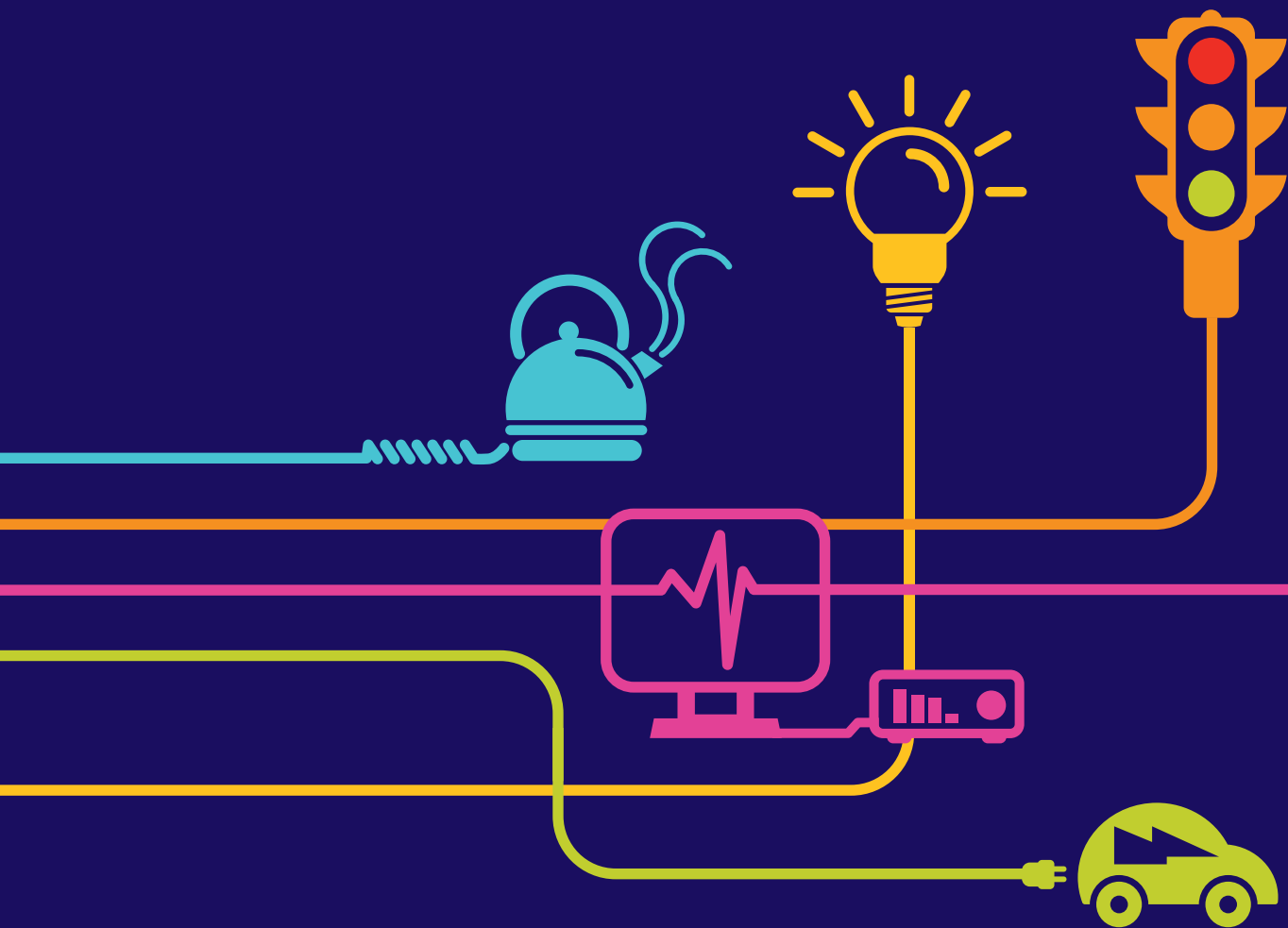


## Preferred Connection Option and Route Corridor Report

National Grid (Richborough Connection Project) Order

*First published in June 2013*







# **Richborough Connection Project**

## **Preferred Connection Option and Route Corridor Report**

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## Executive Summary

### The Richborough Connection Project

1. Nemo Link<sup>®</sup> proposes to construct an undersea electricity cable between Zeebrugge in Belgium and Richborough, near Sandwich in Kent, capable of carrying 1GW (1,000 MW) of electrical power. Nemo Link requires a connection to the National Grid high-voltage transmission network by 2018. Currently there is no National Grid high-voltage transmission network in the Richborough area. In order to ensure that this new electrical power can be connected to the National Grid high-voltage transmission network, National Grid will need to build a new 400kV connection to Richborough. This new infrastructure project is called the 'Richborough Connection' ("the Project").
2. The early stages of the Project identified various strategic options and route corridor options for the connection. Balancing all the information available, National Grid's view is that an overhead line connection between Richborough and Canterbury is the most appropriate way to join the high-voltage transmission network to Nemo Link. National Grid's view is that this solution achieves a balance between Government policy, guidance from professionals and statutory bodies, and National Grid's statutory duties and licence obligations.

### The Summer 2013 Consultation

3. In June 2013, The Strategic Options Report<sup>1</sup> and Route Corridor Study<sup>2</sup> were published and consultation began on 25th June 2013 to obtain the views of stakeholders on the proposed connection. The consultation period concluded on 9th August 2013 and all comments made through the consultation have been reported in the Summer 2013 Consultation Feedback Report<sup>3</sup>.
4. National Grid analysed the responses received and has taken these comments into account in its decision making. The comments raised, and National Grid's response to them can be found in the Summer 2013 Consultation Feedback Report. Comments received relating to the Nemo Link project have been referred to the promoters of that project, National Grid Nemo Link Limited (NGNLL)<sup>4</sup> and Elia the Belgian transmission system operator.

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<sup>1</sup> National Grid plc: Richborough Connection Project: Strategic Options Report for the South East Region: June 2013.

<sup>2</sup> National Grid plc: Richborough Connection Project: Route Corridor Study: June 2013.

<sup>3</sup> National Grid plc: Richborough Connection Project: Summer 2013 Consultation Feedback Report: November 2013.

<sup>4</sup> National Grid Nemo Link Limited (NGNLL) is a subsidiary of National Grid plc, and has been established specifically for the development of the Nemo Link. National Grid plc is one of the largest investor-owned utilities in the world. A separate subsidiary, National Grid Electricity Transmission plc (NGET) owns the high-voltage electricity transmission system in England and Wales and operates the system across Great Britain.

## Strategic Options

5. The Strategic Options Report (SOR) assessed six strategic options for the connection of the Nemo Link (three offshore options and three onshore options) to the high-voltage transmission network. These were:
  - Strategic Option 1 – Richborough to Canterbury North (onshore);
  - Strategic Option 2 – Richborough to Cleve Hill (onshore);
  - Strategic Option 3 – Richborough to Kemsley (onshore);
  - Strategic Option 4 – Richborough to Cleve Hill (offshore);
  - Strategic Option 5 – Richborough to Sellindge (offshore); and
  - Strategic Option 6 – Richborough to Kemsley (offshore).
6. The on-shore connections were further sub-divided to cover different technologies – overhead lines, underground cable and gas-insulated lines.
7. The three offshore options were found to incur substantially greater costs than the onshore options due to their length and the high cost of undersea cables. They could also have direct effects on a number of coastal international ecological designations, which could not be avoided.
8. Strategic Option 2 involves a longer connection route length and provides no benefit over Strategic Option 1. It was therefore recommended that Strategic Option 2 was not taken forward.
9. Looking at Strategic Option 3, a connection by Alternating Current (AC) overhead line (Strategic Option 3a) would be the most economic of the Kemsley connection options but at 48km would be much longer than an 18km connection to Canterbury North (Strategic Option 1). Strategic Option 3a would have a lower capital cost but would generate greater landscape and visual effects. There would also be cumulative effects associated with the existing 400kV overhead line in this area. Generally, for onshore options, the longer the route, the greater the environmental impact is likely to be.
10. Considering Strategic Option 1 further, the overhead line connection option (Strategic Option 1a) between Richborough and Canterbury North would be the least expensive of the three sub-options. Underground cable (Strategic Option 1b) or GIL connections (Strategic Option 1c) between Richborough and Canterbury North would be significantly more expensive and would offer limited landscape and visual benefits over Strategic Option 1a as existing overhead electricity infrastructure would be retained. While from a cost perspective, the onshore route between Richborough and Kemsley (Strategic Option SO3) would have the lowest capital cost of all strategic options, National Grid concluded that Strategic Option 1a, initially looking at an overhead line connection between Richborough and Canterbury, would best comply with its statutory obligations and national planning guidance. This option was presented as National Grid's preferred option in the 2013 Summer Consultation.



11. Through the 2013 Summer Consultation, stakeholders suggested some alternative strategic options. These included various subsea routes; combining the connection with the Broad Oak Reservoir pipeline; or cabling beneath the River Stour from Richborough to Canterbury. Alternative technologies were also suggested such as tunnelling and High Voltage Alternating Current (HVAC)/ High Voltage Direct Current (HVDC) links to Canterbury.
12. Representations received on all of the strategic options put forward by National Grid included concerns about effects on landscape character, particularly in relation to the Kent Downs Area of Outstanding Natural Beauty, and impacts on coastal landscapes. Concerns were also raised regarding ecology and archaeology in various areas. The potential effect on house prices along onshore strategic routes was also of concern.
13. National Grid has reviewed the comments raised in the consultation and these are considered in detail in the Summer 2013 Consultation Feedback Report. It has concluded that no additional issues were raised which would lead it to change its position that Strategic Option 1a should be the preferred Strategic Option.

### **Preferred Route Corridor**

14. On the basis of the original findings of the SOR, a Route Corridor Study (RCS) was undertaken to identify broad areas of land (known as route corridors) which could potentially accommodate an overhead line connection between Richborough and Canterbury. Two such corridors (See Figure 1) were identified. The North Corridor broadly follows the corridor occupied by an existing 132kV overhead line and is divided into 3 sub-options at its western end: A, B and C. There are also two scenarios to consider within the North Corridor involving the retention (Scenario 1) or removal (Scenario 2) of the existing 132kV overhead line from Richborough to Canterbury, owned by the local electricity distribution operator UK Power Networks. The South Corridor takes a south westerly route from Richborough and then progresses west to Canterbury approaching the substation from the western side of Fordwich.
15. The Route Corridor Study<sup>5</sup> (RCS) concluded that the option that performs best in terms of likely environmental effects is the North Corridor (Scenario 2) which assumes the removal of the existing 132kV overhead line from Richborough to Canterbury following development of a new 400kV overhead line within the corridor (placed either to the north or south of the existing 132kV overhead line). A second existing 132kV overhead line which runs from Richborough to the Isle of Thanet would remain in place. The removal of UK Power Networks' 132kV overhead line between Richborough and Canterbury North would require reaching a satisfactory agreement with UK Power Networks to ensure the provision of an equivalent reliable and secure supply to the local electricity network. This agreement has been reached in principle and will be refined as the project is developed in more detail.
16. At the Canterbury end of the route, the RCS concluded that there was minimal difference between Sub-options A and B, passing to the east and west of Broad Oak

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<sup>5</sup> National Grid plc: Richborough Connections Project: Route Corridor Study: June 2013

respectively, and therefore both would be presented at consultation. Sub-option C was not taken forward for further consideration, given its greater effects on environmental factors.

