St Austell BSP

Network Development Report – South West

May 2024

Electricity Distribution

nationalgrid

Contents

St Austell BSP

1. Network Overview

St Austell Bulk Supply Point (BSP) supplies a mostly rural area of 33 kV network, with the bulk of the demand centred in St Austell town, as well as Fowey town and Bugle to the North of St Austell. It is supplied from two 132/33 kV (Grid Transformers) GTs at Bridgwater BSP, fed via 132 kV circuits from Indian Queens (Grid Supply Point) GSP. St Austell BSP supplies approximately 31,000 customers.

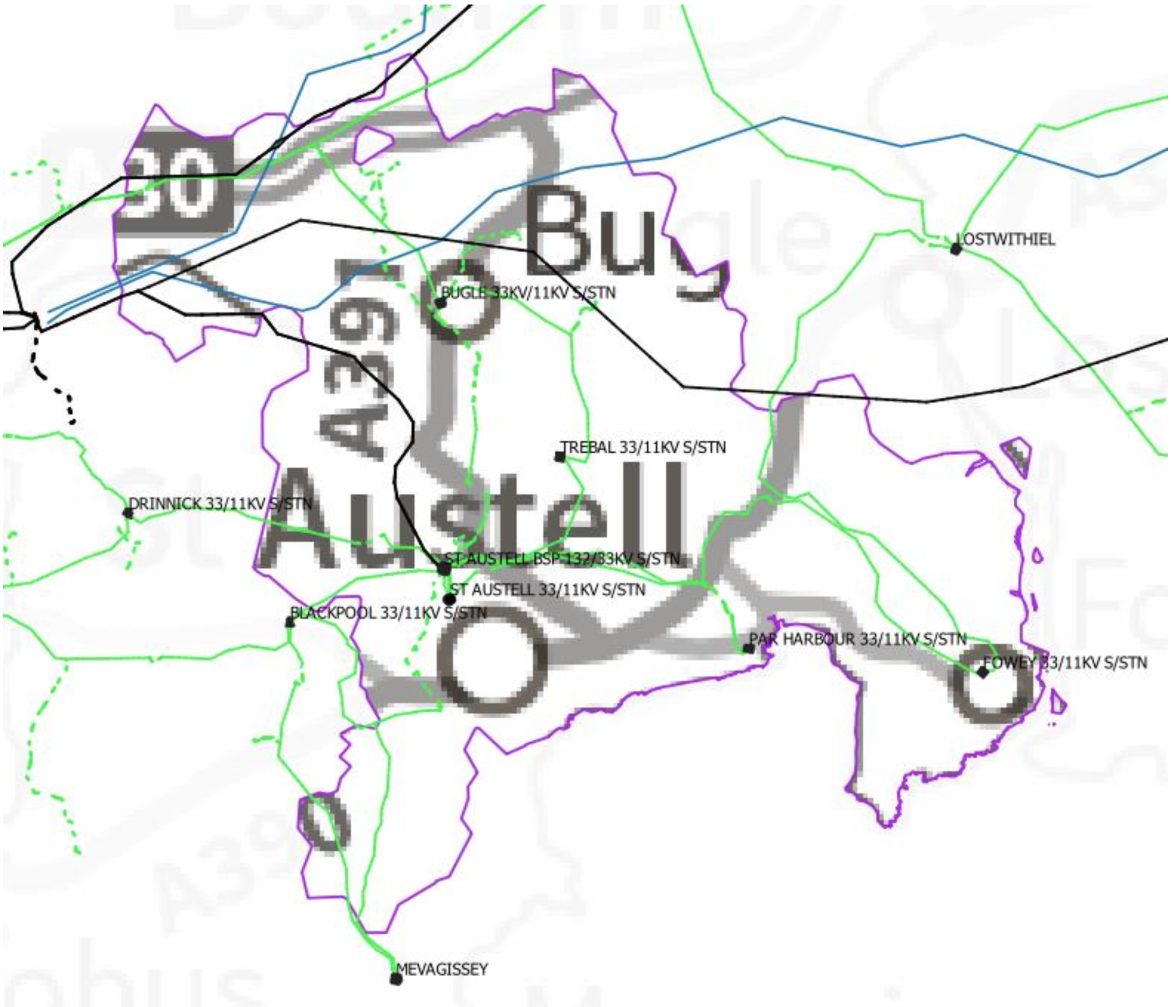

Figure 1.1 St Austell BSP geographic network coverage

This report discusses all existing and future network constraints over a 0-10 year horizon associated with the 33/11 kV transformers, 33 kV circuits and 132/33 kV transformers which supply and are supplied by St Austell 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 St Austell BSP network is arranged as follows:

- GT1 and GT2 currently run in parallel supplying St Austell BSP.
- St Austell primary is fed from transformer feeders directly from the BSP.

- There is a normal open point between Mevagissey and Blackpool, which gives a direct feed into Blackpool primary, the other circuit forms a ring that goes through Sawles Road and then Mevagissey terminating at Blackpool primary passing through two generators.
- From Blackpool primary there is a circuit that has interconnection to Fraddon BSP with two generators on the way.
- There is a generator directly off St Austell busbar.
- Bugle primary has two circuits from St Austell BSP, one interconnector to Fraddon and a generator connected to one of the busbars. On one of the circuits feeding Bugle there is Trebal a Single Transformer Primary and two generators.
- St Blazey Switching Station has two circuits feeding it from St Austell BSP. It feeds a Par Harbour primary with two circuits and one circuit feeds Fowey, this then has an interconnector to St Germans BSP.

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.

- Various winter arranged outages not permitted due to SCO overloads.
- Various SCO overloads solved by network reconfiguration for arranged outages.
- For the loss of an infeed to a transformer at any of the primaries fed from Street BSP under arranged outages, the lower voltage side circuit breaker is opened to prevent back-energisation.

2. Summary of Network Constraints

