Auckland Network

Supplementary Information – Substation Load Characteristics

EECA

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Document History & Status

Revision	Date	Author	Reviewed by	Approved by	Status
A	31/01/2025	C Bergervoet	K Morison	K Morison	Draft

Revision	Details
A	Draft

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1. Executive Summary

The following figures illustrate the characteristics of the major electrical substations (both GXPs and Zone Substations) in the Auckland region. This document supplements the main report titled "*Auckland – Spare Capacity and Load Characteristics*".

For each GXP, the January 2023 through December 2023 apparent (MVA) and reactive loadings (MVAr) are presented. For each Zone Substation, the apparent power (MVA) or real power (MW) 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. Zone Substations

2.1 Vector

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

Atkinson Road MVA

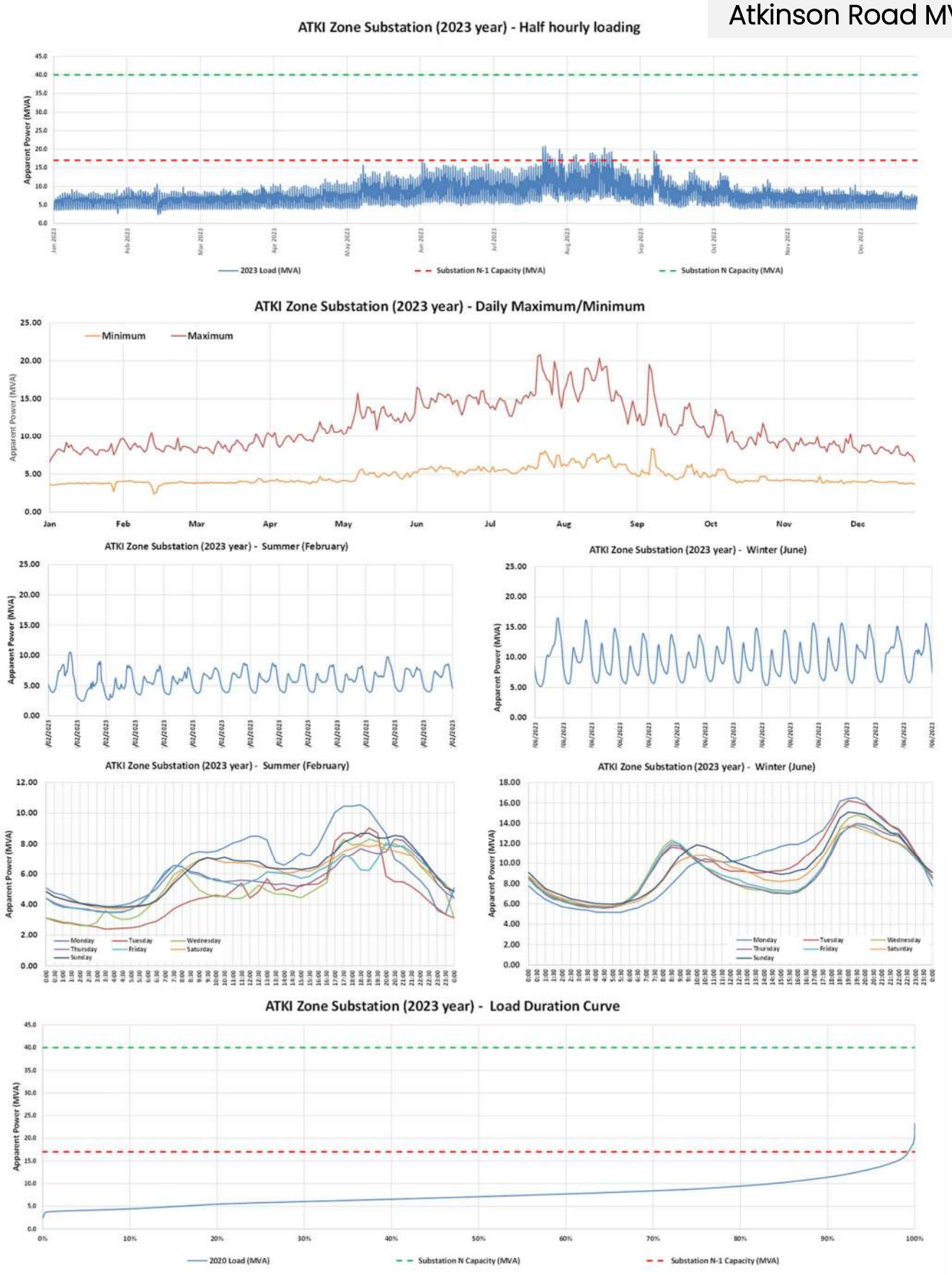

Figure 1. Atkinson Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Auckland Airport MVA

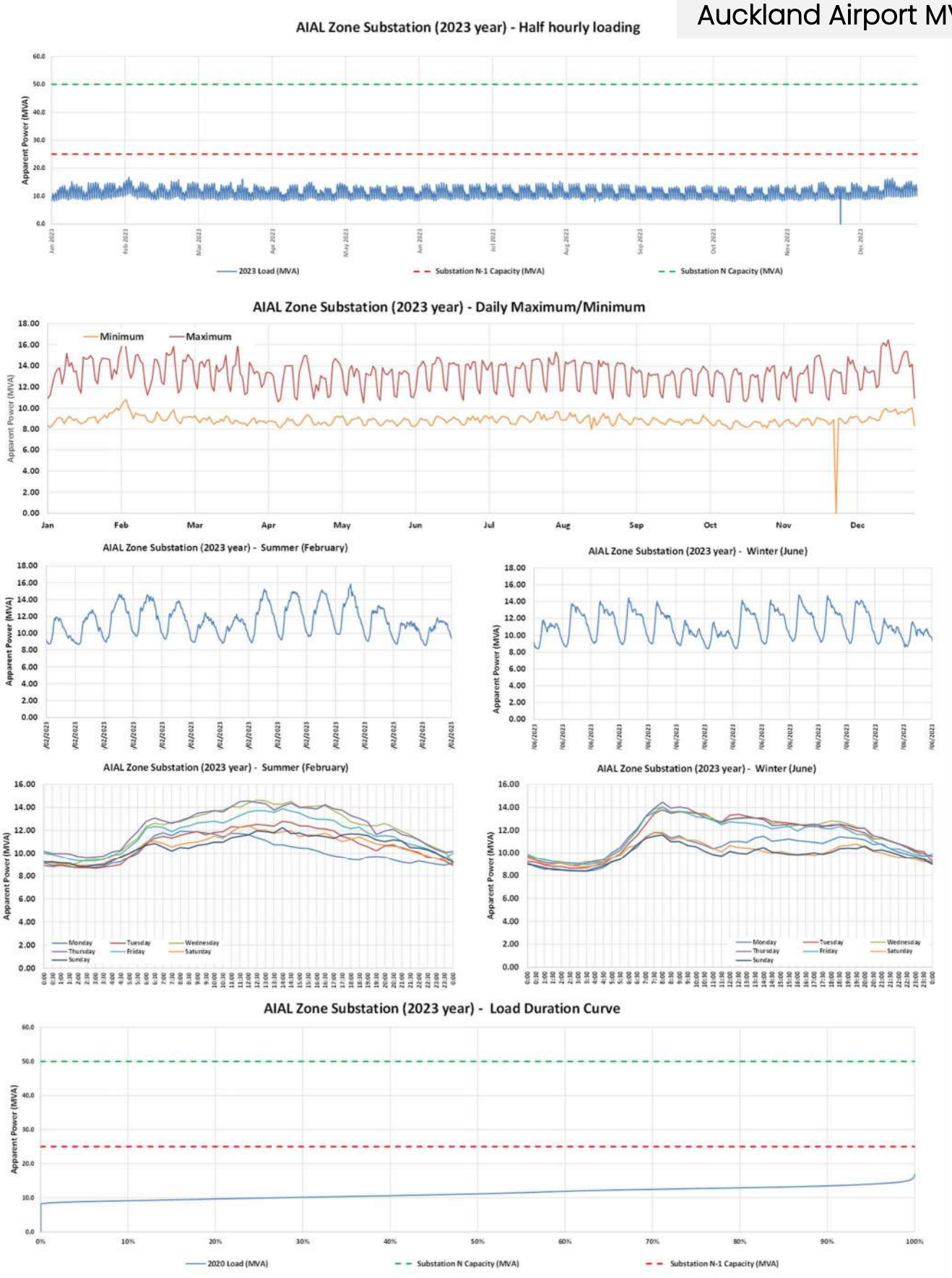

Figure 2. Auckland Airport 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Avondale MVA

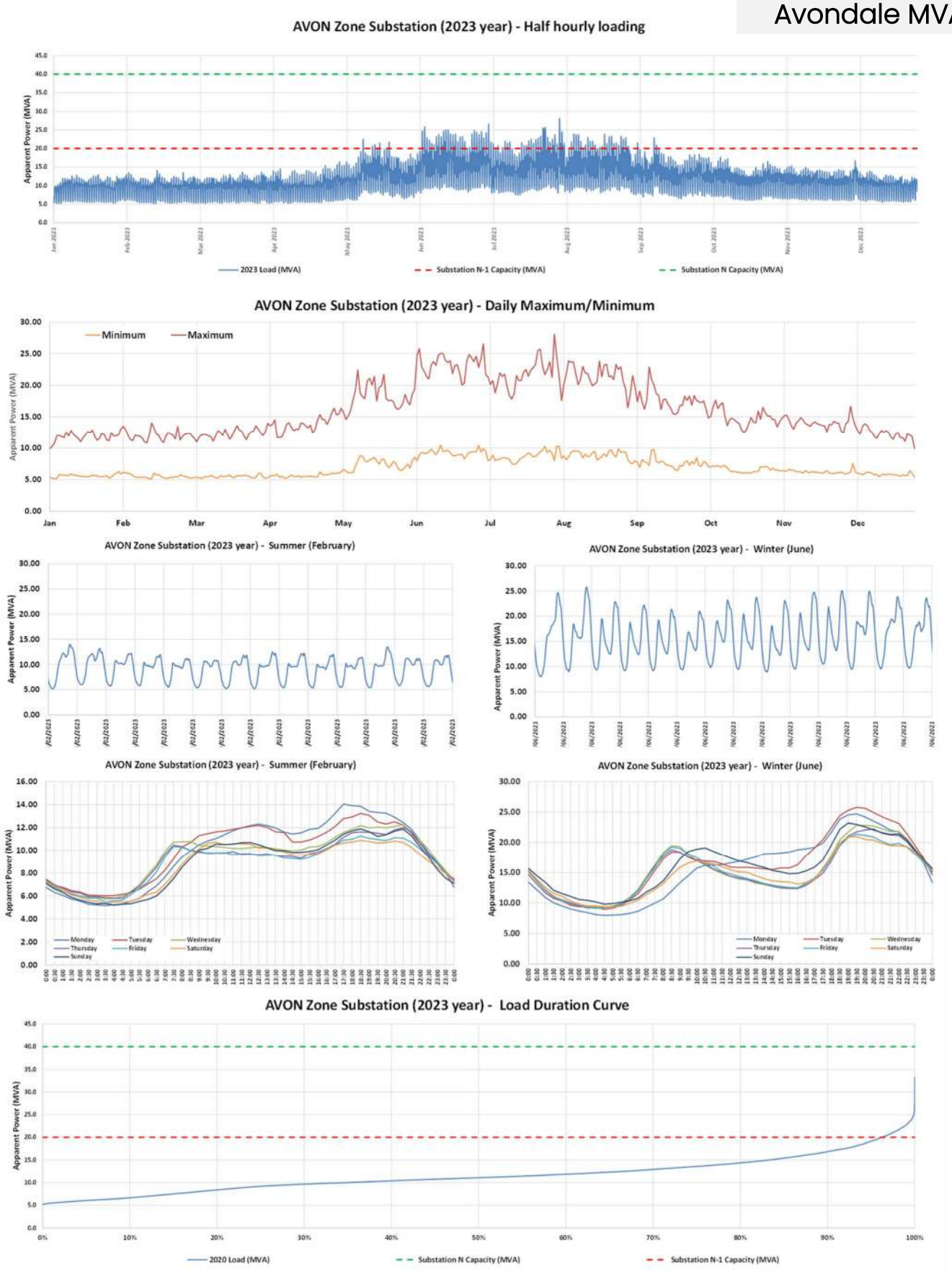

Figure 3. Avondale 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Bairds MVA

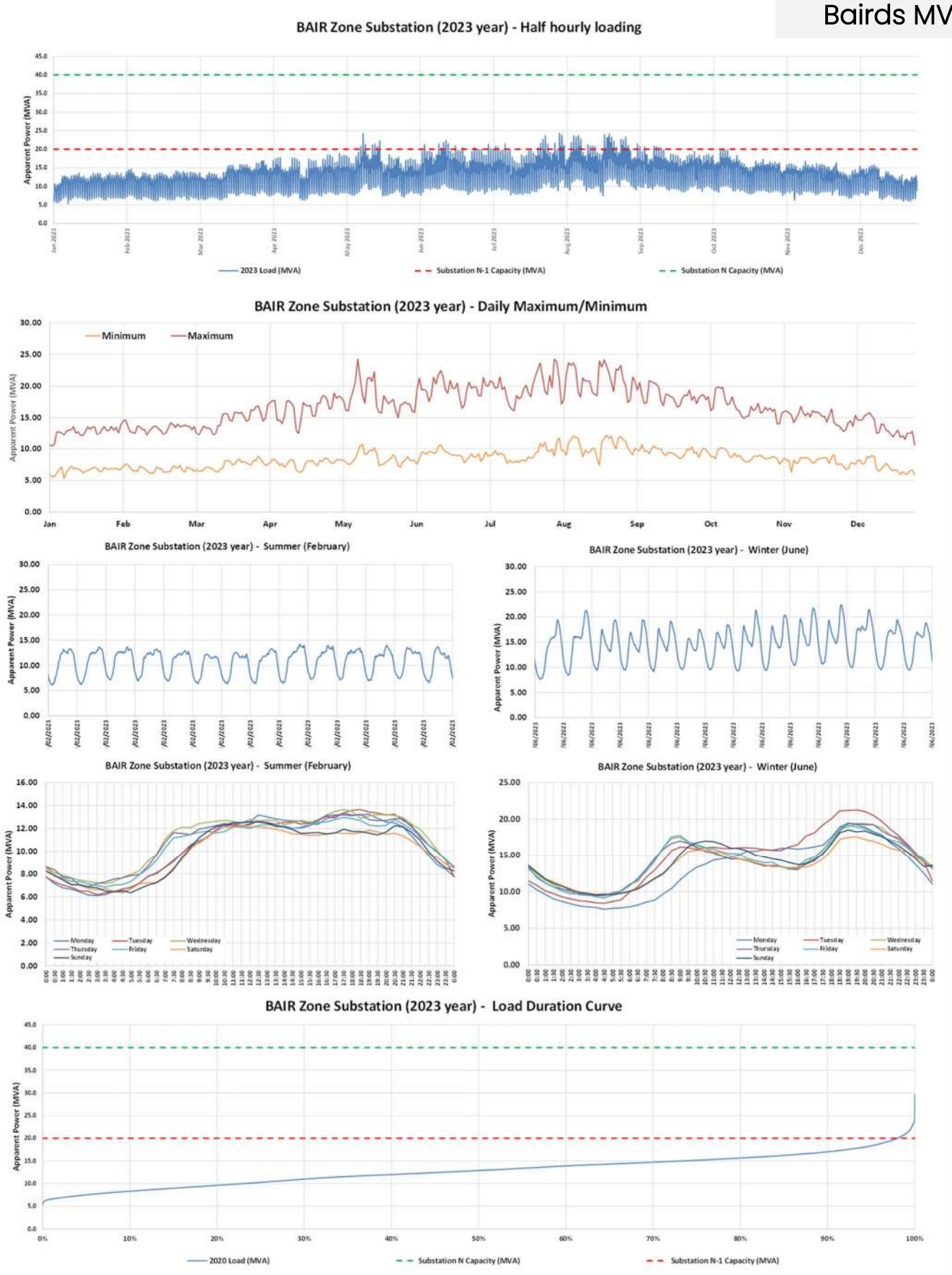

Figure 4. Bairds 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Balmoral MVA

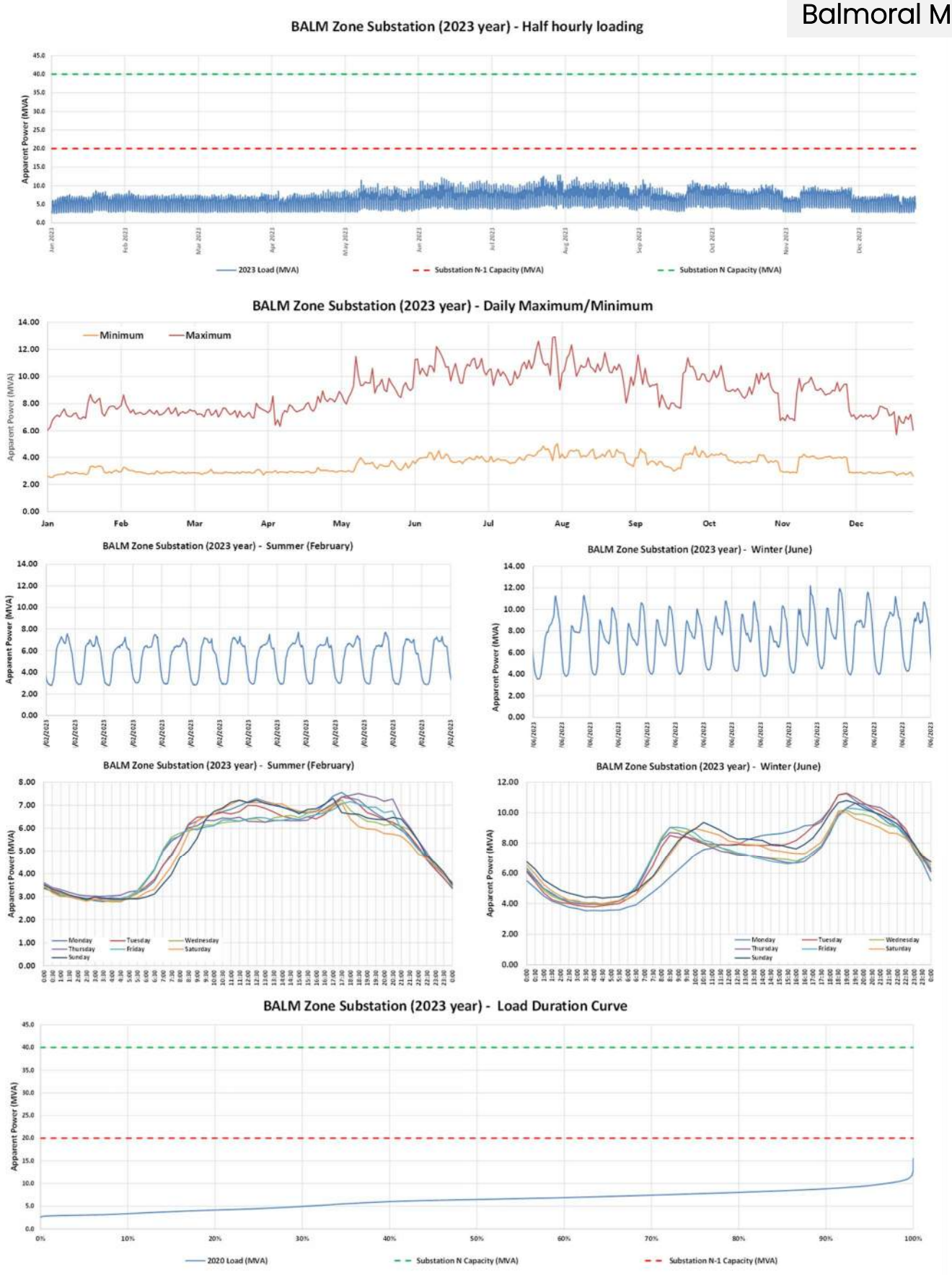

Figure 5. Balmoral 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Belmont MVA

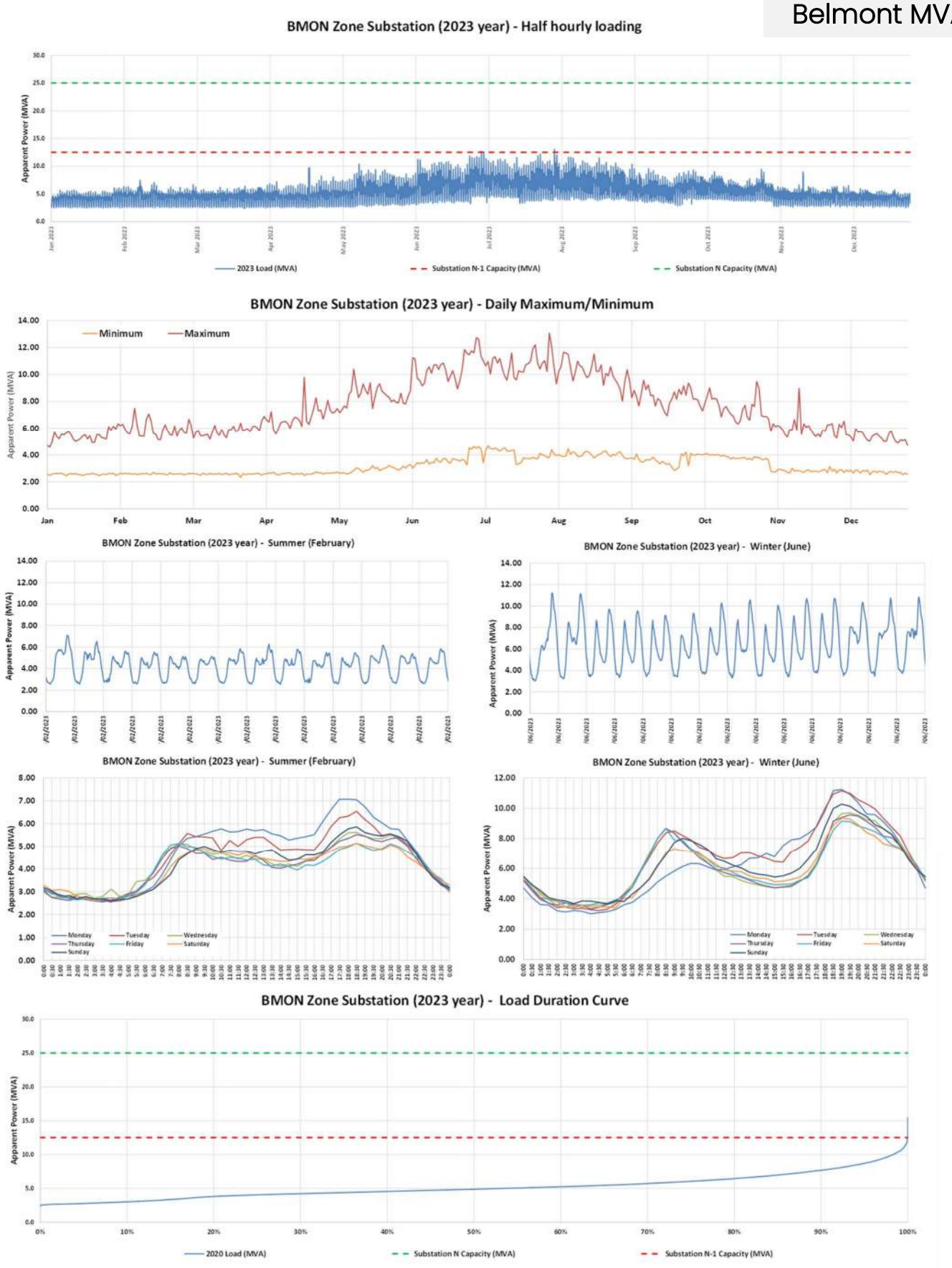

Figure 6. Belmont 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Big Ōmaha MVA

Ergo was not supplied load information for this substation.

Birkdale MVA

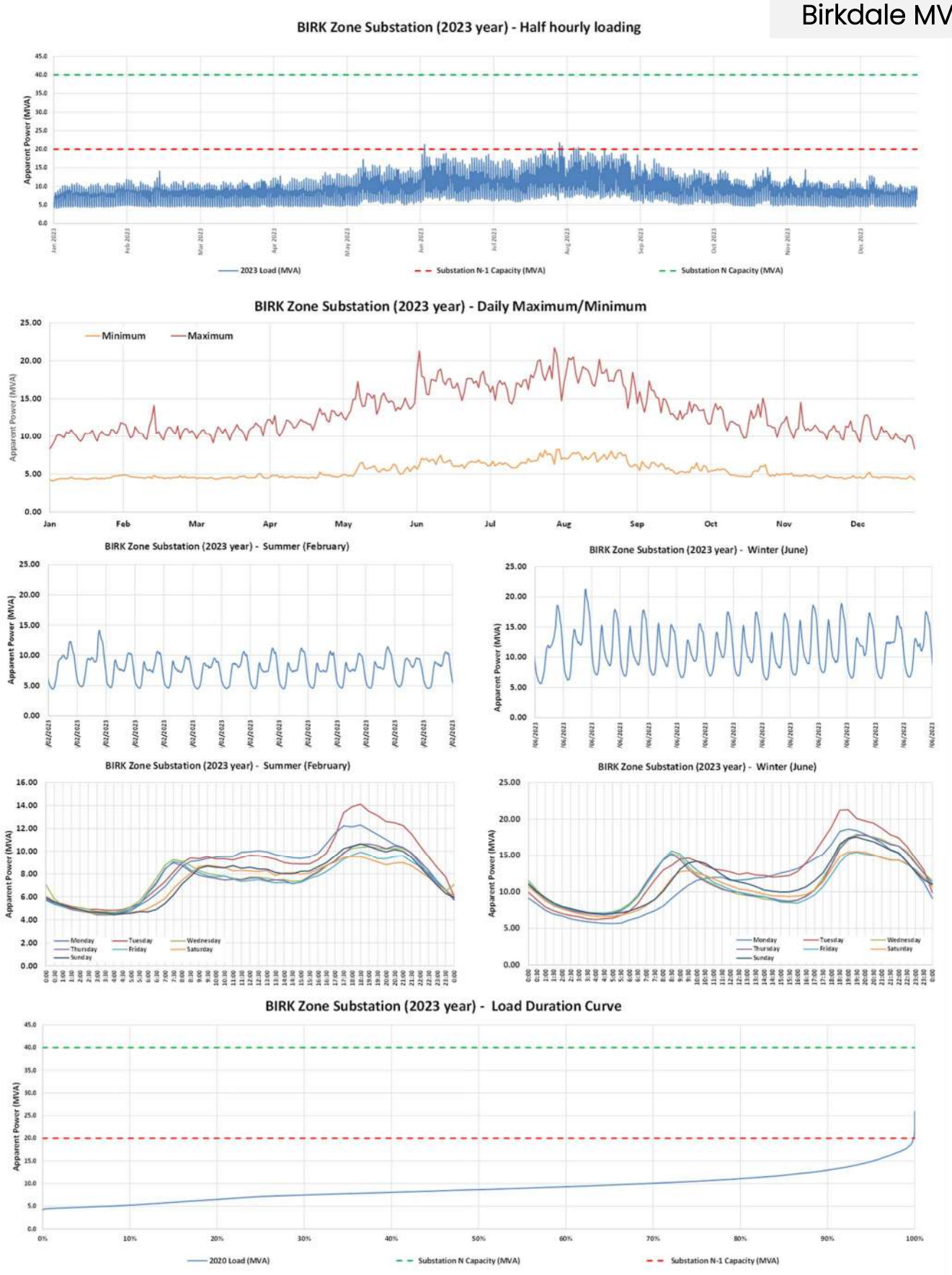

Figure 7. Birkdale 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Balmain MVA

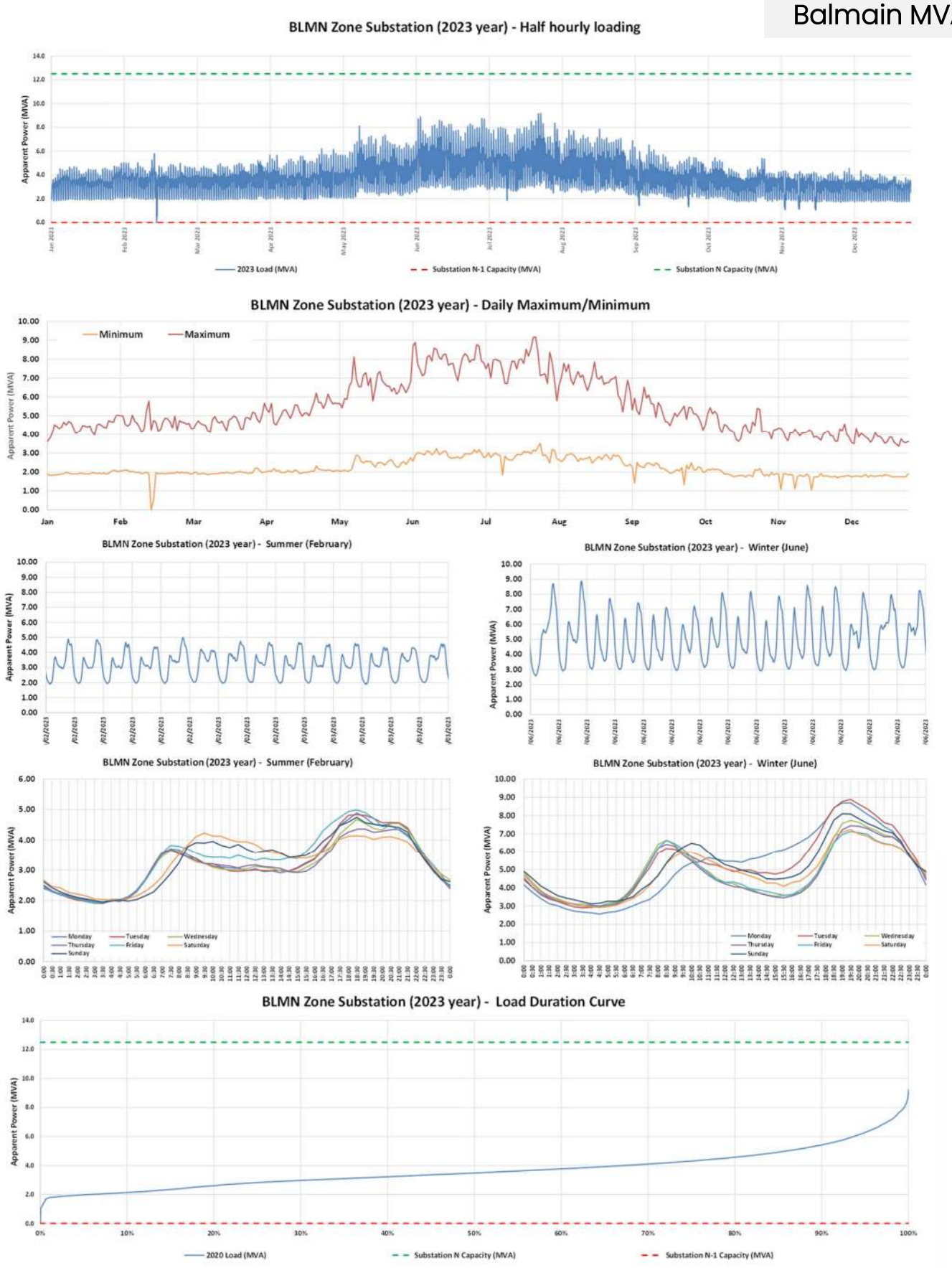

Figure 8. Balmain 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Brickworks MVA

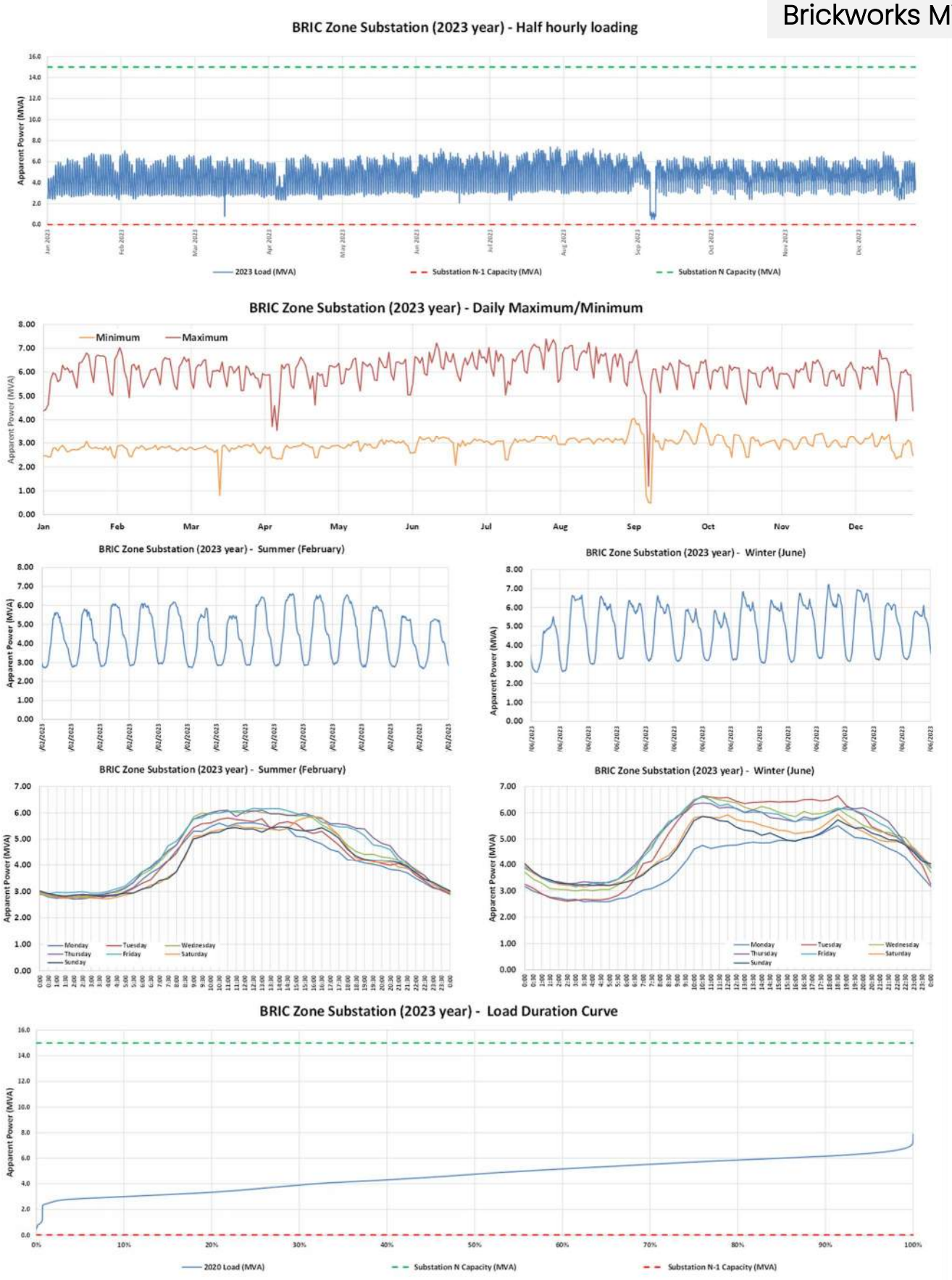

Figure 9. Brickworks 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Browns Bay MVA

