From: Noviss, Adrian To: Aguind Interconnector Kasseean, Anita Cc:

Subject: AQUIND (EN020022) - DEADLINE 5 - Mr Geoffrey Carpenter & Mr Peter Carpenter Email 1 of 2 (ID: 20025030) [BMG-LEGAL.FID44973420]

01 December 2020 17:42:38

Attachments: Appendix F Part 1 of 2 - 13 01025 FUL-Design Access Statement-301945.PDF

Dear Sirs

Application by AQUIND Limited for an Order granting Development Consent for the AQUIND Interconnector Project (PINS reference: EN020022)

Mr. Geoffrey Carpenter and Mr. Peter Carpenter (Registration Identification Number: 20025030)

Submitted in relation to Deadline 5 of the Examination Timetable

Email 1 of 2

We act for Mr Geoffrey Carpenter and Mr Peter Carpenter (our "Clients").

We refer to the above and the letter dated 30 November 2020 that was attached to our Clients' submissions in relation to Deadline 5 of the Examination Timetable

Further to Point 3 of that letter in relation to the proposed late submission of Appendix F to Mr Zwart's transcript of oral submissions for Compulsory Acquisition Hearing 2 (CAH2), please find attached Part 1 of 2 of Appendix F (the whole document exceeds the 12MB size limit. Part 2 will be attached to a second email).

We have also noted a minor error in the cover page for the CAH2 transcript which mistakenly refers to it containing submissions for Issue Specific Hearing 1 (ISH1). We wish to clarify, for the avoidance of doubt, that this should be read as stating it is the transcript of the oral submissions for CAH2.

Kind regards,

Adrian Noviss

Associate

For and on behalf of Blake Morgan LLP

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BLAKE DDI: 023 8085 7431 M: 07969 072045 F: 0844 620 3401 E: Adrian.Noviss@blakemorgan.co.uk New Kings Court, Tollgate, Chandler's Ford, Eastleigh, Hampshire S053 3LG +44 (0) 23 8090 8090 DX 155850 Eastleigh 7 www.blakemorgan.co.uk

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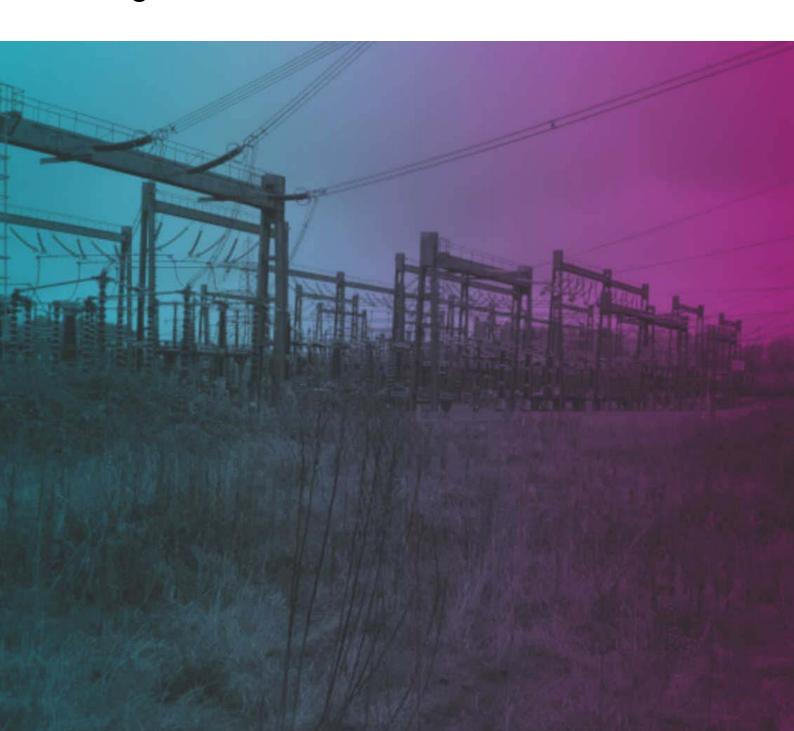
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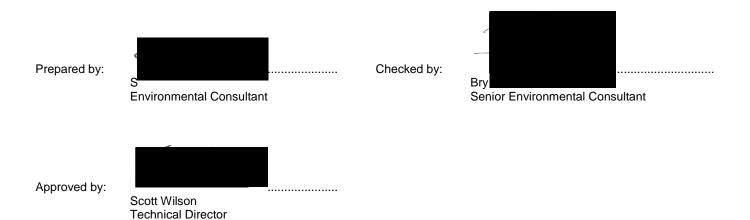
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Lovedean Substation Extension

