

Essex County Council
BRAMFORD TO TWINSTEAD TEE CONNECTION PROJECT
DISTRIBUTION SYSTEM OPTIONS REPORT, FEBRUARY 2013

Background

The Preferred Corridor involves the dismantling of the 132kV overhead line between Burstall Bridge and Twinstead Tee and replacement with a 400kV overhead/underground connection. The removal of the 132kV overhead line requires a new option to maintain the current security of supply to local homes and businesses.

The distribution company, UK Power Networks reviewed a number of options in July 2012 for maintaining the security of local electricity supplies, which included new 132kV overhead lines or underground cables between different points on the network, new substations and an expanded substation. National Grid has reviewed these strategic options within the context of the Bramford to Twinstead Project against technical, environmental, socio economic and cost factors.

This review supports the conclusion of UKPN's assessment that the development of a new substation west of Twinstead is the most appropriate solution. Consequently, National Grid has published alongside this consultation a Substation Siting Report, which seeks views on a number of locations in three Study Areas, namely:

- Study Area A – east of A1017 Dickett's Hill/Colne Valley Railway, Castle Hedingham
- Study Area B – Delvyn's Lane
- Study Area C – Butler's Wood/Waldegrave Wood, Wickham Bishops

Discounted Options by Essex County Council

Options involving Overhead Lines

The County Council has been successful in securing the undergrounding of a 3.8km section of the proposed route to the west of Dorking Tye to a re routed location further south of Twinstead on the Bramford – Braintree – Rayleigh overhead line in the vicinity of Pylon 4YLA004. The County Council also welcomes the proposed undergrounding of the section through the Dedham Vale AONB. The County Council also acknowledges and supports the view of the other local authorities in Essex and Suffolk in seeking to have the entire route to be underground.

Consequently, the County Council is supportive of Option 2, which seeks to underground the 132KV circuits between Twinstead and Burstall Bridge.

Whilst the County Council acknowledges that undergrounding has some impacts on the natural and historic environment (eg. buried archaeology/biodiversity etc), it is acknowledged that the majority of the impacts can be mitigated. Furthermore, the undergrounding of cables provides more opportunities for avoiding sensitive locations. However, the potential impact of overhead lines on the historic landscapes, designated/non designated heritage assets and their setting, local views and amenity, socio economics and the appreciation of these landscapes on individuals well being will have an immediate and long term impact on future generations.

Consequently, the County Council is not supportive of any of the UKPN Options that require the construction of significant lengths of new overhead lines in Braintree District. These include Option 3.1.1, 3.2.1, 5.1.1, 5.2.1, 7.1 and 8.1.

Options connecting to the Existing 132kv Overhead Line near Twinstead Tee/Diamond Crossing

For all options, other than those connecting to Rushley Green (Option 5.1) and new substation (Option 6), the point of connection with the remaining UKPN 132kv overhead line network west of Twinstead Tee would be the first pylon to the west of the existing 'diamond crossing'. All these options would require a new Sealing End Platform tower.

The Connection Options Report (May 2012) proposed a Sealing End Compound location in a similar location to that identified above. ECC considered this location would have significant negative impacts upon the Stour River Valley landscape character; local visual receptors; impact on public views from protected lanes, Public Rights Of Way, Loshes Meadow Nature Reserve, Sparrow's Farm and its setting (Grade II). The termination tower would be visible over a wide area. It would involve the permanent loss of pasture field, which is species rich. The proposed interim location for a SEC was also located within the area subject to an extension of the Dedham Vale AONB, and which appears as an AONB in all but designation.

An additional consultation was undertaken by National Grid titled 'Western sealing end compound location (November 2012), which proposed a revised route and Sealing End Compound location to connect to the Bramford-Braintree-Rayleigh overhead line further south in the vicinity of tower 4YLA04 rather than 4YLA01. As part of this proposal the 4 spans of 400kV overhead line south from Twinstead Tee (and 'diamond crossing') to the sealing end compound at Henny Back Road would also be removed providing a significant benefit to the natural and historic environment. This was supported by Essex County Council, subject to ongoing consultation, and has been adopted by National Grid.

