Essex County Council
Bramford to Twinstead – Substation Siting Options Appraisal

Background

The removal of the existing 132kV overhead line between Burstall Bridge and Twinstead Tee, which is owned by UKPN, will be replaced by National Grid with a 400kV connection. In order to ensure system security additional works is required by National Grid to the local electricity distribution network. In July 2012 UKPN undertook a study, based primarily on technical and cost issues, regarding 8 strategic options for maintaining supply, including underground and overhead line options, system reinforcement and potential for new substations. These options have been considered by National Grid in their `Distribution System Options Report', based on technical, environmental, socio economic and cost issues, and concluded that their preferred option is for a new substation to the west of Twinstead Tee in proximity to the existing 400kV overhead line, as did UKPN.

National Grid has published for consultation three potential Study Areas, within which a number of sites for a new substation have been identified. These are:

- Study Area A – eastern side of the A1017 Dickett's Hill, north of entrance to Colne Valley Railway
- Study Area B – Delvyn's Lane
- Study Area C – west of A131 between Butlers Wood and Waldergrave Wood

The preferred location for a new substation by National Grid is within Study Area C located between Butlers and Waldegrave Wood(Option C2)

A new substation, if selected as the preferred option, would involve the following technical requirements

- A Grid Supply Point with a 400kV substation (NG) and a UKPN 132kV substation
- A Grid supply Point site area – 1.5 ha
- A permanent access road to the local highway
- A 400kV station will connect to existing 400kV OH line, have a 400/132kV transformer and switchgear
- A 132kV substation will be connected by UG cables and a 132kv sealing end platform tower to existing 132kv OH line

County Council Preferred Option – Reinforcement of Braintree Grid Supply Point and connection to Rushley Green

The County Council has reviewed the `Distribution System Options Report', which supports this consultation, and has submitted its response to National Grid. It is the preferred view of Essex County Council that 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 should be progressed. With regards this Option the County Council would prefer further investigation with regards Option 5.1.2 West, which utilises part of the carriageway along the A131 and A1017.

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 route, and environmental constraints.

This option 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. 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 routeing 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 routeing 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.

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 current 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.

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 `qualititatively, 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.

Potential Impact of a Substation on the 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, and is approximately 1km from the NG preferred option C2 in Study Area C. The area is also subject to a `Statement of Intent' to Natural England to extend the AONB westwards into the Stour Valley (extent of extension presently not defined). 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. The preferred substation site (C2) would be located at the gateway to landscapes of high cultural significance

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) would be located in the gateway to this culturally significant landscape and potential national AONB designation. PINS response to the EIA Scoping, paragraph 3.34 acknowledges the cultural significance of the Stour Valley.

Assessing the Impact on Protected Lanes

The proposed development of the underground route in the Stour Valley, Sealing End Compound and potential substation sites all refer to potential impacts on protected lanes, which are highly prevalent in the Stour Valley. These are considered highly sensitive and impacts on biodiversity, trees, vegetation and protected hedgerows should be fully considered (PINS response to EIA Scoping, para 3.36)

ECC has recently completed the reassessment of protected lanes in Braintree District using revised criteria developed by Essex County Council historic environment specialists. This has provided an appropriate evidence base for Policy ADM 54 – Protected Lanes, as contained in the Braintree Site Allocations and Development Management Plan, Draft, January 2013.

The policy highlights that the historic lanes of the District are a key element of the historic environment. It is suggested that in addition to the conservation of the historic lanes "banks, ditches and verges" other natural features such as the hedgerows and other structural elements which make up the historic features of the lane should be considered to be covered by the designation. These additional elements have been included as part of the re-assessment of Protected Lanes in Braintree.

