nationalgrid

Bramford to Twinstead Tee Connection Project
Preferred Corridor

An overview

Background

Following extensive public consultation, we have selected **Corridor 2** as the preferred corridor for the proposed Bramford to Twinstead Tee connection.

This document provides a summary of our decision. It is based on more detailed information which can be found in the following documents:

Need Case for the East Anglia Region (June 2011) – explains why we need to increase the capacity of the East Anglia electricity transmission system.

Strategic Optioneering Report (2009) – an examination of the technically feasible connection options to meet the identified need.

Review of Strategic Options Report (June 2011) – a review and back-check of the connection options set out in the Strategic Optioneering Report 2009 which takes account of further information and issues raised during the first stage of consultation.

Route Corridor Study (2009) – the study that identified potential corridors for the preferred strategic option of a connection between Bramford substation in Suffolk and Twinstead Tee in Essex and which formed the basis for the first stage of consultation.

Feedback Report on Stage 1 Consultation (June 2011) – a report that summarises the representations received during our Stage 1 Consultation and reports the themes and location-specific issues raised and how we have taken them into account.

Selection of Preferred Corridor (June 2011) – this report considers how our statutory duties, policy considerations, technical and environmental issues and the responses to the consultation have shaped and influenced the selection of the preferred corridor.

If you would like copies of any of these documents you can download them from the project website www.nationalgrid.com/bramford-twinstead or call us on freephone 0800 377 7340.

Overview

Following extensive public consultation, we have selected Corridor 2 as the preferred corridor for the proposed Bramford to Twinstead Tee connection.

The majority of **Corridor 2** runs alongside an existing 400,000 volt (400kV) overhead line between Bramford and Twinstead Tee. Our selected option means we would take down the UK Power Networks 132,000 volt (132kV) overhead line running from Burstall Bridge to Twinstead Tee and build a new 400kV line.

There are two options for the eastern end of Corridor 2: Corridor 2A runs due south from Bramford substation, passing Burstall village and turning west to run to the south of Hintlesham village; and Corridor 2B runs west of Bramford passing to the north of Hintlesham. We will consult on these options during our Stage 2 Consultation.

To continue to supply power to the UK Power Networks system, a new substation would be needed. Three potential sites have been identified between Twinstead Tee and Castle Hedingham and we will consult further on these during the Stage 2 consultation process.

When selecting the preferred corridor, we considered a range of factors, including our statutory duties, environmental constraints and planning policy and feedback from our Stage 1 Consultation. All four corridors were reviewed against these factors.

Many of the responses to our consultation raised concerns about the potential impact a new connection would have on landscapes where there are no pylons. This was considered against the impact on a landscape with existing pylons, part of which is nationally designated for its natural beauty.

Taking account of all feedback, along with our statutory duties, planning policy and environmental constraints, we believe that removing the existing 132 kV overhead line and building a new 400 kV overhead line in Corridor 2 would have less impact than building in the other corridors. We will consider areas where mitigation measures such as woodland planting, use of shorter pylons or placing cables underground may be appropriate.

Throughout Stage 2 Consultation we will work with you to develop a connection design which will seek to minimise the impact on the environment and local community and be consistent with our statutory duties.

“The UK will need more than 20,000MW of new generation by 2020.”

The challenge

National Grid is responsible for operating the high voltage electricity transmission network across Great Britain and owns the system in England and Wales.

The system operates mainly at 400kV and 275kV, connecting electricity generators to substations where high voltages are transformed to lower voltages to enable the power to be distributed to homes and businesses by Distribution Network Operators like UK Power Networks.

The UK is facing a major challenge to meet increasing energy needs while tackling climate change. Over the next decade a number of power stations are due to close. These include:

- coal and oil fired power stations, closing due to EU emissions legislation (12,000MW);
- nuclear power stations at the end of their asset lives (7,500MW).

The UK will need more than 20,000MW of new generation by 2020.

The existing electricity transmission system in East Anglia is adequate to meet current demand. However we have legal obligations to connect new electricity generators to the electricity transmission network and to comply with standards that maintain the high levels of safety and reliability that everyone has become accustomed to and of which we are very proud.

East Anglia is an area where more power generation is planned and a number of generators have requested connection to the national transmission system, including:

- King's Lynn B gas-fired power station (984MW)
- Sizewell C nuclear power station (3,300MW)
- South Holland gas-fired power station (840MW)
- East Anglian Offshore Wind Farm (7,200MW)
- Galloper Offshore Wind Farm (500MW)
- Dudgeon Offshore Wind Farm (500MW)

Additional capacity will be required in the National Grid transmission network in East Anglia from 2016 to allow new generation to connect.

You can find further information about why we need to build a new connection in the Need Case for the East Anglia Region.

Why a new connection from Bramford to Twinstead Tee?

When the need for additional capacity in the East Anglia electricity network was first identified we looked at 18 possible strategic options and concluded that a new 400kV connection between Bramford substation and the Twinstead Tee junction of the Bramford-Pelham/Rayleigh overhead line routes was required. This process is described in the Strategic Optioneering Report (2009).

