Electricity Transmission

Network Development Policy Decisions

30th June 2019

Purpose

This document describes the investment options National Grid Electricity Transmission (NGET[1]) has selected to progress under our Network Development Policy (NDP) dated 31st August 2017.

Background

There is significant uncertainty around the quantity, type and location of future generation, demand, and interconnector connections. As these connections may lead to the need to provide additional capacity on the wider transmission network, the nature of the wider works required is also uncertain. This uncertainty is compounded by the lead-time for some transmission reinforcements often being greater than the lead-time for the development of new connections.

For wider works, this uncertainty is managed through our NDP. The purpose of this is to balance the risks of investing too early, which include the risk of inefficient financing costs and an increased stranding risk, with the risks of investing too late, which include inefficient congestion costs.

The NDP provides the framework on which NGET decides to proceed, not start or to delay wider investment in an economic, efficient and coordinated manner. The analysis is conducted annually so that investment options are reviewed for the coming year.

Each year, a range of Future Energy Scenarios (FES) are developed by the National Grid Electricity System Operator (NGESO) following extensive stakeholder consultation. These scenarios are then used in NGESO's Electricity Ten Year Statement (ETYS) to establish the future need for boundary reinforcements in each of the scenarios. Against these needs in England and Wales transmission network, NGET has identified investment options that can meet the possible future needs of the network.

NGESO compares the expected congestion costs against the cost of the investment options in an economic analysis as part of the Network Options Assessment (NOA) process. The purpose of this is to identify investments that have the least regret of proceeding.

[1] The terms 'National Grid Electricity Transmission', 'NGET', 'we', 'our' and 'us' are used interchangeably in this document.

NGET uses the NOA output to assist making investment decisions to ensure that the transmission part of the industry provides the best value outcome for existing and future consumers.

It is worth noting that in some cases 'enabling works' in our customers' connection agreements include some of the same works as in this document which are subject to NOA or NDP assessment. The NOA or NDP assessment determines only if these should be progressed to support the wider transmission system. The delivery of these 'enabling works' is communicated and planned jointly with the relevant connection customer on a project by project basis.

Network Options Assessment 2018/19

The 2018/19 NOA results[2] were published by NGESO in January 2019. As part of this NOA, NGET submitted 99 investment options for economic analysis. Of these, 61 options were considered by NGESO to provide an economic benefit in one or more scenarios in FES, with 21 being recommended to 'Proceed' with their Earliest In Service Dates (EISDs).

Network Development Policy Decisions (30th June 2019)

We have reviewed the NOA 2018/19 recommendations and made our investment decisions in line with NDP. The table in Appendix 1 provides a summary of our conclusions. For most investments, our NDP decisions align with NGESO's NOA recommendations. Comments on some notable projects are provided as below.

Eastern Link and Central Yorkshire Reinforcement (E2DC, E4D3, OENO)

There continues to be a strong driver to deliver an increased level of Scottish-Anglo transmission capacity. Based on the options submitted for assessment, two HVDC links are proposed (as per the previous NOA report): the first from Torness to Hawthorn Pit in 2027 (a joint SPT – NGET project) and the second from Peterhead to Drax in 2029 (a joint SSE-NGET project).

It is worth noting that realising system benefit of the HVDC links would also require additional network capacity in NGET's network in East of England region, therefore the 'Proceed' recommendation for Central Yorkshire Reinforcement (OENO) in NOA 2018/19. We are currently investigating all options which provide network capacity in this region for submission to NOA 2019/20 analysis.

Power Flow Control Devices and Lister Drive Quad Booster (FSPC, HSPC, LDQB, LNRE)

This year was the first time that we have proposed new 'power flow control devices', focusing this year on options within the north. A key benefit of these devices is that they can be deployed quickly (with a 2020 EISD proposed in 2018/19 NOA) and for a lower cost than a traditional quad booster installation, while delivering the same system benefit.

Besides the two projects (FSPC, HSPC) which are recommended in NOA 2018/19, we have also found cost efficiency in replacing LDQB and LNRE with installation of 'power flow control devices' through post NOA cost benefit analysis and discussions with NGESO. Replacement projects will be submitted to NGESO for NOA 2019/20 assessment in September 2019.

South Coast Reinforcement (SCN1)

[2] https://www.nationalgrideso.com/document/137321/download

For the second year, the NOA has recommended a south coast reinforcement to significantly increase network capacity transferring power from the South Coast region. We are currently investigating all options to deliver the network capacity required in the required timescales.

