



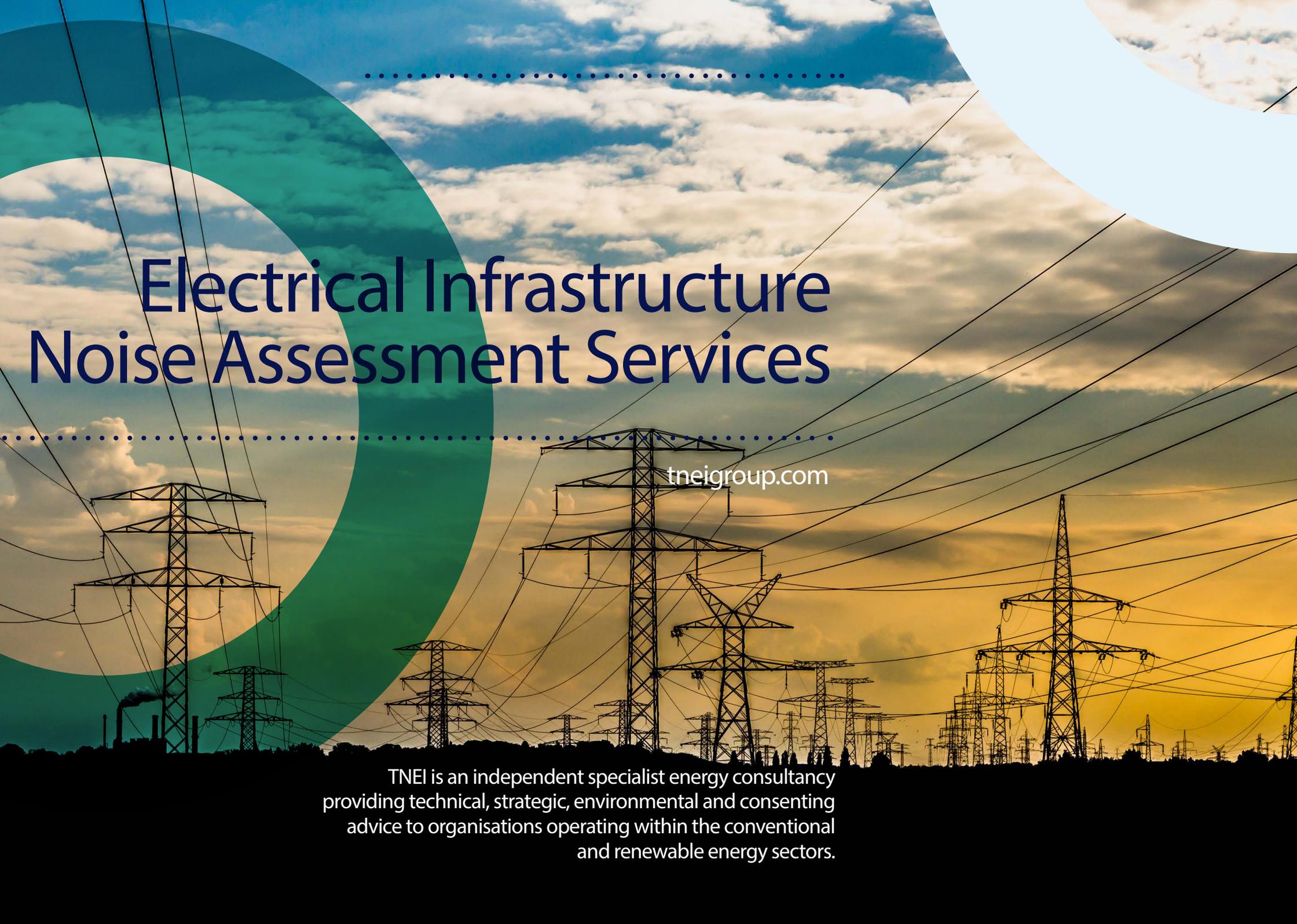
A specialist energy consultancy

# Electrical Infrastructure Noise Assessment Services

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TNEI is an independent specialist energy consultancy providing technical, strategic, environmental and consenting advice to organisations operating within the conventional and renewable energy sectors.

## Electrical Infrastructure Noise Assessment Services

Electricity transmission and distribution infrastructure, such as substations and overhead lines, commonly produce continuous tonal noise that can become a contentious issue in the local community. If not carefully managed, planning condition noise limits can be breached and audible noise can damage relations with local residents, leading to complaints, both of which may result in intervention from the Local Authority.

Noise emissions from electrical infrastructure may need to be considered during the planning, procurement, construction and operational phases of a development. TNEI can provide assessments for all stages of the project lifecycle, and have extensive experience working with a wide range of relevant British and international industry standards, legislation and guidelines, including BS 4142:2014 'Method for rating and assessing industrial and commercial sound', and IEC 60076-10:2016 'Power transformers – Determination of sound levels'.

Retrospectively installing noise mitigation in this scenario can be a costly process involving site downtime, layout redesign, installation of expensive noise control measures and significant construction works.