A new connection between Bramford and Twinstead Tee would provide a secure, reliable and economical electricity connection, not only for the Sizewell C nuclear power station and other power generation proposals, but also for future generators.

A Route Corridor Study was commissioned to look at environmental constraints between Bramford and Twinstead Tee and the study identified four broad corridors in which it would be technically feasible to construct an overhead line:

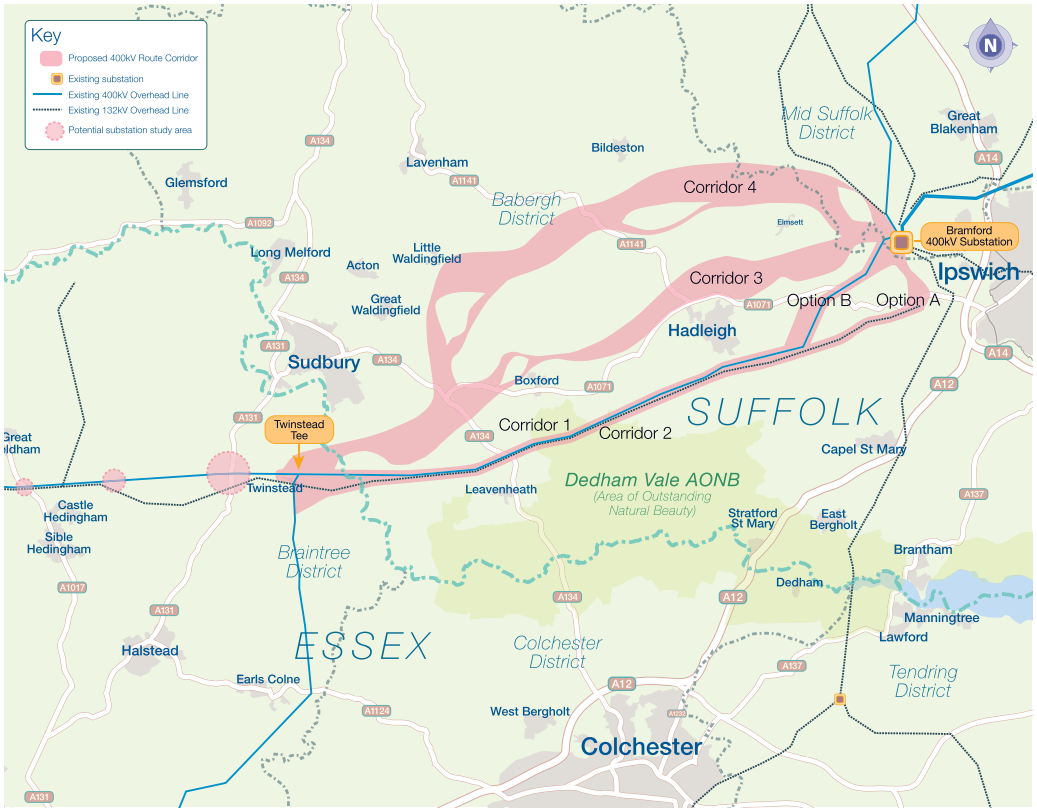
- **Corridor 1** – running southwest from Bramford substation following the existing 400kV overhead line to the north of Burstall and Hintlesham, continuing south of Hadleigh and Polstead Heath. The corridor continues to Twinstead Tee passing through the Dedham Vale Area of Outstanding Natural Beauty (AONB) south of Boxford.

- **Corridor 2** – mostly using the route of an existing 132kV UK Power Networks overhead line running parallel with Corridor 1 with a small variation as the 132kV overhead line approaches Twinstead Tee. There are two options near Hintlesham. Corridor 2 Option B could continue parallel to the existing 400kV overhead line, passing north of Hintlesham. Or Corridor 2 Option A could continue along the route of the 132kV line before running to Bramford substation. To continue to supply power to UK Power Networks after removing the 132kV line a new substation would need to be built west of Twinstead Tee.

“….the study identified four broad corridors in which it would be technically feasible to construct an overhead line.”

- **Corridor 3** – running in a south-westerly direction from Bramford substation and then turning due west to the north of Hadleigh. After Hadleigh, the corridor turns south-east, passing north of Boxford and on to Twinstead Tee.

- **Corridor 4** – running north-west from Bramford substation passing to the east or west of the village of Flowton before turning due west to pass to the north or south of the village of Semer. At Semer the corridor turns south-west to Twinstead Tee.



What public consultation has already taken place?

We published a Statement of Community Consultation (SOCC) under the Planning Act 2008 before starting our public consultation. The SOCC set out how National Grid intended to consult on its proposals at Stage 1 and was published in local newspapers on two consecutive weeks in October 2009.