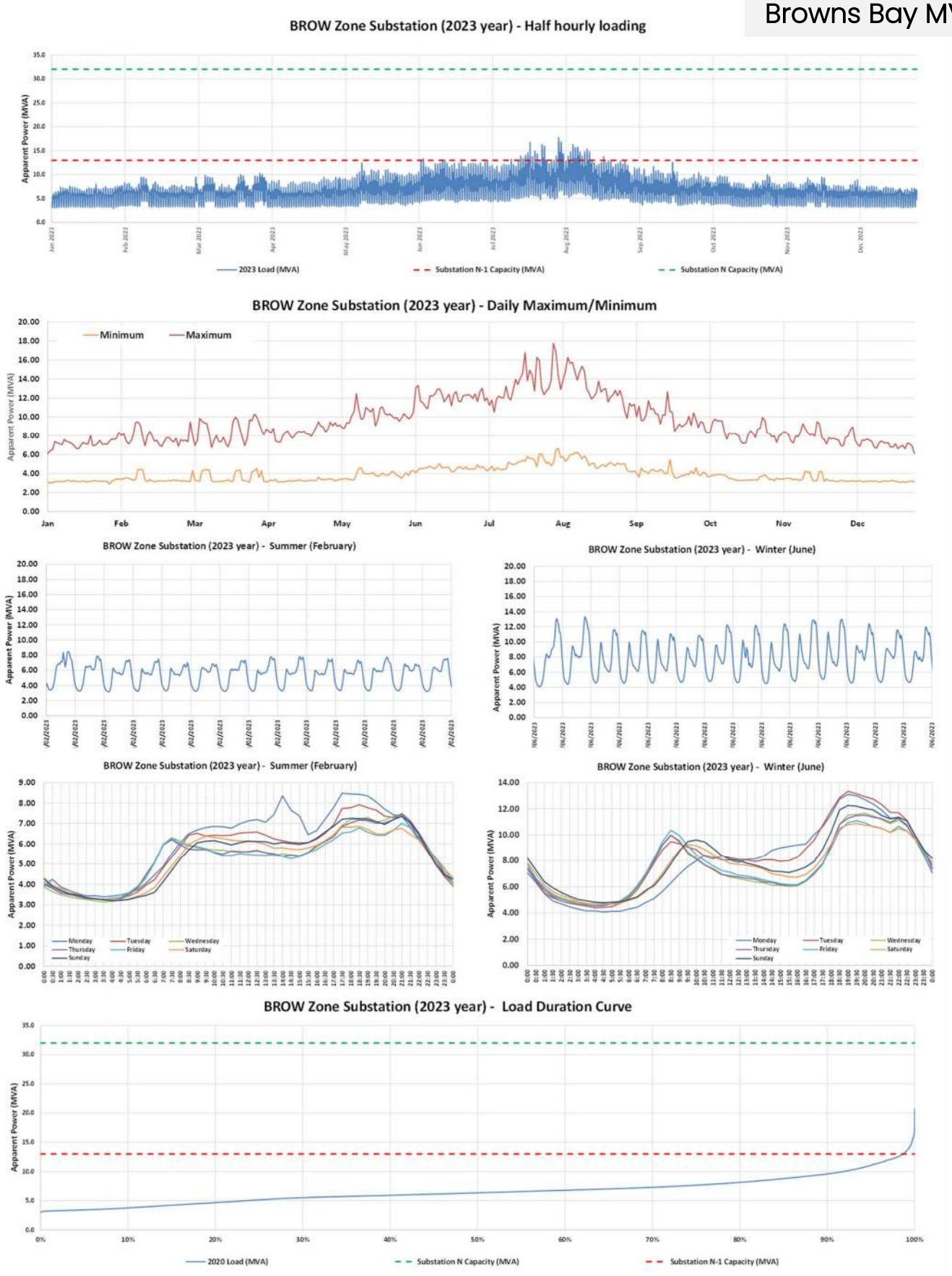

Figure 10. Browns Bay 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Bush Road MVA

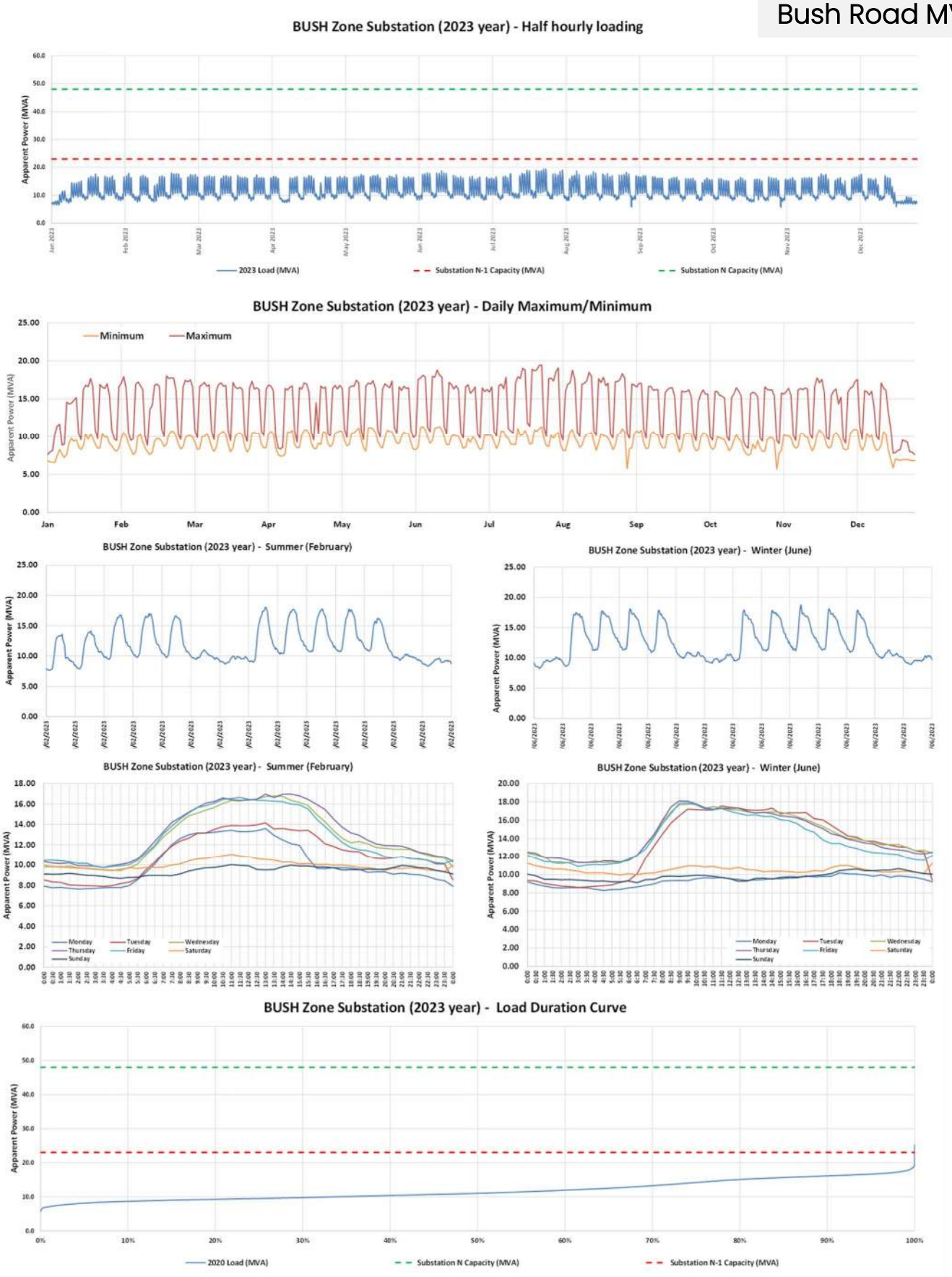

Figure 11. Bush Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Carbine MVA

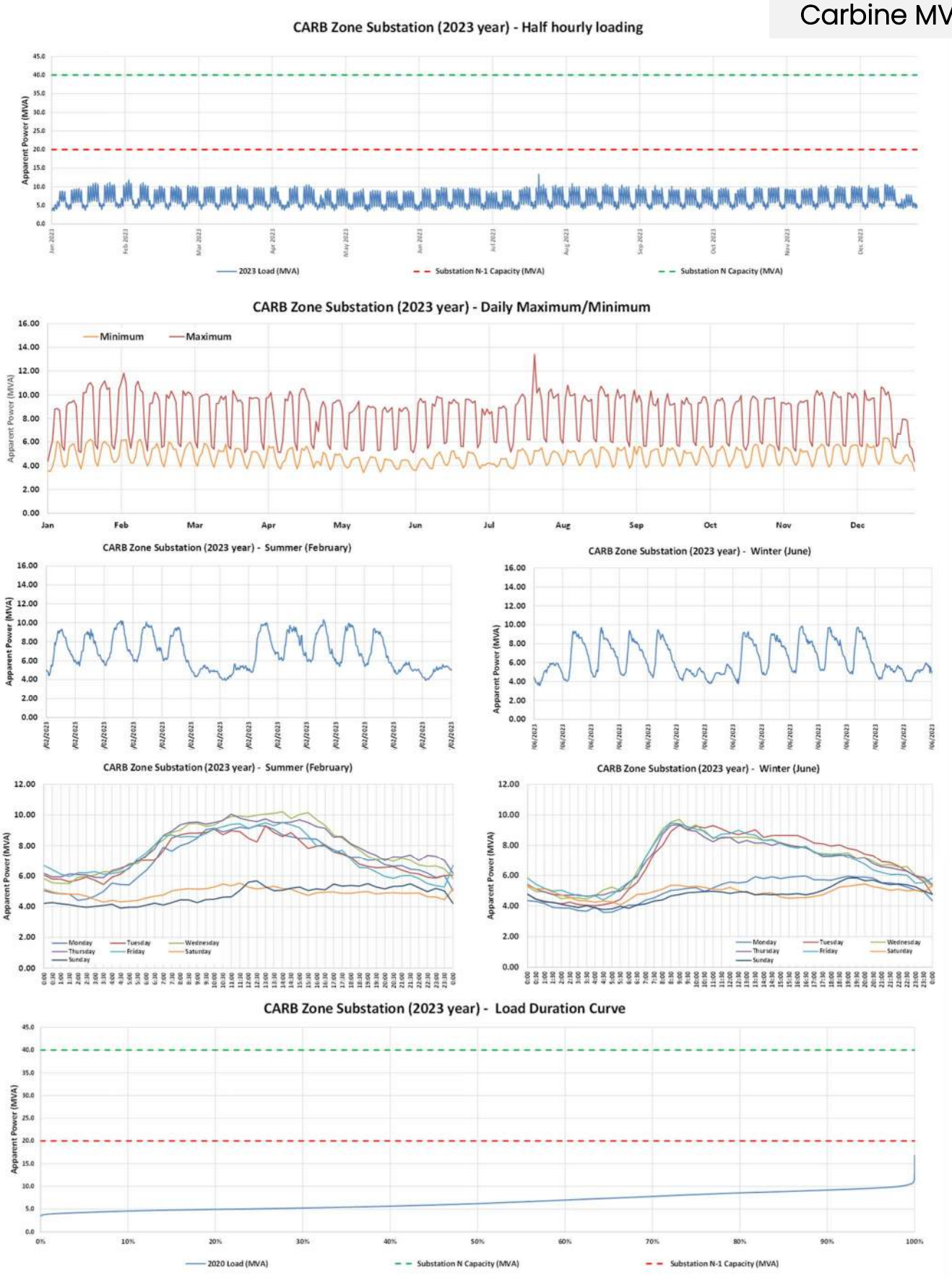

Figure 12. Carbine 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Chevalier MVA

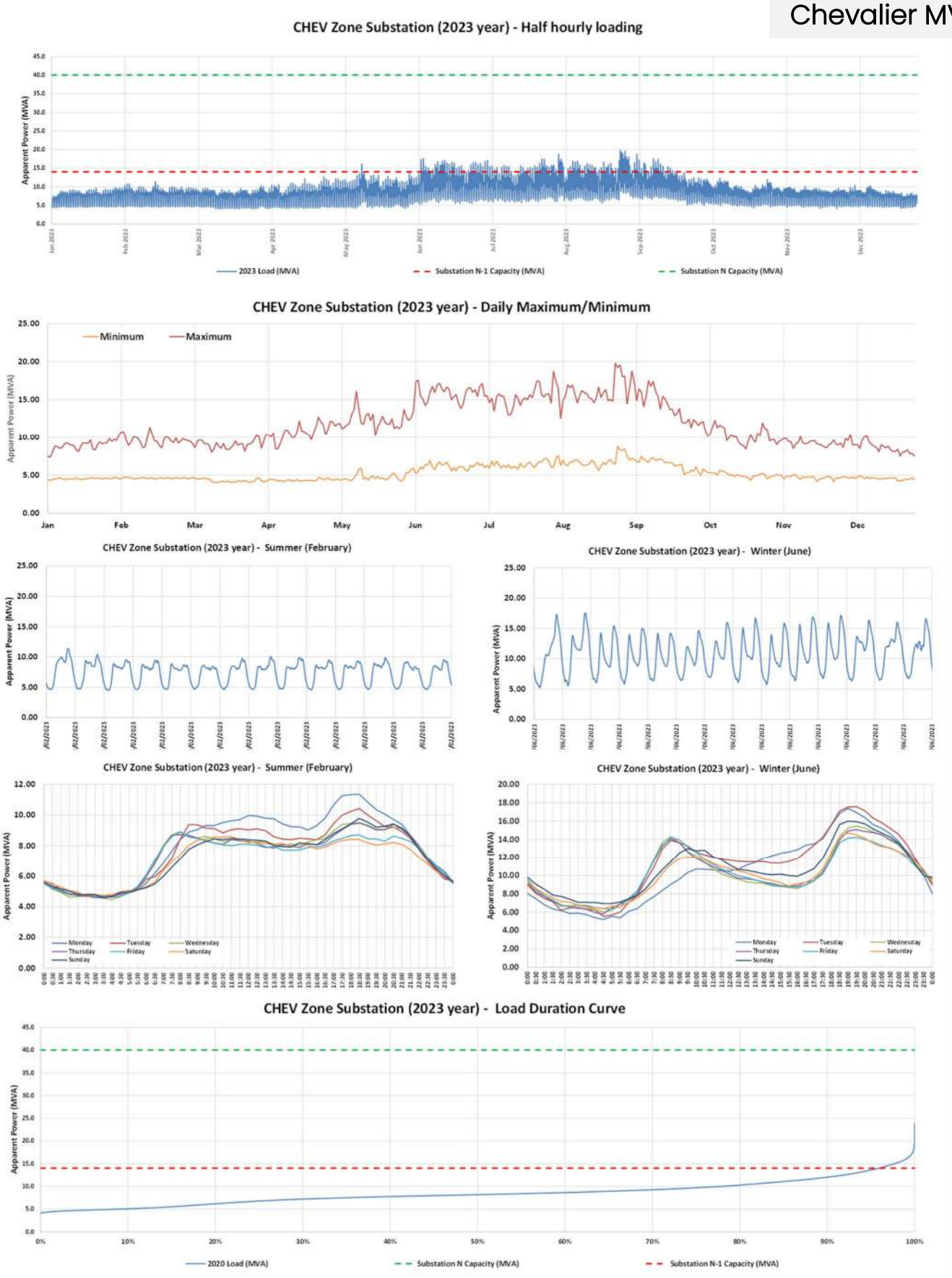

Figure 13. Chevalier 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Clendon MVA

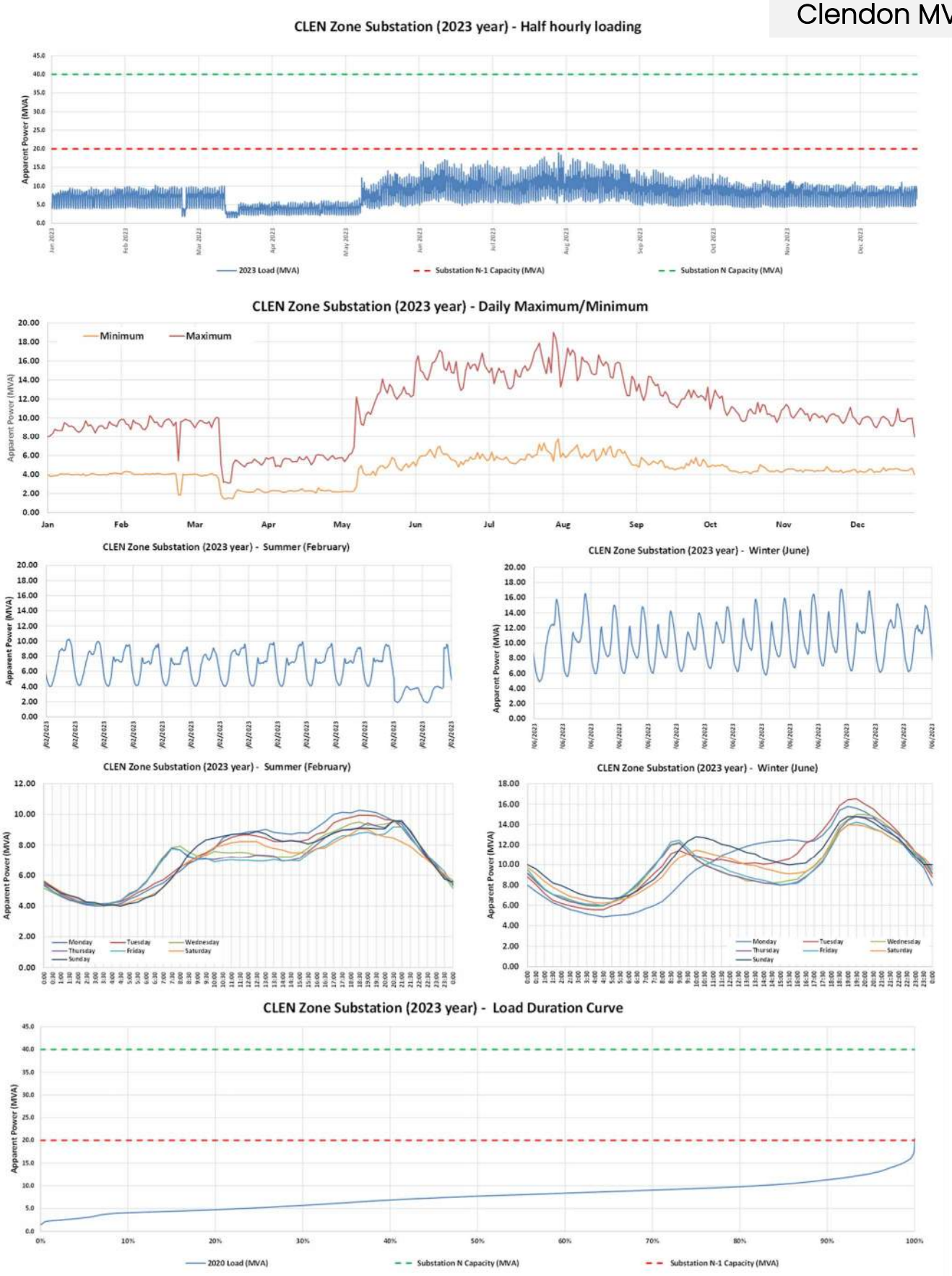

Figure 14. Clendon 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Clevedon MVA

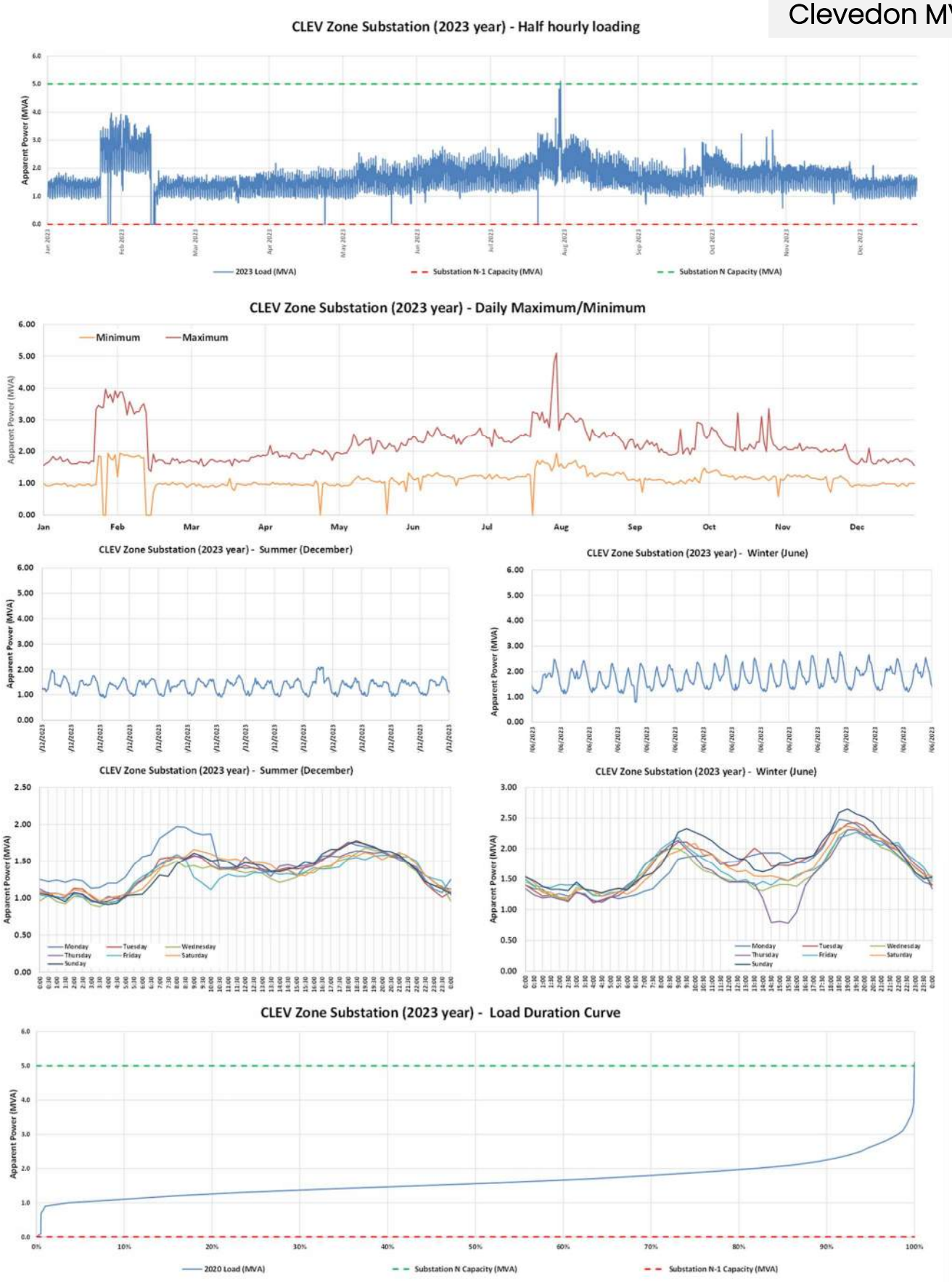

Figure 15. Clevedon 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Coatesville MVA

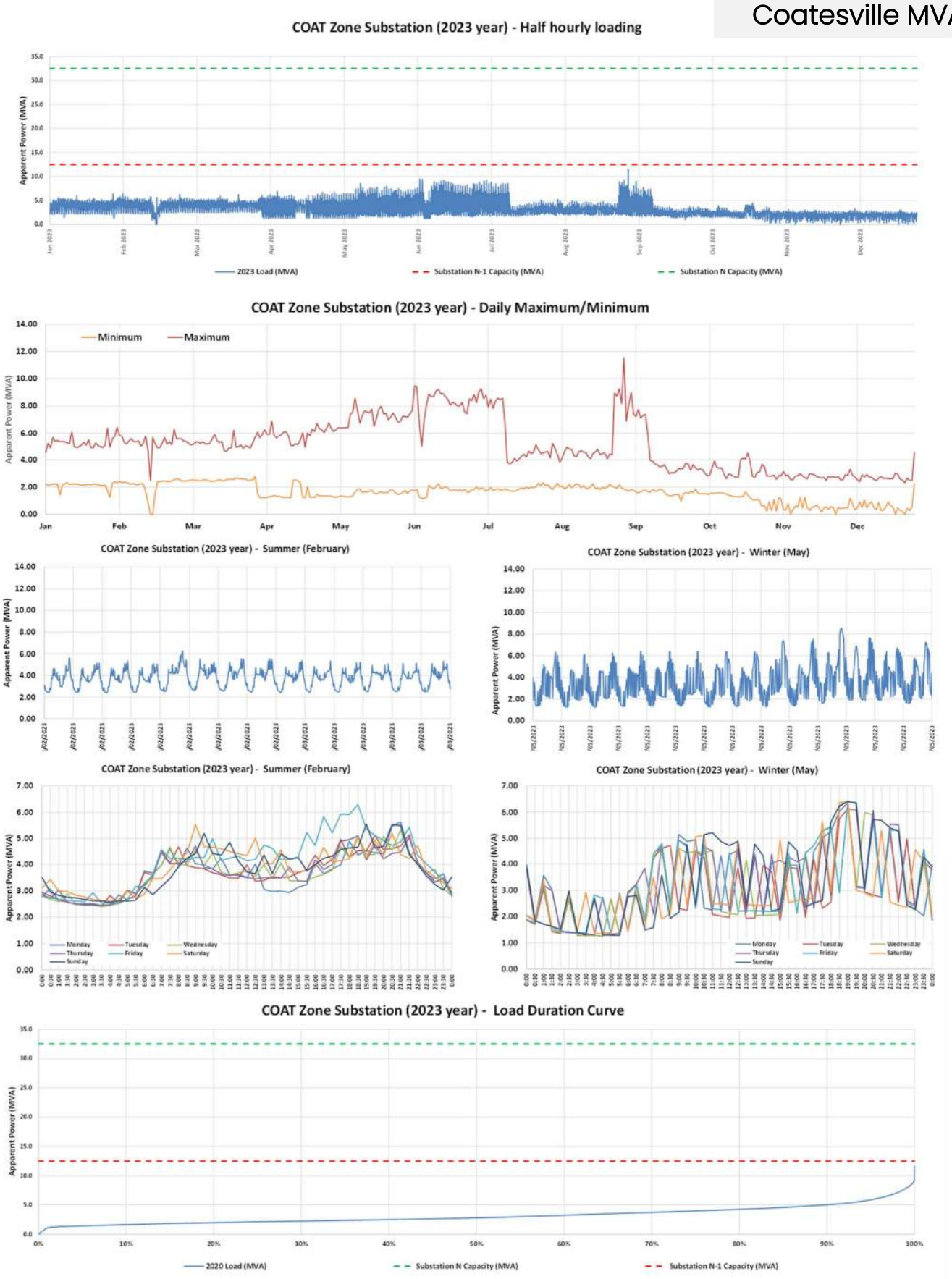

Figure 16. Coatesville 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Drive MVA

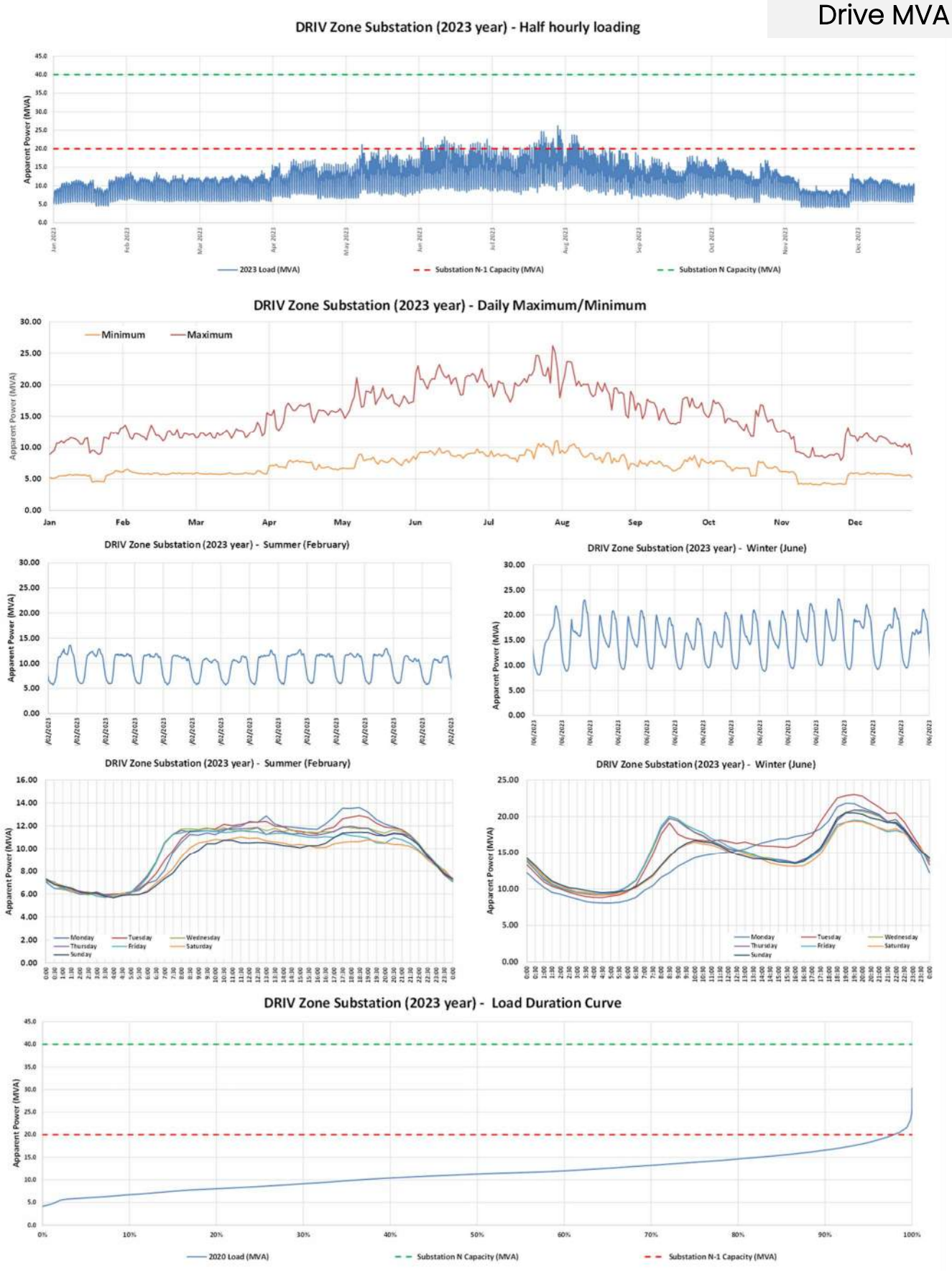

Figure 17. Drive 33/11 kV zone substation: Apparent Power (MVA) load characteristics

East Coast Road MVA

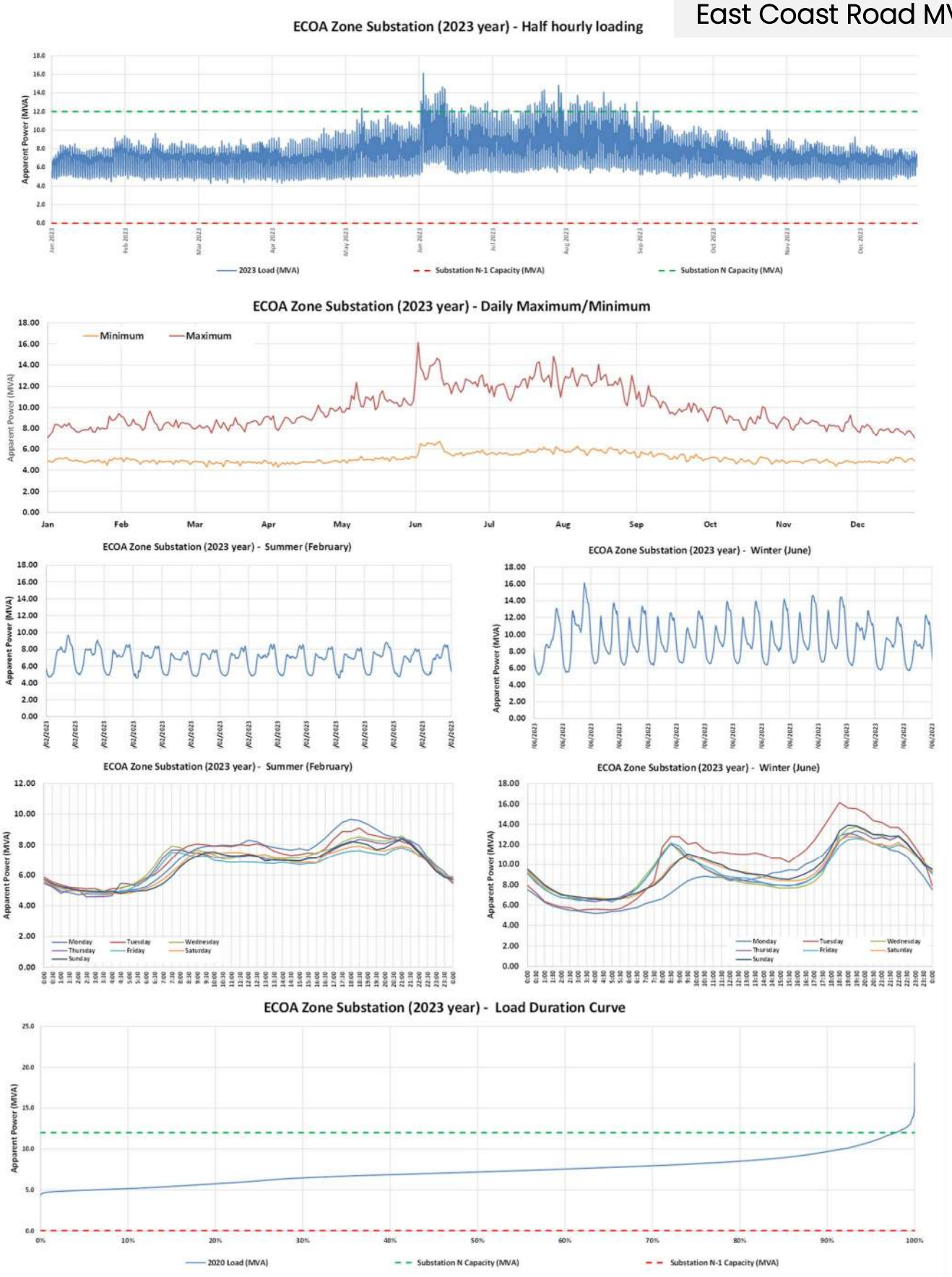

Figure 18. East Coast Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

East Tāmaki MVA

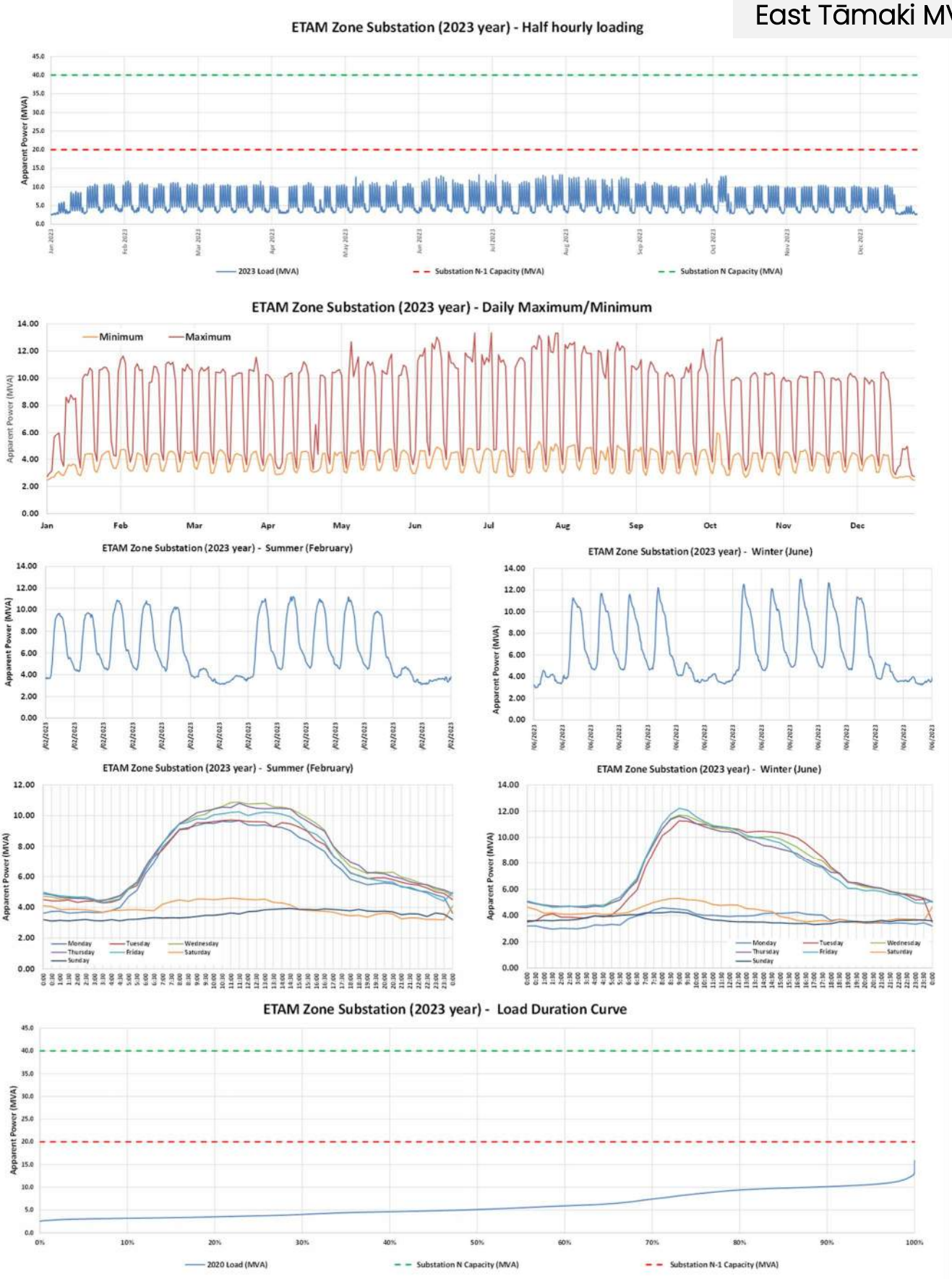

Figure 19. East Tāmaki 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Flat Bush MVA