It is also important to note that protected lanes are designated not simply for their landscape and nature conservation character, but also their tranquillity, and this could be impacted upon by any new substation. Any potential impacts on the `tranquillity' of protected lanes is referred to by PINS in their response to the EIA Scoping, paragraph 3.54. The NG preferred substation site (C2) is located in close proximity to protected lanes at Old Road and Watery Lane, which may be impacted upon by the constant transformer noise. Paragraph 8.29 indicates the 132kv underground cable connecting the substation to the 132kV overhead line would cross Old Road, a protected lane, and that any effects will be mitigated through

replacement hedgerow planting. Essex County Council would seek to ensure that any route would not damage the banks and verges of the protected lane, as it considers any damage is irreversible.

ECC would seek further clarification, as to where any temporary construction compound would be located, along with welfare facilities, adjacent to any substation site. With regards the preferred location at C2 access to any construction compound via the protected lane along Old Road would be resisted.

Approach to Archaeological Assessment

All potential substation sites will need to consider the impact on buried archaeology, and ECC will seek the following approach to be implemented. PINS response to EIA Scoping, para 3.41 refers to the proposed scope and methodology of archaeological assessment, which is outlined by ECC below.

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.

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.

Traffic and Transport Issues

ECC welcomes the pre application discussion with National Grid regarding the Abnormal Indivisible Load Access Study (Wynns, September 2012) which has influenced the Substation Siting Study. The County Council would seek ongoing discussion in progressing any potential substation site, and in particular regarding the following:

- ECC would need to be involved in the preparation of the Transport Assessment to support the Development Consent Order, which should include up to date traffic data ; identify any additional junction surveys; traffic flows on the wider network; impacts on junctions; impact of development on all vehicles (inc HGV); identification and function of the haul road; impacts on existing flows
- Traffic Management Plans will need to be agreed with Essex County Council and Essex Police in terms of the management of AIL movements on the A131 and B1058 during construction.
- Detailed discussion regarding identified `structural' and `negotiability' issues (eg Halstead town centre) at locations where necessary works have been confirmed for the transportation of the transformer and heavy goods and access to any substation site.
- Access from the existing road network into the substation compound area, and the permanent access road, with passing places
- Detailed consideration of noise and vibration impacts of heavy goods vehicles/transformer through Halstead town centre, a conservation area (PINS response to Scoping Request, paragraph 3.62)
- Continued assessment of roads, and their suitability, in relation to the delivery of any potential transformer and heavy loads during construction (bridges, culverts etc), and the identification of any necessary alterations to the road network
- Need for temporary road closures, diversions, widening
- Temporary closures to any PROW will need to be identified, and an effective communication strategy of closures considered
- Consultation regarding the potential impact on hedgerows, trees, protected lanes etc along construction traffic routes and their mitigation
- ECC agrees that the cumulative impacts of other developments along the proposed AIL routes for the substation and other access routes need to be considered
- A condition survey should be undertaken for roads and PROW should be undertaken prior to commencement of development to ensure any deterioration can be mitigated appropriately
- The delivery of the transformer and heavy goods is likely to be made at night – any potential impacts on residents along the route will need to be considered in any assessment

The County Council notes some of the highway issues, which have been considered in assessing the suitability of individual Study Areas.

Study Area A – eastern side of the A1017 Dickett's Hill, north of entrance to Colne Valley Railway

- ECC has assisted in the AIL survey and agrees that the A1017 is unsuitable for the delivery of the 169te transformer and construction vehicles. The road is single carriageway with tight bends. Furthermore, the identified route needs to use Gosfield Bridge N0 4, which is limited to 44te gross loads only. Estimated remedial works could cost in the region of £1m

- The access from the A1017 which serves the Colne Valley Railway is not suitable for AILs
- Other culverts on A1017 would require further assessment to carry transformer loads if selected, and site construction traffic (44te gross vehicle weight capacity)
- A1017 is characterised by narrow road sections and tight bends between Sible Hedingham and Castle Hedingham which require consideration

Study Area B – Delvyn's Lane

- An access track would be required from the Sudbury Road due to constraints at Delvyn's Lane (Special Roadside Verge) and must enable turn to the site of AIL vehicles;
- The B1058 has 2 culverts that would require assessment for load carrying capacity (near Hole Farm and Mill House), which the County Council would seek further assessment and an engineering solution
- The access route is considered AIL compliant subject to the above
- Consideration would be required concerning `negotiability' through Halstead
- A1017 is characterised by narrow road sections and tight bends between Sible Hedingham and Castle Hedingham which require consideration