17. 383 representations were received during the Summer 2013 Consultation - the majority of which related to the selection of the route corridor. Representations in support of the North Corridor (Scenario 2) made reference to this corridor having the least environmental impact, particularly if the existing 132kV overhead line was removed. Impact on birds was a specific concern of many of the representations and continuing surveys will be required in later stages of the Project to minimise risk to birds and other wildlife. From an ecology perspective, there was a marginal preference for Sub-option B. There was no distinction between Sub-options A and B with regard to anticipated effects on landscape and views and Sub-option A was preferred based on anticipated effects on the historic environment.
18. Consultation responses also showed support for undergrounding of the whole route. A fully underground solution was not supported at the strategic options stage and, whilst in some environmentally sensitive areas it will be considered, comments relating to undergrounding do not affect the selection of the preferred route corridor. Socio-economic factors, such as impact on farming operations and tourism, were also raised and will be assessed further in the next stage of the project.
19. There were some representations in support of the South Corridor which considered that it would have a lesser impact on birds. Comments supporting this corridor also suggested that an overhead line should be sited in this corridor as it would be located close to fewer areas of dense housing than would be the case with the North Corridor.
20. Since the beginning of the Project, National Grid has been advised of a long-standing proposal for a new reservoir to the north of Broad Oak, within the general area of Sub-option B. This would be a new supply reservoir for drinking water with a surface area of approximately 250 hectares. However, the proposal has no planning status at present. National Grid, at this stage, considers it technically feasible to deliver a new connection within Sub-option B without affecting the delivery of the reservoir and is currently in liaison with South East Water in this regard.
21. National Grid recognises that Canterbury City Council has identified Strategic Site 2 at Broad Oak/Sturry as a proposed housing allocation for up to 1000 dwellings. This site is crossed by Sub-options A and B in the North Corridor. National Grid considers that a new connection within either Sub-option could be delivered whilst achieving delivery of the Strategic Site and will seek to work with the developer of the site to discuss the interaction between the proposals. The delivery of Sub-option A could have greater effects on the Strategic Site as it would result in a new electricity connection directly through the centre of the site, whereas Sub-option B only interacts with a corner of the site.

## **Conclusions**

22. Having taken all of the comments raised during the Summer 2013 Consultation into account, and through the process of back check and review, National Grid has decided to take forward an overhead line connection in the North Corridor, including Sub-option B, to the next stage. The North Corridor is considered to present the least environmentally constrained option, and Sub-option B would avoid much of the Strategic Site allocation at Broad Oak/Sturry. Of the two alternative scenarios, Scenario 2 would have the least environmental impact due to the removal of the 132kV overhead line between Richborough and Canterbury and this will be taken forward.

## **Next Steps**

23. The Summer 2013 Consultation Feedback Report is due to be published along with the announcement in November 2013. Now that a preferred corridor has been confirmed, detailed consideration will be given to alignments for an overhead line, pylon locations, and areas of particular sensitivity that may require an underground cable solution. These aspects will be addressed in the detailed design stage of the process. Further surveys and assessments will be carried out and the process of back check and review will continue.

24. There will also be further opportunities for people to provide their comments on the proposals for the project. A final, formal stage of consultation is targeted to take place in early 2015 before an application is submitted to the Secretary of State (through the Planning Inspectorate).

## **1. Introduction**

### **Purpose of the report**

- 1.1 This Preferred Connection Option and Route Corridor Report has been produced by National Grid Electricity Transmission (National Grid) and forms part of the pre-application procedures adopted by National Grid for such major infrastructure projects. The Richborough Connection would be classified as a Nationally Significant Infrastructure Project (NSIP) if the connection was proposed to be an overhead line and as such would be the subject of an application for an Order granting Development Consent under the Planning Act 2008.
- 1.2 The purpose of this report is to summarise the development of the Project to date and consider whether the findings identified in the Strategic Options Report (SOR)<sup>6</sup> and Route Corridor Study (RCS)<sup>7</sup> should be modified in light of more recent information and the outcomes of the Summer 2013 Consultation exercise. This report only considers those issues which are likely to impact upon the selection of the preferred Strategic Option and Route Corridor. Other comments raised in consultation, and National Grid's responses to them, are addressed in the Summer 2013 Consultation Feedback Report<sup>8</sup>.

### **Structure of the report**

- 1.3 This report sets out the background to the Project and reviews the findings of the Strategic Options process and the assessment of potential Route Corridors. The report then sets out the findings of the Summer 2013 Consultation and identifies the next steps in the process.
- 1.4 The report is structured as follows:
- Chapter 2 sets out the background to the Project, looking at the need for the proposed development and key stages in the Project development;
  - Chapter 3 considers the policy context for the Project;

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<sup>6</sup> National Grid plc: Richborough Connections Project: Strategic Options Report for the South East Region: June 2013

<sup>7</sup> National Grid plc: Richborough Connections Project: Route Corridor Study: June 2013

<sup>8</sup> National Grid plc: Richborough Connections Project: Summer 2013 Consultation Feedback Report: September 2013

- Chapter 4 identifies the strategic options and considers their assessment. It summarises the findings of the Strategic Options Report and the main comments raised through consultation.
- Chapter 5 identifies potential Route Corridors and considers their assessment. It summarises the findings of the Route Corridor Study and the main comments raised through consultation.
- Chapter 6 draws conclusions from the previous chapters and any changes affecting the Project since June 2013 when the Route Corridor Study was published. This chapter then goes on to confirm the preferred Strategic Option and Route Corridor and considers issues to be addressed in design development. This chapter also identifies the next steps in the development of the Project.

### **National Grid and its duties**

- 1.5 National Grid is the operator of the high-voltage transmission system for the whole of Great Britain and the owner of the high voltage transmission network in England and Wales.
- 1.6 National Grid's transmission system in England and Wales consists of approximately 7,200km of overhead lines and a further 700km of underground cabling, operating at 400kV and 275kV. The overhead lines and cables connect around 340 substations to form a highly interconnected network.
- 1.7 Under Section 9(2) of the Electricity Act 1989, National Grid has a duty:
- to develop and maintain an efficient, co-ordinated and economical system of electricity transmission; and
  - to facilitate competition in the supply and generation of electricity.
- 1.8 Section 38 and Schedule 9 of the Electricity Act require National Grid, when formulating proposals for new lines and other works, to
- (a) *"...have regard to the desirability of preserving natural beauty, of conserving flora, fauna, and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest;"* and
- (b) *do what [it] reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects".*

### **National Grid policy and approaches**

1.9 In its Stakeholder, Community and Amenity policy<sup>9</sup>, National Grid sets out how the company will meet the duty placed upon it by the aforementioned legislation.

This includes :

- only seeking to build new lines and substations where the existing transmission infrastructure cannot be upgraded to meet transmission security standards;
- seeking to avoid nationally and internationally designated areas where new infrastructure is required; and
- minimising the effects of new infrastructure on other sites valued for their amenity.

1.10 The Stakeholder, Community and Amenity Policy also commits to applying best practice methods, assessing the environmental impacts of proposals and identifying appropriate mitigation measures, and to promoting effective stakeholder and community engagement.

1.11 In September 2011, National Grid published its Approach to the Design and Routeing of New Electricity Transmission Lines<sup>10</sup>. This document describes the process which National Grid adopts for its project development. This involves increasing refinement of the design as more information is gathered about the proposal, its setting and constraints. In order to test different options, options appraisal<sup>11</sup> is used which takes account of a range of factors – environmental, socio-economic, technical and cost. This approach has been taken in the appraisal of both strategic options and route corridors and will continue to be applied through the remaining stages of this Project.

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<sup>9</sup> National Grid plc : National Grid's commitments when undertaking works in the UK - our Stakeholder, Community and Amenity Policy : February 2010

<sup>10</sup> National Grid plc: Approach to the Design and Routeing of New Electricity Transmission Lines : September 2011

<sup>11</sup> National Grid plc: Our Approach to Options Appraisal: 2012.

## 2. Project Background

### Project Need

- 2.1 In 2008 an application was made to National Grid Electricity Transmission (NGET) to connect a 1000MW (or 1GW) electricity High Voltage Direct Current (HVDC) interconnector at Richborough, near Sandwich in Kent. The project, named the Nemo Link<sup>®</sup>, is being jointly developed by National Grid Nemo Link Limited (NGNLL) and Elia, the Belgian transmission system operator.
- 2.2 Nemo Link is proposing to construct an electricity interconnector between the UK and Belgium. The Nemo Link interconnector features a subsea and underground cables, as well as a convertor station in each country connecting to the high-voltage electricity networks. Nemo Link will allow electricity to flow in either direction between the UK and Belgium. Nemo Link proposes to build the convertor station and electricity substation on a site, formerly occupied by the Richborough Power Station, near Sandwich in Kent. A planning application for these works has been submitted to Thanet and Dover District Council and is still being determined.
- 2.3 NGET has signed a connection agreement to join Nemo Link at Richborough to the UK's electricity transmission network.
- 2.4 The Need Case document for the Richborough Connection Project<sup>12</sup> explains the need to plan the extension of the National Electricity Transmission System (NETS) in the south-east of England in order to connect to the proposed 1000MW electricity interconnector (Nemo Link) between Belgium and Great Britain to the national electricity system.
- 2.5 There is currently no National Grid electricity transmission infrastructure in the immediate vicinity of the proposed location of the Nemo Link at Richborough. Therefore, in order to provide a transmission connection, new transmission infrastructure is required between Richborough and the existing transmission system, the nearest point being located about 20km away.

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<sup>12</sup> National Grid plc: Richborough Connection Project: Project Need Case: June 2013.

## **Project Development**

- 2.6 National Grid has examined several ways of making the connection between Nemo Link at Richborough and the National Grid high voltage electricity transmission network as set out in the Strategic Options Report (SOR). The SOR concludes that the strategic option of a connection between Richborough and Canterbury should be taken forward, and that initially a route for an overhead line route should be sought. The decision to take this approach was based on National Grid's view that this option best balances all the information and Government guidance available at this time.
- 2.7 On the basis of the findings of the SOR, a study has been undertaken to identify areas of land (known as route corridors) to accommodate an overhead line for a transmission connection between Richborough and Canterbury (the preferred strategic option). National Grid has identified two potential route corridors for an overhead line connection, the North and South Corridors (see Figure 1), and, within the North Corridor, two scenarios involving the retention (Scenario 1) or removal (Scenario 2) of an existing 132kV overhead line. The Route Corridor Study (RCS) concluded that building in the North Corridor including removal of the existing 132kV overhead line between Richborough and Canterbury (owned by UK Power Networks) would have the lowest level of environmental effects.
- 2.8 National Grid also identified three potential ways for the western end of the North Corridor to reach Canterbury North substation, and after careful consideration, included two of these as part of the North Corridor and referred to them as 'sub-options'. Details of these considerations and appraisals are contained within the RCS.
- 2.9 Consultation on the ways of making the connection (as set out in the SOR) and the route corridor options (as set out in the RCS) took place between 25th June 2013 and 9th August 2013, the first public consultation activity on this project. A Summer 2013 Consultation Feedback Report has been published which identifies and addresses all representations received in relation to this consultation.
- 2.10 The findings of the SOR and RCS and the responses to the Summer 2013 Consultation will enable National Grid to select the preferred connection to take forward to the next stage in the Project.



2.11 The detailed design of the connection will then commence and will be subject to further assessment and consultation. The detailed connection design will form the basis of the proposed application for an order granting development consent (the DCO application) which will be subject to formal publicity and consultation under s42, s47 and s48 of the Planning Act 2008. Feedback from that formal consultation will be taken into account in finalising any proposed DCO application before its submission to the Secretary of State (through the Planning Inspectorate).

### 3. National and Local Policies

3.1 Decision makers must give due consideration to the context provided by national and local policies, which are reviewed in this chapter of the report.

#### National Policy Statements

3.2 The context for any appraisal of options relating to energy infrastructure is provided by the Overarching National Policy Statement for Energy (EN-1). This states that in considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the IPC<sup>13</sup> should take into account:

- its potential benefits including its contribution to meeting the need for energy infrastructure, job creation and any long term or wider benefits; and
- its potential adverse impacts, including any long term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.

3.3 It goes on to note that, in this context, the IPC should take into account environmental, social and economic benefits and adverse impacts, at national, regional and local levels. The NPS provides guidance on assessment on a topic basis relevant to all energy projects which is supplemented by guidance specific to the project type. In the case of the Richborough Connection, the relevant guidance is to be found in the National Policy Statement for Electricity Networks Infrastructure (EN-5). EN-1 recognises that *"in most cases, there will be more than one technological approach by which it is possible to make such a connection or reinforce the network (for example, by overhead line or underground cable) and the costs and benefits of these alternatives should be properly considered as set out in EN-5 (in particular section 2.8) before any overhead line proposal is consented."* (EN-1 paragraph 3.7.10). Different technological approaches for the Richborough Connection have been considered in the SOR.