Design and Access Statement





Lovedean Substation Extension: Design and Access Statement

Rev No	Comments	Checked by	Approved by	Date

Colmore Plaza, Colmore Circus Queensway, Birmingham, B4 6AT Telephone: 0121 262 1900 Website: http://www.aecom.com

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Photograph 1: Access off Broadway Lane

Photograph 2; Site access road

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Photograph 5: Existing screening to the right and proposed extension location to the left Photograph 6: Existing screening to the left and proposed extension location to the right

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View 1b

View 2

View 3

View 3a

View 3b

View 4

View 4a

View 5

View 6

View 7

View from Portisdown Hill towards Lovedean Substation and proposed extension

1 Introduction

1.1 Purpose of the Design and Access Statement

- 1.1.1 This Design and Access Statement has been prepared by AECOM on behalf of National Grid to accompany an Environmental Report and planning application to Winchester City Council for the proposed extension to Lovedean Substation
- 1.1.2 The Statement follows the CABE guidelines, *Design and Access Statements, How to write, read and use them (2006).* It is made up of three parts:
 - Part 1 Introduction;
 - Part 2 explains the Design and how the physical characteristics of the scheme have been informed via Use, Amount, Layout, Scale, Landscaping and Appearance;
 - Part 3 explains the consideration which has been given to Access including vehicular and transport links and inclusive access.
- 1.1.3 The Environmental Report contains a complete set of figures used to illustrate all the topics covered and assessed. The figures used within this Statement have been extracted from the Environmental Report.

1.2 Background to the Proposal

- 1.2.1 A number of large conventional power plants, including Fawley (Hampshire), Didcot A (Oxfordshire) and Littlebrook (Kent) will all close by 2015. Electricity demand along the South Coast will therefore be met through the use of gas power plants located north of this area. However, by 2019 it is expected that several new interconnectors will be constructed linking Great Britain to Continental Europe and allowing energy to be transmitted. In the South Coast area the existing network will be extended to include:
 - A Belgium interconnector (1GW) at Richborough near Canterbury; and
 - A second French interconnector (1GW) at Chilling near Fawley
 - An existing interconnector is also located at Sellindge, Kent (Interconnexion France Angletterra).
- 1.2.2 The development of the additional interconnectors, plus the closure of local power plants will increase the north to south power flow in the area. This increased flow, could potentially create a situation named 'voltage collapse', which would lead to loss of power along the South Coast.
- 1.2.3 A solution to this problem is to install a piece of electrical equipment, called a Static Variable Compensator (SVC), at the existing Lovedean substation. An SVC is a device for stabilising power on high-voltage electricity transmission networks. This piece of equipment allows a quick response to system faults, and can prevent a voltage depression from developing into collapse.
- 1.2.4 Lovedean Substation (shown in Figure 1) has been identified as the appropriate location for an SVC due to its significant connectivity with the South Coast system. The substation supports connections with other electrical infrastructure in Fleet, Nursling/Mannington, Botley Wood/Fawley, and Bolney. Installing reactive compensation equipments at Lovedean Substation is therefore the most cost effective way to improve system resilience. However, other substations in the South Coast will also require extension and the addition of SVCs in order to reduce the potential for voltage collapse. (National Grid is currently preparing proposals to locate two new SVCs at Bolney substation).
- 1.2.5 A Shunt Reactor is required at Lovedean to support the system along the South Coast. At the moment the system along the South Coast is at risk of becoming unstable at times when the network is high loaded with little demand, for example 4am. A Shunt Reactor is able to increase stability during these periods. Current methods of stabilising the system in this area are extremely costly and not considered to be economically efficient by National Grid or its regulators.

