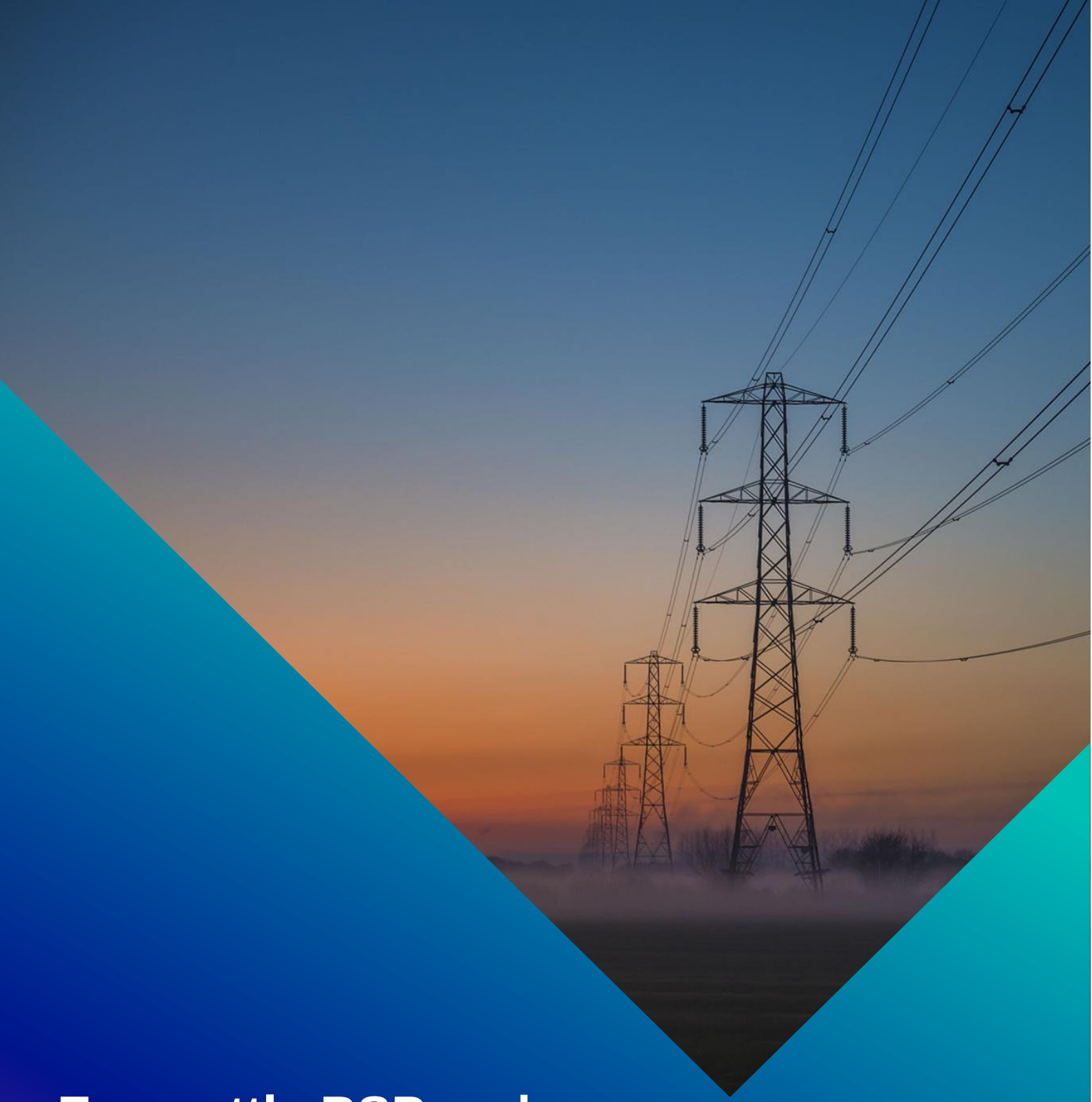

Ernesettle BSP and Associated 33 kV Network

Network Development Report – South West

May 2024

Electricity Distribution

nationalgrid

Contents

Ernesettle BSP and Associated 33 kV Network

1. Network Overview

Ernesettle Bulk Supply Point (BSP) supplies a mixture rural and urban sections of 33 kV network, in West Devon and northern Plymouth. It is supplied from two 132/33 kV Grid Transformers (GTs) and feeds approximately 40,700 customers.

