Nelson, Marlborough and Tasman

Supplementary Information - Substation Load Characteristics

EECA

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Document history and status

Revision	Date	Author	Reviewed by	Approved by	Status
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Revision details

Revision	Details
A	Supplementary document created to reduce size of overall “spare capacity and load conversion opportunity report”

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1. Introduction

The following figures illustrate the characteristics of the major electrical substations (both GXPs and Zone Substations) in the Nelson, Marlborough and Tasman region. This document supplements the main report titled “Nelson, Marlborough and Tasman Network – Spare Capacity and Load Conversion Opportunity Report”.

For each GXP, the January 2022 through December 2022 apparent (MVA) and reactive loadings (MVAr) are presented. For each Zone Substation, the apparent (MVA) loadings only are presented. The data is presented in graphs of:

- The load profile for the entire year.
- The maximum and minimum loads for each of the 365 days.
- Load profiles for two weeks in summer and two weeks in winter.
- Typical daily summer and winter load profiles.
- A load duration curve for the entire year.

2. Transmission/GXP Substations

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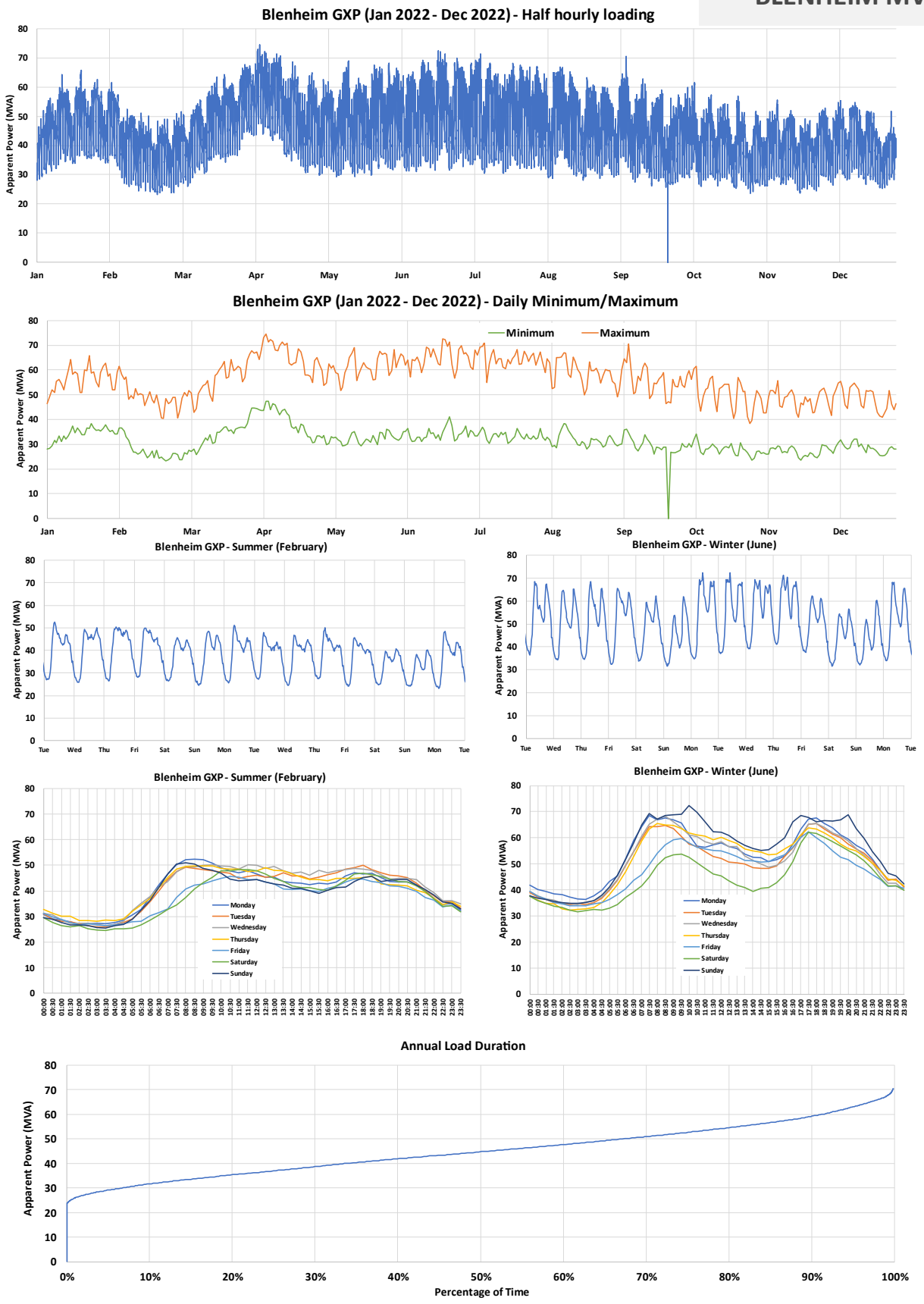