1.2.6 A Super Grid Transformer (SGT) is also required within Lovedean substation to support additional demand for electricity along the South Coast, ensuring that the substation and the transmission system are able to meet the demand for electricity created by current lifestyles and economic activities.

1.3 Electricity Supply in the UK

- 1.3.1 The UK is facing a major challenge in meeting its current and future energy needs while reducing its greenhouse gas emissions to help tackle climate change.
- 1.3.2 Current peak demand (the most we would need at any one time) for electricity in the UK is around 60GW (gigawatts). Over the next decade, a number of existing UK power stations are planned to close. In order to replace the power being generated by these stations, more than 20GW of new electricity generation would be required by 2020. The UK Government is supporting the development of new, low carbon sources of electricity to meet this energy need while reducing greenhouse gas emissions.
- 1.3.3 National Grid needs to make huge investments over coming years to accommodate changing patterns of electricity generation. National Grid is required to update and extend its network to transfer new sources of energy (wind and nuclear). The investment is required to assist the UK Government to achieve the targets for a low carbon future.
- 1.3.4 The extension to the existing Lovedean substation is to ensure the stability of the electricity network around the South Coast. Demand in the Portsmouth area has also risen and Lovedean substation is the only substation which serves the Portsmouth area and which can accommodate the required equipment without the need to be completely reconfigured.
- 1.3.5 The UK government has signed up to the EU Renewable Energy Directive, which includes a UK target of 15 percent of energy from renewables by 2020. There are a number of other targets and legislation driving the changes in energy distribution as outlined below:
 - CO2 reduction of 80% by 2050, reliable energy supplies and competitive markets Our Energy Future: Creating a Low Carbon Economy, White Paper, 2003;
 - Upgrading the transmission system Meeting the Energy Challenge, Energy White Paper, 2007;
 - Carbon budgets and reductions of UK emissions by 34% by 2020 Climate Change Act, 2008;
 - Investment in energy efficiency, clean technologies, renewables, nuclear and CCS The Climate Change Act, 2008
 - Renewable targets: 30% of UK electricity from renewable sources by 2020 UK Renewable Energy Strategy, 2009;
 - 25% of current power generation to close by 2020 Large Combustion Plant Directive (LCPD, 2001/80/EC).

1.4 Programme

- 1.4.1 Construction will take place over three phases:
 - Phase 1 is expected to begin in late 2013 and take approximately nine months to complete. It will comprise of tree replanting / clearance / reinstatement, Phase 1 earthworks, fencing and lighting column installations and the construction of the foundations for the Shunt Reactor and associated equipment;
 - Phase 2 is expected to begin in 2016 and take approximately seven months to complete. It will comprise of Phase 2 earthworks, fencing and lighting column installations, the construction of new roads within the substation boundary and the construction of the SVC building foundations;
 - Phase 3 is expected to begin in 2020 and take approximately six months to complete. During this phase, the foundations for the SGT and associated equipment will be constructed.

1.4.2 Figure 2 shows the Site layout plan and outlines the works included in each Phase of construction.

1.5 Site Alternatives

Alternative Sites

- 1.5.1 National Grid has identified the need to install reactive compensation equipment to improve system resilience on the South Coast. A number of substations in this region were considered as appropriate locations for extension, including:
 - Bramley;
 - Fleet; and
 - Botley Wood.
- 1.5.2 Examination of these sites demonstrated that they were not suitable for supporting additional electrical equipment. Bramley was found to be constrained by ancient woodland and both Fleet and Botley Wood did not have the required equipment (double busbars) needed to support SVCs.
- 1.5.3 Lovedean has the required equipment, and can be extended without affecting ancient woodland, and has therefore been selected as the preferred location for an extension to accommodate new equipment.