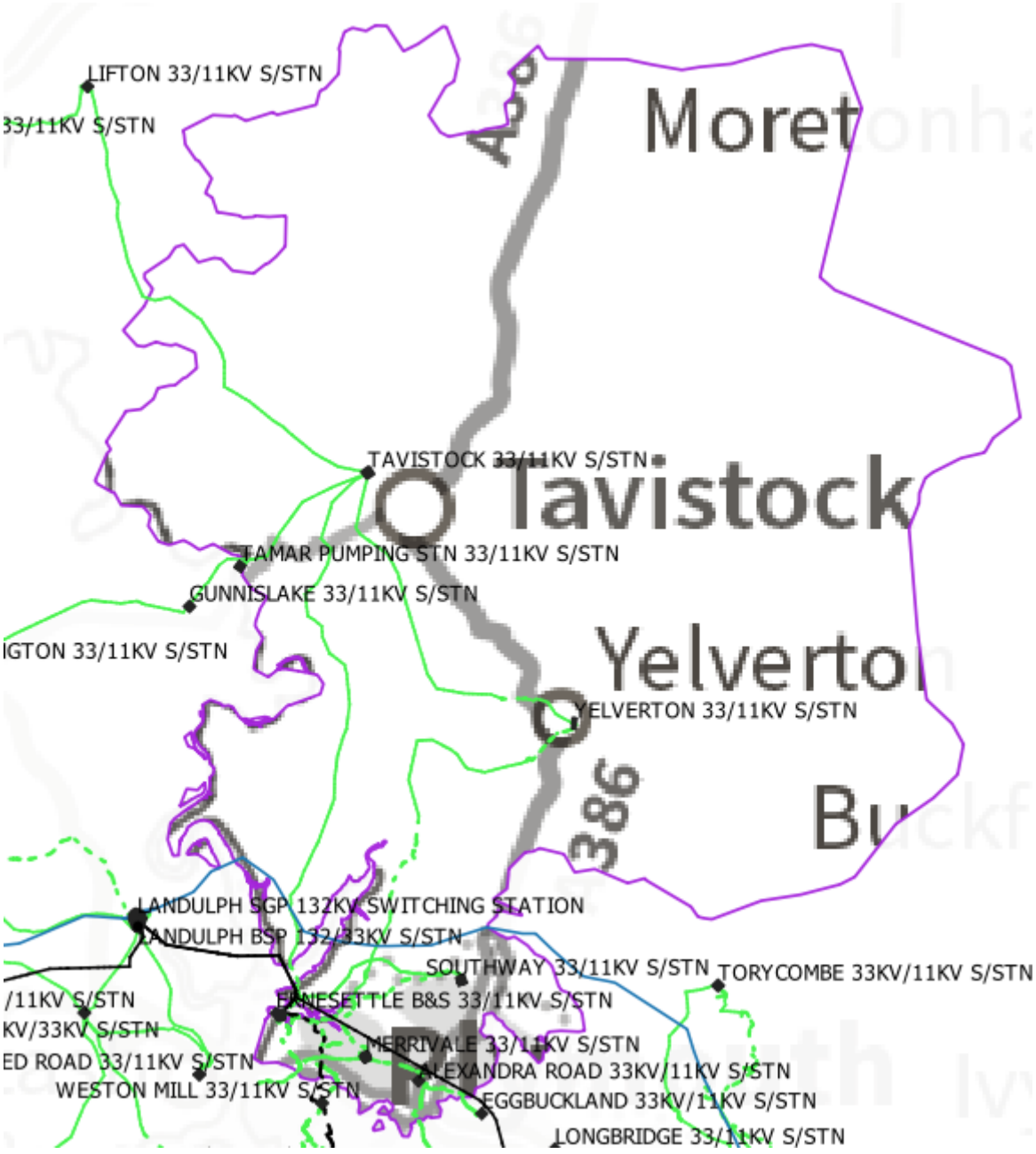

Figure 1.1 Ernesettle BSP geographic network coverage

This report discusses all existing and future network constraints over a 0-10 year horizon identified on the GTs and the 33 kV network fed from Ernesettle BSP. This uses the methodology outlined in the Network Development Plan Methodology Report with Network Operability Modelling applied as outlined below.