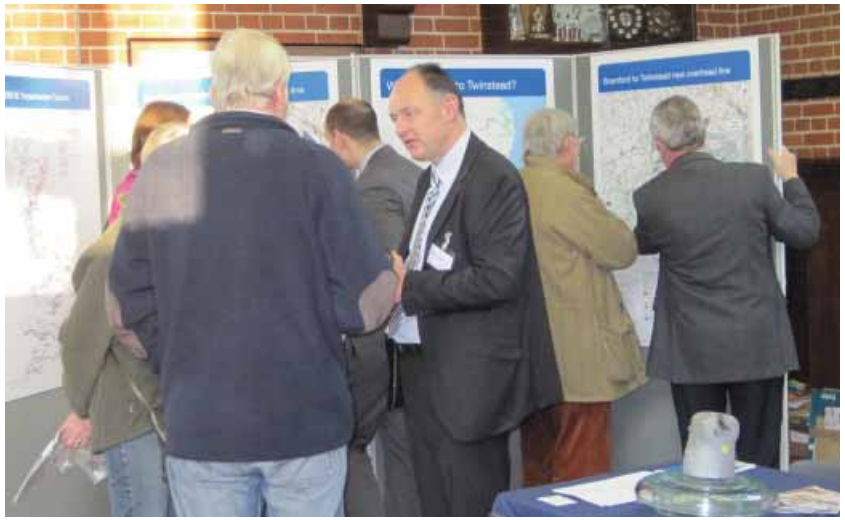
Our Stage 1 Consultation started in October 2009 and considered the four corridors which had been identified in the Route Corridor Study. The consultation programme included:

- a series of staffed public exhibitions at 20 venues in the local area.
- project briefing meetings with town and parish councils and members and officers of the local authorities.
- consultation with a wide range of organisations including the Environment Agency, Natural England and English Heritage.

We asked for views on the corridor options and listened carefully to the representations received from both the public and organisations.

Some local authorities and other consultees requested more detailed technical information on underground cabling and high voltage direct current technology (HVDC). In response, we published fact sheets explaining the technical information and we held an additional communications and consultation programme from June to July 2010. This included briefings for council members, parish councillors and a further five public information events. A newsletter summarising the technical information was sent to all residents and the project website was kept updated.

> **National Grid would like to thank everyone who responded; it is important that we hear your views on our proposals.**



We received over 3,000 individual responses to our Stage 1 Consultation. We received feedback from members of the public (including petitions and representations from campaign groups), local authorities, parish and town councils, other statutory and non-statutory consultees and other local interest groups.

National Grid would like to thank everyone who responded; it is important that we hear your views on our proposals. Further information on all the responses received is available in the Feedback Report on Stage 1 Consultation.

We took into account all of the representations received during Stage 1 Consultation when making the decision on which corridor to take forward.

Your feedback

Responses to the Stage 1 Consultation focused on the following themes:

- A number of local authorities expressed the view that, if the case for an overhead line in this area was accepted, Corridor 2 would be their preferred corridor, adding that specific sections within the Dedham Vale AONB, the Stour Valley and the Brett Valley should be placed underground. Parish Councils on the whole either stated opposition to all corridors or stated that Corridor 2 was the 'least worst option'.

- The majority of individuals who responded to the consultation preferred Corridor 2 with many also requesting that as much of the new connection as possible should be placed underground, particularly in sensitive areas such as the Dedham Vale AONB.

- The majority of respondents believed that sufficient information had been provided, but some, particularly local authorities and other statutory consultees, requested more detailed information on other technologies, such as underground cables and HVDC cabling.

- The local authorities also requested that we take a more strategic view on national transmission requirements, paying full regard to lifetime costs and the environmental factors associated with alternative approaches.

- A number of local authorities highlighted the need for us to take full account of the views of local people and elected representatives during the consultation process. They also suggested community forums be set up for the Stage 2 Consultation.

- Some respondents requested that we give more consideration to technologies that would provide an alternative to an overhead line, especially underground cables. Respondents questioned why these technologies are considered to be too expensive.

“You can read more about our responses to the issues raised by respondents in the Feedback Report on Stage 1 Consultation....”

- Where respondents stated a preference for either Corridor 1 or 2, it was often stated that this was because the corridor follows the route of an existing overhead line. Those who said they preferred one of these corridors often did so on the basis that the route should be placed partially or entirely underground. Most of those who preferred Corridor 2 felt that dismantling the existing lower voltage line in the process of installing a new 400kV overhead line would have less of an impact on the landscape compared to the other options.

- Where respondents stated an opposition to Corridors 3 and 4, they often made the point that an overhead line in either of these corridors would be detrimental to these areas, introducing pylons into an area of unspoilt countryside.

- Respondents who preferred Corridors 3 and 4 commented that these corridors would avoid any impact on the Dedham Vale AONB and that there would not be a need to build a new substation.

- Concerns were raised about the potential impact of Corridors 1 and 2 on the Dedham Vale AONB.

- Concerns were raised in relation to all corridors with respect to potential impacts on visual amenity, the character of the landscape, cultural heritage and wildlife and biodiversity.

- Concerns were expressed in relation to all corridors regarding the potential impact on local businesses, tourism, health and the effects on the value and saleability of properties.

