

NIA Project Registration and PEA Document

Date of Submission

Jun 2026

Project Reference Number

NIA_SPEN_0137

Project Registration

Project Title

Project Canopy

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NIA_SPEN_0137

Project Licensee(s)

SP Energy Networks Distribution

Project Start

June 2026

Project Duration

1 year and 10 months

Nominated Project Contact(s)

Parham Momeni and Sam McNeil

Project Budget

£1,400,000.00

Summary

Project CANOPY (Combined Analytics for Network Overgrowth Prediction & Yearly-audit) will develop and demonstrate a data-driven Vegetation Management System (VMS) for SP Energy Networks, integrating LiDAR, satellite imagery and SPEN asset data on the Neara platform. The system will automate identification of vegetation encroachment, fall-in and grow-in risks, with species-aware growth modelling to predict future risk and optimise intervention timing. SPEN's vegetation standards and workflows will be digitised to support risk-based planning, prioritisation, and post-cut auditing, and potentially enable remote or offline insights for field teams. Delivered in two phases, the project will deliver insights and workflow changes that can support VMS teams moving from cyclical, manual vegetation management approaches to a proactive, risk-based approach, learnings which are transferable across GB licensees.

Third Party Collaborators

Neara Software Ltd

Nominated Contact Email Address(es)

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Problem Being Solved

SP Energy Networks' current vegetation management approach relies on circuit-by-circuit ground surveys and periodic manual inspections to identify vegetation encroachment, with surveys conducted on a fixed three-year cycle (covering one third of the network per year) and 100% post-cut audits performed manually at site. Survey teams operate with limited historical or predictive data on cutting history, expected encroachment, vegetation risk and growth rates, and the process is time-intensive — taking days to several weeks for remote or complex circuits.

These constraints affect all three of SPEN's licence areas but disproportionately impact distribution performance, particularly the 11kV and LV networks where vegetation contact with overhead lines (OHL) remains a leading driver of unplanned interruptions. Inappropriately managed vegetation also contributes to safety risks and customer detriment, and is exacerbated by climate-driven changes in growth rates and weather hazards.

While SPEN has begun to use LiDAR data to model vegetation, in the absence of advanced classification, growth modelling and frequent re-capture, LiDAR alone does not enable the prediction of growth or proactive prioritisation. Without proactive intervention, SPEN could continue to incur high volumes of vegetation-related outages, deliver vegetation works inefficiently, and miss opportunities to improve its IIS performance and to reduce contractor cost ahead of ED3.

Method(s)

Method

The methods are primarily technical and analytical: develop and demonstrate a data-driven Vegetation Management System (VMS) on the Neara platform that integrates centimetre-accurate LiDAR, multispectral and RGB satellite imagery, and SPEN asset/GIS data within a single engineering-grade digital twin of SPEN's overhead line network. This can then be used by SPEN's VMS teams to effect efficiencies and changes to their processes and work activities. Core technical elements include using the Neara digital twin platform to:

1. Combine LiDAR point cloud data, asset engineering libraries and asset GIS data to create a network model of SPEN assets for this project, as well as a library of individual trees segmented by canopy
2. Identify encroachment, fall-in and grow-in risks under a range of realistic operating and weather conditions by using engineering-grade physics-enabled analysis and simulations, including conductor sag and sway and asset utilisation factors;
3. Use multispectral, IR and RGB satellite analysis of tree health or vitality, species classification and canopy change for visibility between LiDAR captures and enriching these with third-party species, soil, land-use and other environmental data where possible
4. Develop predictive multi-year vegetation growth modelling using aforementioned data, to forecast where and when vegetation will become a risk and propose appropriate cutting or veg removal interventions
5. Digitise of SPEN's vegetation standards and processes into automated platform workflows for risk identification, prioritisation, contractor mobile/offline access and remote post-cut auditing; and
6. Investigate integration with SPEN corporate systems and other solutions and platforms, notably an existing Salesforce-based work management platform, as well as SAP and ESRI GIS, so that VMS outputs can flow into operational planning and execution.