3.4 Paragraph 2.8.2 of EN-5 states that *"Government does not believe that development of overhead lines is generally incompatible in principle with*

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<sup>13</sup> The functions of the IPC were transferred to the Planning Inspectorate in April 2012

*developers' statutory duty under section 9 of the Electricity Act to have regard to amenity and to mitigate impacts. In practice new above ground electricity lines, whether supported by lattice steel towers/pylons or wooden poles, can give rise to adverse landscape and visual impacts, dependent upon their scale, siting, degree of screening and the nature of the landscape and local environment through which they are routed. For the most part these impacts can be mitigated. However, at particularly sensitive locations the potential adverse landscape and visual impacts of an overhead line proposal may make it unacceptable in planning terms, taking account of the specific local environment and context."*

- 3.5 EN-5 goes on to say that although Government expects that overhead lines will often be appropriate and their effects can often be mitigated, where there are serious concerns about the potential adverse landscape and visual effects of a proposed overhead line, *"the IPC will have to balance these against other relevant factors, including the need for the proposed infrastructure, the availability and cost of alternative sites and routes and methods of installation (including undergrounding)"*. The Richborough Connection is to be taken forward as an overhead line project. However, consideration will be given to potential mitigation measures, including undergrounding where this can be justified, as the project develops.
- 3.6 EN-5 states that consent should only be refused for overhead line proposals in favour of an underground line if *"...the benefits from the non-overhead line alternative will clearly outweigh any extra economic, social and environmental impacts and the technical difficulties are surmountable"*. In this context it should consider:
- the landscape in which the proposed line will be set, (in particular, the impact on residential areas, and those of natural beauty or historic importance such as National Parks, AONBs and the Broads);
  - the additional cost of any undergrounding; and
  - the environmental and archaeological consequences of undergrounding.

### National Planning Policy Framework

- 3.7 The National Planning Policy Framework<sup>14</sup> (NPPF) may be considered as an “important and relevant” matter to be considered in decision making for NSIPs. Paragraph 6 of the NPPF states that “*the purpose of the planning system is to contribute to the achievement of sustainable development*”. It goes on to note that planning has a key role to play in “*supporting the delivery of renewable and low carbon energy and associated infrastructure*”. The Richborough Connection will facilitate the development of the Nemo Link which will provide greater opportunities for the UK to trade in wider European power markets and to take advantage of energy generated from renewable sources in Europe, including several off-shore wind farms off the coast of Zeebrugge in Belgium. This will assist the UK to meet its renewable energy targets. While the NPPF does not include policies specifically related to electricity transmission infrastructure, it does include policies for conserving and enhancing the natural and historic environment which have been taken into account in planning and assessing strategic options and route corridors.
- 3.8 Paragraph 115 states that “*great weight should be given to conserving landscape and scenic beauty in National Parks and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty. The conservation of wildlife and cultural heritage are important considerations in all these areas...*”. The Kent Downs Area of Outstanding Natural Beauty (AONB) is located approximately 3km to the north of the project area.
- 3.9 Paragraph 118 of the NPPF calls on local planning authorities to aim to conserve and enhance biodiversity in determining planning applications by protecting nationally and internationally designated sites from development which would have an adverse effect upon them and, in all locations, by refusing development which could result in significant harm to biodiversity and which cannot be avoided or adequately mitigated or compensated. Specific mention is made of the need to protect irreplaceable habitats, including ancient woodland and veteran trees.
- 3.10 Within the area of interest for the Strategic Options and Route Corridor Study there are several international designations including Special Protection Areas

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<sup>14</sup> Department for Communities and Local Government : National Planning Policy Framework : March 2012

(SPA), Special Area of Conservation (SAC) and Ramsar sites, together with a number of other nationally designated Sites of Special Scientific Interest (SSSI).

- 3.11 Paragraph 128 of the NPPF states that in determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. Paragraph 132 states that *“when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation. The more important the asset, the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting.”* Subsequent paragraphs provide for weighing the harm to heritage assets against the public benefits which would be achieved through the proposed development.
- 3.12 Within the area of interest for the Strategic Options and Route Corridor Study, there are numerous heritage assets, including the Canterbury World Heritage Site, together with a large number of Scheduled Monuments, Listed Buildings and Conservation Areas.

#### Development Plans

- 3.13 Development Plans may be a material consideration in determining applications made under the Planning Act 2008 and a number of local policies need to be taken into consideration for this Project. The majority of the area between Richborough and Canterbury – affected by the onshore strategic options and route corridor options - falls under the jurisdiction of Canterbury City Council, with the part to the north of the River Stour within the area of Thanet District Council and the part to the east of the Little Stour within the area of Dover District Council.
- 3.14 Kent County Council (KCC) is the Highway Authority for the whole of the area of interest as well as the authority in charge of minerals and waste planning.
- 3.15 The Kent County Council Draft Minerals and Waste Plan 'Pre-submission' consultation document is currently under review and is likely to be adopted in Autumn 2014. There are a number of Minerals and Waste Policies currently adopted by Kent County Council which may be relevant to the Project. These allocate sites for various workings, which could be avoided at the detailed routeing stage.

- 3.16 Canterbury City Council's Local Plan was adopted in July 2006. The main saved policies (2009) relevant to this project relate to the protection of the landscape itself and features within the landscape, including woodland and ecological and heritage assets. Other relevant saved policies relate to traffic and transport and the local economy.
- 3.17 The Council's new Draft Local Plan was published in June 2013 and the consultation ended on 30th August 2013 but no further announcement regarding progress has been made to date.
- 3.18 The consultation document introduces two policies which could affect the North Corridor; a Strategic Development Site (SP3b) has been identified at Sturry/Broad Oak and a relief road through Sturry is also proposed.
- 3.19 Thanet District Council (TDC) Local Plan was adopted in 2006. The main saved policies (2009) of relevance within the Thanet District Adopted Local Plan relate to archaeology, landscape character, transportation and tourism.
- 3.20 Land at Richborough Power Station has been requested as a site for employment allocation within the Thanet LDF. The proposal is for the site to be used for B1/B2/B3 employment purposes and uses identified within the 2006 Thanet Local Plan under Policy EP14 (not saved in 2009).
- 3.21 A Thanet Local Plan Issues and Options document has been published and was subject to consultation between 4<sup>th</sup> June and 14<sup>th</sup> August 2013, although no new information has been released to date.
- 3.22 Dover District Council (DDC) Local Plan consists of saved policies from the 2002 Local Plan and policies within the adopted Core Strategy 2010.
- 3.23 The main policies of relevance within the Dover Core Strategy (adopted February 2010) and saved policies from the 2002 Local Plan relate to protection of the landscape, landscape designations and landscape features, the local economy, travel and transport and land allocations.

*Other Local Planning Authorities*

- 3.24 Some of the strategic options will need to take account of the planning policies of Swale Borough Council and Shepway District Council (as well as Thanet,

Canterbury, Dover and Kent). None of these policies would affect the route corridor options identified in the RCS.

## 4. Strategic Options

4.1 The Strategic Options Report (SOR) provides details of the appraisal of strategic options which could provide the additional transmission system capacity that is needed. The identified strategic options were:

- Strategic Option 1 – Richborough to Canterbury North (onshore);
- Strategic Option 2 – Richborough to Cleve Hill (onshore);
- Strategic Option 3 – Richborough to Kemsley (onshore);
- Strategic Option 4 – Richborough to Cleve Hill (offshore);
- Strategic Option 5 – Richborough to Sellindge (offshore); and
- Strategic Option 6 – Richborough to Kemsley (offshore).

4.2 All three of the onshore options were divided into three sub-options for appraisal: (a) overhead line, (b) underground cable and (c) Gas Insulated Line (GIL). All offshore options assumed one method of connection being a subsea cable (using Alternating Current (AC) cable).

4.3 The factors considered relevant to the options appraisal process were:

- Technical - some options were assessed as not technically viable and were therefore scoped out of the appraisal. This included some connection methods which would not be suitable for offshore options, such as overhead lines. HVDC technology was also scoped out of the options appraisal as this would require two additional converter stations which would not offer any benefit over AC cabling options<sup>15</sup>;
- Environmental - the environmental appraisal considered potential effects on receptors of national or international importance, split into three sub-topics: Landscape and Visual, Ecology and Historic Environment;
- Socio-economic - for the purposes of the strategic options assessment, the only socio-economic topic that was considered was the potential effect on local economic activities; and
- Cost - capital costs were based on the current financial year prices and based on generalised unit costs for the key elements of each option. Additionally, operational lifetime costs were calculated for the transmission

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<sup>15</sup> A further assessment of technology can be found in Chapter 4 of the SOR



circuits using the estimated capital cost, transmission losses and maintenance costs for transmission over 40 years<sup>16</sup>.

- 4.4 Analysis of these factors allowed National Grid to identify which option best meets its various statutory and licence obligations. The following sections of the chapter focus on the topics set out above.

## **Technical**

### *Summary of SOR Findings*

- 4.5 The SOR concluded that there is extensive operational experience of both overhead lines and underground cables but limited experience of GIL technology for the distances required. Connections to Canterbury North, Cleve Hill and Sellindge would trigger the need for additional voltage support equipment that would result in a more complex operational regime in the South East.
- 4.6 Although there would be an increasing scale of construction work connected to the increasing circuit lengths of the options, and in particular for the offshore options, no insurmountable delivery issues were identified at this stage for any of the options.
- 4.7 The strategic options were assessed as to whether they offer any major additional system benefits for the transmission system beyond meeting the identified reinforcement need. None of the options provide additional "system wide" capacity as they are essentially dedicated circuits supporting the Nemo Link. However, up to 800MW of additional capacity would be available on the transmission circuits for further generation or interconnection connected at Richborough.

### *Issues Raised in Consultation*

- 4.8 Alternative onshore and offshore strategic routes and connection points suggested through consultation included:
- Running a subsea cable to a point west of the Colne and then underground to Canterbury;
  - Various subsea routes coming on-shore at Reculver, Whitstable, Seasalter, Cleve Hill or Kemsley, passing up the Thames Estuary;

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<sup>16</sup> A further assessment of cost can be found in Appendix D of the SOR.

- Combining the connection with the Broad Oak Reservoir pipeline from Plucks Gutter to Broad Oak; and
- Create 'river runs' from Richborough to Canterbury, cable underneath the River Stour or underneath the tow paths that follow the river;
- An underground connection via Sellindge where there is an existing underground connection;
- A potential coastal/inshore underground cable route to another town on the coast e.g. Dover, Folkestone, where substations already exist.

4.9 An underground cable option was suggested using HVAC or continuing the HVDC link to Canterbury. It was also stated that transmission in HVDC form would mean the cables could be more effectively put underground.

*Response to Issues*

4.10 As part of the Summer 2013 consultation, National Grid published the "Richborough Connection Project Strategic Options Report for the South East Region June 2013". The report explains National Grid's assessment of a range of technology solutions, including subsea, fully underground and the use of Gas Insulated Line solutions.

4.11 The SOR drew attention to the high cost of marine cables and the effect which they would have on coastal ecology designations. These factors mitigate against suggestions for wholly or partial subsea routes. The proposal to install underground cables under the River Stour is unfeasible due to the adverse effects on the environment, much of which is designated for its nature conservation interest and the meandering nature of the river.

4.12 An underground AC connection to Canterbury and an offshore AC connection to Sellindge were considered as part of the SOR. HVDC technology solution was not included as part of the strategic options appraisal as this would require two additional convertor stations which would not offer any benefit over AC cabling options. The suggested use of DC onshore circuits was considered within the SOR and ruled out because of the high cost of AC-DC converter stations which would be required at both ends of the cable. The higher costs of converter stations would mean that DC would be more expensive than AC underground cabling and therefore in National Grid's view provide no benefit over other options considered

within the report. A continuation of the HVDC interconnector to Canterbury would be a matter for Nemo Link and not the Richborough Connection project.