For the purposes of this analysis the NGED Best View Distribution Future Energy Scenario (DFES) has been used to study the years 2022 (baseline), 2028 and 2034, with consideration given to how proposals could change under the other scenarios. Five representative days have been studied

across the four seasons: Winter Peak Demand, Intermediate Warm Peak Demand, Intermediate Cool Peak Demand, Summer Peak Demand and Summer Peak Generation.

1.1 Network Topology

The Ernesettle BSP network is arranged as follows:

- Southway Primary substation is supplied via four separate transformer feeders with a 33kV generator connection teed off one of the circuits. The substation is configured as two separate Primary substations (A & B) each with two 33/11 kV transformers.
- Brown & Sharpe Primary substation is supplied as a single transformer feeder.
- Merrivale Primary is fed via three 33 kV circuits form Ernesettle BSP.
- Alexandra Road Primary is fed via two 33 kV circuits from Merrivale. There is interconnection with the Plymouth BSP via 21L5 & 25L5 at Alexandra Road which are normally run open
- Tavistock & Yelverton Primaries are fed via a 33 kV ring from Ernesettle BSP and Merrivale.
- There are two interconnecting circuits with Milehouse BSP via Weston Mill with the normal open point on circuit breakers 4L5 & 21L5 at Ernesettle BSP.
- There are two 33 kV feeders to North Intake which are normally run open at 1L5 & 2L5 at North Intake.

1.2 Network Operability Modelling

The following network automation and manual switching schemes have been modelled in the analysis of this area, aligning to how the network is currently operated, as well as proposed actions, to manage some constraints identified operationally.

- For an outage on a Milehouse BSP to Central Intake feeder the normal open points at North intake are closed with the remaining Milehouse to Central Intake feeder being run open.

2. Network Constraints and Solution Options

2.1 Summary of Network Constraints

The following constraints were identified for the Best View Scenario, for which mitigation options will be discussed:

- Ernesettle BSP 132/33 kV Grid Transformer overloads
- Tavistock 33/11 kV T1 & T2 overloads
- Merrivale 33/11 kV T1 & T2 overloads
- Southway 33/11 kV transformer overloads
- Ernesettle BSP to Merrivale 33 kV circuit overload
- Yelverton to Merrivale 33 kV circuit overload
- Ernesettle BSP to Tavistock 33 kV circuit overloads

3. Network Constraint Details and Solution Options

3.1 Ernesettle BSP 132/33 kV GT Overloads

Generation | Demand

Constraint Overview

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads seen at winter peak demand.

Table 3.1.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First studied year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Ernesettle GT1 overload	Ernesettle GT2 or 33kV busbar outage	None	2025	2025	2025	2032
Ernesettle GT2 overload	Ernesettle GT1 or 33kVbusbar outage	None	2025	2025	2025	2032
Ernesettle GT1 overload	Milehouse BSP to Central Intake 33kV cct arranged	Ernesettle GT2 or 33kV busbar fault outage	Baseline	Baseline	Baseline	Baseline
Ernesettle GT2 Overload	Milehouse BSP to Central Intake 33kV cct arranged	Ernesettle GT1 or 33kV busbar fault outage	Baseline	Baseline	Baseline	Baseline

Uncertainty under other Distribution Future Energy Scenarios: As this constraint occurs under baseline, there is no uncertainty about future forecasts. There is a risk that demand reduces, however this is not forecast under any scenario so mitigation against this constraint is required.

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.1.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	**Discounted**
Reinforcement					
1	Application of an increased rating following checks on ancillaries	✓	×	✓	**Viable**
Operational Mitigation					
2	Transfer Alexandra Road 33/11 kV substation to Plymouth BSP for arranged outages on Milehouse-Central Intake 33 kV circuits	✓	×	✓	**Viable**
Load Management Schemes					
3	Constrain new battery connections for arranged outages on Milehouse BSP – Central Intake 33 kV circuits	✓	×	✓	**Viable**
Flexibility services					
4	Procure flexibility under Ernesettle BSP at 33 kV or below	✓	×	✓	**Viable**

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full cost benefit analysis (CBA). This CBA will be subsequently carried out by the Distribution Network Operator (DNO) to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the Distribution System Operator (DSO) as part of the Distribution Network Options Assessment (DNOA) process.