- References were made to the Holford Rules, Schedule 9 of The Electricity Act, national planning policy and regional and local planning policies.

You can read more about our responses to the issues raised by respondents in the Feedback Report on Stage 1 Consultation and how they have been taken into account in the decision making process in the Selection of Preferred Corridor Report.

How have we responded to your feedback?

Following Stage 1 Consultation we have reviewed and back-checked the strategic options to test whether, on the basis of the most up-to-date information and responses to consultation, building a transmission line between Bramford and Twinstead Tee remains the most appropriate option.

The review took into account the changes we have seen in the number of generators that now require connection to the electricity transmission system since the Strategic Optioneering Report was published in 2009.

The review also considers other technologies, including HVDC and gas insulated lines (GIL), lifetime costs and environmental and socio-economic issues. The review concluded that the option of an overhead line connection between Bramford and Twinstead Tee remains the most appropriate solution for this transmission reinforcement and best meets our statutory and licence obligations.

We held an additional communications and consultation programme from June to July 2010. This was in response to feedback from the local authorities about the availability of more detailed technical information on underground cabling and HVDC.

Many representations suggested that an entirely underground connection should be considered by National Grid. The undergrounding option of the whole line has been reviewed and we concluded that this is an inappropriate option for the reasons set out in the Review of Strategic Options Report.

National Grid has also undertaken a consultation on its approach to undergrounding. Following that consultation, an updated approach will be adopted. We will take this into account in considering if there is a case for undergrounding part of the connection between Bramford and Twinstead Tee.

During Stage 1 Consultation we responded to individuals and organisations who raised questions or points for clarification and you can read about how National Grid has responded to all the issues raised during Stage 1 Consultation in our Feedback Report on Stage 1 Consultation.

How we made our decision

The four corridors have been carefully considered taking into account a wide range of factors including:

- National Grid's statutory duties
- National and local planning policies
- National Grid policies
- consultation representations
- landscape and visual impacts
- effects on the historic environment
- effects on biodiversity and geological conservation
- effects on land use and socio-economic factors
- engineering – deliverability
- effects on civil and military aviation and defence interests
- effects on flood risk and climate change resilience

We have taken each of these factors into account in choosing the preferred corridor. The table overleaf provides an overview of the findings of the assessments undertaken. Further information can be found in our Selection of Preferred Corridor Report.

Assessment of Corridor Options

Factor	Comment
1. National Grid's statutory duties (system efficiency, co-ordination and economy and effect on the environment)	All four corridors could accommodate a scheme which would be sufficient in terms of the overall efficiency of the electricity transmission and distribution network. If capital cost alone were considered, Corridor 1 as an overhead line would be the preferred solution. However cost must be balanced against other factors, including impact on amenity.
2. Compliance with planning policies	In terms of planning policy considerations alone, Corridor 4 would have the least impact on areas designated for their environmental value as compared to Corridors 1, 2 and 3. Corridors 1 and 2 both pass through the Dedham Vale AONB and Corridor 3 passes through a larger section of a Special Landscape Area in comparison to Corridor 4. A new overhead line in any of the corridors would be visible from the Dedham Vale AONB. Corridor 1 would have the greatest effect on the AONB as it involves the construction of an extra overhead line running parallel to the existing lines.
3. Compliance with National Grid policies	Our commitments refer to avoiding designated sites including AONBs where possible. Corridor 4 is furthest from the AONB designation. Under our current guidelines, our approach to undergrounding would suggest that partial undergrounding could be considered for the sections of Corridors 1 and 2 which pass through an 'exceptionally constrained' rural area (the Dedham Vale AONB) and possibly for the western end of all four corridors which run through the Stour Valley.
4. Consultation representations	The analysis of the representations made during the Stage 1 Consultation made it clear that the selection of Corridors 3 and 4 was least favoured by the general public, and statutory and non-statutory consultees. Some respondents stated a clear preference for Corridor 2, with this corridor being identified as the least worst option by a large proportion of the public and statutory and non-statutory consultees. In the majority of cases any preference was stated subject to the proviso that undergrounding of some or the entire route be considered. There was significantly less public support for Corridor 1. The replacement of an existing overhead line, albeit with a line involving larger pylons, was seen by many as preferable to introducing a new overhead line into an area not currently affected by such infrastructure.