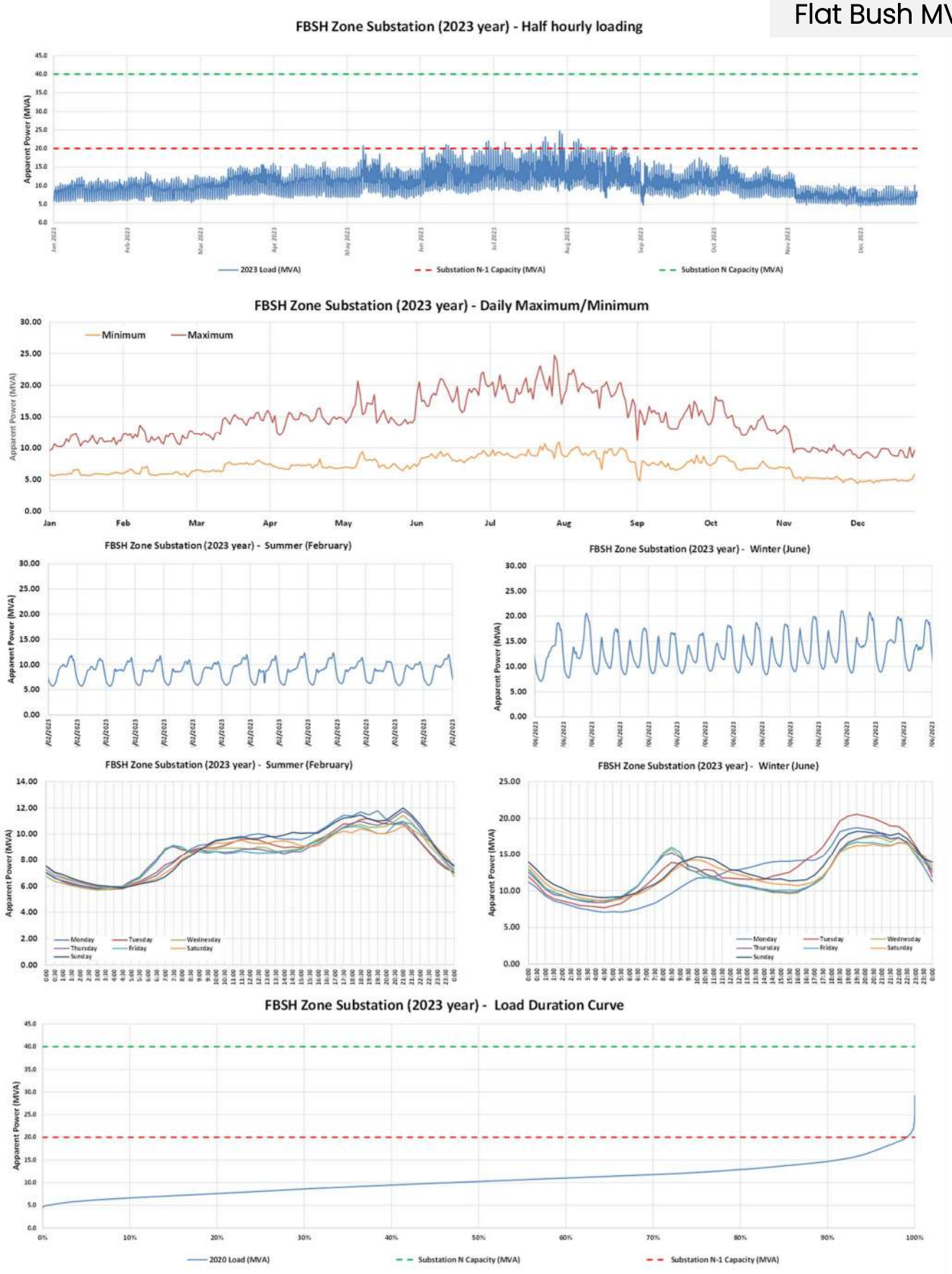

Figure 20. Flat Bush 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Forrest Road MVA

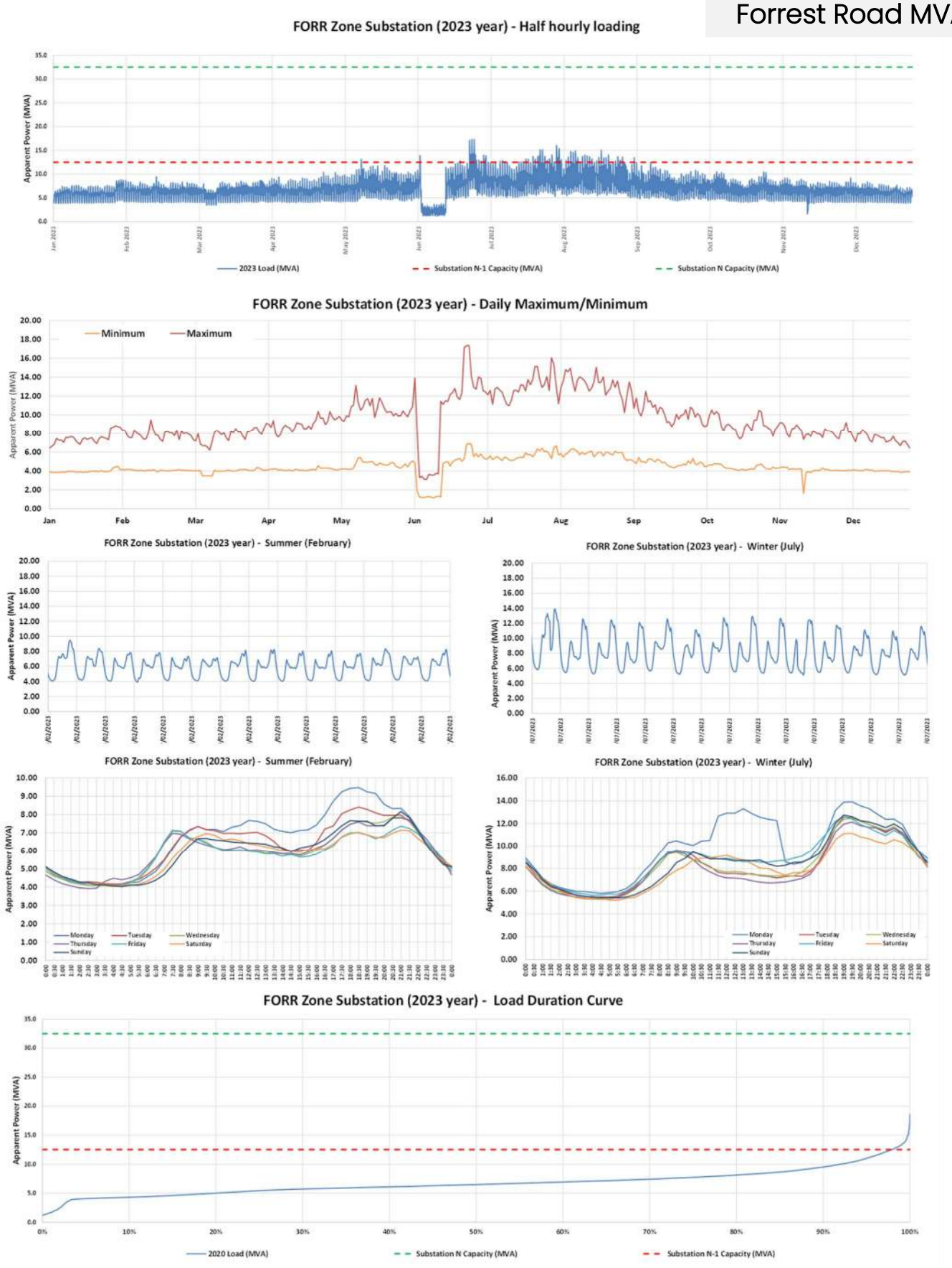

Figure 21. Forrest Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Freemans Bay MVA

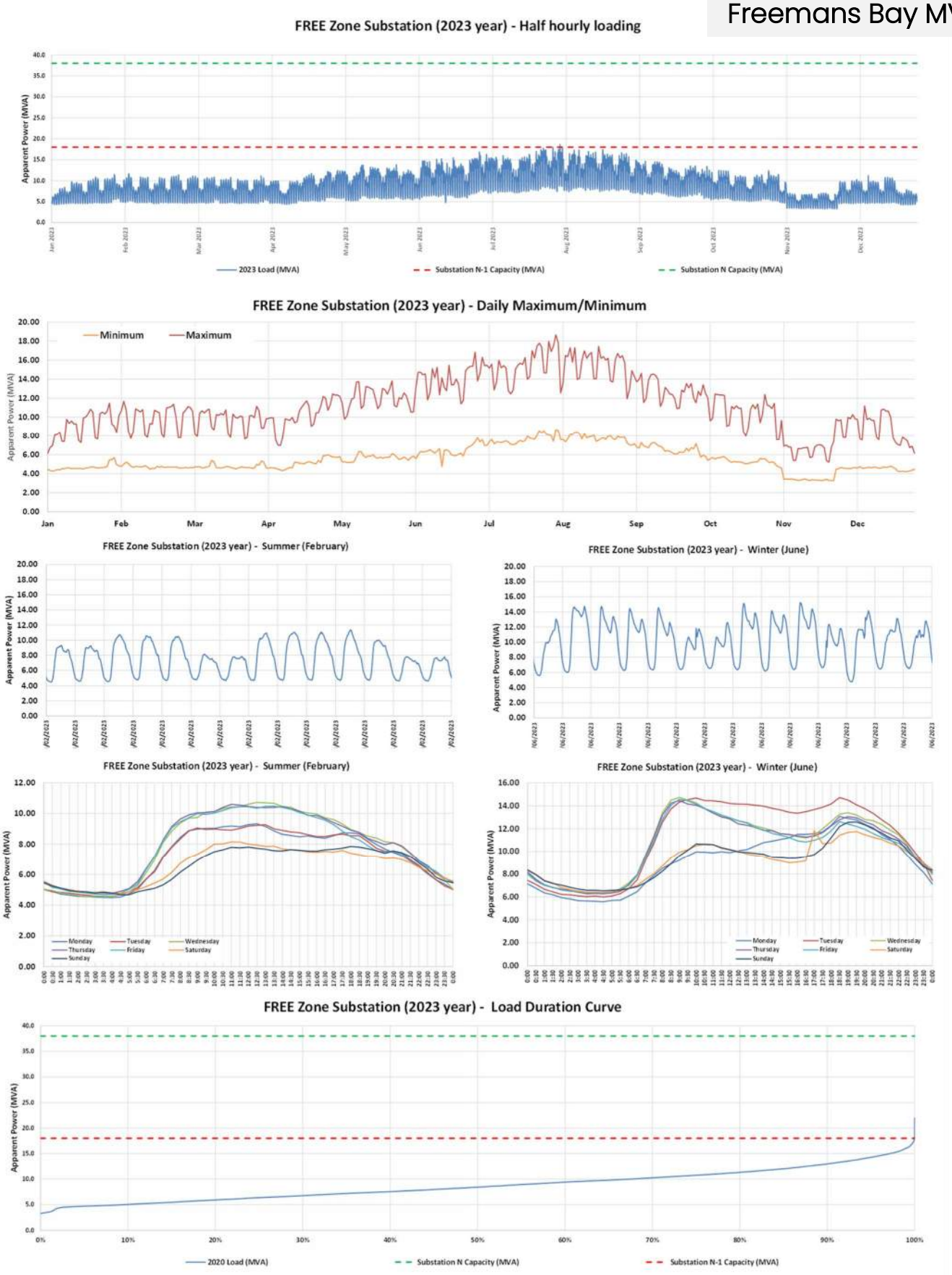

Figure 22. Freemans Bay 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Greenhithe MVA

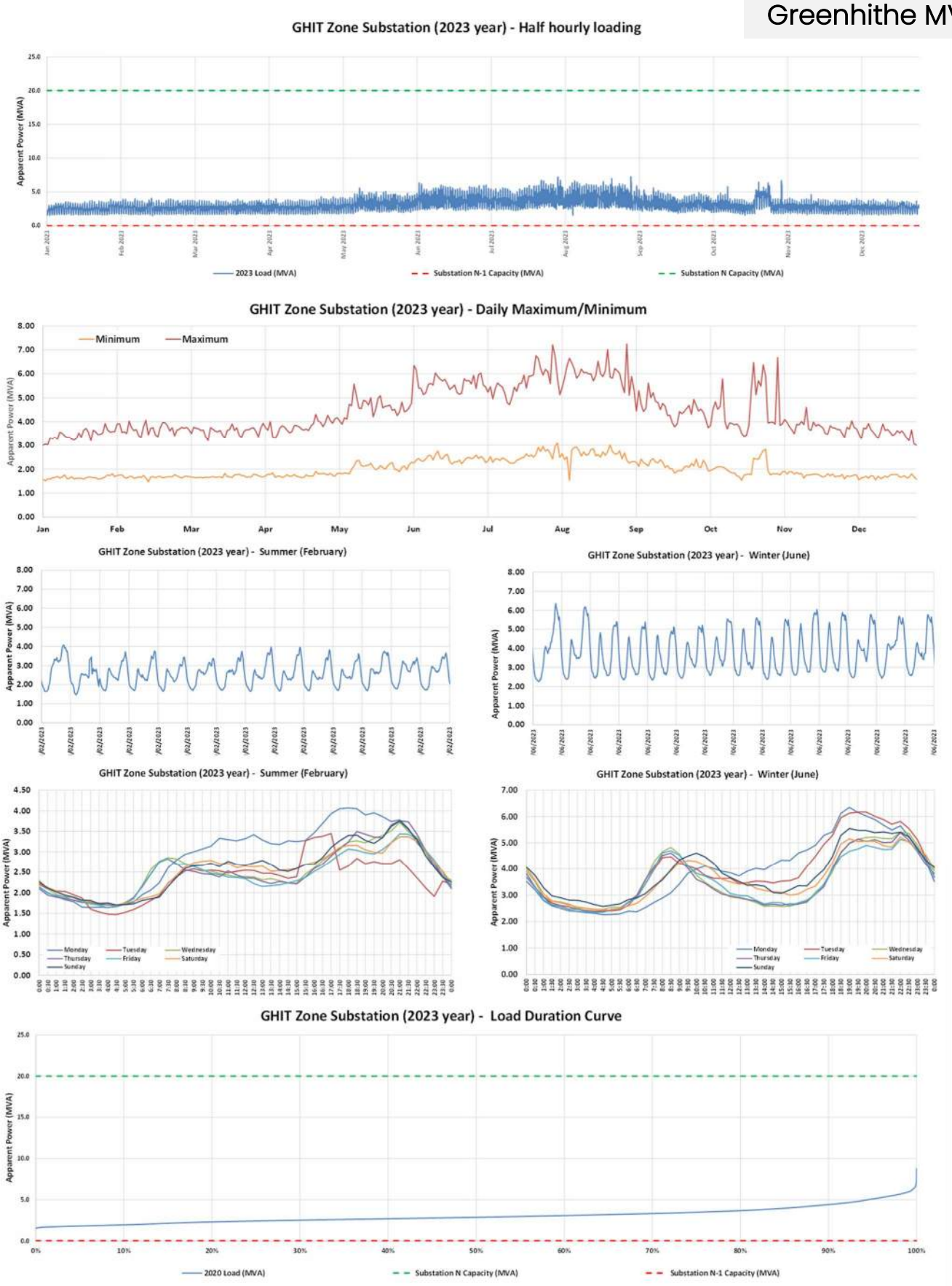

Figure 23. Greenhithe 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Glen Innes MVA

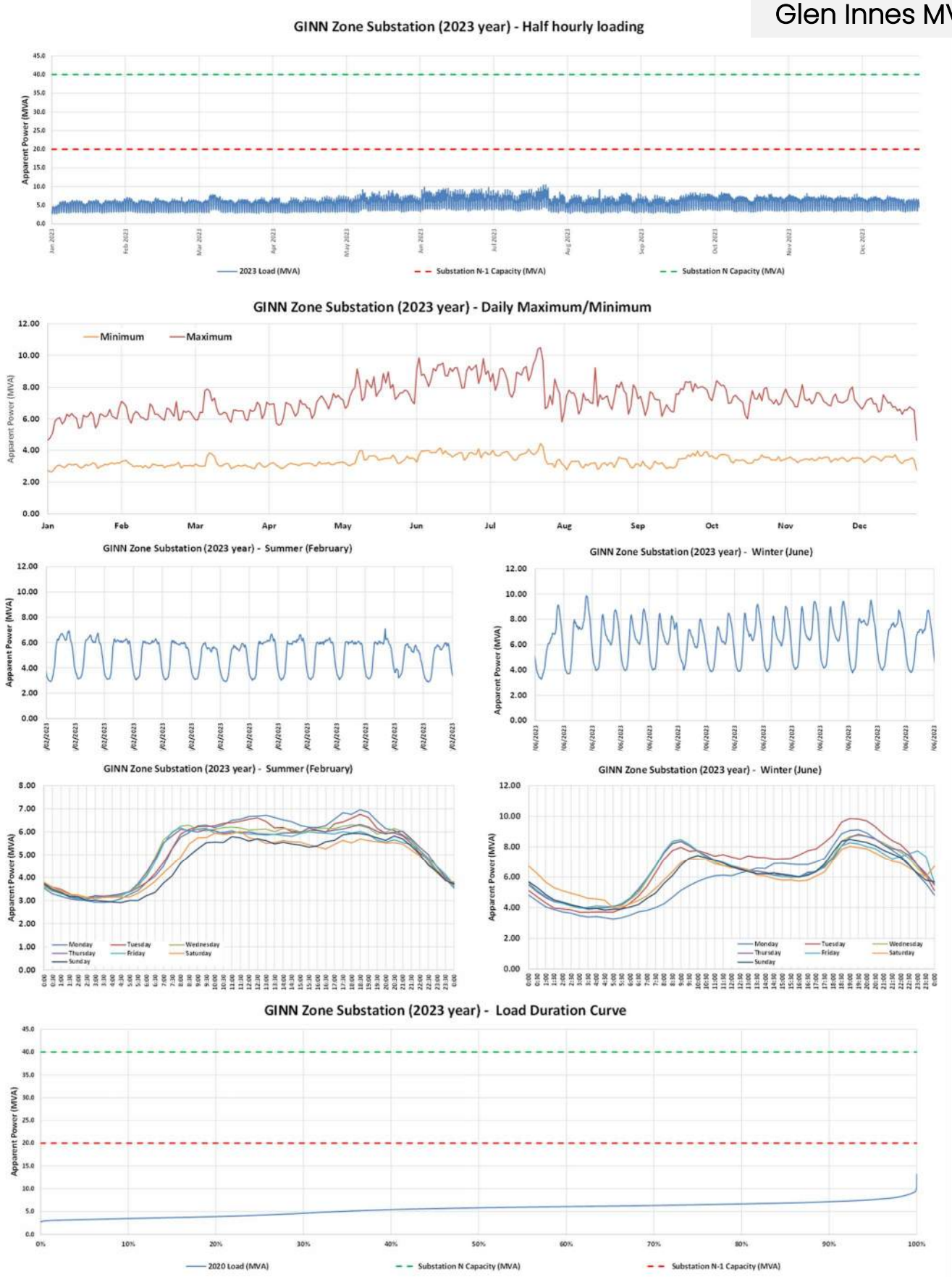

Figure 24. Glen Innes 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Greenmount MVA

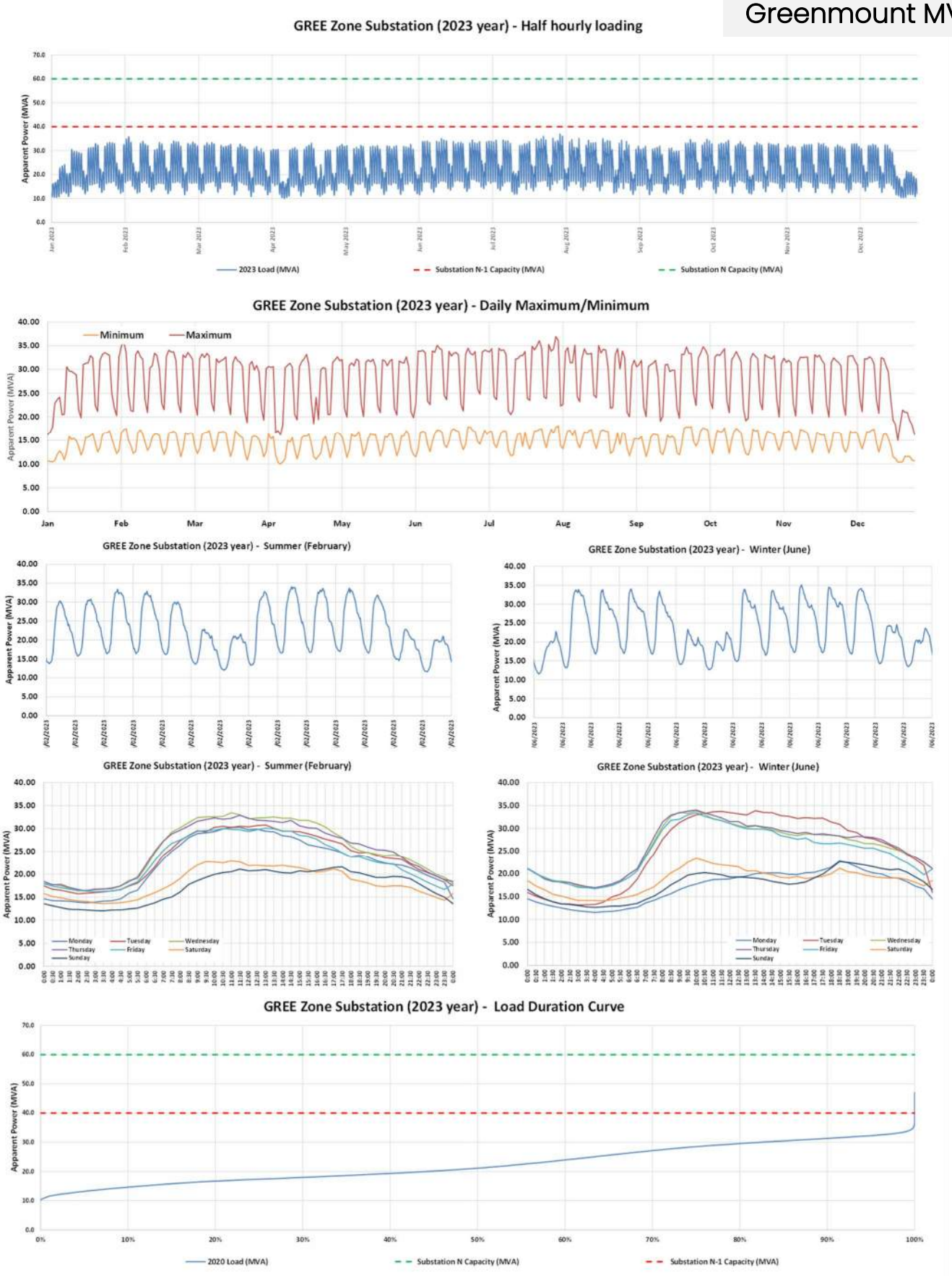

Figure 25. Greenmount 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Gulf Harbour MVA

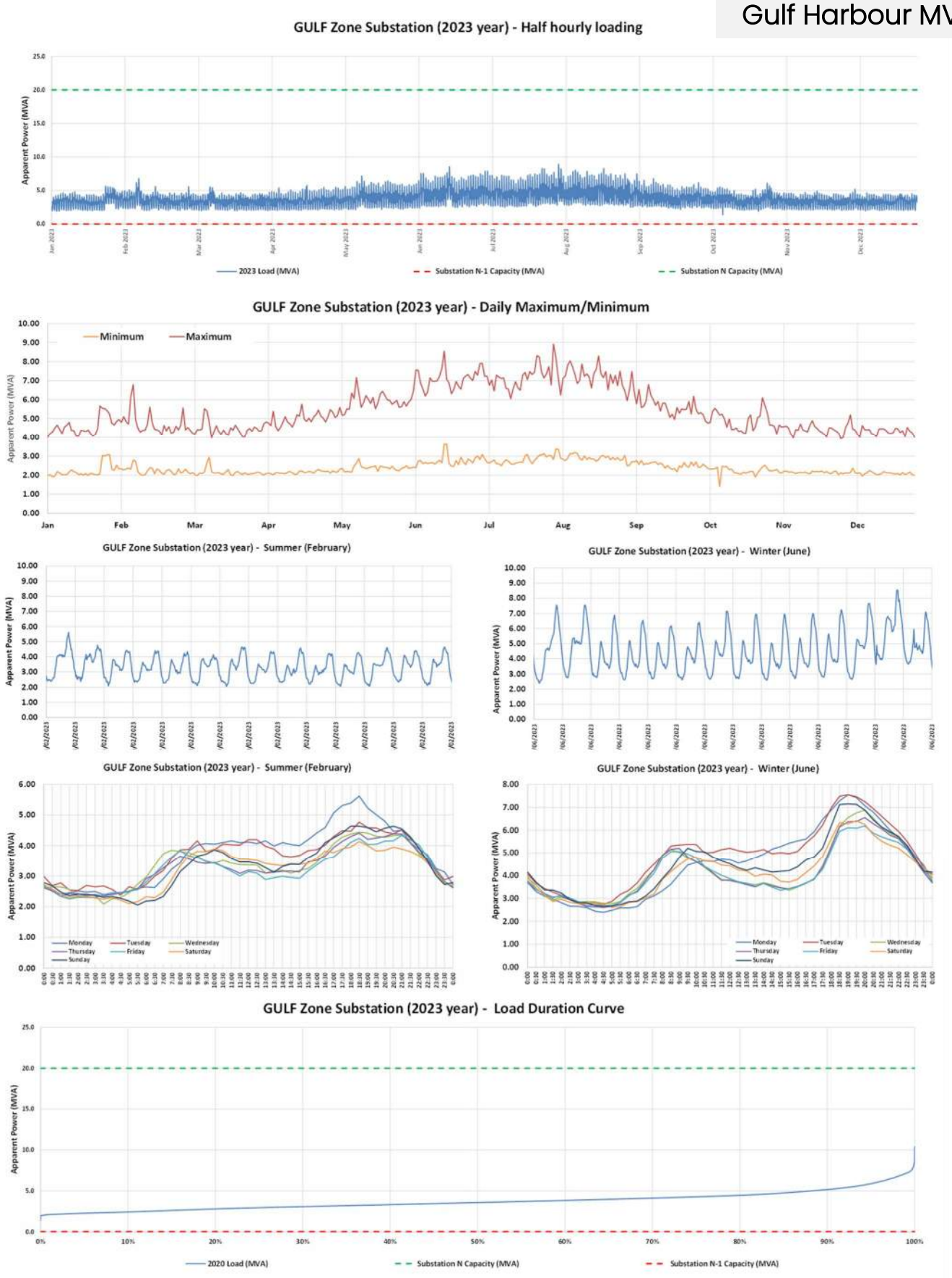

Figure 26. Gulf Harbour 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Hans MVA

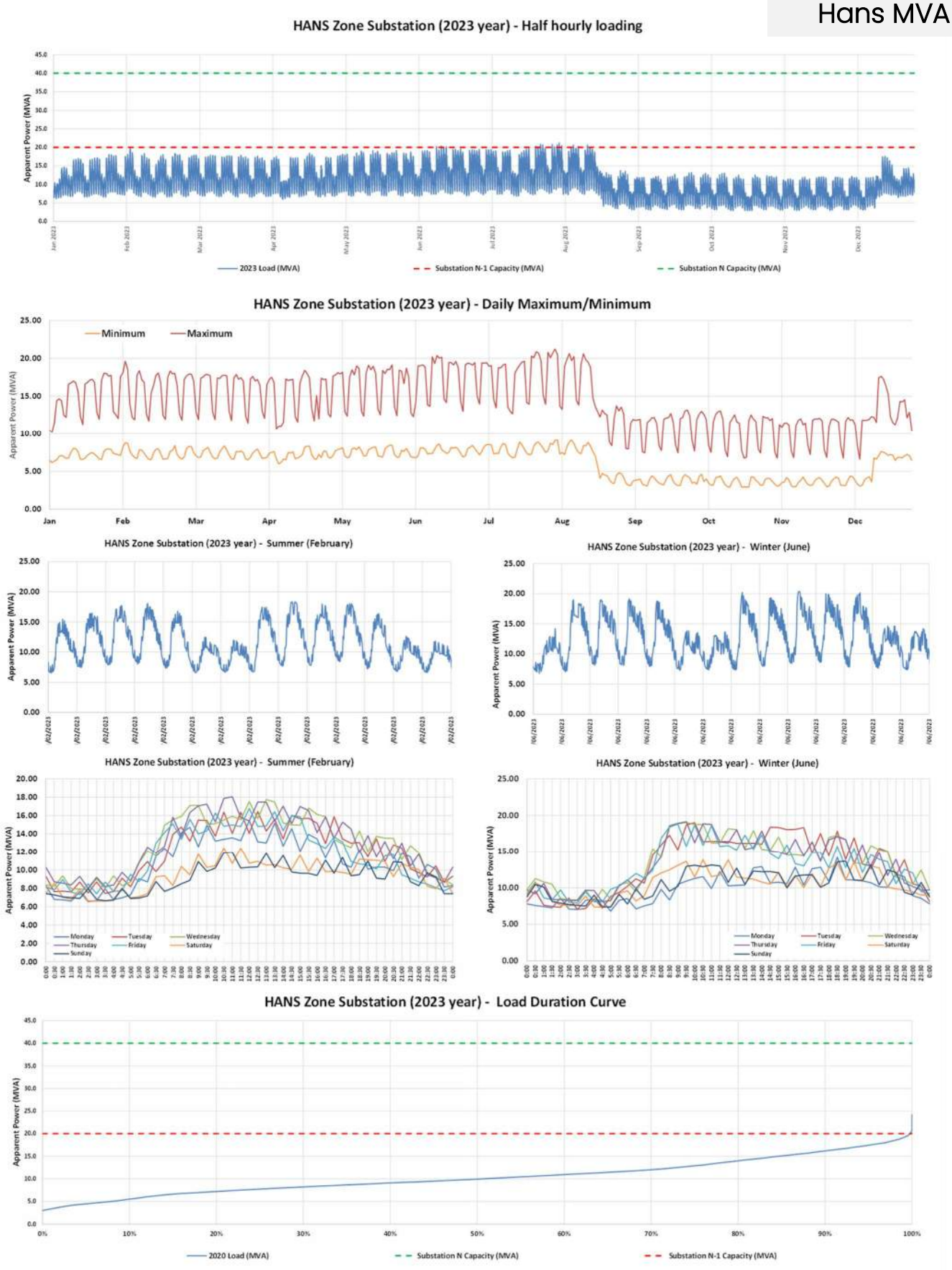

Figure 27. Hans 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Hauraki MVA

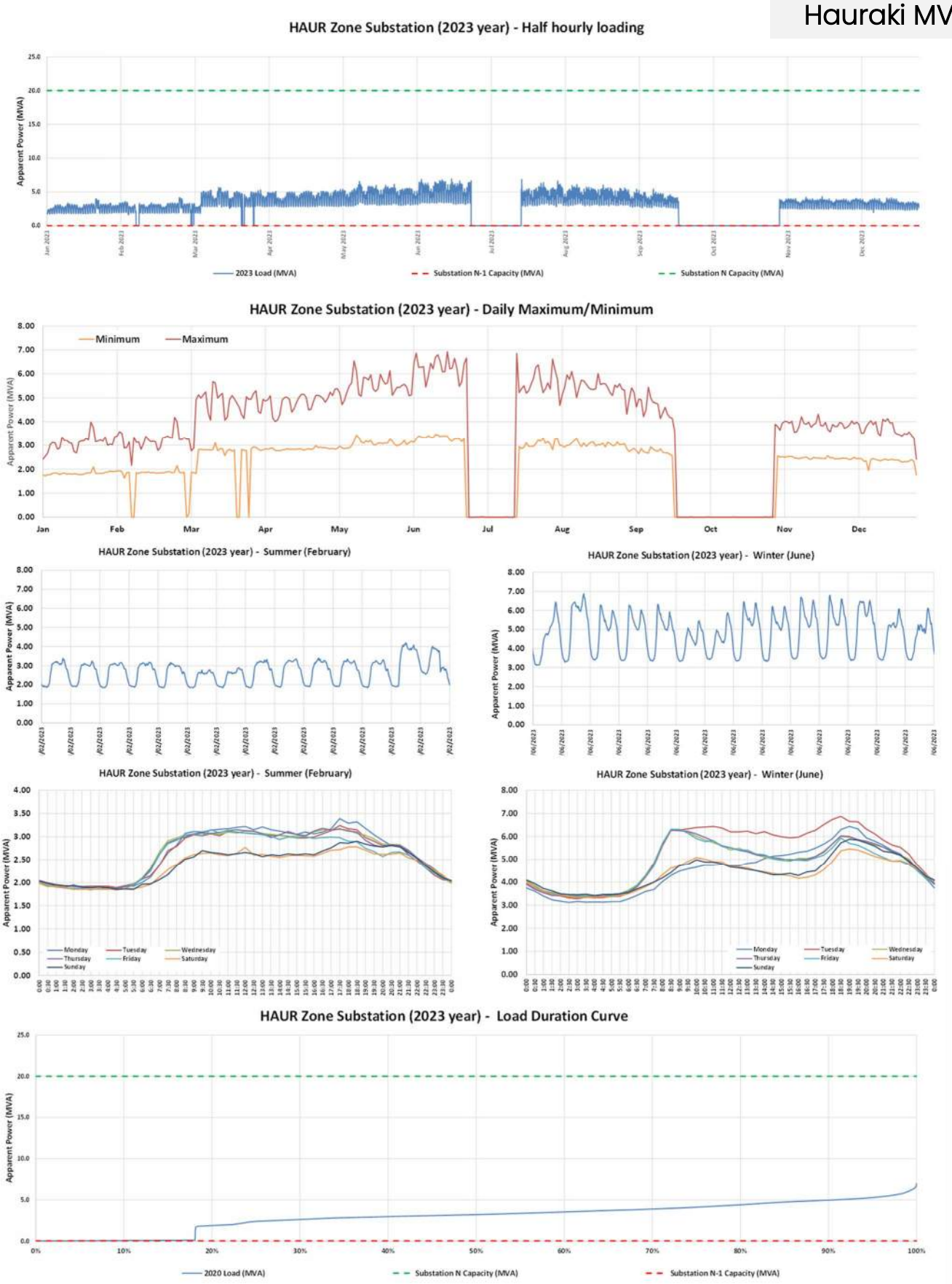

Figure 28. Hauraki 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Highbrook MVA

