



Nature4Networks Energy Innovation Summit 2025

Dot Revill – Innovation Project manager



Scottish & Southern
Electricity Networks



SSEN DISTRIBUTION

WHO WE ARE

We're Scottish and Southern Electricity Networks (SSEN) Distribution. We're the Distribution Network Operator (DNO) responsible for delivering power to almost 4 million homes and businesses across central southern England and the north of Scotland.

We serve some of the UK's most remote communities - and some of the most densely populated. Our two networks cover the greatest land mass of any UK DNO, covering 72 local authority areas and 75,000km² of extremely diverse terrain.

We're also at the forefront of delivering the decarbonised electricity system of the future, connecting new low-carbon technologies to the network. Through this, we're helping support sustainable economic growth for decades to come.

SSEN DISTRIBUTION NETWORK AT A GLANCE

Nearly **4 million** homes
and businesses

Over **128,000km** of overhead
lines and underground cables

Over **460km** of subsea cables
powering our island communities

Over **4,400** employees
across the country

North of Scotland
SSEH/SHEPD LICENCE AREA



Central Southern England
SSES/SEPD LICENCE AREA



Nature-based Solutions (NbS)



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“Nature-based solutions are actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services, resilience and biodiversity benefits.”

(UNEP, 2022)



Nature4Networks

**Exploring how Nature-based Solutions
can be used as innovative, sustainable
and resilient alternatives for network
investment.**

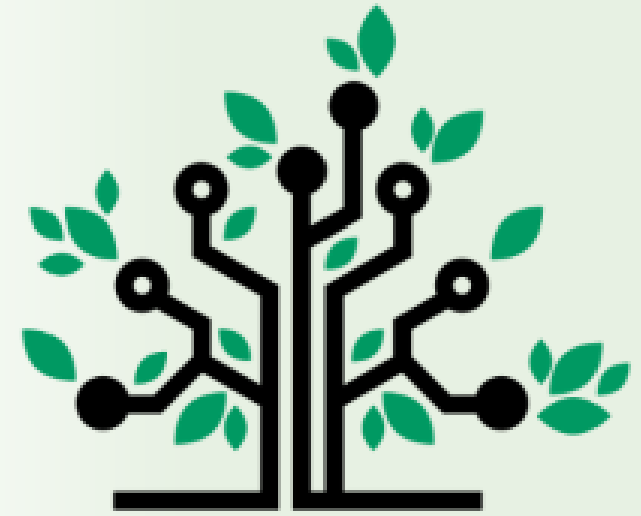
Laying foundations for scalable Nature-based Solutions (NbS) as innovative, sustainable, and resilient alternatives for network investment.

Achievements:

- Assessed investment methodologies, regulation, and policy.
- Developed a catalogue of 15 potential Nbs approaches for energy networks.
- Created site to suitability and selection criteria.
- Produced Barriers and Recommendations Report and Case Study Report.
- Define key performance indicators (KPIs) to evidence effectiveness.
- Identified trial sites and prepared for real life demonstrators.
- Developed Nbs engineering standards for 4 use cases.

Project Phases:

- **Discovery:** feasibility of Nbs for energy networks.
- **Alpha:** Deep dive into four specific Nbs approaches and their application.
- **Beta (next):** physical demonstrators and evidence gathering.