Factor	Comment
5. Landscape and visual impacts	A new overhead line would have adverse effects on landscape and views in any route corridor. Corridor 2 was considered to have least impact when compared to the other three corridor options because the scale of change would be lowest. Corridors 3 and 4 pass through areas which, while not designated for their landscape value, are highly valued by the local community.
6. Effects on historic environment	A new overhead line in any of the corridors would avoid passing through or over any sites designated for their historic value and the risk to unknown buried archaeology would be similar for all corridors. Effects from a new overhead line in Corridors 1 and 2 would be similar to the effects already experienced from the existing lines. Corridors 3 and 4 are considered by consultees to have a greater risk with regard to effects on the historic environment, including Conservation Areas, Listed Buildings and the historic landscape, and English Heritage advised that neither should be pursued.
7. Effects on biodiversity and geological conservation	All the potential corridors would have some effect on biodiversity and geology. Corridors 1 and 2B would result in direct effects on Hintlesham Woods Site of Special Scientific Interest (SSSI). In the case of Corridors 1 and 2, the majority of the nature conservation interest that might be affected is already affected to some degree by the existing 132kV overhead line, which would be removed and replaced by the new overhead line. Natural England concluded that Corridor 2 would have least impact on the environment. Corridors 3 and 4 offer the greatest potential to minimise effects on biodiversity through detailed routeing in relatively wide corridors, although effects would be in areas where these do not presently occur.
8. Effects on land use and socio-economic factors	There is little difference between the corridors in terms of potential impact on agricultural land use. All four corridors sought to avoid mineral reserves and active sites, and where they have been included we are certain that these can be avoided in the detailed connection design. The greatest risk of impacting on existing land uses would be associated with Corridors 1 and 2, because the need to follow an existing overhead line results in a narrower corridor width and limited flexibility in pylon positioning. However land uses in these corridors are already affected by existing overhead lines. At this stage no significant differences between the corridors in terms of local social and economic impacts have been identified.
9. Engineering – deliverability	There is no significant difference between the corridors in terms of main construction constraints or risk.
10. Effects on civil and military aviation and defence interests	None of the corridors infringe aviation safety zones; however the operation of some airstrips near Corridors 3 and 4 would need to be changed if a new overhead line was built in these corridors.
11. Effects on flood risk and climate change resilience	It is not appropriate to determine the preferred route corridor on the basis of resilience to climate change or flood risk, as the potential risk is similar for all options and can be managed.

Summary of the main characteristics of the corridors

Corridor 1

Corridor 1 is the shortest and lowest cost connection option. A new overhead line would affect the Dedham Vale AONB directly by passing through the designated site adjacent to two other existing overhead lines. It would have a greater effect on the AONB than Corridor 2 and so is not preferred.

Corridor 2

Corridor 2 passes through the northern area of the Dedham Vale AONB and would run alongside the existing 400kV line. The existing 132kV overhead line would be removed and to continue to supply power to UK Power Networks after removing the line a new substation would need to be built west of Twinstead Tee. Using this corridor would not increase the number of electricity lines passing through the AONB. This option would involve the lowest scale of change to the landscape and to views.

Corridor 3

Corridor 3 would involve a new overhead line which avoids passing through the Dedham Vale AONB, although it would pass relatively close to the boundary of the designated area. It would also pass through a number of Special Landscape Areas and close to some settlements. It would introduce a new overhead line into an area which is presently relatively distant from existing overhead lines. It would have a greater effect than Corridor 2 and so is not preferred.