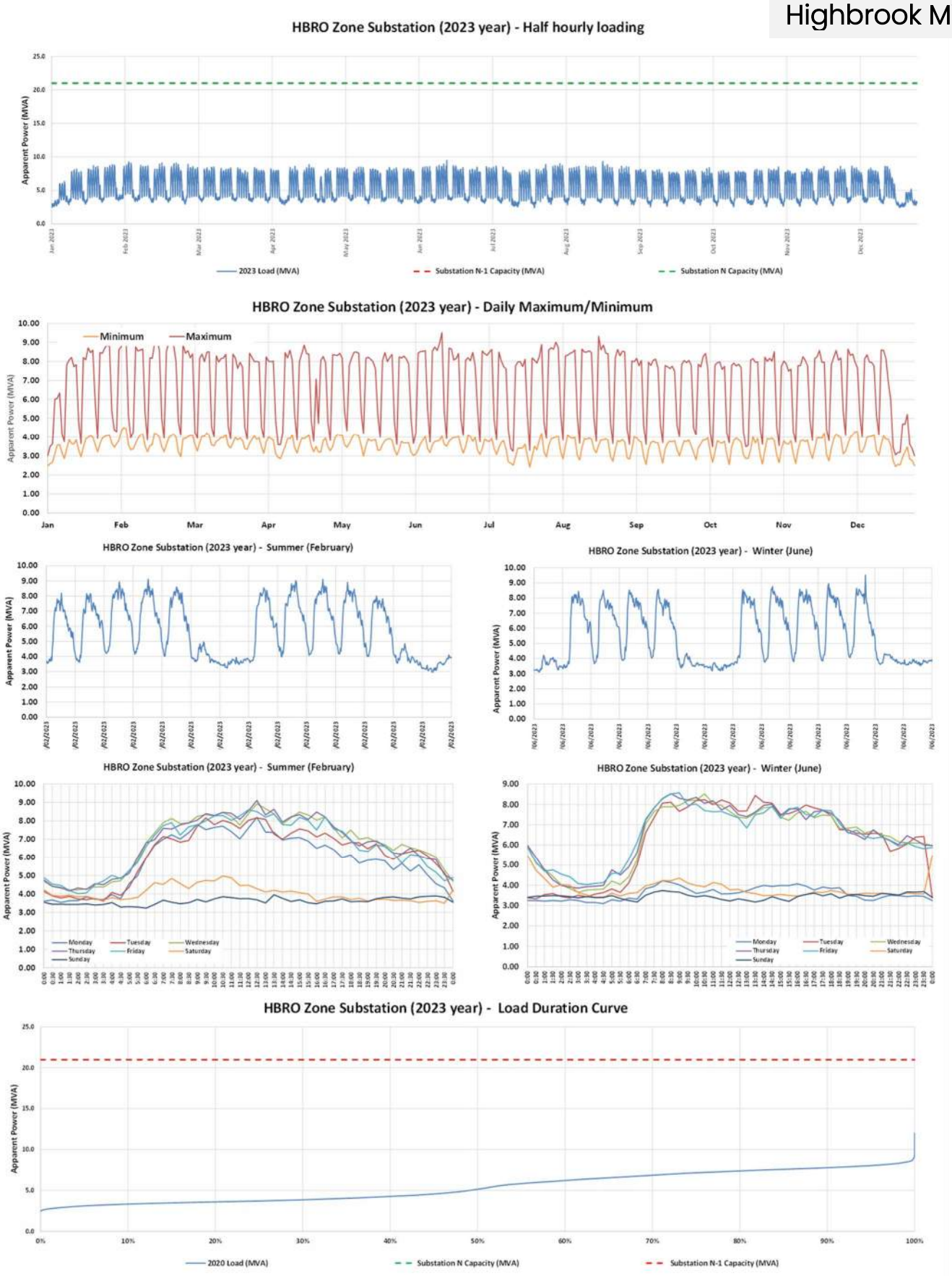

Figure 29. Highbrook 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Highbury MVA

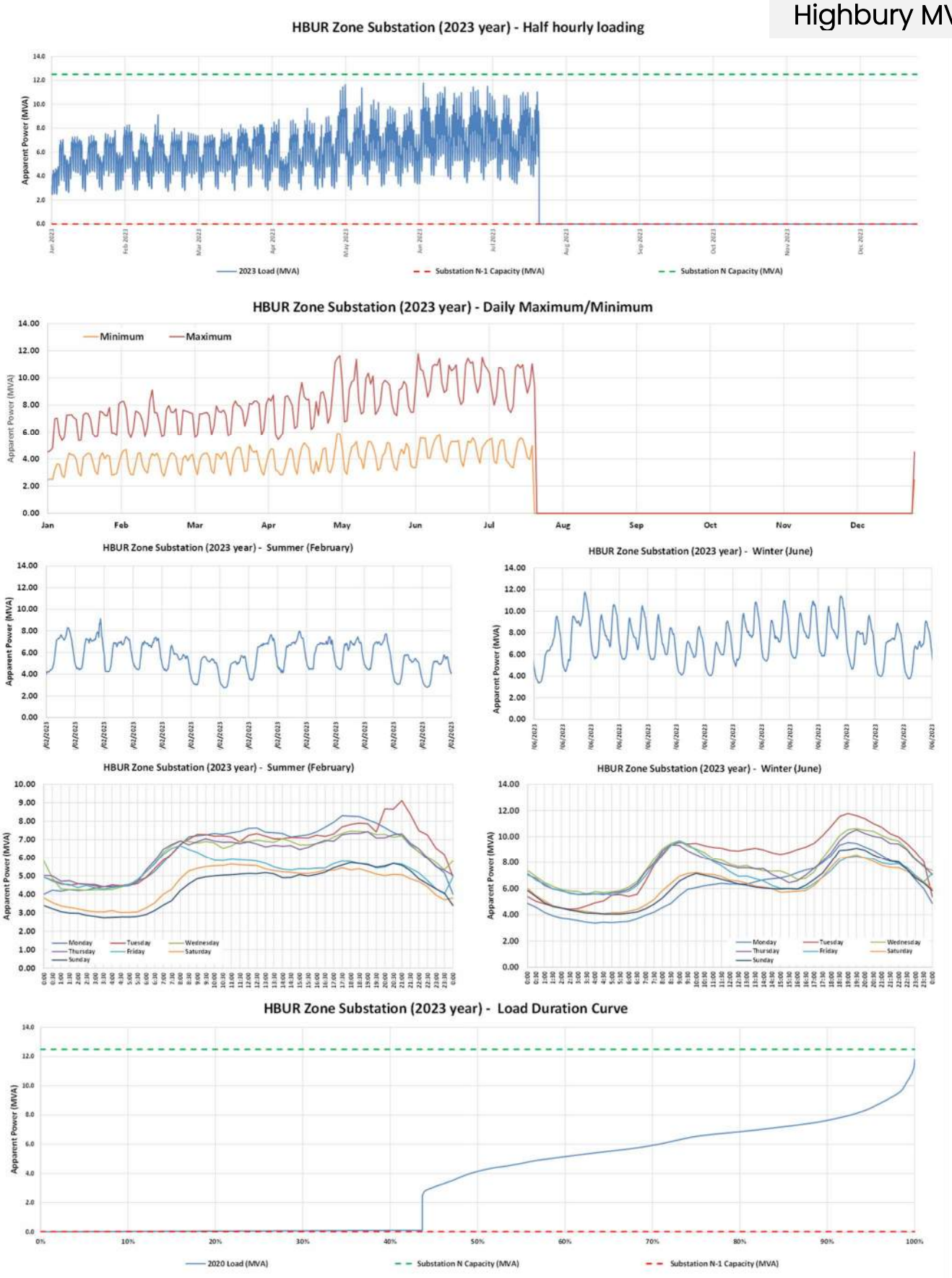

Figure 30. Highbury 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Hillcrest MVA

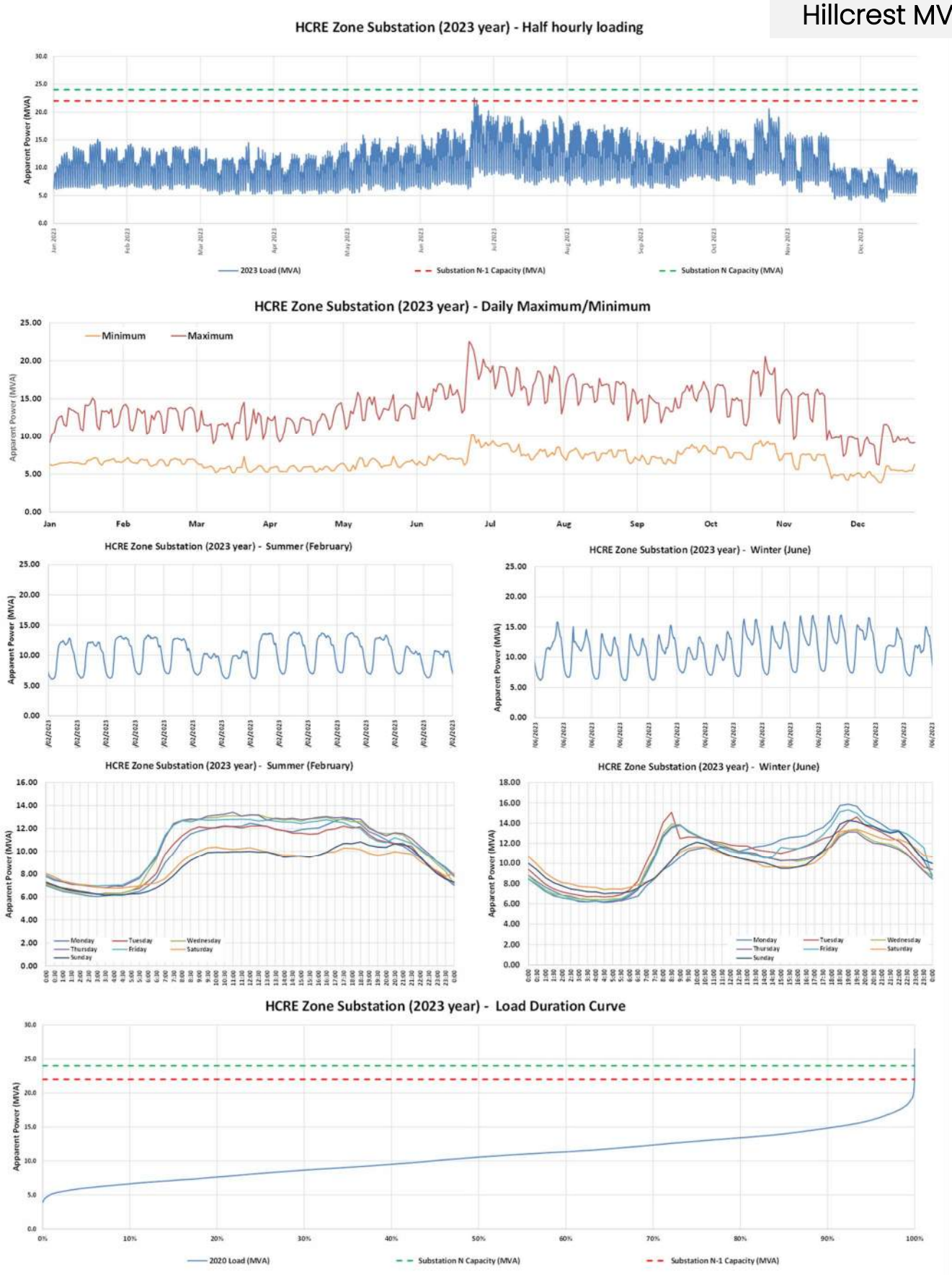

Figure 31. Hillcrest 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Helensville MVA

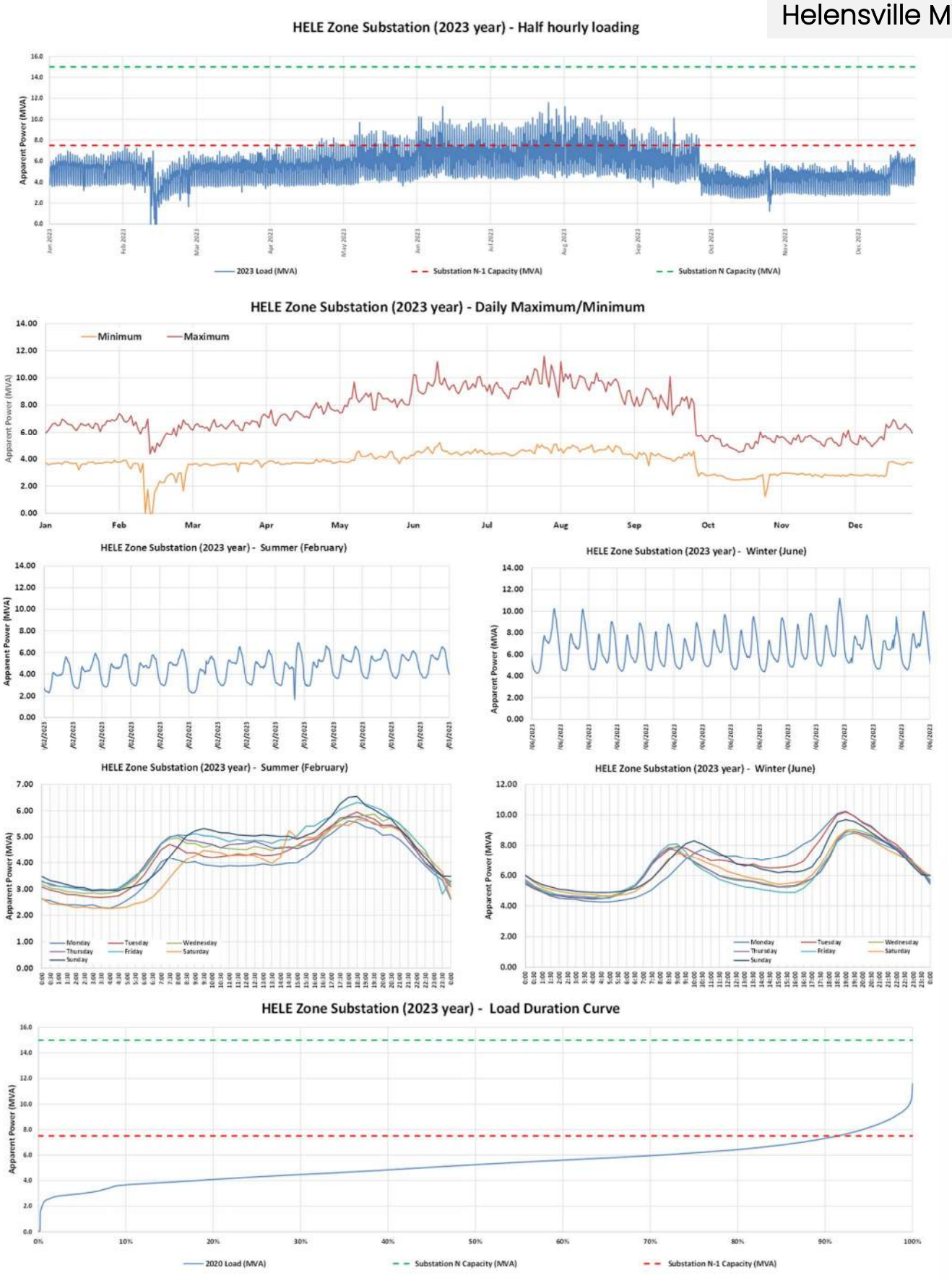

Figure 32. Helensville 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Hillsborough MVA

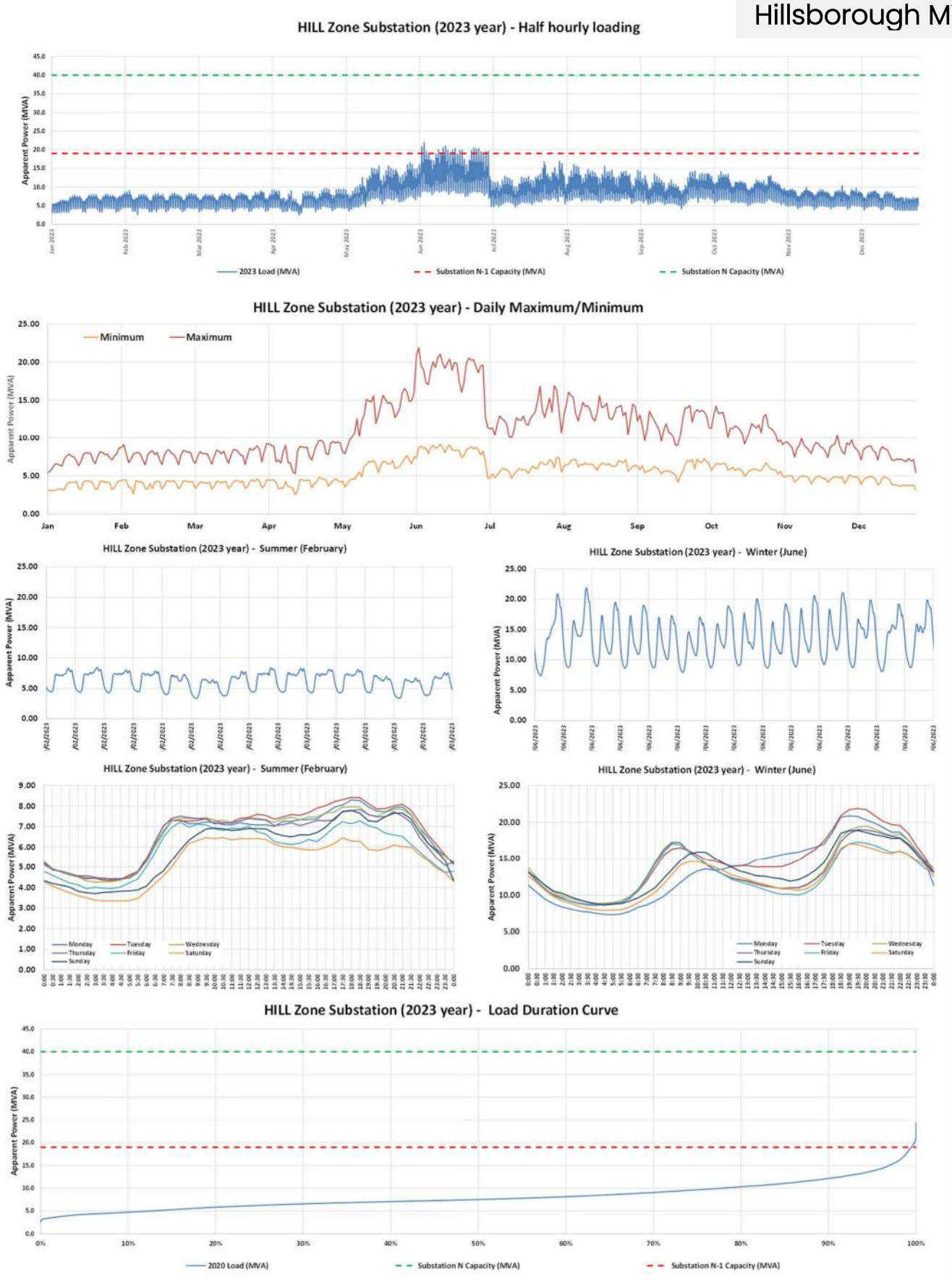

Figure 33. Hillsborough 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Hobson 11 kV MVA

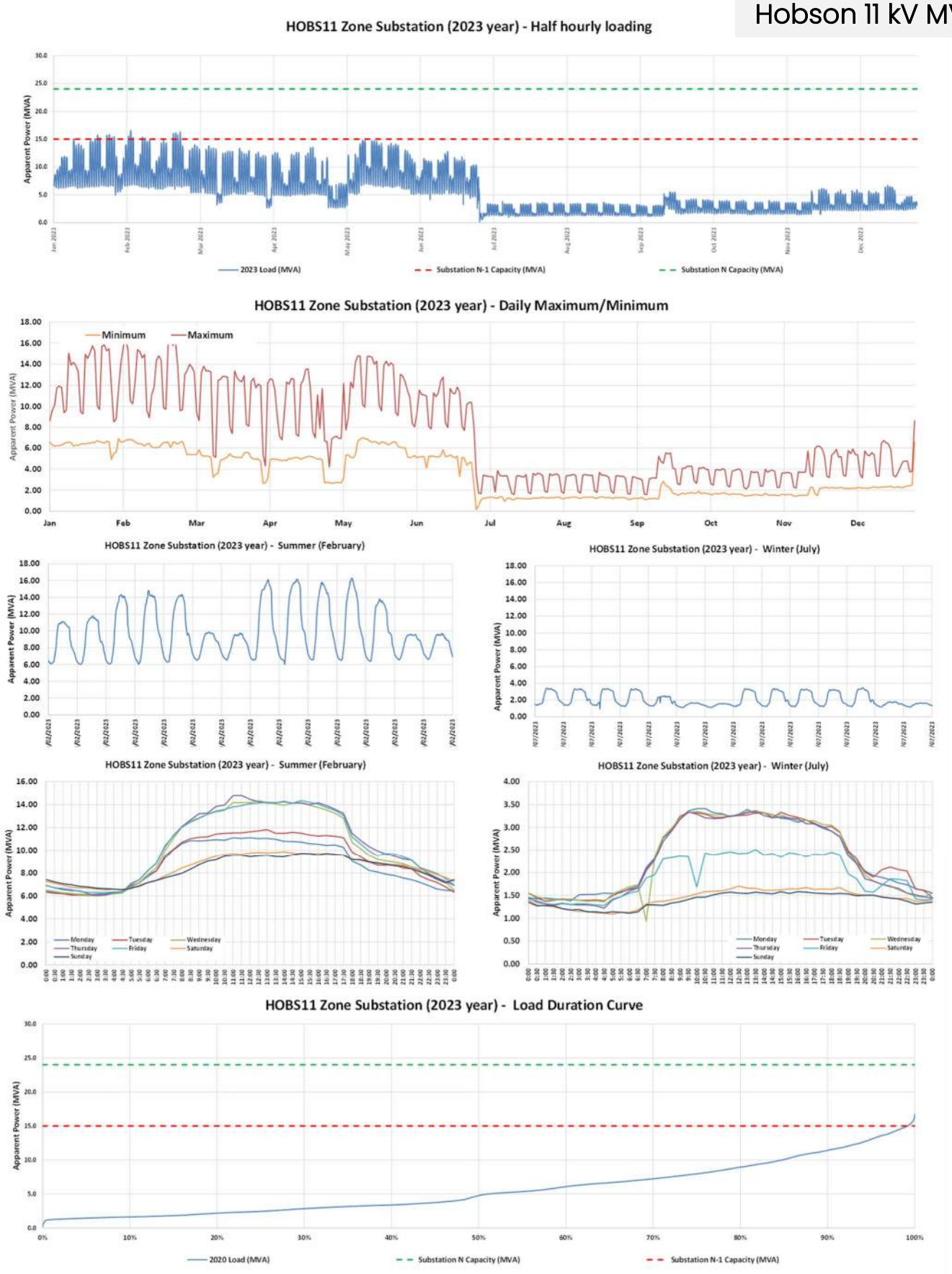

Figure 34. Hobson 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Hobson 22 kV MVA

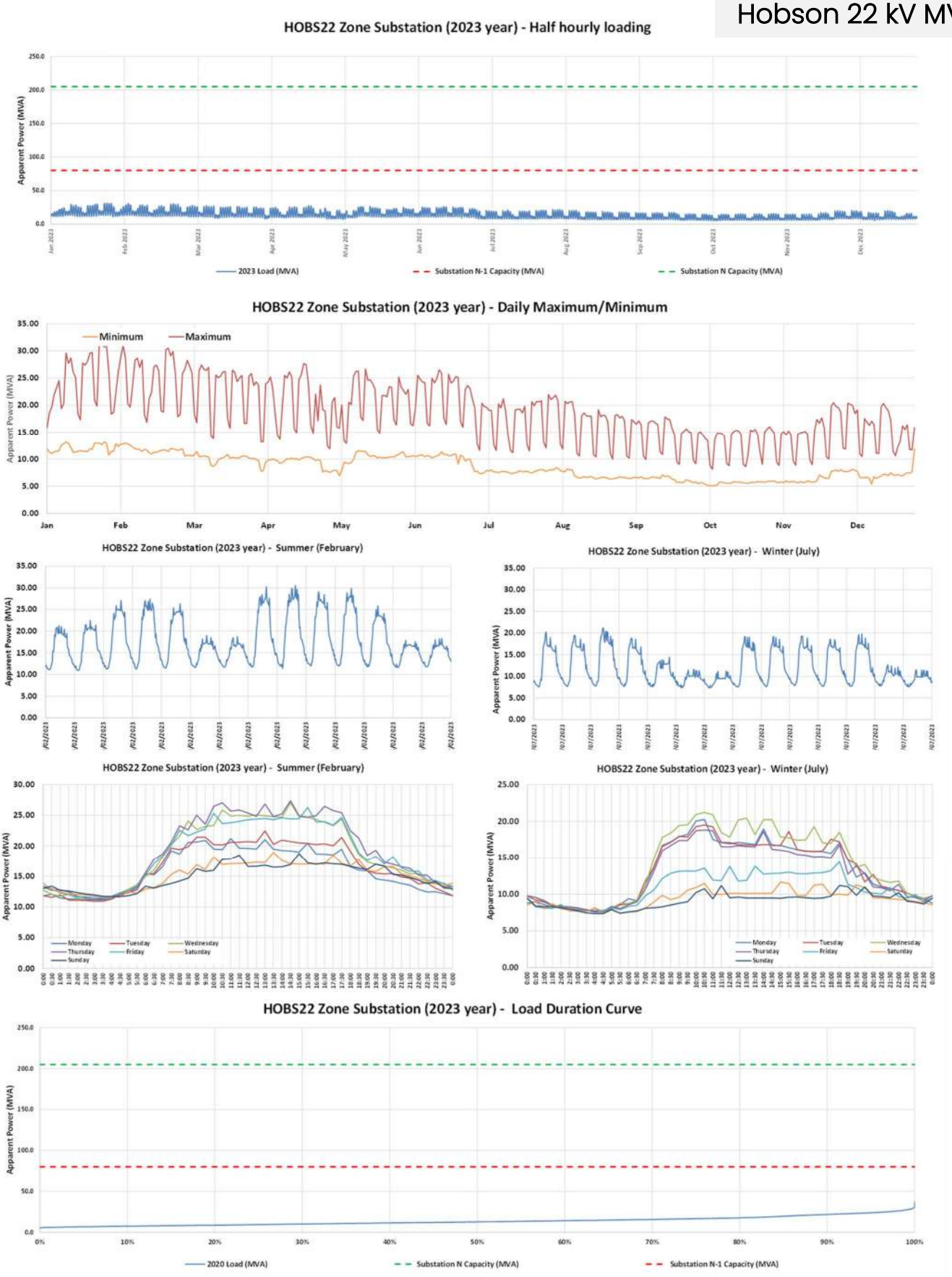

Figure 35. Hobson 110/22 kV zone substation: Apparent Power (MVA) load characteristics

Hobsonville MVA

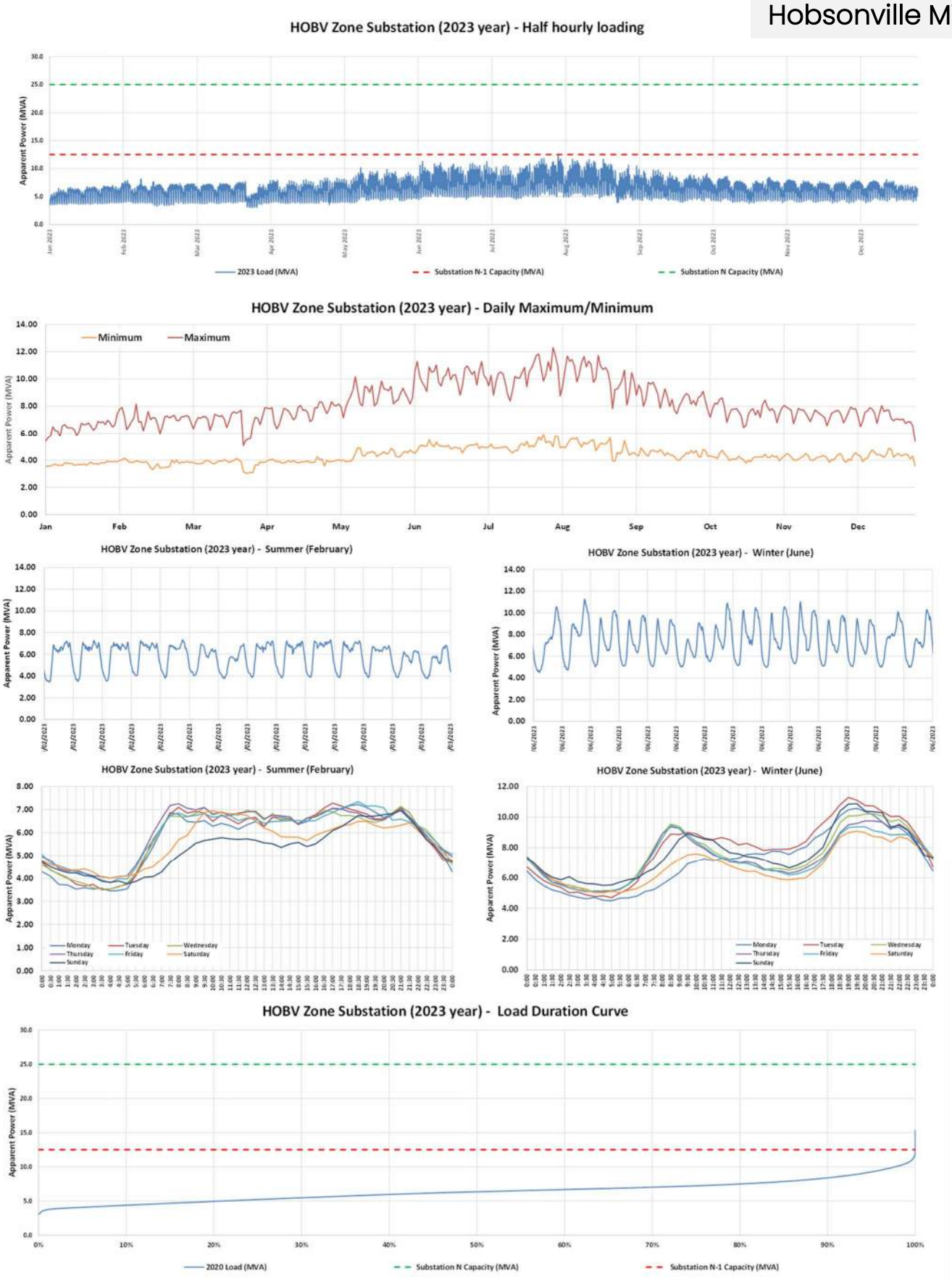

Figure 36. Hobsonville 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Horseshoe Bush

Ergo was not supplied information for this substation.

Howick MVA

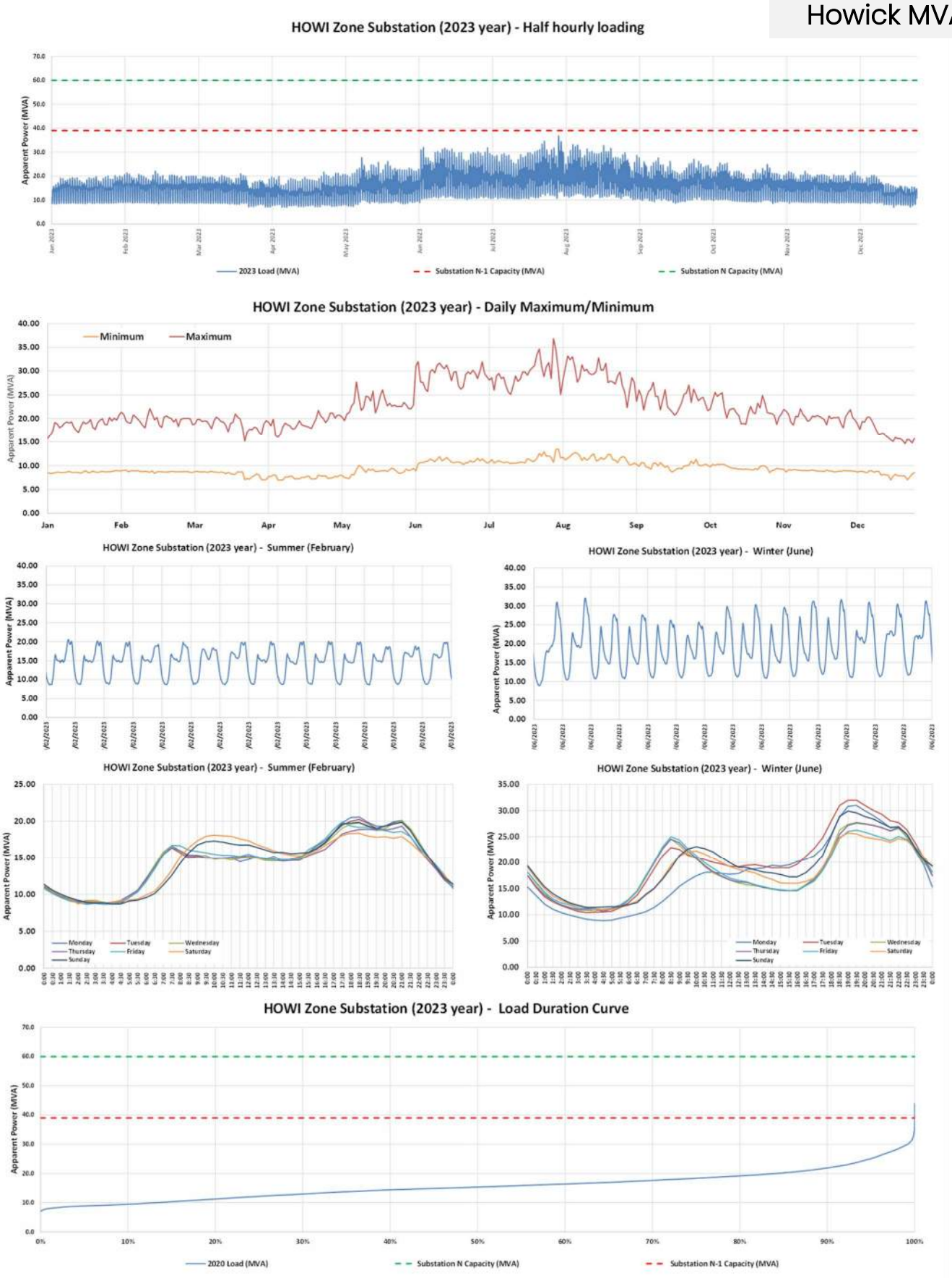

Figure 37. Howick 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Hobsonville Point MVA

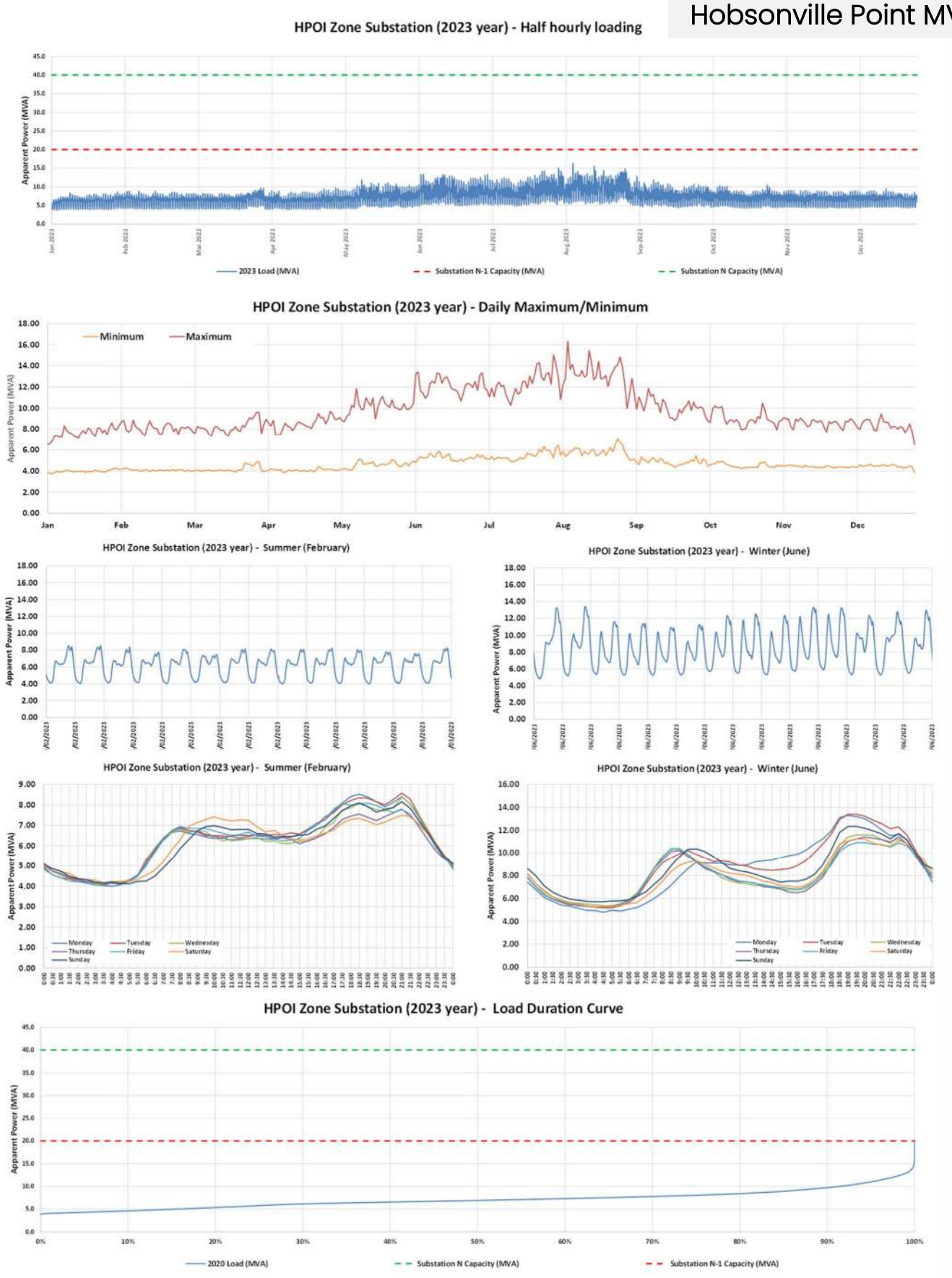

Figure 38. Hobsonville Point 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Henderson Valley MVA

