the need

for design guidelines

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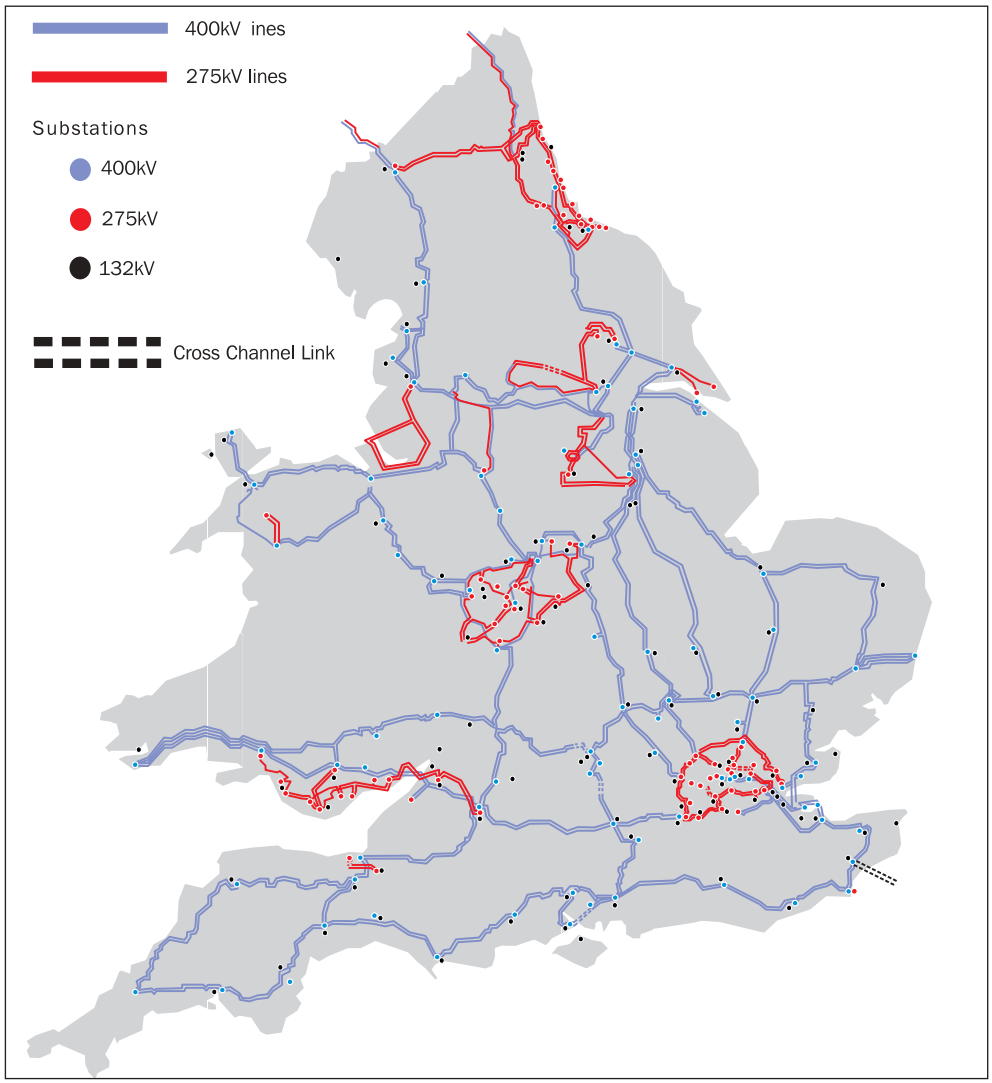
National Grid is the electricity transmission business in England and Wales. The electricity transmission system consists of over 7,000 route kilometres of high voltage overhead lines. Historically, where development took place close to these high voltage overhead lines, little attention was paid to the design and layout of development and its relationship to the electricity equipment. The result has been the creation of what we might now consider poor environments – and we know we can do better.