Figure 1 Blenheim: Apparent power (MVA) load characteristics

BLENHEIM MVAr

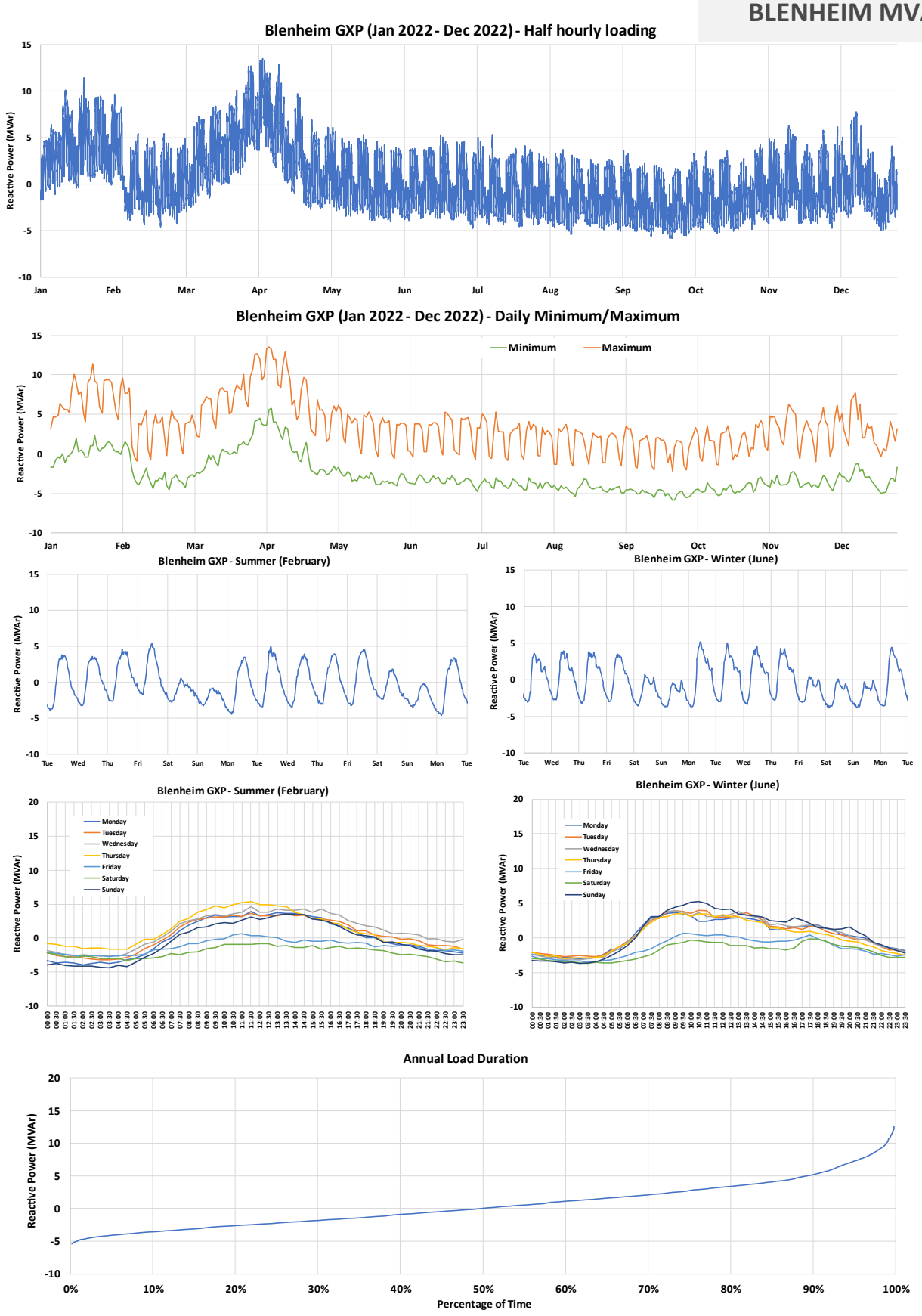

Figure 2 Blenheim: Reactive power (MVAr) load characteristics

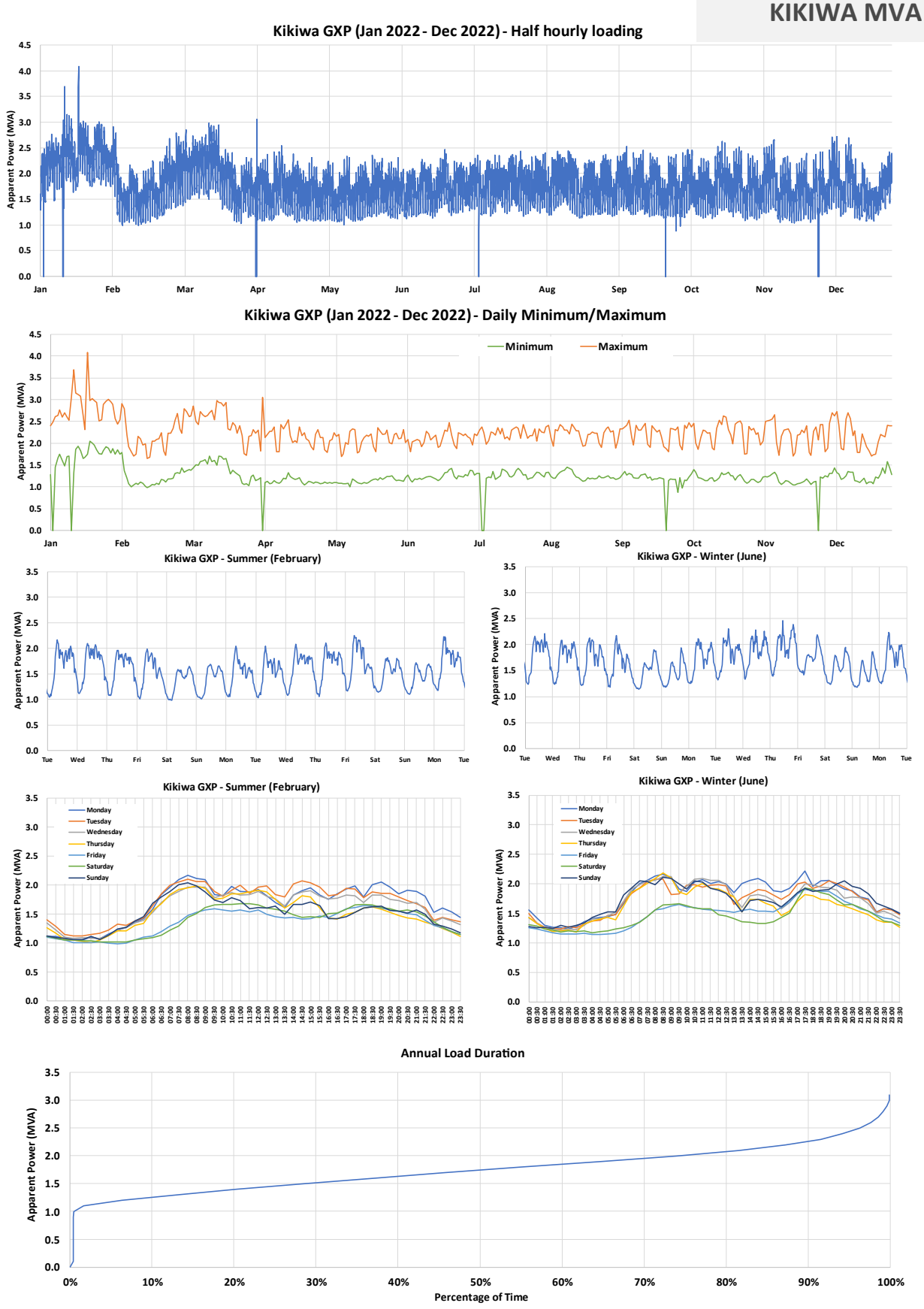

Figure 3 Kikiwa: Apparent power (MVA) load characteristics

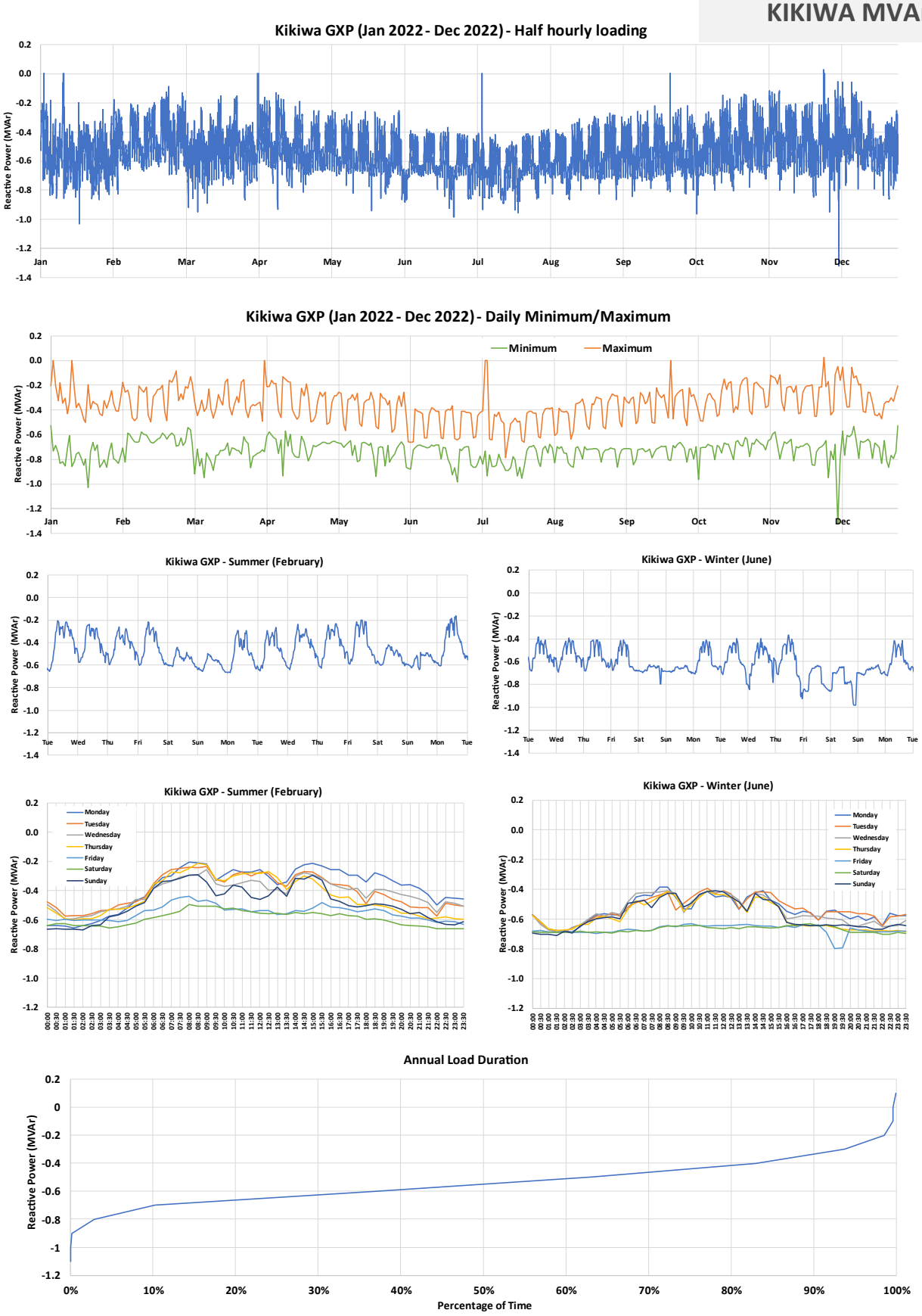

Figure 4 Kikiwa: Reactive power (MVAr) load characteristics

MURCHISON MVA

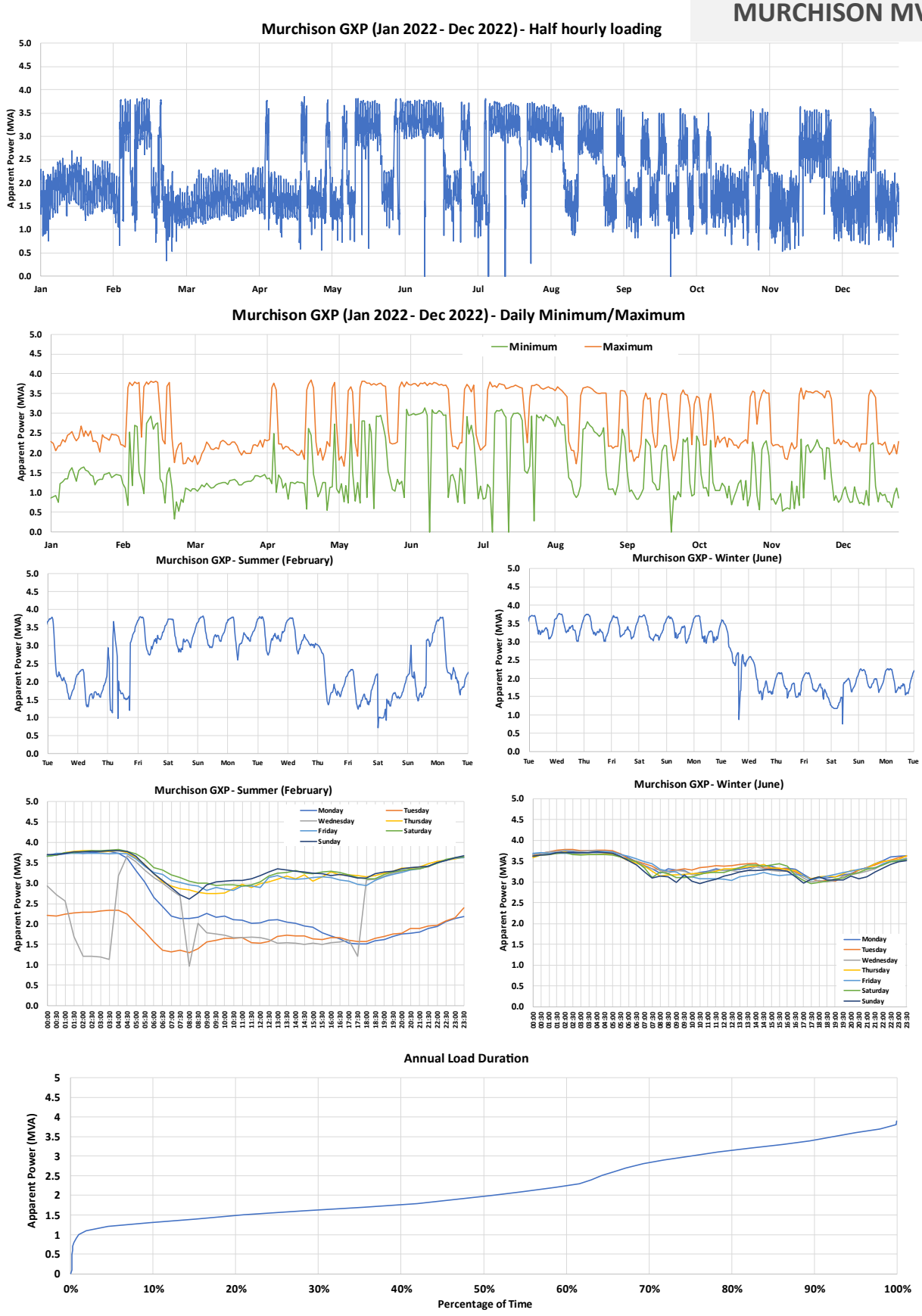

Figure 5 Murchison: Apparent power (MVA) load characteristics

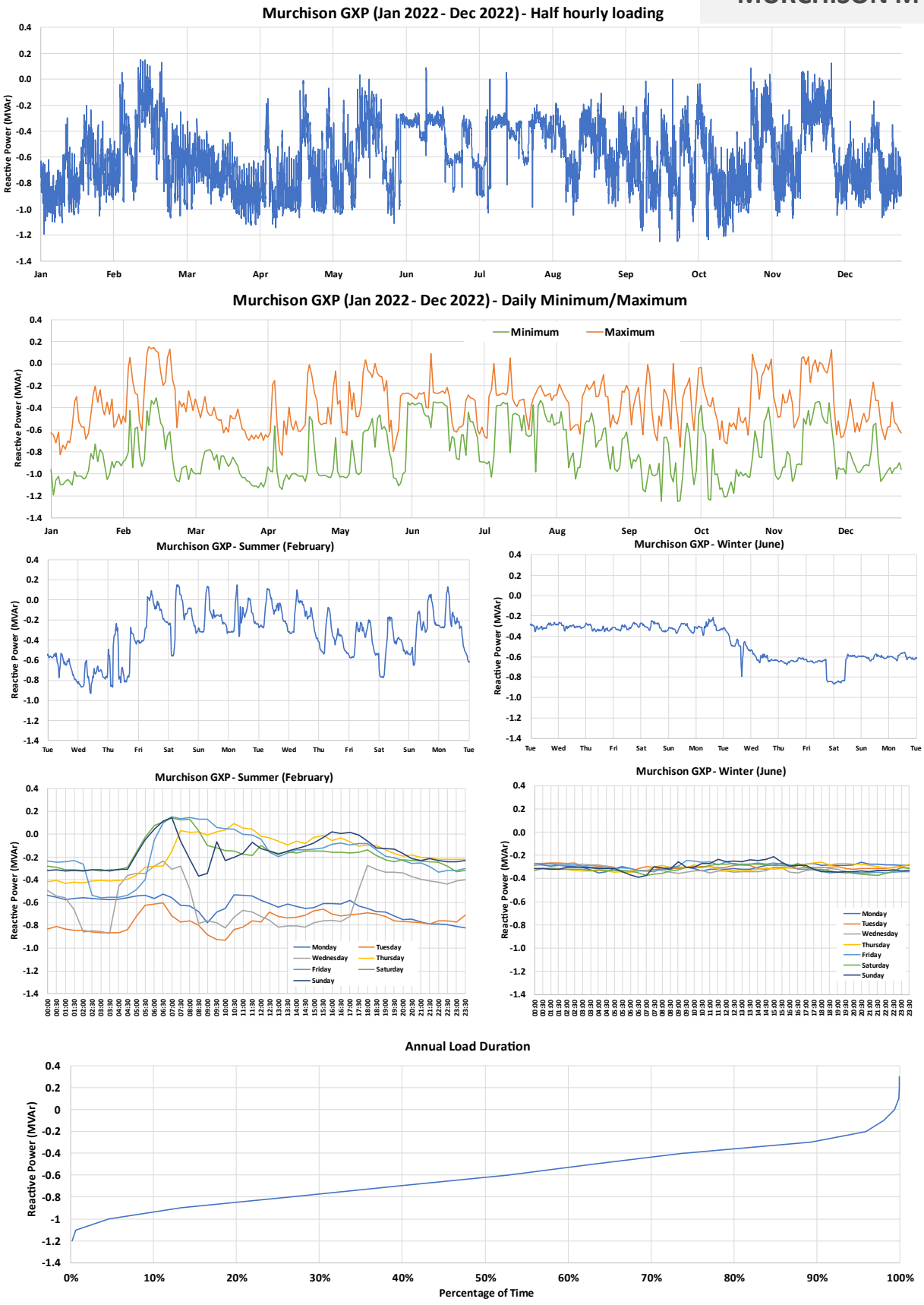

Figure 6 Murchison: Reactive power (MVAr) load characteristics

STOKE_33KV MVA

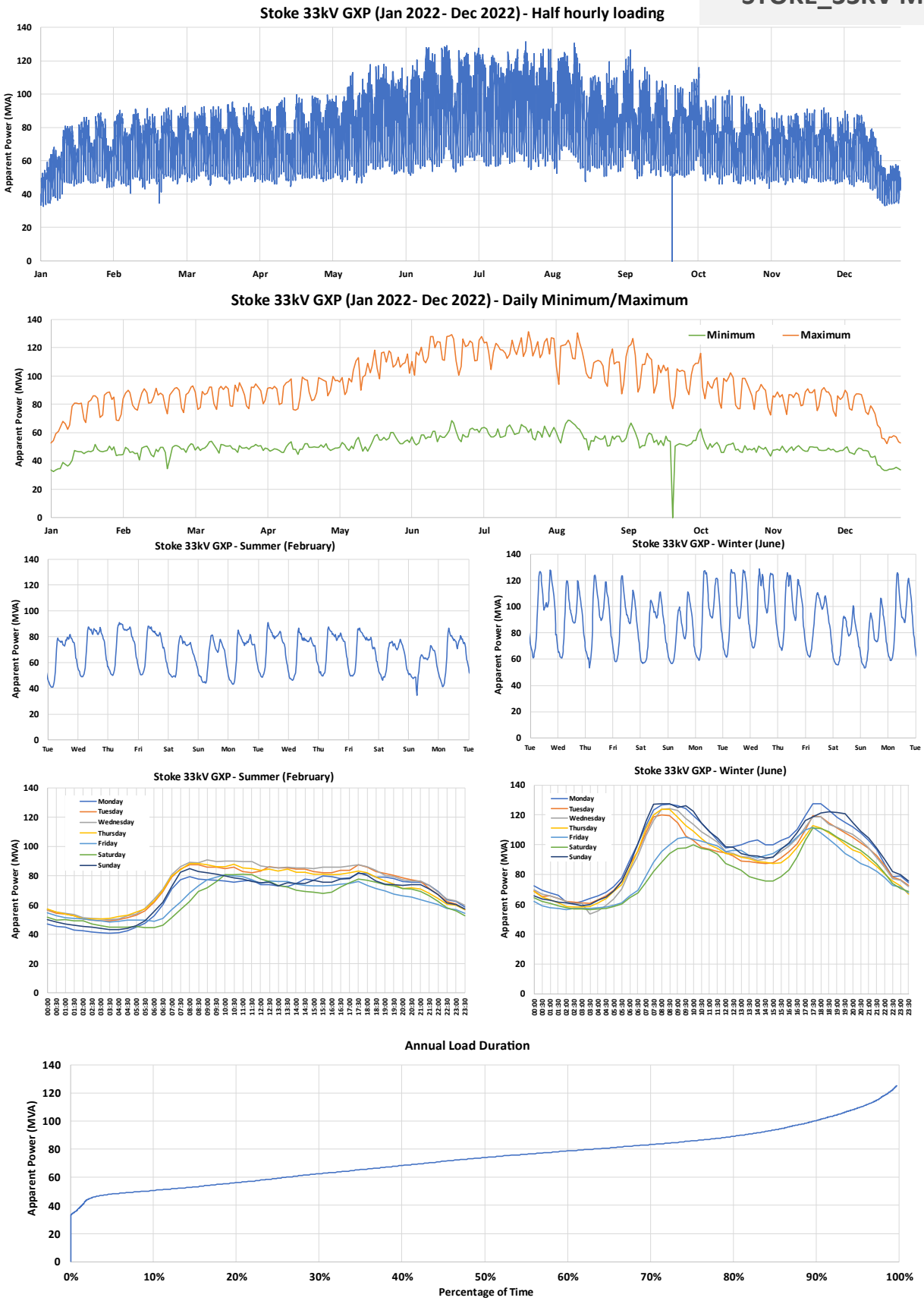

Figure 7 Stoke_33kV: Apparent power (MVA) load characteristics

STOKE_33KV MVAr

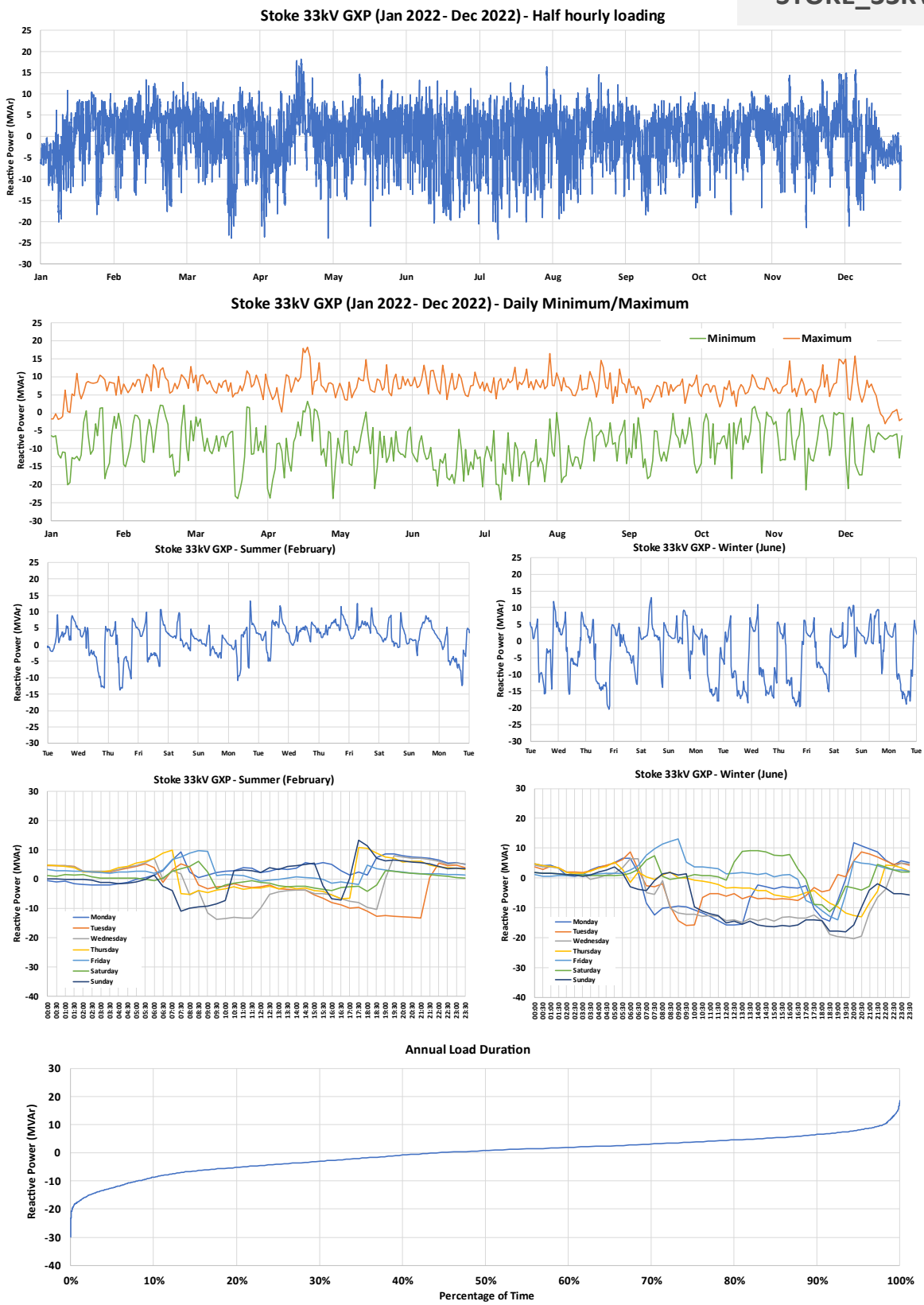

Figure 8 Stoke_33kV: Reactive power (MVAr) load characteristics