Bramford – Twinstead New 400kV Double Circuit (BTNO)

The FES 2018 suggested there is likely to be significantly more offshore wind generation and interconnection capacity connecting to East Anglia than was contained in the 2017 scenarios. As a result, a new double circuit from Bramford to Twinstead is recommended by NGESO to 'Proceed' for constraint management in East Anglia and North London.

Given previous stakeholder engagement around the project, we will 'Proceed' the project with caution. The project will commence from the earliest stage of investment development to explore all options that can meet the capacity requirement. Commercial intelligence from CfD award this year can also help with further understanding of project needs case.

Fleet – Lovedean Reconductoring (FLR2)

We have received multiple NOA signals in previous years that this was required to be delivered in 2020, and have developed the scheme to enable this. This years' formal NOA publication notes that we should 'hold' and not deliver this project until 2025 given outage restrictions.

Subsequently, further analysis between NGET and NGESO have recognised that this recommendation would not be the most economic or efficient option due to risks in system constraints around 2025. An optimised outage plan in the South-East region for 2020 was jointly developed as the least regret solution. NGESO has confirmed in writing that we should progress with delivery of FLR2 in 2020. We are keeping 'Proceed' status of the project under NDP this year.

We welcome your feedback

We believe that the above outputs from our Network Development Policy provide an appropriate balance between asset investment and operational costs to achieve the best use of consumers' money. We hope that the information contained within this document provides a useful insight of how we are seeking to protect consumers' interests by ensuring that investment is made at an appropriate time.

We would welcome your views on the contents of this document. Please send any feedback to Mark Perry, Network Development Manager (mark.perry@nationalgrid.com).

APPENDIX 1

KEY

1. **PROCEED** – Work should continue, or start, to maintain the EISD.
2. **HOLD** - The option is optimal but not critical and an investment decision should be put on hold. Delivery of this option should be delayed by at least one year.
3. **DELAY** – The option is optimal and critical, but it is not economical to be delivered by its EISD. Delivery should be delayed by one year.
4. **DO NOT START** – The option is currently non-optimal. Delivery should not begin.
5. **STOP** - The option is currently non-optimal. Delivery should not be continued.

	NOA Option Code	Description	EISD	NOA 17/18	NOA 18/19	NGET NDP Decision (In coloured wordings)/Comments
Eastern Link and Central Yorkshire Reinforcement						
1	E2DC	**Eastern Link:** Torness to Hawthorn Pit	2027	**PROCEED**	**PROCEED**	**PROCEED** in line with NOA recommendation, but continue to follow SWW process to include further work to determine the optimal option for the Eastern Link projects.
2	E4D3	**Eastern Link:** Peterhead to Drax	2029	**NOT INCLUDED**	**PROCEED**	**PROCEED** in line with NOA recommendation, but continue to follow SWW process to include further work to determine the optimal option for the Eastern Link projects.
3	E4DC	**Eastern Link:** Peterhead to Hawthorn Pit	2027	**PROCEED**	**STOP**	**STOP** in line with NOA recommendation. This option is replaced by Peterhead – Drax, based on the assumption that two links should not connect at the same site due to issues with link and controller interaction. We will follow the SWW process to include further work to determine the optimal option for the Eastern Link projects.
4	OENO	Central Yorkshire Reinforcement	2027	**HOLD**	**PROCEED**	**PROCEED** in line with NOA recommendation, but with a clear link into Eastern Link Programme
Power Flow Control Devices and Lister Drive Quad Booster						
5	FSPC	**Power Flow Control Devices:** Fourstones - Stella West	2020	**NOT INCLUDED**	**PROCEED**	**PROCEED** in line with NOA recommendation. We will deliver at all sites deemed economic by ongoing CBA.
6	HSPC	**Power Flow Control:** Harker - Stella West	2020	**NOT INCLUDED**	**PROCEED**	**PROCEED** in line with NOA recommendation. We will deliver at all sites deemed economic by ongoing CBA.
7	LDQB	Lister Drive QB	2020	**PROCEED**	**PROCEED**	**STOP** delivery of this project as delivery of the Power Flow Control devices has been shown to be optimal post NOA publication, supported by a CBA. Replacement scheme will be submitted for NOA 2019/20.
Mersey Ring Uprate						
8	MRUP	**Mersey Ring Uprate:** Uprate Penwortham to Washway Farm to Kirkby double circuit to 400kV	2023	**PROCEED**	**STOP**	**STOP** in line with NOA recommendation.
South Coast Reinforcement						
9	SCN1	South Coast Reinforcement to increase network capacity in the region	2026	**DO NOT START**	**PROCEED**	**PROCEED** in line with NOA recommendation for further investigation on options to increase network capacity in the region.
Bramford – Twinstead New 400kV Double Circuit						
10	BTNO	New DC from Bramford to Twinstead	2026	**DELAY**	**PROCEED**	**PROCEED** in line with NOA recommendation, but this will be done with caution. Project will commence from the earliest investment stage to determine required scope and optimal option for delivery.
Fleet – Lovedean Reconductoring						
11	FLR2	Fleet - Lovedean reconductoring (with different conductor to FLRE)	2020	**PROCEED**	**HOLD**	**PROCEED** in line with our view following outage optimisation, and we have had formal confirmation from NGESO that this should be delivered in 2020.
SGT Replacements						
12	HAE2	Harker SGT5 Replacement	2022	**HOLD**	**PROCEED**	**PROCEED** in line with NOA recommendation
13	HAEU	Harker SGT6 Replacement	2021	**PROCEED**	**PROCEED**	**PROCEED** in line with NOA recommendation
Reactive Compensation Equipment Installation						
14	NEMS	North East MSCs (225MVArs at Norton)	2022	**NOT INCLUDED**	**PROCEED**	**PROCEED** in line with NOA recommendation
15	THS1	Series reactors at Thornton	2023	**HOLD**	**PROCEED**	**PROCEED** in line with NOA recommendation