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

- St Austell to Bugle circuit capacity
- Fowey Primary capacity
- St Blazey Switching Station to St Austell circuit capacity
- Par Harbour Transformer and circuit capacity
- St Austell Primary capacity
- St Austell BSP capacity

3. Network Constraint Details and Solution Options

3.1 St Austell to Bugle circuit capacity

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 Summer Peak generation.

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
St Austell 24L5 to Bugle 3L3 circuit capacity (mainly section between Trebal and the first generator towards Bugle)	Fault of the other infeed into the ring. Mainly St Austell Main 2 busbar fault	None	-	-	-	Baseline

Uncertainty under other Distribution Future Energy Scenarios: As this constraint occurs under baseline, there is no uncertainty about future forecasts.

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	Reinforce existing 33 kV circuits	✓	✓	✓	Viable
2	Install additional 33 kV circuits	✓	✓	×	Discounted
Operational Mitigation					
3	Add intertrips for generators	✓	✓	✓	Viable
Load Management Schemes					
4	Post-fault transfers	×	×	×	Discounted
Flexibility services					
5	Procure flexibility	×	×	×	Discounted

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.

Option 0 – No Intervention

Capacity Released for constraint(s) considered: 0 MVA

Discounted

Detailed description: Doing nothing to mitigate the constraint would result in overloads for the conditions described above.

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

Option 1 – Reinforce existing 33 kV circuits

Capacity Released for constraint(s) considered: 14 MVA

Viable

Detailed description: Due to a lot of generation concentrated in a 33 kV circuit there will need to be a section of about 3 km that will need to be reconductored with 200 mm^2 All Aluminium Alloy Conductor (AAAC) Poplar or equivalent between Trebal and the first generator towards Bugle.

New limiting factor for constraint(s) considered: New circuit rating.

Option 2 – Install additional 33 kV circuits

Capacity released for constraint(s) considered: 23 MVA

Discounted

Detailed description: Not necessary and over the top due to Bugle already having two circuits and an interconnection circuit. It would consist in building one more circuit from St Austell into the Bugle/Trebal ring.

New limiting factor for constraint(s) considered: Capacity of new circuit.