STOKE_66KV MVA

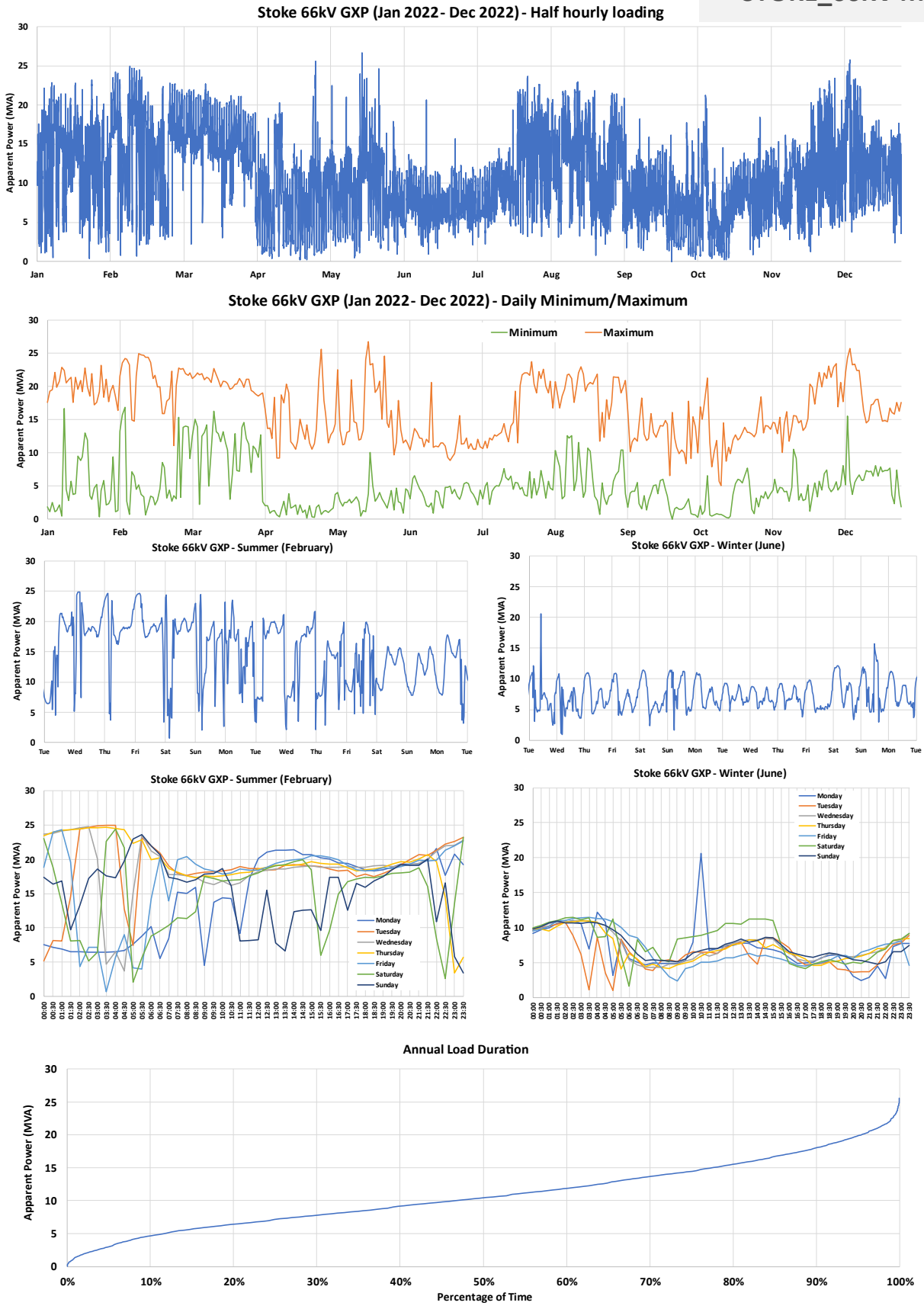

Figure 9 Stoke_66kV: Apparent power (MVA) load characteristics

STOKE_66KV MVAr

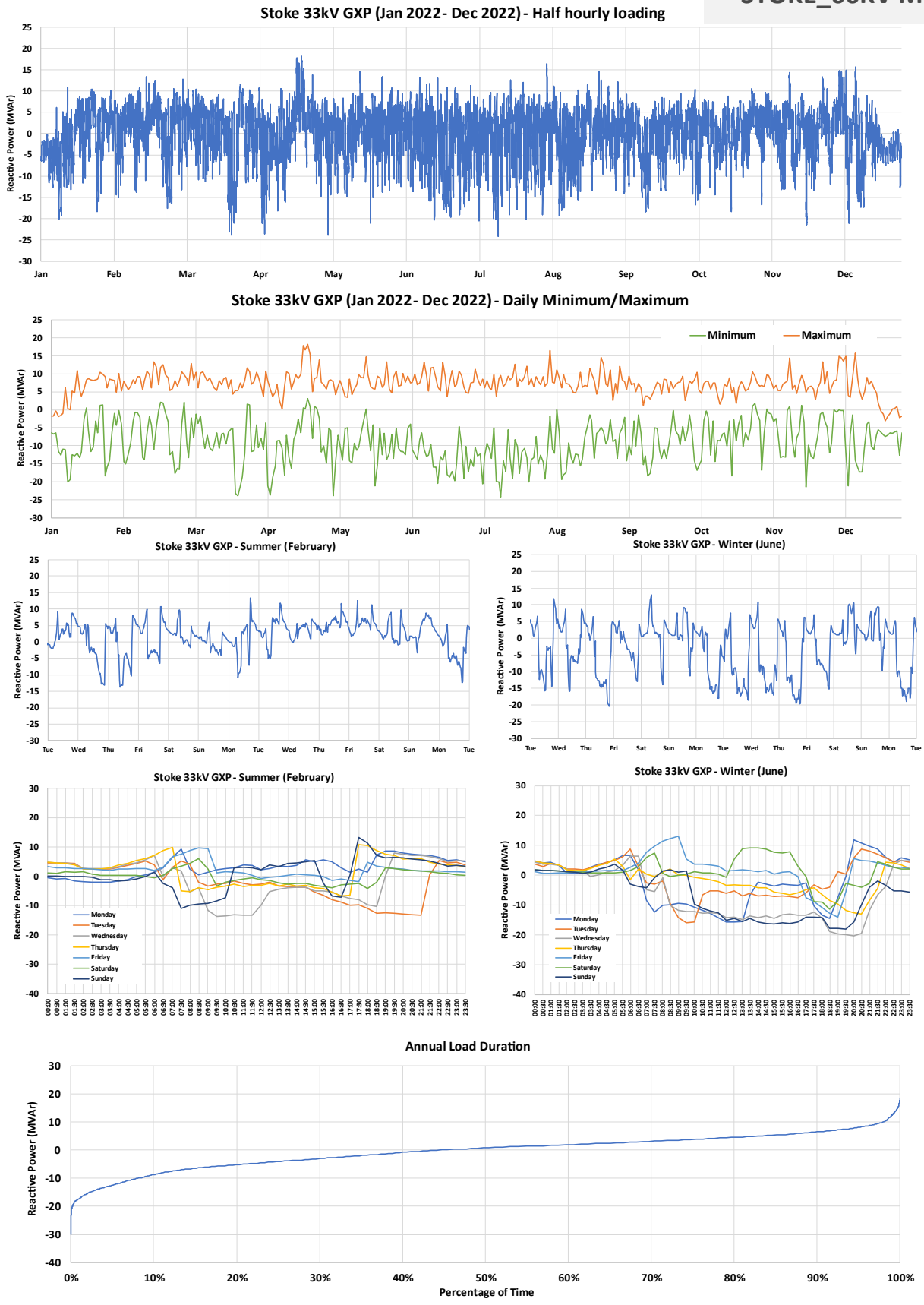

Figure 10 Stoke_66kV: Reactive power (MVAr) load characteristics

3. Zone Substations

3.1 Nelson Electricity

The characteristics of the zone substation **apparent power loadings** within Nelson Electricity's network are shown in the following:

- **Figure 11** Haven Road 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 11 Haven Road 33/11kV zone substation: Apparent power (MVA) load characteristics

3.2 Network Tasman

The characteristics of the zone substation **apparent power loadings** within Network Tasman's network are shown in the following:

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- **Figure 21** Swamp Road 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 22** Takaka 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 23** Upper Takaka 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 24** Wakapuaka 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 12 Annesbrook 33/11kV zone substation: Apparent power (MVA) load characteristics

BRIGHTWATER MVA

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Figure 13 Brightwater 33/11kV zone substation: Apparent power (MVA) load characteristics

EVES VALLEY MVA

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Figure 14 Eves Valley 33/11kV zone substation: Apparent power (MVA) load characteristics

FOUNDERS MVA

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Figure 15 Founders 33/11kV zone substation: Apparent power (MVA) load characteristics

MAPUA MVA

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Figure 16 Mapua 33/11kV zone substation: Apparent power (MVA) load characteristics

MOTUEKA MVA

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Figure 17 Motueka 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 18 Richmond 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 19 Songer 33/11kV zone substation: Apparent power (MVA) load characteristics

ST HOPE MVA

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Figure 20 St Hope 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 21 Swamp Road 33/11kV zone substation: Apparent power (MVA) load characteristics

TAKAKA MVA

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Figure 22 Takaka 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 23 Upper Takaka 33/11kV zone substation: Apparent power (MVA) load characteristics