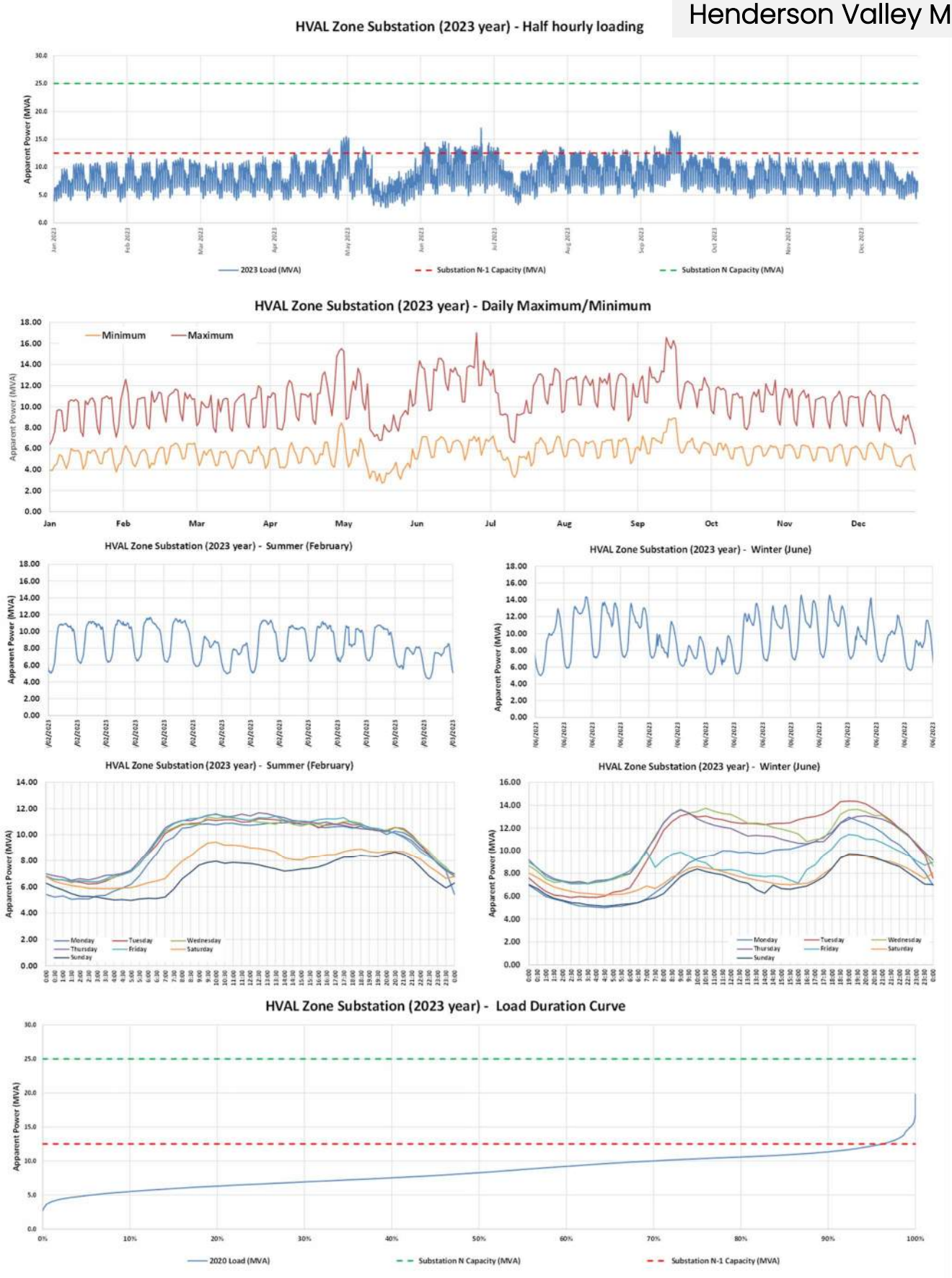

Figure 39. Henderson Valley 33/11 kV zone substation: Apparent Power (MVA) load characteristics

James Street MVA

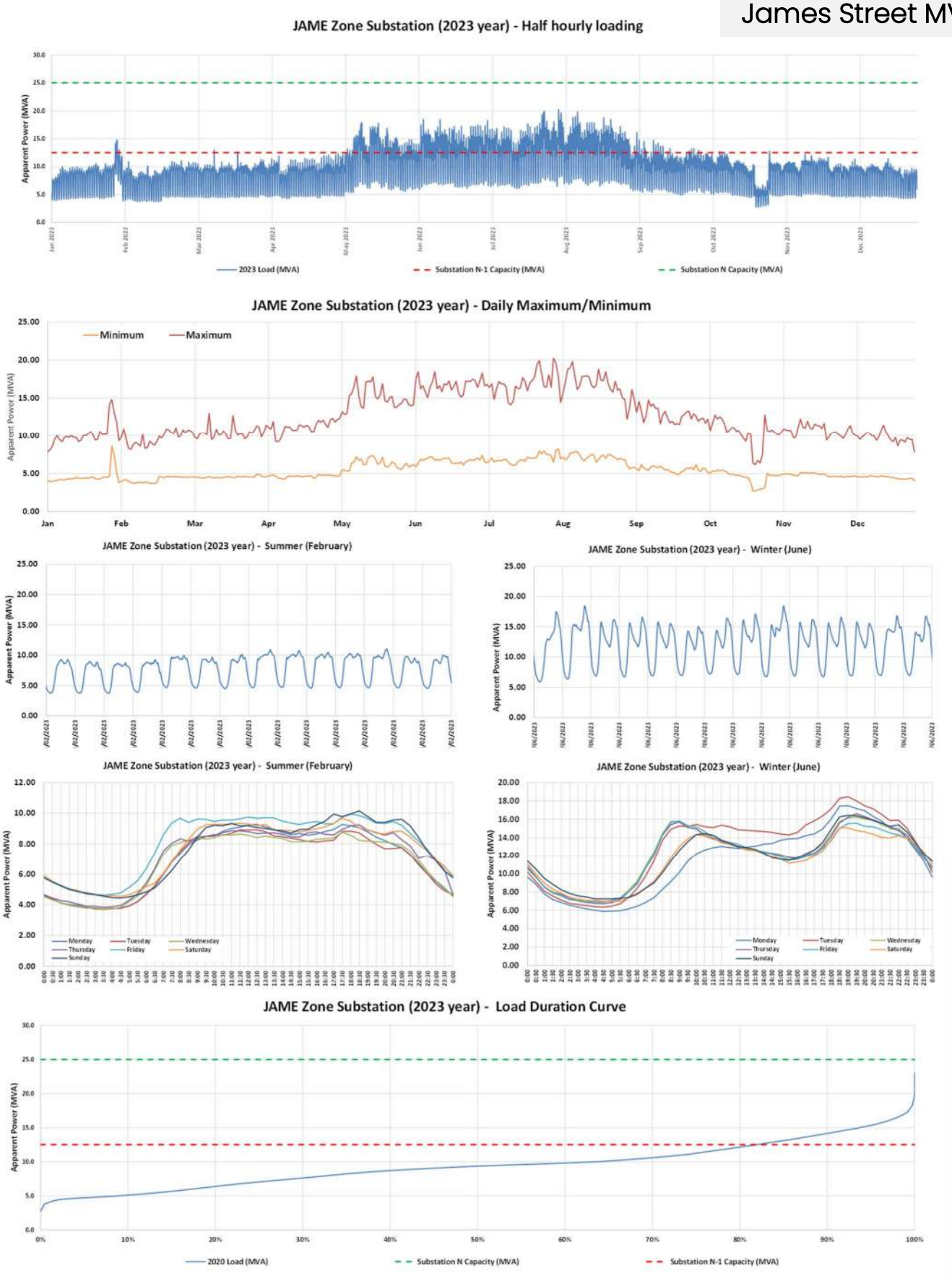

Figure 40. James Street 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Keeling Road MVA

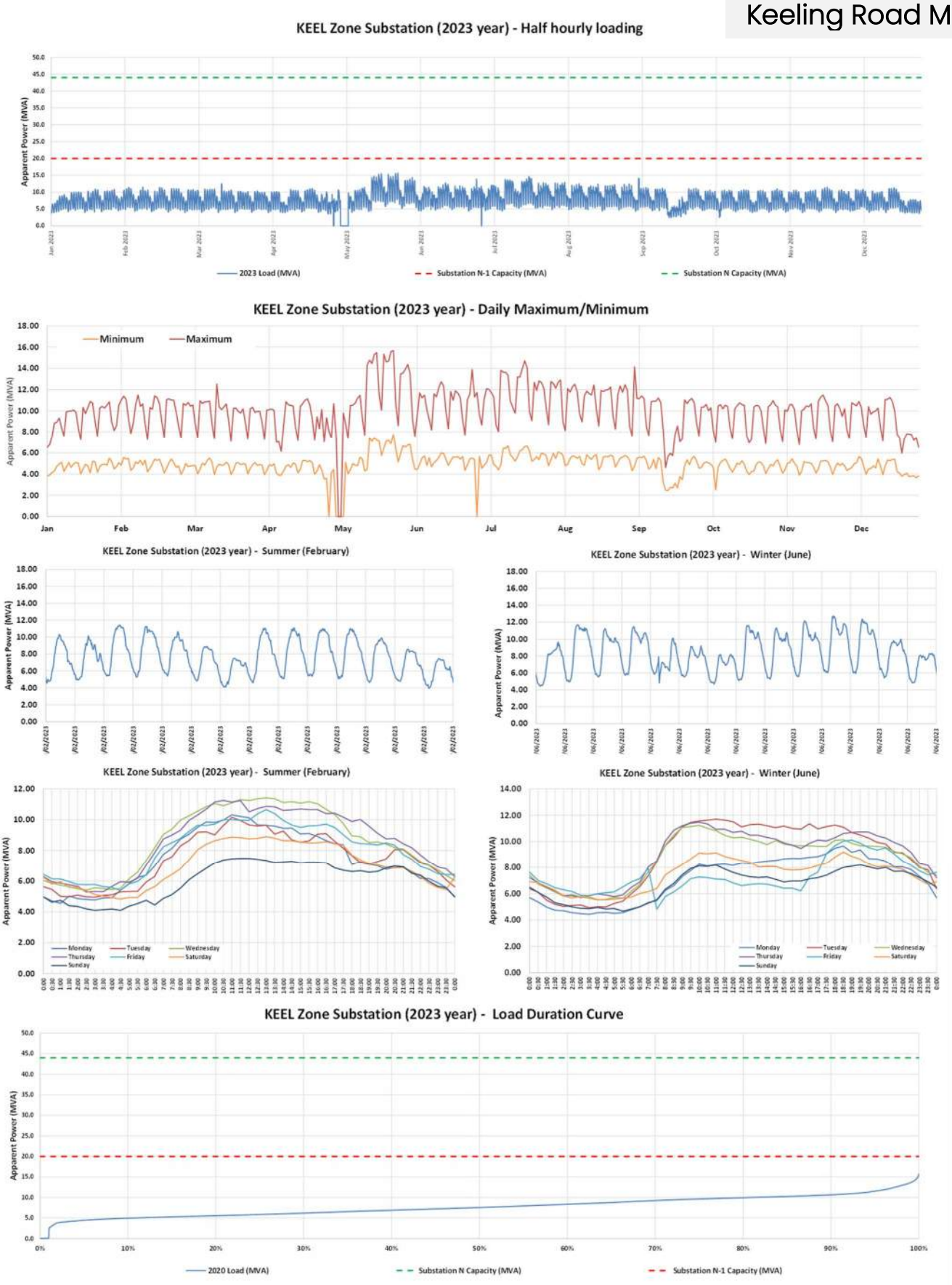

Figure 41. Keeling Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Kingsland 11 kV MVA

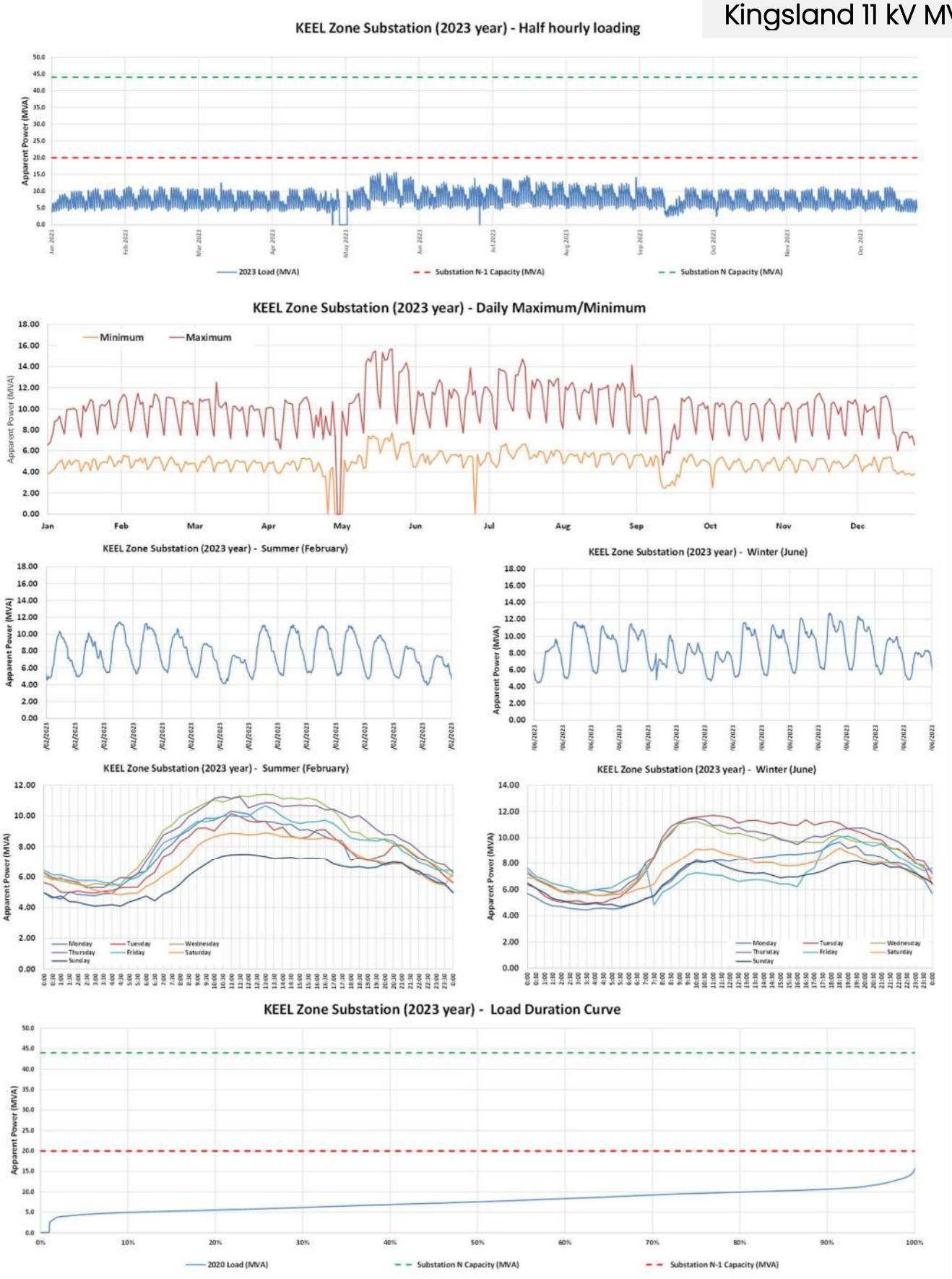

Figure 42. Kingsland 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Kingsland 22 kV MVA

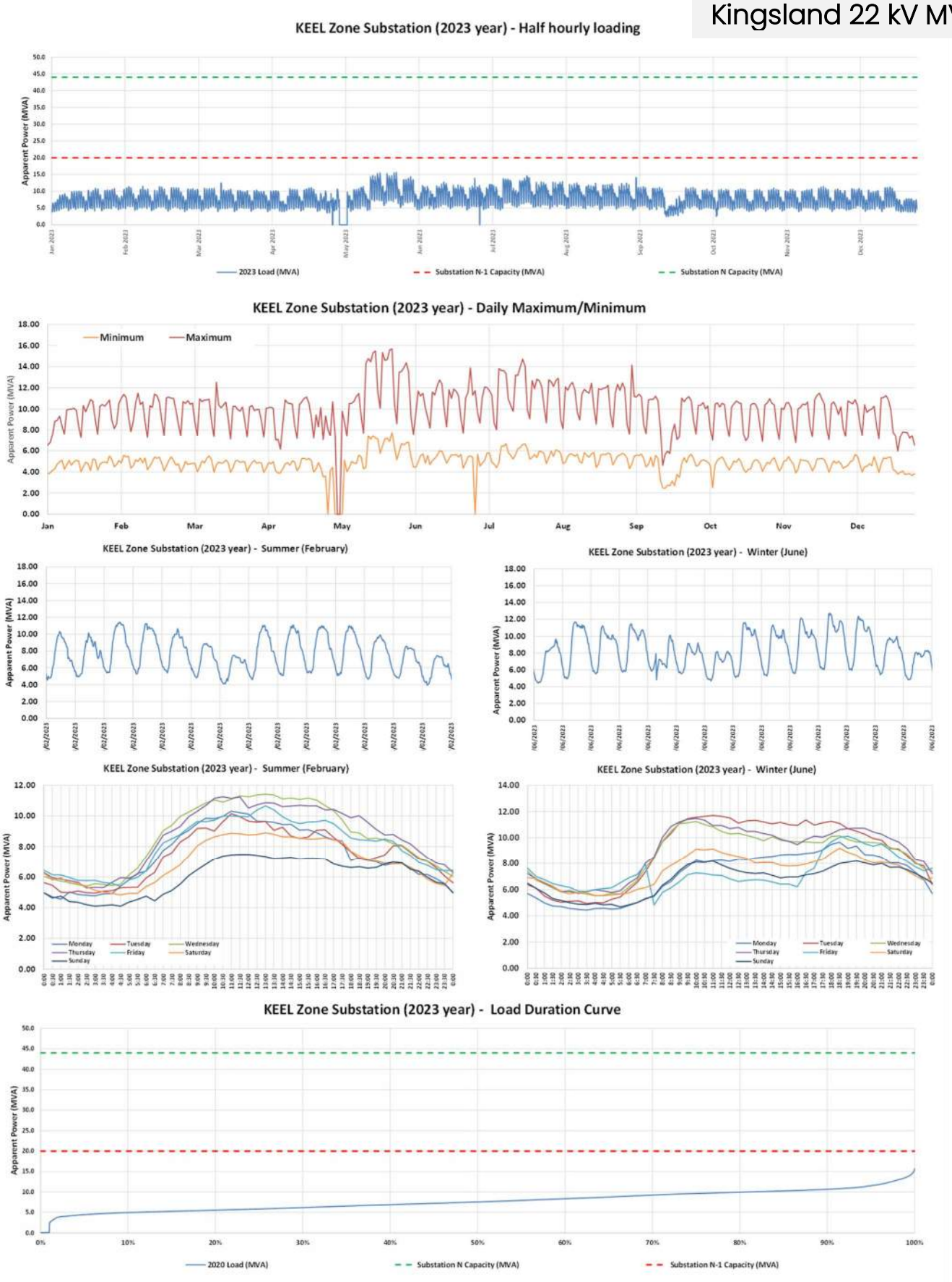

Figure 43. Kingsland 110/22 kV zone substation: Apparent Power (MVA) load characteristics

Kaukapakapa MVA

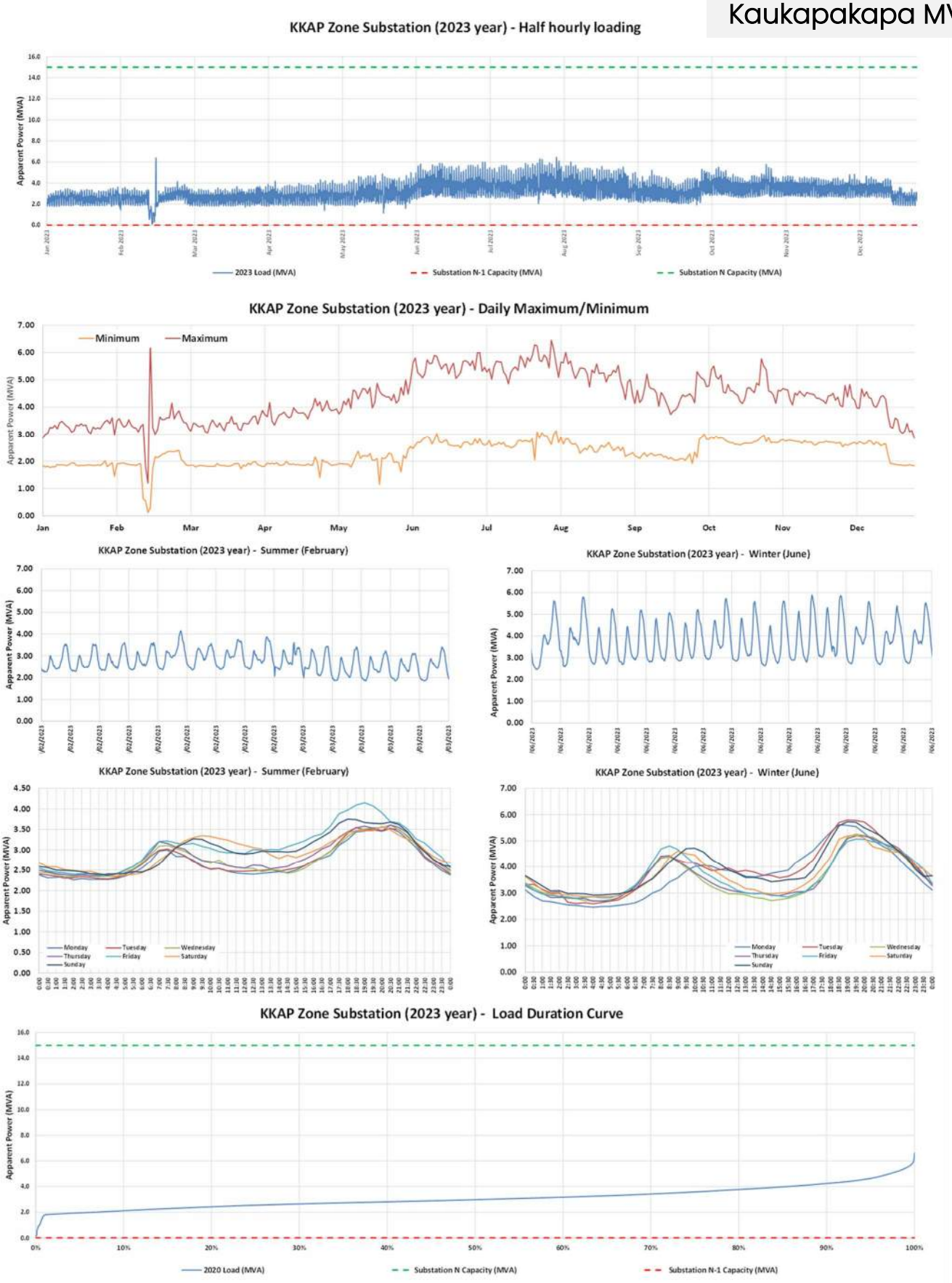

Figure 44. Kauukapakapa 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Laingholm MVA

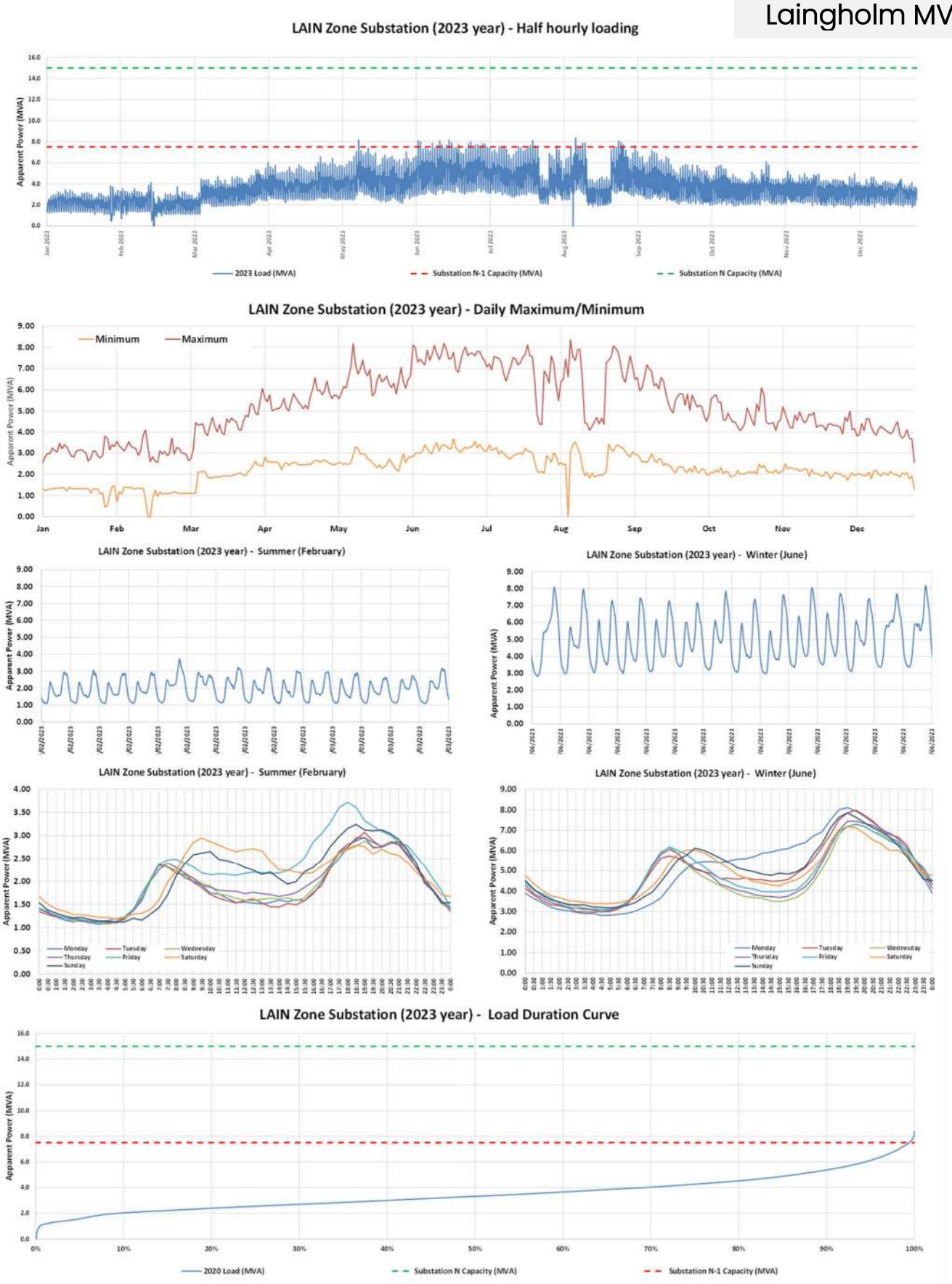

Figure 45. Laingholm 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Liverpool 11 kV MVA

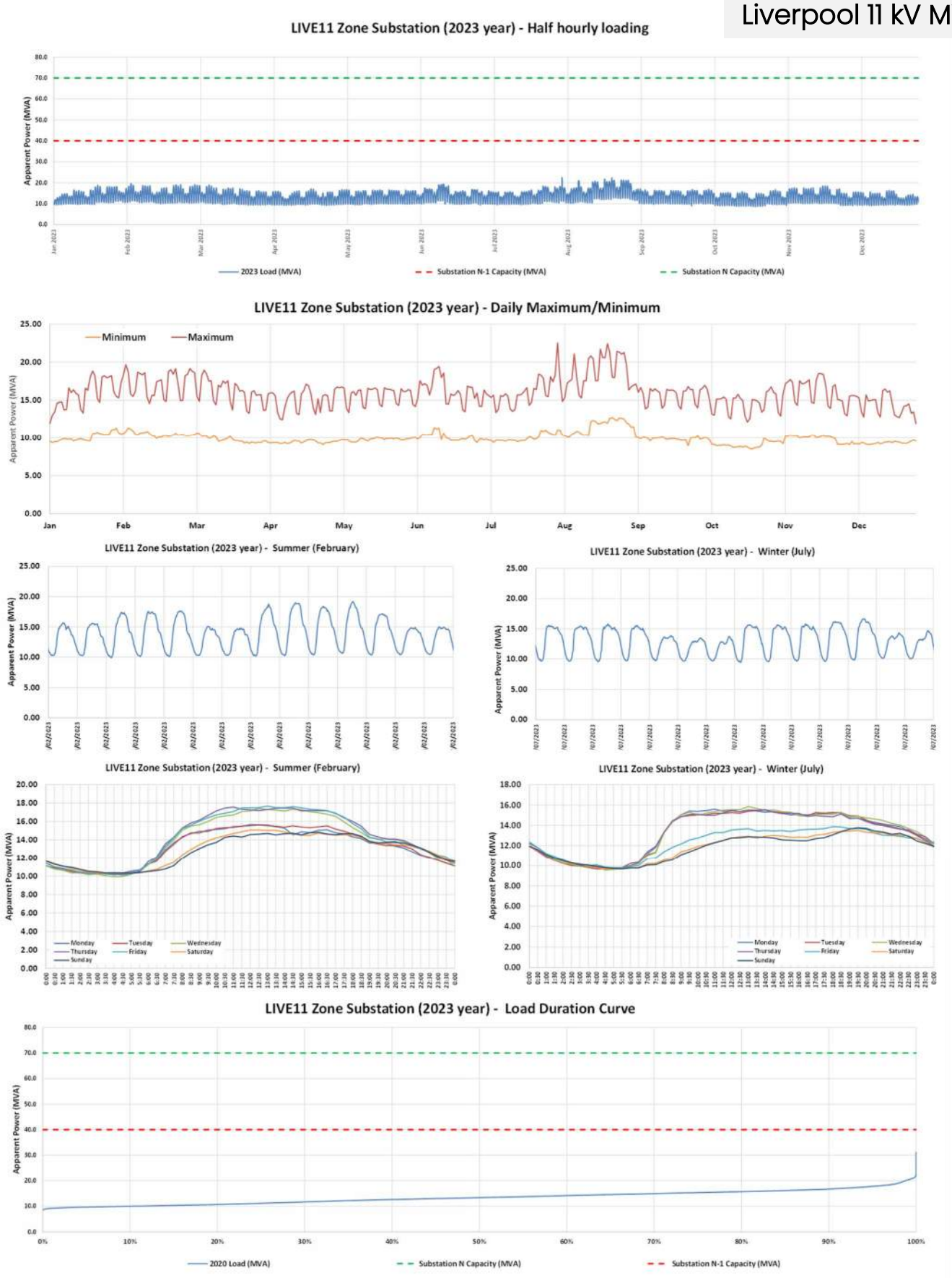

Figure 46. Liverpool 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Liverpool 22 kV MVA

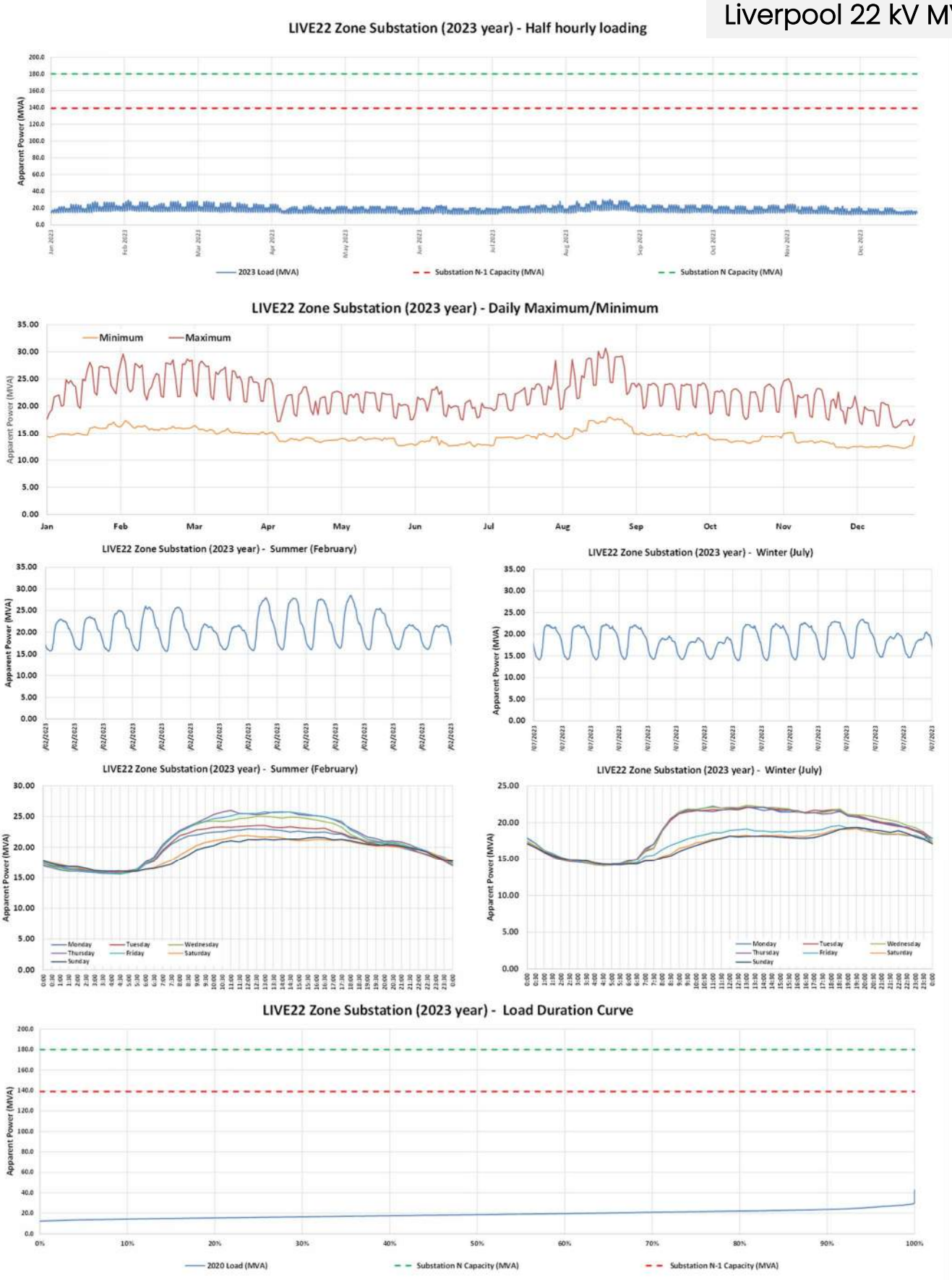

Figure 47. Liverpool 110/22 kV zone substation: Apparent Power (MVA) load characteristics

