SSEN Distribution

DNOA OUTCOMES REPORT

November 2024

Scottish & Southern Electricity Networks

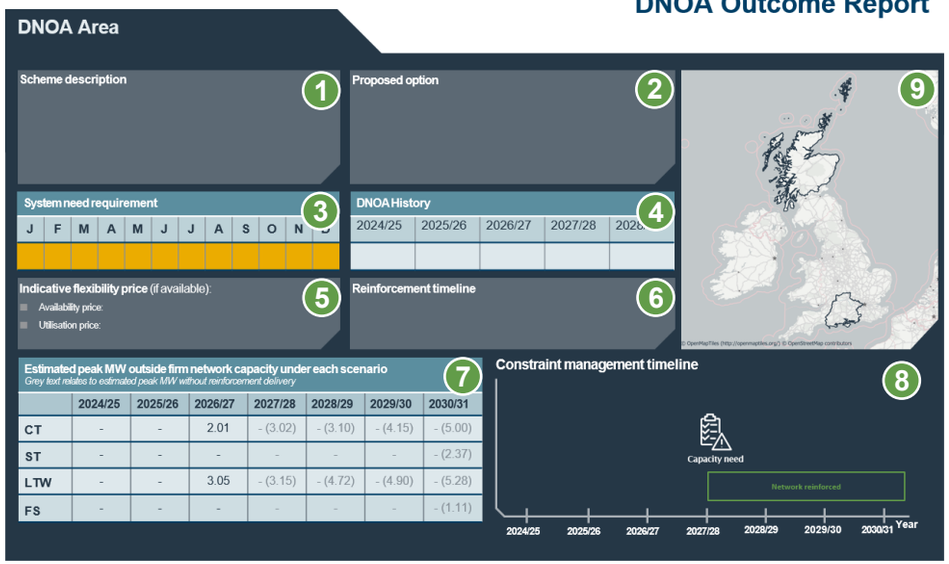
DSO Powering Change

Contents

How to view this report

The following guidance note can be used to help navigate each outcomes report

DNOA Outcome Report



1 Scheme description:

- This section describes the location where a system need has been identified. This is accompanied with indicative postcodes for the customer areas related to this scheme.
- Included is the type of constraint on the network.

2 Proposed option:

- An outline of the proposed solution option aligned with the defined outcomes in the DNOA methodology. A description of any flexibility procurement and/or reinforcement works required is provided and justified.
- An estimated value for the capacity released by the delivery of any works required can be found here. It does not necessarily relate to available capacity.

3 System need requirement:

- This table highlights in yellow the months of the year where there is a potential system need due to the constraint arising.

4 DNOA history:

- A record of the outcome report status.

5 Indicative flexibility price:

- The indicative flexibility price used in the techno-economic assessment is given in this section where relevant and available.
- This is given as an availability (£/MW/h) and utilisation (£/MWh) price.

6 Reinforcement timeline:

- Where reinforcement is proposed, an indicative delivery year for the completion of works is given.

7 Estimated peak MW outside firm capacity:

- The forecasted exceedance of load over the firm capacity of the transformer.

8 Constraint management timeline:

- The timeline illustrates the stages needed to remove the constraint from the network.
- **For schemes proposing to procure flexibility:** The first stage (purple) is an indicative 2-year initial flexibility procurement window where any required services will be acquired. The second stage (yellow) indicates the years where the option uses flexibility services to release more capacity. The last stage (green) indicates the year when capacity will be increased on the network to relieve the constraint.
- **For schemes proposing an asset solution:** The timeline indicates when capacity will be increased on the network to relieve the constraint.

9 Scheme map:

- The map provided shows the approximate geographical area covered by the scheme.

Index of DNOA outcomes - SHEPD

1 Procure Flexibility Solutions - *see below the DNOA Outcome Reports proposing flexibility opportunities*

DNOA outcome	Flexibility utilisation period	Indicative postcode areas
Ref. 1124-03 – Forres (Forres 33kV Circuits) – Pg. 10	2026/27-2027/28 (2 years)	IV36
Ref. 1124-04 – Forres (Forres PSS) – Pg. 11	2026/27-2027/28 (2 years)	IV36
Ref. 1124-05 – Isle of Skye & Wester Ross (Broadford GSP) – Pg. 12	2027/28 - 2031/32 (5 years)	IV40-46, IV49, IV51-54

2 Asset Solutions - *see below the DNOA Outcome Reports proposing asset solutions only*

DNOA outcome	Capacity increase from	Indicative postcode areas
Ref. 1124-01 – Ardersier (Ardersier and Dalcross PSS) – Pg. 8	2027/28	IV1, IV2, IV12
Ref. 1124-02 – Ellon (Ellon PSS) – Pg. 9	2026/27	AB41, AB42
Ref. 1124-06 – Kippen and Callander (Braco West GSP) – Pg. 13	2028/29	FK8, FK9, FK15, FK16, FK17, G63
Ref. 1124-07 – North Uist (Clachan PSS) – Pg. 14	2026/27	HS6
Ref. 1124-08 – Northeast Aberdeenshire (Strichen 33kV Circuits) – Pg. 15	2029/30	AB41, AB42, AB53
Ref. 1124-09 – Skulamus, Isle of Skye (Skulamus PSS) - Pg. 16	2027/28	IV41- IV46, IV49

Index of DNOA outcomes - SEPD

1 Procure Flexibility Solutions - *see below the DNOA Outcome Reports proposing flexibility opportunities*

DNOA outcome	Flexibility utilisation period	Indicative postcode areas
Ref. 1124-14 – East Southampton (Weston, Bitterne and Woolston PSS) – Pg. 22	2026/27-2027/28 (2 years)	SO14-19, SO30-32, SO40, SO45, SO50, SO53
Ref. 1124-17 – North Oxfordshire (Yarnton & Witney BSP) – Pg. 25	2024/25 & 2026/27 - 2028/29 (4 years)	GL54, OX(1-5, 7, 13-15, 18, 20, 25, 27-29), SN7
Ref. 1124-18 – Northeast Chichester (Chichester PSS) – Pg. 26	2027/28 (1 year)	BN18, PO18 – 22
Ref. 1124-19 – Sandford-on-Thames (Rose Hill PSS) – Pg. 27	2026/27 - 2030/31 (4 years)	OX1, OX4, OX44
Ref. 1124-22 – Thatcham and Newbury (Thatcham BSP) – Pg. 30	2027/28 (1 year)	OX12, RG14, RG17, RG18, RG19, RG2, RG20, RG25, RG26, RG28, RG7, RG8, SN8 , SP11

2 Asset Solutions - *see below the DNOA Outcome Reports proposing asset solutions only*

DNOA outcome	Capacity increase from	Indicative postcode areas
Ref. 1124-10 – Alton and Fernhurst (132kV Switching Station) – Pg. 18	2028/29	GU8-35, RG21-29
Ref. 1124-11 – Arundal & Yapton (Bilsham PSS) – Pg. 19	2030/31	BN17, BN18, PO22
Ref. 1124-12 – Cowley & Moreton (Cowley Local Main BSP) – Pg. 20	2027/28	OX1, OX(3-4), OX(10-11), OX14, OX33, OX44
Ref. 1124-13 – East Southampton (Bitterne PSS) – Pg. 21	2026/27	SO18-19, SO30
Ref. 1124-15 – Faringdon (Shrivenham, Faringdon, Black Bourton PSSs) – Pg. 23	2027/28	GL7, OX18, SN4, SN6, SN7

Index of DNOA outcomes - SEPD

2 Asset Solutions - *see below the DNOA Outcome Reports proposing asset solutions only*

DNOA outcome	Capacity increase from	Indicative postcode areas
Ref. 1124-16 – Felpham (South Bersted PSS) – Pg. 24	2028/29	PO21, PO22
Ref. 1124-20 – Southampton City Centre (Central Bridge 33kV circuits) – Pg. 28	2028/29	SO14, SO15
Ref. 1124-21 – Southampton City Centre (Southampton BSP) – Pg. 29	2030/31	SO14, SO15, SO17
Ref. 1124-23 – West Oxfordshire (Witney BSP) – Pg. 31	2028/29	GL54, OX(2, 7, 8, 13, 14, 18, 28, 29), SN7

DNOA OUTCOMES - SHEPD

Ardersier (Ardersier and Dalcross PSS)

Scheme description

- The reinforcement of the 33kV overhead line from Nairn to Ardersier and Dalcross PSSs will increase capacity in the Ardersier area. Postcode(s): IV1, IV2, IV12.
- Local authority: Highland
- Load related – substation and circuit thermal overload and voltage issues during intact conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Replacement of the existing overhead line from Nairn busbar to Ardersier tee with underground cable.
- Flexibility was unable to be utilised due to being uneconomical from CEM output.
- This option addresses the forecasted thermal overload on the 33kV overhead line out to 2050.
- Capacity released: 15.7MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

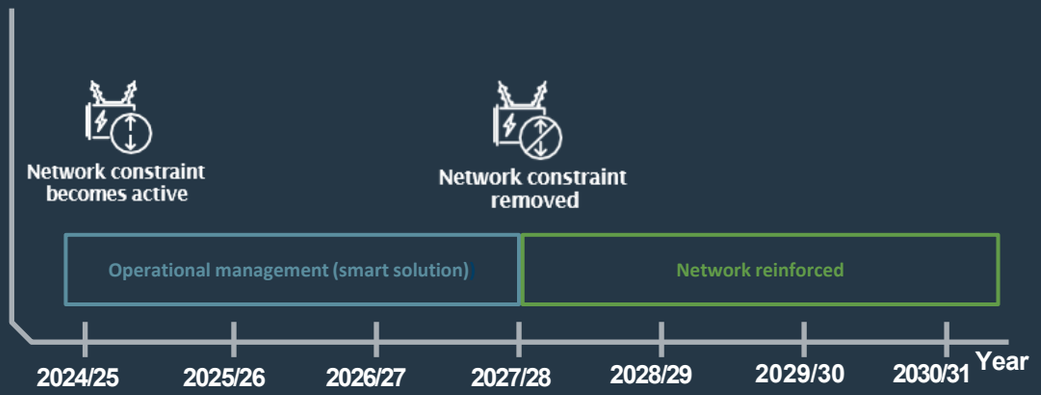
- Reinforcement delivery by the end of 2026/27.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	1.27	1.74	2.37	- (3.12)	- (4.10)	- (5.18)	- (6.00)
ST	1.26	1.68	2.23	- (2.88)	- (3.71)	- (4.68)	- (5.40)
LTW	1.33	1.85	2.51	- (3.27)	- (4.26)	- (5.38)	- (6.27)
FS	1.25	1.67	2.15	- (2.74)	- (3.54)	- (4.43)	- (5.11)