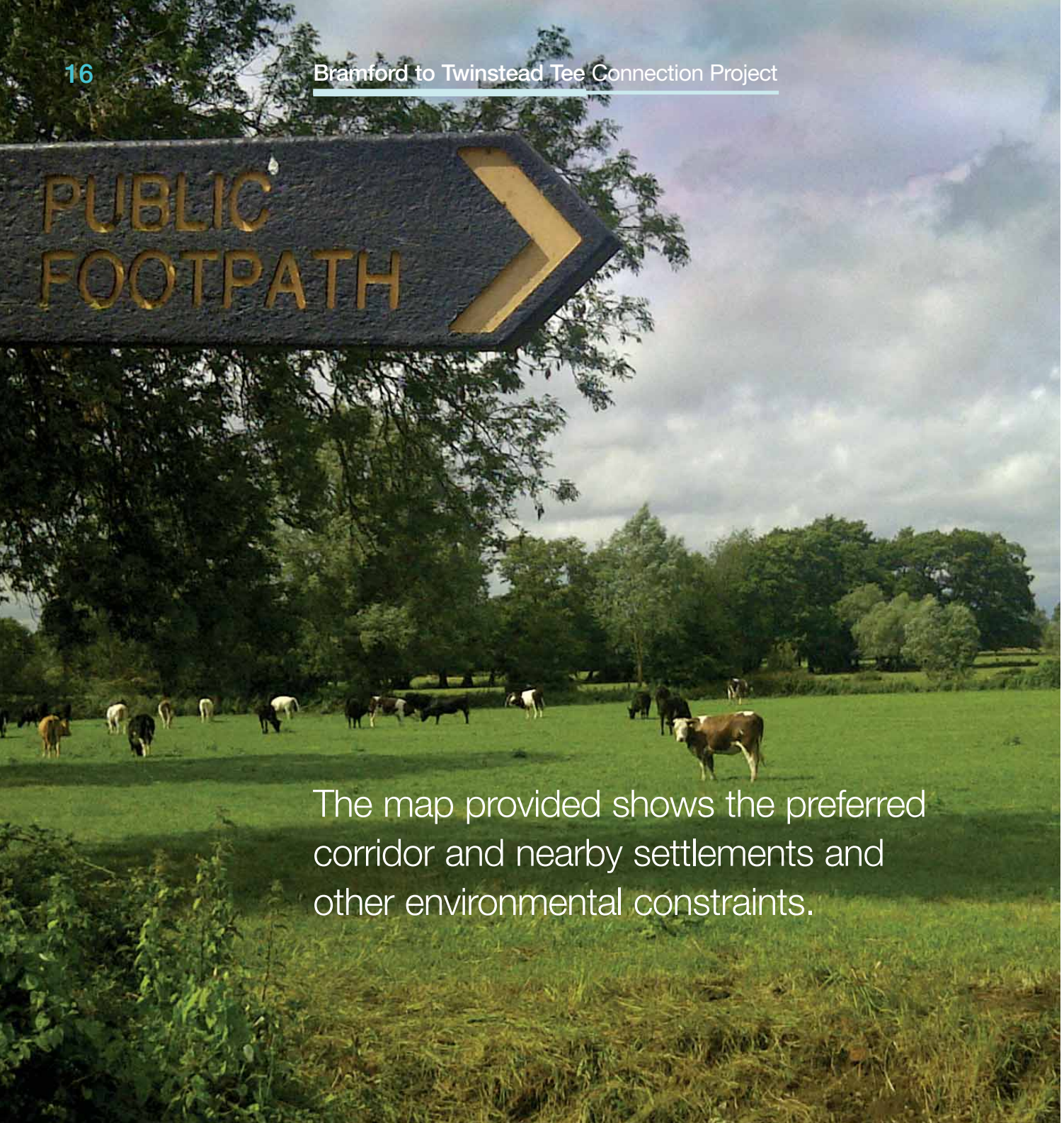
Corridor 4

A new overhead line in Corridor 4 would avoid the Dedham Vale AONB and would be furthest from the designated area. It would involve a relatively short crossing of a Special Landscape Area outside the Stour Valley. However, it would introduce a new overhead line into an area which is most remote from existing overhead lines. It would have a greater effect than Corridor 2 and so is not preferred.

Corridor 2 is considered the most suitable option and will be taken forward for further consultation during Stage 2.

Many representations from the public and other consultees urged consideration of undergrounding in all or parts of the route. Specific areas cited include Dedham Vale AONB and the Stour Valley. We will consider undergrounding in detail during Stage 2 Consultation.

The map provided overleaf shows the preferred corridor and nearby settlements and other environmental constraints.



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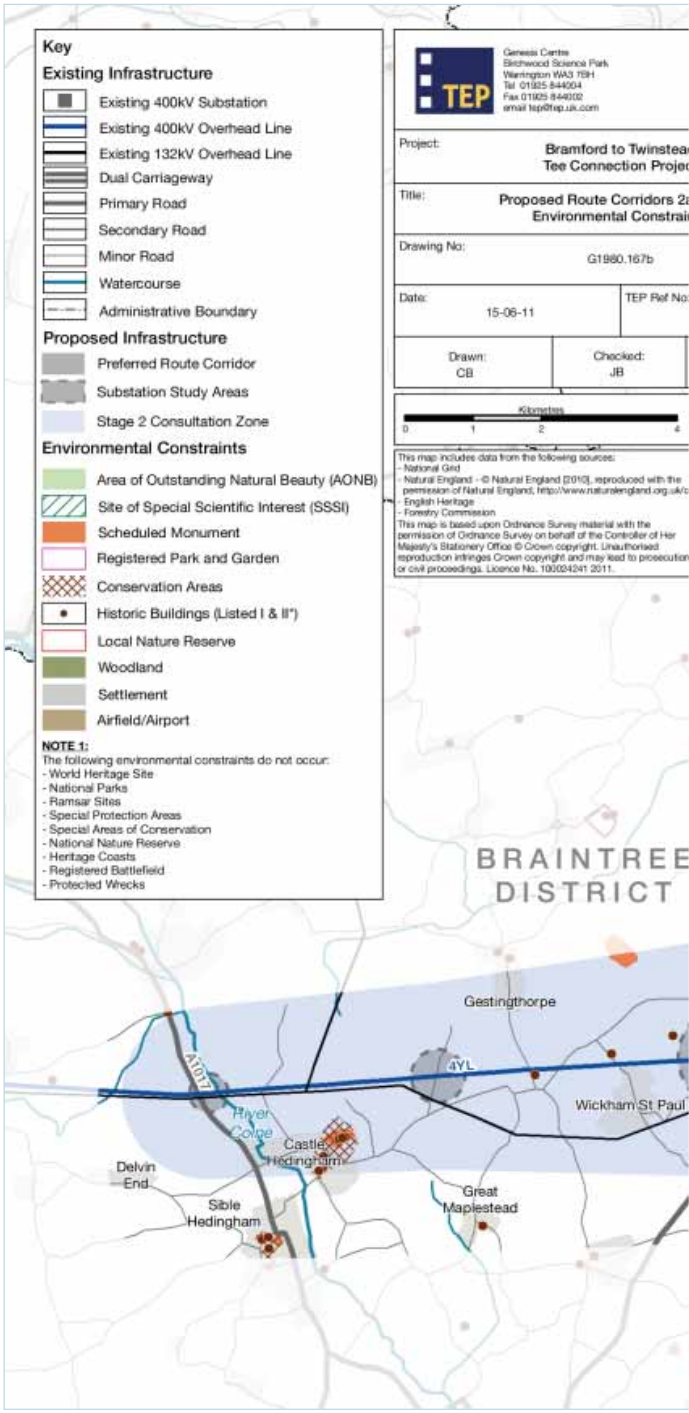

