and recommendations Report
- D_3.2_Barriers and opportunities to Robots report

WP4 -- CBA and Industry engagement

Lead: CeeD

Outcomes:

- O_4.1_Wider Stakeholder Engagement with DNOs and Robotics Supply Chain
- O_4.2_Development of CBA
- O_4.3_Synthesise learnings and provide recommendations for next steps

Deliverables:

- D_4.1_Dissemination to other DNOs and innovators of barriers and challenges
- D_4.2_Discovery CBA
- D_4.3_Project Summary/Opportunity Report

Outputs from these activities will inform our decision to progress into Alpha Phase, with learnings disseminated to the SIF

community at the end of project via Show and Tell.

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, newsletters and social media
- Specific engagement with other DNO's, industry innovators and other relevant stakeholders.

Commercials

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.

Investment Needs

The following lists the key initiatives which have been considered when designing this project proposal [full list in PM Book]

While these have implemented the use of robotics, they have not directly informed this project and the barriers and challenges that DNO's face in implementing Robotics on large scale to improve its operations across the industry.

Robot, AI and Drone Enhanced Detection of Discharge (RAIDEDD) -NIA2_NGET0060 (Live 2024-2026)

Funding: £2,300,000

Description: The project aims to enhance early detection and diagnosis of partial discharge by using machine learning to optimise sensor placement, applying AI to interpret PD patterns under varying environmental conditions, and trialling robot and drone based monitoring to improve monitoring, reduce outage risk, support safer post-failure operations, and enable both short and long term working in hazardous zones.

Design for Live Line Technology Acceleration (DELLTA) - 10166260 (Live 2025-2026)

Funding: £509,025

Description: DELLTA aims to accelerate network development by introducing innovative live-line working methods that reduce outage duration, minimise planned interruptions, and free up access for new connections and system upgrades. It combines redesigned tower components, new technologies such as externally gapped line arrestors to improve operator safety, and advanced robotics that can shorten outages or enable new live monitoring capabilities, strengthening maintenance efficiency and overall network resilience.

EPRI Substations (P37) and Analytics (P34) - NIA2_NGET0008 (Completed 2021-2025)

Funding: £2,470,000

Description: This project explores how autonomous ground robots can enhance substation inspection by reliably capturing visual, thermal, acoustic, and LiDAR data. Testing showed they can detect failing assets, analyse data with AI, and operate end-to-end without human intervention—from deployment to charging—while commercial data management platforms already exist to support their use.

Aero Prune – NIA_UKPN0116 (Live 2025-2026)

Funding: £146,000

Description: This project aims to develop and test drone based tree cutting technology to make vegetation management around overhead lines safer, faster, and more cost effective. By reducing reliance on manual cutting—especially in remote or hazardous areas—the approach aims to cut CIs and CMLs, lower operational risk, and deliver a scalable, compliant solution for maintaining clearances around HV networks.

Line Inspections by Semi-Autonomous Systems (LISAS) - NIA_SHET_0023 (Complete 2018-2020)

Funding: £230,000

Description: This project explores lightweight robots that can traverse overhead lines with onboard sensors, giving much wider inspection coverage without continuous human involvement. Designed for SSEN - T's remote, tension/tower network, these devices can capture detailed imagery, reduce climbing risks, and potentially operate live, cutting outage costs while improving asset insight.

Value for money

Total project cost has been set at £161,985 of which £16,198 will be met through compulsory contribution (10%). We are requesting **£145,787** of SIF funding.

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

SSEN - Distribution:

Full Cost: £29,950

Funding: £26,955

Contribution: £2,995 (10%)

The National Robotarium:

Full Cost: £127,915

Funding: £115,124

Contribution: £12,791 (10%)

CeeD:

Full Cost: £4,120

Funding: £3,708

Contribution: £412 (10%)

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

WP1 - Project management: Funding: £8,637 (6% of total)

WP2 -- Research and Readiness Review: Funding: £44,342 (30% of total)

WP3 -- Adoption Assessment and Robotics Recommendations: Funding: £67,732 (47% of total)

WP4 -- CBA and Industry engagement: Funding: £25,076 (17% of total)

Value for money

The spread of costs across each project participants is proportional to the work they will deliver. Deliverables and work packages have been prepared using experience gained from previous successful SIF projects to ensure RISE delivers a high-quality output and value for money for the customers.

The National Robotarium and CeeD are essential to the success of the project. SSEN have benchmarked their costs to comparative organisations and 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:

The National Robotarium:

- Assess the relevance of current robotic and autonomous systems to electricity distribution functions, to identify the best use cases to focus on for further development.

- Contribute to technical insight during robotics readiness reviews and use case development, identifying key technical challenges and risks to robotic adoption, in order to ensure that these are addressed at an early stage to progress adoption to BAU
- Support the translation of operational pain points into high-level technical and functional requirements to prioritise development activities
- Inform road mapping activities by identifying feasible technology pathways and integration considerations, for both the DNO sector and critically the nascent robotics supply chain.

CeeD:

- Provide crosssector robotics expertise from manufacturing, engineering and industrial domains already operating at higher automation maturity, ensuring RISE recommendations and outputs are practical, scalable and informed by proven approaches to automation adoption.
- Reallworld insight into organisational change, including how other sectors have overcome cultural resistance and workforce concerns
- Supplychain intelligence, helping identify capable vendors, emerging technologies and practical deployment considerations.
- Strong dissemination and engagement channels through CeeD's events, newsletters and industry forums.

Supporting documents

File Upload

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Documents uploaded where applicable?

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