Measurement Quality Statement / Data Quality Statement:

The project may collect and process data from the following primary sources:

- LiDAR point cloud data – historic captures already held by SPEN, plus new captures planned annually (April–October) covering a third of the network per year, and a fresh capture in 2026 covering a section of the HV network.
- Multispectral and RGB satellite imagery – procured or captured in Q2–Q3 of 2026 and 2027, covering the proof of concept (PoC) area and subsequently the wider network
- GIS and asset records – ingested from SPEN's existing asset management systems, covering LV, HV, and EHV network assets
- Field reports – outputs from manual surveys, cutting records, and post-cut audits conducted by SPEN and its service partners
- Species and forestry records – external reference data used to inform tree species classification and growth modelling

As part of the Project, data requirements and specifications will be set and discussed as part of Phase I. These may include the following:

- **Completeness:** Data must cover the agreed scope area for each project phase. Gaps in coverage (e.g. from cloud cover affecting satellite capture) must be documented and their potential impact on outputs assessed.
- **Accuracy:** LiDAR data must meet the positional accuracy standards required for centimetre-level vegetation modelling. Satellite imagery must meet the resolution and spectral quality thresholds agreed during Phase I requirements gathering.
- **Consistency:** Data ingested from multiple sources (LiDAR, satellite, GIS, field reports) must be aligned to a common reference system or identification scheme when integrated into the Neara platform.
- **Timeliness:** Data must be captured and ingested within the timeframes set out in the project plan to avoid delays to modelling and workflow development activities.
- **Traceability:** All data must carry metadata recording its source, capture date, processing version, and any transformations applied.

Where the data (and associated metadata) already exists or is being collected as part of existing activities at SPEN (e.g. asset GIS

data, LiDAR data), data quality will be subject to existing standards set as part of those data collection activities independent of this Project.

For example, LiDAR captured on behalf of SPEN could be subject to point density / classification checks or quality checks as required / specified by SPEN in agreements with their suppliers. Where data (and associated metadata) does not yet exist or requires additional collection or purchase, data procured will be subject to quality assurance and validation against standards and specifications as defined for the Project.

Data will be classified at ingestion as open, commercially sensitive, or restricted, with reasons documented where data cannot be shared openly, in line with the NIA default open data requirement. All raw and processed data will be stored on the Neara platform in accordance with agreed data governance standards for the Project and SPEN's own data policy (linked in 2.12).

Version control will be applied to all processed datasets and model outputs to ensure reproducibility. Data provenance, lineage and processing pipelines will be documented and version-controlled within the Neara platform, showing how data is stored, combined and processed. Periodic reviews against SPEN's data governance standards may be conducted by the project governance team.

Where required, outputs from analyses such as encroachment, fall-in/grow-in, growth predictions, and other parts of the method requiring the use of quantitative figures will be reported explicitly with relevant measurement or calculation uncertainties

Scope

The Project will design, build and validate a VMS on the Neara platform that enables SPEN to move from a cyclical, time-based vegetation management model to a proactive, risk-based model.

In scope: ingestion and processing of historic and newly-captured LiDAR, RGB and multispectral satellite imagery across a representative LV, HV and EHV section of SPEN's network for a Proof of Concept (Phase I), and expansion of coverage in Phase II; AI-driven classification, tree segmentation, growth and health modelling; engineering-grade modelling of conductor sag/sway and vegetation clearance under realistic operating and weather conditions; digitisation of SPEN's vegetation standards into platform workflows for survey, prioritisation, cutting, and remote auditing; initial mobile/offline field-team workflows and integration with SPEN corporate systems (notably Salesforce); and a refined cost-benefit analysis of the new VMS against the current cyclical baseline.

Out of scope: full enterprise rollout across the entire SPEN network (this follows project completion at the start of ED3); changes to SPEN's cutting approaches, contractor procurement frameworks or unit-rate pricing; work order management scope covered by parallel Salesforce project

Net benefits accruing to SPEN's electricity distribution and (where applicable) transmission systems include: avoided or reduced office time on VMS planning, risk identification and cutting prioritisation activities, field team and contractor survey and audit costs; avoided IIS/GSOP exposure and emergency response costs from vegetation-driven outages; environmental benefits from fewer truck-rolls and unnecessary cuts; safety benefits from fewer hazardous field visits; and improved regulatory and customer outcomes (further detail in the Success Criteria and Section 3.2 below). The initial CBA estimates an average gross financial benefit of £12.4m p.a. in ED3 (rising to ~£18m beyond ED3) and a 10-year NPV of approximately £70m (from 2024).