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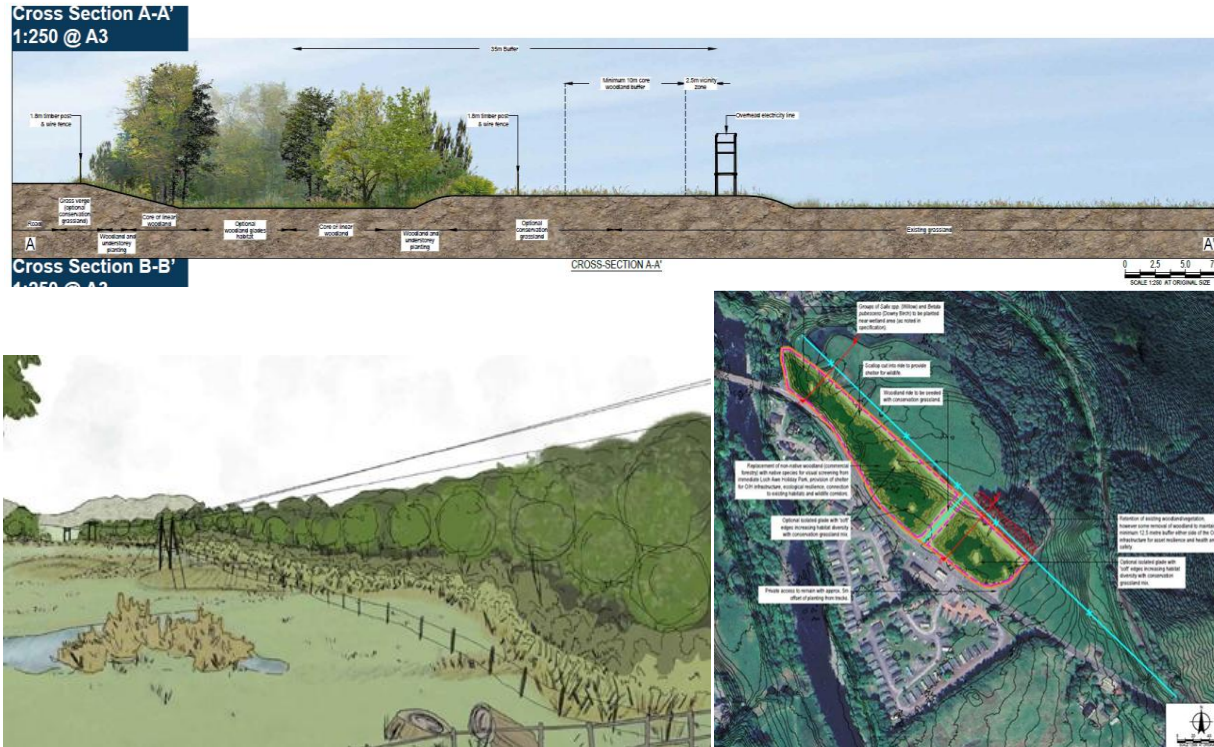


Guidehouse



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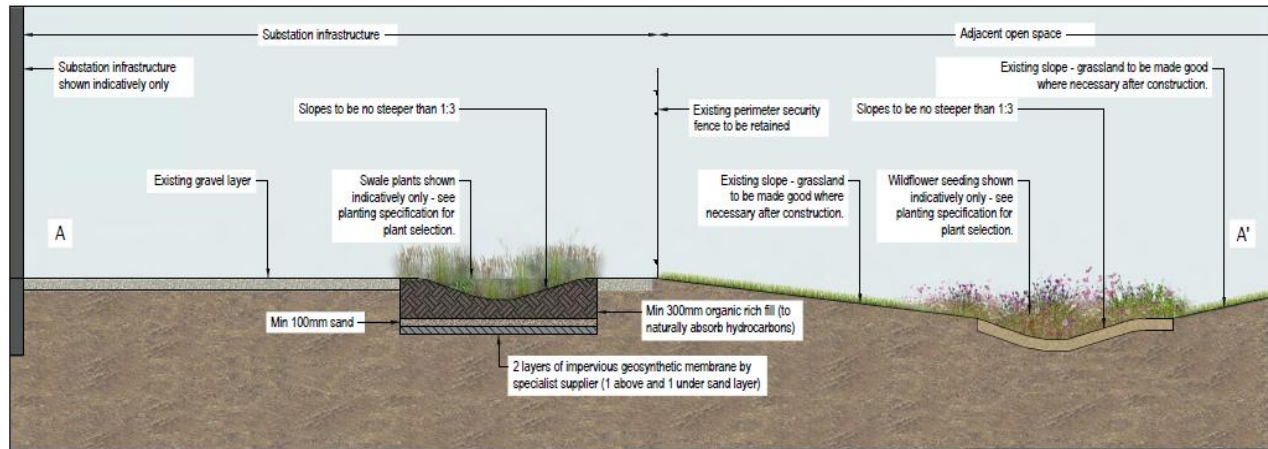
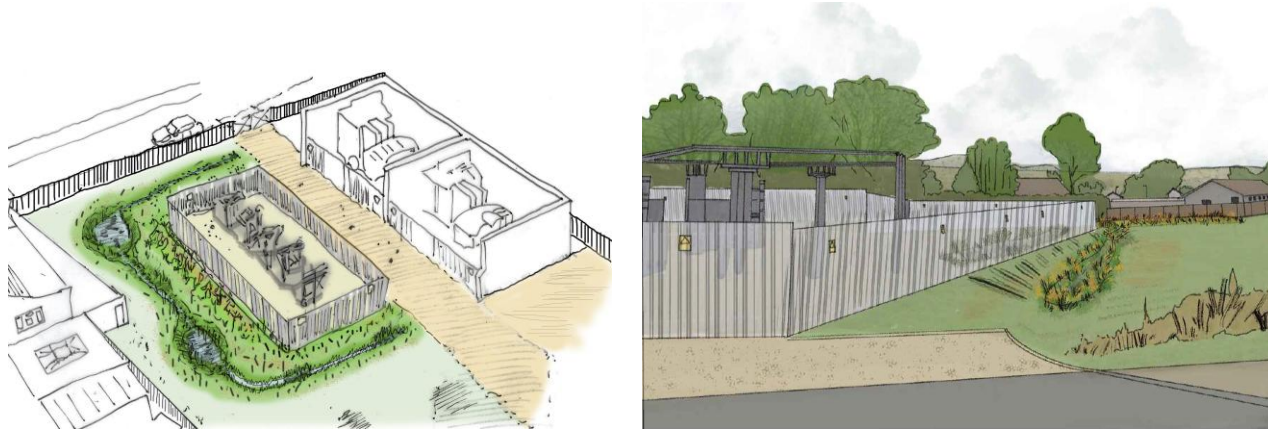
Use Case 1 Linear Woodland