Whilst the County Council acknowledges the impact of a Sealing End Platform tower on local landscape and views, its potential impact would not be as significant as a Sealing End Compound. Any additional 'tower' at this location would partly negate the environmental improvements already secured in the Stour Valley, and indicated above. Consequently, the options requiring connection via a sealing end platform tower near Twinstead Tee are not supported by the County Council

Other Local Impacts (Undergrounding Options)

The Options connecting with the 132kV overhead line at Twinstead would also have other significant following environmental impacts, which the County Council would have concerns and would seek potential mitigation and rerouting where possible.

- Additional undergrounding through Dedham Vale AONB (5.5km) – Option 3.1.2
- Potential habitat loss of County Wildlife Sites – Option 5.1.2
- Potential impacts on designated and non-designated heritage assets and their setting – all options;
- Potential impact on hedgerows (ancient), flora and fauna – all options
- Potential high impact on buried archaeology – all options
- Potential impact on the internationally designated Abberton Reservoir (Option 3.2.2)
- Potential impact from a new substation at Earls Colne or Coggeshall in a rural landscape

Overarching Issues

Description of Development Proposal – Substation/Distribution Options

The 'Distribution System Options Report' has been published alongside the Substation Siting Options Report, and appears to be a supporting document to evidence the National Grid preferred Option 6 – New Grid Supply Point at Twinstead. UKPN previously published their

'Needs Case', July 2012 for ensuring system security, and which included a technical and cost appraisal of options. National Grid has undertaken some further broad assessment of compliant options from a technical, environmental, socio economic and cost perspective. Essex County Council is concerned that this report has not been widely publicised in order that the relevant communities can consider all the options that have been considered by National Grid. The Substation Siting Options consultation is focussed on the communities affected by the National Grid preferred option west of Twinstead and the preferred route corridor. There has been minimal opportunity for the communities subject to the alternative options to be consulted and to consider the alternatives.

Furthermore, as indicated in our response to the EIA Scoping Opinion Request, the description of the National Grid proposal is by no means clear, and could lead to the need for a revised EIA Scoping to be undertaken prior to submission of the DCO. This is supported by the PINS Scoping Opinion, para 2.52 (March 2013).

There remains uncertainty with regards the detailed description of the development, which is subject to change following the consideration of responses to the 'Distribution System Options Report' and 'Substation Siting Options Appraisal'. For example paragraph 3.7.1 of the EIA Scoping Opinion states

If a substation is confirmed as the preferred form of securing the 132kV connection supply, the ES will report on the environmental assessments undertaken for the preferred substation site.

Consequently, this implies that National Grid is by no means set on progressing a substation option, and may still consider an alternative option. However, as indicated above it appears that the document regarding a range of distribution options has only been publicised to those affected by the preferred route corridor and potential substation sites. This could compromise National Grid's ability to respond to the requirements of Section 37 of the Planning Act – particularly with regards the production of a Consultation Report that shows how they have had regard to any relevant responses.

Socio Economics and Willingness to Pay

As previously aired by Essex County Council there remains ongoing concerns that judgements on alternative options are being made with primary reference to cost. The County Council acknowledges that National Grid has to second guess what the regulator (Ofgem) might consider what the "efficient costs of delivering the scheme [are] from consumers". However, any proposed scheme must be acceptable in planning terms having regard to the main alternatives. Setting the need case for the project to one side the electrical benefits provided by this project can be provided by other means, for example by undergrounding of the connection in its entirety (which is supported by the County Council) and the expansion of Braintree sub station with connection to Rushley Green (Option 5). The principal argument against these options appears to be cost; and the Secretary of State should therefore be presented with sufficient information to understand the environmental impact of undergrounding the entire route and other options in this report.

Essex County Council also considers the continued approach by National Grid in relation to socio-economic matters is insufficient. It has to date constrained its approach to considering the economic impacts of the proposal on existing tourist related facilities and businesses, or the proximity of the overhead line to such facilities. National Grid has not considered or factored in the appreciation of the natural and historic beauty of the area into any of their assessment. There is clearly links between the visual quality of the environment and the potential for tourism. The presence of tourist related facilities is considered more incidental than the actual quality of the landscape. National Policy Statement EN – 1, paragraph 2.2.27

states that energy infrastructure should contribute to the Government's wider objectives including sustainable development including the way energy infrastructure affects the well being of society and individuals.

National Grid has placed a great emphasis on cost in determining its alternative means of network reinforcement. It has relied on 'judgement' to determine whether the social, environmental and economic impacts, measured 'qualitatively, of overhead lines warrant the use of undergrounding. ECC considers that more work is required by NG to actually 'quantify' the disbenefits of their scheme, and whether these exceed the additional cost of undergrounding and other options.

