THE RICHBOROUGH CONNECTION

Consultation response from the Kent branch of the Campaign to Protect Rural England

CPRE campaigns for a beautiful and living countryside. It works to protect, promote and enhance our towns and countryside to make them better places to live, work and enjoy, and to ensure the countryside is protected for now and for future generations. CPRE has a branch in every English county, over 200 district groups and over 2,000 member parish councils, and is the country's main third-party participant in the planning system. CPRE believes that good land-use planning is essential for facilitating the development we need in the right locations while protecting the environment.

The Kent branch of CPRE has approximately 2,000 members and district committees in nearly all the districts and boroughs of Kent. It is the largest county CPRE branch.

CPRE Kent believes that power transmission should be effected in the manner which is least damaging to the countryside, and should make maximum use of underground and undersea cables. We continue to press for greater recognition of their impact and the benefit of placing them underground. We find it disappointing therefore that National Grid and its partners have not taken the opportunity to bury the new link that comes ashore near Richborough.

We understand that National Grid is also working on the Western Link[1]. Unlike the proposed Richborough Connection, the link is to continue the undersea High Voltage Direct Current (HVDC) cable system on land where, it will be buried underground through the Wirral peninsula south of Liverpool. The reason we refer to the Western Link is that it uses HVDC subsea and underground cables, with one converter station at each end of the link to change the electricity from direct current to alternating current for connection to the existing electricity transmission system. Unlike the Richborough Connection it does not convert the HVDC to High Voltage Alternating Current (HVAC) at the landfall point; instead, the undersea cables comes ashore at Leasowe on the Wirral peninsula, then an underground HVDC cable goes approximately 33km through the Wirral peninsula with a converter station in Deeside, Flintshire.

As a rough approximation, the distance from Richborough to Canterbury is similar to the length of that link across Wirral.

We therefore suggest that the Richborough Connection could follow exactly the same process,

[1] http://www2.nationalgrid.com/UK/In-your-area/Projects/Western-Link/

CPRE Kent, Queen's Head House, Ashford Road, Charing, Kent, TN27 0AD Fax: 01233 714549 Email: info@cprekent.org.uk

Phone: 01233 714540 www.cprekent.org.uk

using the HVDC cable system underground all the way from the undersea landfall to Canterbury, with just one convertor at or near the Canterbury end, which would avoid the need for any additional convertor stations.

We recognise that much of the land in the Wirral route is green belt, but we contend that there are significant advantages in adopting a similar approach in the Richborough route.

In support of this assertion we provide the following comments on the relative merits of HCDC versus HVAC:

HVDC is more efficient with lower transmission losses than HVAC. HVDC can therefore use cables of smaller cross-section than the AC equivalent. In the case of underground cables, HVDC also has advantages over AC because it only needs two cables per circuit, while AC needs at least 3 cables (one for each phase) per circuit. AC cables can also need reactive compensation mid route, which adds to cost/complexity.

The supporting information supplied with the consultation information provided suggests that for AC power transmission, putting cables underground is about 5 times (or more) the cost of using pylons (£1.5M per km *vs* £8.8M per km for underground cables). For HVDC cables the cost is given at £1.75M per km, but this assumes that two convertor stations would be needed (one at each end) costing £290M in total, which is significantly greater than cable costs for the distance involved. In addition, the maintenance costs for the converter stations are listed as £968k per annum per converter[2].

However, if the HVDC cable were to be continued all the way to Canterbury (as in the Wirral route), the cost would be simply that of the cable, as the proposed Convertor station at Richborough would instead be at the Canterbury end and therefore generate no extra costs for using HVDC all the way. This would reduce capital and maintenance costs tremendously. We further submit that as converter and transmission technology changes, costs will continue to reduce. For example, ABB has developed a 525kV cable which allows 64% increase in power over the previous 320 kV system for same cable size[3]. There are also new HVDC switching systems making HVDC more reliable[4,5].

This may still cost slightly more than AC cables on pylons, but would be far cheaper to put HVDC cable underground than putting AC cables underground, and having the convertor at Canterbury would further reduce costs significantly and thereby provide environmental benefits at minimal additional costs.

We acknowledge that there may be issues of a site for the convertor in Canterbury. The Wirral

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2 www.richboroughconnection.co.uk/assets/downloads/5.3%20Strategic%20Options%20Report.pdf (annex D)

3 http://eandt.theiet.org/news/2014/aug/dc-power-cable.cfm

4 http://issuu.com/energymagazines/docs/wee_oct_digital

5 www05.abb.com/global/scot/scot221.nsf/veritydisplay/c9d5ba256e7e9671c1257ab6004b1feb/$file/hybrid-hvdc-breaker---an-innovation-breakthrough-for-reliable-hvdc-gridsnov2012.pdf

scheme quotes the Deeside convertor area as 8 hectares, and a rough estimation of the Broad Oak Road National Grid site is around that size, although the siting of the convertor may be affected by the siting of other equipment. However there is the Viridor waste site north of the rail line which is heading towards closure and has a large amount of space so is an alternative possibility, especially as there are already wayleaves over the eastern part of that site.

We further note that all pylons carrying 400 kV will be determined by the Infrastructure Planning Commission, while underground cables do not. In planning terms it may therefore be cheaper to go underground, and there are options of using a rail-side route – the National Grid literature for underground applications uses an illustration of a duct beside a canal. The railway provides a facility equivalent to a canal, and there is a line all the way from Richborough to Canterbury. It would of course be subject to the rail agreement, but it would then provide them an income from wayleaves.

The Wirral cable route goes through farmland but also goes parallel to existing pylons, the railway and an A road for parts of the route[6]. The installation process is described as: "*A temporary working corridor, around 20m wide, which will be fenced off while it is being used but less where the cable needs to cross or travel along roads. Within this corridor we will install two cables in a single trench approximately 1.2m deep and 750 mm wide. The corridor will also be used to store material excavated from the trench dug for the cable and to install drainage and a temporary road for the delivery of the cable*."[7] Hence there is a much smaller space requirement for the completed system compared to an AC route, again saving costs.

We therefore appeal to National Grid and its Project Nemo partners to give full consideration to installing the cables underground.

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6 http://spng.opendebate.co.uk/files/Banners_final_low_res.pdf

7 www.westernhvdclink.co.uk/