Objective(s)

Project CANOPY aims to develop a proof-of-concept (PoC) of a novel VMS that leverages LiDAR data, satellite imagery and other data to develop advanced workflows and analysis for proactive vegetation management using the Neara Software platform. The focus is to help SPEN VMS teams and contractors:

- Automatically assess vegetation infringements and required cutting works at scale across the network based on SPEN and regulatory standards
- Ingest and integrate multiple data sources and processes on a single-platform solution for vegetation risk identification, prioritisation, management, auditing and reporting, potentially with desktop and mobile access for field teams
- Determine and apply advanced growth prediction models from a mixture of LiDAR, satellite imagery, field reports and species & forestry records

The project will be delivered in two phases with differing but related objectives.

- Phase I focuses on requirements gathering, data ingestion, and development of the minimum viable PoC across a representative network area of the distribution network.
- Phase II will expand modelling across the network whilst developing advanced growth prediction capabilities, refining vegetation management workflows, planning integration with other SPEN systems, and supporting user testing, training, and initial deployment.

Consumer Vulnerability Impact Assessment

While Project CANOPY is primarily an operational and network management tool, it is expected to deliver meaningful indirect benefits for consumers in vulnerable situations, including those on SPEN's Priority Services Register (PSR). Consumers who are elderly, who have medical dependencies on electricity supply, or who live in rural and hard-to-reach areas of SPEN's network are disproportionately affected by unplanned outages. Vegetation contact with overhead lines is one of the leading causes of such outages.

By enabling SPEN to identify and remediate the highest-risk vegetation hazards earlier and more accurately, CANOPY has the potential to reduce both the frequency and the duration of supply interruptions across SPEN's networks, including for the customers most vulnerable to loss of supply. The risk-based prioritisation also targets investment at high-consequence circuits — including those serving rural communities, low-carbon technology loads (EV charging hubs, heat pump clusters) and PSR concentrations — improving the equity of vegetation-driven reliability outcomes.

Distributional impact assessment:

1. Technical — vulnerable customers in rural and remote areas, where vegetation-related risk is highest, are expected to see the largest improvement in CIs/CMLs;
2. Financial — avoided IIS/GSOP exposure and lower contractor costs can be reflected in network charges over time, supporting affordability for all consumers including those in vulnerable situations;
3. Wellbeing — fewer prolonged outages reduce risk to customers reliant on powered medical equipment, refrigerated medication and remote communications, particularly during winter storms.

Success Criteria

The Project will be evaluated by the Licensee against the following success criteria:

1. PoC delivery: Successful build of a digital model of the PoC scope area integrating LiDAR, satellite imagery and SPEN GIS/asset data, with automated identification of vegetation encroachment, fall-in and grow-in risks against SPEN standards.
2. Modelling approaches validated: Vegetation growth prediction and risk identification approaches challenged and validated by SPEN vegetation management and operations teams, including feedback from field cutting teams during cutting and audit
3. Workflow digitisation: SPEN vegetation risk identification, prioritisation, and remote audit workflows operating within the platform and validated by end users.
4. Integration planning in place: Clear integration with at least one corporate system, tool or platform demonstrated e.g. Salesforce, with a documented integration plan for further systems.
5. Field deployment readiness: If included in Phase 2 scope, initial mobile/offline workflows usable by SPEN tree-cutting co-ordinators and service partners, validated through user acceptance testing.
6. Business case: Updated, defensible cost-benefit analysis confirming the average gross financial benefit envelope (ED3) and the NPV, supported with licensee inputs into the baseline and impact calculations.
7. New learning: Development of knowledge outputs with sharing made available upon request.

If successful, the Provider may be engaged to provide access to a commercial product that enables risk-based vegetation management for the full SPEN network.

Project Partners and External Funding

Project Partner: Neara Software Ltd. is the sole project delivery partner. Work for the Project, as described in the work packages and deliverables, will be delivered exclusively by Neara Software Ltd. in close collaboration with SP Energy Networks.

External funding: The Project is funded under the Network Innovation Allowance (NIA). No external (non-NIA) funding has been secured at the time of registration. SPEN will provide internal resourcing (~£276,300 across the project) which is captured within the indicative project budget.

Potential for New Learning

The Project will generate new, transferable learning by developing and validating a scalable, data-agnostic approach to vegetation management that combines satellite and LiDAR data within an engineering-grade digital twin.