Mt Albert MVA

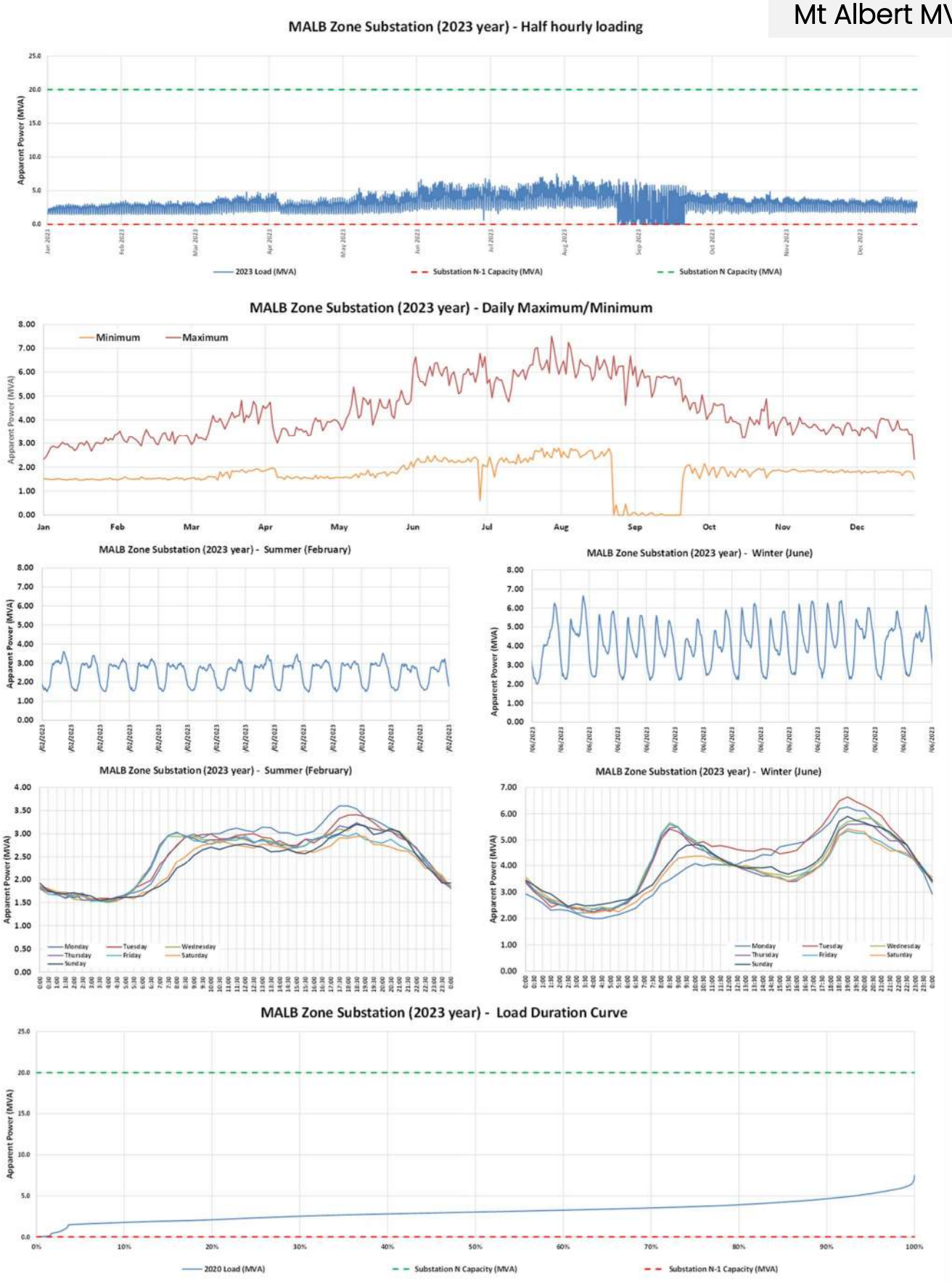

Figure 48. Mt Albert 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Manly MVA

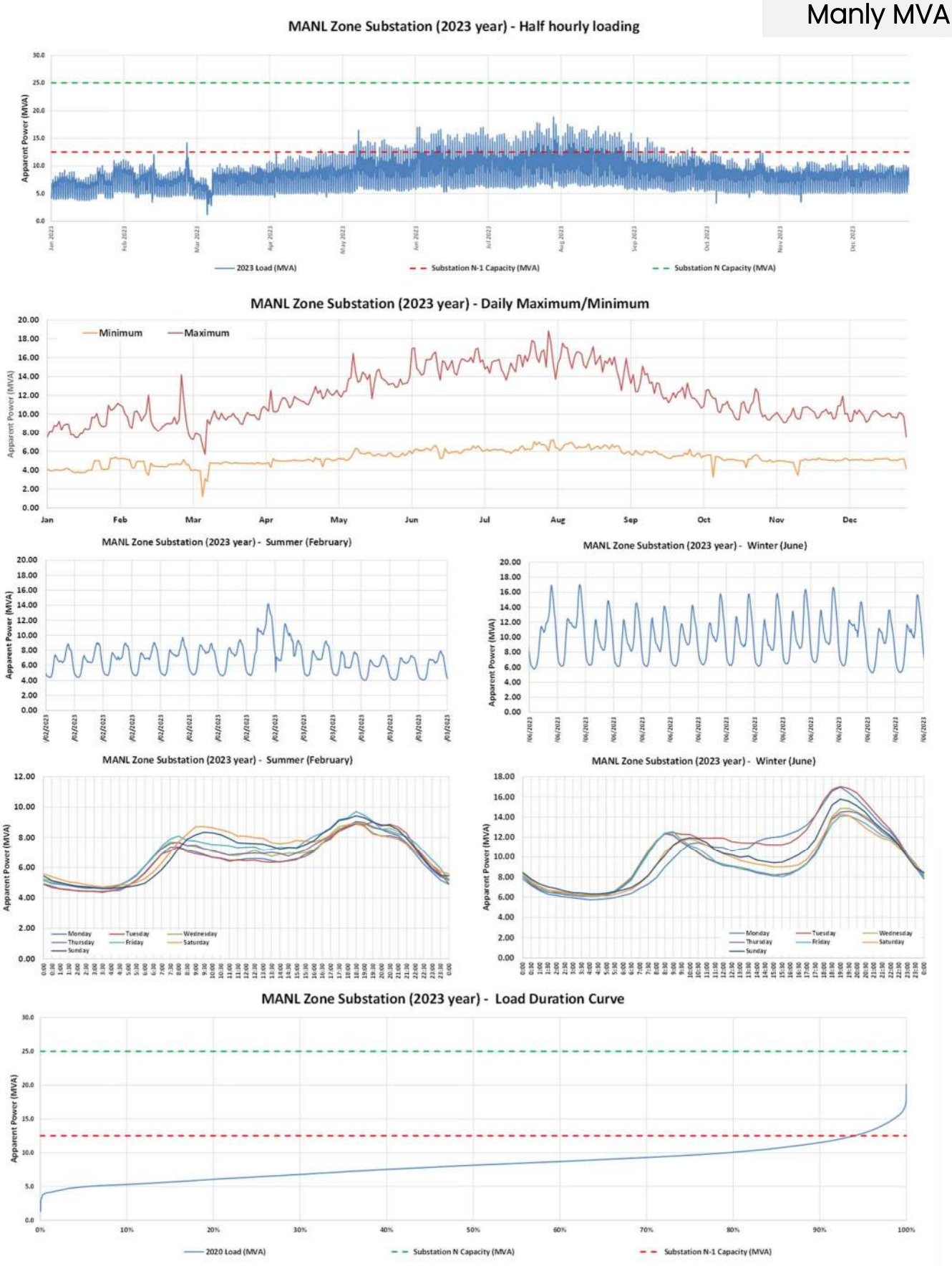

Figure 49. Manly 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Manurewa MVA

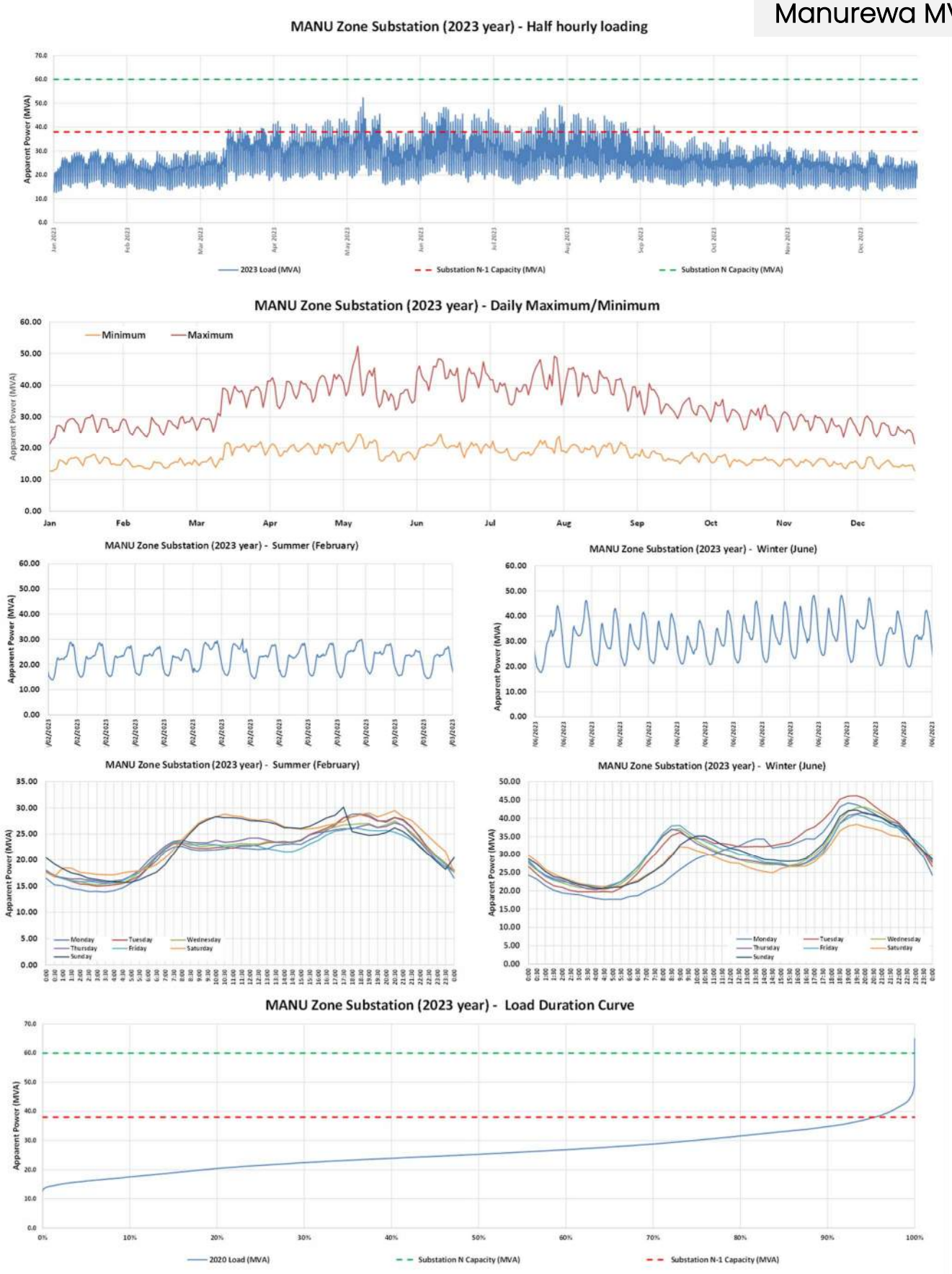

Figure 50. Manurewa 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Maraetai MVA

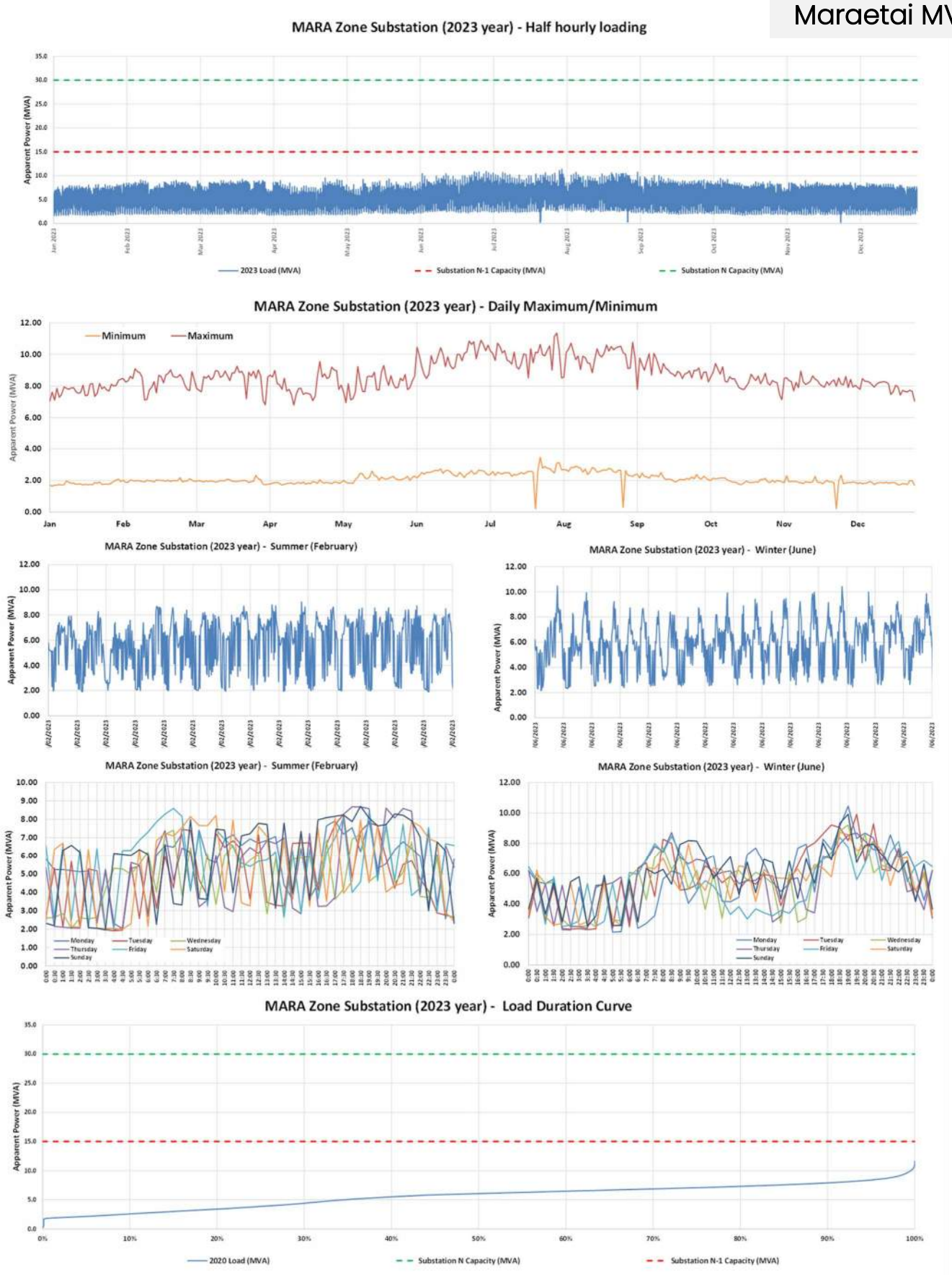

Figure 51. Maraetai 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Māngere Central MVA

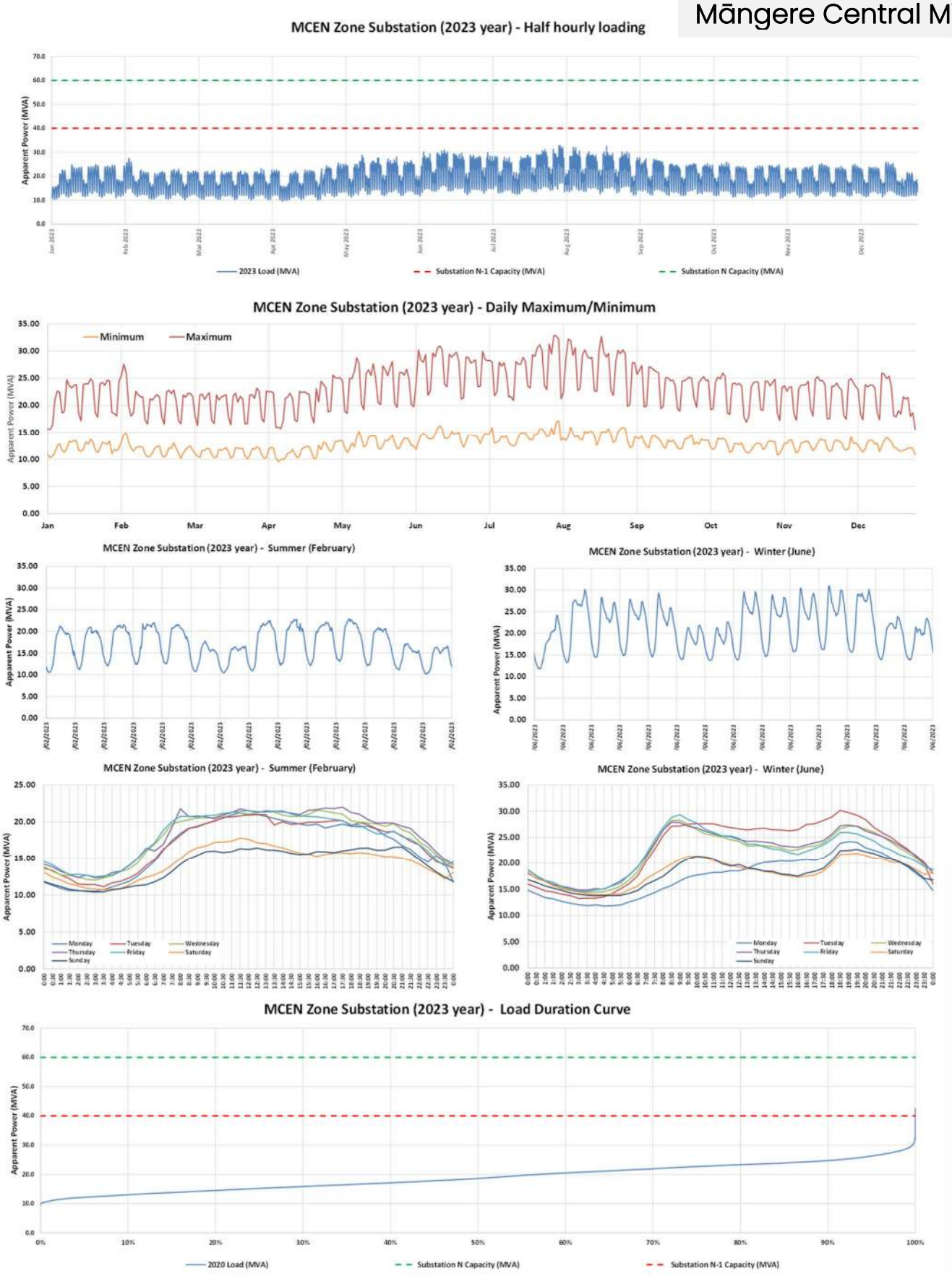

Figure 52. Māngere Central 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Māngere East MVA

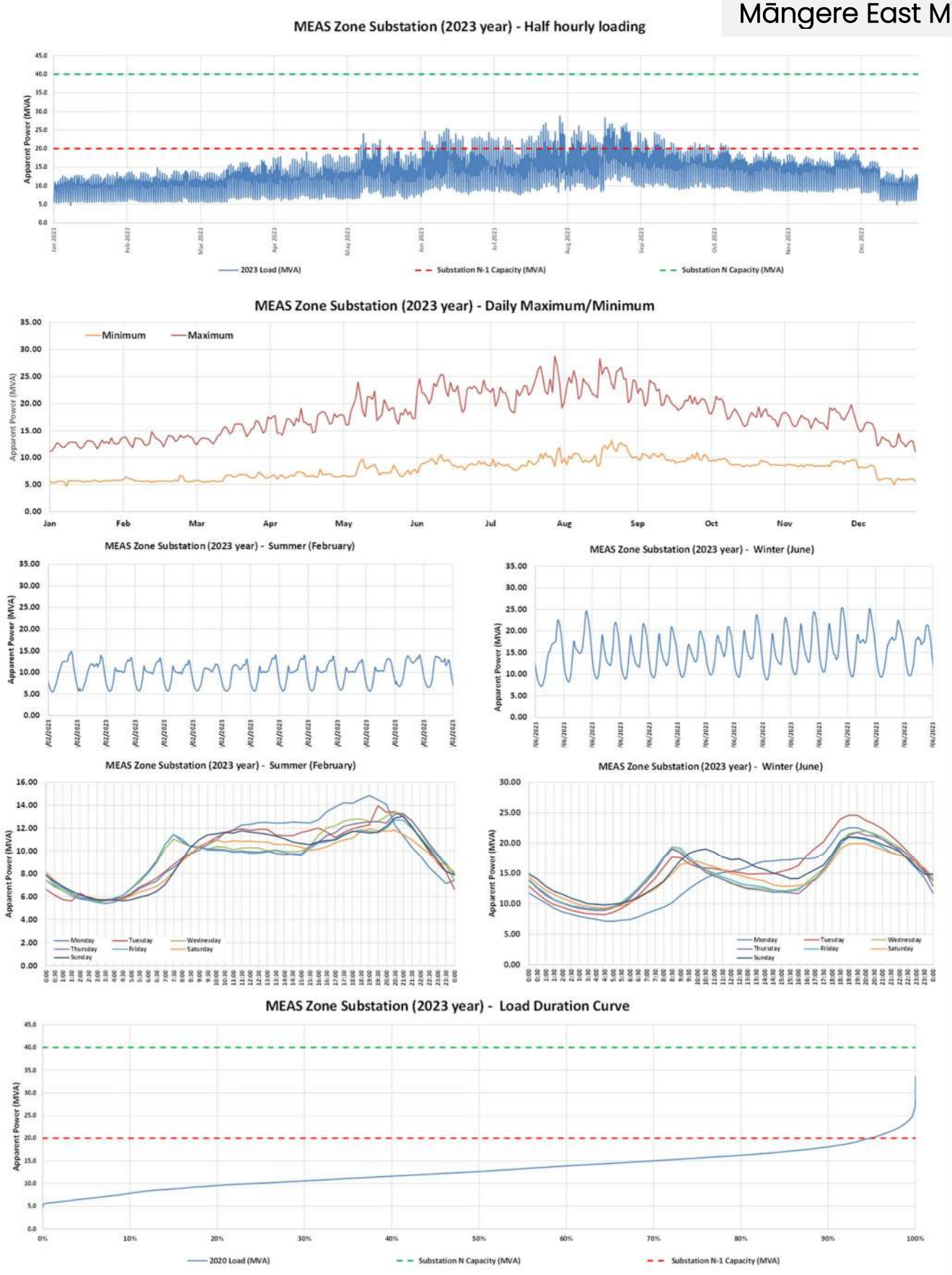

Figure 53. Māngere East 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Milford MVA

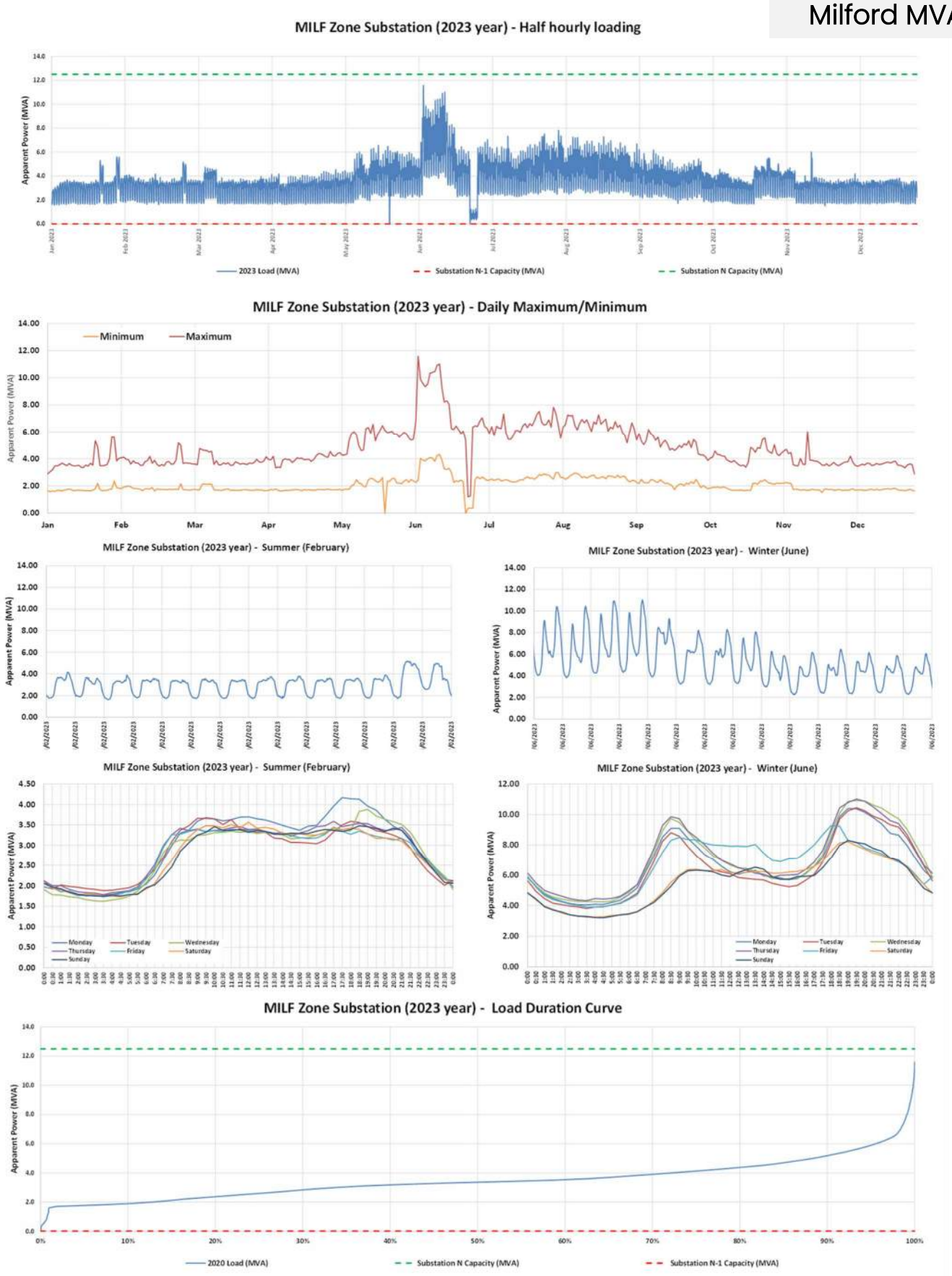

Figure 54. Milford 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Manukau MVA

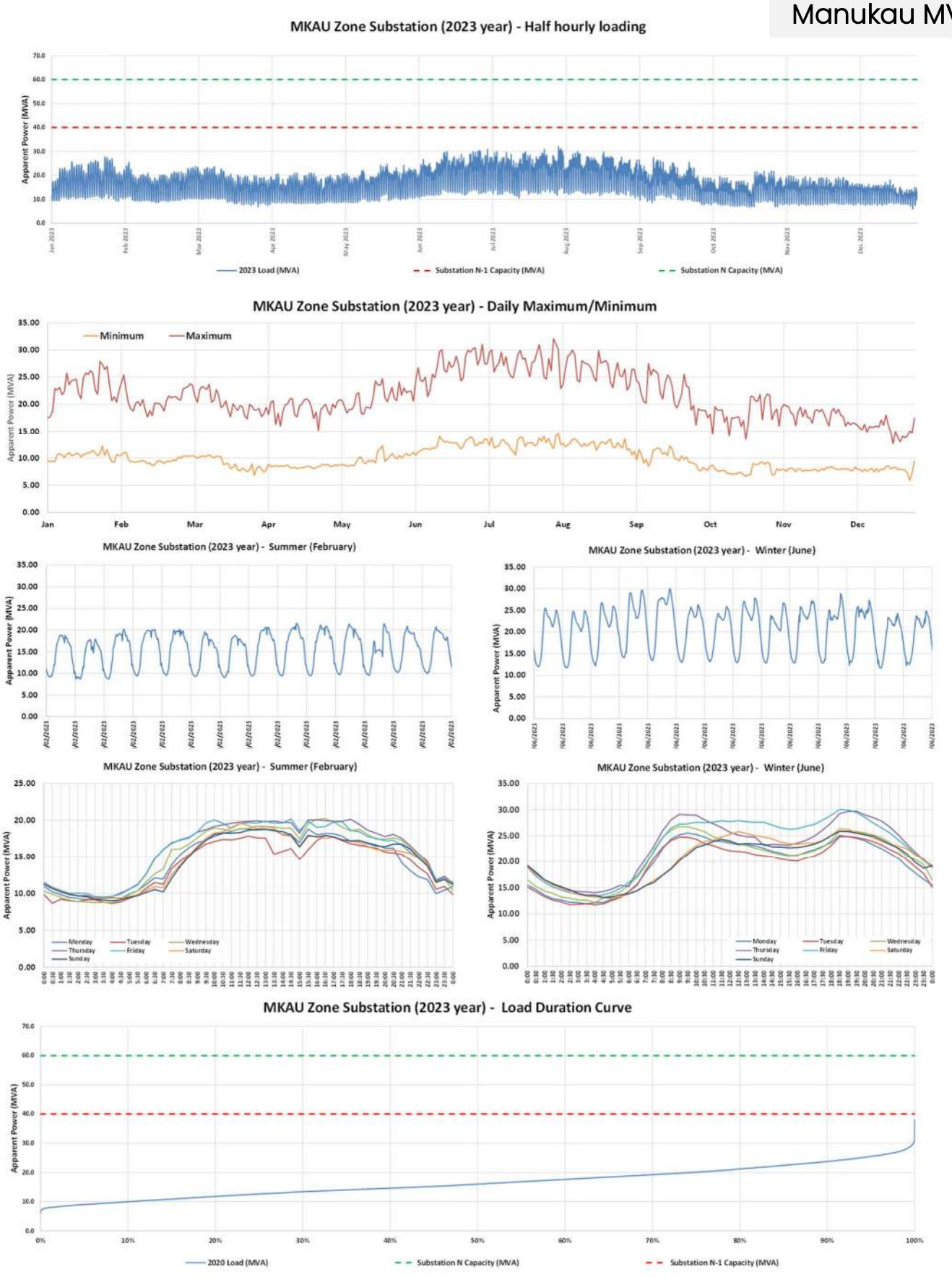

Figure 55. Manukau 33/11 kV zone substation: Apparent Power (MVA) load characteristics

McKinnon MVA

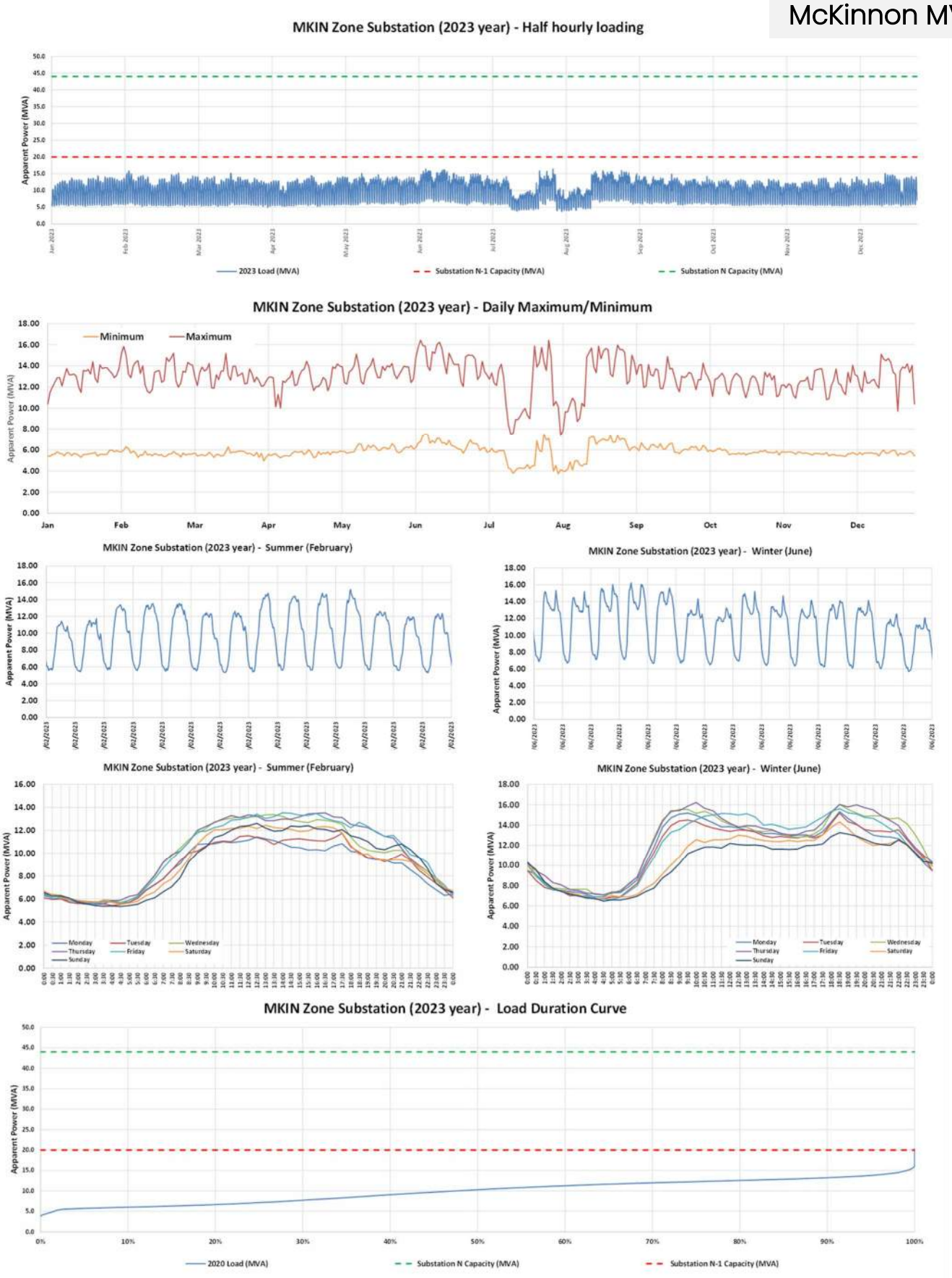

Figure 56. McKinnon 33/11 kV zone substation: Apparent Power (MVA) load characteristics