TNEI's Site Services team are experienced in helping clients solve complex noise issues in relation to new projects and those associated with the redevelopment of existing sites. We are familiar with noise and vibration considerations related to substation, overhead line and interconnector developments, and have expertise in working with DNOs and subcontractors to ensure proactive noise management practices are employed to reduce noise-related risks and costs throughout the lifetime of an asset.

### Typical services that we offer include:

- Noise impact assessment of proposed and existing sites (BS 4142:2014)
- Digital noise propagation modelling
- Baseline sound level monitoring
- Sound power level measurements (IEC 60076-10)
- Noise analysis of equipment
- Noise complaint investigation
- Mitigation advice for effective acoustic silencers, enclosures and barriers
- Vibration assessment of isolation fixtures
- EHO and community consultation.

## Case studies

**Service:** Aberdeen Offshore Wind Farm Onshore Blackdog Substation  
**Client:** J. Murphy & Sons Ltd

TNEI was commissioned to carry out a Noise Impact Assessment to determine the likely impacts of operational noise from the Aberdeen Offshore Wind

Farm Onshore Blackdog Substation at noise sensitive receptors (NSRs).

The assessment involved sound level monitoring to quantify existing background sound levels at the nearest NSRs, digital noise propagation modelling to predict noise emissions from the operational substation and an assessment of the predicted levels in accordance with BS 4142:2014 guidance.

The assessment concluded that noise immission levels at the NSRs would be below the level at which adverse impact would be considered likely. Furthermore, TNEI were able to demonstrate that the planned construction of a noise wall would have little to no effect on reducing noise immission levels at the NSRs, highlighting a potential cost-reduction opportunity for the client.

**Service:** Galloper Offshore Windfarm Onshore Substation  
**Client:** Alstom

TNEI was commissioned to carry out noise propagation modelling of the onshore substation for the 300 MW Galloper Offshore Wind Farm. The purpose of the project was to ensure that noise levels from the development would be below the noise level limits set within the development's planning conditions.

The Galloper Substation is particularly complex, utilising multiple harmonic filter compounds, some of which have the potential to generate high levels of operational noise. TNEI produced a comprehensive noise propagation model incorporating over 100 individual noise sources. Initial modelling indicated that noise limits had the potential to be exceeded, therefore TNEI worked with the client throughout the procurement process over an 18 month period to assess the acoustic performance of all potential plant items.

Careful selection of plant and investigation of possible noise control measures resulted in the overall sound pressure levels being reduced by more than 20 dBA at the nearest noise sensitive receptors. Continual assessment throughout the tendering process enabled specification of plant; achieving appropriate levels of protection for the nearest receptors whilst minimising the requirements for expensive noise control measures.

**Service:** Northconnect HVDC link  
**Client:** Affric / Northconnect

TNEI undertook a noise assessment and authored the ES noise Chapter for the onshore elements of the Northconnect HVDC interconnector. The assessment needed to consider a number of noise generating activities including Horizontal Directional Drilling (HDD) at two locations, cable winching up to two jointing bays and the operations of vessels close to the cable landfall location.

In terms of noise sensitive receptors (NSRs), we were required to assess the noise impacts on local residential NSRs, public amenity areas, including a coastal path and climbing venues; and the local seabird population.

## Key contacts

### Jim Singleton

Team Manager (Site Services), Principal Technical Consultant



Jim carries out environmental noise propagation modelling, assessment and reporting for a wide range of sectors, with particular expertise in industrial, commercial and energy projects. Projects of note include energy from waste plants, capacity mechanism schemes, port activities, electrical infrastructure and road, rail and aircraft noise.

He leads projects for IPPC permitting, planning applications, conditions discharge, EIA, and noise control and management. He is also experienced in noise and vibration monitoring (including blasting), construction and decommissioning work, occupational noise assessments and architectural acoustics.

Jim has over 13 years' experience working on projects across the UK and abroad. He is a full Member of the Institute of Acoustics (IOA), holds a first class BSc (Hons) and the IOA Diploma in Acoustics and Noise Control.

### James Mackay

Director of Site Services



James has undertaken a significant amount of noise assessments with a special focus on energy generation and infrastructure developments. Since 2006 he has led TNEI's Site Services team through the assessment of over 4 GW of onshore wind and a large variety of other energy developments including energy from waste, solar, biomass, hydrogen generation, substations, interconnectors, etc.

James regularly presents papers at national and international acoustics conferences and was involved in the drafting and review of the Institute of Acoustics document 'A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise.' He holds the IOA Diploma in Acoustics and Noise Control and is a Member of the Institute of Acoustic.

## Get in touch

We are a specialist, independent company. That's why we can offer a flexible, personal service and help our clients quickly and efficiently, without all the big corporate distractions.

But most of all, we love to solve problems.

For more information about our noise Expert Witness services, please contact James or Jim.; james.mackay@tneigroup.com, +44 (0)191 211 1414. jim.singleton@tneigroup.com, +44 (0) 141 428 3186.



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For more information about who we are and what we do, please contact: [info@tneigroup.com](mailto:info@tneigroup.com)

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