The increasing pressure for development and the urban renaissance planning agenda are leading to more development sites being brought forward through the planning process on land that is crossed by National Grid equipment. A snapshot of development plans in England and Wales showed that 48 sites crossed by National Grid overhead lines are currently allocated for built development, and this figure is likely to increase.

The high standards of design and sustainable development forms advocated by the emerging planning and urban design agenda require a more creative approach to new development around high voltage overhead lines: the need for guidance is clear.



Map of National Grid electricity transmission system.

Development and overhead power lines: National Grid's role and responsibilities

National Grid provides the transmission of electricity from the point of generation across the country to the major centres of demand, which are the main urban areas where most people live and use electricity. The National Grid system is integrated throughout England and Wales and has links to Scotland, the Isle of Man and France. For the most part the system crosses rural areas and skirts the major urban conurbations. It also feeds directly into the industrial areas of the country where heavy industry has high electricity demands. The National Grid system is a fundamental part of our national infrastructure.

Much of the National Grid system was developed in the 1950s and 60s, when the main concern was to bring electricity to the centres of demand. Since that time we have all become used to the benefits brought by electricity whilst at the same time becoming increasingly aware of our environment. Issues to do with environmental quality, health and safety and social responsibility are now actively considered and incorporated into all parts of National Grid's business.

While National Grid owns the land occupied by its substations, only exceptionally does it own the land which is crossed by its electricity lines. National Grid cannot therefore prevent development close to or under overhead lines, providing statutory safety clearances are maintained. National Grid does not benefit financially from the development of this land, but does have responsibility for the equipment and for maintaining the safe supply of electricity as required by statute under National Grid's licence to operate.

National Grid is not a statutory consultee in the planning application process. Where high voltage overhead lines are present on a site, it is recommended that National Grid is consulted at the earliest possible opportunity in order that advice and guidance on development near high voltage overhead lines may be taken into account.

These guidelines therefore set out National Grid's commitment to the highest standards of design in new development around or near high voltage overhead lines, and promote creative design solutions that are compatible with its statutory duty to maintain the national electricity infrastructure.

National Grid is committed to promoting environmental quality, health and safety and social responsibility.

The context for these guidelines

Recent Government policy statements on creating well designed environments and an emphasis on the quality of the public realm, together with the broader professional and public debate about urban design and regeneration issues, all help to create a clear context for these guidelines. Design is seen as central to achieving the objectives of sustainable development. Design can not only raise the visual quality of the urban environment, but can assist in stimulating varied communities that offer greater choices to residents and workers and also rely much less on private car use. Achieving the objectives of sustainable development implies a more compact urban form, to which fresh design ideas can add value and bring high levels of amenity and quality.

A key element of planning policy is the re-use and redevelopment of previously developed 'brownfield' land in preference to the use of undeveloped 'greenfield' land. Much brownfield land is land that was formerly occupied by heavy industrial uses such as manufacturing, with significant power demands that would historically have been linked into the National Grid. Consequently, many of these derelict sites are crossed by high voltage overhead lines.

A good example of this scenario is within Thames Gateway to the east of London, identified as a huge opportunity for integrated brownfield development, economic growth, environmental improvement and urban renewal. The area contains National Grid high voltage overhead lines bringing power into the centre of London. National Grid is working closely with developers and key national delivery agencies in applying these guidelines to individual sites within this area to promote high quality innovative design solutions.

Thames Gateway - Royal Docks

"With the establishment of the ExCel exhibition centre, the City Airport and the University of East London, the Royal Docks have already been transformed from a derelict expanse to a high quality development area with modern infrastructure and facilities."

Draft London Plan. Para. 2B.57.

As well as issues of urban renewal, the sequential approach to new residential development set out in Planning Policy Guidance Note 3: Housing (PPG3) is leading to the promotion of more sustainable urban extensions to towns. PPG3 advocates that where suitable brownfield land is not available, housing development should be located in sustainable urban extensions to settlements so that the proximity to existing jobs and services can help reduce the need to travel.

