

# **Service constraints at Maffra (MFA) Zone Substation**

**Regulatory Investment Test for  
Distribution**

**Notice of determination under clause  
5.17.4(d) of the National Electricity Rules**



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**Service constraints at MFA**

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**ISSUE/AMENDMENT STATUS**

<b>Issue</b>	<b>Date</b>	<b>Description</b>	<b>Author</b>	<b>Approved</b>
1	6/04/2021	First Issue	F. Dinh	T. Langstaff

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## 1 Introduction and overview

AusNet Services is a regulated Victorian Distribution Network Service Provider (DNSP) that supplies electrical distribution services to more than 745,000 customers. Our electricity distribution network covers eastern rural Victoria and the fringe of the northern and eastern Melbourne metropolitan area.

As expected by our customers and required by the various regulatory instruments that we operate under, AusNet Services aims to maintain service levels at the lowest possible cost to our customers. To achieve this outcome, we develop forward looking plans that aim to maximise the present value of economic benefit to all those who produce, consume and transport electricity in the National Electricity Market (NEM).

Our approach is to consider network and non-network options on their merits, so that we meet our customers' needs and our compliance obligations at the lowest total cost. Where applicable, we also prepare, publish, and consult on a regulatory investment test for distribution (RIT-D), which further helps ensure all credible options are identified and considered, and the best option is selected.

In relation to required works at Maffra Zone Substation (MFA), we have concluded that there are no credible non-network options that are capable of addressing the risks at that zone substation, which are asset-related. In accordance with clause 5.17.4(d) of the National Electricity Rules (NER), therefore, this document is the notification of our determination that there are no credible non-network options in relation to the identified need at MFA. Consequently, AusNet Services will not publish a non-network options report as part of the RIT-D for works at MFA.

The next stage of the RIT-D process will be the publication of the Draft Project Assessment Report (DPAR), which AusNet Services intends to publish in May 2021.

## 2 Background

MFA is located approximately 220 km east of Melbourne (VicRoads map reference 694 C-7) and is the main source of supply for Maffra, Nambrok, Heyfield, Licola, Boisdale, Briagolong, Stratford and surrounding areas. MFA zone substation is located at an elevation of 30 m above sea level.

The load at MFA includes town and rural based residential, with some town based commercial, industrial and farming. MFA supplies approximately 8,350 customers. The largest customer supplied from MFA is a milk processing plant owned by Saputo (Dairy Australia). This plant is a major employer in the community and performs an essential role for the region's dairy producers. The electrical supply to the plant is critical to compliant operation of sensitive milk processing equipment.

MFA commenced operation as a 66/22kV transformation station in 1960. Two 10/13.5MVA transformers were installed in 1960 and a third 10/13.5MVA transformer was added in 1998. The 66kV switchyard was constructed in the 1960s, which the 22kV switchyard was replaced by an indoor switchboard in 1998.

A special switching arrangement at MFA is employed by opening the No.1-2 22kV bus tie. This configuration with a single small feeder (MFA 14) effectively provides a 66kV point of common coupling to Saputo and provides protection to the plant from power variations that result from the day to day operation of the remaining five feeders on the No.2 and No.3 22kV buses.

Service constraints at MFA

As shown in Figure 1, MFA is supplied via a 66kV network that connects between:

- Morwell Terminal Station (MWTS);
- Bairnsdale Switching Station (BDSS);
- Traralgon (TGN) Zone Substation; and
- Sale (SLE) Zone Substation.