Option 3 – Add intertrips for generators

Capacity Released for constraint(s) considered: 0 MVA

Viable

Detailed description: Due to this constraint being a generation issue some customers may accept intertrips which would solve it. However, it may mean altering or adding restrictions to connection agreements which may not be in customers' interests.

New limiting factor for constraint(s) considered: Current circuit capacity.

Option 4 – Post-fault transfers

Discounted

Capacity Released for constraint(s) considered: 0 MVA

Detailed description: Post fault transfers cannot be utilised as the overload is beyond post-fault ratings meaning there is no window to reduce the load on the 33 kV circuits through load management.

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

Option 5 – Procure flexibility

Discounted

Estimated Flexibility Required (MVA): 0 MVA

Detailed description: Flexibility services would not be able to solve generation issues currently.

Solution Recommendation

It is recommended to reconductor a 3 km section of circuit between Trebal and the first generator towards Bugle with 200 mm^2 AAAC Poplar conductor or equivalent. Adding intertrips could also be another solution, but it could constraint the generators more than their initial connection agreement.

3.2 Fowey Primary capacity

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 3.2.1 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
Fowey Primary capacity	Loss of one Transformer	None	2034	2034	2040	2050

Uncertainty under other Distribution Future Energy Scenarios: Under Leading the Way Scenario, this constraint is predicted to arise in 2032 and under falling short is it predicted to arise in 2040.

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 Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Replace Transformers with 7.5/15 MVA units	✓	✓	✓	Viable
2	Possibility of adding fans	✓	✓	✓	Viable
Operational Mitigation					
3	Transfer demand to other Primaries	×	×	×	Discounted
Load Management Schemes					
4	Post-fault transfers	×	×	×	Discounted
Flexibility services					
5	Procure flexibility at Fowey Primary	✓	✓	✓	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 0 – No Intervention

Capacity Released for constraint(s) considered: 0 MVA **Discounted**

Detailed description: Doing nothing to mitigate the constraint would result in overloads for the conditions described above. This would lead to an inability to meet the Security of Supply requirements of Engineering Recommendation P2 for Fowey primary substations.

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

Option 1 – Replace Transformers with 7.5/15 MVA units

Capacity Released for constraint(s) considered: 9 MVA **Viable**

Detailed description: Replace with larger units. There is a chance that in the 2040s and 2050s there could be a hydrogen electrolysis plant so maybe 12/24 MVA would be needed in 2045/2050, but very low certainty as it is so far in the future.

New limiting factor for constraint(s) considered: New transformer capacity

Option 2 – Possibility of adding fans

Capacity released for constraint(s) considered: 3 MVA **Viable**

Detailed description: This is an option that needs to be considered. However due to the age of the transformers might not be worth it as it could be something that will not be used for long.

New limiting factor for constraint(s) considered: Cyclic ratings

Option 4 – Transfer demand to other Primaries

Capacity Released for constraint(s) considered: 0 MVA **Discounted**

Detailed description: If St Blazey gets a new primary due to increased demand at Par Harbour Fowey extra demand could be fed from Par Harbour shifting demand North. This also depends where the demand connections will appear geographically within the Fowey ESA.

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

Option 5 – Post-fault transfers

Capacity Released for constraint(s) considered: 0 MVA **Discounted**

Detailed description: Post fault transfers cannot be utilised as the overload is beyond post-fault ratings meaning there is no window to reduce the load on the 33 kV circuits through load management.

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

Option 6 – Procure flexibility at Fowey Primary

Estimated Flexibility Required (MVA): 1 MVA+ **Viable**

Detailed description: Flexibility services could be procured at Fowey to alleviate projected overloads.

Solution Recommendation

It may be possible to procure flexibility at Fowey Primary substation to defer the reinforcement requirements, subject to a cost benefit analysis confirmation through the DNOA process.

However, longer term St Blazey Primary may get built and some demand can get shifted North. If not enough, the Fowey transformers will need to be replaced by 7.5/15 MVA units, meaning subject to a cost benefit analysis this is likely to be the most cost-effective option as no 11 kV works needed.