- 4.13 The SOR concluded that an on-shore connection between Richborough and Canterbury (Strategic Option 1) was the option which best met National Grid's statutory duties and Government guidance. The report acknowledged that National Grid's approach will be to initially look for an overhead line route. The report notes that this view will be reviewed throughout the development of the project and following consultation with statutory and non-statutory bodies and local communities who will have the opportunity to comment on all options considered. If particular sensitive landscape and visual impacts are identified and cannot be avoided, the benefits of undergrounding sections of the overhead line will be considered which may include tunnel technology as necessary. As the project develops, National Grid will continue to backcheck and review its assessments, including developments in technology.
- 4.14 As part of the Summer 2013 Consultation National Grid published the "Richborough Connection Project Strategic Options Report for the South East Region June 2013". The report explains National Grid's assessment of a fully underground cable option to Canterbury.

#### *Conclusions*

- 4.15 The representations made through the 2013 Summer Consultation have been taken into account and would not alter the options identified and the technical appraisal.

#### **Environment**

##### *Summary of SOR Findings*

- 4.16 The environmental effects of onshore options generally increase with the extent of the works associated with each option. Hence, the effects of the same technology options for connections between Richborough and Canterbury would be generally less than for a connection between Richborough and Cleve Hill or Kemsley, given its shorter length.
- 4.17 Similar considerations apply to the offshore options; thus, the options Richborough-Cleve Hill (SO4) and Richborough-Kemsley (SO5) would result in similar types of environmental effects, although the scale of environmental effects

for the latter would be greater due to the increased length of the connection required through areas of high ecological sensitivity.

- 4.18 With regard to the onshore overhead line options, potential landscape, visual, ecological and heritage effects will generally be localised and normally capable of being mitigated. For underground cable options, the scope for habitat loss and effects on unidentified archaeology will be greater than for overhead line options, though in most cases appropriate mitigation strategies are available.
- 4.19 For the onshore options, the SOR concluded that, from an environmental perspective, options between Richborough and Canterbury (SO1) would be preferred to options between Richborough and Cleve Hill (SO2) or Kemsley (SO3). The landscape and visual effects of an overhead line option between Richborough and Kemsley (SO3a) would be more difficult to mitigate than either Strategic Option 3b or Strategic Option 3c. Strategic Option 5 (offshore) – Richborough to Sellindge is likely to impact more on the historic environment than other offshore options due to the extent of the onshore element of this option.
- 4.20 Offshore options would have substantially reduced landscape and visual effects. Most effects are likely to be short term but there would be some long term effects. The impact on unidentified archaeology would be less for offshore options, although there is potential for impact on protected and unprotected wrecks.
- 4.21 All on-shore routes exhibit concentrations of listed buildings and Scheduled Monuments. It should be possible to avoid direct effects on most heritage assets by careful routeing, although there is potential for temporary effects on the settings of such assets during the construction phase.
- 4.22 Any of the offshore options would have potential for major ecological effects, due to the concentration of overlapping national and international ecological designations in and around Pegwell Bay that could not be avoided. Such effects could be long-term in nature. Strategic Option 5 would have the least ecological effects of the offshore options.

#### *Issues Raised in Consultation*

- 4.23 Representations specific to the strategic options appraisal raised some general concerns in relation to the impact of an onshore overhead line on views and

landscape character. There were also concerns raised about birds being affected by overhead lines.

- 4.24 There were concerns that both overhead lines and underground cables would be damaging to buried archaeology and the environment generally. The point where underground cables and overhead lines meet (cable sealing end compound) were considered by one representation to be unsightly and prominent.
- 4.25 Comments stated that Strategic Option 1a (overhead line between Richborough and Canterbury) appears to be the least ecologically damaging option and preferable to building on an area of land that does not currently have an overhead line. Natural England considers that this option would pose least harm to the natural environment and would adversely affect fewer designated sites than other options.

*Response to Issues*

- 4.26 In response to the points raised, National Grid agrees that a strategic option from Richborough to Canterbury by overhead line would have the least effect on the ecology of the area and would have less effect on landscape character than other onshore options, as the corridor is already affected by overhead lines.
- 4.27 Following a review of the feedback provided in the Summer 2013 Consultation, National Grid considers that the environmental appraisals of strategic options remain robust. National Grid considers that the most appropriate way to make the connection is by an onshore overhead route, though further consideration will be given to undergrounding where this is justified.
- 4.28 National Grid has a duty under the Electricity Act (1989) to 'consider the desirability of preserving amenity' when undertaking projects (which includes effects on communities, landscape and visual amenity, cultural heritage and ecological resources). To satisfy this duty, National Grid seeks to avoid areas which are nationally or internationally designated for their landscape, wildlife or cultural significance. National Grid recognises that not all sites that are valued by, and are important for the wellbeing of, local communities are necessarily designated. National Grid's 'Our approach to the design and routeing of new electricity transmission lines' (2012) therefore seeks to ensure that all potential economic, environmental and social impacts of proposed projects are considered and not just those relating to designated sites.

- 4.29 Further environmental assessments will be carried out throughout the following stages of the Project including assessments of impacts on landscape and views, heritage and ecology and potential mitigation measures. This would include the effects of underground cables and related infrastructure should this form part of the proposal going forward.

#### *Conclusions*

- 4.30 It is considered that, in comparison to the onshore options, the subsea options would have substantially reduced landscape and visual effects. However, the subsea options have the potential for major ecological effects, including effects on internationally designated sites. From an environmental perspective the shorter onshore option between Richborough and Canterbury would be preferred to options between Richborough and Cleve Hill or Kemsley. Continuing the route to either of these locations would introduce additional environmental effects without realising any benefits. National Grid considers that the environmental appraisal of strategic options remains robust following review of the comments received in this subject matter through consultation.

#### **Socio-economics**

##### *Summary of SOR Findings*

- 4.31 The proposed energy park on the remaining land at the former Richborough power station site has the potential to be impacted upon although this is not yet in the construction phase and could be taken into account in the detailed connection design. Careful routeing of the offshore options where they would connect to land would be necessary to avoid possible impacts on coastal local economies. Other than these factors, none of the options would affect any major areas of economic activity.

##### *Issues Raised in Consultation*

- 4.32 Concerns were raised regarding the impact on house prices.

##### *Response to Issues*

- 4.33 The issue of property price is not a relevant factor in the decision making process for the strategic options or route corridor options. The siting of pylons or underground cable will be discussed with landowners or occupiers when establishing the detailed route of the connection. The relevant legislation provides that those whose property will have National Grid equipment sited on or across it (e.g. if a pylon is located on the land or the conductors/ wires – oversail a landholding) are entitled to compensation. National Grid works closely with any landowners on whose land its equipment is sited to negotiate compensation terms if this is appropriate. Any party, who feels that they may have a claim for compensation, is recommended to seek professional advice and /or contact National Grid who will be happy to discuss their individual situation.

#### *Conclusions*

- 4.34 The representations made through the 2013 Summer Consultation have been taken into account and the main concern raised during consultation in relation to socio-economic impact was the impact on house prices. This is not a determining factor for assessing either strategic options or route corridor options.

#### **Cost**

#### *Summary of SOR Findings*

- 4.35 The SOR finds that of all options, SO3 (Richborough to Kemsley) would have the lowest capital cost of £105m based on an overhead line circuit construction. This is because it does not require the additional voltage support equipment associated with Strategic Options 1, 2, 4 or 5. Strategic Options 2, 4, 5 and 6 are more expensive than SO1 because they involve longer transmission circuits. The connections to Cleve Hill and Sellindge also require the additional voltage support equipment. The transmission circuits associated with Strategic Option 1 would have the lowest lifetime cost compared to all other options.

#### *Issues Raised in Consultation*

- 4.36 In relation to cost, one respondent commented that an overground solution is sensible for economic reasons and the cost of undergrounding would be too great. However, comments were also received stating that the whole route should be placed underground irrespective of cost. Another commented that National Grid

should upgrade the existing line, and combine high and low voltage lines in one consolidated system (for economic value).

*Response to Issues*

- 4.37 Most of the existing network National Grid Transmission system takes the form of overhead lines, as these provide the most economical solution to the energy transmission challenge, and therefore have the least effect on consumer bills (when compared to alternatives, the costs of overhead lines are generally lower). Operationally overhead lines offer higher reliability; for example, when faults occur on lines they can be more easily and quickly located and repaired.
- 4.38 As part of the Summer 2013 consultation National Grid published the "Richborough Connection Project Strategic Options Report for the South East Region June 2013". The report explains National Grid's assessment of a range of technology solutions, including subsea, fully underground and the use of Gas Insulated Line solutions. The cost comparisons in this report are clear. One of National Grid's statutory duties is to develop and maintain an economical system of electricity transmission, which means that it cannot pursue options irrespective of cost. National Policy Statement EN-5 states that although Government expects that overhead lines will often be appropriate and their effects can often be mitigated, where there are serious concerns about the potential adverse landscape and visual effects of a proposed overhead line, *"the IPC will have to balance these against other relevant factors, including the need for the proposed infrastructure, the availability and cost of alternative sites and routes and methods of installation (including underground)."*
- 4.39 It is not possible to upgrade the existing 132kV overhead line to 400kV because there is insufficient safety clearance and the structural specification of the existing pylons is not designated to take the increase in capacity. It would be necessary to rebuild the line, which is effectively what is being proposed in Strategic Option 1, Scenario 2.
- 4.40 As the project develops National Grid will continue to backcheck and review its assessments, including changes to base cost information.



### *Conclusions*

- 4.41 The representations made through the 2013 Summer Consultation have been taken into account and none of the comments received would result in National Grid reviewing its assessment of cost for the Project.

### **Conclusions of the Strategic Options process**

- 4.42 National Grid has taken into consideration the findings of the SOR and the responses received during the Summer 2013 consultation. From an environmental, technical and socio-economic point of view, an onshore Strategic Option between Richborough and Canterbury with an overhead line route (SO1a) would best meet National Grid's statutory duties and Government guidance. While from a cost perspective, the onshore route between Richborough and Kemsley (SO3) would have the lowest capital cost of all strategic options.
- 4.43 Although representations had suggested other options, including wholly or partly subsea routes and extensive undergrounding, these would incur disadvantages in terms of both higher costs and environmental effects.
- 4.44 National Grid considers that Strategic Option 1a is compliant with National Policy Statement EN-5 in that, when balancing environmental, technical, cost and socio-economic factors, an overhead line from Richborough to Canterbury North is the most appropriate. Taking all factors into consideration, National Grid remains of the view that Strategic Option 1a should be taken forward to the next stage of the Project. This decision will continue to be reviewed throughout the development of the project and following consultation with local communities.

## 5. Route Corridor Study

5.1 The Route Corridor Study (RCS) considered potential route corridor options within Strategic Option 1 to accommodate a 400kV overhead line between a proposed substation for the Nemo Link interconnector, located at the former Richborough power station site near Sandwich in Kent, and the existing Canterbury North substation.

5.2 The RCS considered the effects of two types of overhead line supports: the lattice steel pylon; and the T-pylon, within the potential route corridors. However, the RCS does not compare or express a preference between the two pylon types.

5.3 Two corridor options were identified:

- North Corridor – approximate length 19.6km – a corridor that follows the existing 132kV overhead line from Richborough to Canterbury. Within the North Corridor, there are Sub-options A, B and C at the western end of the corridor.
  - Sub-option A – passes between Broad Oak and Sturry before turning south to approach the substation from the east;
  - Sub-option B – passes north of Broad Oak before turning south towards the substation;
  - Sub-option C – a corridor that partly follows the route of B and then close to the Barton Down landfill site adopts the route of the existing National Grid 400kV Canterbury North–Kemsley overhead line. The existing 400kV line would be diverted to take a different route to connect to Canterbury North substation.

Within the North Corridor, there are also two scenarios:

- Scenario 1 includes the retention of the existing 132kV overhead line from Richborough to Canterbury and development of a new 400kV overhead line to the north or south of the existing overhead lines in the corridor; and
- Scenario 2 assumes the removal of the existing 132kV overhead line from Richborough to Canterbury following development of a new overhead line within the corridor.

