

# Information Document

## South Area Transmission Constraint Management

### ID #2013-009R



Information documents are not authoritative. Information documents are provided for information purposes only and are intended to provide guidance. If there is a discrepancy between an information document and any authoritative document<sup>1</sup> in effect, the authoritative document governs.

#### 1 Purpose

This information document relates to the following authoritative document:

- Section 302.1 of the ISO rules, *Real Time Transmission Constraint Management* ("Section 302.1").

The purpose of this information document is to provide information regarding the unique operating characteristics and resulting constraint conditions and limits in the south area of the interconnected electric system. In this information document, the AESO defines the south area as the area illustrated by maps presented.

Section 302.1 sets out the general transmission constraint management protocol steps the AESO uses to manage transmission constraints in real time on the interconnected electric system. These steps are referenced in Table 1 of this information document as they are applied to the south area.

#### 2 General

The transmission and generation facilities in the south area are shown in a geographical map in Appendix 2. For schematic single line diagrams of the south area, see Appendix 3A and Appendix 3B.

Several remedial action schemes are in place in the south area to ensure system reliability. The remedial action schemes for the south area are provided in the list of Alberta Remedial Action Schemes which is available on the AESO website.

#### 3 Constraint Conditions and Limits

When managing a transmission constraint in the south area, the AESO ensures that transmission line flows out of the area are managed in accordance with transmission line ratings. These ratings are established by the legal owner of the transmission facility to protect transmission facilities, ensuring the continued reliable operation of the interconnected electric system. The existing remedial action schemes are designed to ensure line flows are managed to safely maintain emergency transmission line ratings.

The AESO monitors the remedial action schemes in the south to ensure that the remedial action schemes are available when required. If a remedial action scheme is not available or partially inoperable, the AESO may proactively curtail generation in anticipation of contingencies in order to ensure safe, reliable operation of the system. South area remedial action schemes are outlined in the list of Alberta Remedial Action Schemes.

The AESO uses ramp power management tools to curtail during constraints. Ramp power management does not apply to any wind aggregated facilities that have been constrained down for a local area constraint. Once the transmission constraint management directive is cancelled, ramp power management is again applied to the asset.

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<sup>1</sup> "Authoritative document" is the general name given by the AESO to categories of documents made by the AESO under the authority of the *Electric Utilities Act* and regulations, and that contain binding legal requirements for either market participants or the AESO, or both. Authoritative documents include: the ISO rules, the reliability standards, and the ISO tariff.

#### 3.1 Non-Studied Constraints and Limits

The AESO uses energy management system tools and dynamic stability tools to assess unstudied system operating limits in real time, for system conditions that are not pre-studied.

Real time system conditions and area transmission element outages not identified through engineering studies, may require the use of any of the effective assets listed in Appendix 1 for constraint mitigation.

#### 3.2 Studied Constraints and Limits

System studies have identified potential thermal violations, voltage violations and low short circuit ratios under certain system conditions in the south area. The identified constraints and affected pool assets are listed in Appendix 4.

Area constraints may occur during normal operating conditions as well as under planned or forced outages when there are high levels of generation.

For planned outages on any of: 1034L, 1035L, 1074L, 964L, 965L or 983L an engineering assessment is performed to determine acceptable generation levels.

For forced outages on any of: 1034L, 1035L, 1074L, 964L, 965L or 983L area generation is constrained to a maximum of 350 MW until an engineering assessment is performed to determine acceptable generation levels.

Remedial action schemes are utilized to manage several identified constraints in the south area. For more information on south area remedial action schemes, refer to the list of Alberta Remedial Action Schemes.

#### 4 Application of Transmission Constraint Management Procedures

The AESO manages transmission constraints in all areas of Alberta in accordance with the provisions of Section 302.1. However, not all of those provisions are effective in the south area due to certain operating conditions that exist in the area. This information document represents the application of the general provisions of Section 302.1 to the south area, and provides additional clarifying steps as required to effectively manage transmission constraints in that area before and after the activation of a remedial action scheme. The protocol steps which are effective in managing transmission constraints are outlined in Table 1 below.

