

## Response for deadline 4 to Need Case put forward by National Grid

Planning Inspectorate ref: EN020026

Kent

### **1) Need Argument put forward by the Applicant**

In RR-4892 this was summarised as:

It should be noted that all the values referred to below are provided by the Applicant in APP-320 and are assumed to be correct.

- Estimated total scaled generation capacity by 2037 is 14,245.3 MW.
- Forecast Average Cold Spell (ACS) Peak demand for 2030/2031 is 1,556.1 MW (this is likely to be significantly higher by 2037!).
- The supply is considerably more than load so excess (12,689.2 MW) must be transferred across the SC2 boundary which is referred to as the Planned Transfer.
- NG must plan for worst case scenario which, they say, would be a fault in the double circuits connecting Canterbury North to Kemsley.
- With the fault described above the remaining circuit capability (the maximum power that can cross the boundary) for SC2 is reduced to 5,873 MW.
- NG state that circuit capability can be increased by 300W giving a new total of 6173 MW.
- This would leave a deficit of  $12,689.2 - 6173 = 6,516.2$  MW.
- NG argue that part of the solution is to export some of that deficit (2,000 MW) via Sea link.

The Applicant is describing an N-1 fault where failure of a single component, in this case an OHL, would cause widespread supply interruptions. In RR-4892 it was argued that this deficit could be dealt with by a combination of battery storage of 2,531.2MW and Interconnectors of 5,720MW within SC2. However, this is only a sticking plaster solution and there is a need to reinforce the infrastructure within SC2.

### **2) New infrastructure required**

The Applicant states that "*The principle underlying the NETS SQSS is that the NETS should have sufficient spare capability or "redundancy" such that fault conditions do not result in widespread supply interruptions.*" (APP-320) The Applicant argues that Sea Link is the solution to this N-1 problem within SC2.

However, Sea Link would still leave a deficit within SC2 of 4,516.2MW should the worst-case fault occur between Canterbury North and Kemsley risking an interruption of supply and thus appears to contravene the NETS SQSS and the N-1 Principle. Further infrastructure would be required within SC2 to solve this N-1 problem, so Sea link is NOT the answer.

The solution is to build a new overhead line (OHL) between Canterbury North and Kemsley. Using Google maps and the measure distance function, it is possible to follow the existing OHL route between Canterbury North substation and Kemsley substation. The distance is 29km.

Using data produced by the Institute of Engineering and Technology (IET) "A Comparison of Electricity Transmission Technologies: Costs and Characteristics" by Mott MacDonald April 2025, it is possible to calculate the approximate cost of a new 7,482MW OHL. It should be noted that the shorter the cable, the more expensive the construction is. Using IET 2025 data gives a figure of £4.03m / km for a 3km

length (p42), £3.20m for a 15km length (p45) and £2.95m / km for a 75km length (p48). This gives costs for the 29km OHL of £117m, £93m and £86m respectively. With the distance being 29km the likely cost will be between £86m and £93m.

The provision of this second OHL of 7,482MW is more than sufficient to offset the 6,516.2MW deficit calculated by the Applicant should the “worst-case fault” between Kemsley and Canterbury North occur. Unlike Sea Link this single solution does satisfy the requirements of NETS SQSS and the N-1 Principle.

## Suffolk

### 3) Need Argument put forward by the Applicant

The Applicant calculates that if the worst-case fault occurred between Bramford and Sizewell which “leaves the remaining double circuit with a maximum potential capability of 6,930 MW and generation transfer of 8782.1 MW leaving a deficit of more than -1852 MW”.<sup>1</sup>

However, the generation figure of 8,782 includes two interconnectors. One is Nautilus (1500MW) which is no longer relevant because it is now going to Grain. This reduces the deficit to 352MW.