- Under both scenarios the existing 132kV overhead line from Richborough to the Isle of Thanet which would remain in place.
  
- South Corridor – approximate length 19.5km – a corridor, which currently has no overhead line infrastructure, that follows an alternative route to Canterbury, in the southern part of the study area, running to the north of Ash and Wickhambreaux and approaching Canterbury North substation to the west of Fordwich.

5.4 The factors considered relevant to the options appraisal process were:

- Technical – in the case of this Project, the corridor options are similar in length and complexity and this factor would not be a material differentiator;
- Environmental - the environmental appraisal considered three sub-topics: Landscape and Visual, Ecology and Historic Environment as well as other factors such as flood risk;
- Socio-economic - for the purposes of assessing the route corridor options, socio economic factors were scoped out. However, local economic activities, traffic and transport and other comments were brought up through consultation and are therefore featured below; and
- Cost - capital costs were based on the current financial year prices and based on generalised unit costs for the key elements of each option. Additionally, operational lifetime costs were calculated using the estimated capital cost, transmission losses and maintenance costs for transmission circuits over 40 years<sup>17</sup>.

5.5 Analysis of these factors allowed National Grid to identify which option best meets its various statutory and licence obligations. The following sections of the chapter focus on the topics set out above.

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<sup>17</sup> A further assessment of cost can be found in Appendix 3 of the RCS.

## **Technical**

### *Summary of RCS Findings*

- 5.6 The technical issues which were considered in the SOR are not differentiators at the route corridor selection stage, as the same technology type is being considered in each route corridor option. As the corridor options are similar in length and complexity, and all relate to an overhead line option, other technical issues were not a material differentiator in the appraisal and selection of the preferred route corridor option.
- 5.7 This section of the report will consider those comments received through the Summer 2013 consultation of a technical nature and examine if they influence the appraisal of route corridor options.

### *Issues Raised in Consultation*

- 5.8 A number of issues were raised in relation to undergrounding including suggestions to underground the whole or part of the route, particularly through the Broad Oak Valley and along the river near Canterbury. There were also concerns regarding the potential impact of undergrounding on modern ploughing and warming of farm land. Safety issues to do with undergrounding were also raised.
- 5.9 Comments were received relating to issues of severe weather and black outs occurring if overhead lines are used. Areas like Wickhambreaux were said to suffer from power cuts when there is any strong wind.
- 5.10 Some representations noted that the North Corridor benefitted from existing infrastructure and follows the existing overhead line, railway line and A28. Comments also noted that this would result in easier access for maintenance with less disruption. The point was raised that consideration needs to be given to access across the marshland south of the railway line. It was also noted that existing culverts and gateways are unlikely to be strong enough to support heavy construction machinery. To access land south of the railway, consideration will also need to be given to access points and possibly the need to upgrade level crossings.

- 5.11 There was some support for different pylon designs – namely the T-pylon design on the grounds that its lower height would make it less prominent. Others opposed the use of the T-pylon design as the solid central column was considered more prominent.

*Response to Issues*

- 5.12 At this stage of the project a detailed route for the connection has not been identified. As per the findings of the SOR and the subsequent review of feedback received (as set out in Chapter 4), the option of an overhead line route between Richborough and Canterbury has been identified as the preferred connection option to be taken forward. Undergrounding the whole connection was not selected as the preferred strategic option. In developing a detailed route alignment, consideration will be given to undergrounding part of the connection, where this can be justified.
- 5.13 Overhead lines are designed to cope with extreme weather conditions and localised conditions would not therefore help to differentiate between corridors.
- 5.14 Following the selection of the preferred route corridor, National Grid will conduct a number of engineering and environmental surveys to help identify the precise siting of new transmission pylons and sections of underground cable if required. As part of that process we will also seek to agree the routes and timing of temporary access tracks and construction compounds. This will include discussions with landowners and occupiers, Network Rail (should access across the railway line be required) and local highways authorities for road access. Access for construction is not an issue which would preclude the selection of either corridor.
- 5.15 At this stage of the project, the pylon type has not been identified. National Grid will continue to assess the pylon type available as it formulates the next stage of its proposals.

*Conclusions*

- 5.16 National Grid has taken into account all comments received in relation to technical matters and has concluded that the issues raised would not result in changes being made to the route corridor identified. It is not possible to differentiate between the route corridor options on technical grounds.

## **Environment**

### *Summary of RCS Findings*

- 5.17 The environmental sub-topics which were employed to identify differences between the route corridors were landscape, visual amenity, ecology and historic environment. The results of the assessments of these sub-topics are summarised below.
- 5.18 The North Corridor (Scenario 2) would give rise to a lower level of effects on heritage assets and is therefore preferred from a historic environment point of view. The introduction of a new overhead line into the South Corridor, an area without such infrastructure, would give rise to a greater degree of change to historic environment receptors, including a number of conservation areas, Grade I listed buildings and the Richborough Castle scheduled monument.
- 5.19 The environmental appraisal within the RCS found that the North Corridor (Scenario 2) would have the lowest level of environmental effects.
- 5.20 Three sub-options were identified in the North Corridor to connect into Canterbury North substation. Sub-option C would have the greatest level of effects on environmental grounds when assessed against all sub-topics. The preference based on anticipated effects on historic environment is Sub-option A which envisages a new 400kV overhead line built partly in a corridor based on the approximate route of an existing 132kV overhead line. The scale of change would be lower than for other sub-options.
- 5.21 There is no distinction between Sub-options A and B with regard to effects on landscape and visual amenity. The preference based on anticipated effects on the historic environment is Sub-option A. There is a marginal preference for Sub-option B over Sub-option A based on anticipated effects on ecology. This sub-option would result in less tree loss to designated sites.
- 5.22 The RCS noted that the sub-options may be affected by sites to be taken forward in Canterbury City Council's Draft Local Plan, and that this would be reviewed in the light of any new relevant information. This is considered further below. The RCS concluded that the preferred route corridor on environmental grounds was

the North Corridor, both Sub-options A and B (Scenario 2) as it would have the lowest level of environmental effects.

- 5.23 The South Corridor would introduce overhead line infrastructure to a number of landscape character areas where there is no such infrastructure currently. Choosing the South Corridor would also introduce views of overhead line infrastructure to parts of a regional trail and a Sustrans route where there is none currently, as well as to a number of villages and individual residential properties where there is no existing overhead line infrastructure. In all cases the proposed overhead line infrastructure in the South Corridor would result in a greater scale of change than the North Corridor and a greater level of adverse effects. The removal of the 132kV overhead line under North Corridor (Scenario 2) means that this would result in lower effects on landscape and visual amenity than North Corridor (Scenario 1) and would be the preferred option from this point of view.
- 5.24 Both corridors have potential to have adverse effects on birds listed within the Stodmarsh, Thanet Coast and Sandwich and The Swale SPA and Ramsar citations and species listed in the citations for Preston Marshes SSSI and Sandwich Bay to Hacklinge Marshes SSSI. Theoretical collision risk would be greater where a new 400kV overhead line would run parallel to existing 132kV overhead lines as in North Corridor (Scenario 1). However, with the North Corridor (Scenario 2) the overall bird collision risk is likely to remain unchanged due to the removal of the existing 132kV overhead line and the replacement with a new 400kV overhead line. Using the South Corridor, the introduction of a 400kV overhead line in the landscape that is currently without such infrastructure would introduce a new collision risk along a length of the corridor and in particular where the corridor crosses the Preston Marshes SSSI.
- 5.25 Both corridors would have potential adverse effects on Local Wildlife Sites. There would be lesser effects on woodland with the North Corridor than the South Corridor. North Corridor (Scenario 2) offers some potential for woodland reinstatement. Overall this would be the preferred option on ecology grounds.

#### *Issues Raised in Consultation*

- 5.26 This section has been split into Landscape and Views, Ecology and Historic Environment for ease of reference. Any other environmental issues have been captured in the section 'Other'.

### Landscape and Views

#### North Corridor

- 5.27 It was noted that the existing 132kV line could be followed and the existing pylons removed resulting in a less visually and environmentally intrusive route. Kent County Council supported the North Corridor on that basis. The comment was also made that residents in the North Corridor are used to pylons and the visual impact on the countryside will be less. However, others commented that people in the North Corridor should not have to have more pylons. One asked why the route cannot follow the complete line of pylons right into Canterbury.
- 5.28 Concerns were raised in relation to the proximity of pylons to respondent's properties/land and the impact on their views. Others commented that the North Corridor would result in a lesser impact on the landscape.
- 5.29 Comments were received in relation to the quality of the landscape within the North Corridor, noting that it contains mostly arable marshland and farmland of poor quality, furthest away from the AONB. There were also, however, comments stating that development within this corridor would impact on landscape considerations – new pylons would be constructed on the slopes of the Stour Valley and appear obtrusive in this location.

#### Sub-Options

- 5.30 It was suggested that Sub-Option A would be too close to residential properties and it was proposed that undergrounding be considered in the Broad Oak area. Other comments suggested that Sub-Option A was considered preferable in terms of the effects on views of Canterbury from the east and it having the least environmental impact when the existing cables are removed.
- 5.31 It was also considered that diverting the route through Den Grove Wood (Sub Option A) seems contrary to the aims of the NPPF and impacts upon the local landscape character.
- 5.32 It was noted that Sub-Option B would seem to be less of a blight as the woods would provide screening. Comments also noted that Sub-Option B would



introduce tall pylons in an area of significant open views, impacting on the visual landscape.

- 5.33 It was noted that Sub-Option C passes through environmentally sensitive areas.

#### South Corridor

- 5.34 Representations noted that the South Corridor is sited within the vicinity of resident's properties, impacting on the enjoyment and views of their properties. It was also noted that this area is wide and flat and pylons would be seen from miles around in a countryside that is varied, interesting, unspoilt and attractive. There was a suggestion that, should the South Corridor be selected, undergrounding could be used to protect the setting of Fordwich. Others proposed more extensive undergrounding on this corridor.

#### General

- 5.35 Some considered that the area around Canterbury is already highly polluted and erecting more pylons would be detrimental to the landscape. Impact on the Kent Downs AONB was also noted and it was questioned whether as a result of a Landscape and Visual Impact Assessment (LVIA) which included views from the AONB, undergrounding would be considered. The hamlets of Weddington, Nash, Walmestone and Deerson were noted as unspoilt locations within the countryside and Supperton Farm, Wickhambreaux and the settlement of Swanton are in characterful undulating countryside.
- 5.36 Some stated that the proposal is unsympathetic to the nature of the area with regard to its geographic and topographical location, and the potential visual impact. It was stated that the Stour Valley and marshes do not have the capacity to take such large scale infrastructure and re-using the existing routes is the only viable option. Concern was also raised about the visual impact of the T-pylon, particularly in relation to other visually significant buildings and contrasting styles of the traditional pylons.
- 5.37 Natural England considered that the North Corridor would pose less risk to the Kent Downs AONB than would the South Corridor.
- 5.38 Kent County Council considered that in landscape terms, the North Corridor (Scenario 2) should be considered in more detail. It opposed proposals to

introduce overhead lines into an area where none exist, as would be the case with the South Corridor.