It will demonstrate how lower-cost, high-frequency satellite data can be used to provide network-wide visibility and inform targeted deployment of LiDAR, enabling a more efficient and scalable monitoring strategy. It will also establish a risk-based framework for vegetation management, linking vegetation proximity and growth with asset behaviour under real-world conditions to prioritise interventions based on quantified risk, rather than cyclical practices.

In addition, the Project will generate learning on how to optimise vegetation management programmes under budget constraints —

including how to maximise risk reduction per unit of spend — and how advanced analytics can be embedded into utility workflows for planning and operational decision-making.

The frameworks and findings developed through the Project will be directly applicable to other electricity transmission and distribution Network Licensees, as they are designed to be scalable and adaptable across different network types and geographies. Outputs and reports of the Project will be made available to other Licensees upon request, in compliance with SPEN's data policies.

Scale of Project

The Project is scoped at an indicative total of £1,400,000 over a duration of 1 year 9 months (May 2026 – March 2028), staged across two phases. Phase I (May–July 2026; £240,000) delivers requirements gathering, project setup and a Proof of Concept on a representative LV/HV/EHV section of SPEN's network. Phase II (August 2026 – March 2028; ~£1,160,000) extends network modelling, refines growth and risk models, develops VMS workflows, integrates with SPEN corporate systems, builds initial mobile/offline field-team workflows, and conducts user acceptance testing and onboarding to support enterprise deployment from April 2028.

The investment is justified by the scale of the underlying programme being addressed. SPEN's ED2 spend on tree cutting was estimated at approximately £82m (2021 prices). Project CANOPY is sized to design, build, validate and deploy a new VMS at sufficient breadth — multiple voltage levels; multi-year growth and audit cycles; integration with corporate systems — to provide credible evidence of operational viability and benefits ahead of ED3. A smaller-scale project would not exercise the full data, modelling and workflow stack needed to substantiate this. It would also be unable to capture sufficient species/geography/growth diversity to validate the predictive models or to demonstrate value across the LV, HV and EHV networks where vegetation risk profiles differ materially.

Conversely, the project is intentionally scoped below full enterprise rollout (which is excluded and will follow at the start of ED3), keeping investment proportionate to the new learning sought during the NIA period.

Technology Readiness at Start

TRL3 Proof of Concept

Technology Readiness at End

TRL6 Large Scale

Geographical Area

The Project will take place across SP Energy Networks' overhead line networks. SPEN currently comprises three licensed networks: SP Distribution (central and southern Scotland), SP Manweb (Merseyside, Cheshire, North Wales and North Shropshire) and SP Transmission (central and southern Scotland transmission); a fourth license area, SP Electricity North West, is excluded from the Project for now. The vegetation management challenge will focus on looking at assets covered by SP Distribution and SP Manweb, with SP Transmission assets included where data is made available alongside SPD assets; these may be included as “EHV” assets under SPM.

Phase I initial PoC scope: a representative section of the LV, HV and EHV network within SPEN's licence areas. The specific geography will be confirmed during Phase I scoping with SPEN's vegetation management team, prioritising areas where existing LiDAR coverage is available and where vegetation-driven CIs/CMLs are concentrated.

Phase II VMS core delivery: expansion to broader LV, HV and EHV coverage within SPEN's network, with annual satellite captures (Q2–Q3 each year) and LiDAR captures aligned to SPEN's enterprise capture programme (rolling third of the network annually, April–October).

This is not a multi-licensee collaborative project.

Revenue Allowed for the RIIO Settlement

0

Indicative Total NIA Project Expenditure

£1,400,000 indicative total NIA expenditure for the whole of the Project (RIIO-2 / ED2). Phased as follows:

- Phase I — Requirements Gathering and Initial Proof of Concept (May 2026 – July 2026): £240,000.
- Phase II — Core VMS Delivery and initial setup with SPEN (August 2026 – March 2028): approximately £1,160,000 (subject to

refinement during Phase I scoping).

