

# London cable tunnels



## The project

London accounts for 20% of the UK's electricity demand and this is continuing to grow by 3-5% a year. This compares to the UK average of 1-2% a year.

It is National Grid's responsibility to ensure there is sufficient transmission infrastructure available to support future energy demand in London and, as part of our investment programme, we are planning to build four deep tunnels which will house new 400,000 volt (400kV) cables. The work is essential to ensure London has a safe and secure electricity transmission network into the future.

These tunnels will connect existing substations at:

- Hackney
- St John's Wood
- Willesden
- Wimbledon
- Hurst
- Eltham

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# London cable tunnels



**Traditional cable laying just below the road surface leads to traffic congestion**



Traffic congestion in London

## Why a tunnel?

In London most electricity is transmitted through underground cables. They are traditionally located just beneath the road surface and work to maintain these cables is carried out in the road.

By housing new electricity cables in tunnels deep below the road surface a number of advantages are achieved compared to traditional methods:

- Major disruption to the road network throughout London is avoided as we do not need to dig up the streets to lay the cable
- Overall disruption to Londoners and road users during construction is significantly reduced as the majority of the works take place under ground
- Future repair and maintenance work can be carried out without disrupting traffic, businesses and residents
- Additional cables can be installed in the tunnels to meet future demand

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# London cable tunnels



TBM breakthrough

## How do you build a tunnel?

A shaft, approximately 15m in diameter, is sunk at a large construction site known as a drive site.

A tunnel boring machine (TBM) is then lowered down the shaft and starts tunnelling along a pre-determined route at approximately 120m per week.

The TBM carries out two main activities. It moves forward cutting through the earth and it also inserts a tunnel lining of concrete segments.

The TBM ends its journey at a reception site where another shaft is sunk and the TBM is removed.

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# London cable tunnels



A cable drum delivery

## Cable installation

Once the tunnel is complete the high voltage cables are pulled through the tunnel from large drums at the drive site.

These lengths are then joined together using specialist techniques.

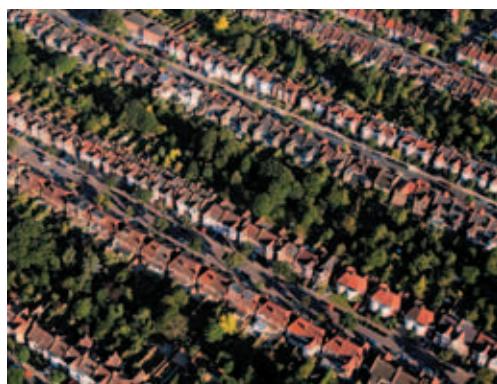
The cables connect to National Grid's substations at either end of the route via the shafts.

Once the cables are installed, any shafts which are not required for access or ventilation are backfilled.

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# London cable tunnels



## Working with the community

National Grid is committed to working with local communities and to minimising the impact of its works wherever possible.

A community relations programme will be carried out before work begins and before any planning applications are submitted for the headhouses which are required as part of the tunnel route.

National Grid will maintain regular contact during construction with local communities in a number of different ways including:

- Public exhibitions
- Project leaflets
- Project updates by letter
- Dedicated community relations team
- Dedicated community relations phone number 0800 783 2855
- Local media

