

4.3 Environmental Impact

The design shall have due consideration for the local environment and comply with the relevant Environmental Regulations² and Environment Agency and Local Authority requirements. The designer or planner is responsible for providing information regarding the environmental conditions likely to affect the substation.

When considering the location of a new substation it is essential to consider the ecological impact and design suitability. Environmental designations for the site location can be found using the 'MAGIC' mapping service provided by DEFRA (<https://magic.defra.gov.uk/>).

4.4 Noise and Vibration Nuisance

4.4.1 Overview

The design, construction and positioning of substations shall be such that noise and vibration are not transmitted into habitable spaces in residential areas, where the low frequency noise could give rise to a statutory nuisance, or impact other sensitive receptors.

Ground mounted distribution transformers emit a maximum noise level of 58 dBA³ which is dampened by the type of enclosure, noise barriers and distance to receptors. To prevent transformer vibrations causing noise nuisance, wherever possible, substations shall be located a minimum of 10m from residential properties. Where this is not possible the following calculated sound levels may be used to inform the positioning of the substation in relation to receptors.

Where sensitive receptors are within 10m of the substation a pre-construction noise survey shall establish a baseline noise level with which to assess post-commissioning noise levels. Specialist input will generally be required to establish the potential impact.

Noise limits are dictated by local authorities, depending on the area of the installation. Further information should be sought from the local authority to determine the noise limits for the installation.

4.4.2 GRP Substation Noise Levels

Calculated sound power levels for GRP substations are summarised in Table 4-2. The distances provided shall be taken from the geometric centre of the substation. Sound levels radiate from the centre of the substation equally in all directions.

Table 4-2 – GRP Substation Sound Power Levels

Transformer Rating	Distance			
	3m	5m	8m	10m
1000kVA	38 dBA	34 dBA	30 dBA	28 dBA
800kVA	37 dBA	33 dBA	29 dBA	27 dBA
500kVA	36 dBA	32 dBA	28 dBA	26 dBA
315kVA	33 dBA	29 dBA	25 dBA	23 dBA

² Environmental Permitting (England & Wales) Regulations 2016

³ Maximum sound power levels for a 1500kVA transformer.