WAKAPUAKA MVA

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Figure 24 Wakapuaka 33/11kV zone substation: Apparent power (MVA) load characteristics

3.3 Marlborough Lines

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- **Figure 26** Havelock 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 27** Leefield 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 28** Linkwater 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 29** Nelson Street 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 30** Picton 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 31** Rai Valley 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 32** Redwoodtown 33/11kV zone substation: Apparent power (MVA) load characteristics
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- **Figure 39** Waters 33/11kV zone substation: Apparent power (MVA) load characteristics
- **Figure 40** Woodbourne 33/11kV zone substation: Apparent power (MVA) load characteristics

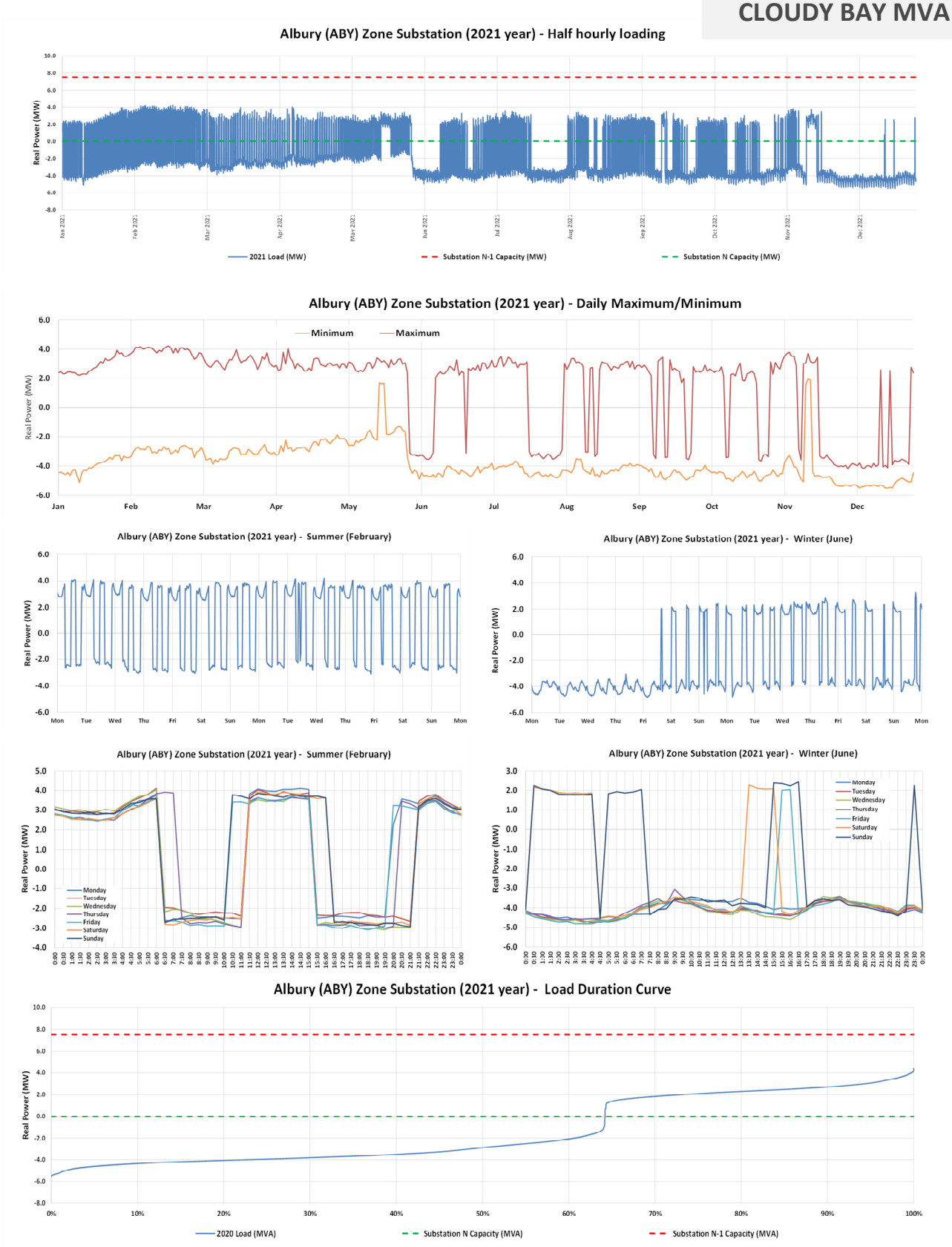

Figure 25 Cloudy bay 33/11kV zone substation: Apparent power (MVA) load characteristics

HAVELOCK MVA

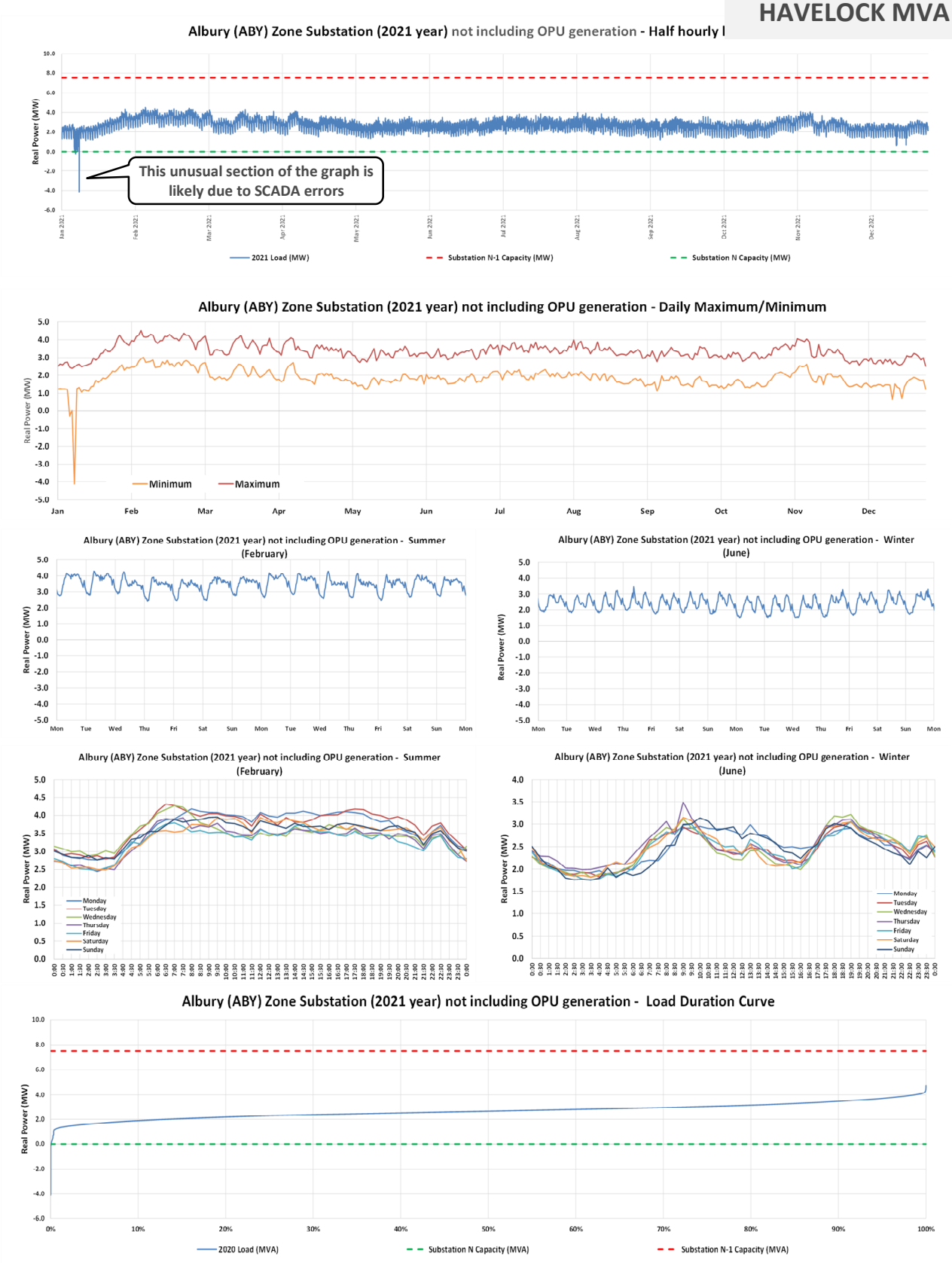

Figure 26 Havelock 33/11kV zone substation: Apparent power (MVA) load characteristics