McLeod Road MVA

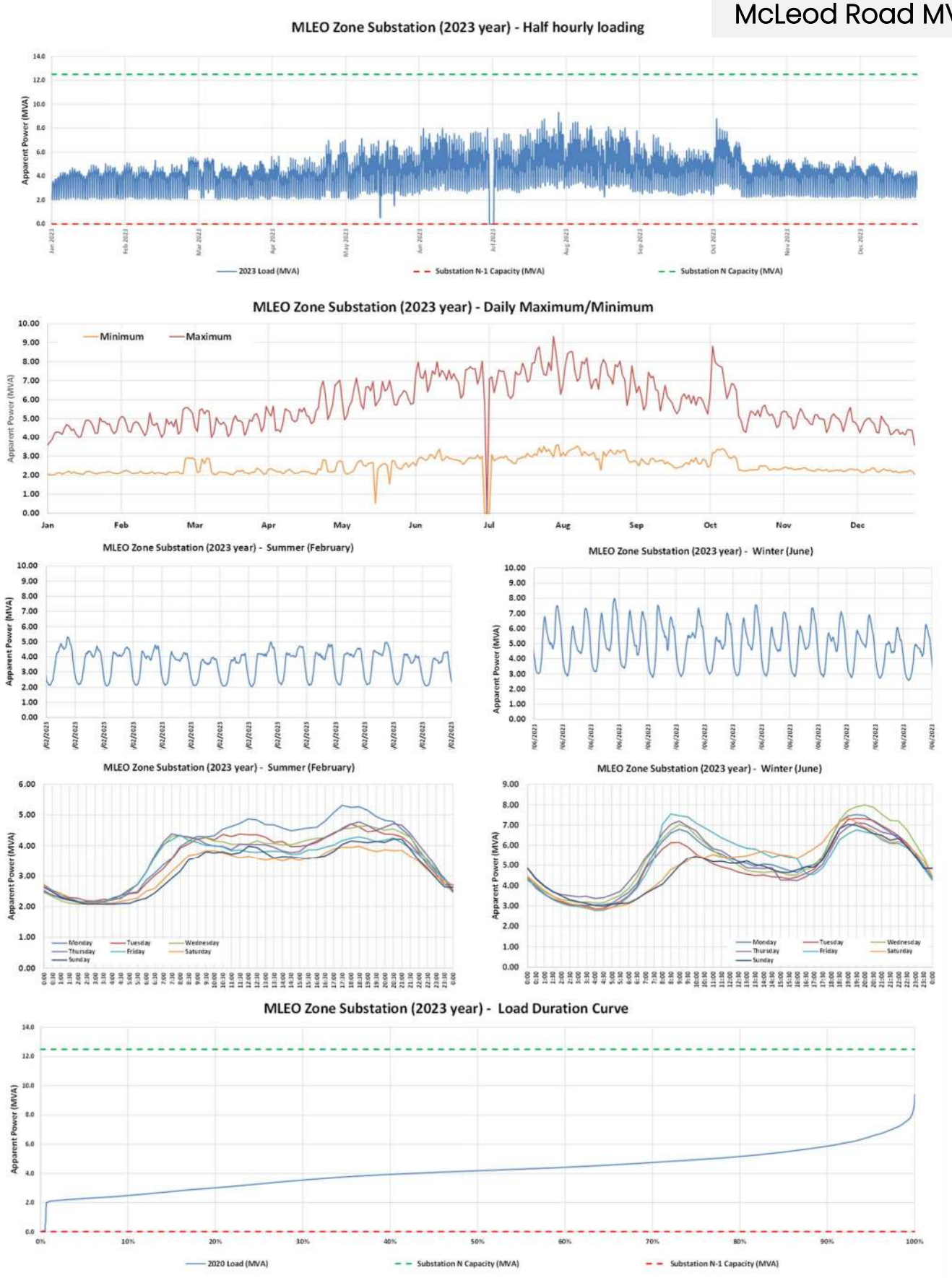

Figure 57. McLeod Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

McNab MVA

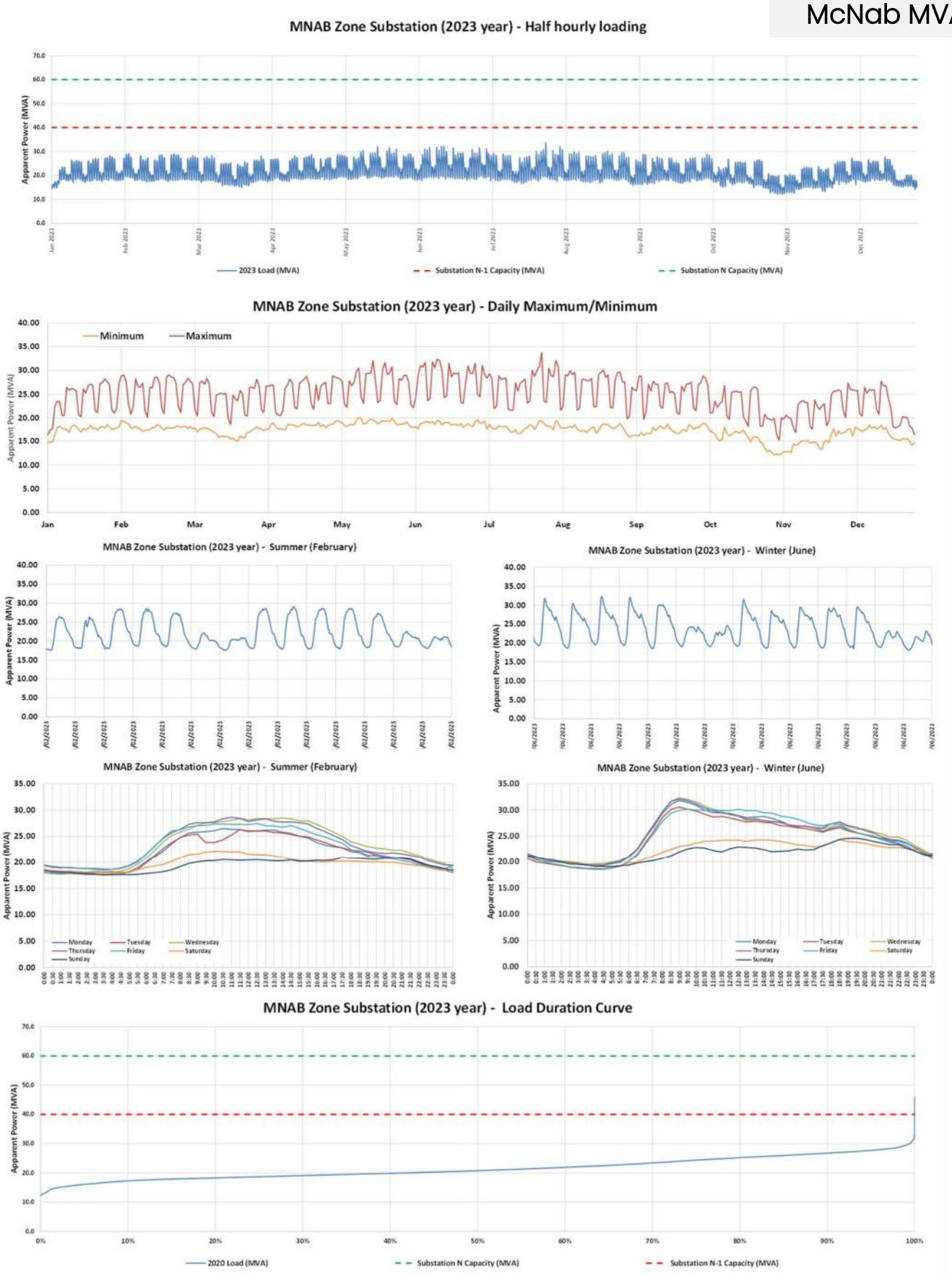

Figure 58. McNab 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Mt Wellington MVA

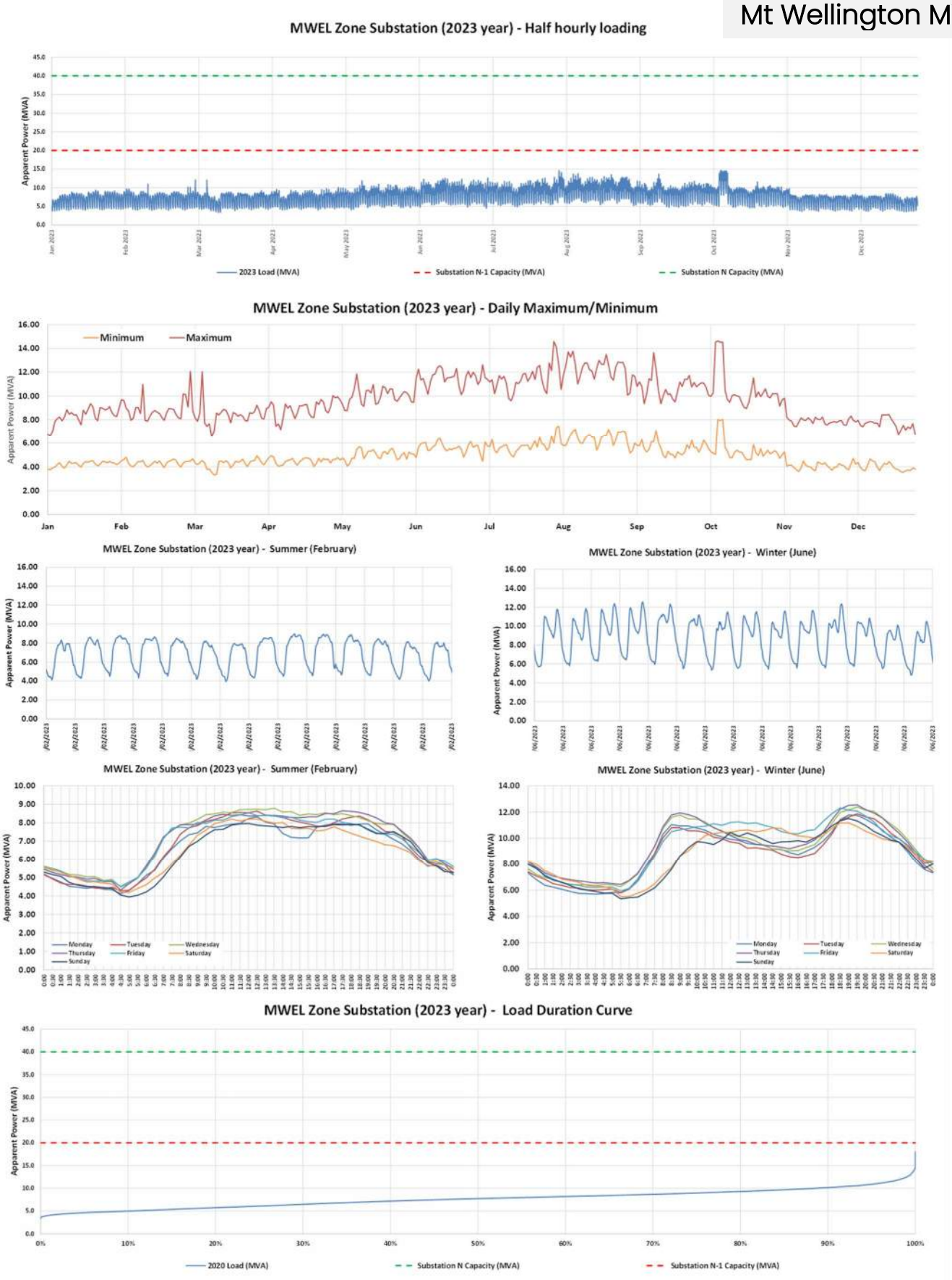

Figure 59. Mt Wellington 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Māngere West MVA

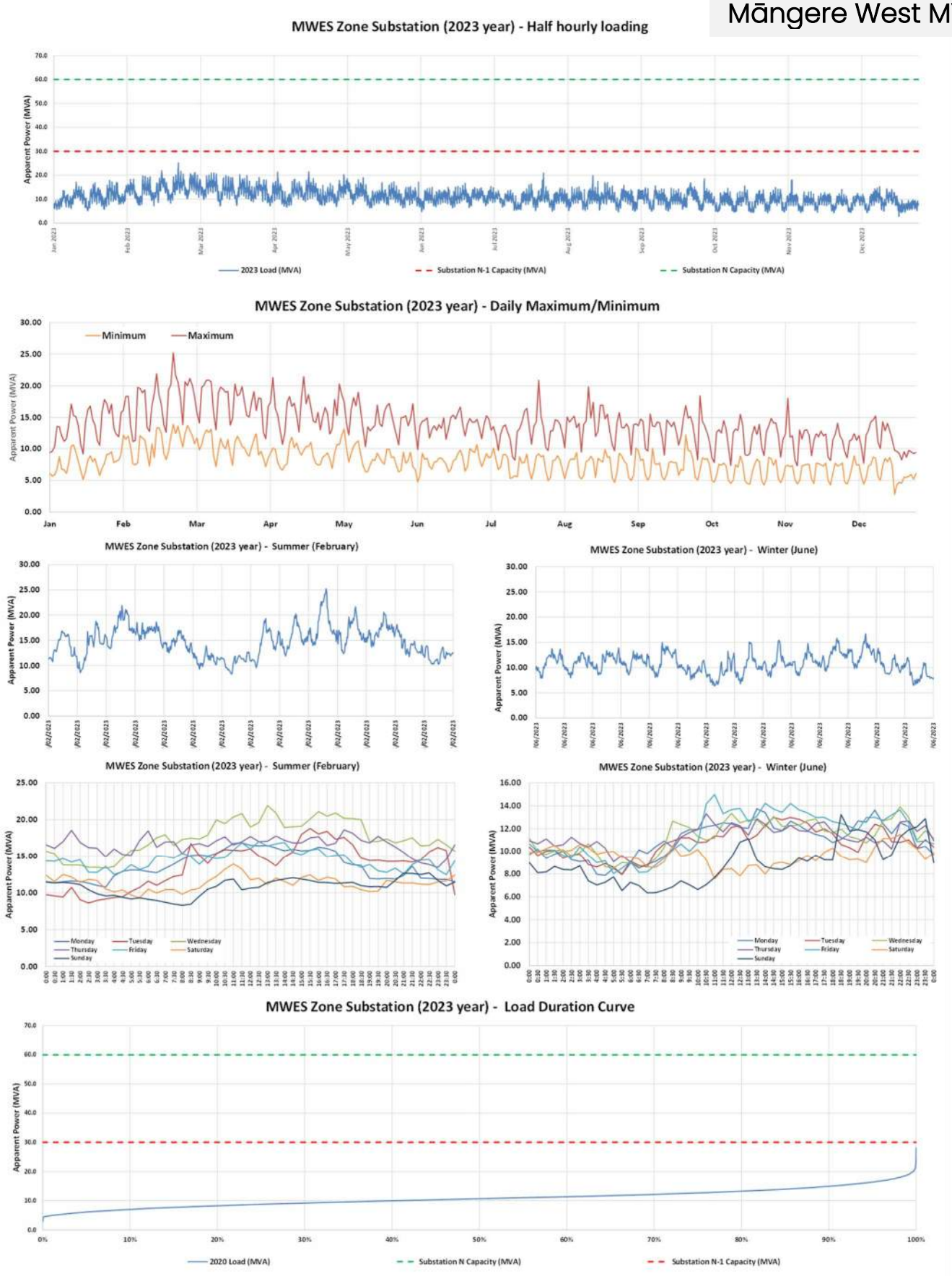

Figure 60. Māngere West 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Northcote MVA

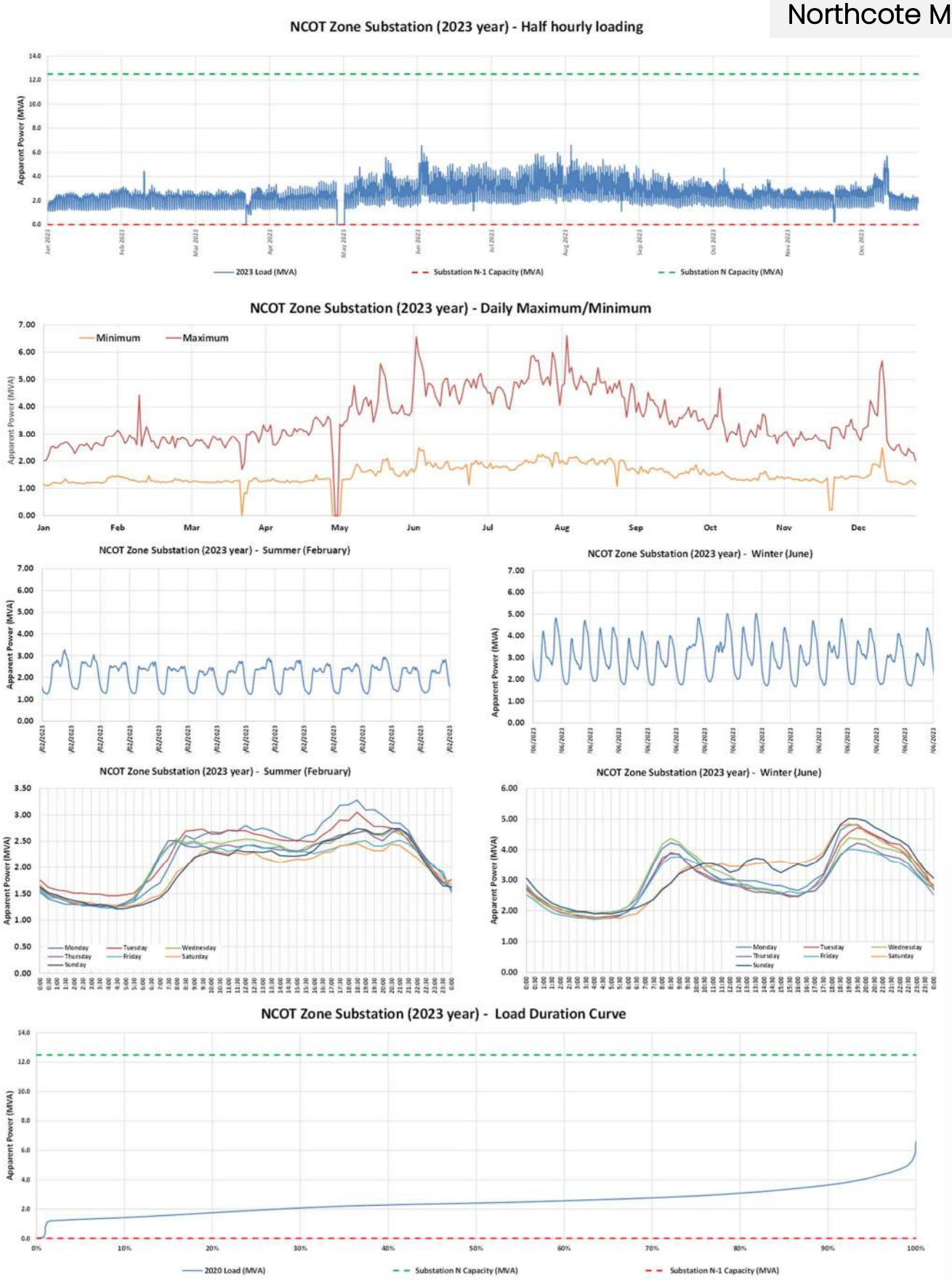

Figure 61. Northcote 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Newmarket MVA

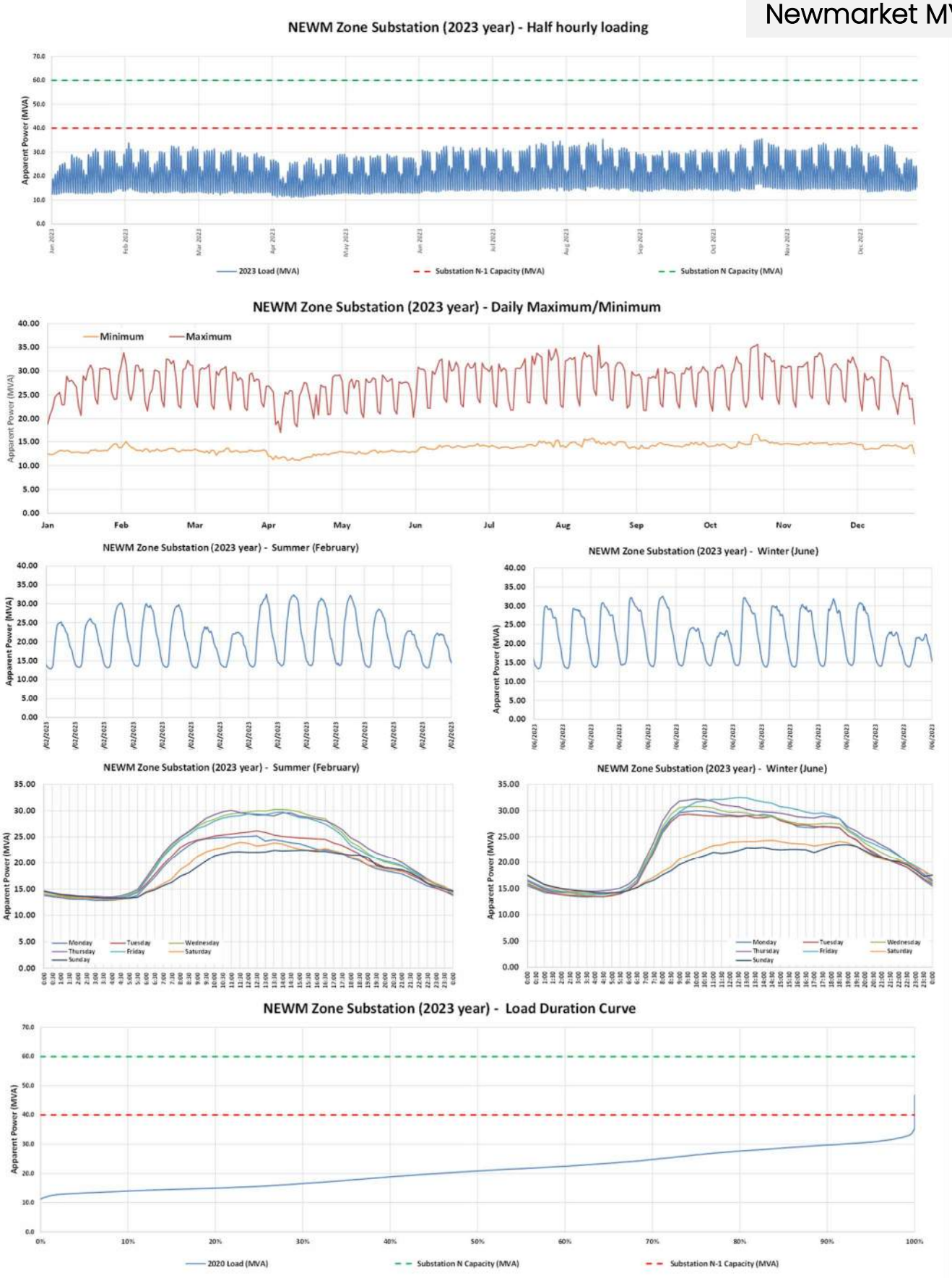

Figure 62. Newmarket 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Newton MVA

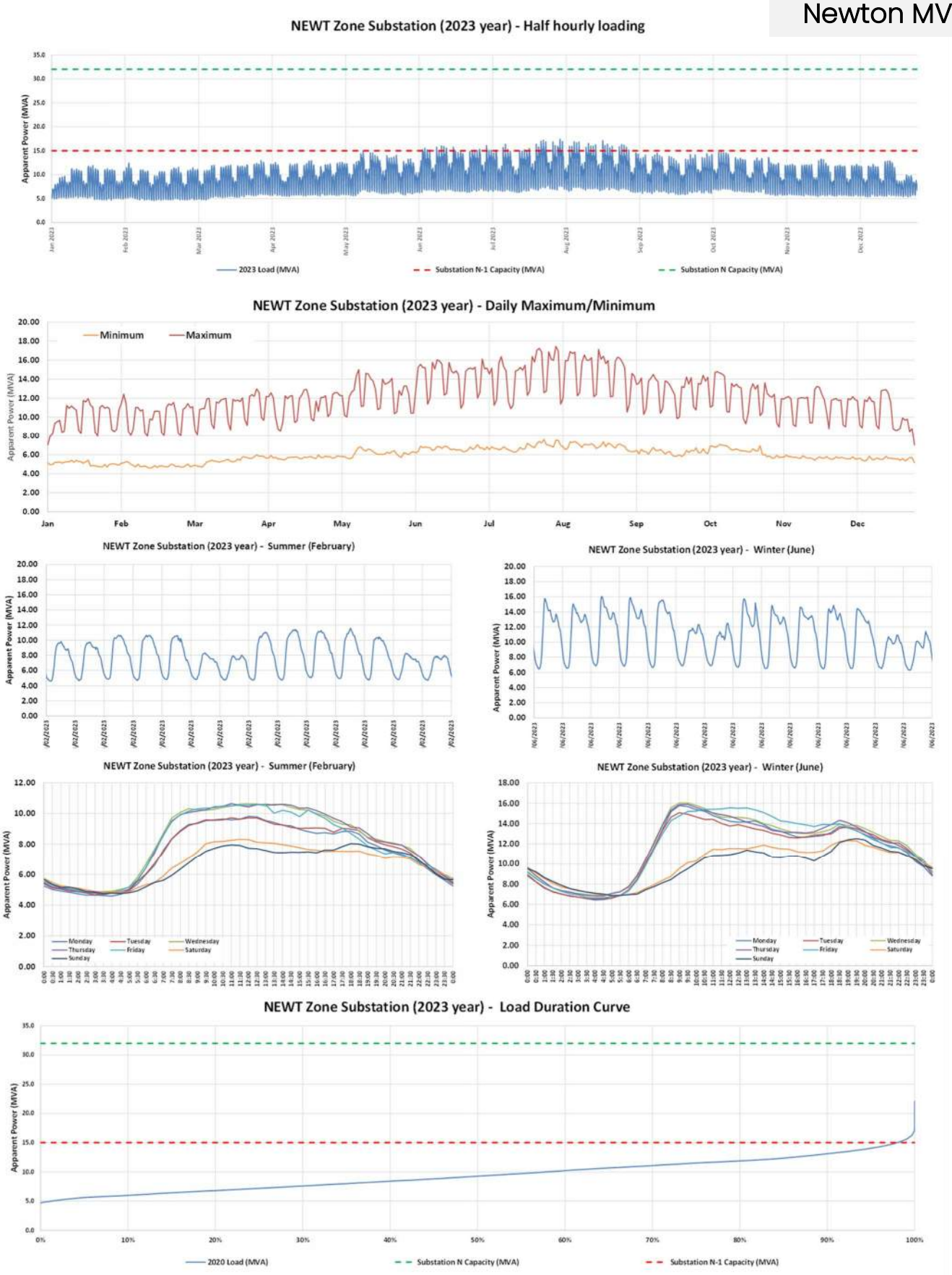

Figure 63. Newton 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Ngātaringa Bay MVA

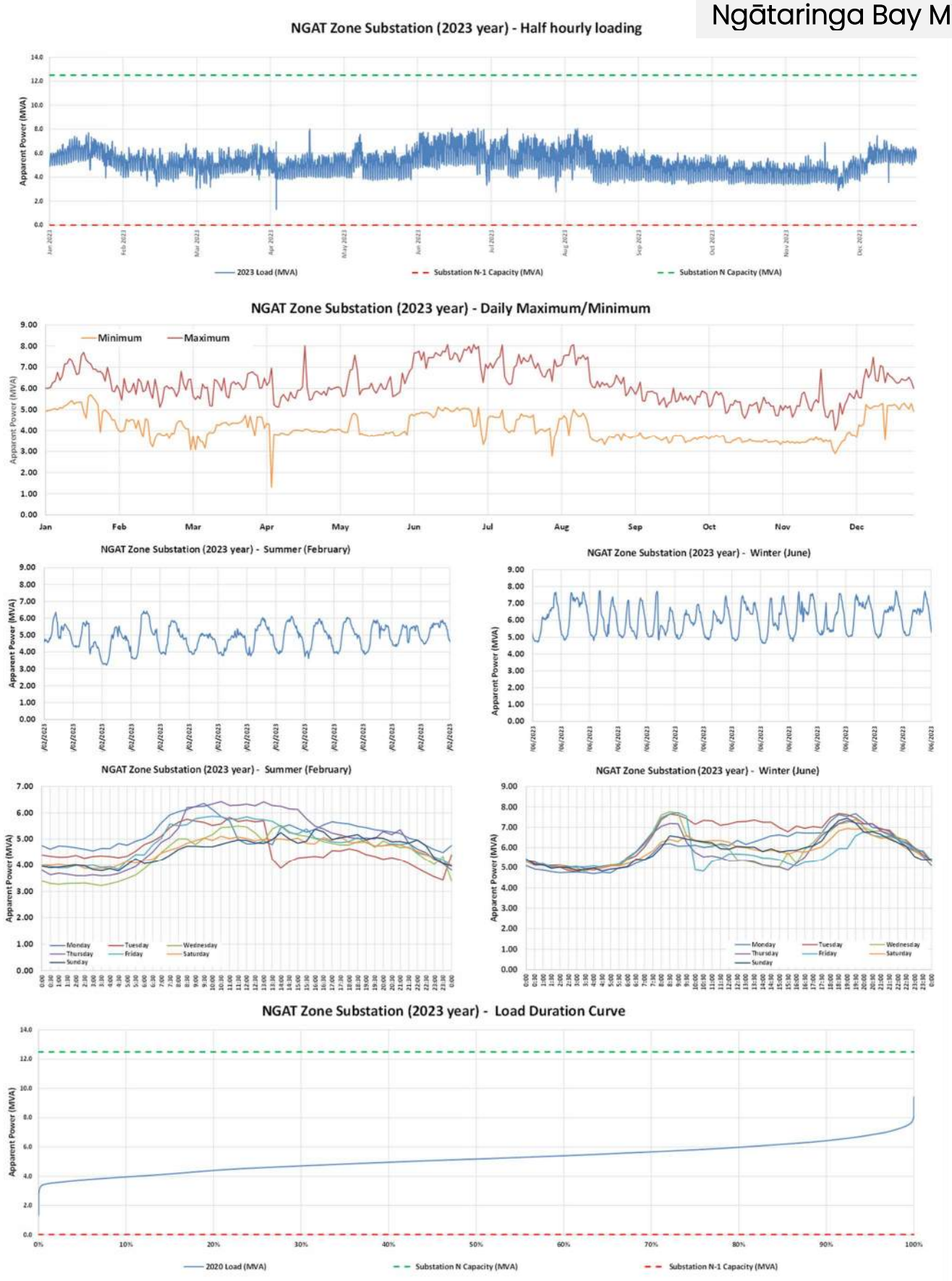

Figure 64. Ngātaringa Bay 33/11 kV zone substation: Apparent Power (MVA) load characteristics

New Lynn MVA

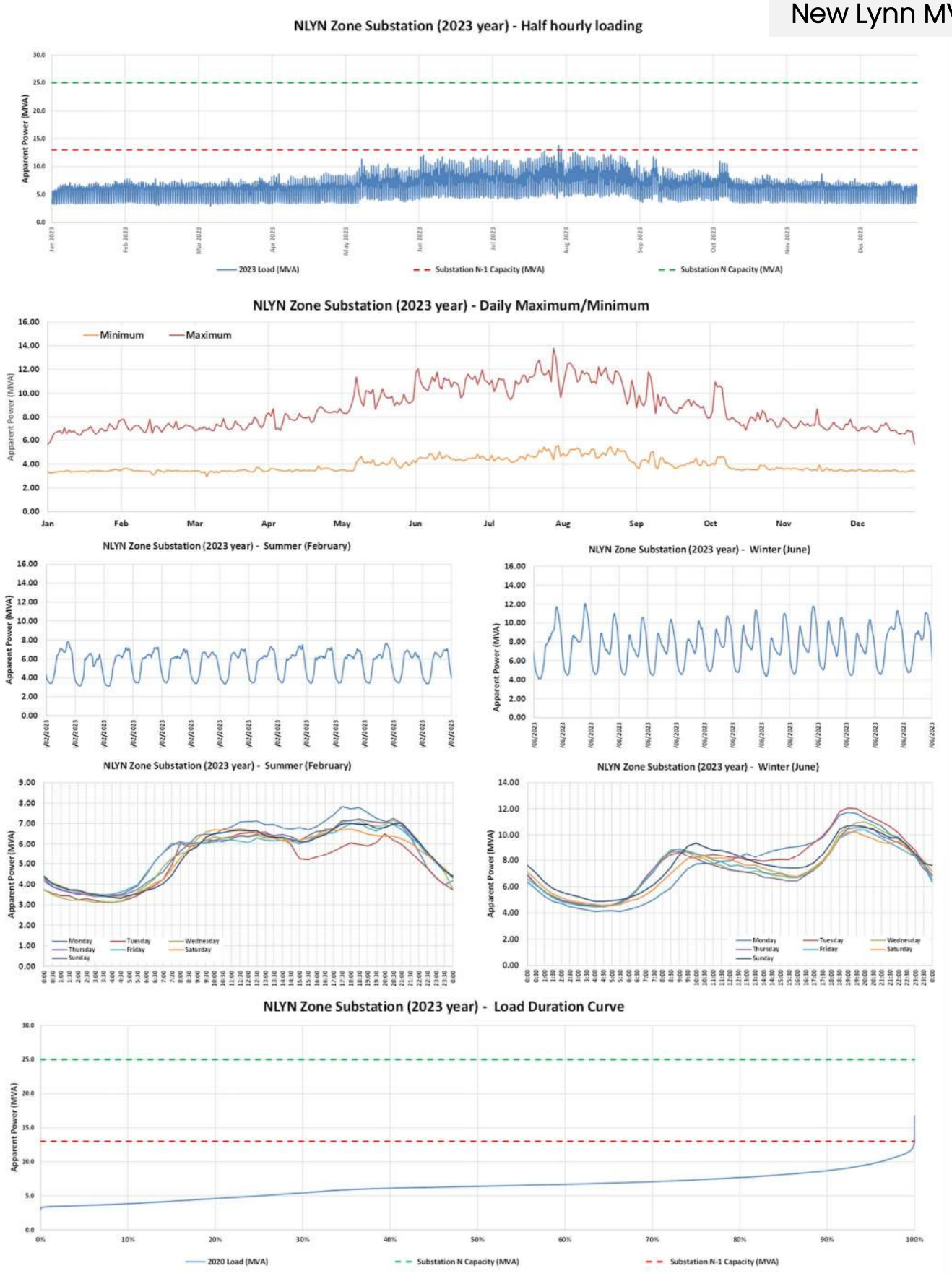

Figure 65. New Lynn 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Onehunga MVA

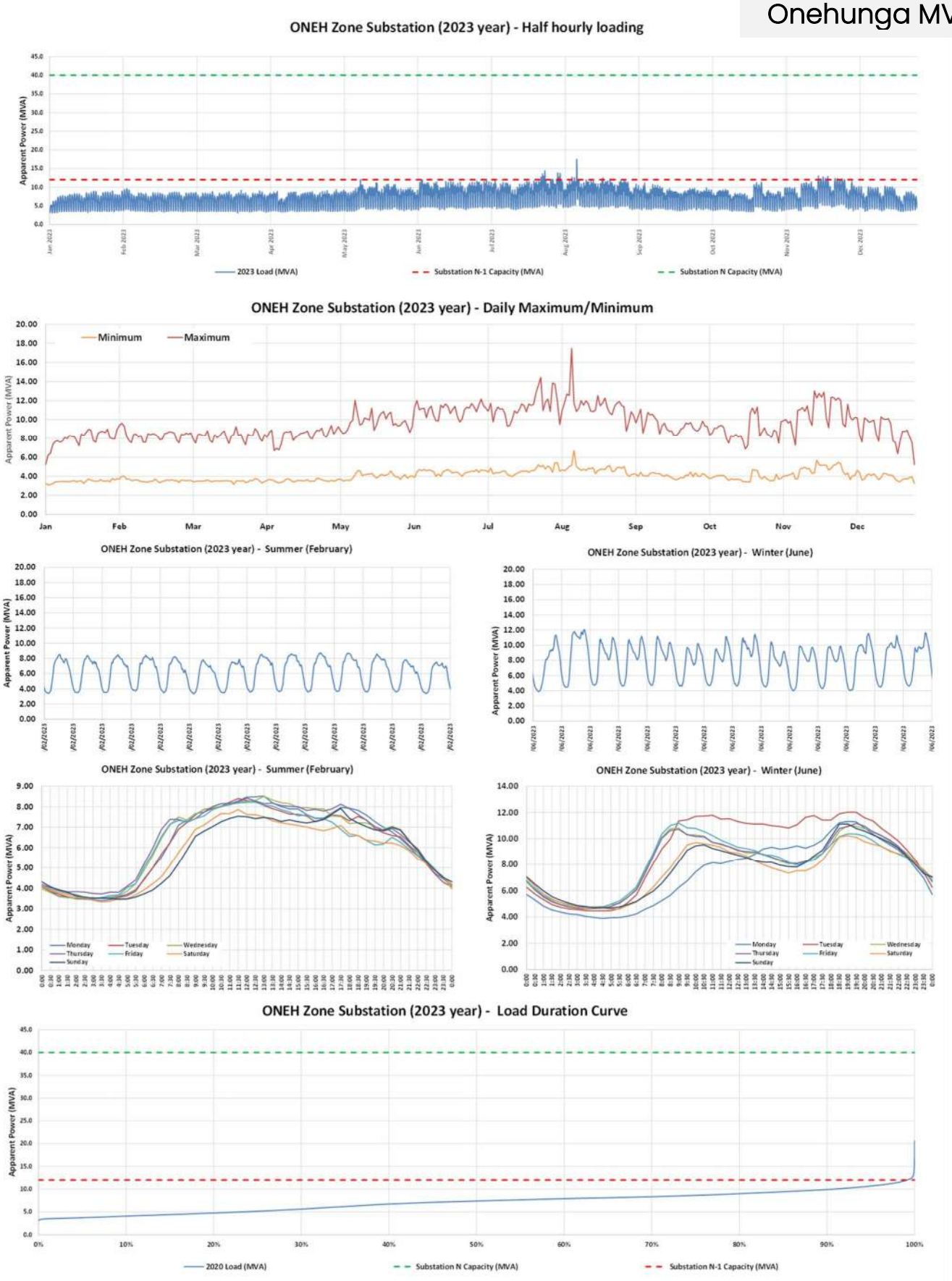

Figure 66. Onehunga 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Ōrākei MVA