**Table 1**  
**Transmission Constraint Management**  
**Sequential Procedures for South Area**

Subsection 2(1) of Section 302.1, protocol steps	Is the procedure applicable to the south area?
(a) Determine effective pool assets	Yes
(b) Ensure maximum capability not exceeded	Yes
(c) Curtail effective downstream constraint side export service and upstream constraint side import service	Yes
(d) Curtail effective demand opportunity service on the downstream constraint side	No
(e)(i) Issue a dispatch for effective contracted transmission must-run	No
(e)(ii) Issue a directive for effective non-contracted transmission must-run	No
(f) Curtail effective pool assets in reverse energy market merit order followed by pro-rata curtailment	Yes
(g) Curtail effective loads with bids in reverse energy market merit order followed by pro-rata load curtailment	No

**Applicable Protocol Steps**

The first step in managing constraints is to identify those pool assets, both generating units and loads, which are effective in managing constraints. A list of those effective generating pool are identified in Appendix 1. As per subsection 2(4) of Section 302.1, when a transmission constraint has been or is expected by the AESO to activate a remedial action scheme, the AESO recommences the procedural sequence in Table 1 (above) once the AESO has ensured that the system is operating in a safe and reliable mode.

Step (a) in Table 1

The effective pool assets are as shown in Appendix 1.

Step (b) in Table 1

Ensuring maximum capability levels are not exceeded is effective in managing south area transmission constraints. The effective pool assets that the AESO may curtail are listed in Appendix 1.

Step (c) in Table 1

There may be situations where curtailment of import flows is effective in managing a transmission constraint in the south area.

Step (d) in Table 1

Curtailing effective demand opportunity service on the downstream constraint side is not effective in managing south area constraints because there is no demand opportunity service in the area.

Step (e) in Table 1

With respect to steps (e)(i) and (ii), there are no transmission must-run contracts in the south area and using transmission must-run is not effective in managing a transmission constraint.

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Step (f) in Table 1

Curtailing effective generating units in reverse energy market merit order followed by pro-rata curtailment is effective in managing south area transmission constraints. The effective pool assets that the AESO may curtail are listed in Appendix 1.

Step (g) in Table 1

Because of the configuration of the interconnected electrical system, curtailing load on the upstream side is not effective in managing south area constraints.

## 5 Project Updates

As necessary, the AESO intends to provide information in this section about projects underway in the south area that are known to have an impact on the information contained in this information document.

### Appendices

Appendix 1 – *Effective Pool Assets*

Appendix 2 – *Geographical Map of the South Area*

Appendix 3A – *South West Area Single Line Diagram*

Appendix 3B – *South East Area Single Line Diagram*

Appendix 4 – *South Area Constraints and Effective Assets*

### Revision History

Posting Date	Description of Changes
2024-06-13	Updated Appendix 1. Added Path 83 (MATL) constraints to Appendix 4 Table [1].
2024-04-26	Renumbered Appendix 4A to Appendix 4. Added 612L outage to Appendix 4 Table [1]. Updated Appendix 2 Geographic Map of the South Area. Updated Appendix 3A South West Area Single Line Diagram. Updated Appendix 3B South East Area Single Line Diagram.
2023-12-20	Updated Section 3 to replace wind power management with ramp power management. Added additional information to Section 3.2. Updated Appendix 1 with current effective pool assets. Updated Appendix 4A to merge the existing south east and south west constraints into one table.

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Posting Date	Description of Changes
2022-03-30	<p>Amended Appendix 3 to include Appendix 3A South West Area Single Line Diagram and Appendix 3B South East Area Single Line Diagram.</p> <p>Amended to include Appendix 4A South West Area Constraints and Appendix 4B South East Area Constraints.</p> <p>Updated Appendix 4A South West Area Constraints and Appendix 4B South East Area Constraints with area transmission constraints and effective generators.</p>
2021-10-27	<p>Updated Appendix 1 with effective generators</p> <p>Updated Appendix 2 and 3 Maps</p> <p>Added Appendix 5 Taber/Medicine Hat Area Constraints</p>
2021-05-07	<p>Updated Appendix 1-3 with effective generators</p> <p>Added Appendix 4 South Area Constraints</p> <p>Added reference to Alberta RAS List</p> <p>Minor editorial improvements made throughout to improve clarity and align to current AESO drafting principles</p>
2015-08-20	<p>With energization of components of Southern Area Transmission Reinforcement (SATR) and Foothills Area Transmission Development (FATD), changes to the description of constraints and removal of four Remedial Action schemes.</p>
2014-06-26	<p>Appendix 3 amended to include Fidler Substation with associated line amendments and Appendix 4 amended to renumber and add note concerning Remedial Action Scheme at 103S Goose Lake 893L.</p>
2014-05-29	<p>Appendix 1 through 3 amended to include Old Man River Wind 112S (OWF1).</p>
2014-04-08	<p>Appendix 1 through 3 amended to include pool asset BSR1</p>
2014-02-27	<p>Initial Release</p>