Option 1 – Application of an increased rating following checks on ancillaries

Capacity released for constraint(s) considered: TBC following assessment ↑ **Viable**

Detailed description: Uprate the existing GTs at Ernesettle via use of cyclic ratings in accordance with British Standard 171/IEC60076 and NGED Standard Technique SD8C. This requires a capability assessment of all ancillaries, such as busbars, isolators, Current Transformers (CTs), cables (including cabling within the substation), switchgear, tap changer, transformer bushings, conservator and earthing transformer. In addition, an assessment of the cyclic profile of the load is required to determine if transformer temperature and ageing is within acceptable limits.

New limiting factor for constraint(s) considered: TBC following assessment

Option 2 – Transfer Alexandra Road to Plymouth BSP for certain arranged outages

Capacity released for constraint(s) considered: N/A ↑ **Viable**

Detailed description: Transfer Alexandra Road 33/11 kV Primary substation to Plymouth BSP during arranged outages on either Milehouse BSP to Central Intake 33 kV circuits to prevent overloading a Grid transformer at Ernesettle BSP in the event of a subsequent fault.

New limiting factor for constraint(s) considered: N/A

Option 3 – Constrain new battery connections for certain arranged outages

Capacity released for constraint(s) considered: N/A ↑ **Viable**

Detailed description: Constrain any new battery import connections during arranged outages on either Milehouse BSP to Central Intake 33 kV circuits to prevent overloading a Grid transformer at Ernesettle BSP in the event of a subsequent fault.

New limiting factor for constraint(s) considered: N/A

Option 4– Procure flexibility under Ernesettle BSP at 33 kV or below

Flexibility service type: Generation turn up/demand turn down ↑ **Viable**

Detailed description: Flexibility services could be procured to alleviate projected overloads seen on the GTs at Ernesettle. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended to undertake an assessment using NGED Standard Technique SD8C to achieve the full rating of both Grid Transformers (Option 1). In addition to avoid any overloads during arranged outages on the Milehouse BSP to Central Intake 33 kV circuits to transfer Alexandra Road 33/11 kV Primary substation to the Plymouth BSP network (Option 2). Should demand growth continue with the addition of new battery connections it may be necessary to constrain the battery import during certain arranged outage conditions to prevent transformer overloads (Option 3).

3.2 Tavistock T1 & T2 Overloads

Generation | Demand

Constraint Overview

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads initially seen at winter peak demand.

Table 3.2.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Tavistock T1 overload	Tavistock T2 outage	None	Baseline	Baseline	Baseline	Baseline
Tavistock T2 overload	Tavistock T1 outage	None	Baseline	Baseline	Baseline	Baseline

Uncertainty under other Distribution Future Energy Scenarios: As this constraint occurs under baseline, there is no uncertainty about future forecasts. There is a risk that demand reduces, however this is not forecast under any scenario so mitigation against this constraint is required.

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.2.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Area Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Uprate existing transformers	✓	×	✓	Viable
2	Replace transformers with larger units	✓	×	×	Viable
Operational Mitigation					
-	*None Identified*	-	-	-	-
Load Management Schemes					
-	*None Identified*	-	-	-	-
Flexibility services					
3	Procure flexibility under Tavistock at 11 kV or below	✓	×	✓	Viable

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full CBA. This CBA will be subsequently carried out by the DNO to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the DSO as part of the DNOA process.

Option 1 – Uprate existing transformers

Capacity released for constraint(s) considered: TBC following assessment

Viable

Detailed description: Uprate the existing transformers at Tavistock via use of cyclic ratings in accordance with British Standard 171/IEC60076 and NGED Standard Technique SD8C. This requires a capability assessment of all ancillaries, such as busbars, isolators, CTs, cables (including cabling within the substation), switchgear, tap changer, transformer bushings and conservator. In addition, an assessment of the cyclic profile of the load is required to determine if transformer temperature and ageing is within acceptable limits.