Furthermore there are established techniques for measuring the impact of projects on more human issues such as health, wellbeing and visual amenity. One such means is the HM Treasury Guidance (the Green Book), Annex 2. This document would allow 'the net value of a project to society as a whole' to be considered, taking account of impacts on health, well being and visual amenity, and measured against capital costs of the project. These impacts are gaining more support from Ofgem, and are already being implemented in other transmission infrastructure projects. In fact Ofgem has stated:

'We agree with third party stakeholders that there is a potential role for consumer willingness to pay (WTP) studies, as well as other information on landscape quality and features of special interest, to inform NGET on the efficient level of different technologies when developing its proposals. However, it is ultimately for NGET to develop its proposals and the need for mitigation on a case by case basis by working with stakeholders during the planning process..'

The local authorities and amenity groups have been clear in their wish to see the WTP studies considered in this project. WTP is an important and valid counterweight to National Grid's overriding cost arguments for, amongst other things, not considering an entirely undergrounded route. WTP allows consumers to express in monetary terms the perceived environmental and socio-economic disbenefits of overhead lines. The NPPF identifies three strands to sustainable development, namely economic, social and environmental, and these need to be considered appropriately.

ECC would seek opportunities to be maximised for securing local job opportunities and materials during the construction phase of the project.

Archaeological Assessment

ECC welcomes the consultation undertaken to date by National Grid with the relevant local authorities with regards archaeological assessment, but would like to emphasise its position, as included in the EIA Scoping Request. This approach would be required if a new substation is progressed at any Study Area, and at specific locations within these areas. PINS response to EIA Scoping, para 3.41 refers to the proposed scope and methodology of archaeological assessment, which is outlined by ECC below.

There will be a requirement for the appropriate assessment of below ground archaeology; namely Geophysical Survey of sites; trial trench evaluation, reporting; and paleo-environmental assessment across flood plains. This will be required in relation to any substation in relation to temporary compounds/laydown areas; any potential substation and along their permanent access roads. ECC would expect the Written Scheme for the assessment; evaluation and reporting stage of this work to be agreed in advance, and submitted within the EIA.

In responding to the Connection Options Report the County Council stated its insistence that a comprehensive and detailed archaeological evaluation programme is undertaken in advance of any development, which would be followed by the detailed open area excavations that will result from the evaluation work. ECC would like to see archaeological evaluation (including intrusive trial trenching) undertaken to inform the EIA, wherever possible. In the first instance this could be targeted at known cropmark or existing sites where the presence of archaeological deposits is known. For all areas not evaluated there will need to be a significant time gap between any trial trenching undertaken at a later date and the construction programme to allow for appropriate large scale open area excavation to take place.

Following the evaluation, archaeological investigation will be required prior to development :

- This will comprise open area excavation of known sites with strip, map and excavation of the full working width (stripped easement) of temporary compounds/lay-down areas, Substation Site; and permanent access roads.

The timetabling of any open area excavation can be based on the density of archaeological remains defined by the evaluation but should be undertaken well in advance of the start of development.

In addition, continuous archaeological monitoring and recording (a watching brief) of the full working width may also be specified in certain areas. In these areas, opportunity must be given to the contracted archaeologist to hand excavate any discrete archaeological features which appear during earth moving operations, retrieve finds and make measured records as necessary.

Any archaeological work that is required prior to (or immediately before) development, i.e. full excavation and/or monitoring, will need to be the subject of a further Written Scheme of Investigation.

County Council Preferred Option

The County Council has reviewed the 'Distribution System Options Report' and would wish to clarify its support for Option 5 – Reinforcement of Braintree Grid Supply Point, and in particular Option 5.1.2, a new 132kv underground cable connection between the existing Braintree substation northwards to Rushley Green. With regards this option the County Council would require further discussion with regards Option 5.1.2 West, which utilises part of the carriageway along the A131 and A1017, and as stated by National Grid would result in the least environmental effects of all underground cable options (paragraph 10.7).

Whilst the County Council acknowledges this could provide significant improvements to the North Essex environment, where a new substation is proposed, it must stress that detailed discussion would be required with the County Council to consider the specific impacts of Option 5.1.2 West on the County Highway Network. The County Council would seek to ensure that any disruption to the County Road Network is kept to a minimum. The Traffic Management Act 2004 has provided the County Council increased powers in relation to the co-ordination of works by utility companies in order to minimise disruption, and the better management and co-ordination of all works.