### Ecology

- 5.39 Many comments related to the level of consideration when assessing options and various further assessments were suggested including: impacts on European sites and interpretation of the legislation; a full Appropriate Assessment; a Habitats Regulations Assessment; assessment of the likely indirect impacts on the Thanet Coast and Sandwich Bay SPA and Stodmarsh SPA as a result of the collision risk to SPA birds; and impacts within supporting habitats at Ash Levels and South Richborough Pasture LWS.
- 5.40 Concern was raised in relation to impact on a number of bird species and it was noted that a greater number of migrating birds would be expected in the North Corridor and due to the proximity of the North Corridor to the SPAs and wetland habitats a number of bird species would be impacted on, although it is acknowledged that dismantling the existing infrastructure would be likely to reduce the collision risk. It was noted that the North Corridor would be used by birds more than the South Corridor and if the impacts cannot be successfully mitigated then alternative routes may need to be considered. Particular concern was raised about effects on the movement of geese, wildfowl and swans at Seaton Lakes.
- 5.41 Concerns were raised in relation to ecological harm and habitat loss at: West Blean and Thornden Woods SSSI; Chislet Marshes, Sarre Penn and Preston Marshes; Little Hall and Kemberland Woods and Pasture; River Great Ashford and Fordwich; Thanet Coast and Sandwich Bay and Stodmarsh SPA and Stodmarsh Nature Reserve (SSSI); Stodmarsh Westbere Ramsar site; Little Stour and Great Stour Valley; and ancient woodland between Wickhambreaux and Fordwich and Dengrove Woodland.
- 5.42 It was stated that within the EIA, designated features and protected species present within the sites and adjacent areas should be assessed. Of particular concern were: great crested newts; lizards; grass snakes; bats; owls; migratory birds; rare orchids; and dormouse.
- 5.43 It was suggested that, within the South Corridor, the impact on Local Wildlife Sites could be as acute as that in the North Corridor. It was stated that the

preferred route is likely to impact upon two Biodiversity Opportunity Areas and could cause harmful impacts. However, it was also suggested that the North Corridor (scenario 2 with existing 132kV overhead line removed) is the shorter and most direct route and, based on current evidence, would pose less risk to wildlife than the South Corridor. The South Corridor was considered by some respondents to be less preferable as it has no pylons, has a SSSI, conservation interest, species areas and other environmental areas that need protecting. Careful avoidance and mitigation measures were considered necessary for either corridor.

- 5.44 Sub-option A was noted to involve construction through an area of ancient woodland and be harmful to habitats. Sub-Option B was considered harmful as it is close to the landfill site which was to be designated as a country park.
- 5.45 Natural England's key concern was the potential impact on bird species. It considered that the North Corridor (Scenario 2 with existing 132kV overhead line removed) would pose less risk to wildlife and Sub-option B is likely to be preferable from a natural environment perspective.
- 5.46 The Environment Agency raised no objections to the proposals but drew attention to the value of the Lower Stour and the need to take this and flood risk into account in detailed route planning.

#### Historic Environment

- 5.47 It was considered that the historic landscape was not sufficiently assessed in the RCS and the assessment was not sufficient to enable confident conclusions to be drawn. In particular, issues were raised regarding the impact on: the scheduled Anglo Saxon cemetery at Sarre; Canterbury Cathedral, St Augustine's Abbey and St Martin's Church World Heritage Site; Richborough Fort including the buried amphitheatre adjacent to the fort; scheduled ancient monuments at Richborough Castle and Chequer Court; the Grade I listed church of St. Mildred, Preston Court; Grade I listed St. Mary Magdalene church, Monkton; Grade II\* listed Gore Street Farmhouse; the Grade II listed Elbridge House; Fordwich Conservation Area; and the route of the Roman road between Canterbury and Richborough. Some respondents also considered that nationally important undesignated sites have not been adequately assessed.

- 5.48 It was also suggested that there would not be substantially harmful historic environment impacts resulting from either option, although there would be a degree of harm to heritage significance which will need to be assessed and quantified as part of an EIA. It was, however, noted that the extent of any harm to the significance of listed buildings, scheduled monuments, conservation areas and undesignated archaeology could be mitigated through detailed design.
- 5.49 Some commented that there are likely to be fewer historic environment impacts associated with the North Corridor, particularly if the existing lower voltage line were removed. It was also noted that whilst the number of heritage assets likely to be affected by the South Corridor is comparable to the North Corridor, there is likely to be greater harm to the significance of some assets affected only by the South Corridor.
- 5.50 Comments noted that Sub-option A would create new pylons on the slopes of the Stour Valley, within view of the Bell Harry Tower at Canterbury Cathedral causing visual impact and impacting on the greater setting of the Cathedral.
- 5.51 Some comments stated that Sub-option B would run through less sensitive countryside and would result in lesser impacts on the setting of Canterbury Cathedral, although others stated that Sub-option B would create a greater impact on the setting of the Cathedral.
- 5.52 Comments suggested that both sub-options will impact on the setting of the City of Canterbury and particularly its Cathedral.
- 5.53 One comment clarified that the draft Canterbury Landscape Character and Biodiversity Appraisal dated August 2012 identifies the landscape in both North and South as an important part of the historic visual setting of Canterbury, with its World Heritage site of the Cathedral and St. Augustine's Abbey. The setting is further referred to in the Council's recent Conservation Area Appraisal Document.
- 5.54 English Heritage did not consider that any of the options/sub-options would result in substantially harmful effects on the historic environment. It considered that the effects on the historic environment of the North Corridor would be less than those of the South Corridor and could be further reduced by adopting Scenario 2.
- 5.55 Kent County Council concluded that in heritage terms, the North Corridor (Scenario 2) should be considered in more detail.

### Other

- 5.56 It was noted that Richborough is on a flood plain and concerns were raised that there may be flooding or hydrology risks within the area which need to be considered and mitigated for in particular for the proposed construction methods.
- 5.57 Comments highlighted the history of mining in the area (in particular at Deerson Farm) which could make the land unsuitable for construction due to land stability and a history of subsidence and underground springs near Hales Place which would cause safety issues for undergrounding options. It was further noted that National Grid should take into account the ground conditions (water resource and quality and contamination).
- 5.58 Impact on land drains was raised as an issue which needs consideration to give a remedial drainage scheme from the outset.

### *Response to Issues*

### Landscape and Views

- 5.59 New high voltage transmission infrastructure can adversely affect sites identified for their environmental value. This is acknowledged in the RCS where designated sites and sensitive areas were considered in identifying the corridors.
- 5.60 National Grid considers all viable options when it comes to route planning, and will avoid designated and environmentally sensitive areas wherever possible. However, it is not always possible to avoid such areas, and in such situations National Grid will strive to minimise the impact on them and to ensure that measures are taken to prevent, reduce and where possible offset any significant adverse effects.
- 5.61 The purpose of an AONB designation is to protect and enhance the natural beauty of an area. Neither route corridor passes within the Kent Downs AONB but the South Corridor is closest to it. The closest the study area comes to the AONB is at Patixbourne at a distance of 3km. The landscape and visual impact of the preferred route (including potential effects on the AONB) will be assessed further through the formal landscape and visual impact assessment as part of the Environmental Impact Assessment (EIA) on the route of the connection within the preferred corridor.

- 5.62 The RCS considered the potential effects on views, settlement, woodland and the landscape generally. Whilst both corridors directly affect all of these factors, those in the North Corridor are already affected by existing overhead line infrastructure. Introduction of overhead line infrastructure in the South Corridor where it is presently absent would result in a greater scale of change and greater adverse effects.
- 5.63 National Grid appreciates that the construction of a new overhead line inevitably leads to a degree of visual intrusion which will vary from different viewpoints. It accepts that it is impossible to fully screen views of any new overhead line. However, when considering the detailed connection design, National Grid will give careful consideration to how significant visual impacts can be minimised. This will primarily be in routeing the overhead line, consideration of pylon design and, where possible, making use of natural features such as woodland blocks and changes in topography to help screen and act as a backdrop. The benefits of undergrounding sections of the overhead line will also be considered in particularly environmentally sensitive areas.
- 5.64 The proposed detailed connection design, including the most suitable type of pylon to be used, will be determined at the detailed design stage. The T-pylon may appear more visually prominent in close views due to the solid central column and cross beam. However, being shorter than the standard steel lattice pylon there may be more effective ways to background and screen with vegetation.
- 5.65 If a T-pylon was used in the North Corridor, the additional structure introduced in landscape and views would be noticeably different from the lattice steel pylons which are currently present on the existing 132kV overhead line. A new overhead line in the South Corridor using a lattice steel pylon or the T-pylon would give rise to similar effects on landscape and views as no infrastructure currently exists.

#### Ecology

- 5.66 The RCS recognises that wildlife would be affected by a new overhead line in the South Corridor where in some locations there is no existing overhead line. Approximately 13km of the South Corridor has no existing overhead line infrastructure. Introduction of overhead line infrastructure in the South Corridor where it is presently absent would result in a greater scale of change and greater adverse effects.

- 5.67 A new connection has the potential to cause loss of sensitive habitats on each of the corridors. However, detailed surveys will be undertaken to determine the location of sensitive habitats and this information will be considered during the next stage of the project - the detailed design stage of the scheme. Where there is potential for impacts on sensitive habitats, avoidance and mitigation measures will be proposed and implemented in agreement with the advisory environmental organisations.
- 5.68 The RCS recognises that Sub-option B is likely to cause marginally less adverse effects on ancient woodland than Sub-option A. Sub-option B has more flexibility to avoid Kemberland Wood and Lynne Wood.
- 5.69 The RCS recognises that the South Corridor has direct impacts on the Preston Marshes SSSI. The bird surveys currently being undertaken will help establish whether there would be any adverse effects on birds in the locality.
- 5.70 National Grid acknowledges within the RCS that construction of overhead lines has the potential to introduce an increase in collision risk to species of birds. This has been addressed in the RCS by seeking to avoid sites including SPAs, Ramsar sites, SACs and SSSIs which have been designated for their bird interest. National Grid has also undertaken desk and field studies of birds during winter 2012/13, focussing on species at risk of collision with overhead lines, and are continuing with these surveys during 2013 and into 2014. Natural England is also being consulted on the issue of collision risk. Where necessary, mitigation (such as the installation of bird deflectors) will be proposed and implemented in agreement with statutory consultees to reduce collision risk.
- 5.71 During construction of a new connection there is potential to affect protected species. It is likely that mitigation will be required for some species and will be agreed with statutory consultees. However, this is unlikely to be considered a material consideration when determining the route corridor.

#### Historic Environment

- 5.72 National Grid acknowledges the importance of the historic environment and takes into account the legislation, policy and guidance relevant to this topic when developing its proposals. Designated heritage assets (Scheduled Monuments, Listed Buildings, Conservation Areas and the World Heritage Site) were considered when identifying corridors and in the RCS. Non-designated heritage

assets identified from the Kent Historic Environment Record and National Monuments Record, and the Kent Historic Landscape Characterisation project were also considered during the preparation of the RCS.

- 5.73 The RCS identified that there were a number of Listed Buildings, Conservation Areas and Scheduled Monuments within the study area. These include: the Canterbury Cathedral, St. Augustine's Abbey and St. Martin's Church World Heritage Site; Richborough Roman Fort Scheduled Monument; the Grade I listed churches at Chislet, Preston Court and Elmstone, the Grade II\* listed buildings at Gore Street and Elbridge House; and 15 Conservation Areas including Fordwich and Sturry. However, the majority of the designated heritage assets were avoided by both the North and South corridors.
- 5.74 The historic landscape character of the corridor options study area is broadly 19th century and later enclosure, with large 'prairie' style fields created from smaller, pre-19th century enclosed land. This was taken into account in assessing the comparative likely effects of a North and South corridor on the historic environment.
- 5.75 The analysis of the historic environment issues provided in the Route Corridor Study identifies that adverse effects could arise on historic environment receptors, particularly in relation to buried archaeology, the setting of Listed Buildings and on Conservation Areas. However, the scale of effect is not predicted to be significant and measures to prevent, reduce or mitigate the adverse effects are available. The RCS identifies that the North Corridor (Scenario 2) would give rise to lower level of effects and is preferred for the historic environment topic.
- 5.76 Moving forward, effects on the setting of Listed Buildings, Scheduled Monuments, Conservation Areas and other heritage assets, as well as effects on buried archaeology, will be considered in identifying the detailed design of the connection. During the development of the detailed design of the connection and the EIA, National Grid will work closely with the local authorities conservation teams, the Historic Environment Team at Kent County Council, and English Heritage, to identify any measures needed to prevent, reduce, or if necessary mitigate or offset, any adverse effects on the historic environment.