### Appendix 1 – Effective Pool Assets

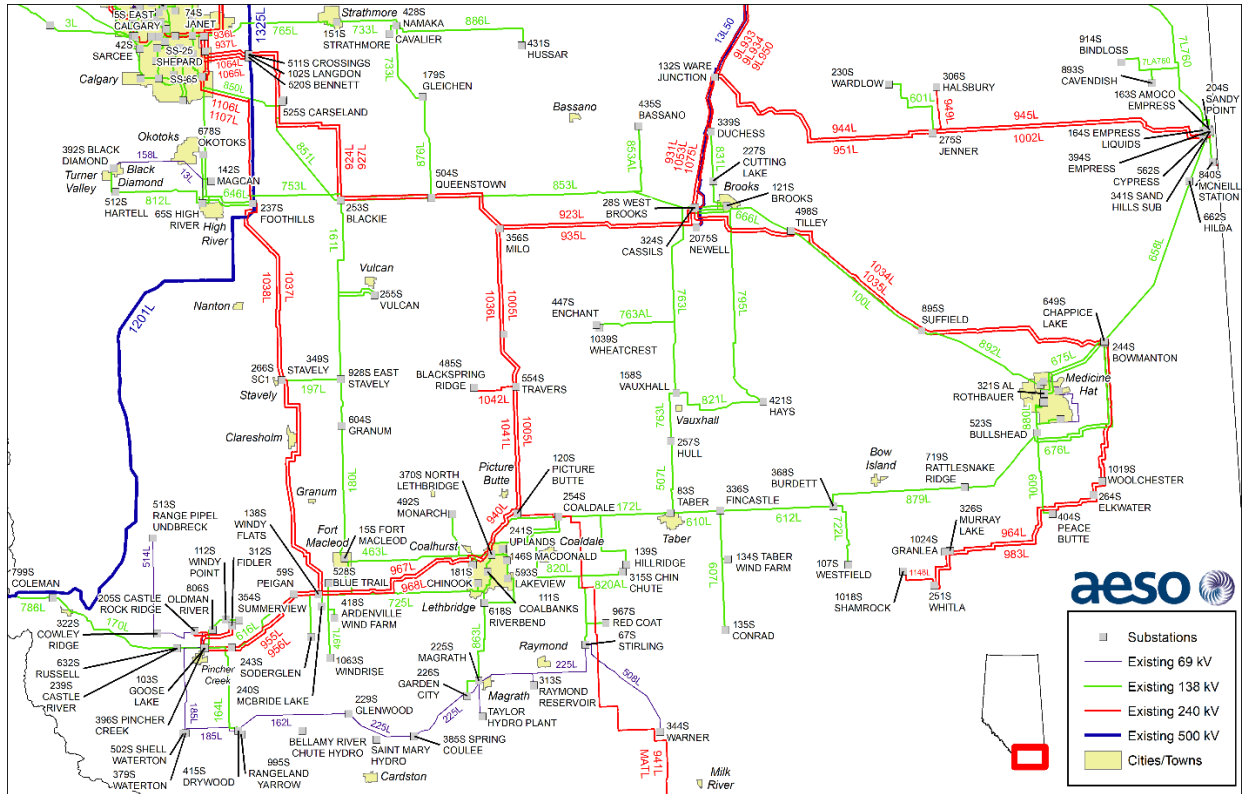
The effective pool assets for the south area, listed alphabetically by their asset IDs, include:

- AKE1
- ARD1
- ALP1
- ALP2
- BFL1
- BFL2
- BFL3
- BFL4
- BLYR
- BRD1
- BRK1
- BRK2
- BSC1
- BSR1
- BTR1
- BUR1
- CHIN
- CLR2
- CLY1
- CLY2
- COL1
- CRD1
- CRD2
- CRE3
- CR1
- CRR1
- CRR2
- CRWD
- CYP1
- CYP2
- DRW1
- EMP1
- FMG1
- FRM1
- GWW1
- HLD1
- HUL1
- HYS1
- ICP1
- IEW1
- IEW2
- JER1
- JNR1
- JNR2
- JNR3
- KHW1
- MEO2
- MEO3
- MEO4
- MON1
- NAT1
- OMRH
- OWF1
- RIV1
- RTL1
- RYMD
- SCR2
- SCR3
- SDL1
- SGC1
- SUF1
- STV1
- SWP1
- TAB1
- TAY1
- TVS1
- VCN1
- VXH1
- WEF1
- WHT1
- WHT2
- WIR1
- WRW1

Interties for the curtailment of import flows include:

- Path 83
- Path 2
- Path 1

## Appendix 2 – Geographical Map of the South Area



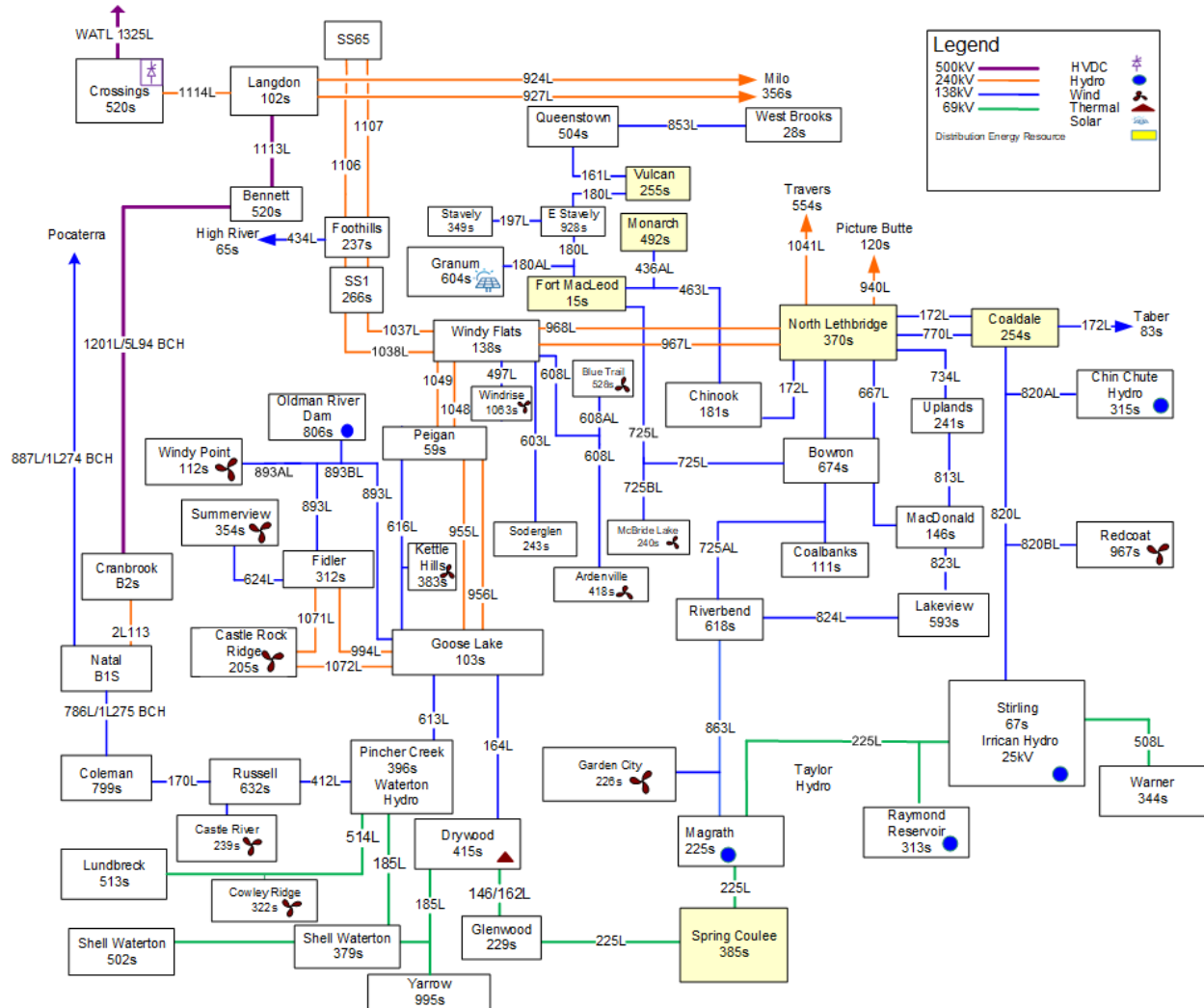
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#### Appendix 3A – South West Area Single Line Diagram