What have we learned?

- ✓ Similar financial costs as undergrounding but additional environmental benefits
- ✓ Nature markets mean DNOs and their customers can monetise some of these benefits
- ! Visual Amenity Scheme would need extending – although willingness-to-pay survey could help justify this
- ! Need for arrangements with landowners that can 'lock in' benefits for the long term

Use Case 2 Sustainable Drainage Systems



Conceptual designs by GHD

What have we learned?

- ✓ Case study showed SuDS costs can be less than traditional solutions
- ✓ SuDS can also bring environmental benefits (biodiversity and carbon)
- ✓ Possible benefits reducing run-off to sewer systems
- ! Technical guidance may need changing – a demonstrator could provide evidence

What have we learned?



- ! Case study CBA showed higher financial costs for the bioswale than the concrete bund
- ✓ The bioswale brings biodiversity and carbon benefits
- ! CBA still negative – although a very close result, and subject to significant uncertainty
- ✓ If sites can be found where there are net benefits, a demonstrator could be constructed





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Project highlights – what have we achieved?



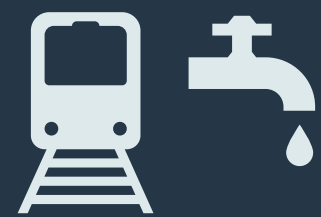
Co-creation:

Two Webinars held in December

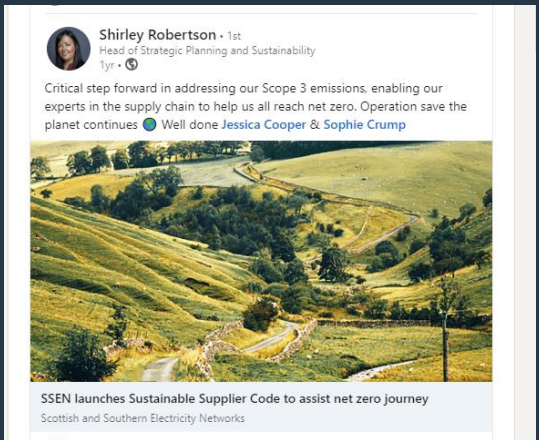



~ 100 joined
across two
sessions

Embedding Learnings:



Other online presence



Conclusions – Opportunities

This work has shown that Nature-based Solutions can:

- Be applied to electricity networks to enhance sustainability and resilience of assets;
- Deliver benefits to the wider environment; and
- Reduce networks' costs, which could ultimately result in bill savings for customers.

There is not necessarily a conflict between these objectives

We have also shown that these interventions could be rolled out at a sufficient scale to make a meaningful difference:

- Even if linear woodlands could only be applied to 5% of sites where undergrounding is currently used, this could still amount to nearly 30km per price control period across GB.
- We estimate between 20 and 60 substations are currently at risk of flooding and suitable for SuDS.
- Between 250 and 900 substations might be suitable for bioswales as an alternative to concrete bunding.
- Over 100,000 poles might be suitable candidates for thorny planting.

Project Challenges

Ability for networks to fund NbS

- Some NbS would not currently be eligible for regulatory funding (e.g. the visual amenity scheme only covers undergrounding).
- Additional co-ordination with water companies may be needed to provide further funding for SuDS.

Uncertainties regarding effectiveness

- These concepts should provide a satisfactory level of performance – however 'in the field' trials may be required to build the evidence needed to change engineering recommendations.

Land use and ownership

- Acceptable business models to make use of third-party land need to be developed and trialled.