Project Eligibility Assessment Part 1

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

Neara's Project CANOPY (Combined Analytics for Network Overgrowth Prediction & Yearly-audit) directly supports the energy system transition by enabling SP Energy Networks (SPEN) to manage its electricity distribution network more efficiently and reliably as the network evolves to support net zero. As GB's electricity system transitions toward net zero, the distribution networks will face significantly increased demand from electrification of heat and transport, as well as greater integration of distributed renewable generation. Maintaining network reliability and resilience through this transition is therefore more critical than ever, and vegetation risk management is a key component. Vegetation encroachment and tree fall on overhead line (OHL) assets are among the leading causes of unplanned outages on the electricity network, especially combined with climate and weather hazards. The ability to prioritise vegetation remediation based on connected customer numbers, circuit criticality and risk severity means that high-consequence circuits, including those supplying low-carbon technology loads such as EV charging hubs and heat pump clusters, can undergo more effective tree and vegetation cutting. Improving these activities directly supports the reliable operation of the network infrastructure needed to deliver the energy transition.

How the Project has potential to benefit consumer in vulnerable situations:

While the VMS from CANOPY is primarily an operational and network management tool, it will also have meaningful indirect benefits for consumers in vulnerable situations, including those on SPEN's Priority Services Register (PSR). Consumers who are elderly, have medical dependencies on electricity supply, or who live in rural and hard-to-reach areas, are disproportionately affected by unplanned power outages. Vegetation contact with overhead lines is a significant cause of such outages. By enabling SPEN to identify and remediate the highest-risk vegetation hazards earlier and more accurately, CANOPY has the potential to reduce the frequency and duration of supply interruptions for all customers, including those most vulnerable to the consequences of loss of supply.

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved

n/a

Please provide a calculation and/or description of the expected benefits of the solution

The current standard / baseline method in use by GB TSOs / DNOs / DSOs involves cycle-based, time-based cutting (vegetation growth and risk on distribution networks reviewed every 3–4 years and cut back to acceptable clearance standards; tree-fall and tree-health risks addressed case-by-case). While some GB utilities already integrate LiDAR or satellite imagery, most still require contractors to conduct manual line inspections to confirm clearance infringements and plan cutting tasks, or to facilitate post-cut auditing. Most DNOs still use digital data to react to infringement data via cyclical cutting plans rather than to proactively plan cutting around expected future risks on the most critical circuits or assets. The Neara CANOPY platform will allow SPEN to predict when and where vegetation will become a risk to assets and address these proactively, leading to:

1. **Financial benefits** to SPEN and consumers: SPEN's ED2 planned spend for tree cutting is ~£82m (2021 prices). Project CANOPY has the potential to reduce the cost of this programme for ED3 by targeting expenditure on the spans and circuits where vegetation risk is currently highest (or, via health and growth models, expected to be highest); allowing SPEN and its contractors to conduct vegetation surveys through platform insights, removing a proportion of manual surveys and field visits; allowing faster, more automated prioritisation of cutting activities, with integrations into work management for contractors and possible field-enabled access; and enabling remote post-cut auditing through the platform, supporting sampling-based auditing rather than 100% manual audits. Savings can be reallocated to other energy transition and climate resilience initiatives or passed to consumers through lower network charges (including those in vulnerable situations).

2. **Network reliability benefits** (financial and societal): Vegetation contact with overhead lines is one of the principal causes of unplanned supply interruptions, estimated to cause about a third of outages on distribution networks. Earlier and more accurate identification of encroachment, fall-in and grow-in risks, plus more precise multi-year cutting plan forecasting based on actual tree growth rates and health data, can meaningfully reduce the frequency and duration of supply interruptions across SPEN's network. Under RII0-ED2 and beyond, where SPEN faces incentives and penalties tied to reliability (IIS and GSOP), vegetation-related outage reduction translates directly into financial benefits. For SPEN's ~3.5 million household and business customers — especially those in rural or remote locations — fewer losses of power produce a societal benefit quantifiable under Value of Lost Load (VOLL) per kWh.
3. **Harder-to-quantify benefits**: environmental benefits (fewer truck-rolls, fewer emissions, fewer unnecessary cuts); safety benefits (fewer hazardous field visits); improved regulatory confidence and Ofgem engagement; improved contractor accountability via objective satellite-based post-cut auditing; reputational and community benefit from fewer rural outages; climate resilience from growth/health models that incorporate species and soil data; data asset creation (a durable, reusable tree inventory, species library and growth models); and biodiversity benefits from risk-based cutting that avoids unnecessary removal of healthy trees.