3.3 St Blazey Switching Station to St Austell circuit capacity

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 3.3.1 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
St Blazey to St Austell circuit capacity	Loss of one Busbar at St Blazey Switching Station	None	2033	2033	2034	2035

Uncertainty under other Distribution Future Energy Scenarios: Under Leading the Way Scenario, this constraint is predicted to arise in 2032 and under falling short is it predicted to arise in 2045.

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 Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Reconductor 33 kV circuits	✓	✓	✓	Viable
2	New 33 kV circuits	✓	×	×	Discounted
Operational Mitigation					
3	Transfer demand to other Primaries	×	×	×	Discounted
Load Management Schemes					
4	Post-fault transfers	×	×	×	Discounted
Flexibility services					
5	Procure flexibility at Fowey and Par Harbour Primaries	✓	✓	✓	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 0 – No Intervention

Capacity Released for constraint(s) considered: 0 MVA — Discounted

Detailed description: Doing nothing to mitigate the constraint would result in overloads for the conditions described above. This would lead to an inability to meet the Security of Supply requirements of Engineering Recommendation P2 for Fowey and Par Harbour primary substations.

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

Option 1 – Reconductor 33 kV circuits

Capacity Released for constraint(s) considered: 14 MVA — Viable

Detailed description: Replace the existing over 5 km section of 33 kV conductors with 200 mm^2 AAAC Poplar. According to the Best View this size of conductor will take us to 2040. After that Option 3 will become viable.

New limiting factor for constraint(s) considered: New circuit capacity

Option 2 – New 33 kV circuits

Capacity released for constraint(s) considered: 23 MVA — **Discounted**

Detailed description: This new circuit or circuits would provide extra support to this part of the network. However, it may only be needed when St Blazey new primary gets built and is filled to capacity. This is highly uncertain so I would not recommend it for CBA.

New limiting factor for constraint(s) considered: New 33 kV circuits

Option 4 – Transfer demand to other Primaries

Capacity Released for constraint(s) considered: 0 MVA — **Discounted**

Detailed description: These two primaries cover a wide area which means very limited transfer to outside of this group.

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

Option 5 – Post-fault transfers

Capacity Released for constraint(s) considered: 0 MVA — **Discounted**

Detailed description: Post fault transfers cannot be utilised as the overload is beyond post-fault ratings meaning there is no window to reduce the load on the 33kV circuits through load management.

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

Option 6 – Procure flexibility at Fowey and Par Harbour Primaries

Estimated Flexibility Required (MVA): 1 MVA+ — **Viable**

Detailed description: Flexibility services could be procured at Fowey and Par Harbour to alleviate projected overloads.

Solution Recommendation

It may be possible to procure flexibility at Fowey and Par Harbour Primary substation to defer the reinforcement requirements, subject to a cost benefit analysis confirmation through the DNOA process.

However, longer term reconductoring of the circuits between St Blazey Switching station and St Austell which are over 5km with 200 mm^2 AAAC Poplar conductor will be needed. If not enough new 33 kV circuits will be needed.

3.4 Par Harbour Transformer and circuit capacity

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 3.4.1 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
Par Harbour Transformers and circuit capacity	Loss of half of the Transformers and circuits	None	2035	2040	2040	2040

Uncertainty under other Distribution Future Energy Scenarios: Under Leading the Way Scenario, this constraint is predicted to arise in 2035 and under falling short is it predicted to arise in 2050.

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 Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	New primary at St Blazey Switching Station	✓	✓	✓	Viable
2	New 33 kV circuits and primary	✓	✓	×	Discounted
Operational Mitigation					
3	Transfer demand to other Primaries	×	×	×	Discounted
Load Management Schemes					
4	Post-fault transfers	×	×	×	Discounted
Flexibility services					
5	Procure flexibility at Fowey and Par Harbour Primaries	✓	✓	✓	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 0 – No Intervention

Capacity Released for constraint(s) considered: 0 MVA — Discounted

Detailed description: Doing nothing to mitigate the constraint would result in overloads for the conditions described above. This would lead to an inability to meet the Security of Supply requirements of Engineering Recommendation P2 for Par Harbour primary substations.

