

Rothienorman 400 kV Substation
Rothienorman, Inverurie

Client: Scottish Southern Electricity Networks (SSEN) Transmission, Principal Contractor: Siemens + BAM

BIG Biodiversity Challenge Award Category: *Community Engagement*

Project overview

The project involves the construction of a new 400kV substation. The 14-bay AIS substation is part of a major infrastructure upgrade to increase network efficiency and capability. We aimed to reduce our environmental impact, by minimising the loss of biodiversity, and enhancing ecology leading to a net gain in biodiversity.

What were the biodiversity conditions on site, prior to the enhancement?

The site was a greenfield build substation. Prior to development the site was mainly cultivated arable land (previously used for Barley production) with some screening and had good potential for maximising habitat. The site is located in a well-settled area with a network of minor rural roads, well connected to the main road network. The site is within the surface water catchment of the Black Burn which flows eastward and to the south. The local council North East Biodiversity Action Plan focuses on enhancing biodiversity through, providing bird boxes / feeders; creating a habitat for wildlife, such as wildflower areas.

What were the reasons behind this project ?

SSEN is committed to ensuring ‘No Net Loss’ on new infrastructure projects gaining consent in 2020 onwards and achieving an overall ‘Net Gain’ on projects gaining consent from 2025 onwards. Siemens+BAM were required to ensure this commitment was integrated into the site design, inclusive of but not limited to SUDS, drainage and landscaping. Siemens+BAM were required to deliver and implement as part of the overall works a landscaping and restoration site plan, with actions to deliver a net biodiversity gain. At our core, Siemens+BAM focuses on establishing a good relationship with the local community throughout the duration of our projects.



Rothienorman site pre-construction (image credit: SSEN Transmission)



Completed construction of Rothienorman AIS (Air Insulated Switchgear) Substation (image credit: Siemens+BAM)

What were the biodiversity measures taken?

The project implemented the following biodiversity measures:

- Bird boxes and insect boxes around the site – made from waste wood materials from packaging on site.
- Bat maternity boxes purchased from Natural History Book Service (NHBS).
- Hibernacula – felled trees from site and topped up from grass cuttings from the local primary school.
- Screen planting trees and flowers (wild seed mix) planted in conjunction with Scottish Woodlands.
- Waste wood from the project was donated to a WoodRecyclAbility, a local community project which turns wood waste into products for resale (e.g. tables and picnic benches). In total, 33 tonnes of waste wood from site has been donated which would usually be sent to a waste-to-energy plant.
- Primary School planting session – ECoW explained the requirements and placement of different plants including oxygenating, submerged and marginal. Also discussed the use of scientific and common names for describing species.
- Playground refurbishment – pond relined with rockery and fence, wood chip path, bat box and frog house donated and grass cut and fencing refurbished.

The whole project team and the local community were engaged in the project to achieve the biodiversity enhancements. The team worked closely with the Siemens + BAM Ecological Clerk of Works (ECoW) who monitored site on a weekly basis to ensure throughout the project that all species were not impacted by our construction activities. The Siemens+BAM ECoW worked closely with the local Fisherford primary school children to explain what biodiversity is and the measures undertaken on site. Additionally, the project team and ECoW voluntarily attended the Fisherford primary school to assist with the improvement of their pond and thus increasing its biodiversity. A recent SSEN Transmission assessment estimated that there is currently a 60 % net gain in biodiversity at Rothienorman, calculated from the baseline taken by the customer at the start of the project.



Fisherford pond at local primary school including bark path, strimming, and adding levels to the pond. Pond skaters observed in the pond by ECoW (image credit: HED Ltd).



Insect box purchased from WoodRecyclAbility – using waste wood from the packaging materials from the project (image credit: HED Ltd).



Further information

Throughout the project we monitored our baseline as well as our compliance with legislation and environmental objectives and targets through monthly environmental inspections undertaken by our Siemens+BAM Environmental Advisors and weekly visits by our ECoW. Furthermore, our client SSEN, undertook monthly site visits and quarterly audits to assess environmental performance. Our Siemens+BAM team have learned a number of good practices from this project and intend to implement them across our existing and future projects. Siemens+BAM are committed to reducing the embodied carbon of infrastructure we design and build, through consideration and use of sustainable construction materials, development of efficient working methodologies and exploration of new ways of working to reduce emissions from construction plant. Our businesses are committed to using natural resources more efficiently, promoting the use of sustainably sourced materials and renewable energies to reduce our climate change impact. Siemens + BAM seek to prevent waste and strive towards zero waste to landfill by promoting resource efficiency. Our businesses engage with interested parties including customers, designers, regulators, supply chain and communities, to enhance environmental performance of our operations and promote sustainable outcomes. Siemens+BAM apply tools and approaches to achieve similar sustainability goals, with the ultimate aim of decarbonising our business activities. It is imperative for both our businesses working on construction projects to establish a good relationship with both the client and the local community and leave a lasting legacy.

Project Team

- SSEN Transmission - Client
- Siemens Energy and BAM Nuttall (Siemens + BAM) - Principal Contractor
- HED Ltd – Siemens + BAM Ecological Clerk of Works (ECoW)
- Scottish Woodlands
- The Wood Shop – local branch of Wood RecyclAbility which is a social enterprise.

What was the motivation for carrying out the enhancement?

The greenfield site had a good potential for maximising habitat, and as the project progressed the project team collaborated to realise opportunities for enhancing biodiversity. All parties worked towards the shared strategic ambition to achieve biodiversity 'net gain' on the project. At Siemens+BAM, community engagement is at the core of our business. Establishing good relationships with the local community throughout the duration of our projects enables us to leave a lasting positive legacy for local communities and the environment.



Rothienorman site attenuation pond featuring trees planted by Scottish Woodland Trust (image credit: HED Ltd).



Bird boxes made out of waste materials from site and bat maternity boxes purchased from NHBS (image credit: HED Ltd).