Recipients: SPEN (as the Funding Licensee) through cost reduction, IIS/GSOP performance and operational efficiency; SPEN's ~3.5 million customers (including those in vulnerable situations) through lower network charges, fewer outages and improved climate resilience; SPEN's contractors through more efficient task allocation; and (via dissemination) other GB DNOs and TNOs and their customers through transferability of the Method.

Calculation of benefits estimate: An initial CBA accounting for financial and non-financial benefits against a do-nothing scenario estimates a 10-year NPV (from 2024) of approximately £70m, with a 3-year payback period from first costs incurred in 2026 once the platform is implemented at scale in ED3.

Against the do-nothing scenario, the average gross financial benefit is estimated at £12.4m p.a. in ED3 (rising to ~£18m p.a. beyond ED3), comprising:

- Avoided OPEX / TOTEX costs from operational efficiencies and fewer field costs in vegetation management; average of £10.4M p.a. from the first full year of full implementation across SPD / SPM (Mar 2028-2029)
- Avoided IIS & GSOP penalties and compensation / increased revenue from better reliability; average of £2.1M p.a. from the first full year of full implementation across SPD / SPM (Mar 2028-2029)

Against the do-nothing scenario, non-financial benefits comprise:

- Reduced indirect emissions from fewer rollouts / field dispatches; average of 235.4 tCO₂e reduced p.a. from the first full year of full implementation across SPD / SPM (Mar 2028-2029)
- Reduced number of customers interrupted; average of 81,786 fewer customers interrupted p.a. from the first full year of full implementation across SPD / SPM (Mar 2028-2029)
- Reduced number of customer minutes lost; average of 6.9m fewer customer minutes lost interrupted p.a. from the first full year of full implementation across SPD / SPM (Mar 2028-2029)
- Reduced number of instances of major injury; average of one fewer major injury p.a. from the first full year of full implementation across SPD / SPM (Mar 2028-2029)

These calculations are subject to change as the project progresses an analysis of the baseline method.

Please provide an estimate of how replicable the Method is across GB

The Method is highly replicable across GB. All fourteen electricity distribution network licence areas in GB operate substantial overhead line networks where vegetation management is a significant operational and safety obligation. Electricity transmission operators similarly maintain large OHL networks across the country.

The core components of Project CANOPY — LiDAR-based network modelling, multispectral satellite analysis, AI-driven tree segmentation and growth modelling, and risk-based prioritisation — are network-agnostic, meaning they can be applied to any DNO's or transmission licensee's asset base regardless of geography or voltage level. Similarly, the Method is applicable to the full extent of GB's overhead electricity transmission network maintained by multiple network licensees.

In percentage terms, the Method is applicable to effectively 100% of the overhead-line portion of GB electricity distribution and transmission networks. Underground portions are out of scope. Approximate replicability scope: ~14 distribution licence areas; multiple transmission licence areas; tens of thousands of kilometres of OHL; and the entire GB OHL vegetation management programme.

Please provide an outline of the costs of rolling out the Method across GB.

The primary costs of rolling out the Project CANOPY methodology to other GB Network Licensees would consist of:

- LiDAR data capture and processing for the relevant network areas where LiDAR has not already been captured.
- Satellite imagery capture and analysis.
- Platform deployment and configuration against each licensee's specific vegetation management requirements and standards.
- Onboarding, training, workflow and process development or integration to make the platform useable by licensees and their contractors.
- Integration with each licensee's enterprise systems such as asset management, work management and GIS platforms.
- Recurring license fees for continued use of a commercial solution on the Neara platform

The cost profile is expected to be more favourable for subsequent licensee deployments than for the initial SPEN implementation, on the assumption that some GB DNOs are already using LiDAR or satellite imagery on portions of their network for vegetation management, climate resilience or other asset management purposes, meaning those DNOs would only need to fund the incremental cost of completing data coverage, capturing the missing data layer (satellite or LiDAR), and combining the layers within the Neara platform.