### Other

- 5.77 National Grid considers the siting of installations such as substations and pylons very carefully in relation to flood risk. It is relatively straightforward to build flood resilience into overhead lines by addressing safety clearances from anticipated flood levels in line design. The presence of overhead line pylons in areas of flood risk has negligible effect on the risk or displacement of water as the lattice steel construction poses no material change to water flow. Flood risk was therefore not considered an influence on the original selection of corridors. During the detailed connection design National Grid will further consider local factors such as the topography of land and flood zones. Where building within a flood plain cannot be avoided, consideration would be given to encasing steelwork in concrete or waterproof coatings to above the potential flood line. If pylon or conductor repairs were required during flood events and access could not be achieved from ground level, then National Grid has established helicopter maintenance procedures that would be utilised.
- 5.78 Following confirmation of the preferred route corridor, environmental assessments will continue to assist in the identification of the detailed route and connection design. This will take into consideration the suitability, and equally the unsuitability, of any localised areas of geology or ground conditions. The environmental assessment will further identify the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on ground conditions.

### *Conclusions*

- 5.79 The RCS concluded that the North Corridor, Sub-Option A or B (Scenario 2) from an environmental perspective was the preferred corridor. Having taken into consideration the comments received during consultation National Grid remains of the view that the North Corridor (Scenario 2) is the least environmentally constrained option. The North Corridor is further away from the AONB than the South Corridor. It is considered to have a lesser impact on views in general as there is an existing 132kV overhead line in the corridor and therefore the scale of change on views would be less if this is replaced by a 400kV overhead line, compared to introducing an new overhead line into an area where none currently exists. It is acknowledged that the North Corridor in certain locations is closer to

the SPAs and wetland habitats and a number of bird species could be impacted on. However, collision risk is unlikely to change significantly if the existing infrastructure is dismantled. The North Corridor would also result in fewer effects on the historic environment and a number of representations support this.

- 5.80 From an environmental perspective, Sub-Options A and B are relatively balanced.

### **Socio-economics**

#### *Summary of RCS Findings*

- 5.81 The findings of the RCS showed that neither route option is likely to result in a significant residual impact on economic activity and no material considerations were identified as part of the assessment of either route.
- 5.82 Socio-economics was therefore scoped out and did not inform the decision making process in the selection of the route corridor in the RCS.

#### *Issues Raised in Consultation*

- 5.83 A number of issues were raised in relation to socio-economics. This section has been split into Local Economy, Traffic and Transport and Other for ease of reference.

#### Local Economy

- 5.84 Representations noted that both corridors would have adverse effects on settlements and individual properties. Some considered that there would be a greater effect on property and business owners in the South Corridor making the North Corridor more favourable. It was also noted that the communities in the South Corridor use the heritage of the area (which includes land, animals, water, soil, plants, and beautiful views) to create businesses and visitor attractions – National Grid’s proposals would be harmful to the above benefits.
- 5.85 Tourism was considered by respondents to be of importance to the area and destroying the natural beauty of the area would be counterproductive. They also noted that locals of Kent come to villages like Preston Grove and Wickhambreaux (South Corridor) and much of the area of Kent is visited by tourists from all over the world. A line of pylons were considered to be detrimental to the jobs of those who rely on the tourist industry.

- 5.86 It was considered that pylons across the Little Stour Valley (South Corridor) would detract from a particularly tranquil area of natural beauty which is visited by walkers and wildlife observers with an interest in conservation. It was also noted that the Route Corridor Study makes no mention of the outstanding amenity value of the River Stour for leisure boating. Hundreds of leisure boats are moored on and visit the river benefitting local tourism and businesses based on or near the river.
- 5.87 Representations noted that the route would destroy farmland, interfere with farming operations, delay or prevent essential work, impact on orchards, causing food and income lost and less farmland could be wasted if the T-pylons are used rather than the lattice steel (i.e. smaller footing). Concerns about the effects on agriculture were more frequently raised in connection with the South Corridor.

#### Traffic and Transport

- 5.88 Kent County Council and Canterbury City Council raised concerns regarding the impact on highway improvements, particularly the Sturry link road proposed as part of the Canterbury Local Plan Preferred Option Consultation. This would affect the North Corridor Sub-option A in particular.
- 5.89 Concerns were also raised about disruption during the construction period, particularly relating to vehicular movements and road closures.
- 5.90 Suggestions were made to combine the connection with the proposed Sturry link road so that the cables run underground alongside the road and to share the costs with the highways developer.

#### Other

- 5.91 It was noted that the North Corridor (Sub-option A and B) would affect the viability of the Sturry and Broad Oak housing allocation site as identified in the Canterbury City Council Local Plan published June 2013. This could have knock on implications for the Sturry link road and sites at Herne, Herne Bay and Hersden and effectively impact upon the aims and objectives of the Canterbury Local Plan Preferred Options document through sterilisation of a significant part of the proposed development site. It would result in conflict with the objective for power lines to avoid residential areas in order to minimise harm to amenity. It was also noted that this line shadows the newly founded and planted country park on

Sturry Road (A28), which would invalidate the recreational and relaxing purpose of park and countryside.

- 5.92 It was considered that the reservoir plans by South East Water in the valley between Fox Hill and Calcott Hill, currently under consideration, caused doubt about the viability of Sub-option B of the North Corridor.
- 5.93 Representations stated that the consultation on the South Corridor is already affecting property values in the corridor because of the uncertainty causing house sales to fall through.
- 5.94 Comments suggested that going through the South Corridor would invalidate the status of independent towns, clouding the boundaries and open the land to further development.
- 5.95 Requests were made to keep the proposed routes away from schools, settlements and specifically named locations/settlements including residents' homes. Local groups and individuals made a number of suggestions for variations to the route corridors to avoid particular settlements.
- 5.96 Kent County Council considered that the North Corridor, Sub-options A and B would reduce the viability of the Sturry and Broad Oak housing allocation site as identified in the Canterbury City Council Local Plan published June 2013 and therefore jeopardise the other developments to the north and east of Canterbury.

*Response to Issues*

- 5.97 The number and quality of orchards and arable fields in both corridors have been considered as part of the socio-economic appraisal of route corridor options. The impacts on these have also been considered and any residual impacts after careful route alignment and the implementation of mitigation measures were considered and determined at this stage to not be material to the route corridor selection. This will continued to be examined as part of the socio-economic assessment if relevant at the detailed routing stage of the project.
- 5.98 National Grid will seek to agree the precise siting of transmission pylons or underground cable with farmers and tenants such that the impact on farming operations is minimised. In addition National Grid will also seek to agree the routes and timing of temporary access tracks and construction compounds to avoid disturbance to farming operations and farm animals.

- 5.99 Access for on-going maintenance will only be required occasionally and will also be planned around cropping patterns. It is not anticipated that there will be any significant impact on agricultural operations, or proposals for agricultural diversification.
- 5.100 National Grid appreciates that landscape and scenic qualities are part of the attraction of some tourist destinations and that any new development can have an adverse effect on these qualities. Furthermore, National Grid notes the assessment of the value of tourism to the local economy. However, there are many kilometres of overhead lines in National Parks and Areas of Outstanding Natural Beauty (AONB) designated for landscape and scenic qualities which attract tourists.
- 5.101 Care will be taken when fixing the detailed connection design to minimise adverse effects on landscape and scenic qualities of all areas, including those valued for tourism.
- 5.102 In investigating potential corridors, National Grid seeks to avoid or minimise impacts upon settlements wherever possible and designated sites, features and areas of tourism and recreational importance. Suggestions for route alignments made in representations will be taken into account when designing the Project in detail. Potential impacts on views to and from significant viewpoints, sites, features and areas of tourism and recreational importance have already been considered in assessing landscape and visual impacts and have influenced the identification of corridors. Potential impacts on tourism were considered as part of the appraisal of route corridors and it was considered that at this stage no material adverse impacts were identified to differentiate between route corridors.
- 5.103 A Traffic Management Plan will be devised for the routeing and timing of construction traffic throughout the construction period, with a view to minimising the number of journeys on local roads and will aim to schedule journeys to avoid adding to local traffic at peak times and manage abnormal loads.
- 5.104 National Grid is aware of the proposed site allocations as set out in the Canterbury City Council Preferred Options Draft Consultation 2013, in particular Strategic Site 2 (Broad Oak/Sturry).
- 5.105 The Canterbury City Council Preferred Options Draft Consultation 2013 document was published after the finalisation of the RCS for the Richborough Connection

published at the commencement of the Summer 2013 consultation. However, the RCS recognised the potential for sites to be taken forward as indicated in the Strategic Housing Land Availability Assessment but was unable at that point to take the sites into consideration in the appraisal of the route corridor options.

5.106 National Grid recognises the emerging policy position by Canterbury City Council. Strategic Site 2 at Broad Oak/Sturry is crossed by Sub-options A and B considered as part of the North Corridor option for the Richborough Connection. National Grid considers, at this stage that a new connection within Sub-options A or B could be delivered whilst achieving delivery of the Strategic Site and National Grid would seek to work with the developer of the site to discuss the interaction between the proposals that may be brought forward at the site. National Grid does, however, recognise that the delivery of Sub-option A could have greater effects on the Strategic Site and link road as it would result in a new electricity connection directly through the centre of the site, whereas Sub-option B only interacts with a corner of the site. National Grid would seek to continue to discuss this matter with Canterbury City Council and the developer of the site should the North Corridor be confirmed as the preferred route corridor option.

5.107 The proposed plans for a water reservoir at Broad Oak were taken into consideration as part of the route corridor study. However, the reservoir is not currently part of the local planning process and remains a long standing aspiration for South East Water.

5.108 The reservoir is proposed within the general area of Sub-option B within the North Corridor. National Grid considers it technically feasible to deliver a new connection within Sub-Option B without affecting the delivery of the reservoir and is currently in liaison with South East Water to discuss the interaction between the proposal for a reservoir at Broad Oak and the Richborough Connection Project.

### *Conclusions*

5.109 The impact on land and farming operations has been considered and National Grid will liaise with landowners and occupiers following the selection of the preferred corridor to determine the route of a connection within the corridor. There are opportunities for avoidance and mitigation and this is not therefore material in the route selection.

- 5.110 Tourism is understood to be a significant aspect of the local economy in this area. Potential impacts on views to and from significant viewpoints, sites, features, and areas of tourism and recreational importance have also been considered in assessing landscape and visual impacts. Potential impacts on local economy and tourism were considered as part of the appraisal of route corridors and it was determined that no material adverse impacts were identified at this stage to differentiate between route corridor options.
- 5.111 Based on the new information as presented in the Canterbury City Council Draft Local Plan June 2013, it is recognised that the North Corridor Sub-option A would have a greater impact on the Strategic Site at Broad Oak/Sturry. On that basis, in terms of this factor, Sub-option B would be preferred as it would have the least impact on this emerging designation. This is supported by the response of Canterbury City Council to the Summer 2013 Consultation.
- 5.112 The reservoir remains an aspiration of South East Water and has no planning status at present. Whilst it is proposed to be located within the area of Sub-option B, National Grid consider this sub-option to remain technically feasible without affecting the delivery of the reservoir should it go ahead.

### **Cost**

#### *Summary of RCS Findings*

- 5.113 The North and South Corridors are similar and there is no material difference in costs for North Corridor (Scenario 1) and the South Corridor.
- 5.114 North Corridor (Scenario 2) would be the most expensive of the options due to the costs of completely removing the existing 132kV overhead line and establishing a Grid Supply Point to maintain local electricity supplies.
- 5.115 The RCS therefore concluded that, from a cost perspective, North Corridor (Scenario 1) or the South Corridor should be preferred over North Corridor (Scenario 2).

#### *Issues Raised in Consultation*

- 5.116 Comments noted that the North Corridor follows an existing electricity corridor making it more cost effective and viable. One respondent suggested that the

preferred technology option would be an overhead line due to added cost of using an underground cable system.