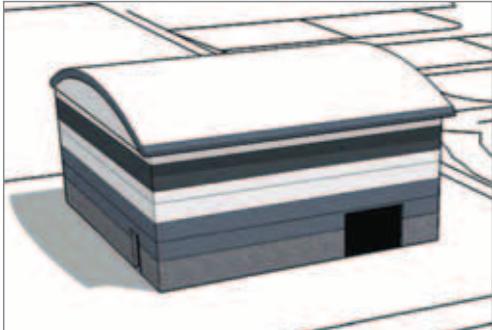
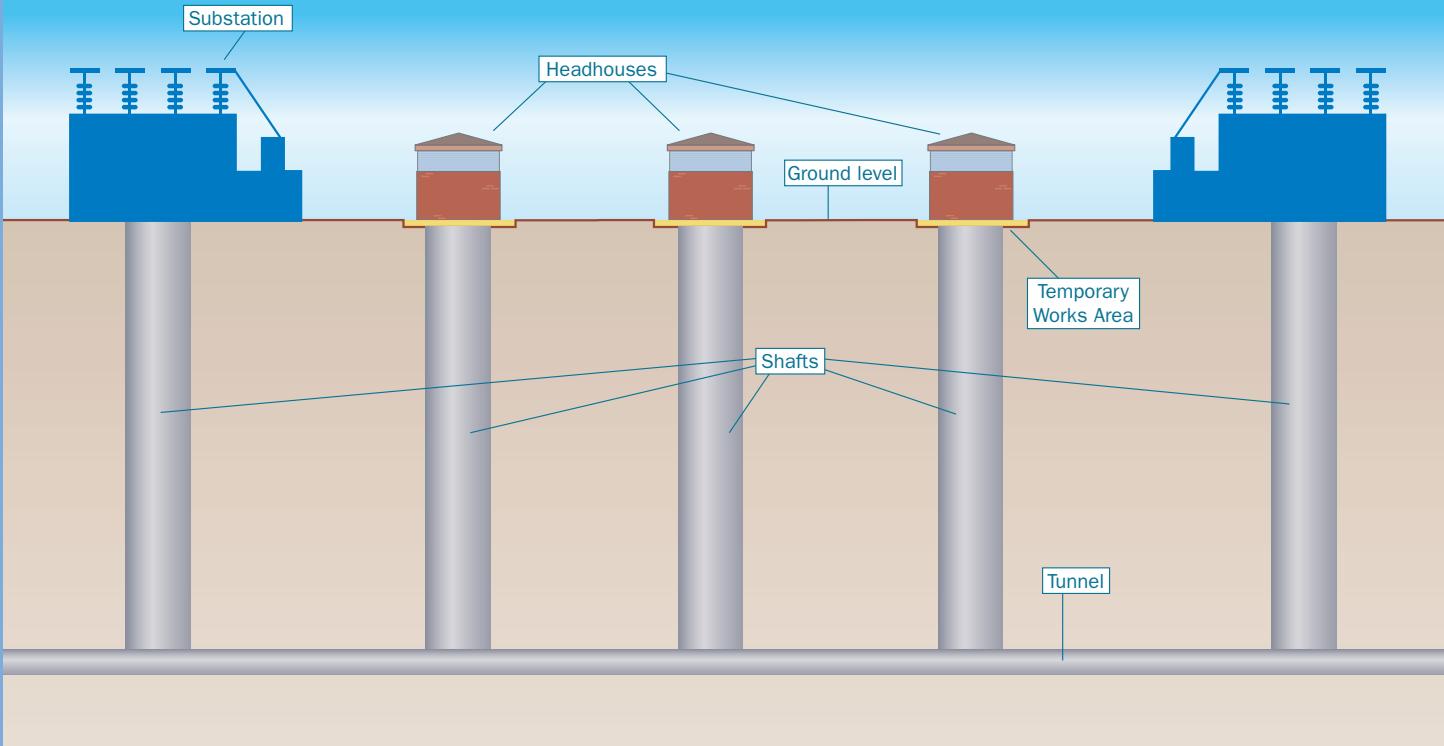
We are keen to support the local communities in which we operate and are interested to hear of any community initiatives we could support. These should be in the areas of:

- Education and skills
- Environment and energy
- Community development

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Tunnel shaft headhouse

## Shafts and headhouses

Intermediate shafts and headhouses are required at key points along the route of the tunnel. The tunnel boring machine will link these points as it progresses along the routes.

The shafts and headhouses are needed for the following reasons:

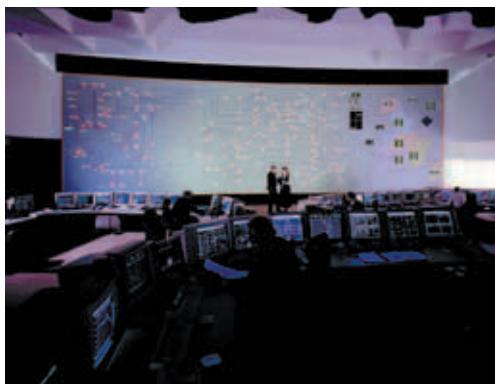
- **Health & Safety** – It is essential to have access points to ensure the safety of our workforce during construction. The shafts are also used to access the tunnel for maintenance work once the tunnel is commissioned
- **Ventilation** – Ventilation equipment, in the form of fans, is required to cool the cables and regulate the temperature inside the tunnel

The headhouses will be designed in order to minimise their visual impact on the local area. For example, the building materials will be chosen to complement the surrounding environment in agreement with the local council.