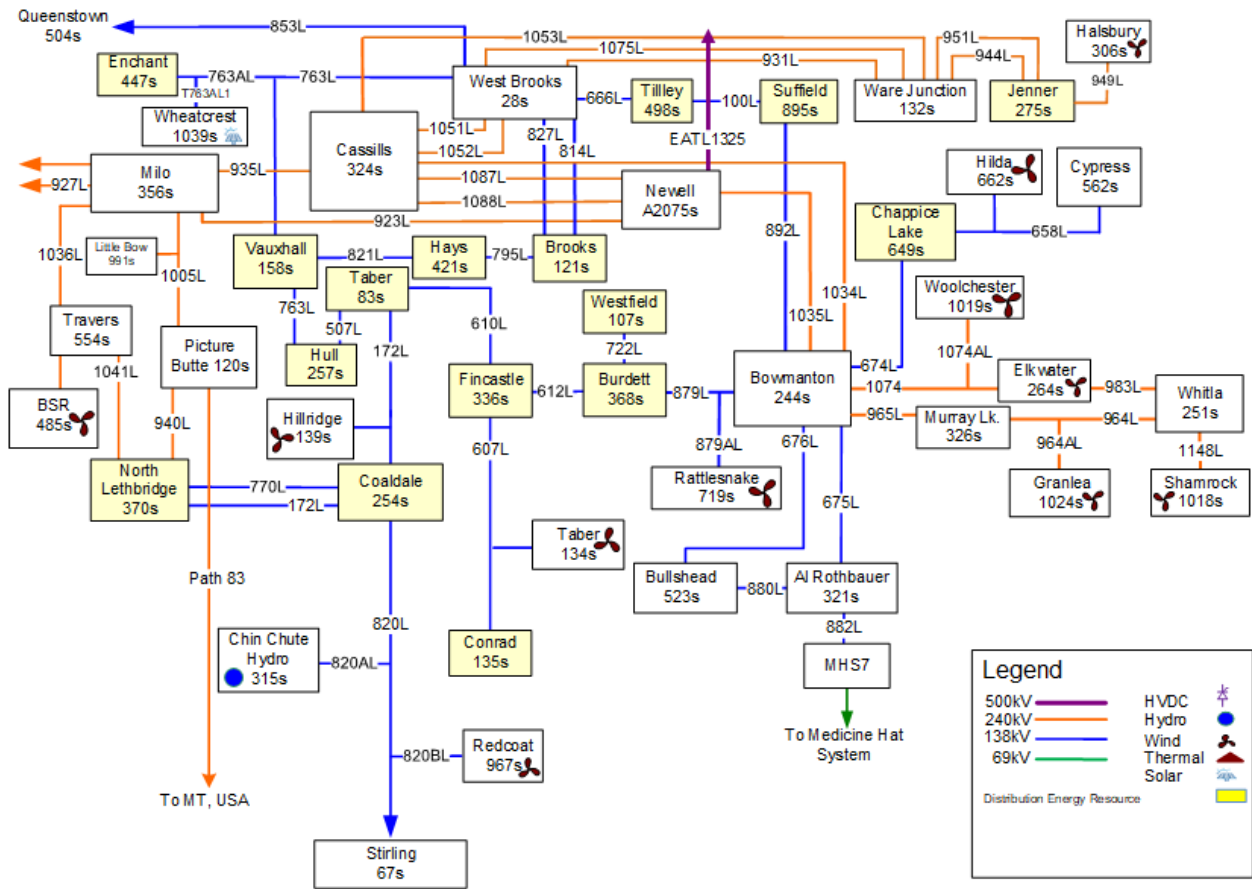
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#### Appendix 3B – South East Area Single Line Diagram



**Appendix 4 – South Area Constraints and Effective Assets**

AESO engineering studies have identified potential thermal constraints in the south area. Constraints in the south area are listed in Table [1] [Appendix 4] along with effective assets.