New limiting factor for constraint(s) considered: TBC following assessment

Option 2 – Replace transformers with larger units

Capacity released for constraint(s) considered: 13.8 MVA

Viable

Detailed description: Replace transformers with larger units (12/24 MVA).

New limiting factor for constraint(s) considered: 23.8 MVA (11 kV circuit breaker rating)

Option 3 – Procure flexibility under Tavistock at 11 kV or below

Flexibility service type: Demand turn down **or** Generation turn up

Viable

Detailed description: Flexibility services could be procured to alleviate projected overloads seen on the transformers at Tavistock. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended to determine if a higher cyclic transformer rating may be applied by for example fitting forced cooling to both transformers (Option 1).

3.3 Merrivale T1 & T2 Overloads

Generation | Demand

Constraint Overview

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads seen at winter peak demand.

Table 3.3.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Merrivale T1 overload	Merrivale T2 outage	None	2028	2034	-	-
Merrivale T2 overload	Merrivale T1 outage	None	2028	2034	-	-

Uncertainty under other Distribution Future Energy Scenarios: Constraints may be triggered earlier for higher growth scenarios

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.3.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Area Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Uprate existing transformers	✓	×	✓	Viable
2	Replace transformers with larger units	✓	×	×	Viable
Operational Mitigation					
-	*None Identified*	-	-	-	
Load Management Schemes					
-	*None Identified*	-	-	-	
Flexibility services					
3	Procure flexibility under Merrivale at 11kV or below	✓	×	✓	Viable

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full CBA. This CBA will be subsequently carried out by the DNO to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the DSO as part of the DNOA process.

Option 1 – Uprate existing transformers

Capacity released for constraint(s) considered: TBC following assessment

Viable

Detailed description: Uprate the existing transformers at Merrivale via use of cyclic ratings in accordance with British Standard 171/IEC60076 and NGED Standard Technique SD8C. This requires a capability assessment of all ancillaries, such as busbars, isolators, CTs, cables (including cabling within the substation), switchgear, tap changer, transformer bushings and conservator. In addition, an assessment of the cyclic profile of the load is required to determine if transformer temperature and ageing is within acceptable limits.

New limiting factor for constraint(s) considered: TBC following assessment

Option 2 – Replace transformers with larger units

Capacity released for constraint(s) considered: TBC

Viable

Detailed description: Replace the existing transformers with larger units (12/24 MVA)

New limiting factor for constraint(s) considered: TBC

Option 3 – Procure flexibility under Merrivale at 11 kV or below

Flexibility service type: Generation turn up/demand turn down

Viable

Detailed description: Flexibility services could be procured to alleviate projected overloads seen on the transformers at Merrivale. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended to determine if a higher cyclic transformer rating may be applied by for example fitting forced cooling to both transformers (Option 1).

3.4 Southway Transformer Overloads

Generation | Demand

Constraint Overview

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads seen at intermediate warm peak demand.

Table 3.4.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Southway T3 overload	Southway T4 outage	None	-	2028	-	-
Southway T4 overload	Southway T3 outage	None	-	2028	-	-
Southway T2 overload	Southway T1 outage	None	-	-	-	2032

Uncertainty under other Distribution Future Energy Scenarios: Constraints may be triggered earlier for higher growth scenarios

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.4.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Area Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Review ratings on transformers T3 & T4 at Southway	✓	×	✓	Viable
2	Review reverse powerflow rating on transformer T2 at Southway	✓	×	✓	Viable
3	Replace transformers with larger units	✓	×	✓	Viable
4	Transfer demand to a new Primary substation at Estover	✓	✓	✓	Viable
Operational Mitigation					
-	*None Identified*	-	-	-	-
Load Management Schemes					
-	*None Identified*	-	-	-	-
Flexibility services					
5	Procure flexibility under Southway T3/T4 at 11 kV or below	✓	✓	✓	Viable

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full CBA. This CBA will be subsequently carried out by the DNO to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the DSO as part of the DNOA process.

Option 1 – Review transformer ratings on T3 & T4 at Southway

Capacity released for constraint(s) considered: TBC following review

Viable

Detailed description: Overloads are only seen in the 2028 year for intermediate cool. It is therefore possible that this constraint could be delayed slightly by reviewing NGED's internal policy regarding transformer ratings, which does not currently distinguish between summer and intermediate cool ratings (which may be overly pessimistic). This solution is dependent on an internal review and would not be a long term solution.