Constraint management timeline



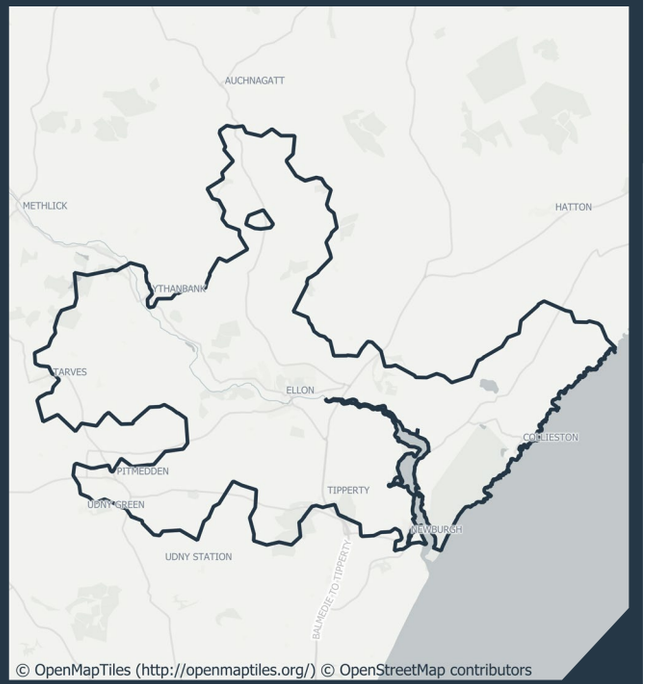
Ellon (Ellon PSS)

Scheme description

- The reinforcement of the Ellon PSS will increase capacity in the northeast Aberdeenshire area. Postcode(s): AB41, AB42.
- Local authority: Aberdeenshire
- Load related – substation and circuit thermal overload and low voltage issues in FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Reinforcement of existing 2 x 33/11kV transformers and reconfiguration/re-rating of the 33kV circuits including installation of voltage regulating equipment.
- Flexibility was unable to be utilised due to it not being suitable to address the constraint type.
- This option addresses the thermal overload at Ellon PSS out to 2034.
- Capacity released: 8.99MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

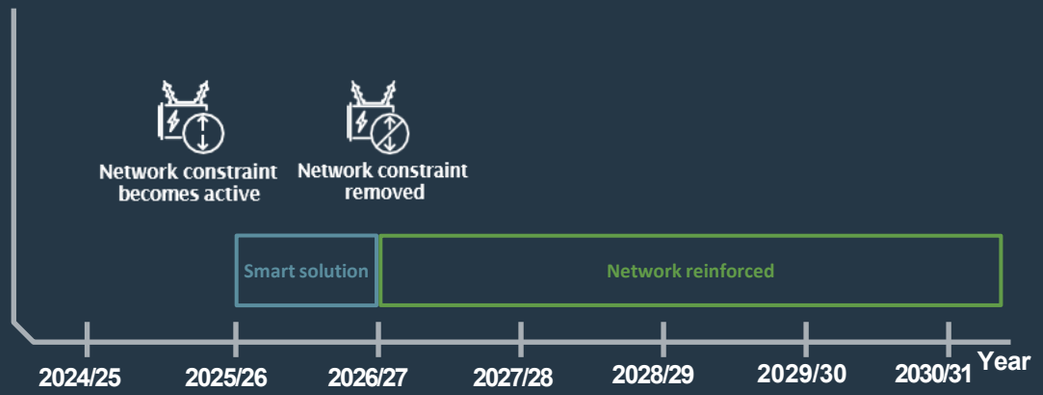
- Reinforcement delivery by the end of 2025/26.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	0.3	- (1.3)	- (2.4)	- (3.4)	- (4.6)	- (5.9)
ST	-	-	- (0.3)	- (0.8)	- (1.2)	- (1.9)	- (2.8)
LTW	0.3	0.9	- (1.9)	- (3.0)	- (4.0)	- (5.4)	- (7.2)
FS	-	-	-	- (0.4)	- (0.6)	- (1.1)	- (1.8)

Constraint management timeline



Forres and Kinloss (Forres and Kinloss PSS)

Scheme description

- The reinforcement of the Forres and Kinloss PSSs will increase capacity in the Forres and Kinloss area. Postcode(s): IV36.
- Local authority: Moray
- Load related – substation and circuit thermal overload and voltage issues during FCO and intact conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Reinforce the 33kV supply circuits to Forres and Kinloss PSSs.
- This option addresses the forecasted thermal and voltage issues at Forres and Kinloss PSSs out to 2050.
- Capacity released: 36.8MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £150/MW/h
- Utilisation price: £200/MWh

Reinforcement timeline

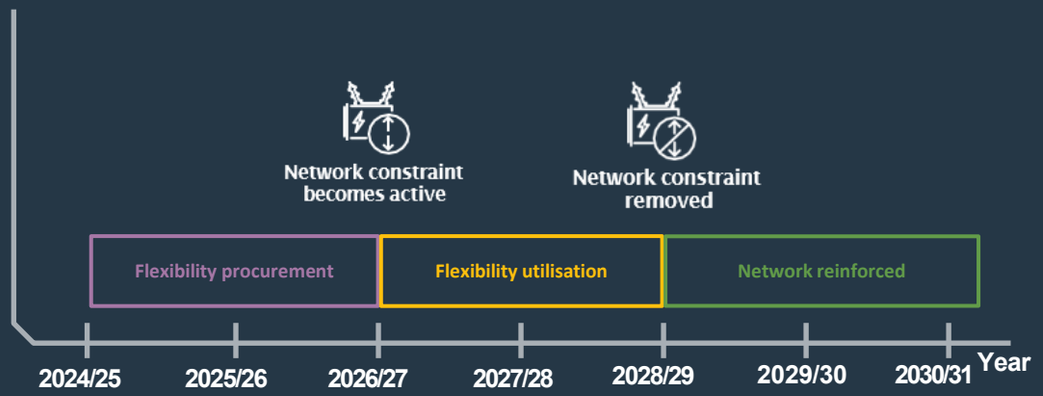
- Flexibility solution utilised from start of 2026/27 until end of 2027/28.
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	0.04	1.59	- (3.43)	- (5.35)	- (6.88)
ST	-	-	-	-	- (0.92)	- (2.31)	- (3.35)
LTW	-	-	0.84	2.48	- (4.38)	- (6.51)	- (8.45)
FS	-	-	-	-	-	- (0.37)	- (1.14)

Constraint management timeline



Forres (Forres PSS)

Scheme description

- The reinforcement of the Forres PSS will increase capacity in the Forres area. Postcode(s): IV36.
- Local authority: Moray
- Load related – substation thermal overload issues during intact conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Replacement of the Forres 33/11 kV transformers.
- This option addresses the forecasted thermal overload at the transformers feeding Forres PSS out to 2050.
- Capacity released: 25MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £150/MW/h
- Utilisation price: £200/MWh

Reinforcement timeline

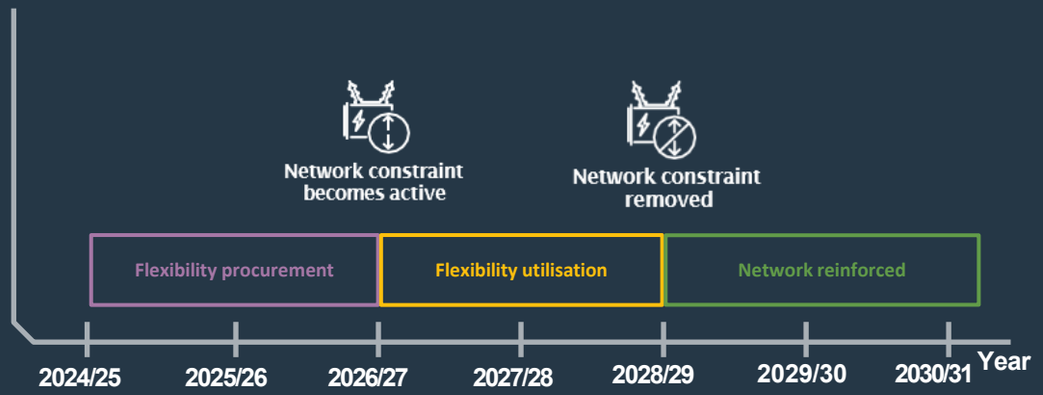
- Flexibility solution utilised from start of 2026/27 until end of 2027/28.
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	1.21	3.03	- (5.20)	- (7.47)	- (9.26)
ST	-	-	0.08	1.28	- (2.50)	- (4.20)	- (5.45)
LTW	-	0.25	2.08	3.99	- (6.22)	- (8.73)	- (10.95)
FS	-	-	-	0.12	- (1.11)	- (2.10)	- (3.07)

Constraint management timeline



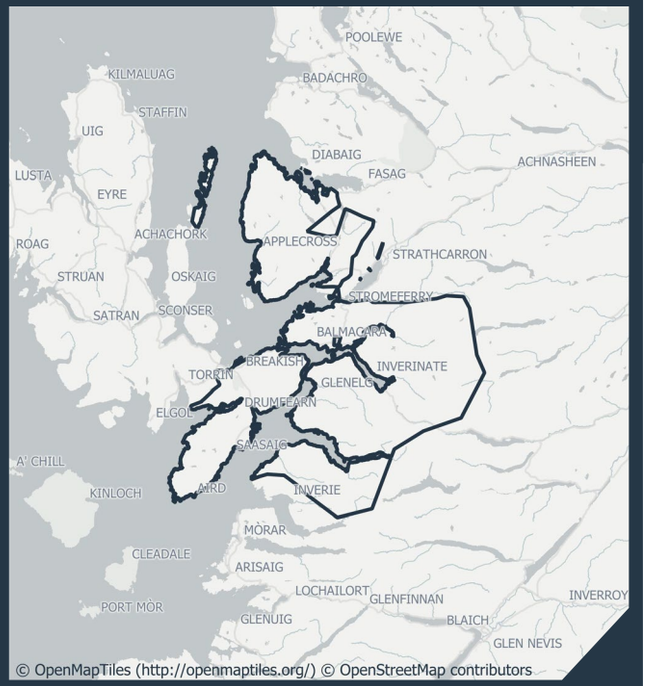
Isle of Skye & Wester Ross (Broadford GSP)

Scheme description

- The reinforcement of the Broadford GSP will increase capacity in the Isle of Skye and Wester Ross areas. Postcode(s): IV40-46, IV49, IV51-54.
- Local authority: Highland Council
- Load related – thermal overload and voltage issues during FCO and intact conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Utilise flexibility for 5 years, followed by reinforcement of Broadford GSP - Skulamus PSS 33kV circuit by 2031/32. Followed by asset solution to install 33kV voltage regulating assets by 2034/35.
- This option addresses the forecasted thermal and voltage issues at Broadford GSP out to 2050.
- Capacity released: 1.12MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £108/MW/h
- Utilisation price: £133/MWh

Reinforcement timeline

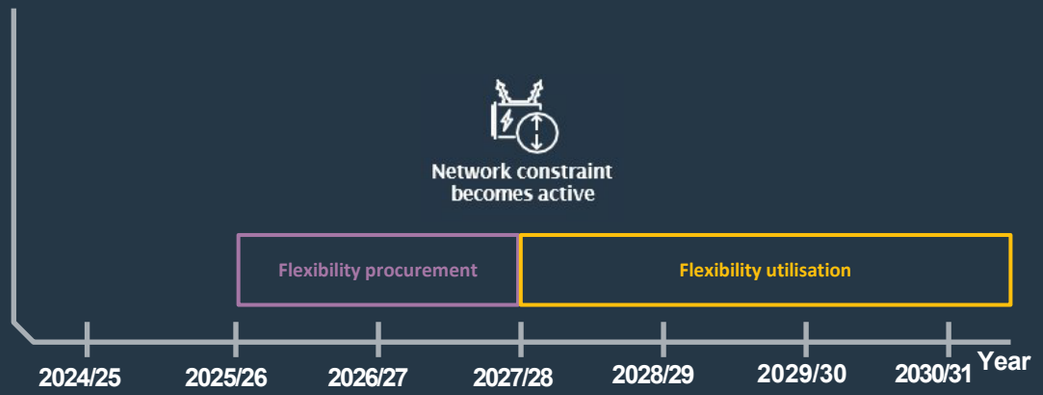
- Flexibility solution utilised from start of 2027/28 until the end of 2031/32.
- Reinforcement delivery by the end of 2034/35.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	0.15	0.46	0.79	1.12
ST	-	-	-	-	-	-	-
LTW	-	-	-	0.16	0.38	0.67	1.03
FS	-	-	-	-	-	-	-