Study Area C – west of A131 between Butlers Wood and Waldergrave Wood

- Proposed access is directly off the A131, which is AIL compliant
- Consideration would be required concerning `negotiability' through Halstead town centre, a conservation area
- Any turn into the site would need to be designed to accommodate AIL delivery vehicles, and satisfy the County Council in highway safety terms
- Access to any temporary construction compound along Old Road (protected lane) would be resisted, given the potential damage from construction vehicles.

The Wynns Report, September 2012 concluded the most suitable location in terms of access was Study Area C, as access can be gained directly off the A131. However, the County Council has highlighted outstanding concerns regarding specific access to the site, and more general issues covering all sites.

Additional Review of Substation Study Areas West of Twinstead Tee

As well as the concerns indicated above the County Council has additional concerns regarding the 3 Study Areas concerning landscape and views, biodiversity and nature conservation.

Study Area A – eastern side of the A1017 Dickett's Hill, north of entrance to Colne Valley Railway

There is a single option identified at this location because other locations within the Study Area have been dismissed by National Grid due to distance from the exisiting 400kV overhead line and road network; impact on residents; open views from nearby houses; and existing built development on site. The County Council also has concerns regarding the following:

- Hedingham Castle is located to the south east (1.5km away) of the site and is a designated Scheduled Monument\Grade 1 and II* and II listed building. It experiences a prominent position in the landscape and its setting within the wider landscape is visible from the proposed site;

- Buried archaeology includes roman cremation burial at Dicketts Hill with further buried archaeology likely. The A1017 is the putative line of a Roman Road and an indication of associated buried archaeology.
- Impact on the views of visitors to the Colne Valley Railway visitor attraction, as access to the substation and tourist attraction is shared
- Part of the site is located within Flood Zone 1 of River Colne
- There would be a significant impact on views from the Edgar Eastall's Church Fields Way long distance walk

ECC agrees with the majority of National Grid's view regarding landscape and views within this Study Area. The landscape is of an enclosed character created by the river valley landscape, and is of an urban fringe nature given existing land uses, which has impacted upon the quality of the landscape and has reduced its sensitivity to change. Whilst the impact on the wider landscape may be limited by the valley landform the potential impact on nearby residents, Colne Valley Railway and nearby public rights of way would be more pronounced. Furthermore, given the scale of the site and other restrictions there is more limited opportunities for potential landscaping and screening.

The County Council considers there is greater opportunity for habitat creation at this location through wet woodland in the valley.

Study Area B – Delvyn's Lane

There are 5 potential options within the Study Area, and parts of the Study Area have been dismissed due to distance from the existing 400kV line; proximity to residential development; and openness of the landscape. The County Council has the following observations regarding this Study Area.

ECC would be concerned at any potential impact upon the verges of Delvyn's Lane, which is a designated Special Roadside Verge. In particular, paragraph 7.19 implies that some cutting back of trees and tree loss may be required on Delvyn's Lane to establish clearances beneath temporary overhead lines during construction, which are required to enable the resolution of technical issues identified in paragraph 7.5. It should be noted that the two Special Roadside Verges in the vicinity of this site are also Local Wildlife Sites, namely Pannells Ash Farm, Parkgate Farm Verge (Bra 141) and Castle Hedingham to Gestingthorpe (Bra 151)

It is noted that the preferred route for the delivery of the transformer is via the B1058 westbound and access would be required from the Sudbury Road into the Study Area. The County Council notes the transport/traffic impacts in paragraphs 7.128 – 7.132 regarding culverts; impacts at Halstead; potential oversail of the public highway on verges, hedgerows and trees, and the tight and bend nature of the local network. ECC would seek to be involved in any necessary engineering solutions and traffic management plans.