New limiting factor for constraint(s) considered: TBC following review

Option 2 – Review reverse powerflow rating on T2 at Southway

Capacity released for constraint(s) considered: TBC

Viable

Detailed description: Review reverse powerflow rating on transformer T2 at Southway

New limiting factor for constraint(s) considered: TBC

Option 3 – Replace transformers with larger units

Capacity released for constraint(s) considered: TBC

Viable

Detailed description: Replace the existing transformers with larger units (20/40 MVA) on one of the sides A or B.

New limiting factor for constraint(s) considered: TBC

Option 4 – Transfer demand a new 33/11 kV substation at Estover

Capacity released for constraint(s) considered: TBC

Viable

Detailed description:.Transfer demand to a new 33/11kV substation at Estover (which maybe fed from another BSP and therefore not contribute to further demand growth on Ernesettle BSP)

New limiting factor for constraint(s) considered: TBC

Option 5 – Procure flexibility under Southway T3/T4 at 11 kV or below

Flexibility service type: Generation turn up/demand turn down

Viable

Detailed description: Flexibility services could be procured to alleviate projected overloads on either T3 or T4 at Southway. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended to review the transformer ratings (Options 1 & 2) in the first instance. Should this not be adequate and flexibility is not viable an assessment of either replacing the transformers at Southway or establishing a new Primary substation in the Estover area should be undertaken.

3.5 Ernesettle to Merrivale 33 kV circuit Overload

Constraint Overview

Generation Demand

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads seen at winter peak demand.

Table 3.5.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Ernesettle BSP to Merrivale 33kV circuit overload	Ernesettle 33kV Main 2 busbar	None	2025	2028	2030	-

Uncertainty under other Distribution Future Energy Scenarios: Constraints may be triggered earlier for higher growth scenarios

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.5.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Area Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Lay additional 33kV circuit from Ernesettle BSP to Merrivale	✓	✓	×	Viable
Operational Mitigation					
2	Establish an inter-tripping scheme to transfer Alexandra Road	✓	×	✓	Viable
3	Install a 3rd section of 33kV busbar at Ernesettle BSP	✓	✓	×	Viable
Load Management Schemes					
-	*None Identified*	-	-	-	-
Flexibility services					
4	Procure flexibility under at Merrivale/Alexandra Road at 11 kV or below	×	✓	✓	Viable

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full CBA. This CBA will be subsequently carried out by the DNO to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the DSO as part of the DNOA process.

Option 1 – Lay an additional 33 kV circuit from Ernesettle BSP to Merrivale

Capacity released for constraint(s) considered: TBC ⬆ Viable

Detailed description: Lay an additional 33 kV cable circuit from Ernesettle BSP to Merrivale to avoid the loss of 2 out of 3 circuits for a 33 kV busbar fault.

New limiting factor for constraint(s) considered: TBC

Option 2– Establish an inter-tripping scheme to transfer Alexandra Road

Capacity released for constraint(s) considered: N/A

Viable

Detailed description: Establish an inter-tripping scheme to transfer Alexandra Road Primary to Plymouth BSP in the event of a 33 kV (Main2) busbar fault at Ernesettle to reduce the circuit loading to within rating.

New limiting factor for constraint(s) considered: N/A

Option 3– Install a 3rd section of 33 kV busbar at Ernesettle BSP

Capacity released for constraint(s) considered: N/A

Viable

Detailed description: Install a 3rd section of 33 kV busbar at Ernesettle BSP to avoid the loss of more than 1 circuit for a single 33 kV busbar fault. This option is likely to involve the significant cost of extending an indoor 33 kV switchboard and the switchroom building.

New limiting factor for constraint(s) considered: N/A

Option 4 – Procure flexibility under Merrivale and Alexandra Road at 11 kV or below

Flexibility service type: Generation turn up/demand turn down

Viable

Detailed description: Flexibility services could be procured to alleviate projected overloads on a 33kV circuit between Ernesettle and Merrivale. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended that the feasibility of establishing an inter-tripping scheme is assessed (Option 2).