Constraint management timeline



Kippen and Callander (Braco West GSP)

Scheme description

- The reinforcement of the Kippen PSS/Callander PSS will increase capacity in the Stirlingshire area. Postcode(s): FK8, FK9, FK15, FK16, FK17, G63.
- Local authority: Stirling Council
- Load related – voltage issues during network intact and FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Installation of 33kV voltage regulating equipment at Callander PSS and reinforcement of Braco West GSP 33kV Circuit. Followed by installation of additional 33kV circuits from Braco West 2 GSP to Callander PSS and Kippen PSS within ED3.
- Flexibility was unable to be utilised due to insufficient flexible assets.
- This option addresses the voltage issues at Callander PSS/Kippen PSS out to 2031. Further works are required within ED3 to enable a constraint free network up to 2050.
- Capacity released: 4.7MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

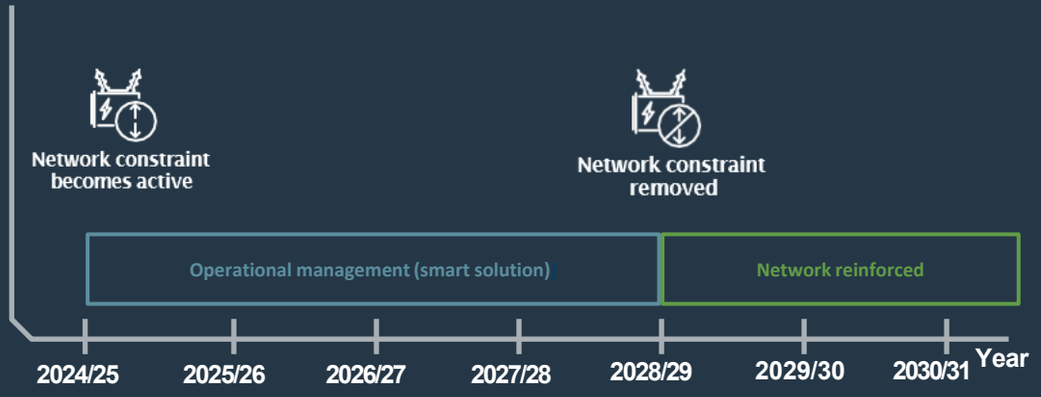
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	-	-	-	-
ST	-	-	-	-	-	-	-
LTW	-	-	-	-	-	-	-
FS	-	-	-	-	-	-	-

Constraint management timeline



North Uist (Clachan PSS)

Scheme description

- The reinforcement of Lochmaddy PSS will increase capacity in the North Uist area. Postcode(s): HS6.
- Local authority: Na h-Eileanan Siar
- Load related – substation voltage issues during FCO conditions due to forecasted demand growth, with additional increased resilience requirements.

Proposed option

- Asset Solution: The creation of a new Lochmaddy 33/11kV PSS and the installation of a new 33kV circuit from Clachan to Lochmaddy.
- Flexibility was unable to be utilised due to it not being a suitable option for the constraint type.
- This option addresses the forecasted voltage issues at Clachan PSS out to 2050.
- Capacity released: 12.4MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

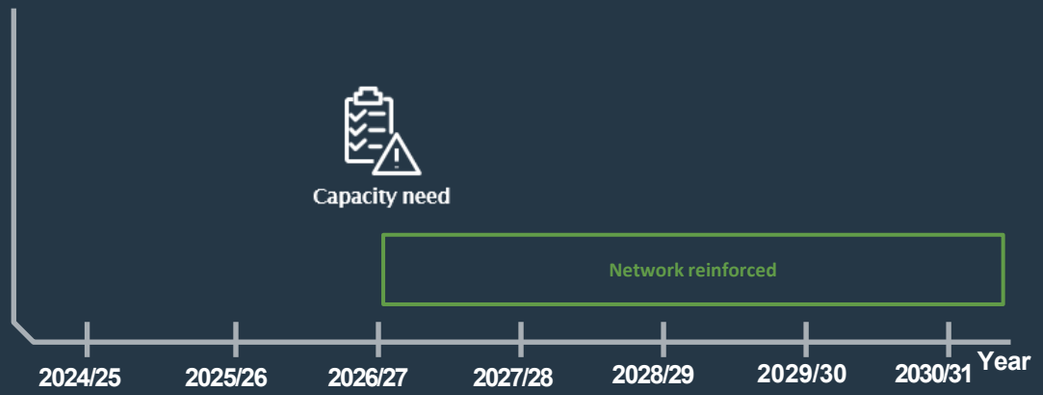
- Reinforcement delivery by the end of 2025/26.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	-	-	-	-
ST	-	-	-	-	-	-	-
LTW	-	-	-	-	-	-	-
FS	-	-	-	-	-	-	-

Constraint management timeline



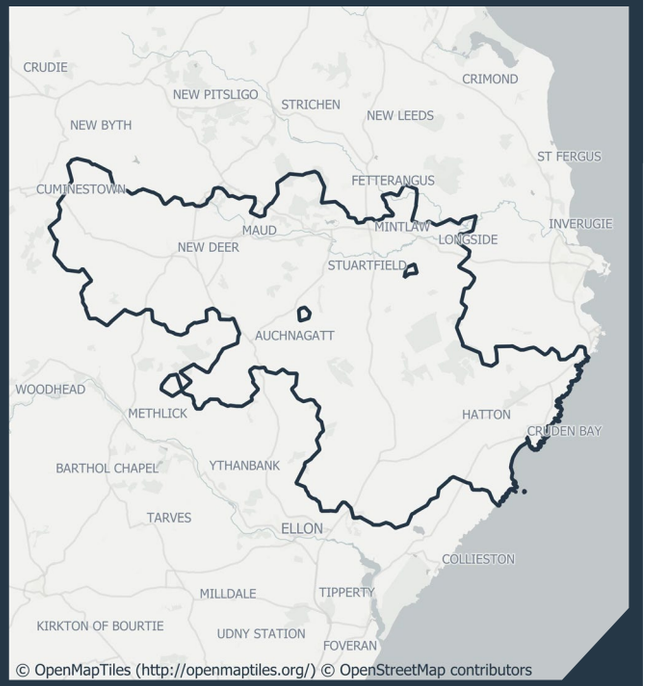
Northeast Aberdeenshire (Strichen 33kV Circuits)

Scheme description

- The reinforcement of Strichen 33kV circuits will increase capacity in the northeast Aberdeenshire area. Postcode(s): AB41, AB42, AB53.
- Local authority: Aberdeenshire Council
- Load related – thermal overload and voltage issues under FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Reinforcement of existing 33kV circuits with underground cable. Flexibility not utilised as this involves additional complexity to resolve voltage issues, becoming a more expensive solution.
- This option addresses the overloading issues on the Strichen 33kV circuits out to 2050. Resolves voltage issues in the near-term, further enhancements may be needed in the future to manage voltage requirements.
- Capacity released: 25.6MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

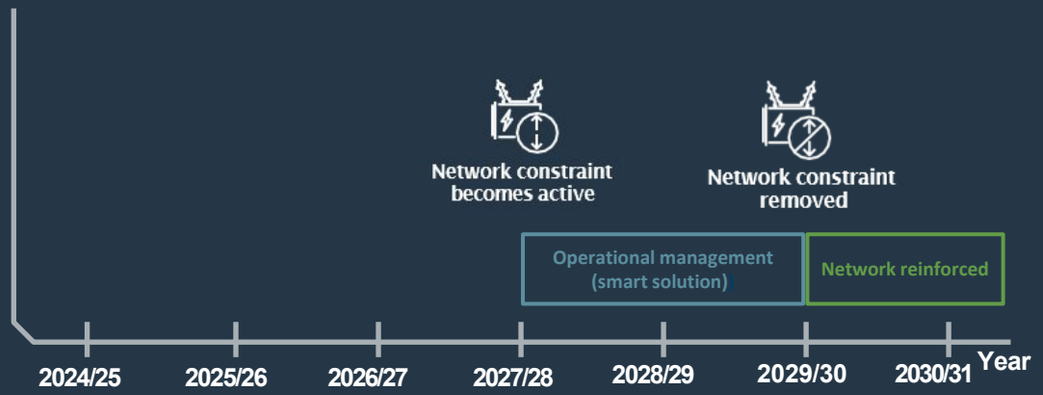
- Reinforcement delivery by the end of 2028/29.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	0.75	1.89	- (3.23)	- (4.35)
ST	-	-	-	-	-	- (0.77)	- (1.46)
LTW	-	-	0.38	1.28	2.25	- (3.56)	- (4.86)
FS	-	-	-	-	-	-	- (0.07)

Constraint management timeline



Skulamus, Isle of Skye (Skulamus PSS)

Scheme description

- The reinforcement of the Skulamus PSS will increase capacity in the Isle of Skye area. Postcode(s): IV41- IV46, IV49.
- Local authority: Highland Council
- Load related – substation and circuit thermal overload and voltage issues during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Reinforcement of Skulamus PSS and associated 11kV circuits.
- Flexibility was unable to be utilised due to it not being suitable for the constraint type.
- This option addresses the forecasted thermal and voltage issues at Skulamus PSS out to 2035.
- Capacity released: 0.45MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

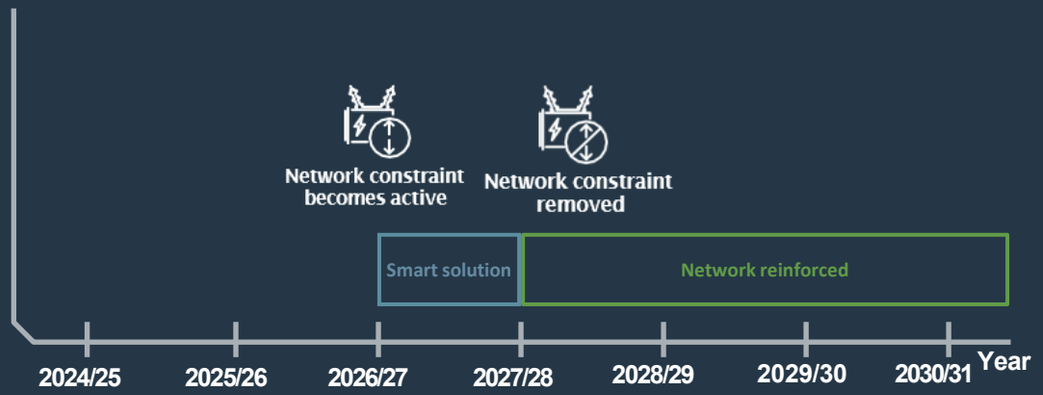
- Reinforcement delivery by the end of 2026/27.
- Further enhancement works will be required to provide a constraint free network by 2050.