**Table [1]: Bulk electric system element outages contributing to thermal-related constraints**

Element Outage	Potential Effective Asset(s)
180L (928S East Stavely substation – 255S Vulcan substation)	<ul style="list-style-type: none"> <li>• AKE1</li> <li>• CLR1 / CLR2</li> </ul>
180L(928S East Stavely substation – 15S Fort McLeod substation)	<p><b>Note:</b> ALP2 is required to be offline for a 180L outage.</p>
244S Bowmanton substation 240 KV Breakers: 252 or 352 or 552 or 652	<ul style="list-style-type: none"> <li>• CCMH</li> <li>• CMH1</li> <li>• CYP1 / CYP2</li> <li>• FMG1</li> <li>• WHT1 / WHT2</li> </ul>
610L (83S Taber substation – 336S Fincastle substation)	<ul style="list-style-type: none"> <li>• BRD1</li> <li>• BUR1</li> <li>• CRD1 / CRD2</li> <li>• RTL1</li> <li>• TAB1</li> <li>• WEF1</li> <li>• HLD1</li> </ul>
612L (336s Fincastle – 368s Burdette)	<ul style="list-style-type: none"> <li>• BRD1</li> <li>• BUR1</li> <li>• RTL1</li> <li>• TAB1</li> <li>• WEF1</li> <li>• HLD1</li> </ul>
463L (15S Fort Macleod substation – 181S Chinook substation)	
725L (L674S Bowron substation – 725AL tap)	<ul style="list-style-type: none"> <li>• AKE1</li> <li>• ALP2</li> <li>• CLR1 / CLR2</li> </ul>
725L (Bowron L674S substation – 725BL tap)	
172L (370S North Lethbridge substation – 181S Chinook substation)	
1088L (324S Cassils substation – 2075S Newell substation)	<ul style="list-style-type: none"> <li>• BKR1 / BKR2</li> </ul>
669L (163S Amoco Empress substation – 562S Cypress substation)	<ul style="list-style-type: none"> <li>• CHP1</li> <li>• HLD1</li> </ul>

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Element Outage	Potential Effective Asset(s)
1036L (365S Milo substation – Travers 554s substation)	<ul style="list-style-type: none"> <li>• CHIN</li> <li>• CLR1 / CLR2</li> <li>• COL1</li> <li>• HUL1</li> <li>• RTL1</li> <li>• SCR3</li> <li>• SWP1</li> <li>• TVS1</li> <li>• VCN1</li> <li>• WCR1</li> </ul>
1005L (356S Milo substation – 120 Picture Butte substation)	
923L (356S Milo substation – 2075S Newell substation)	<ul style="list-style-type: none"> <li>• BFL1 / BFL2 / BFL3 / BFL4</li> <li>• JER1</li> <li>• JNR1 / JNR2 / JNR3</li> </ul>
924L (102S Langdon substation – 356S Milo substation)	<ul style="list-style-type: none"> <li>• BFL1 / BFL2 / BFL3 / BFL4</li> <li>• BKR1 / BKR2</li> <li>• BSR1</li> <li>• CYP1 / CYP2</li> <li>• FMG1</li> <li>• JER1</li> <li>• JNR1 / JNR2 / JNR3</li> <li>• TVS1</li> <li>• WHT1 / WHT2</li> <li>• Path 83 (MATL) import</li> </ul>
927L (102S Langdon substation – 356S Milo substation)	
EATL	<ul style="list-style-type: none"> <li>• CHP1</li> <li>• EMP1</li> <li>• HLD1</li> <li>• Path 83 (MATL) import</li> </ul>
1034L (244S Bowmanton substation – 324S Cassils substation) 1035L (244S Bowmanton substation – 2075S Newell substation) 1074L (244S Bowmanton substation – T1074AL 264S Elkwater substation) 964L (244S Bowmanton substation – T964AL 251S Whitla substation) 965L (244S Bowmanton substation – 326S Murray Lake) 983L (9264S Elkwater substation – 251S Whitla substation)	<ul style="list-style-type: none"> <li>• CYP1 / CYP2</li> <li>• WHT1/WHT2</li> <li>• FMG1</li> </ul>
121S Brooks substation Transformer 1	<ul style="list-style-type: none"> <li>• CLY1 / CLY2</li> </ul>