Alternative Extensions at Lovedean

- 1.5.4 Several extension site options at Lovedean were considered during the design process. These comprise of layouts to the north (Option 1), east (Option 2) and south (Option 3) of the existing substation, in addition to the current proposal of extension to the west (Option 4).
- 1.5.5 Further details on site selection can be found in the Environmental Report.
- 1.5.6 Extensions to the north, east and south of Lovedean were appraised and ruled-out, primarily due to the amount of existing Ancient Semi-Natural Woodland (ASNW) and other non-designated woodland that would have to be removed to accommodate these developments.
- 1.5.7 Option 3 to the south would require the removal of Crabdens Copse and Option 1 to the north would require the removal of Crabdens Row, both areas of ASNW and both areas designated as Sites of Importance to Nature Conservation (SINC).
- 1.5.8 Option 2 to the east is also constrained by its proximity to the South Downs National Park (SDNP) and also Broadway Lane. The SDNP boundary lies adjacent to Broadway Lane on the east and falls within the Site boundary of Option 2. Also, this Option would require the installation of pylons to accommodate the crossing of Broadway Lane, which divides the Site area. Additionally, there is a medieval field system which lies within the Site boundary of Option 2.
- 1.5.9 After consideration of all four options, Option 4 emerged as the preferred extension site with the fewest constraints and the least environmental impact.

1.6 The Environmental Report

- 1.6.1 The Environmental Report and its associated documents have been prepared to provide a summary of the current environmental baseline at the Site, to detail any predicted impacts of the development and outline any proposed mitigation measures. The following topics have been assessed:
 - Landscape and Visual;
 - Arboriculture:
 - Construction Noise;
 - Operational Noise;

- Air Quality;
- Traffic and Transport;
- · Ecology and Nature Conservation;
- Archaeology and Cultural Heritage;
- Geology, Soils and Contaminated Land;
- Water Resources;
- Electro-Magnetic Resources; and
- Waste.

1.7 Planning Application Procedure

- 1.7.1 This Design and Access Statement accompanies a planning application under the Town and Country Planning Act 1990.
- 1.7.2 Under the terms of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011, the proposed scheme does not constitute an Environmental Impact Assessment (EIA) development as substation extensions are not listed as a development in either Schedule 1 (listing developments requiring compulsory EIA), nor Schedule 2 (listing developments which may need EIA) of the regulations.
- 1.7.3 National Grid's practice is to undertake an environmental assessment and produce a detailed Environmental Report to accompany the planning application.

1.8 Consenting Authorities

- 1.8.1 Lovedean substation straddles the administrative boundary between East Hampshire District Council (EHDC) and Winchester City Council (WCC) and is near to the administrative area of South Downs National Park (SDNP). The proposed extension is wholly on the western side of the administrative boundary and therefore the planning authority is Winchester City Council.
- 1.8.2 Pre-application meetings have been held with WCC, EHDC and SDNP to discuss the proposals.
- 1.8.3 Opinions have also been sought from key stakeholders including Natural England, the Environment Agency, English Heritage, local MPs, ward councillors, parish councils and local residents.

2 Design

2.1 Use

- 2.1.1 The existing substation site at Lovedean is a necessary connection point to the national transmission network.
- 2.1.2 The proposed extension will be used to accommodate new equipment associated with the South Coast electricity system. The extension site will accommodate above ground apparatus that will be physically linked to the existing operational site.
- 2.1.3 Additionally, there will be associated landscaping works, security fencing, lighting and new access roads constructed within the compound.
- 2.1.4 Full details of the proposals are contained within the Environmental Report submitted as part of the planning application.

2.2 Amount

- 2.2.1 The proposed site extension covers an area of 3.5 ha and includes a new operational area along with proposed landscaping. Within the extension site there would be the following equipment:
 - Shunt Reactor:
 - Static Variable Compensator; and
 - Super Grid Transformer.

2.3 Layout

- 2.3.1 Several extension site options at Lovedean were considered during the design process and an extension to the west emerged as the preferred extension site with the fewest constraints and the least environmental impact. See section 1.5 above for further details.
- 2.3.2 The extension to the west will incorporate, east to west respectively, a new Shunt Reactor, Static Variable Compensator and Super Grid Transformer.
- 2.3.3 The layout of the proposed site is based on the most efficient use of space which allows safe operation, maintenance and repair or replacement of the equipment during the anticipated operational life of the equipment. The footprint and layout is determined primarily by the equipment, technical standards, safety clearances and access required to components. The equipment must be located so that it is connected to the existing substation site. However, the equipment has been aligned and positioned to minimise the visual impact to surrounding areas wherever technically feasible.