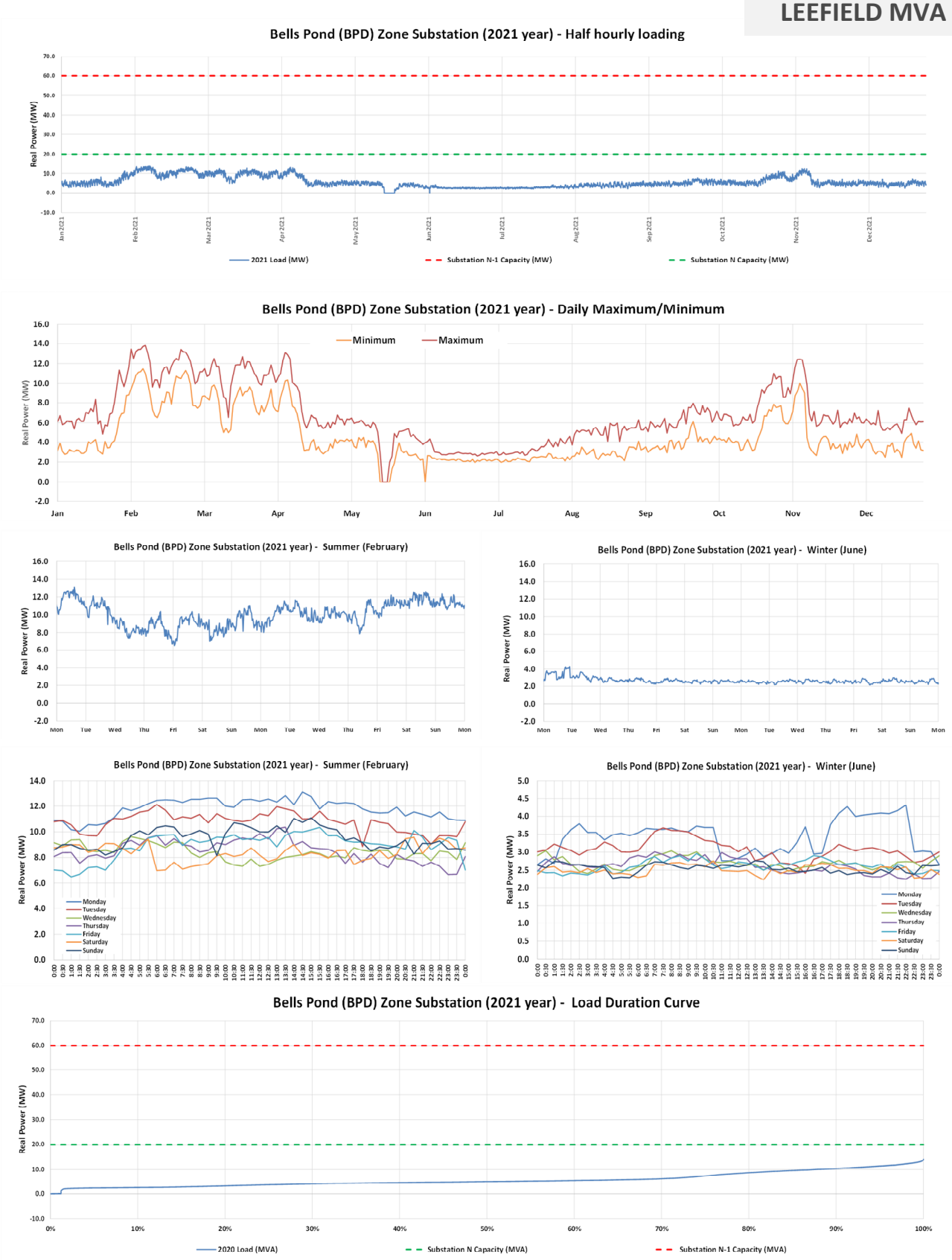

Figure 27 Leefield 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 28 Linkwater 33/11kV zone substation: Apparent power (MVA) load characteristics

NELSON STREET MVA

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Figure 29 Nelson Street 33/11kV zone substation: Apparent power (MVA) load characteristics

PICTON MVA

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Figure 30 Picton 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 31 Rai Valley 33/11kV zone substation: Apparent power (MVA) load characteristics

REDWOODTOWN MVA

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Figure 32 Redwoodtown 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 33 Riverlands 33/11kV zone substation: Apparent power (MVA) load characteristics

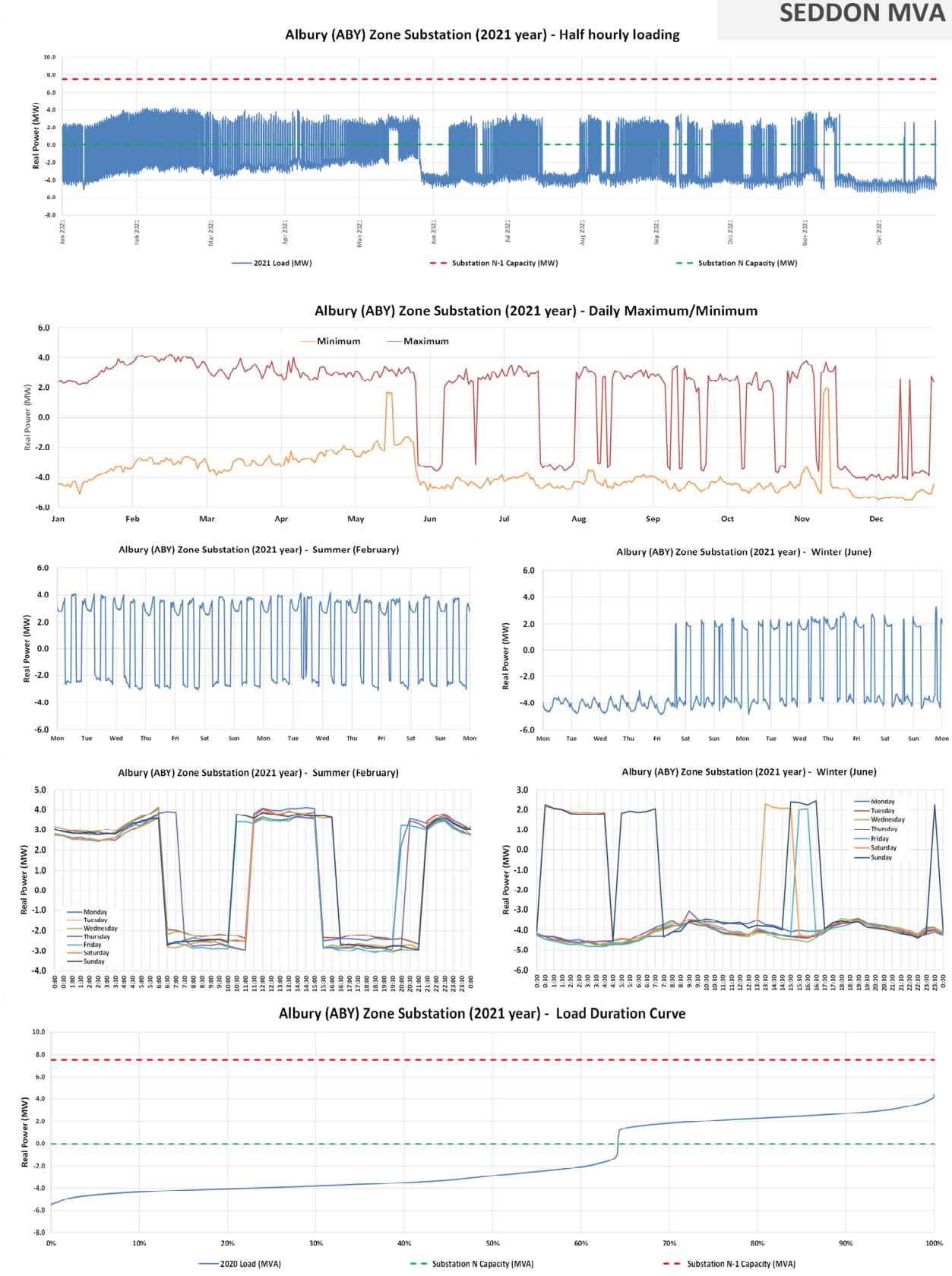

Figure 34 Seddon 33/11kV zone substation: Apparent power (MVA) load characteristics