In progressing this option, consideration would be required regarding where sections of any underground cable could be accommodated within the carriageway, and where an off road alignment would be more appropriate (avoiding key junctions), given the nature and role of the highway route, and environmental constraints.

Option 5 has been confirmed by National Grid as being technically viable for maintaining the existing N-1 transfer capacity between Pelham and Bramford following dismantling of the 132kV overhead line. Consequently, any option to be progressed should not be made on cost, but a balanced approach including environmental and socio economic factors. As indicated above, National Grid has stated that this option has the least environmental impact. In fact, the Distribution Options Report states in relation to the above option:

'The western variant is the most direct (approx 17km) running in a northerly direction from Braintree substation whilst avoiding environmental constraints'.

ECC considers that a balance is required between the relatively short term impacts on the highway network, which can in the whole be managed and mitigated, against the lifetime impact of new major electricity transmission infrastructure in a highly sensitive landscape and culturally significant location.

Some advantages and issues in providing a connection between Braintree substation and Rushley Green are outlined below.

- A connection between Braintree and Rushley Green would help secure the long term benefits already secured to the sensitive and culturally significant landscape in the Stour Valley, which have already been acknowledged by National Grid (undergrounding; re routeing; further dismantling of overhead line, and a relocated Sealing End Compound in the Stour Valley)
- Potential to remove additional sections of the existing UKPN 132kV overhead line between Twinstead Tee and Rushley Green (7-8km and approximately 30 pylons), which would provide substantial benefits to the landscape, communities, and its attractiveness for visitors. Given the divergence between the 400kV and 132kV between Twinstead Tee and Rushley Green the benefit in landscape and views of the removal of the 132 kV line is considered more significant than if their routeing was more parallel.
- Supports the ambition of local authorities and amenity groups to extend the AONB designation into the Stour Valley by removing existing and potential new electricity transmission infrastructure from the highly sensitive landscape
- Better utilisation of existing electricity transmission infrastructure at Braintree sub station, which is located on low lying ground, is located within an urban context bounded by the A120 and Freeport Retail Outlet Centre, the landscape is already impacted upon by existing overhead lines. The location is considered more appropriate for electricity transmission infrastructure than rural North Essex.
- National Grid is proposing a substation with a single 400/132kV transformer in rural north Essex, although the UKPN Needs Case indicated a preference for a two 400/132kV transformer to ensure system security. The latter could be accommodated at Braintree sub station, and provide a more 'future proof' option with regards electricity supply.
- The existing substation is located adjacent to the A120, which can more easily accommodate the transportation of the transformer and other electrical infrastructure, with minimal impact on the environment, compared to the character of the road network in north Essex
- Any noise impact from a substation is subsumed within the local background noise, and the proximity to the A120 and urban environment, if compared to the tranquil setting in North Essex.
- the 132kV underground cable connection could potentially largely be accommodated in the carriageway along the A131 and A1017, minimising impacts on landscape character and hedgerows (historic) etc, unlike other options considered in the report
- Where the potential underground corridor deviates from the A1017 near Gosfield the County Council considers that impact on landscape following construction can be minimised following reinstatement. It would be expected that the most sensitive

habitats, such as woodlands, hedgerows, designated and non designated heritage assets etc, can be avoided through cable routing and the use of HDD.