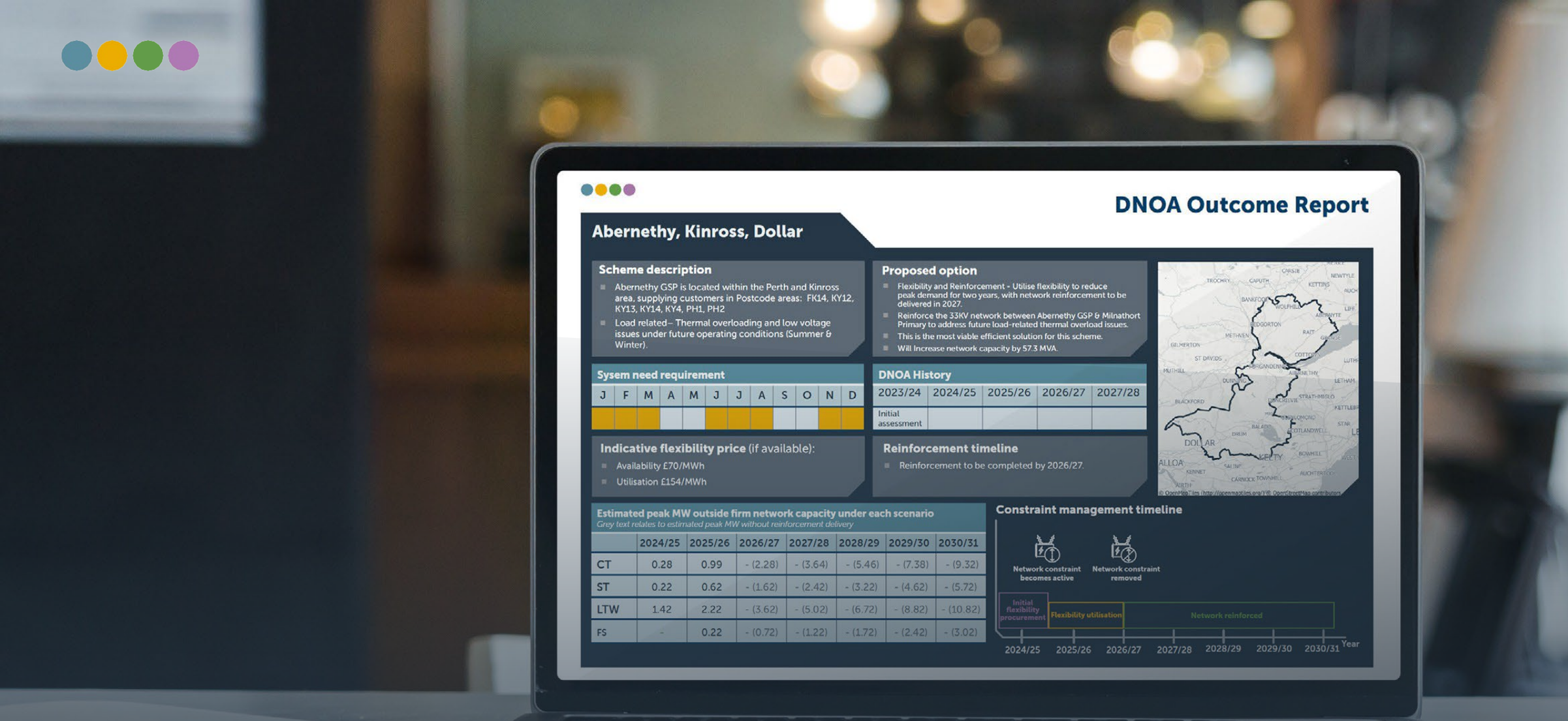
Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	0.10	- (0.41)	- (0.75)	- (1.12)	- (1.54)
ST	-	-	-	-	- (0.14)	- (0.27)	- (0.44)
LTW	-	-	0.06	- (0.35)	- (0.63)	- (1.00)	- (1.40)
FS	-	-	-	-	-	-	-

Constraint management timeline





DNOA OUTCOMES - SEPD

Alton and Fernhurst (132kV Switching Station)

Scheme description

- The reconfiguration of the shared 132kV circuits utilised by Alton BSP and Fernhurst BSP will increase capacity in the Alton, Fernhurst and Winchester area. Postcode(s): GU8-35, RG21-29.
- Local authority: Basingstoke and Deane, Chichester, East Hampshire, Horsham, Test Valley, Waverley, Winchester
- Load related – operational restoration issues during SCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Addition of 132kV Switching Station. This allows direct feeders to Fleet, Alton, Fernhurst and Winchester/Nursling BSPs.
- Flexibility was unable to be utilised as it is not suitable for resolving the restoration issues.
- This option addresses the forecasted overload under Fleet GSP out to 2036.
- Capacity released: 124.7MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

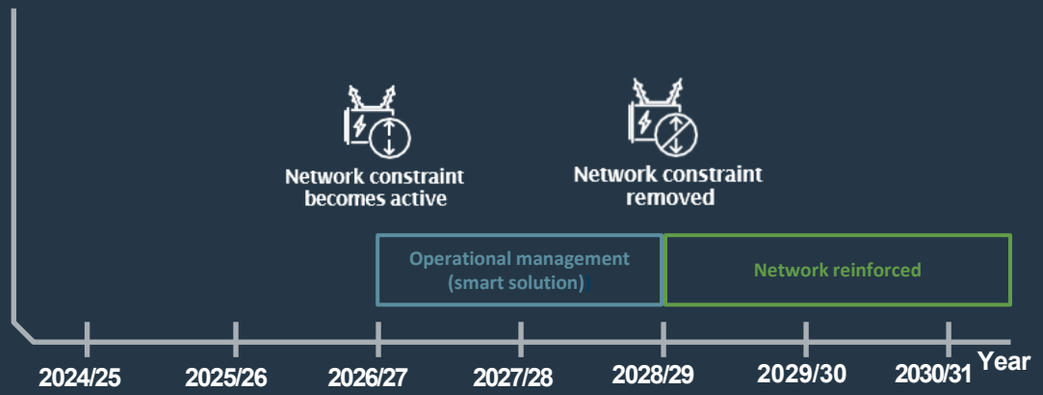
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	0.12	4.10	- (4.93)	- (6.91)	- (11.02)
ST	-	-	-	-	-	-	- (0.89)
LTW	-	-	1.54	5.91	- (6.04)	- (8.64)	- (12.60)
FS	-	-	-	-	-	-	-

Constraint management timeline



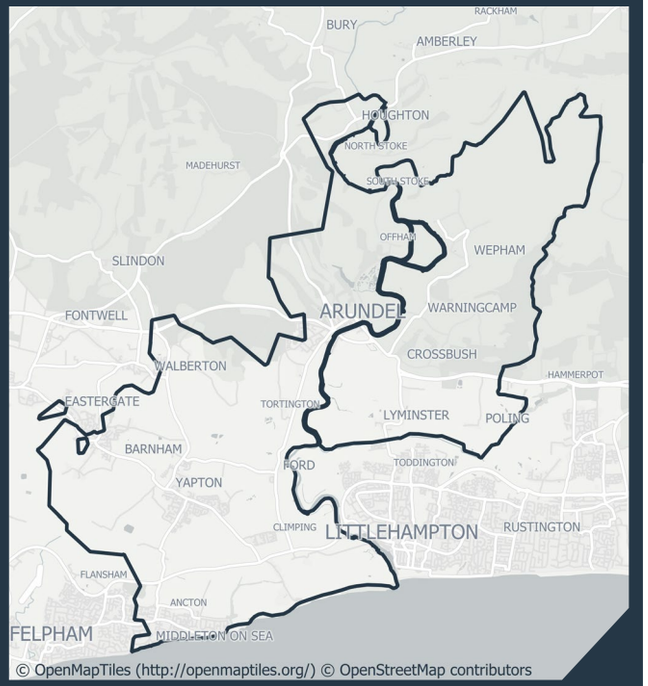
Arundel & Yapton (Bilsham PSS)

Scheme description

- The reinforcement of the Bilsham PSS will increase capacity in the southwest area of West Sussex including Yapton and Arundel. Postcode(s): BN17, BN18, PO22.
- Local authority: Arun
- Load related – substation thermal overload issues during intact conditions due to forecasted demand growth.

Proposed option

- Asset Solution: This option proposes an additional 33/11kV transformer, a new 33kV switching room, and 11kV works.
- Flexibility is expected to be allocated to accelerate connections and therefore, anticipated in being unavailable to defer this reinforcement.
- This option addresses the forecasted overloading at Bilsham PSS out to 2037.
- Capacity released: 14MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

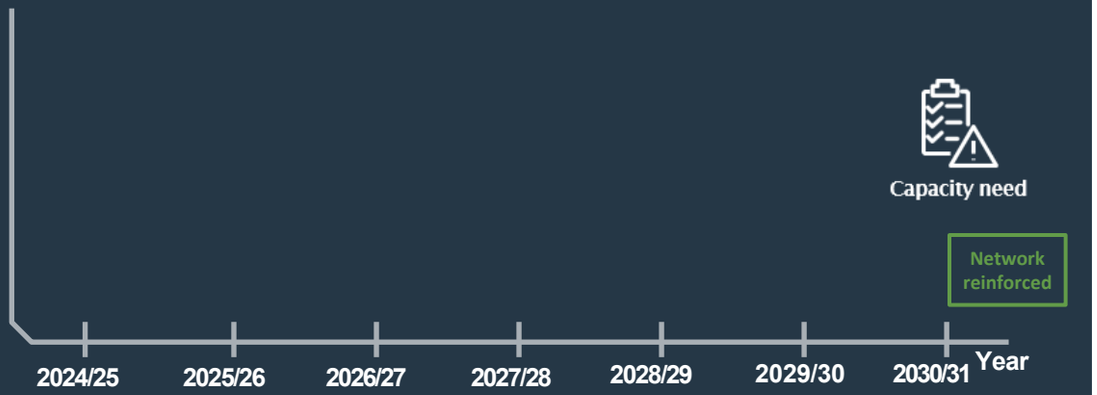
- Reinforcement delivery by the end of 2029/30.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	-	-	-	- (0.79)
ST	-	-	-	-	-	-	-
LTW	-	-	-	-	-	0.57	- (2.86)
FS	-	-	-	-	-	-	-

Constraint management timeline



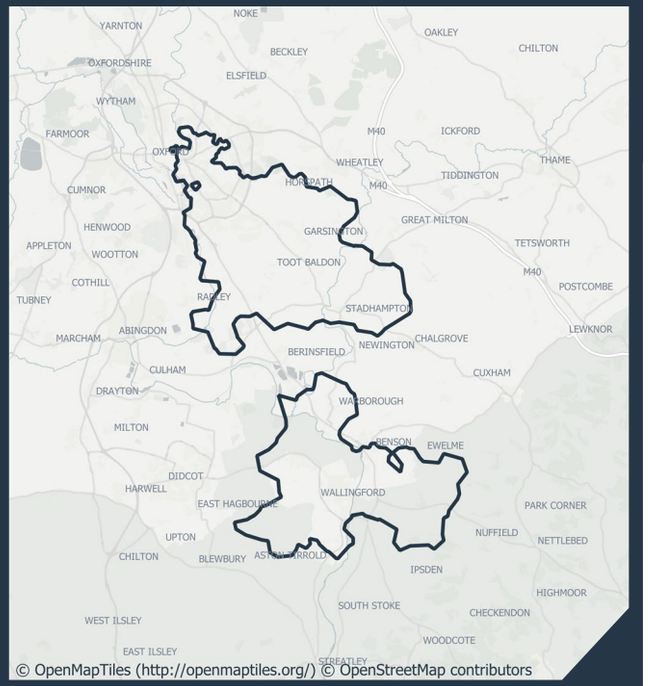
Cowley & Moreton (Cowley Local Main BSP)