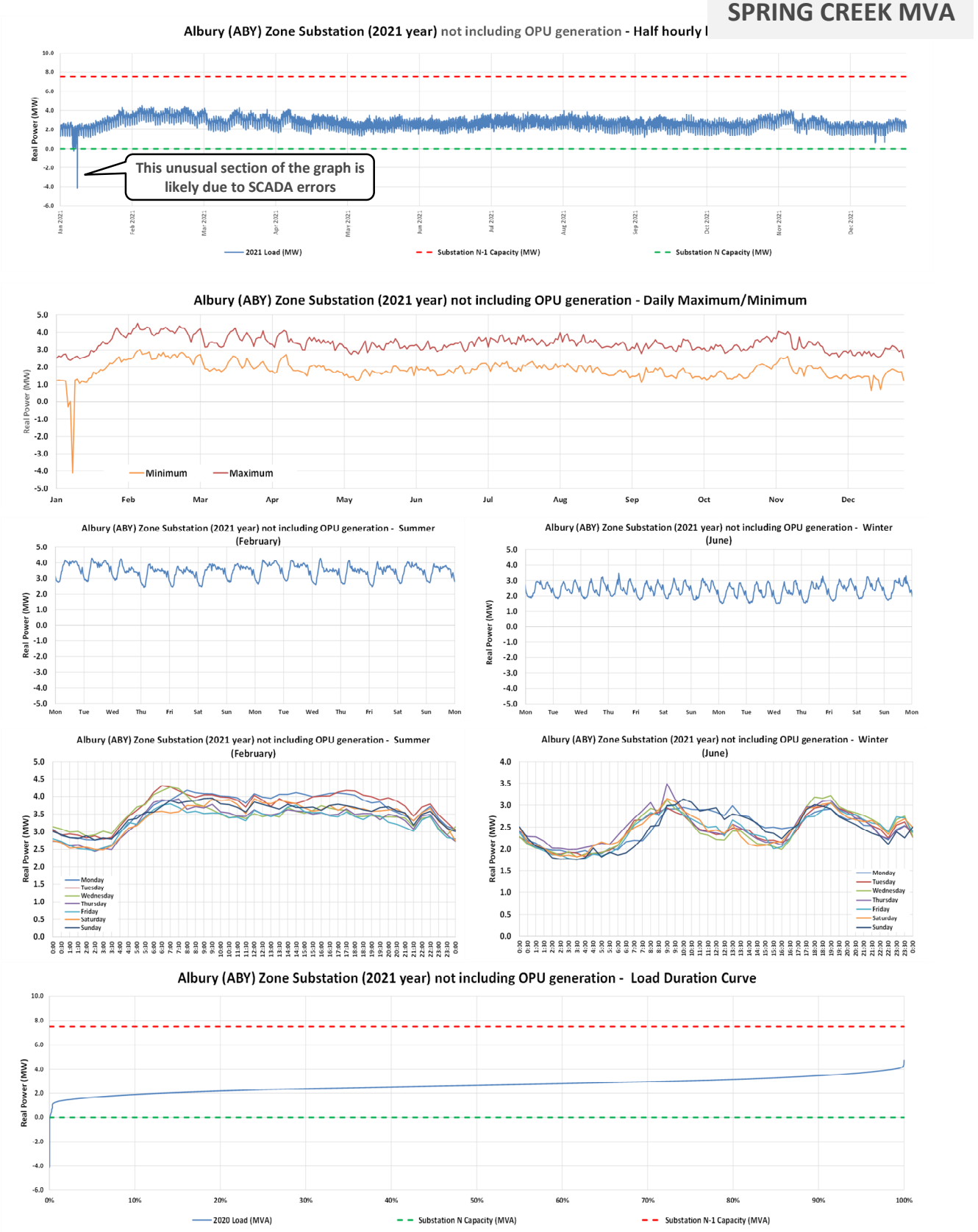

Figure 35 Spring Creek 33/11kV zone substation: Apparent power (MVA) load characteristics

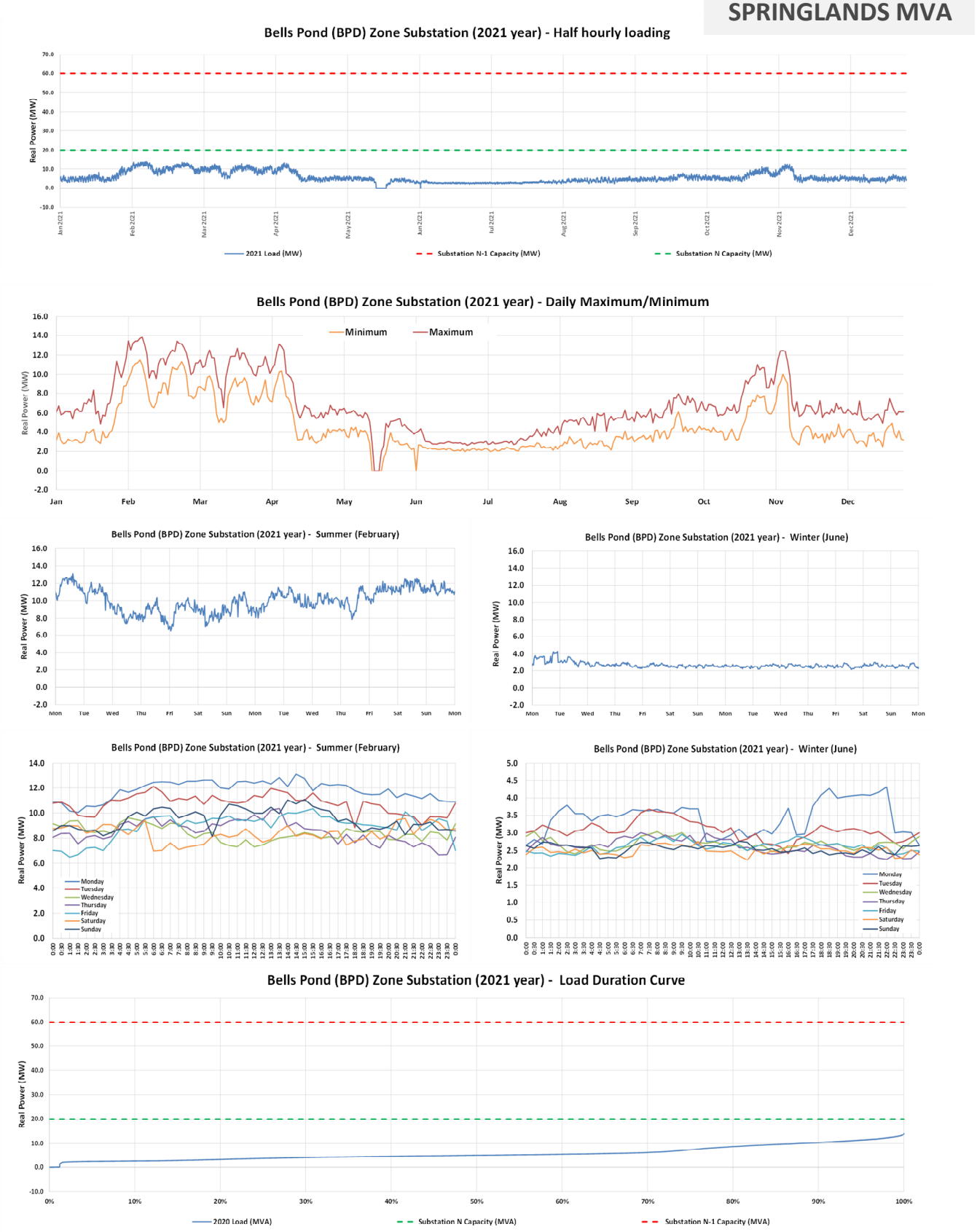

Figure 36 Springlands 33/11kV zone substation: Apparent power (MVA) load characteristics

TAPP MVA

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Figure 37 Tapp 33/11kV zone substation: Apparent power (MVA) load characteristics

WARD MVA

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Figure 38 Ward 33/11kV zone substation: Apparent power (MVA) load characteristics

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Figure 39 Waters 33/11kV zone substation: Apparent power (MVA) load characteristics

WOODBOURNE MVA

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Figure 40 Woodbourne 33/11kV zone substation: Apparent power (MVA) load characteristics