- ECC would seek any underground cable connection to avoid using the carriageway at Galleys Corner, which already experiences congestion at peak hours, and is an important junction on the highway network. Any underground cable route would need to avoid the carriageway at this location. Any routing would also need to consider Policy ADM 48 Transport Related Policy Areas in the Draft Braintree Site Allocations and Management Policies DPD, which seeks to provide transport related uses to serve users of the A120
- ECC would seek clarification of the project dependant issues to be able to consider the impacts on the road network and adjacent environment, for example burial depth of cable, number of cables, construction machinery and techniques. ECC would seek to ensure any necessary works are constrained to the carriageway where possible, and wildlife friendly working methods should be adopted.
- ECC would seek early discussion regarding any proposal and potential impacts on the management of the network in line with the Traffic Management Act (2004)
- No international or local designated sites for nature conservation are crossed
- Connection to 132kV overhead line at Rushley Green would avoid the need to cross the River Colne and Colne Valley Railway
- The connection to the existing 132kV line would require a sealing end platform tower, which is of thicker steel and includes a platform pathway up the pylon. Any potential impact will need to be considered in relation to local receptors, but potential impact may be minimal.
- HDD will need to be considered to avoid impacts on watercourses and vegetation, and in particular County Wildlife Sites, Bourne Brook and the River Blackwater, but avoids any crossing of the River Colne
- Minimise impact on biodiversity, habitats and hedgerows. Any loss will need to be offset in line with paragraphs 5.3.4 and 5.3.7 of EN-1,
- Consideration would need to be given to any construction impacts on Gosfield Hall Registered Park and Garden (within 0.5km).
- The underground route passes within 1km of Hedingham Castle Scheduled Monument, and consideration will be required as to impacts during construction.
- There is high potential for buried archaeology throughout the western corridor, and appropriate investigation, and re-routing will be required. The corridor passes through the remains of Langthorne Brick Works, a non-designated asset, High Garrett and Lyons Hall (north of Braintree) - see Archaeology issue below.

Removal of redundant 132kV line west of Twinstead Tee

ECC will continue to seek some clarification from UKPN and National Grid regarding the opportunity of removing the redundant 132kV line west of Twinstead Tee to wherever the connection is made for securing supply for UKPN. This could potentially be at one of the potential substation locations or potentially where Option 5 – Reinforce Braintree GSP would connect to the 132kV overhead line near Rushley Green. Option 5 could potentially enable the removal of up to 30 pylons over a distance of 7-8km. The local environmental benefits have previously been promoted with the local community as a potential benefit of the project, providing an improvement to local landscape character and visual amenity, especially the setting of Castle Hedingham Castle, a Scheduled Ancient Monument.

Potential Impact on Future Designation of Stour Valley – Extended AONB

National Grid identifies their preferred substation site as Site C2 between Butler's Wood and Waldegrave Wood. Paragraph 10.18 states that the effects of National Grid's preferred substation option would be more localised than other options. ECC would question this assumption given its concern regarding the potential impact on future AONB designation, its

cultural significance, and the historic and visual landscape which is the attraction for many visitors. ECC is concerned that this has not adequately been considered in the decision making process, which has been overly influenced by the fact Site C2 requires the least system reinforcement works of all options, and has the lowest capital and lifetime costs. ECC and other local authorities have regularly raised concerns that National Grid is not prepared to 'quantify' the disbenefits of their proposed scheme, which may reduce the cost differential between options.

The Stour Valley Landscape (A2) is considered as being highly sensitive to change within the Braintree Landscape Character Assessment. The Stour Valley is also subject to a countryside management project, the Dedham Vale AONB and Stour Valley Project. The area is also subject to a 'Statement of Intent' to Natural England to extend the AONB westwards into the Stour Valley. Whilst not presently designated as an AONB any new substation development in this area, could compromise any future designation. The area within the project boundary, but outside the designated Dedham Vale AONB, is mostly of as high a quality as that within the designation. Any further work by NG needs to consider the sensitivity of this local landscape and the long term ambition for the area.

Cultural Significance of Stour Valley

National Grid has recognised the national significance of the Stour Valley in cultural terms in relation to painters Constable, Gainsborough and Nash, and its high sensitivity to electricity transmission infrastructure. This has already been acknowledged by NG in determining the re routing of the underground cable and relocation of a Sealing End Compound in the Stour Valley.

Within their 'Our stakeholder, community and amenity policy' National Grid seeks to minimise the effects of new infrastructure on communities by:

'seek to minimise the effects of new infrastructure on areas which are nationally or internationally designated for their landscape, wildlife or cultural significance..... We will take into account the significance of these and other areas through consultation with local authorities and other stakeholders with particular interests in such sites.

The preferred substation site (C2) is only 1km away from the boundary of the area managed by the Dedham Vale and Stour Valley Project, and would be located in the gateway to this culturally significant landscape and potential national AONB designation.

ECC considers the expansion of the existing Braintree substation is already within an 'urban type' environment on low lying ground in close proximity to the A120/Galleys Corner and Freeport Retail Outlet centre to the north. The local landscape is already impacted upon by overhead lines connecting to the existing substation. Whilst Option 5 – expansion Braintree Sub Station would require a new Sealing End Platform tower near Rushley Green, it would have less impact given its distance from the potential designation area.