Fairford Leys, Aylesbury. An example of successful integration between development and overhead lines.

Historically, high voltage overhead lines would tend to skirt the periphery of settlements. However, the increasing expansion of our towns and villages is bringing such land, including the electricity equipment sited on it, into the heart of new housing and other developments for the first time. A typical example of this is at Fairford Leys to the south-west of Aylesbury where new development accommodates the existing high voltage overhead lines.

National Grid encourages developers to plan and lay out their development taking the presence of the overhead line into account.

Sustainable urban extension at Fairford Leys, Aylesbury.

Where development is proposed near to high voltage overhead lines requests are often made to divert or underground the electricity equipment. It is often the case that developers and local authorities have past experience of moving and undergrounding lower voltage overhead lines on a development site and expect that high voltage overhead lines can be treated in the same way. Due to environmental, technical and cost reasons National Grid prefers to retain its lines in situ, and encourages developers to plan and lay out their development taking the presence of the overhead line into account. National Grid recognises that there may be exceptional circumstances where development is of national or regional significance that may justify the moving or undergrounding of an existing overhead line, but it is likely that, for most development, the line will remain in situ.

Further details of National Grid's approach to the issues of relocating overhead lines and undergrounding are set out in appendices 5 and 6.

Acknowledging the wider debate

In considering the content and scope of this guidance, it is acknowledged that other, wider, issues can arise which need further explanation.

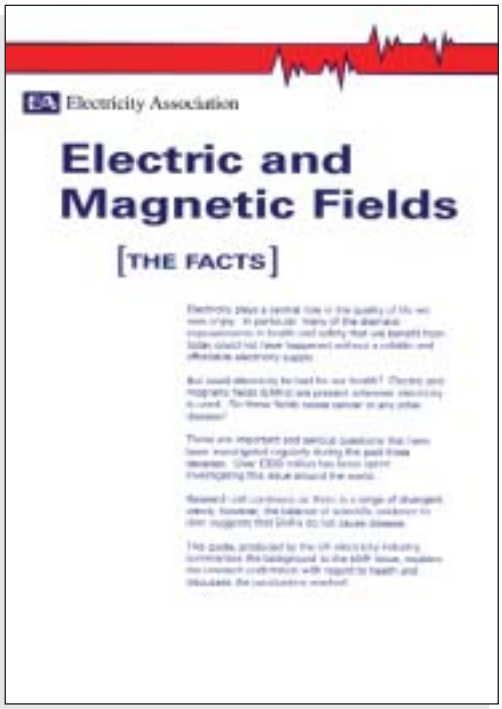
For example, there may be questions about the appropriate distance to locate uses and activities (particularly residential development) from the lines, and there may be some public concern about possible health implications of power lines which impact on residential choice.

There are important safety factors which can restrict certain activities near high voltage overhead lines – flying kites and fishing for example. Further information on these safety factors is contained in the appendices.

Potential public concern about the health implications of living near power lines is an issue that National Grid takes very seriously, and the company is committed to providing timely and open information on this subject – a good starting point is to refer to www.emfs.info. It is worth noting here that electric and magnetic fields (EMFs) can arise from many sources including household appliances, electrical distribution and transmission facilities and equipment, mobile telephones and radio-transmission devices.

Whilst research continues to improve our understanding of the effects of EMFs, the balance of current international scientific evidence is against EMFs from high voltage power lines causing ill health. No causal link has been established between cancer (or any other disease) and EMFs and there is no established mechanism by which these fields could cause or promote disease. Consequently, neither the UK Government nor the National Radiological Protection Board (NRPB) have recommended any special precautions for the development of homes near power lines on EMF grounds. Further information on this issue can be found at appendix 11.

Nevertheless, as these guidelines show, where development is proposed on a site crossed by an overhead line there are good operational and amenity reasons - not to do with EMFs - for not siting built development directly beneath overhead lines.



The electricity industry provides extensive information and advice on electric and magnetic fields (EMFs).