2.4 Scale

- 2.4.1 The existing substation currently accommodates 34 high level busbar gantries at 21m height, 8 landing gantries at 15m height, 1 SVC building at 12m height, 4 transformer buildings at 10m height, 2 shunt reactor buildings at 10m height, and approximately 10 plant / control buildings at 6m height.
- 2.4.2 The proposed extension will accommodate a new Shunt Reactor, Static Variable Compensator and Super Grid Transformer at a maximum height of 13m. Therefore new gantries and equipment housing will be significantly lower in height that the existing equipment on site.
- 2.4.3 In order to create a level site area for the equipment a substantial amount of landscaping works is required. This will result in a large section of the new equipment being located below ground level; up to 6m in some places.
- 2.4.4 The scale of the extension is comparable to the existing site and its size is dictated by the functional requirements of the current facility. The equipment within the extension is comparable with the type and scale of equipment within the existing operational site. The compound is sufficient to accommodate the proposed plant and equipment.

2.5 Landscaping

- 2.5.1 A full Landscaping Scheme which enhances the existing screening of the Site is proposed as part of this application and is set out in detail within the Landscape and Visual Impact Assessment within the Environmental Report.
- 2.5.2 The application proposes the removal of a number of trees from the western boundary of the existing substation to allow for the extension.
- 2.5.3 These trees were planted in the 1960s as part of the screening for the existing site. No trees can be retained on site due to National Grid safety zone requirements.
- 2.5.4 A 20m strip of native tall growing trees will be planted around the northern and western perimeter of the substation extension, replicating the existing screening in width, aspect and planting density. This will occur during Phase 1 of construction to reduce the visual impact of the development. In addition, a new hedgerow will be planted to the south of the substation extension and part of the extension site will be planted as a wildflower meadow.
- 2.5.5 Staggered rows of trees will be planted at a range of sizes from 2.5-6 metres high, interplanted with 1m high native whips. The planting will also include a row of fastigiated tree species including Hornbeam and Lombardy Poplars immediately adjacent to the development to provide a faster growing screen than the other slower growing but longer-lived native trees. The mix of species would ensure a natural appearance, and their fastigiate canopies would avoid conflicts with security and site safety.
- 2.5.6 In the longer term the row of fastigiate trees, including the Lombardy Poplar would be thinned to 6m centres 10 years after planting and felled completely after another 10 years, allowing space for the more naturalistic broader canopies of the other proposed tall growing species

2.6 Appearance

- 2.6.1 The compound is functional and its primary design is to ensure that no unauthorised access can be gained to the Site. The compound contains floodlight columns to allow inspection and maintenance or repairs to be carried out at night. The compound will not be illuminated when no personnel are on site. All normal maintenance will be carried out during daylight hours and the lighting will only be used in emergencies.
- 2.6.2 The overriding principles behind the development are to ensure appropriate efficient and safety of operation, safety for authorised workers and visitors, and the safety of others who should be excluded from exposure to risks.
- 2.6.3 These principles translate into a concept that seeks to provide appropriate operational space and space for maintenance and anticipated repair operations within the compound.
- 2.6.4 The concept also envisages the ability to provide replacement equipment in a timely manner to ensure minimal disruption or interruption to operation, appropriate entry and exiting provisions for workers, and fencing to actively deter access by others. Additionally the concept seeks to minimise as far as is reasonable adverse effects on the environment and amenity.
- 2.6.5 The proposed layout is primarily dictated by the operational requirements of connecting new equipment to the existing equipment. The layout is governed by the appropriate technical standards which dictate safe distances from live equipment and the approved equipment to be used.
- 2.6.6 Much of the visible space within the existing compound is empty due to National Grid safety zone requirements and the need to maintain access to equipment.
- 2.6.7 The layout has been designed to ensure safe and efficient operation and to minimise the impact of the development on the surrounding landscape.
- 2.6.8 In order to create a level site area for the equipment a substantial amount of landscaping works is required. This will result in a large section of the new equipment being located below ground level; up to 6m in some places.