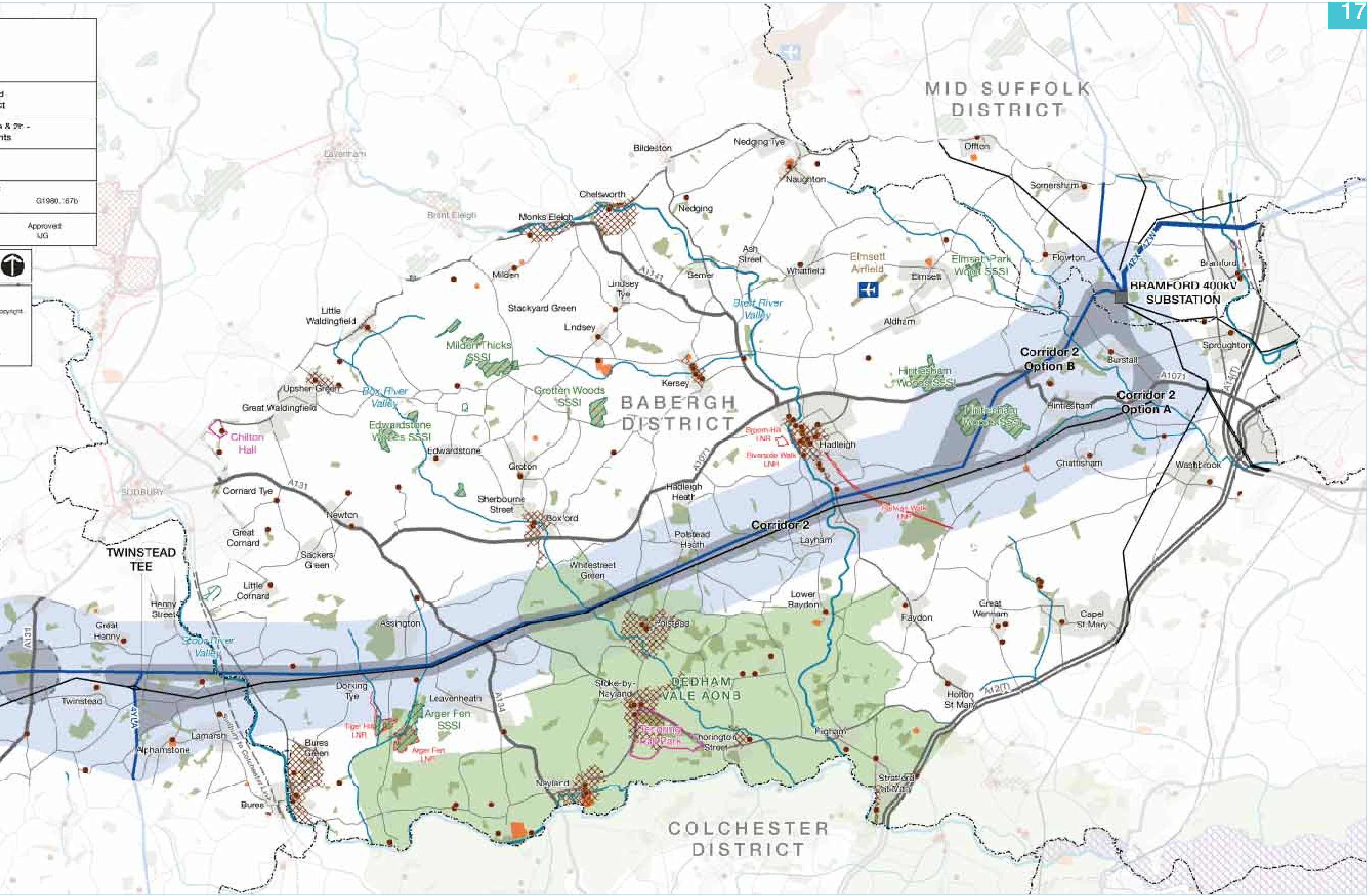
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Offton
Naughton
Somersham
Chelsworth
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Lavenham
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Ash
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Whatfield
Elmsett
Airfield
Elmsett Park
Wood SSSI
Flowton
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What happens next?

Now we have selected the preferred corridor, we will continue our environmental impact assessment and consultation to develop a detailed connection design. The detailed connection design will include the alignment of the new 400kV overhead line and will identify the pylon locations within the corridor and the location of the new substation

We will also consider where additional mitigation, such as woodland planting, use of lower height pylons or undergrounding may be appropriate.