Seb Stevens for the Applicant acknowledged this in the ISH 1 but:

“planned transfer of scale generation would reduce from 1852MW to 352MW, and indeed, a shortfall in transfer capacity of 352MW is still a needs case that would need to be met”. (REP3-011)

SEAS in REP3-125 concur that this 352MW deficit needs to be met but “can easily be accommodated by a reconductoring of the Sizewell to Bramford double circuit that will have to be done, in any event, before Sizewell C’s reactors are commissioned. Increasing the thermal and load capacity of the conductors of those double circuits can be accomplished easily, at an incremental cost of only £ tens of millions rather than £billions for Sea Link with two onshore HVDC converters etc.” This can also be done much quicker than building a new circuit.

Using IET 2025 data it is possible to calculate the cost of reconductoring one of the two double circuits between Sizewell and Bramford which is a distance of 55km. The cost of reconductoring, according to the IET 2025 data (p106), with a cost of £1.20m / km for an additional capacity of up to 2,494MW would be £66 million. Although doing one of the double circuits would add more resilience to the network (greater than the Sea Link value of 2000MW), it would seem sensible to reconduct both and would add up to 4,988MW to the Sizewell group. This would give a total cost of £132m.

### 4) Cost Comparison

The final cost of the Sea Link project is unknown and documentation from Sea Link is contradictory and does not seem to be realistic. The cost of £1.1 billion is either based on 2018/2019 prices (REP3-011) or 2021/2022 prices (APP-320) depending on which document you read. 2025 IET data on page 105 gives the build cost for a 180km 2000MW HVDC subsea cable with a convertor station at each end as £2,549m. Using that data it is possible to estimate the likely cost of Sea Link to be at least £2 billion rather than the £1.1 billion referred to by the Applicant.

Combining the cost of building a new OHL in Kent (circa £90m) and reconductoring both of Sizewell to Bramford OHLs (£132m) gives a total cost circa £222m. Sea Link cost circa £2 billion (with extra infrastructure needed in addition) compared with £0.222 billion.

## 5) Capacity added to the Network

Sea Link will add 2000MW capacity to the network.

A new OHL between Canterbury North and Kemsley will add 7,482MW capacity to the network.

Reconductoring both OHLs between Sizewell and Bramford will add up to 4,988MW capacity to the network.

## 6) Related projects

### Kent

It should be noted that there is no need to reinforce the Richborough to Canterbury North infrastructure because a new 400kv OHL involving 60 pylons was completed in 2018 for the NEMO project. In addition, new substations were built at Richborough and Canterbury North and these were also completed in 2018.

It should also be noted that there is no need to reinforce the Kemsley to Littlebrook infrastructure because a new 400kv OHL was completed in 2020 and a new 400kv substation at Littlebrook was completed in 2024.

### Suffolk

The reconducted OHLs between Sizewell and Bramford will connect into the proposed new OHL between Norwich and Tilbury via Bramford. The examination for this NSIP begins on 9<sup>th</sup> February.

## 7) Related legislation

The Applicant has sought Compulsory Acquisition powers as a vital part of their application. Section 122 of the Planning Act 2008 makes clear that:

*“122 Purpose for which compulsory acquisition may be authorised:*

*(3) The condition is that there is a compelling case in the public interest for the land to be acquired compulsorily.”*

There is not a compelling case in the public interest to spend approximately £2 billion on Sea Link when a cheaper (£0.222 billion), less environmentally damaging, effective alternative is available.

Section 9 of the Electricity Act 1989 states that *“It shall be the duty of an electricity distributor— (a) to develop and maintain an efficient, co-ordinated and economical system of electricity distribution;”*.

Spending circa £2 billion rather than £0.222 billion is not efficient, coordinated or economical and appears to contravene Section 9 of the Act.

There is not a compelling case in the public interest to spend circa £2 billion on Sea Link when it does not satisfy the requirements of NETS SQSS and the N-1 Principle. A new OHL would satisfy both at a fraction of the cost.

**I feel that the applicant has not put forward a compelling needs case and ask that an ISH be held on the subject of “Need”.**

David Stevens