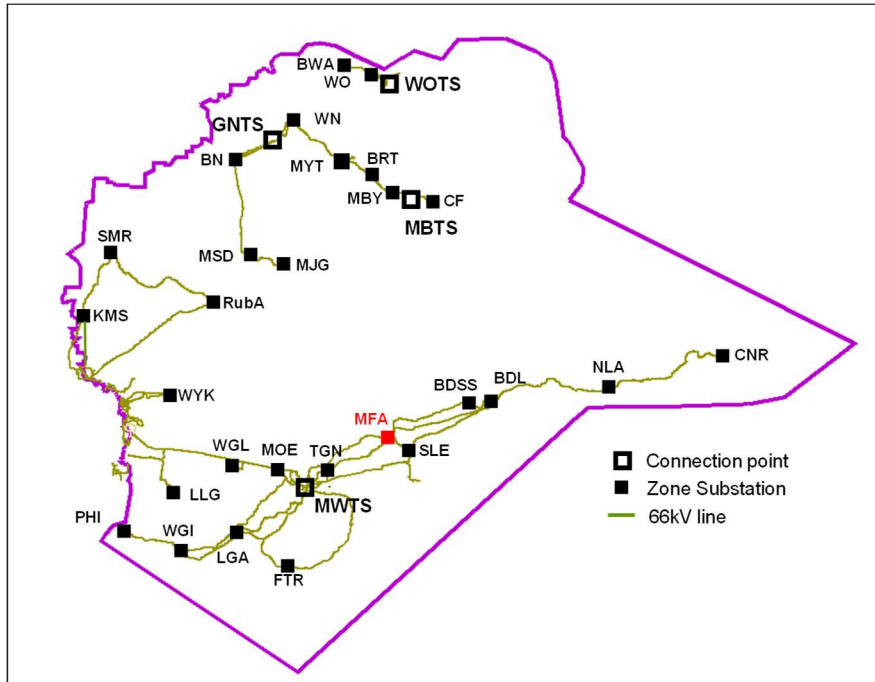


Figure 1: MFA location within AusNet Services subtransmission network

The configuration of primary electrical circuits within MFA is as shown in the following single line diagram (Figure 2), where the 66kV switchyard is shown on the right, and the 22kV switchgear is shown on the left.

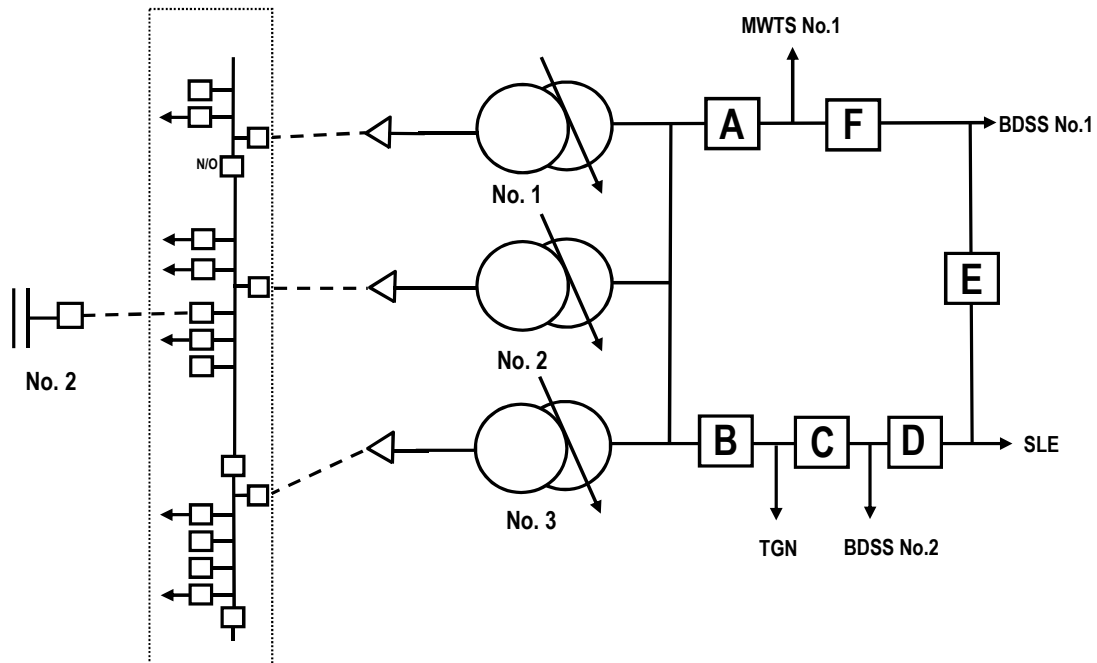


Figure 2: Single Line Diagram of MFA

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## Service constraints at MFA