- 5.117 Comments noted that an overhead pylon connection, although less environmentally friendly would be more cost effective and longer lasting than an underground cable and that, if the only cost effective way is to use pylons, this method should be undertaken in the most environmentally sensitive way possible.
- 5.118 Requests were made for National Grid to publish comparative costs of undergrounding the whole proposed route before work commences. It was also suggested that as National Grid have not supplied cost figures it is difficult to ascertain the additional cost of using cables all the way.
- 5.119 Comments suggested that cost is the main driver for recommending overground transmission and National Grid are taking the cheapest option to maximise returns to shareholders. Further that as this is a long-term project, and the countryside, health impacts and environment should not be jeopardised for the cheapest option, decisions not relating to cost should be made to protect the environment.
- 5.120 Comments stated that little consideration had been given to an underground option due to the cost and undergrounding must be considered even if more expensive and any extra cost incurred by consumers would be worth paying to avoid impact of the pylons.

#### *Response to Issues*

- 5.121 As part of the Summer 2013 consultation National Grid published the "Richborough Connection Project Strategic Options Report for the South East Region June 2013". Table 6.1 (page 28) in the report includes an assessment of costs for a fully underground solution between Richborough and Canterbury North substation. This was discounted for the reasons set out in the report.
- 5.122 Given their statutory duties, National Grid has to balance technical, environmental and economic factors in its decision making. The balance of these factors means that at times the cheapest option is not always preferred.
- 5.123 At this stage of the project a detailed route for the connection has not been identified but as the project develops National Grid will continue to balance its judgements against its statutory duties.



5.124 National Grid will continue to make cost information available as the project develops.

*Conclusions*

5.125 National Grid has taken the comments relating to cost into account and it is noted that the North Corridor, Scenario 2 is the most costly of the North Corridor options. National Grid is required to balance technical, environmental and economic factors in reaching its decision. Therefore, the decision is made by assessing all factors and not cost alone.

**Other**

5.126 Concerns were raised that the proposal would transgress the M.O.D. flight path, for all types of low flying aircraft, which could be dangerous and a risk to aircraft leaving Manston airport.

*Response to Issues*

5.127 Overhead lines have potential to pose risks to aircraft important to aviation and defence, depending on their siting and orientation. Kent International airport at Manston is located to the north of the route corridor boundaries. The distance, coupled with the alignment of the runway and limited extent of obstacle limitation surfaces, means that a new overhead line would not be constrained by the presence of the airport. Therefore, aviation has not been considered a factor to differentiate between strategic or route corridor options.

5.128 As part of the Summer 2013 consultation National Grid consulted with the Civil Aviation Authority (CAA), National Air Traffic Service (NATS) and Defence Estates Safeguarding (MOD) and no issues have been raised. National Grid will continue to consult with these bodies and any other relevant bodies in respect of routeing and technology choice.

*Conclusions*

5.129 National Grid will continue to consult the relevant parties in relation to this project and should concerns be raised, they will be addressed accordingly. The comments above do not affect the decision on the preferred route corridor.

### **Conclusions of Route Corridor Study**

- 5.130 The RCS concluded that the environmental sub-topics which show differentiation between the route corridors, including the two scenarios in the North Corridor, are landscape and visual amenity, ecology and historic environment. The option that performs best on anticipated environmental effects would be the North Corridor (Scenario 2) which assumes the removal of the existing 132kV overhead line from Richborough to Canterbury following development of a new overhead line. The existing 132kV overhead line from Richborough to the Isle of Thanet would remain in place.
- 5.131 At the Canterbury end of the route, the RCS concluded that further consideration should be given to both Sub-options A and B.
- 5.132 The removal of UK Power Networks' 132kV overhead line between Richborough and Canterbury North would require reaching a satisfactory agreement with UK Power Networks to ensure the provision of an equivalent reliable and secure supply to the local electricity network. At this stage, agreement in principle has been reached on what would need to be put in place to compensate for the removal of UK Power Networks 132kV overhead line. UK Power Networks has indicated that this could take place through the siting of a Grid Supply Point within the substation proposed at Richborough. This would allow for the removal of the 132kV line as part of the North Corridor Scenario 2 once the new connection is in place. National Grid will work with UK Power Networks to develop the detailed requirements for removal of their 132kV overhead line as part of the next stage of developing the project.
- 5.133 The Summer 2013 consultation resulted in 383 representations being received, the majority of which related to the selection of the route corridor. Support was noted for both North and South Corridors and within the North Corridor, support was noted for both Sub-options A and B. Objections were also raised in relation to both North and South Corridors.
- 5.134 Representations in support of the North Corridor (Scenario 2) made reference to this corridor having the least environmental impact, particularly if the existing 132kV overhead line was removed. Impact on birds was a specific concern of many of the representations and further surveys would be required in later stages of the project to ensure protection of birds and other wildlife.

- 5.135 Representations in support of the South Corridor stated that it would have a lesser impact on birds. Comments supporting this corridor also suggested that an overhead line should be sited in the South Corridor as the people in the North Corridor had already had their share of pylons.
- 5.136 Many of the representations received in relation to cost did not have a preference for either route corridor but a preference for the use of undergrounding. National Grid has based its initial assessment of costs on an overhead line solution. The potential for using underground cables on sections of the connection, together with the associated costs, will be investigated at a later stage in the development of the Project and such issues do not affect the selection of the preferred route corridor. Socio-economic factors such as impact on farming operations and tourism were raised. These factors have been taken into account and will be assessed further in the next stage of the Project.
- 5.137 During consultation on the connection between Richborough and Canterbury North, National Grid was advised of a long-standing proposal for a new reservoir to the north of Broad Oak. This would be a new supply reservoir for drinking water with a surface area of approximately 250 hectares. However, the proposal has no planning status at present. The reservoir is proposed within the general area of Sub-option B, north of Broad Oak within the North Corridor. National Grid considers, at this stage that it is technically feasible to deliver a new connection within Sub-option B without affecting the delivery of the reservoir and is currently in liaison with South East Water to discuss the interaction between the proposal for a reservoir at Broad Oak and the Richborough Connection Project.
- 5.138 National Grid recognises the emerging policy position by Canterbury City Council in relation to Strategic Site 2 at Broad Oak/Sturry. This site is crossed by Sub-Sub-options A and B considered as part of the North Corridor option for the Richborough Connection. National Grid considers, at this stage, that a new connection within Sub-option A or B could be delivered whilst achieving delivery of the Strategic Site and National Grid would seek to work with the developer of the site to discuss the interaction between the proposals that may be brought forward at the site. National Grid does, however, recognise that the delivery of Sub-option A could have greater effects on the Strategic Site and link road as it would result in a new electricity connection directly through the centre of the site, whereas Sub-Option B only interacts with a corner of the site.

5.139 The assessments that have been undertaken have taken account of potential benefits and adverse impacts, as well as considering measures to avoid, reduce or compensate for any adverse impacts as required by National Policy Statement EN-1. Consideration has been given to the sensitivity of certain areas within each strategic option and route corridor and the significance of heritage assets has also been taken into account as is required in the NPPF.

5.140 It is therefore National Grid's view that taking all of the above information into account, the assessment of the RCS and the representations received in relation to the RCS would indicate that the North Corridor, Sub-option B (Scenario 2) should be taken forward to the next stage.

## **6. Conclusions**

### *Overall Conclusions*

- 6.1 The findings of the SOR and RCS were subject to consultation as part of the Summer 2013 phase of the Richborough Connection Project. The purpose was to obtain the views of statutory and non-statutory bodies, other agencies and the public on the findings of the reports and to determine whether there are any additional constraints or issues which could influence the selection of preferred Strategic Option and preferred Route Corridor and the detailed design going forward.
- 6.2 The representations received have been analysed and reported in the Feedback Report on the Summer 2013 Consultation and those relevant to the selection of strategic options or route corridors, summarised in this document, together with National Grid's responses to the representations. National Grid has considered whether, as a result of information received, it should re-consider which Strategic Option or Route Corridor it should take forward to the next stage.
- 6.3 In the main, statutory bodies showed a preference for the North Corridor (Scenario 2). Views as to which sub-option was preferred were more balanced.
- 6.4 A number of general points were raised which, while some were relevant to the overall project, had no bearing on the selection of either the Strategic Option or Route Corridor, or the decision on which technology to use for the connection. These are reported in the Summer 2013 Consultation Feedback Report.
- 6.5 National Grid has undertaken options appraisal to determine the best options to take forward as set out in the SOR and RCS. All of the main relevant issues raised above have had a bearing on the preferred connection and route corridor. The detailed make up of the connection in terms of the technology to be used (lattice pylon, T-pylon and/or part underground) has not yet been determined. National Grid will conduct a number of engineering and environmental surveys to help identify the precise siting of new transmission pylons and the removal of existing pylons. Areas of particular sensitivity may require an underground cable solution and these aspects will be addressed in the detailed design stage of the process. National Grid will continue to assess the technology options available as it formulates the next stage of its proposals.

- 6.6 In assessing the route corridors, National Grid has considered National Policy Statements, the NPPF and local planning policy. The assessments that have been undertaken have taken account of potential benefits and adverse impacts, as well as considering measures to avoid, reduce or compensate for any adverse impacts as required by National Policy Statement EN-1. Consideration has been given to the sensitivity of certain areas within each strategic option and route corridor and the significance of heritage assets has also been taken into account as is required in the NPPF. Local planning policy has been considered through all assessments.
- 6.7 Further environmental surveys will be carried out and impacts on landscape, views, wildlife and sites of historic importance will be avoided and/or mitigated where possible. The environmental impacts on the route corridors have helped to influence National Grid's decision to take forward the North Corridor.
- 6.8 Furthermore, the Strategic Site at Broad Oak/Sturry and the Sturry link road have also influenced National Grid's decision on the preferred Route Corridor. Whilst both Sub-Options A and B within the North Corridor would have an impact on the Strategic Site, the line would cross a corner of the site if Sub-Option B were taken forward as opposed to crossing the whole site if Sub-Option A were taken forward.
- 6.9 The proposed plans for a water reservoir at Broad Oak were taken into consideration. However, the reservoir is not currently part of the local planning process and remains a long standing aspiration for South East Water. The reservoir is proposed within the general area of Sub-Option B within the North Corridor. National Grid considers, at this stage, that it is technically feasible to deliver a new connection within Sub-Option B without affecting the delivery of the reservoir and is currently in liaison with South East Water.
- 6.10 Representations also supported the conclusion that Scenario 2 should be preferred. The removal of the 132kV line between Richborough and Canterbury North substation, which is required under this scenario, would require reaching a satisfactory agreement with UK Power Networks to ensure the provision of an equivalent reliable and secure supply to the local electricity network. This agreement has been reached in principle and will be refined as the project is developed in more detail.
- 6.11

- 6.12 National Grid has taken all representations into account and has concluded that Strategic Option 1 - that of an overhead line, onshore route between Richborough and Canterbury North substation should be taken forward. This option is the least environmentally constrained and most cost effective of the strategic options to Canterbury. None of the representation received during the consultation stage raised issues which have led National Grid to conclude that an alternative solution would be preferable on technical, cost, environmental or socio-economic grounds. The preferred route corridor to be taken forward is that of the North Corridor, Scenario 2, including Sub-option B.

*Next Steps*

- 6.13 Following the adoption of the preferred corridor, detailed consideration will be given to the routeing of an overhead line, and pylon locations within the preferred corridor. Where there are areas of particular environmental sensitivity, sections where undergrounding may be justified will, in accordance with National Grid's approach to the design and routeing of new electricity transmission lines and national policy in EN-5 Electricity Networks, be investigated during development of the detailed design of the connection. Examination of tower types will also take place at this time. The detailed design of the connection will be influenced by technical considerations, environmental and geo-technical surveys and discussions with affected landowners and occupiers. It will also be subject to environmental impact assessment (EIA) and further public consultation. The refinement of a proposed connection design will emerge as part of the on-going consultation and EIA process.
- 6.14 The project is subject to a continuous process of backcheck and review in the pre-application stages to ensure that when new information comes forward (be it related to policy, technological developments, environmental or other factors), this is communicated to the project team and its effect on the robustness of decision making evaluated.
- 6.15 National Grid will continue an on-going process of communication with statutory and other bodies and the local community and it is anticipated that National Grid's formal consultation will be undertaken in early 2015. The proposal will then be finalised and it is anticipated that a submission will be made to the Planning Inspectorate later in 2015, seeking consent for the connection and associated

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





## Contact us

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