Scheme description

- The reinforcement of the Cowley Local Main BSP will increase capacity in the Cowley and Moreton areas. Postcode(s): OX1, OX(3-4), OX(10-11), OX14, OX33, OX44.
- Local authority: South Oxfordshire, Oxford
- Load related – substation thermal overload issues during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Installation of an additional 132/33kV transformer.
- Flexibility was unable to be utilised due to being uneconomical from CEM output.
- This option addresses the forecasted thermal overload at Cowley Local Main BSP out to 2050.
- Capacity released: 90MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

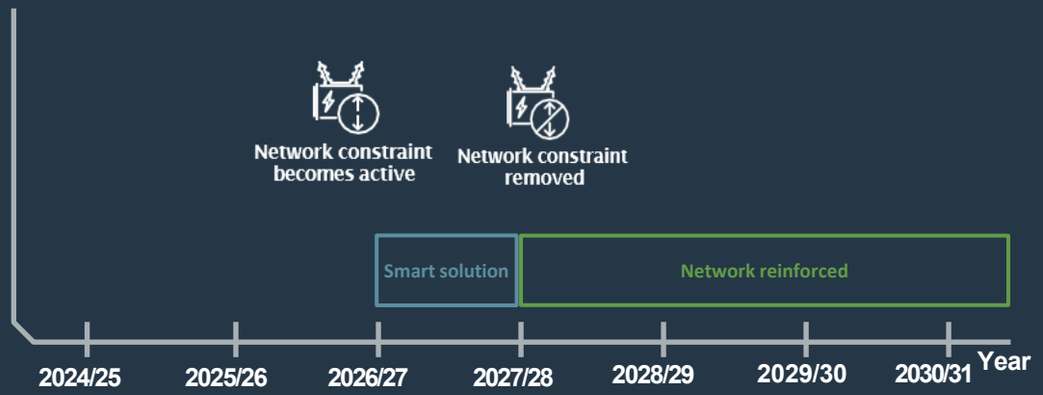
- Reinforcement delivery by the end of 2026/27.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	4.65	- (10.55)	- (13.64)	- (16.53)	- (20.35)
ST	-	-	1.92	- (6.56)	- (8.03)	- (9.47)	- (11.28)
LTW	-	-	7.03	- (13.72)	- (17.40)	- (21.39)	- (25.95)
FS	-	-	1.03	- (5.47)	- (6.80)	- (7.98)	- (9.41)

Constraint management timeline



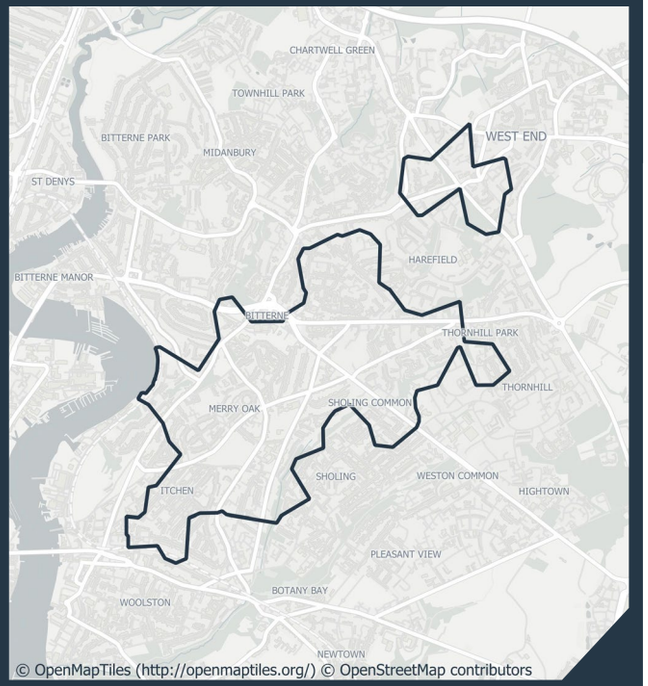
East Southampton (Bitterne PSS)

Scheme description

- The reinforcement of the Bitterne PSS will enable efficient use of existing capacity in the east Southampton area. Postcode(s): SO18-19, SO30.
- Local authority: Southampton, Eastleigh
- Load related – 33kV circuit thermal overload issue during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Reinforcement of Bitterne PSS busbars to allow greater usage of the existing capacity, by redirecting the load from the constrained assets to unconstrained assets.
- Flexibility was unable to be utilised as the capacity is released through a rearrangement of the network topology.
- This option addresses the forecasted thermal overload out to 2032.



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

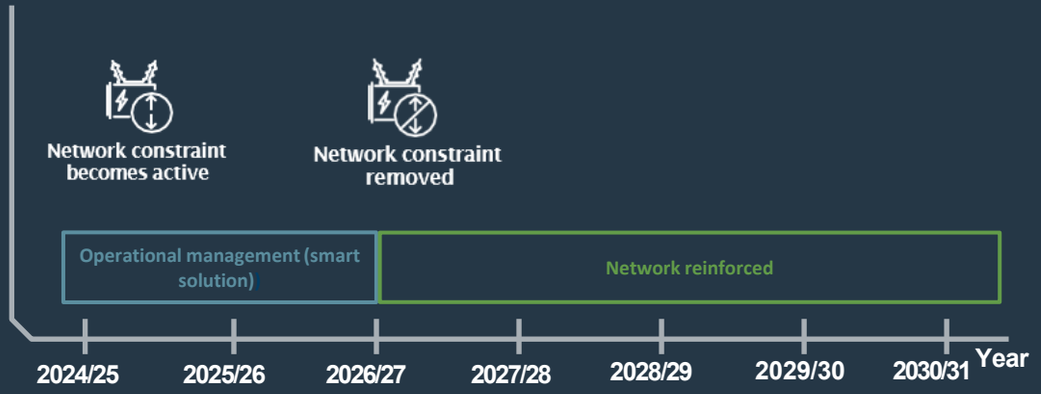
- Reinforcement delivery by the end of 2025/26.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	1.80	3.58	- (5.08)	- (6.27)	- (9.26)	- (12.23)	- (14.03)
ST	0.83	2.13	- (2.66)	- (2.94)	- (4.82)	- (6.79)	- (7.26)
LTW	2.71	4.68	- (6.24)	- (7.80)	- (10.84)	- (14.29)	- (16.39)
FS	0.82	2.12	- (2.53)	- (2.91)	- (4.86)	- (6.84)	- (7.28)

Constraint management timeline



East Southampton (Weston, Bitterne and Woolston PSS)

Scheme description

- The reinforcement of the 33kV circuit which supplies Weston, Bitterne and Woolston PSS will increase capacity in the east Southampton area. Postcode(s): SO14-19, SO30-32, SO40, SO45, SO50, SO53.
- Local authority: Southampton, Eastleigh
- Load related – 33kV circuit thermal overload issue during FCO conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Two new 33kV circuits from Netley Common BSP to Weston PSS which removes Weston PSS from a constrained circuit it shares with Woolston PSS and Bitterne PSS.
- This option addresses the forecasted 33kV circuit thermal overload out to 2050.
- Capacity released: 42MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £116/MW/h
- Utilisation price: £152/MWh

Reinforcement timeline

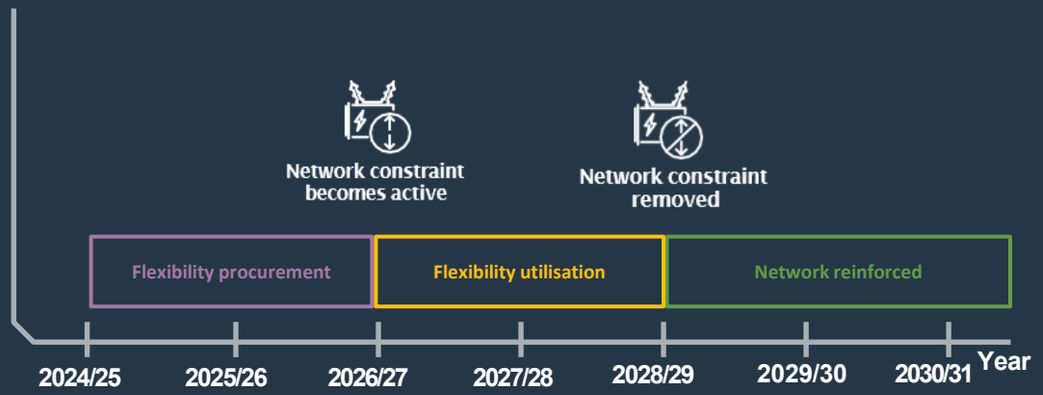
- Flexibility solution utilised from the start of 2026/27 until the end of 2027/28.
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	0.46	1.43	- (4.16)	- (6.91)	- (8.43)
ST	-	0.038	1.34	2.68	- (5.50)	- (8.71)	- (10.48)
LTW	-	-	-	-	- (0.55)	- (2.47)	- (2.85)
FS	-	-	-	-	- (0.55)	- (2.48)	- (2.84)

Constraint management timeline



Faringdon (Shrivenham, Faringdon, Black Bourton PSSs)

Scheme description

- The reinforcement of the Stratton 33kV circuits will increase capacity in the northeast of Swindon area. Postcode(s): GL7, OX18, SN4, SN6, SN7.
- Local authority: Vale of White Horse, West Oxfordshire, Swindon
- Load related – circuit thermal overload and voltage issue during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset Solution: Installation of additional 33kV circuit between Stratton BSP and Faringdon PSS.
- Flexibility was unable to be utilised due to insufficient flexible assets.
- This option addresses the forecasted thermal overload of the Stratton circuits out to 2035.
- Capacity released: 14MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

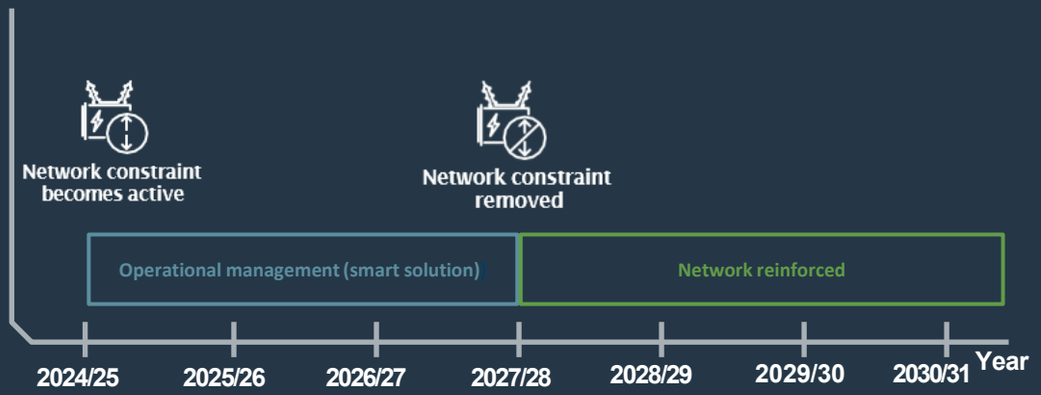
- Reinforcement delivery by the end of 2026/27.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	4.7	5.3	6.0	- (6.8)	- (7.7)	- (8.7)	- (9.8)
ST	4.1	4.4	4.9	- (5.5)	- (5.9)	- (6.5)	- (7.0)
LTW	5.4	6.2	7.1	- (8.1)	- (8.8)	- (10.0)	- (11.3)
FS	4	4.2	4.6	- (5.1)	- (5.3)	- (5.8)	- (6.2)