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

Option 1 – New primary at St Blazey Switching Station

Capacity Released for constraint(s) considered: 23 MVA — Viable

Detailed description: This option should be the easiest, it will require just putting two 33 kV transformers at St Blazey Switching Station. If space is an issue there may be a need to establish a 33 kV indoor busbar and switchgear.

New limiting factor for constraint(s) considered: New transformer capacity.

Option 2 – New 33kV circuits and primary

Capacity released for constraint(s) considered: 23 MVA — Discounted

Detailed description: This option may be slightly over that what is needed as there is already a switching station that could accept the Transformers.

New limiting factor for constraint(s) considered: New 33 kV circuits and transformer capacity

Option 3 – Transfer demand to other Primaries

Capacity Released for constraint(s) considered: 0 MVA — Discounted

Detailed description: As Par Harbour primary is a tee off towards the sea there are no primaries that can easily accept demand nearby.

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

Option 4 – Post-fault transfers

Capacity Released for constraint(s) considered: 0 MVA **Discounted**

Detailed description: Post fault transfers cannot be utilised as the overload is beyond post-fault ratings meaning there is no window to reduce the load on the 33 kV circuits through load management.

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

Option 5 – Procure flexibility at Par Harbour Primaries

Estimated Flexibility Required (MVA): 1 MVA+ **Viable**

Detailed description: Flexibility services could be procured at Fowey and Par Harbour to alleviate projected overloads.

Solution Recommendation

It may be possible to procure flexibility at Par Harbour Primary substation to defer the reinforcement requirements, subject to a cost benefit analysis confirmation through the DNOA process.

However, longer term using St Blazey as a primary with two 12/24 MVA transformers would alleviate the constraint following the predicted growth rate. There is a large site that may join the pipeline soon which may bring this reinforcement forward and it may mean bringing the solution to constraint 3.3 forward too.

3.5 St Austell Primary capacity

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 studied year constraint is observed in each season under Best View			
			Winter	Int Cool	Int Warm	Summer
St Austell Primary capacity	Loss of half of the Transformers and circuits	None	2034	2034	2035	2040

Uncertainty under other Distribution Future Energy Scenarios: Under Leading the Way Scenario, this constraint is predicted to arise in 2033 and under falling short is it predicted to arise in 2045.

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 Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	**Discounted**
Reinforcement					
1	New primary	✓	✓	×	**Discounted**
2	Uprate existing primary with 20/40 MVA units	✓	✓	×	**Viable**
Operational Mitigation					
3	Transfer demand to other Primaries	✓	✓	✓	**Viable**
Load Management Schemes					
4	Post-fault transfers	×	×	×	**Discounted**
Flexibility services					
5	Procure flexibility at St Austell primary	✓	✓	×	**Discounted**

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 0 – No Intervention

Capacity Released for constraint(s) considered: 0 MVA **Discounted**

Detailed description: Doing nothing to mitigate the constraint would result in overloads for the conditions described above. This would lead to an inability to meet the Security of Supply requirements of Engineering Recommendation P2 for St Austell primary substations.

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

Option 1 – New primary

Capacity Released for constraint(s) considered: 23 MVA **Discounted**

Detailed description: A new primary would have to come from St Austell. However, there already is an underutilised primary in the vicinities so Option 2 will be recommended.

New limiting factor for constraint(s) considered: New transformer capacity.

Option 2 – Uprate existing primary with 20/40 MVA units

Capacity Released for constraint(s) considered: 15 MVA Viable

Detailed description: Uprating the existing primary to 20/40 MVA units would be a simple way of getting capacity in the area. However, option 3 must be considered and a cost benefit analysis done on the amount of 11 kV works needed for both options.

New limiting factor for constraint(s) considered: New transformer capacity.

Option 3 – Transfer demand to other Primaries

Capacity released for constraint(s) considered: 0 MVA Viable

Detailed description: Blackpool Primary can accept a lot of demand this may have some 11 kV reinforcement associated with it, but should be the better option at this stage.