Requirement 3 / 1

Involve Research, Development or Demonstration

Projects must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

- ☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).
- ☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)
- ☐ A specific novel operational practice directly related to the operation of the Network Licensees system
- ☐ A specific novel commercial arrangement

Involve Research, Development or Demonstration - Please select all that apply

- ☐ A specific piece of new equipment (including monitoring, control and communications systems and software)
- ☒ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven
- ☒ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)
- ☒ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology
- ☒ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution
- ☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

The Project will generate new, transferable learning by developing and validating a scalable, data-agnostic approach to vegetation management that combines satellite and LiDAR data within an engineering-grade digital twin. It will demonstrate how lower-cost, high-frequency satellite data can be used to provide network-wide visibility and inform targeted deployment of LiDAR, enabling a more efficient and scalable monitoring strategy. It will also establish a risk-based framework for vegetation management, linking vegetation proximity and growth with asset behaviour under real-world conditions to prioritise interventions based on quantified risk, rather than cyclical practices.

In addition, the Project will generate learning on how to optimise vegetation management programmes under budget constraints — including how to maximise risk reduction per unit of spend — and how advanced analytics can be embedded into utility workflows for planning and operational decision-making.

The frameworks and findings developed through the Project can be adapted to other electricity transmission and distribution Network Licensees, as they are designed to be scalable and adaptable across different network types and geographies. However, Licensees will need to build their own network models on the Neara platform using their own LiDAR, satellite imagery and engineering libraries data in order to apply findings and frameworks to their particular context and standards. Findings may include the approach to risk

identification, growth prediction, and risk-based sampling for audits. Outputs and reports of the Project may be made available to other Licensees upon request, in compliance with SPEN's data policies.

n/a

Is the default IPR position being applied?

☒ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed. Networks must explicitly mention similar projects that they have considered and how these differ.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

Project CANOPY will not result in unnecessary duplication of existing innovation projects, as it develops and tests a novel methodology that has not previously been deployed at scale. While vegetation management has been the focus of prior NIA and related projects, these have typically relied on single data sources (e.g. LiDAR-only or satellite-only approaches) or have not integrated these within an engineering-grade analytical framework. A search of the ENA project database surfaces several proposals where satellite is proposed as an alternative to LiDAR, but none where the detail of LiDAR is combined with satellite imagery to generate vegetation management insights and growth models.

In contrast, this Project specifically focuses on the combined use of satellite and LiDAR data within a physics-enabled platform to deliver both continuous network-wide monitoring and engineering-level precision. This represents a materially different Method to existing approaches and is expected to generate new learning on how multiple data sources can be integrated to improve risk identification, prioritisation and programme optimisation.

Where similar technologies have been explored in isolation, this Project advances the technology readiness level by validating the combined approach at network scale and embedding it within operational workflows. As such, the Project will produce new and distinct learning that goes beyond prior work and supports wider adoption across electricity transmission and distribution networks.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

N/A

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

Project CANOPY is innovative and not a business-as-usual activity. It represents the first deployment of a combined satellite and LiDAR-based vegetation management approach at network scale within a single, integrated analytical framework. There is currently no established solution in the market that operationalises LiDAR or satellite data in a way that delivers both network-wide visibility and engineering-grade precision for vegetation risk assessment. The Project will therefore develop and validate a new methodology for using and combining these data sources to enable more accurate, scalable and cost-effective vegetation management.

Relevant Foreground IPR

N/A

Data Access Details

The SP Energy Networks Data Sharing Policy can be found [here](#).

Please identify why the Network Licensees will not fund the project as a part of it's business and usual activities

SPEN cannot fund this Project as part of business-as-usual activities due to the unproven nature of the approach and the associated risks. The Project requires the development and testing of new methodologies, integration of multiple data sources, and close collaboration between Neara and SPEN to validate outputs against real network conditions. This goes beyond standard operational vegetation management practices, which are typically based on established, cyclical processes with predictable outcomes.

Where possible, SPEN may use existing LiDAR data — captured under previous activities for asset management and clearance management processes under ESQCR — to accelerate implementation. However, this data will be combined with newly-captured satellite imagery and used to build a new VMS platform in a way that is not covered by existing BAU activities.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks (e.g. commercial, technical, operational or regulatory) associated with the project

The project can only be undertaken with NIA support due to a combination of technical, operational and commercial risks. These include uncertainty around the accuracy and reliability of satellite-derived insights when integrated with LiDAR at scale, the effectiveness of the combined approach in improving risk identification and prioritisation, and the challenges of embedding new analytical outputs into existing utility workflows. There is also commercial risk associated with investing in a solution that is not yet proven at scale in GB networks. NIA funding enables these risks to be addressed in a controlled environment, generating the evidence required to support potential wider adoption.

This project has been approved by a senior member of staff

☒ Yes