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### 2.1 Zone Substation Equipment

#### 2.1.1 Primary Equipment

MFA includes an air insulated 66kV switchyard with eight busbars configured as a 66kV ring with six 66kV circuit breakers switching one line from Morwell Terminal Station (MWTS), one line from Traralgon Zone Substation (TGN), one line from Sale Zone Substation (SLE) and two lines from Bairnsdale Switching Station (BDSS).

There are three 22kV buses in an indoor switchroom supplying six 22kV feeders and one 12MVAR capacitor bank consisting of four 3MVAR modules. The 66kV circuits are switched by six minimum oil 66kV circuit breakers. Three units were installed in 1982, two units in 1963 and one unit was installed in 1967.

The 22kV indoor switchboard currently has seventeen 22kV circuit breakers, comprising ten feeder circuit breakers (including four spares), two bus-tie circuit breakers, three transformer circuit breakers, one circuit breaker that protects the capacitor bank and one extra circuit breaker allowed for the future capacitor bank. All 22kV circuit breakers were installed in 1998.

Transformation comprises three 10MVA 66/22kV transformers that are switched as a single group. The No.2 and No.3 transformers were originally installed in 1960 when the station was established. The No.1 transformer was added in 1998.

#### 2.1.2 Secondary Equipment

The 66kV line circuit breakers have circuit breaker failure and auto reclose schemes using Group relays.

The 22kV feeder circuit breakers have overcurrent, earth fault and sensitive earth fault using modern numeric relays. The 22kV capacitor bank protection has neutral balance and capacitor control device functions using modern numeric relays.

The transformers have differential protection, voltage regulating and restrictive earth fault protection using old digital relays. The bus protection has overcurrent and distance protection using old digital relays.

## 3 Identified need

As noted in the previous section, MFA commenced operation in 1960 and the 66kV switchyard is practically unchanged. Our assessment is that the physical and electrical condition of a number of assets at MFA has deteriorated and are now presenting an increasing failure risk. The primary issues at MFA arise from the following asset-related risks:

- a) Health and safety risks presented by a possible explosive failure of bushings on a number of the assets;
- b) Plant collateral damage risks presented by a possible explosive failure of bushings on a number of the assets;
- c) Environmental risks associated with insulating oil spill or fire;
- d) Reactive asset replacement risks presented by the increasing likelihood of asset failure due to the deteriorating condition of the assets; and
- e) Health and safety risks presented by asbestos-containing cement sheets or electrical switch boards in the control building, storeroom and toilet.

Our planning report for MFA also highlighted the security of supply risks that arise from the station configuration, as all three transformers are switched as a single group. The load at risk as a result of this station configuration issue is an additional factor that will need to be considered in examining the alternative options.

## 4 Regulatory Obligations

In addressing the identified need, we must satisfy our regulatory obligations, which we summarise below.

Clause 6.5.7 of the National Electricity Rules requires AusNet Services to only propose capital expenditure required in order to achieve each of the following:

- (1) *meet or manage the expected demand for standard control services over that period;*
- (2) *comply with all applicable regulatory obligations or requirements associated with the provision of standard control services;*
- (3) *to the extent that there is no applicable regulatory obligation or requirement in relation to:*
  - (i) *quality, reliability or security of supply of standard control services; or*
  - (ii) *the reliability or security of the distribution system through the supply of standard control services**to the relevant extent:*
  - (iii) *maintain the quality, reliability and security of supply of standard control services, and*
  - (iv) *maintain the reliability and security of the distribution system through the supply of standard control services; and*
- (4) *maintain the safety of the distribution system through the supply of standard control services.*