New limiting factor for constraint(s) considered: New 33 kV circuits and transformer capacity

Option 4 – Post-fault transfers

Capacity Released for constraint(s) considered: 0 MVA Discounted

Detailed description: Post fault transfers cannot be utilised as the overload is beyond post-fault ratings meaning there is no window to reduce the load on the 33 kV circuits through load management.

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

Option 5 – Procure flexibility at St Austell primary

Estimated Flexibility Required (MVA): 0 MVA Discounted

Detailed description: Flexibility services could be procured at St Austell primary to alleviate projected overloads, but a cheaper option could be achieved by Option 2.

Solution Recommendation

It is recommended that load growth at St Austell Primary gets shared with Blackpool Primary, this may mean more 11 kV reinforcement towards Blackpool will be needed. This can be carried to CBA jointly with Flexibility if needed.

3.6 St Austell BSP capacity

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 3.6.1 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
St Austell BSP capacity	Loss of one GT	None	2034	2035	2040	-

Uncertainty under other Distribution Future Energy Scenarios: Under Leading the Way Scenario, this constraint is predicted to arise in 2028 and under falling short is it predicted to arise in 2045.

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 Benefit	Potential to be cost effective	Viable or Discounted
0	No Intervention	×	×	×	Discounted
Reinforcement					
1	Reinforcing neighbouring BSPs	✓	✓	×	Discounted
2	Enable cyclic ratings	✓	✓	✓	Viable
Operational Mitigation					
3	Transfer demand to other BSPs	✓	✓	✓	Viable
Load Management Schemes					
4	Post-fault transfers	×	×	×	Discounted
Flexibility services					
5	Procure flexibility at St Austell BSP	✓	✓	✓	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 0 – No Intervention

Capacity Released for constraint(s) considered: 0 MVA — Discounted

Detailed description: Doing nothing to mitigate the constraint would result in overloads for the conditions described above. This would lead to an inability to meet the Security of Supply requirements of Engineering Recommendation P2 for St Austell BSP.

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

Option 1 – Reinforcing neighbouring BSPs

Capacity Released for constraint(s) considered: 30 MVA — Discounted

Detailed description: Reinforcing neighbouring BSPs due to this constraint would be over the top for the amount of demand predicted for the area. However, if load growth is as high as Leading the Way there may be a need to reinforce other areas near St Austell for example Fraddon or St Germans. This would link with Option 3 of transferring primaries away from St Austell BSP.

New limiting factor for constraint(s) considered: Reinforced BSP capacity

Option 2 – Enable cyclic ratings

Capacity released for constraint(s) considered: 24 MVA — Viable

Detailed description: St Austell will exceed its nameplate rating. However, these could be enhanced if SD8C checks area carried out and any ancilliary limits are removed. As these checks should enhance an existing asset will be the preferred option.

New limiting factor for constraint(s) considered: Cyclic ratings

Option 3 – Transfer demand to other BSPs

Capacity Released for constraint(s) considered: 0 MVA — Viable

Detailed description: Neighbouring BSPs are predicted to have extra capacity which could accommodate some growth from St Austell. An issue with this approach would be voltage on the St Germans side. So Fraddon could be the better BSP to accept some load if needed.

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

Option 4 – Post-fault transfers

Capacity Released for constraint(s) considered: 0 MVA **Discounted**

Detailed description: Post fault transfers cannot be utilised as the overload is beyond post-fault ratings meaning there is no window to reduce the load on the 33 kV circuits through load management.

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

Option 6 – Procure flexibility at St Austell primary

Estimated Flexibility Required (MVA): 1 MVA+ **Viable**

Detailed description: Flexibility services could be procured at St Austell BSP to alleviate projected overloads.

Solution Recommendation

It is recommended that cyclic ratings are used at St Austell BSP, this can be achieved by performing internal policy SD8C checks to make sure all the ancillaries can be relied on. Any works identified as part of these should be carried out.

It may be possible to procure flexibility at St Austell BSP substation to defer the reinforcement requirements, subject to a cost benefit analysis confirmation through the DNOA process.

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