BACKGROUND

Working with National Grid

UK Power Networks has been approached by National Grid to transfer ownership of a section of a UK Power Networks owned power line in order to reinforce their electricity transmission system in the East Anglia region.

The power line runs from Bramford in Suffolk to Twinstead, it is of steel tower construction and operates at 132,000 volts. National Grid’s proposal is to dismantle this section of power line so that a new 400,000 volt overhead line connection can be constructed along a similar route.

In order for UK Power Networks to continue to provide a safe and reliable electricity supply to homes and businesses in the area following the transfer of this power line, a new connection needs to be made to National Grid.

Responsibilities of UK Power Networks and National Grid

National Grid is the company that transmits very high voltage electricity across the country, from power stations to local companies called Distribution Network Operators, including UK Power Networks.

UK Power Networks is a separate company which owns and runs the networks of substations, overhead lines and underground cables that allows lower voltage electricity to be transported to homes and businesses.

About UK Power Networks

UK Power Networks distributes power to a quarter of Britain’s population through its electricity networks serving the East of England, South East and London. The company’s 5,000 employees are dedicated to delivering a safe, secure electricity supply from the national grid to about eight million homes and businesses.

The industry regulator, Ofgem, places conditions upon Distribution Network Operators such as UK Power Networks. For example, it must ensure safe and reliable power supplies to its customers, and cater for future technological changes and growth in demand.

Customers pay their bills to supply companies, not directly to UK Power Networks. Ofgem sets an allowed revenue to distribution companies so that they can maintain safe and reliable electricity supplies.

This year UK Power Networks is investing £360million in its electricity networks and around £1.8billion in the five years to 2015.
Replaced the 132,000 volt power line

Strategic Options

A number of options are available to UK Power Networks if its 132,000 volt overhead line is removed.

These options involve a choice of substations, overhead lines and/or underground lines.

The configuration of a new substation to the west of Twinstead will depend on technical and operational considerations.

The four main options are shown in Table 1 and illustrated diagramatically on the attached maps (right).

### Table 1 Options Shortlist

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<tr>
<th>Option</th>
<th>Option Details</th>
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<tbody>
<tr>
<td>Option 1</td>
<td>Do Nothing</td>
<td>• National Grid takes ownership of the line.</td>
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<td></td>
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<td>• Customers are left with an insecure network - risk of power failures.</td>
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<td>• Demand not able to be met.</td>
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<tr>
<td>Option 2</td>
<td>Replace 132,000 volt cables between Twinstead and Burstall Bridge</td>
<td>• Security of electricity supplies is maintained.</td>
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<td></td>
<td></td>
<td>• High cost.</td>
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<td>• Environmental impact.</td>
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<tr>
<td>Option 3</td>
<td>Reinforce Braintree Substation and install new 132,000 volt cables to Rushley Green</td>
<td>• Security of electricity supply is maintained.</td>
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<td></td>
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<td>• High cost.</td>
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<td>• Environmental impact.</td>
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<td></td>
<td></td>
<td>• Additional National Grid transformer and equipment required at Braintree.</td>
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<tr>
<td>Option 4</td>
<td>New Substation west of Twinstead Area</td>
<td>• Maintains electricity network security.</td>
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<td></td>
<td></td>
<td>• Cost-effective.</td>
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<td></td>
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<td>• Environmental impact.</td>
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</table>

Option 2 - Replace 132kV circuits between Twinstead and Burstall Bridge

Option 3 - Reinforce Braintree GSP and install new 132kV circuits to Rushley Green

Option 4 New Grid Supply Point at Twinstead
Preferred Option

National Grid has selected a preferred route for the construction of the new 400,000 volt circuit between Bramford and Twinstead Tee.

UK Power Networks needs to reduce this high voltage power supply circuit down to the right transmission level for its customers by having a substation (also known as a Grid Supply Point) at a suitable location.

A "Grid Supply Point" is a substation where UK Power Networks takes energy from National Grid.

The electricity substation would contain equipment called a "transformer" which steps down the very high voltage supply to a lower voltage so it can be distributed locally.

UK Power Networks has considered a number of options from which Option 4 was chosen. This Option proposes the creation of a substation adjacent to the 400,000 volt line from Bramford-Pelham and in close proximity with the Thaxted to Bramford 132,000 volt line. To implement this option fully, a short length of 132,000 volt cable will need to be installed to connect to the existing overhead lines.

Next Steps

The need for the substation and the preference for it above other options will be set out in the UK Power Networks Needs Case which we hope to publish in the near future.

UK Power Networks is working with National Grid to determine the requirements and therefore the size of the new substation which would be needed.

National Grid is currently investigating three potential sites and will determine a location after consulting with interested parties.

Subject to a decision on the location of the substation, UK Power Networks will consider the future of the remaining 132,000 volt line, which National Grid has confirmed it does not require.

Contact Information

If you have a query about UK Power Networks’ role in this project, please contact:
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To find out more, visit www.ukpowernetworks.co.uk