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# London cable tunnels



## Who is National Grid?

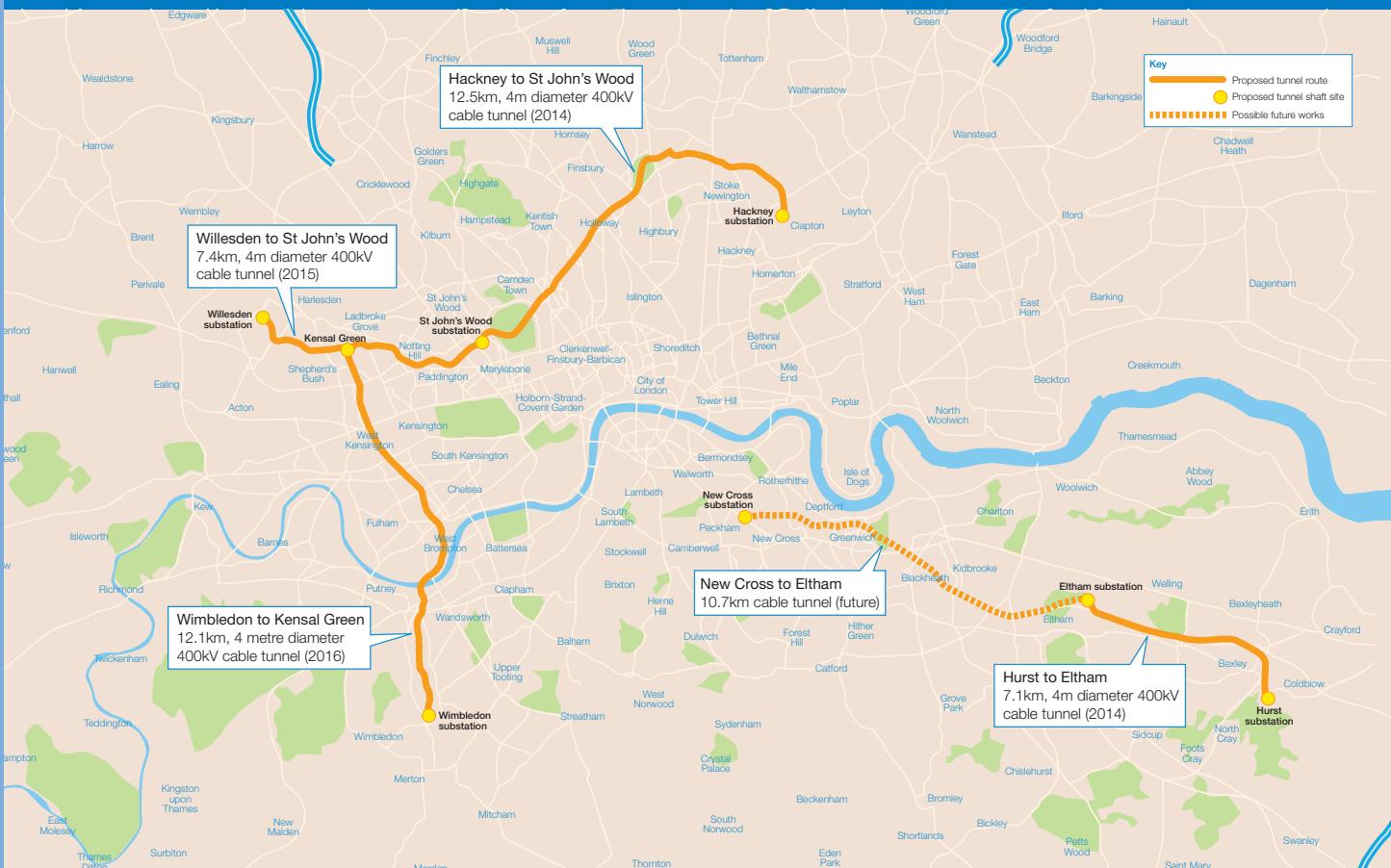
National Grid is an international electricity and gas company and one of the largest investor-owned energy companies in the world. We play a vital role in delivering gas and electricity to millions of people across Great Britain and northeastern US in an efficient, reliable and safe manner. We believe the power of action can play a major role in safeguarding our global environment for future generations and tackling the effects of climate change, providing all our customers with the highest standards of service through network investment and through our talented, diverse workforce.

National Grid owns the high-voltage electricity transmission network in England and Wales and operates the system across Great Britain. It also owns and operates the high pressure gas transmission system in Britain and its distribution business delivers gas to 11 million homes and businesses.

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# London cable tunnels



## Hackney to St John's Wood

Length: 12.5 km

Planned Construction:  
Autumn 2009 – 2014

## Willesden to St John's Wood

Length: 7.4 km

Planned Construction:  
Autumn 2009 – 2015

## Hurst to Eltham

Length: 7.1 km

Planned Construction:  
Mid 2009 – 2014

## Wimbledon to Kensal Green

Length: 12.1 km

Planned Construction:  
Late 2009/early 2010 – 2016

## Tunnel routes

- The total length of the four tunnels is approximately 40km
- Average depth of the tunnels is between 12m and 60m
- The tunnel and shafts are below ground and do not require planning approval
- Headhouses built on private land require planning approval
- Planning applications will be submitted from early 2009
- Total investment will be in the region of £600 million

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# London cable tunnels



## Expected timescales

### Hackney to St John's Wood

- Informing the community Ongoing
- Planning submission Early 2009
- Start construction Autumn 2009
- Planned completion 2014

### Willesden to St John's Wood

- Informing the community Ongoing
- Planning submission Spring 2009
- Start construction Autumn 2009
- Planned completion 2015

### Hurst to Eltham

- Informing the community Ongoing
- Planning submission Early 2009
- Start construction Mid 2009
- Planned completion 2014

### Wimbledon to Kensal Green

- Informing the community Ongoing
- Planning submission By Spring 2009
- Start construction Late 2009/early 2010
- Planned completion 2016

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