Stage 2 Consultation

We have developed an extensive consultation programme with statutory and non-statutory consultees, other agencies, the public and local communities and our Stage 2 SOCC will be published in regional newspapers shortly after the preferred corridor announcement.

During this stage we are keen for people to give us their views so we can take them into account when developing the detailed connection design. We will be seeking views on the most appropriate alignment, pylon locations, potential mitigation measures and the best substation location.

We will assess potential environmental impacts and seek to minimise these by the routeing of the overhead line in the first instance and by using other mitigation techniques such as woodland planting, lower height pylons and undergrounding, where necessary and appropriate.
The findings from the ongoing environmental assessment work will inform the development of the design and be made available during Stage 2 Consultation.

At the end of Stage 2, we will finalise our proposals for the detailed connection design.

How you can get involved in Stage 2 Consultation

There will be a number of ways for you to participate, including:

- Community Forums – National Grid will invite local residents, groups and organisations which represent local communities to join community forums. The independently-chaired forums will allow representatives of communities or interested parties to influence the development of the detailed connection design.

- Drop-in events – Public drop-in consultation events will be held to give everyone the opportunity to meet the National Grid project team, ask questions and give feedback on our proposals.

- Site specific consultations – We will consult on site specific issues including the options for the siting of a new substation and the sub-options of Corridor 2 (Corridor 2A and Corridor 2B) which relate to

“This stage will provide the opportunity for anyone potentially affected to give their view about where the pylons should go and options for undergrounding.”

the eastern part of the connection close to Bramford substation.

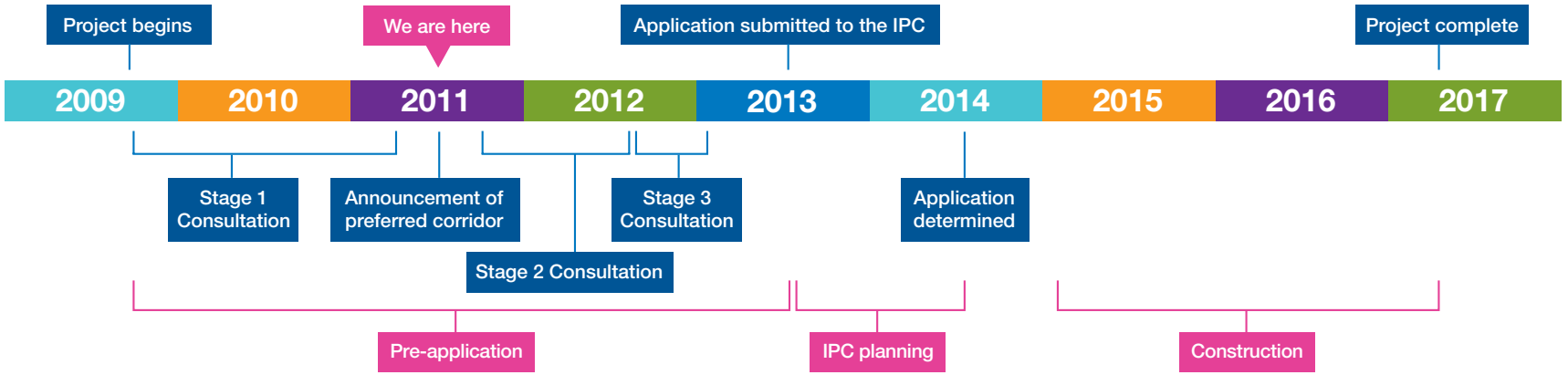
Local authority officers and statutory consultees such as Natural England, the Environment Agency and English Heritage and other environmental specialists will be invited to attend Thematic Groups. They will discuss the assessment of effects on landscape and views, biodiversity, archaeology and cultural heritage. The aim of the Thematic Groups is to inform and influence the Environmental Impact Assessment, which itself will also influence the detailed connection design.

Stage 3 Consultation

Stage 3 Consultation will consider the proposed detailed connection design that has been defined during Stage 2 and the application that is proposed to be made to the Infrastructure Planning Commission for development consent. We will seek the views of statutory and non-statutory consultees, interested parties, people with an interest in land and local communities living in the vicinity of the proposed works. Any representations received during this stage will be taken into account in deciding whether or not to modify or change the proposed alignment and application before submitting an application for development consent to the Infrastructure Planning Commission or its successor.

Programme

Timescales and activities may be subject to alteration as the project progresses.



Stage 2 Consultation will run until summer 2012. Your comments are important and will be carefully considered and taken into account as we develop our proposals. We will update the project website regularly throughout Stages 2 and 3 with progress updates and feedback from the Community Forums, Thematic Groups and other meetings and we will report how feedback has shaped the proposals.

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Contact us

You can find out more information by:

visiting our project website:
http://www.nationalgrid.com/bramford-twinstead

sending an email to:
bramford-twinstead@uk.ngrid.com

calling our freephone number:
0800 377 7340

writing to our freepost address at:
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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.

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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