16	BMM2	225MVAr MSCs at Burwell Main (2022)	2022	**NOT INCLUDED**	**PROCEED**	**PROCEED** in line with NOA recommendation
17	BMM3	225MVAr MSC at Burwell Main (2023)	2023	**NOT INCLUDED**	**PROCEED**	**PROCEED** in line with NOA recommendation
18	BMMS	225MVAr MSCs at Burwell Main	2023	**PROCEED**	**STOP**	**STOP** in line with NOA recommendation. This is replaced by BMM2 and BMM3.
19	BNRC	Bolney and Ninfield reactive Compensation	2022	**PROCEED**	**PROCEED**	**PROCEED** in line with NOA recommendation
20	SEEU	Reactive compensation protective switching scheme	2021	**PROCEED**	**PROCEED**	**PROCEED** in line with NOA recommendation
Reconductoring/Overhead Line Works						
21	TDR1	Drax to Thornton 2 circuit thermal uprating	2021	**PROCEED (prev. TDH1)**	**DO NOT START**	**DO NOT START** in line with NOA recommendation.
22	CDRE	Cellarhead - Drakelow Circuit Reconductoring	2022	**HOLD**	**PROCEED**	**PROCEED** in line with NOA recommendation
23	CPRE	Reconductor sections of the Penwortham - Padiham and Penwortham - Carrington Circuits	2021	**PROCEED**	**HOLD**	**HOLD** in line with NOA recommendation
24	TKRE	Tilbury - Grain and Tilbury - Kingsnorth Upgrade	2025	**PROCEED**	**STOP**	**STOP** in line with NOA recommendation.
25	WYTI	Wymondley Turn In	2021	**PROCEED**	**HOLD**	**HOLD** in line with NOA recommendation
26	KLRE	Kemsley - Littlebrook Reconductoring	2020	**PROCEED**	**PROCEED**	**PROCEED** in line with NOA recommendation
27	RTRE	Reconductor remainder of Rayleigh - Tilbury	2021	**HOLD**	**PROCEED**	**PROCEED** in line with NOA recommendation
28	NOR1	Reconductor Norton - Osbaldwick double circuit	2021	**PROCEED**	**HOLD**	**HOLD** in line with NOA recommendation
29	WHTI	Turn in West Boldon - Hartlepool cct at Hawthorn Pit	2021	**PROCEED**	**PROCEED**	**PROCEED** in line with NOA recommendation
30	LNRE	Reconductor Lackenby - Norton single cct	2022	**HOLD**	**PROCEED**	**STOP** delivery of this project as delivery of the Power Flow Control devices has been shown to be optimal post NOA publication. Replacement scheme will be submitted for NOA 2019/20.