Constraint management timeline



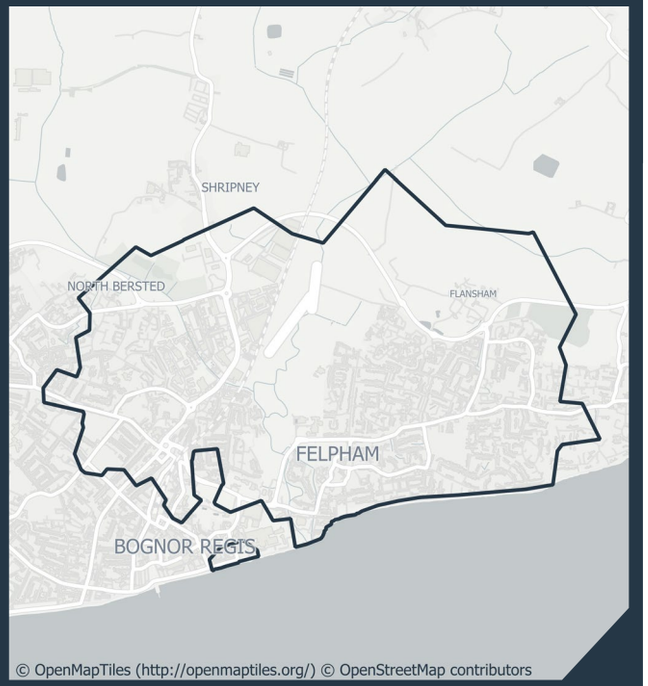
Felpham (South Bersted PSS)

Scheme description

- The reinforcement of the South Bersted PSS will increase capacity in the Felpham area. Postcode(s): PO21, PO22.
- Local authority: Arun
- Load related – substation thermal overload issue during FCO conditions due to forecasted demand growth.

Proposed option

- Asset Solution: Replace both 33/11kV transformers at South Bersted PSS. Load transfer through new 11kV circuits.
- Flexibility was unable to be utilised due to it being uneconomical from CEM output.
- This option addresses the forecasted overloading at South Bersted PSS out to 2032 (further works in this area have been programmed for delivery in the second half of ED3).
- Capacity released: 10MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £108/MW/h
- Utilisation price: £133/MWh

Reinforcement timeline

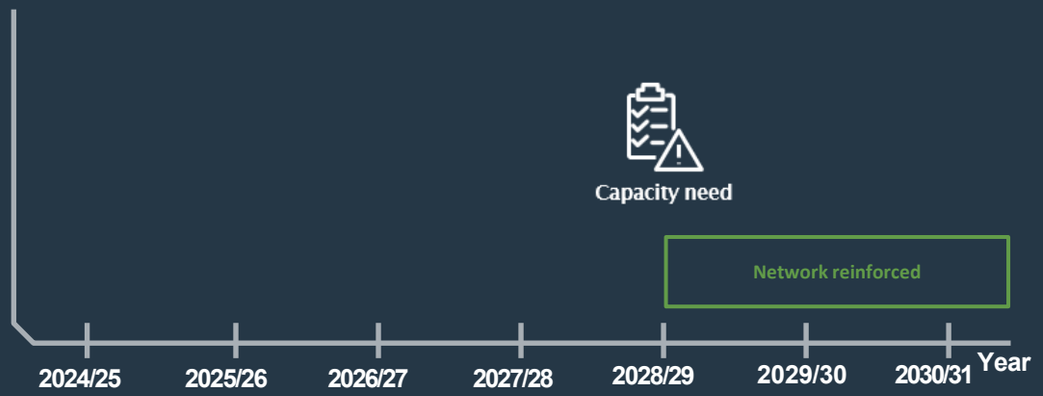
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	-	- (0.42)	- (1.23)	- (2.55)
ST	-	-	-	-	-	-	-
LTW	-	-	0.02	0.98	- (1.85)	- (2.93)	- (4.37)
FS	-	-	-	-	-	-	-

Constraint management timeline



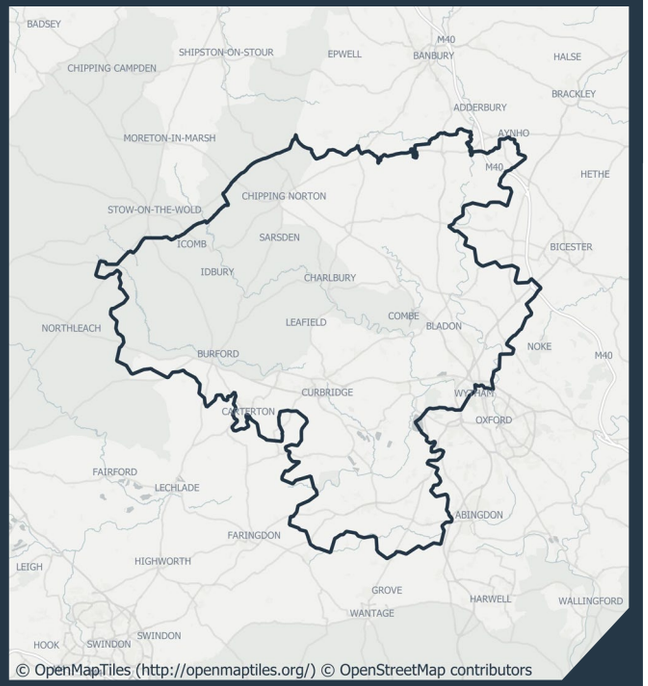
North Oxfordshire (Yarnton & Witney BSP)

Scheme description

- The reinforcement of the Cowley GSP – Yarnton BSP circuits will increase capacity in the north Oxfordshire area. Postcode(s): GL54, OX(1-5, 7, 13-15, 18, 20, 25, 27-29), SN7.
- Local Authority: West Oxfordshire, Cotswold, Vale of White Horse, Oxford, Cherwell
- Load related – circuits overload during FCO conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Installation of an additional 132kV circuit between Cowley GSP and Yarnton BSP.
- This option addresses the forecasted demand growth on the Cowley/Yarnton network out to 2050.
- Capacity released: 282MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £150/MW/h
- Utilisation price: £200/MWh

Reinforcement timeline

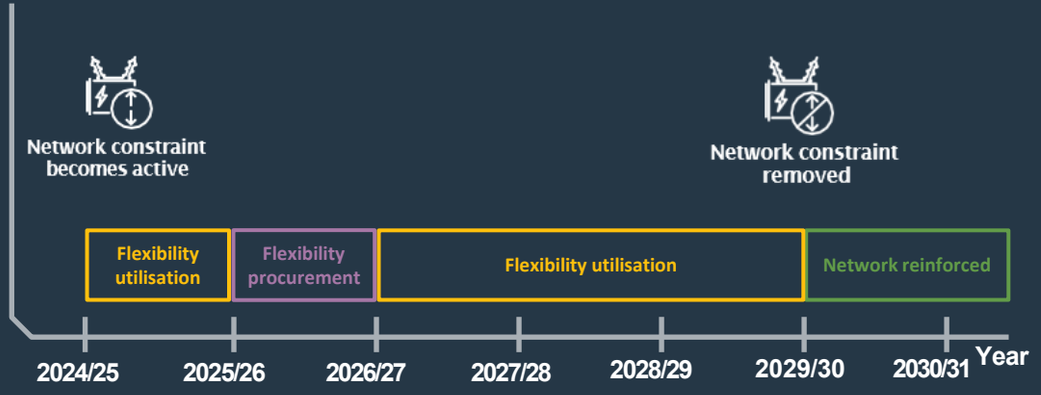
- Flexibility solution utilised in 2024/25 and 2026/27 to 2028/29.
- Reinforcement delivery by the end of 2028/29.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	7.65	-	17.44	28.05	38.78	- (89.01)	- (101.70)
ST	4.44	-	8.6	15.82	22.06	- (68.20)	- (74.71)
LTW	11.99	0.41	27.47	41.05	53.34	- (107.45)	- (122.20)
FS	3.3	-	3.39	9.16	14.45	- (59.03)	- (64.40)

Constraint management timeline



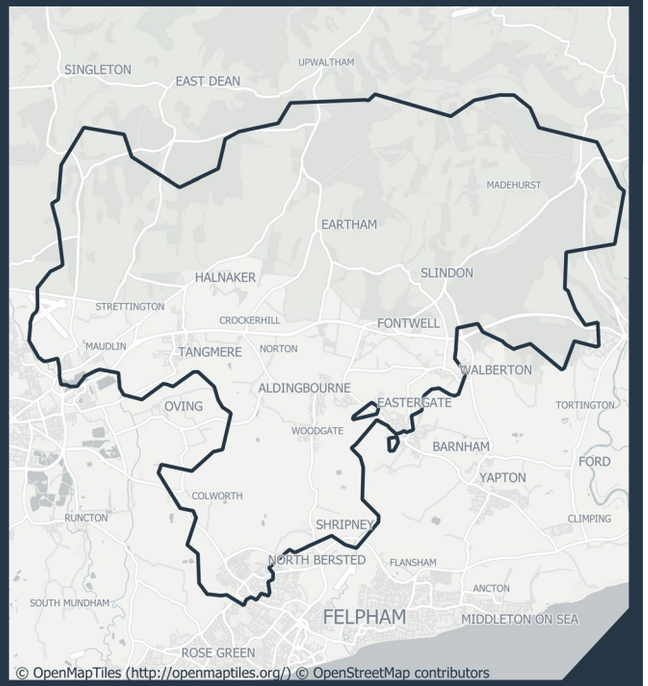
Northeast Chichester (Chichester PSS)

Scheme description

- The reinforcement of the Chichester PSS will increase capacity in the northeast Chichester area. Postcode(s): BN18, PO18 – 22.
- Local authorities: Arun and Chichester
- Load related – substation thermal overload during FCO conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Upgrade both 33/11kV transformers at Chichester PSS.
- This option addresses the forecasted overloading at Chichester PSS out to 2035.
- Capacity released: 15.1MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D
■	■	■	■					■	■	■	■

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £108/MW/h
- Utilisation price: £133/MWh