ECC agrees with the majority of National Grid's view regarding landscape and views within this Study Area. The landform is generally more open and rural in nature, with the western part of the Study Area is generally more open to the east and sensitive to change. It is also acknowledged that this location offers potential for more substantial screening using the existing Ramacre Wood, and capacity for new woodland and hedgerow planting Consideration would need to be given regarding the amenity impact on nearby properties at Parkgate Farm and Pannells Ash Farm, as well as wider afield near Gestingthorpe and Castle Hedingham.

Study Area B is largely characterised by large undulating arable fields with species rich hedgerow boundaries. ECC considers the Study Area offers significant opportunities to

create additional habitat and to significantly enhance existing habitats. Consideration should be given to the enhancement and management of the existing Special Roadside Verges (SRV)/Local Wildlife Sites at Delvyn's Lane. New grassland could be created to help support species within the SRVs and those existing semi natural habitats. There should be a minimum of 15 metres between the woodland edge and any physical structures.

Study Area C – west of A131 between Butlers Wood and Waldergrave Wood

There are 4 potential options within the Study Area, and parts of the Study Area have been dismissed due to distance from the existing 400kV line; proximity to residential development, less screening benefit from mature woodland; and openness of the landscape. The County Council has the following observations regarding this Study Area:

Butlers Wood and Waldegrave Wood are both designated as ancient woodlands. Such ancient woodland is an irreplaceable resource of great importance for its wildlife, its history and the contribution it makes to our diverse landscapes. The County Council seeks to play a vital role in ensuring their conservation, in particular through the planning system. It should be noted that NPPF, paragraph 118 states:

Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss;'

National Policy Statement EN-1, paragraph 5.3.14 also recognises the biodiversity value of ancient woodland and veteran trees. ECC would object to any of the ancient woodland being removed in order to provide alternative landscaping.

Study Area C contains two protected lanes, and some concerns have already been made concerning potential impact on Old Road from the 132kV underground cable and its `tranquillity' setting. The area, especially to the west, is generally regarded as open and rural in nature and options C3 and C4 would be visible from a relatively wide area to the south and east. National Grid preferred location (C2) is screened within Waldegrave and Butlers Wood, but is visible partly from the A131 to the east and the west. Views from the A131 traffic is considered minimal given the substation is set back from the road, and passing traffic will only briefly be subject to a full view of the substation. Additional screening and landscaping could provide further screening at the site entrance.

Essex County Council considers the proposed landscaping at the western end as being insufficient, and unsatisfactory in providing appropriate connectivity between the woodlands. Without additional screening, it is considered that the proposed development would result in a significant visual intrusion in this generally open landscape, particularly when viewed from the west.

ECC considers this Study Area has the greatest potential impact on biodiversity and would seek substantially more mitigation than presently identified in the report. The ecological impacts are potentially greatest at the National Grid preferred site (C2), as the proposal would reduce the connectivity between the woodlands; impact on habitats through lighting (paragraph 8.102) and provide least scope for habitat linkages between the woodlands.

However, there are opportunities for additional habitat creation and enhancement. If the site is progressed the County Council would seek to use the Defra Metric for Biodiversity Offsetting to assist in calculating the appropriate levels of habitat creation. The proposed extent of woodland creation is insufficient to mitigate potential impacts. ECC would seek the following, as a minimum, if the preferred site is progressed:

- a much greater extent of woodland/habitat creation at the western end to enclose the woodland environment;
- habitat creation across the full extent of the gap between the woodlands to improve the connectivity and ecological function of the woodland complex. This could include non woodland habitats such as ponds, grassland and scrub, especially below the existing 400kV overhead line;
- consideration be given to future support management of the existing woodlands, where appropriate

ECC would seek a minimum of 15 metres between the woodland edge and any physical structures.

The historic environment section does not consider the potential impact on any historic woodland features, such as woodland boundaries. Ancient woodlands have often established on previous `occupation sites', and hence appropriate archaeological evaluation will be required.