3.6 Merrivale to Yelverton 33 kV circuit Overloads

Generation Demand

Constraint Overview

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads seen at winter peak demand.

Table 3.6.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Merrivale to Yelverton 33kV circuit	Ernesettle-Tavistock 33kV circuit outage	None	2028	2028	2028	-

Uncertainty under other Distribution Future Energy Scenarios: Constraints may be triggered earlier for higher growth scenarios

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.6.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Area Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Re-conductor circuit with larger conductor (150 sq.mm Cu or 200 sq.mm AAAC) and overlay sections of 0.3 Cu cable	✓	✓	×	Viable
Operational Mitigation					
-	*None Identified*	-	-	-	
Load Management Schemes					
-	*None Identified*	-	-	-	
Flexibility services					
2	Procure flexibility under Tavistock or Yelverton at 11 kV or below	✓	✓	✓	Viable

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full CBA. This CBA will be subsequently carried out by the DNO to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the DSO as part of the DNOA process.

Option 1 – Re-conductor existing 33 kV circuit & overlay cable sections

Capacity released for constraint(s) considered: 8.7 MVA ⬆ Viable

Detailed description: Re-conductor the existing circuits with larger conductor (150 sq.mm Cu or 200 sq.mm AAAC) for 2028 and overlay sections of 0.3 in^2 Cu cable for 2030.

New limiting factor for constraint(s) considered: 32.6 MVA (winter 185 XLPE cable) & 31.4 MVA (CT limit)

Option 2 – Procure flexibility under Tavistock or Yelverton at 11 kV or below

Flexibility service type: Demand turn down or generation turn up

Viable

Detailed description: Flexibility services could be procured to alleviate projected overloads seen on the Merrivale to Yelverton 33 kV circuit. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended that the feasibility of procuring flexibility is assessed (Option 2).

3.7 Ernesettle BSP to Tavistock 33 kV circuit Overloads

Constraint Overview

Generation Demand

The table below outlines the nature of the network constraints identified in the network analysis, with the worst overloads seen at intermediate cool peak demand.

Table 3.7.1 constraint(s) and condition under which constraint occurs

Constraint	N-1 Condition	Subsequent N-2 Condition	First year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
Ernesettle BSP to Tavistock 33 kV overload	Merrivale to Yelverton 33 kV circuit outage	None	2030	2028	2028	-

Uncertainty under other Distribution Future Energy Scenarios: Constraints may be triggered earlier for higher growth scenarios

Solution Options

A list of each of the options considered for this constraint is given in the table below.

Table 3.7.2 solution options to solve constraint(s)

Solution Options	Description	Solves Constraint	Wider Area Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Re-conductor circuit with larger conductor (150 sq.mm Cu or 200 sq.mm Al Alloy) and overlay sections of 0.3 Cu cable	✓	✓	✓	Viable
Operational Mitigation					
-	*None Identified*	-	-	-	
Load Management Schemes					
-	*None Identified*	-	-	-	
Flexibility services					
2	Procure flexibility under Tavistock and Yelverton at 11 kV or below	✓	✓	✓	Viable

Solution Development

These options have been assessed on their technical viability and their likely cost-effectiveness pending a full CBA. This CBA will be subsequently carried out by the DNO to determine the optimal reinforcement solution, which will then be tested against market provided flexibility by the DSO as part of the DNOA process.

Option 1 – Re-conductor existing 33 kV circuit & overlay cable sections

Capacity released for constraint(s) considered: 4.7 MVA — Viable

Detailed description: Re-conductor the existing circuits with larger conductor (150 sq.mm Cu or 200 sq.mm AAAC) for 2028 followed by overlaying sections of underground cable beyond 2030.

New limiting factor for constraint(s) considered: 29.6 MVA (winter cable rating).

Option 2 – Procure flexibility under Tavistock or Yelverton at 11 kV or below

Flexibility service type: Demand turn down or generation turn up

Viable

Detailed description: Flexibility services could be procured to alleviate projected overloads seen on the Ernesettle BSP to Tavistock 33 kV circuit. The viability of utilising flexibility will be further investigated as part of the DNOA process.

Solution Recommendation

It is recommended that the feasibility of procuring flexibility is assessed (Option 2).

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