Reinforcement timeline

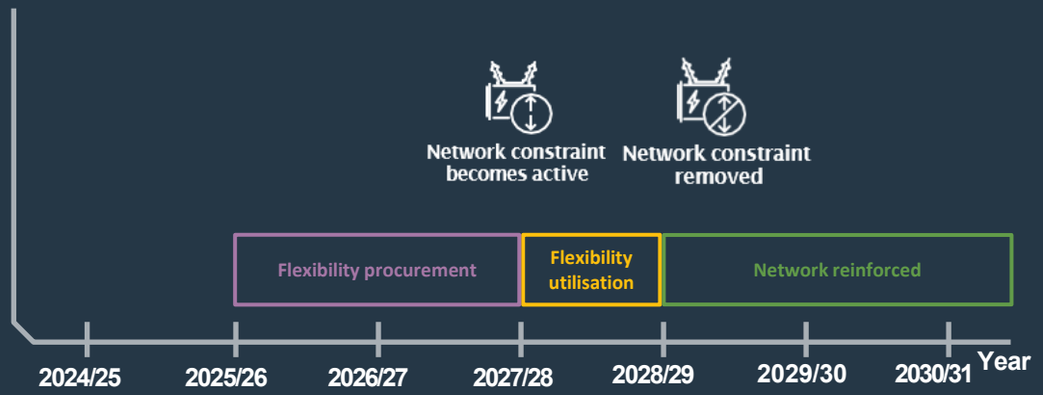
- Flexibility solution utilised for 2027/28.
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	1.15	- (2.66)	- (4.21)	- (6.11)
ST	-	-	-	-	- (0.49)	- (1.37)	- (2.33)
LTW	-	-	0.85	2.53	- (4.24)	- (6.27)	- (8.48)
FS	-	-	-	-	-	- (0.71)	- (1.57)

Constraint management timeline



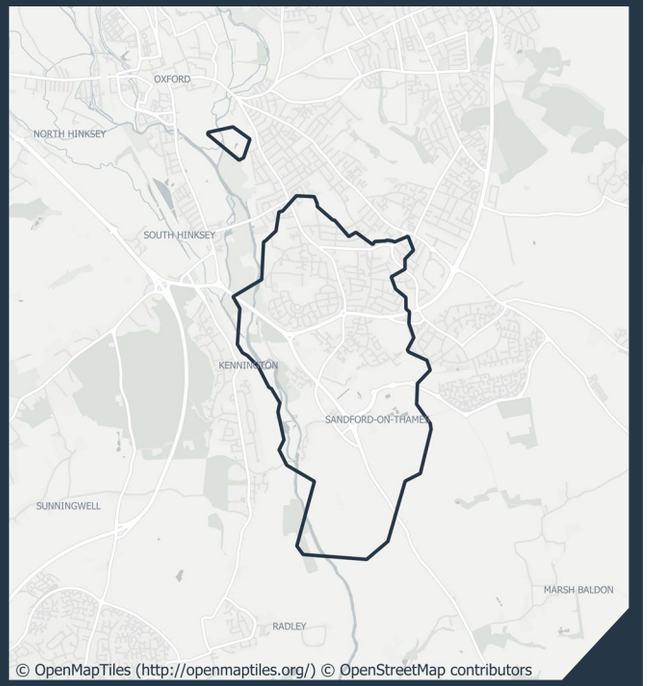
Sandford-on-Thames (Rose Hill PSS)

Scheme description

- The reinforcement of Rose Hill PSS will increase capacity in the Sandford-on-Thames area. Postcode(s): OX1, OX4, OX44.
- Local Authority: Oxford, South Oxfordshire
- Load related – substation and circuits overload during FCO conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Reinforcement of the two 33/11kV transformers (PH1), followed by upgrade of the 33kV circuit from Cowley Local Main BSP to Rose Hill PSS (PH2).
- The phase 1 option addresses the forecasted demand at Rose Hill PSS out to 2029 while phase 2 addresses demand on the circuits out to 2050.
- Capacity released: 20MVA (PH1) & 21.3MVA (PH2)



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £150/MW/h
- Utilisation price: £200/MWh

Reinforcement timeline

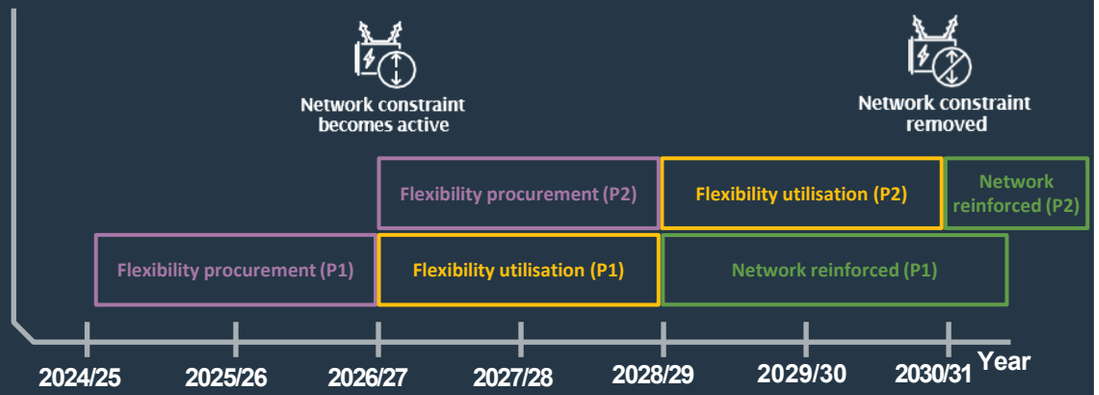
- Flexibility solution utilised from 2026/27 to 2029/30.
- Phase 1 reinforcement delivery by 2028/29.
- Phase 2 reinforcement delivery by 2030/31.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	1.06	1.85	0.41	1.52	- (3.01)
ST	-	-	0.29	0.68	-	-	- (0.07)
LTW	-	0.24	1.76	2.84	1.57	3.04	- (4.83)
FS	-	-	-	0.40	-	-	-

Constraint management timeline



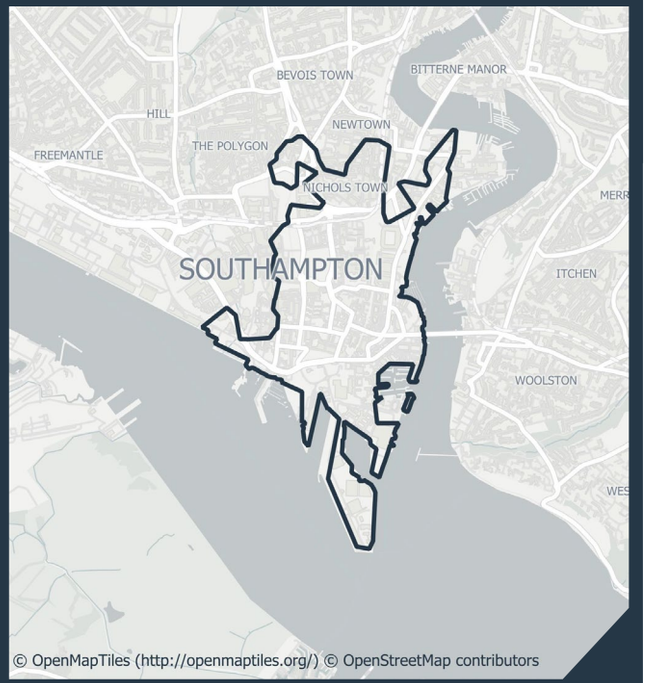
Southampton City Centre (Central Bridge 33kV circuits)

Scheme description

- Reinforce circuits from Central Bridge to Old Docks PSS and install three 33kV circuits from Central Bridge switching station to the new Southampton BSP. This will increase capacity in the city centre area. Postcode(s): SO14, SO15.
- Local authority: Southampton
- Load related – circuit thermal overload during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset solution: Reinforce existing circuits from Central Bridge to Old Docks. Install three new circuits from Central Bridge 33kV switchboard to the new Southampton BSP.
- Flexibility was unable to be utilised as it was shown to be uneconomical through use of the CEM tool.
- This option addresses the forecasted thermal issues on this part of the EHV network out to 2047.
- Capacity released: 60.1MV



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

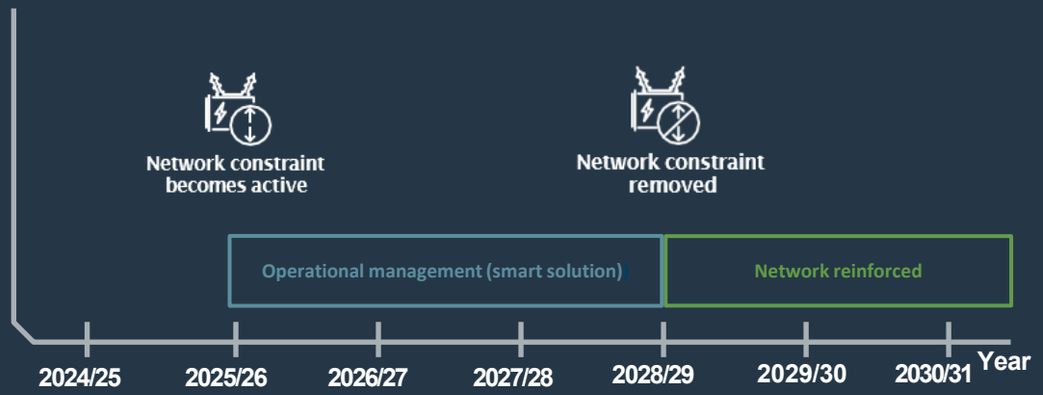
- Reinforcement delivery by the end of 2027/2028.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	4.61	5.83	6.29	- (6.82)	- (7.47)	- (8.35)
ST	-	4.43	5.45	5.67	- (5.85)	- (6.04)	- (6.26)
LTW	-	4.88	6.27	6.89	- (7.43)	- (8.29)	- (9.27)
FS	-	4.02	4.98	5.16	- (5.33)	- (5.54)	- (5.79)

Constraint management timeline



Southampton City Centre (Southampton BSP)

Scheme description

- The construction of a new BSP in Southampton will increase capacity in the city centre area. Postcode(s): SO14, SO15, SO17.
- Local authority: Southampton
- Load related – substation thermal overload during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset solution: Relocate the existing 33kV busbar to create space at the site. Construct new 132kV and 33kV busbars and install three new 132/33kV transformers. New dual underground 132kV circuit to connect the new BSP to Nursling GSP. Install 33kV dual interconnection between the existing BSP and the new BSP.
- Flexibility was unable to be utilised as it was shown to be uneconomical through use of the CEM tool.
- This option addresses the forecasted issues at Southampton BSP out to 2048.
- Capacity released: 180MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: N/A
- Utilisation price: N/A

Reinforcement timeline

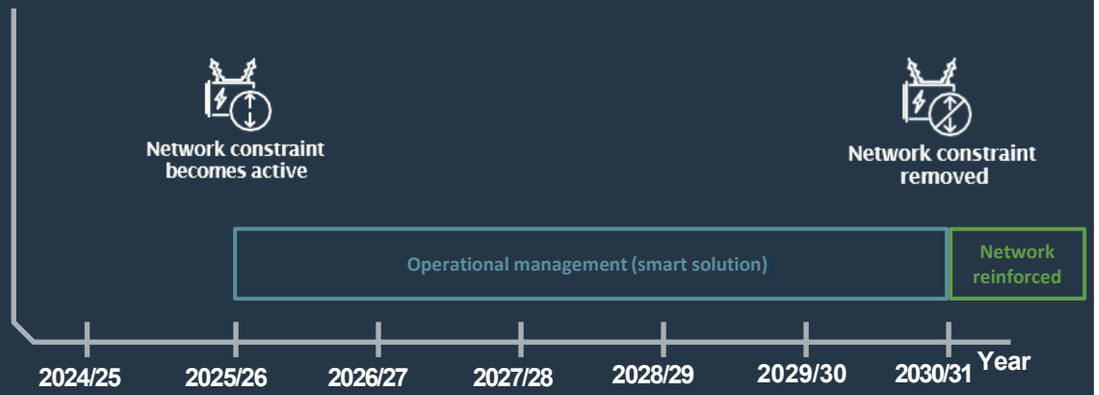
- Reinforcement delivery by the end of 2029/30.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	9.49	26.96	32.90	33.87	43.31	- (44.79)
ST	-	9.10	26.48	32.14	32.58	41.31	- (41.79)
LTW	-	9.97	27.96	34.39	35.54	45.50	- (47.40)
FS	-	8.46	25.43	30.86	31.18	39.90	- (40.39)

Constraint management timeline



Thatcham and Newbury (Thatcham BSP)

Scheme description

- The reinforcement of Thatcham BSP will increase capacity in the Thatcham and Newbury area. Postcode(s): OX12, RG14, RG17, RG18, RG19, RG2, RG20, RG25, RG26, RG28, RG7, RG8, SN8 , SP11.
- Local authority: Basingstoke and Deane, West Berkshire
- Load related – substation overload during FCO conditions due to forecasted demand growth.