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Next Steps →



NATURE4NETWORKS TRIAL SITES



Sustainable Drainage Systems:

Nature-based water management for substations and infrastructure.



Thorny Planting:

Strategic planting to protect assets and support wildlife.



Bioswale:

Engineered vegetated channels for stormwater management and biodiversity.



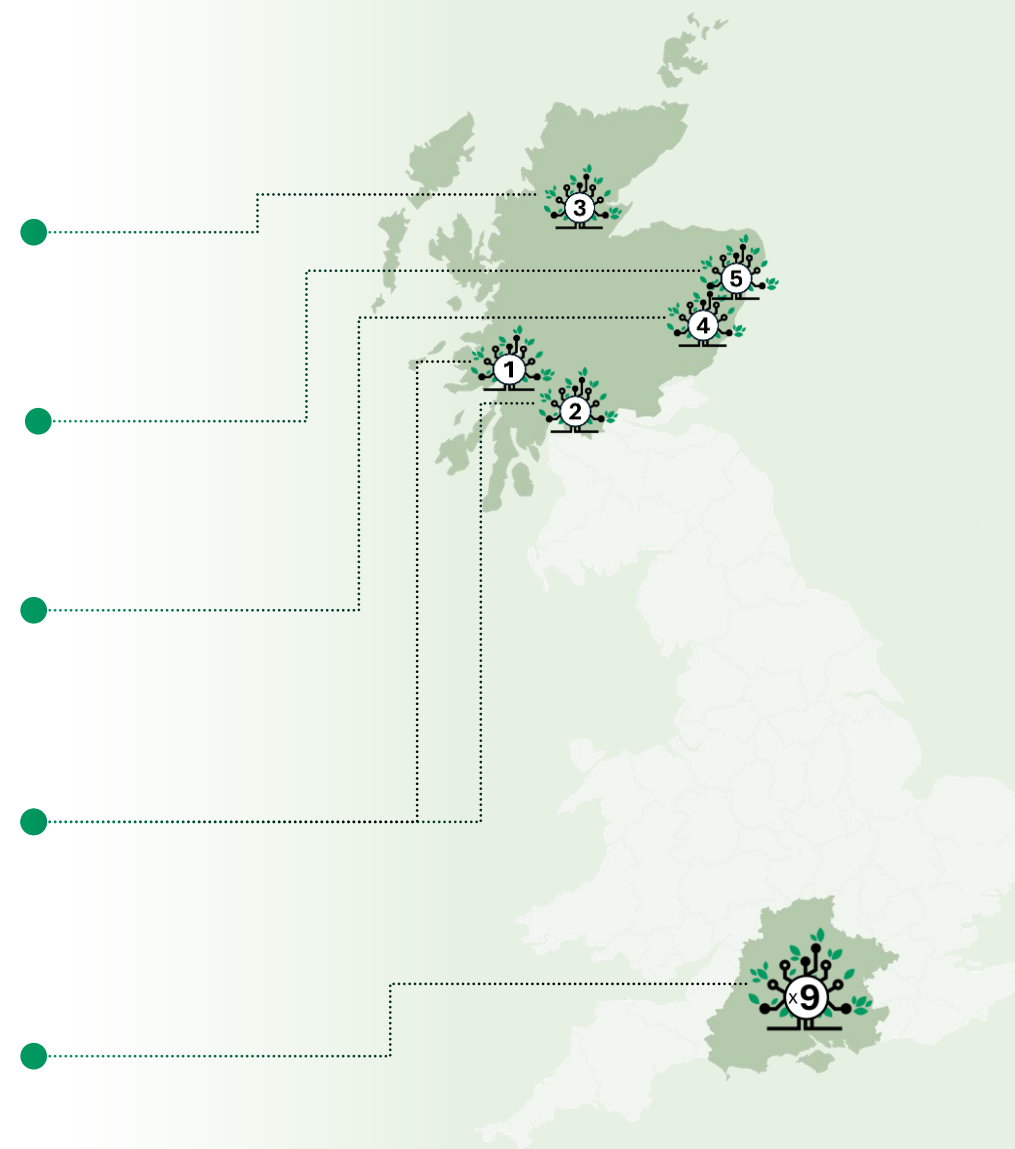
Linear Woodland:

Planting trees/shrubs near overhead lines to protect assets, enhance reliability, and deliver co-benefits (habitat, carbon, amenity).



Identified potential locations for Nbs in Evenlode Landscape Recovery Project area:

9 x site locations for Nbs opportunities and alignment with other key stakeholders





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Thank You! Questions?



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frontier
economics



**Great
Yellow**



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