Section 98(a) of the Electricity Safety Act requires AusNet Services to:

*design, construct, operate, maintain and decommission its supply network to minimise as far as practicable –*

- (a) *the hazards and risks to the safety of any person arising from the supply network; and*
- (b) *the hazards and risks of damage to the property of any person arising from the supply network; and*
- (c) *the bushfire danger arising from the supply network.*

The Electricity Safety act defines 'practicable' to mean having regard to –

- (a) *severity of the hazard or risk in question; and*
- (b) *state of knowledge about the hazard or risk and any ways of removing or mitigating the hazard or risk; and*
- (c) *availability and suitability of ways to remove or mitigate the hazard or risk; and*
- (d) *cost of removing or mitigating the hazard or risk.*

Clause 3.1 of the Electricity Distribution Code requires AusNet Services to:

- (b) *develop and implement plans for the acquisition, creation, maintenance, operation, refurbishment, repair and disposal of its distribution system assets and plans for the establishment and augmentation of transmission connections:*
  - (i) *to comply with the laws and other performance obligations which apply to the provision of distribution services including those contained in this Code;*
  - (ii) *to minimise the risks associated with the failure or reduced performance of assets; and*



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- (iii) *in a way which minimises costs to customers taking into account distribution losses.*

Under clause 5.2 of the Electricity Distribution Code, AusNet Services:

*must use best endeavours to meet targets required by the Price Determination and targets published under clause 5.1 and otherwise meet reasonable customer expectations of reliability of supply.*

The condition of the assets at MFA is discussed in the Asset Health Reports for the key asset classes such as power transformers, instrument transformers and switchgear with information on asset condition rankings, recommended risk mitigation options and replacement timeframes. In light of our Asset Health Report for MFA, our assessment is that works are required to address the asset-related risks in accordance with our obligations set out above.

## 5 Screening for non-network options

As detailed in section 3, the identified need in relation to MFA comprises a number of different elements, which can be grouped together in the following broad categories:

- Health and safety risks;
- Plant collateral damage risks;
- Environmental risks; and
- Reactive asset replacement risks.

The nature of the above risks are asset-related and cannot be mitigated by a non-network option. For asbestos related risks associated with MFA, for example, these risks cannot be mitigated by a non-network option, as the risk relates to the fabric of the building.

In addition to the asset related risks noted above, MFA is exposed to a security of supply issue arising from the existing station configuration. While this issue will need to be considered in addressing the preferred network solution, the potential exposure relates to the loss of the entire zone substation which cannot be addressed by a non-network solution.

For the reasons set out above, our view is that there are no credible non-network options to address the identified need at MFA. In accordance with the NER requirements, we note that our conclusion is not dependent on any particular assumptions or methodologies.

## 6 Next Steps

For the reasons set out in Section 3, AusNet Services has determined that there will not be a non-network option that is a credible option, or a non-network component that forms a significant part of a potential credible option at MFA. In accordance with clause 5.17.4(c) of the NER, therefore, AusNet Services will not be publishing a non-network options report as part of the RIT-D for works at MFA.

Any questions on the matters of this determination notice should be submitted by email to [ritdconsultations@ausnetservices.com.au](mailto:ritdconsultations@ausnetservices.com.au).

The next stage of the RIT-D process is the publication of the DPAR, which is required to provide the information set out in clause 5.17.4(j) of the NER, including:

- A description of the identified need for investment.
- The assumptions used in identifying the need for investment, including the reasons why AusNet Services considers the subject of this RIT-D requires reliability corrective action.



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- A description of each credible option assessed, and their costs, that AusNet Services considers could potentially address the identified need.
- The results of our net present value analysis and accompanying explanatory statements regarding the results.
- Identification of the proposed preferred option that meets the identified need and the RIT-D requirements.
- The contact details for a suitably qualified staff member to whom queries on the draft report may be directed.

AusNet Services intends to publish the DPAR in May 2021.