Proposed option

- Flexibility/Asset Solution: Utilise flexibility for 1 year to manage the constraint and deliver an asset solution of an additional 132/33kV transformer at Thatcham BSP.
- This option addresses the forecasted thermal overload at Thatcham BSP out to 2038.
- Capacity released: 90MVA

System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £115/MW/h
- Utilisation price: £146/MWh

Reinforcement timeline

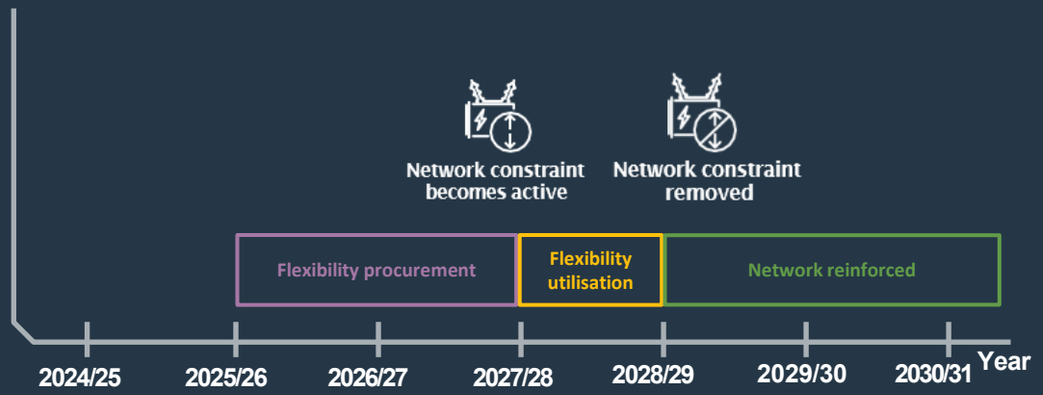
- Flexibility solution utilised in 2027/28.
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	-	-	1.91	- (8.57)	- (34.79)	- (41.80)
ST	-	-	-	-	- (2.26)	- (26.61)	- (31.90)
LTW	-	-	2.30	6.16	- (13.67)	- (39.97)	- (48.40)
FS	-	-	-	-	- (0.41)	- (24.11)	- (29.07)

Constraint management timeline



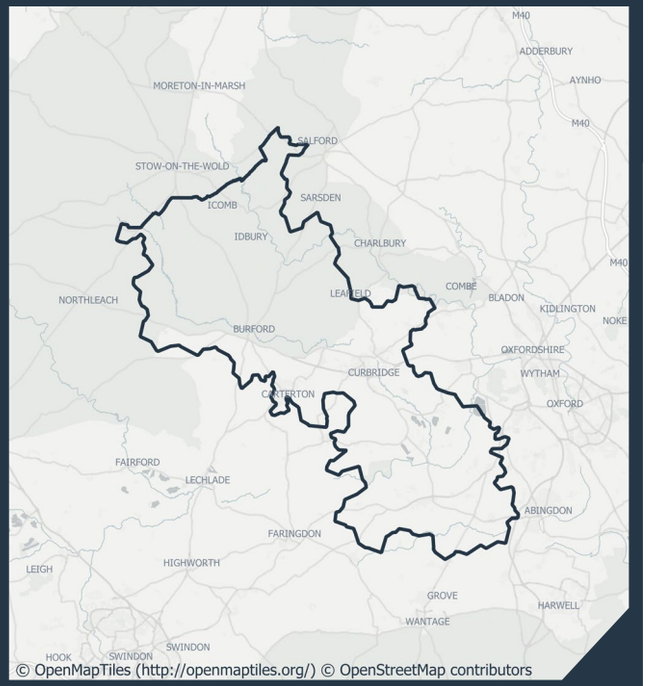
West Oxfordshire (Witney BSP)

Scheme description

- The reinforcement of the Witney BSP will increase capacity in the West Oxfordshire area. Postcode(s): GL54, OX(2, 7, 8, 13, 14, 18, 28, 29), SN7.
- Local Authority: West Oxfordshire, Cotswolds, Vale of White Horse
- Load related – substation and circuits overload during FCO conditions due to forecasted demand growth.

Proposed option

- Smart/Asset solution: Installation of additional 132/33kV transformer at Witney BSP, and reinforcement of 132kV circuit between Witney BSP and Yarnton BSP.
- Flexibility was unable to be utilised due to insufficient flexible assets.
- This option addresses thermal overloading at Witney BSP to 2050.
- Capacity released: 214.3MVA



System need requirement

J	F	M	A	M	J	J	A	S	O	N	D

DNOA History

2024/25	2025/26	2026/27	2027/28	2028/29
Initial assessment				

Indicative flexibility price (if available):

- Availability price: £150/MW/h
- Utilisation price: £200/MWh

Reinforcement timeline

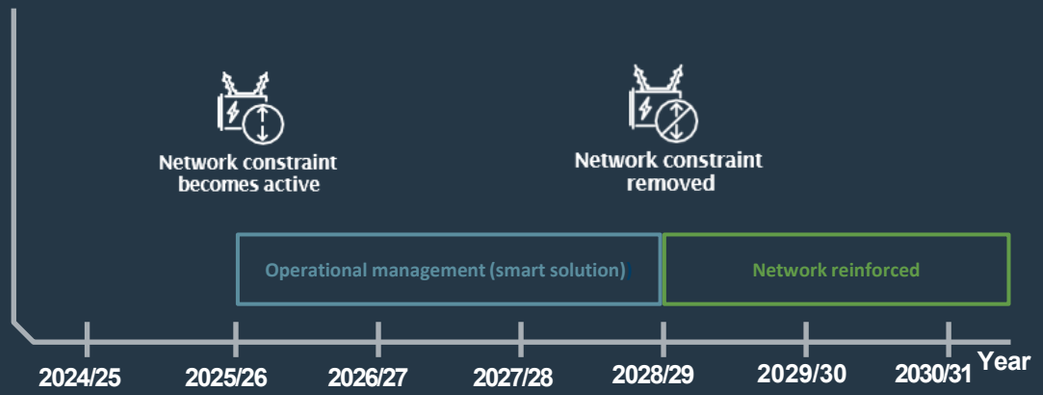
- Substation will be operationally managed until reinforcement delivery.
- Reinforcement delivery by the end of 2027/28.

Estimated peak MW outside firm network capacity under each scenario

Grey text relates to estimated peak MW without reinforcement delivery

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
CT	-	0.03	1.77	4.43	- (7.26)	- (10.31)	- (13.44)
ST	-	-	-	1.13	- (2.88)	- (4.48)	- (6.31)
LTW	-	1.97	4.37	7.38	- (10.9)	- (14.03)	- (18.02)
FS	-	-	-	0.21	- (1.73)	- (3.11)	- (4.59)

Constraint management timeline



Glossary

Term	Description
Aggregators	A new type of energy service provider which can increase or moderate the electricity consumption of a group of consumers according to total electricity demand on the grid.
BSP	Bulk Supply Point.
CMZ	Constraint Managed Zones . These zones make use of technologies providing flexibility to alleviate network constraints, deploying them as an alternative to traditional network reinforcement in the management of peak demand.
Data triage	Systematically find issues which should inhibit open data, identify the 'least impact' mitigation technique(s) and make the process transparent.
Decarbonisation	Reducing the carbon intensity in terms of emissions per unit of electricity generated.
DER	Distributed Energy Resources. Any resource on the distribution system that produces or stores electricity. This can include distributed generation, storage, heat pumps and electric vehicles as well as other technologies.
Digital System Map/ Digital Twin	A digital representation of a real-world entity or system.
DNO	Distribution Network Operator
DNOA	Distribution Network Options Assessment
DSO	Distribution Systems Operator. The directorate within SSEN that supports a more flexible network operation. Uniquely placed to ensure simple and consistent access to new markets for our active customers through maximising the utilisation of our existing electrical and communication networks.
DSOAB	DSO Advisory Board
DSAP	Digital Strategy and Action Plan
FCO	First Circuit Outage. Conditions following loss of a circuit from the intact network.
FSO	Future System Operator. Ofgem intend to set up an expert, independent FSO with responsibilities across both the electricity and gas systems and the ability to expand its remit to additional energy vectors when needed. The FSO will be in the public sector, with operational independence from government.
GDN	Gas Distribution Network
GSP	Grid Supply Point
GW	Gigawatt
HV	High Voltage
IDNO	Independent Distribution Network Operator
kWh	Kilowatt hour
LAEP	Local Area Energy Plan. A data-driven and whole energy system, evidence-based approach that sets out to identify the most effective route for the local area to contribute towards meeting the national net zero target, as well as meeting its local net zero target.
LCT	Low Carbon Technologies

Term	Description
LENZA	Local Energy Net Zero Accelerator. SSEN's tool for supporting local authority LAEPs.
LEO(N)	Local Energy Oxfordshire (Neighbourhood)
LTDS	Long Term Development Statements. Designed to help to identify and evaluate opportunities for entering into arrangements with us relating to use of system or connection.
LV	Low Voltage
MW	Megawatt
NDP	Network Development Plan
NeRDA	Near Real-Time Data Access
NESO	National Energy System Operator. The National Energy System Operator for Great Britain, making sure that Great Britain has the essential energy it needs by ensuring supply meets demand.
NIA	Network Innovation Allowance
NMF	Neutral Market Facilitator will provide a market for trading use of Distributed Energy Resources (DERs).
Open Data	Data in a machine-readable format that can be freely used, shared and built on by anyone, anywhere, for any purpose.
PSS	Primary Substation
RIIO-ED2	Current price control for Electricity Distribution (2023-2028)
RIIO-ED3	The next price control for Electricity Distribution (2028-2033)
RESP	Regional Energy Strategic Plan
SCO	Second Circuit Outage. Loss of a circuit during the event of an already planned or unplanned network outage.
SEPD	Southern Electric Power Distribution
SHEPD	Scottish Hydro Electric Power Distribution
SIF	Strategic Innovation Fund
SME	Small Medium Size Enterprise
SSEN	Scottish and Southern Electricity Networks
TO	Transmission Owner
TOM	Target Operating Model
VFES	Vulnerability Future Energy Scenarios
VIVID	Vulnerability Identification Via Informative Data

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