- 2.6.9 Electrified security fencing, including a new access gate, will be installed during Phase 1 and this will be replaced and extended during Phase 2. The fencing will be given a powdered coating to reduce its visual impact on the landscape.
- 2.6.10 New site lighting columns will be positioned around the internal perimeter road. The majority of these will be hidden from external view as the substation is set in a cutting.
- 2.6.11 Sections 5: Site Photographs and 6: Photomontages show existing and expected views of the proposed development.
- 2.6.12 Full details of the proposed equipment can be found in the Environmental Report.

3 Access

3.1 Introduction

- 3.1.1 The existing substation is accessed via Broadway Lane.
- 3.1.2 During construction and operation, access will also be gained from Broadway Lane via a gated priority access. The nearest part of the Strategic Road Network (SRN) is the A3 (M), and is where it is considered that most construction traffic will access the Site from. The route taken by construction traffic travelling east to the Site will be as follows:
 - Leave the A3 (M) at Junction 2 and travel along the B2149 for approximately 600m;
 - Turn south onto the A3 Portsmouth Road and continue for approximately 800m;
 - Turn right into Lovedean Lane and continue for approximately 2km;
 - Turn left into Day Lane and continue for approximately 600m; and
 - Turn right into Broadway Lane and turn left in to the substation site after approximately 150m.

3.2 Traffic Generation

- 3.2.1 Details of the numbers of deliveries and collections during the construction phases are detailed in the accompanying Transport Statement (TS) within the Environmental Report.
- 3.2.2 The proposals will result in a temporary increase in traffic levels associated with the delivery and installation of the new equipment and construction of associated infrastructure.
- 3.2.3 It is expected that 56 daily two-way trips will be undertaken to and from site by construction operatives and on average one large vehicle will deliver or collect plant or materials from site each day. Up to three abnormal loads will visit the Site which will require a police escort from the docks to the Site. The impact of construction related traffic is expected to be negligible and it is not considered that the work would result in a material traffic impact.
- 3.2.4 Upon completion of the works, all vehicular access for servicing purposes will be via the existing access. This is likely to be no more than the occasional maintenance visit.
- 3.2.5 The route that has been assessed for the purposes of the construction traffic route is considered to be acceptable following assessment in terms of highway safety and capacity.

3.3 Dust and Dirt

- 3.3.1 The principal concerns of construction traffic in relation to dust and dirt can be considered to be materials falling off the back of delivery vehicles whilst on the road network, and dirt and detritus migrating onto the public highway from the construction site.
- 3.3.2 The contractor will deploy the following elements of mitigation to ensure that these effects can be minimised:
 - Provision of appropriate wheel cleaning facilities at the Site exit;
 - A regular programme of road cleaning;
 - A regular programme of cleaning to traffic management cones, lights and signs; and
 - A requirement that all vehicles carrying granular materials to the Site are sheeted when on the public highway.
- 3.3.3 Subject to these measures being implemented it is considered that there would not be an adverse impact on the road network caused by dust and dirt.

3.4 Site Operation/Servicing

3.4.1 Upon completion of the works, all access for servicing purposes will be via the existing substation access.

3.5 Summary and Conclusions

- 3.5.1 The extension to the existing Lovedean substation is to ensure the stability of the electricity network around the South Coast. Alternative sites were assessed for the suitability of installing the required equipment but it was determined by National Grid that Lovedean is the preferred site due to compatibility with the existing equipment.
- 3.5.2 The location for the new equipment has been carefully selected and attempts made to minimise environmental effects by siting equipment alongside the existing substation and providing landscape mitigation to assist in minimising visual effects.
- 3.5.3 Potential impacts upon the environment have been carefully assessed in the Environmental Report.
- 3.5.4 Pre-application discussions have been held with all key stakeholders.

4 Figures