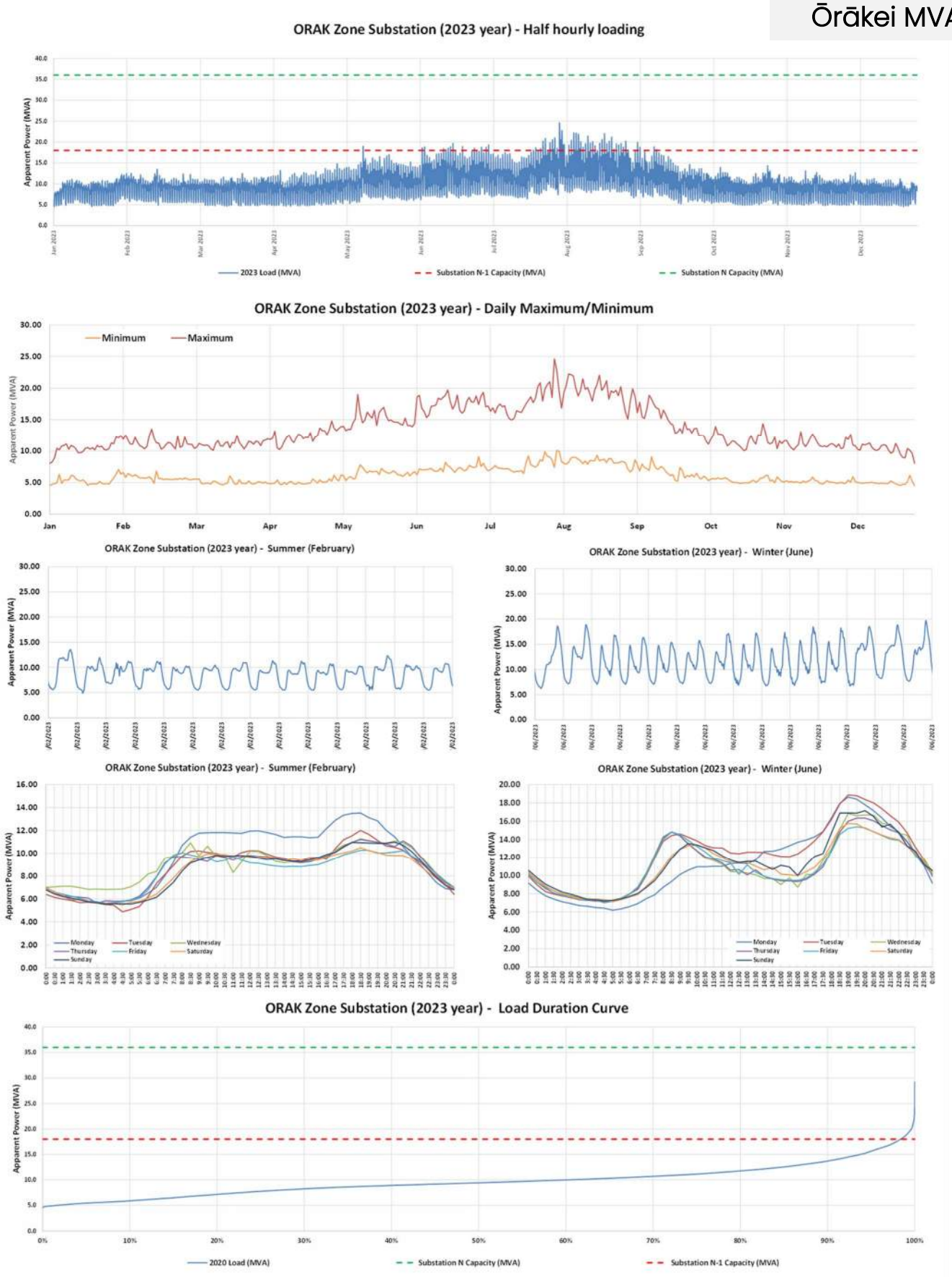

Figure 67. Ōrākei 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Oratia MVA

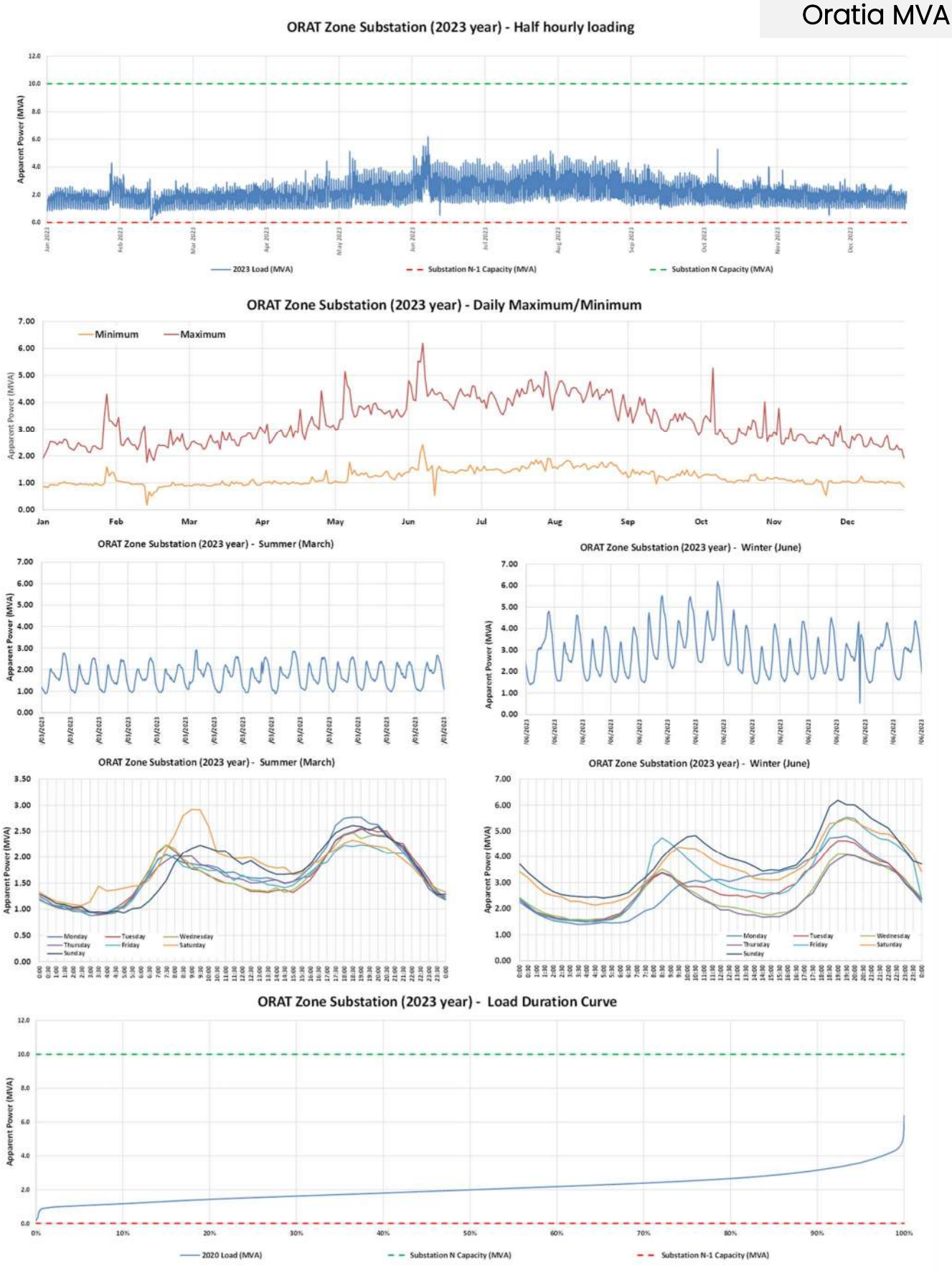

Figure 68. Oratia 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Ōrewa MVA

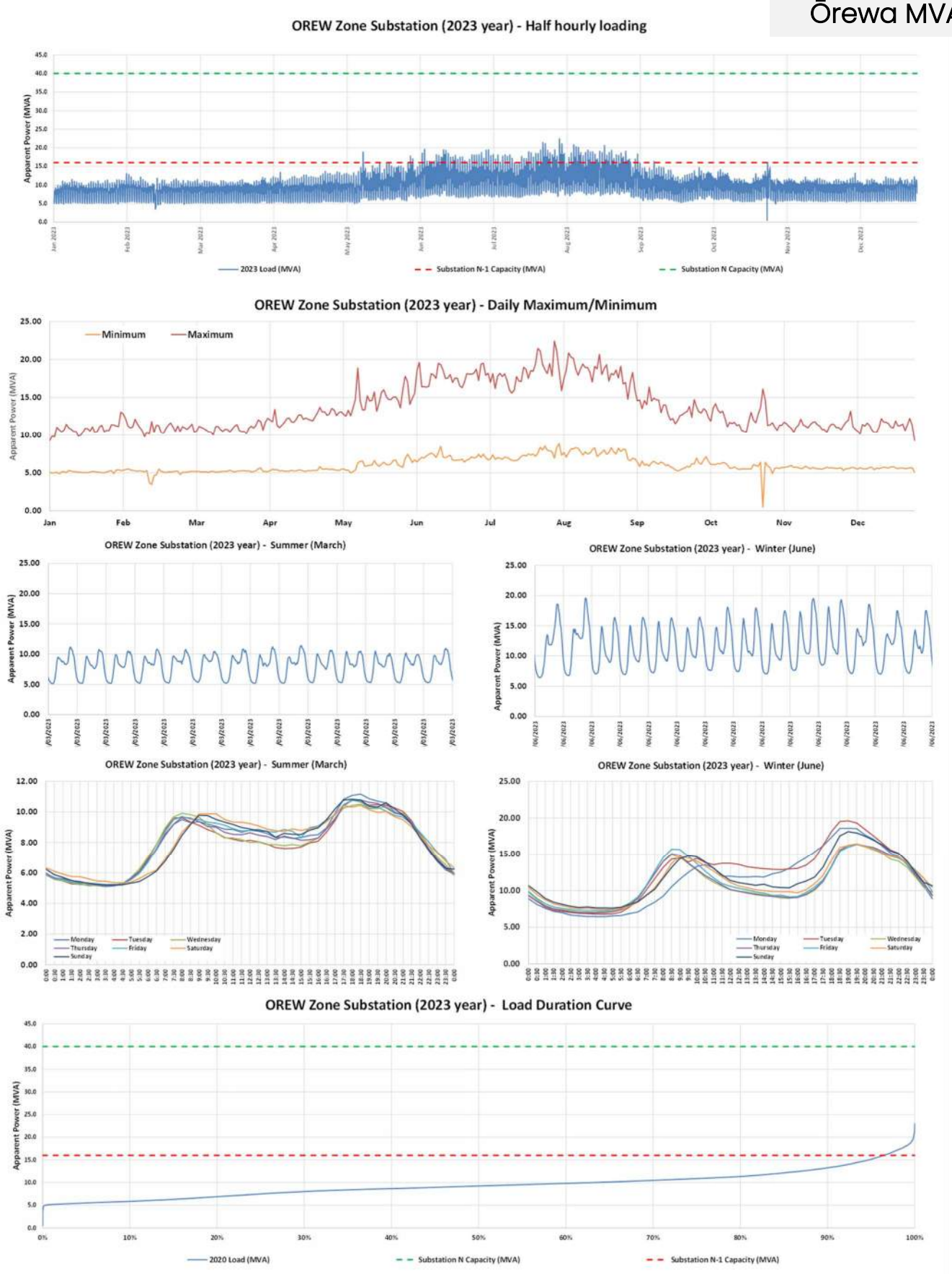

Figure 69. Ōrewa 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Ōtara MVA

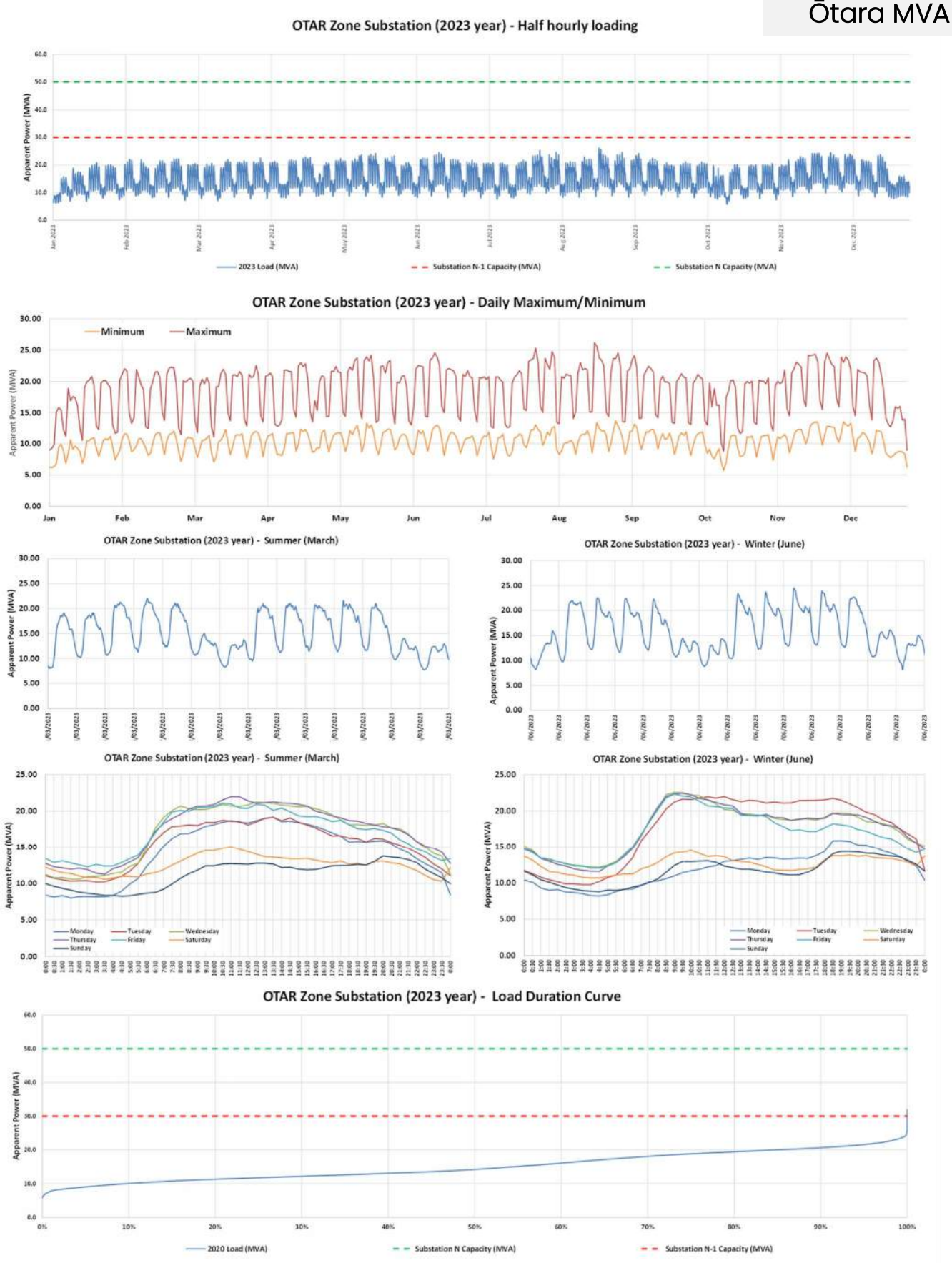

Figure 70. Ōtara 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Quay 11 kV MVA

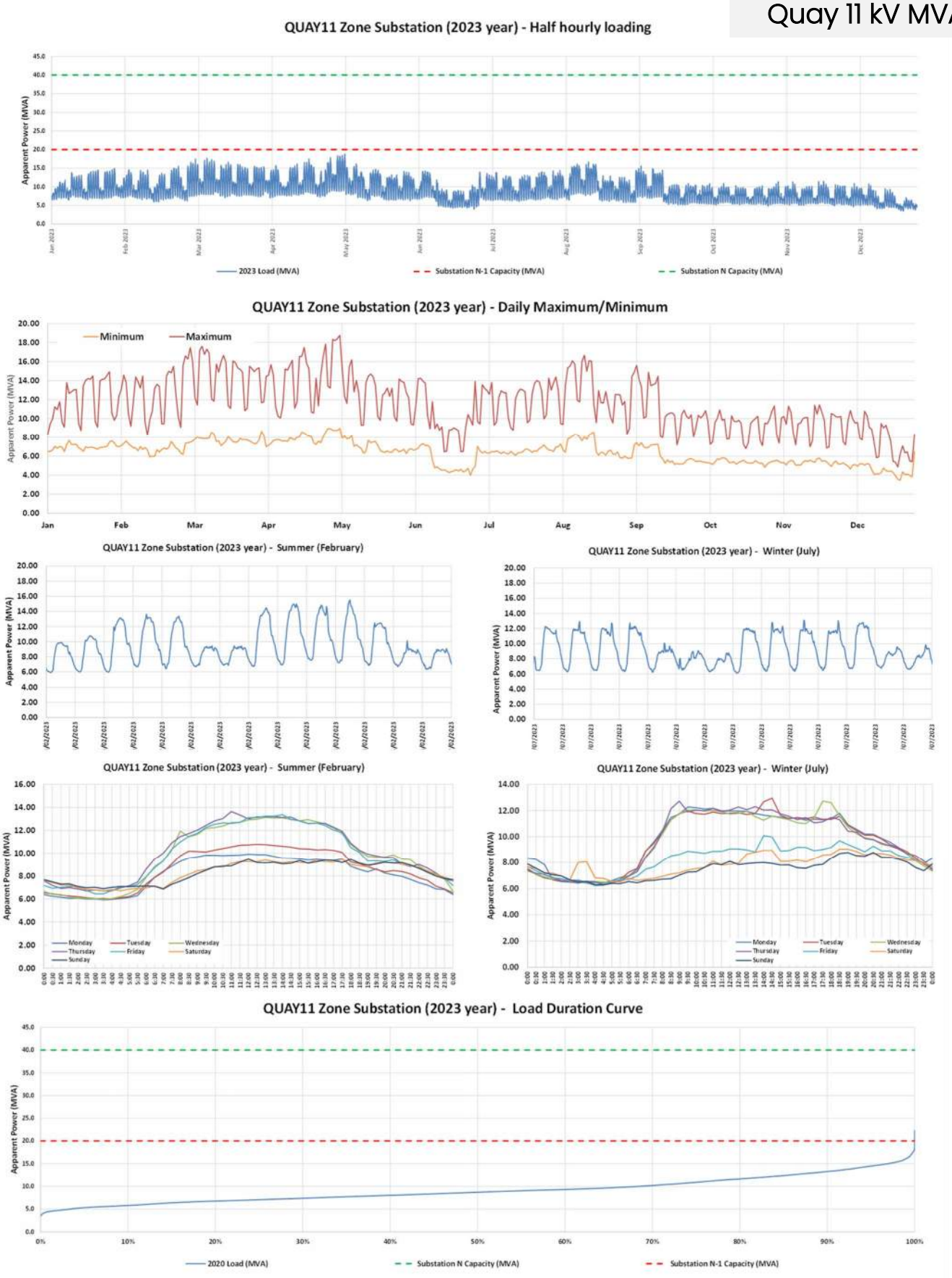

Figure 71. Quay 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Quay 22 kV MVA

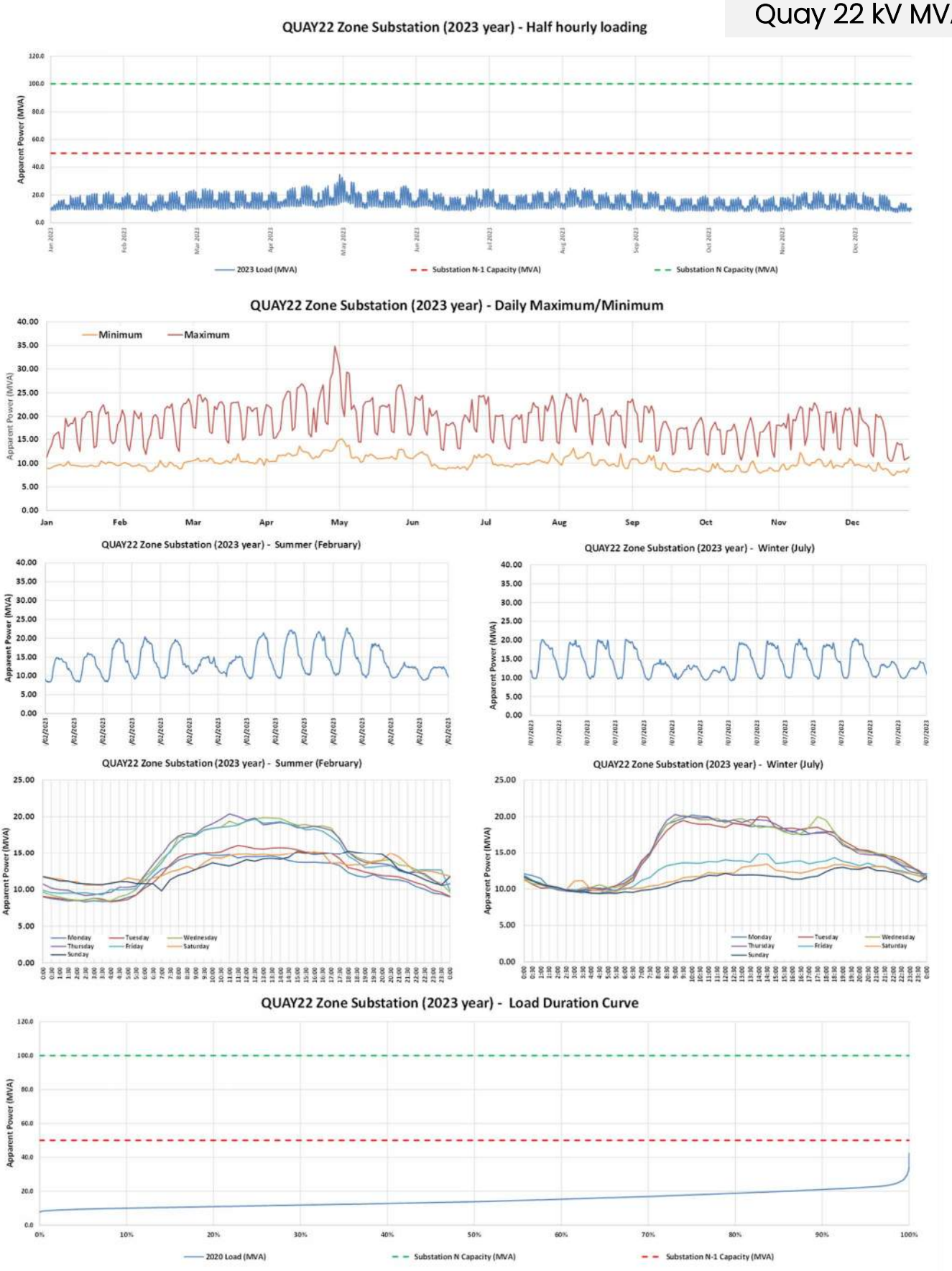

Figure 72. Quay 110/22 kV zone substation: Apparent Power (MVA) load characteristics

Pacific Steel MVA

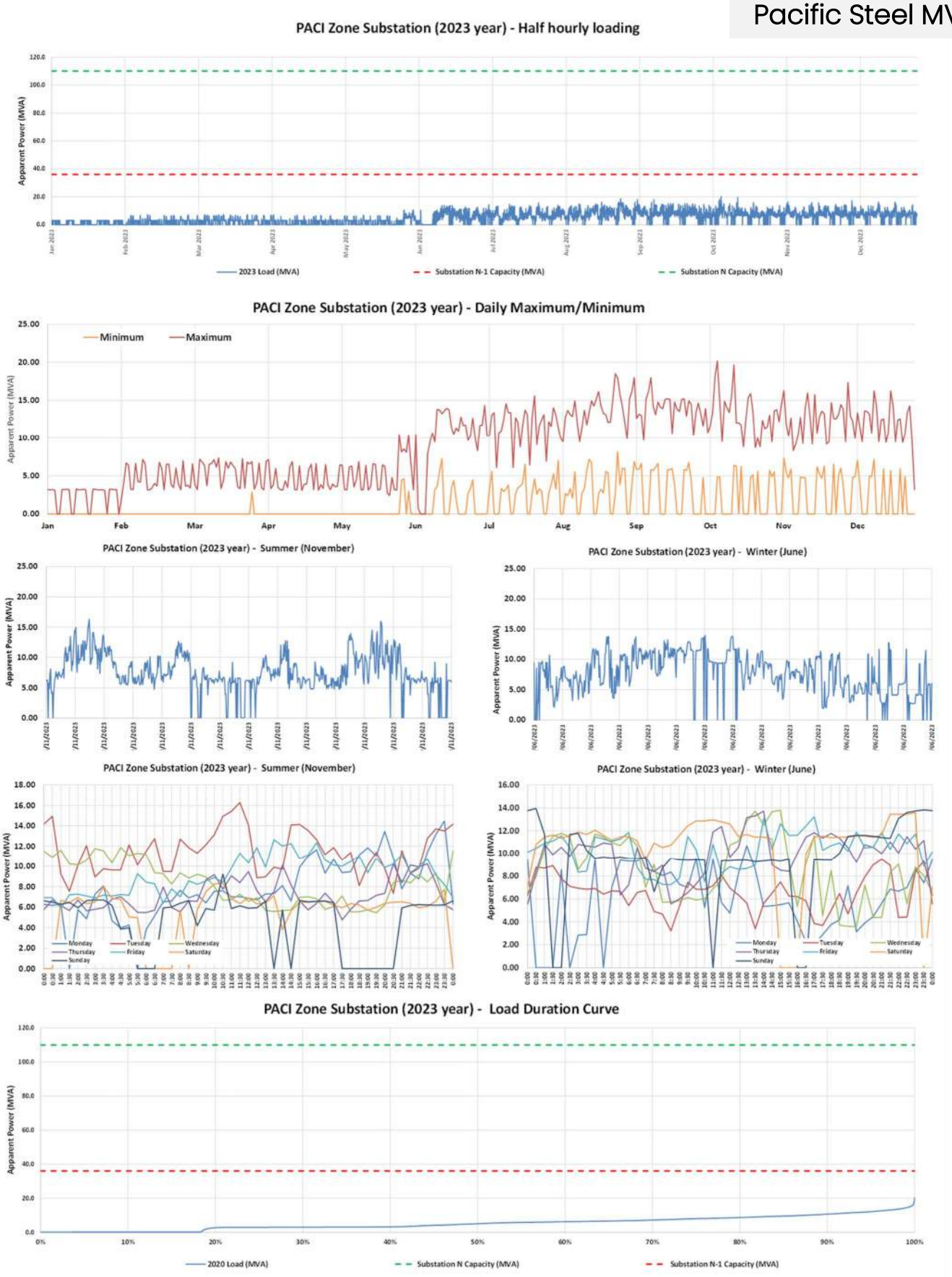

Figure 73. Pacific Steel 110/11 kV zone substation: Apparent Power (MVA) load characteristics

Pakuranga MVA

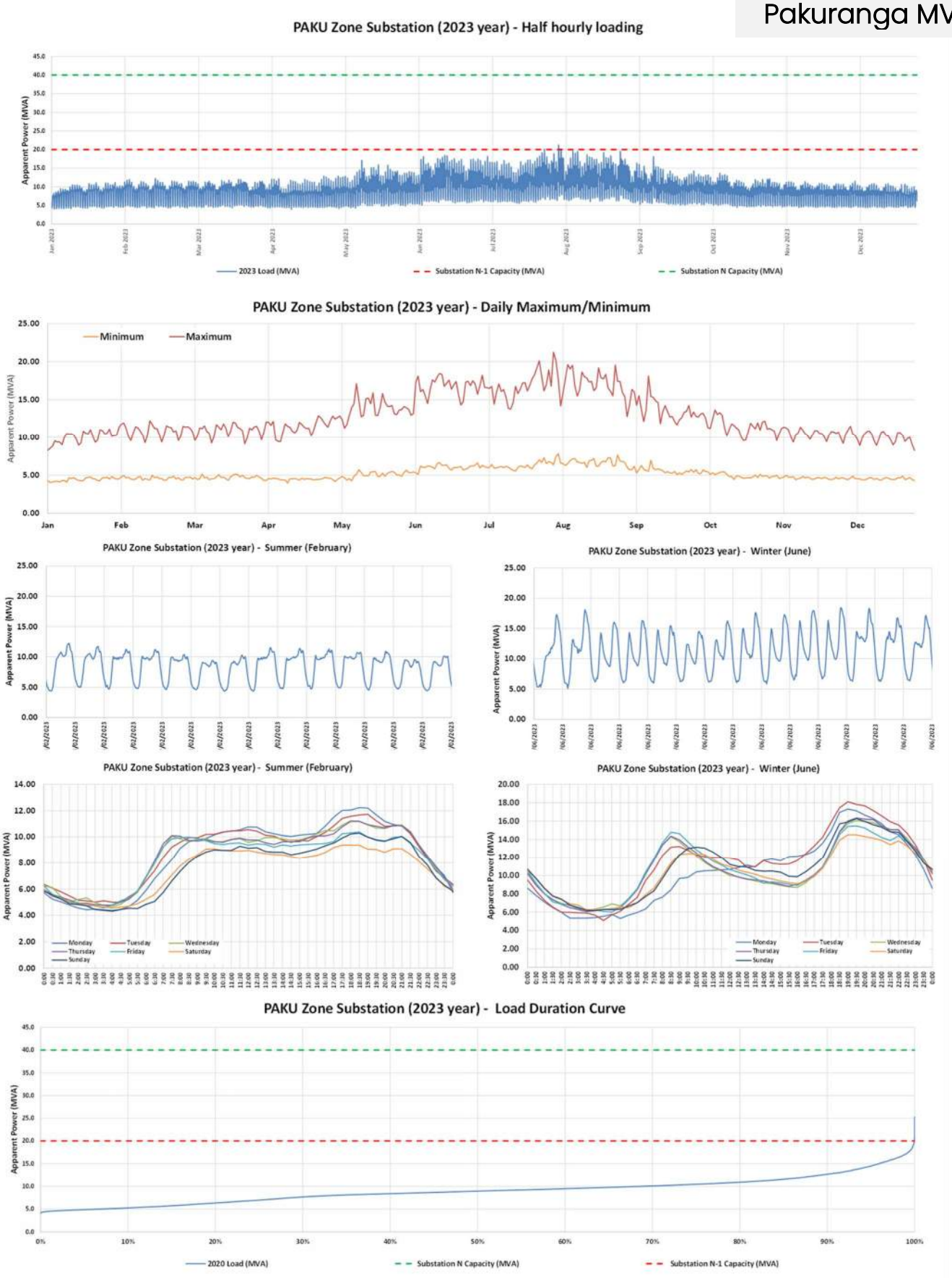

Figure 74. Pakuranga 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Papakura MVA

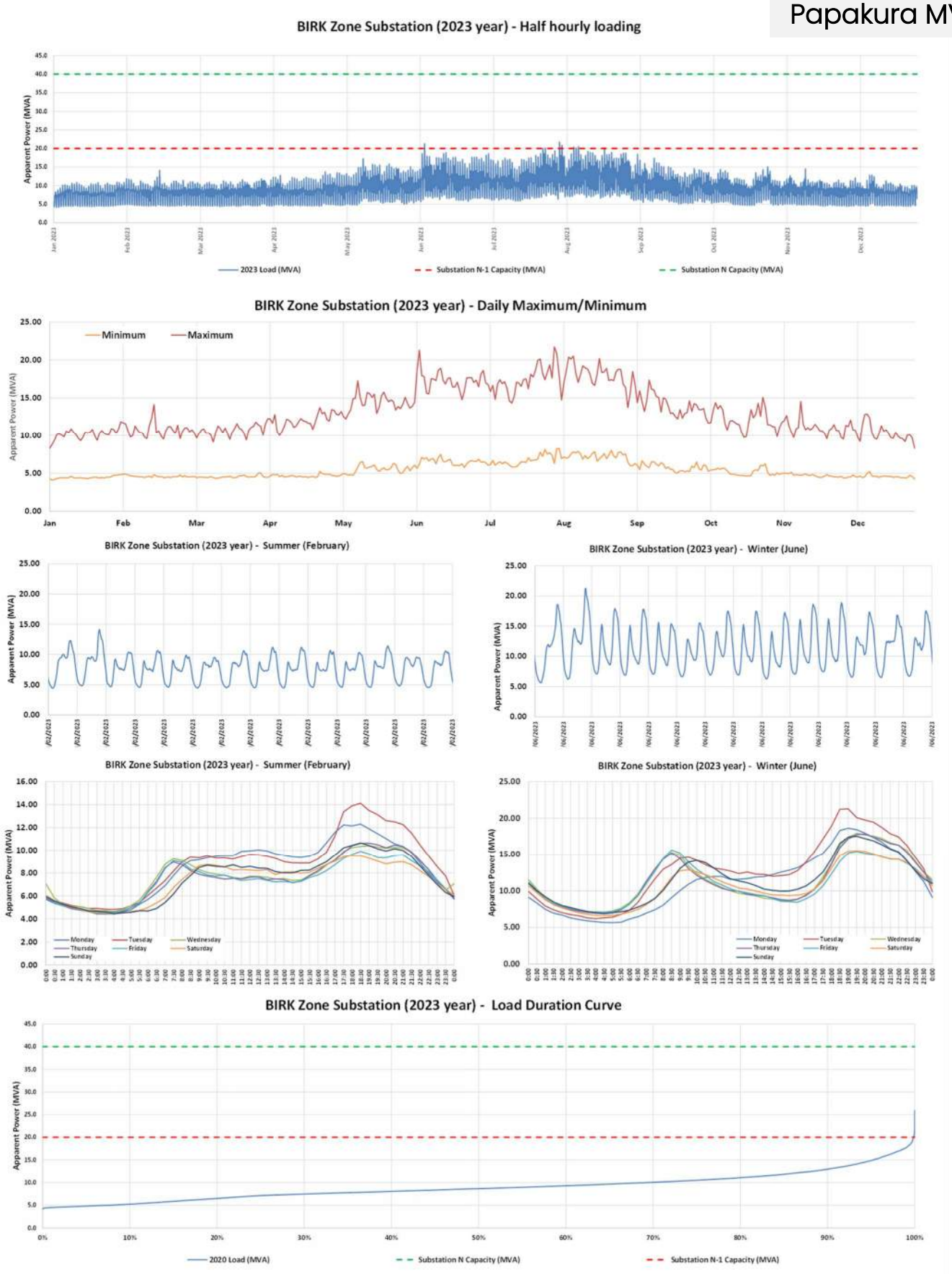

Figure 75. Papakura 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Parnell MVA

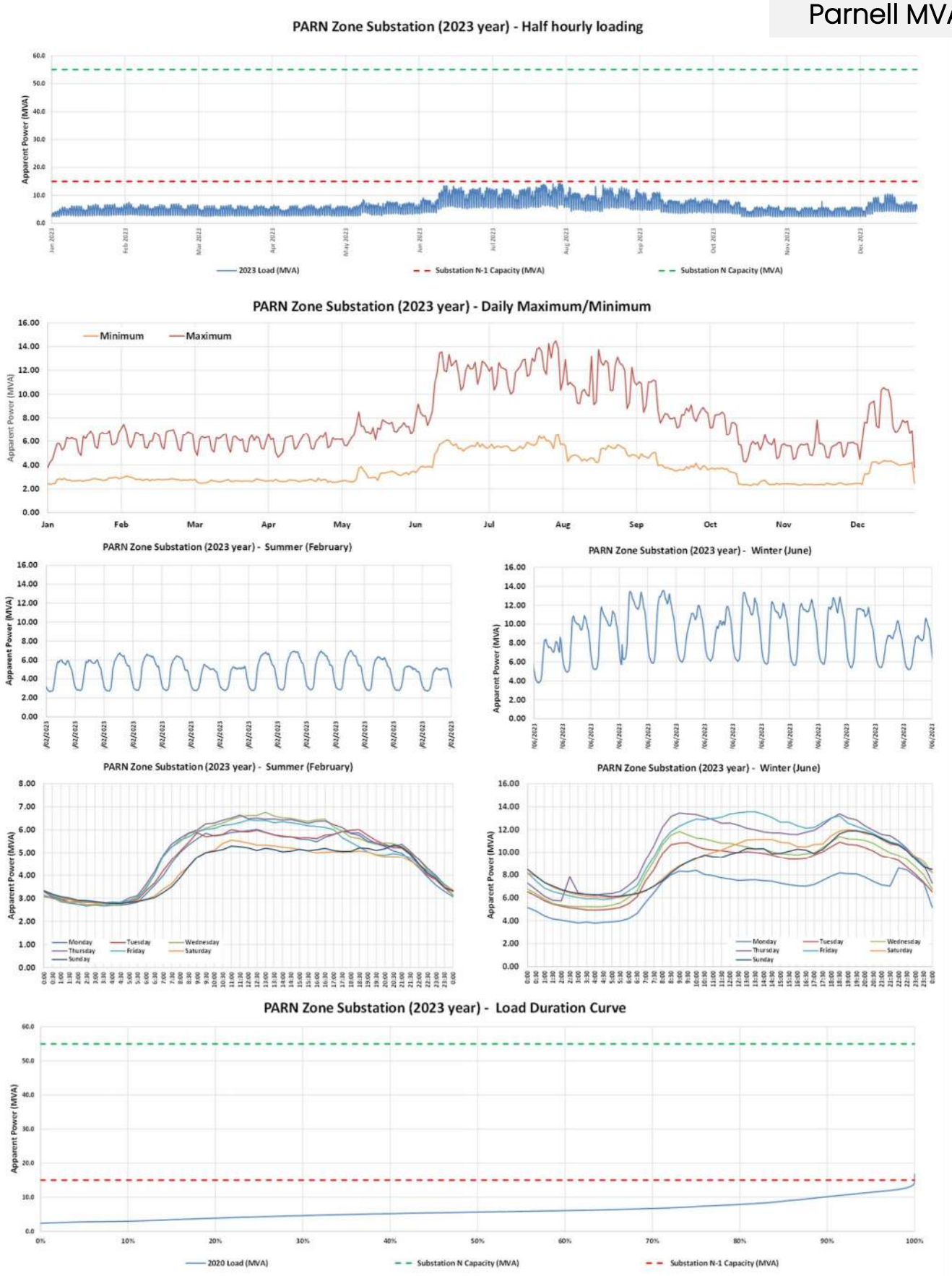

Figure 76. Parnell 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Ponsonby MVA

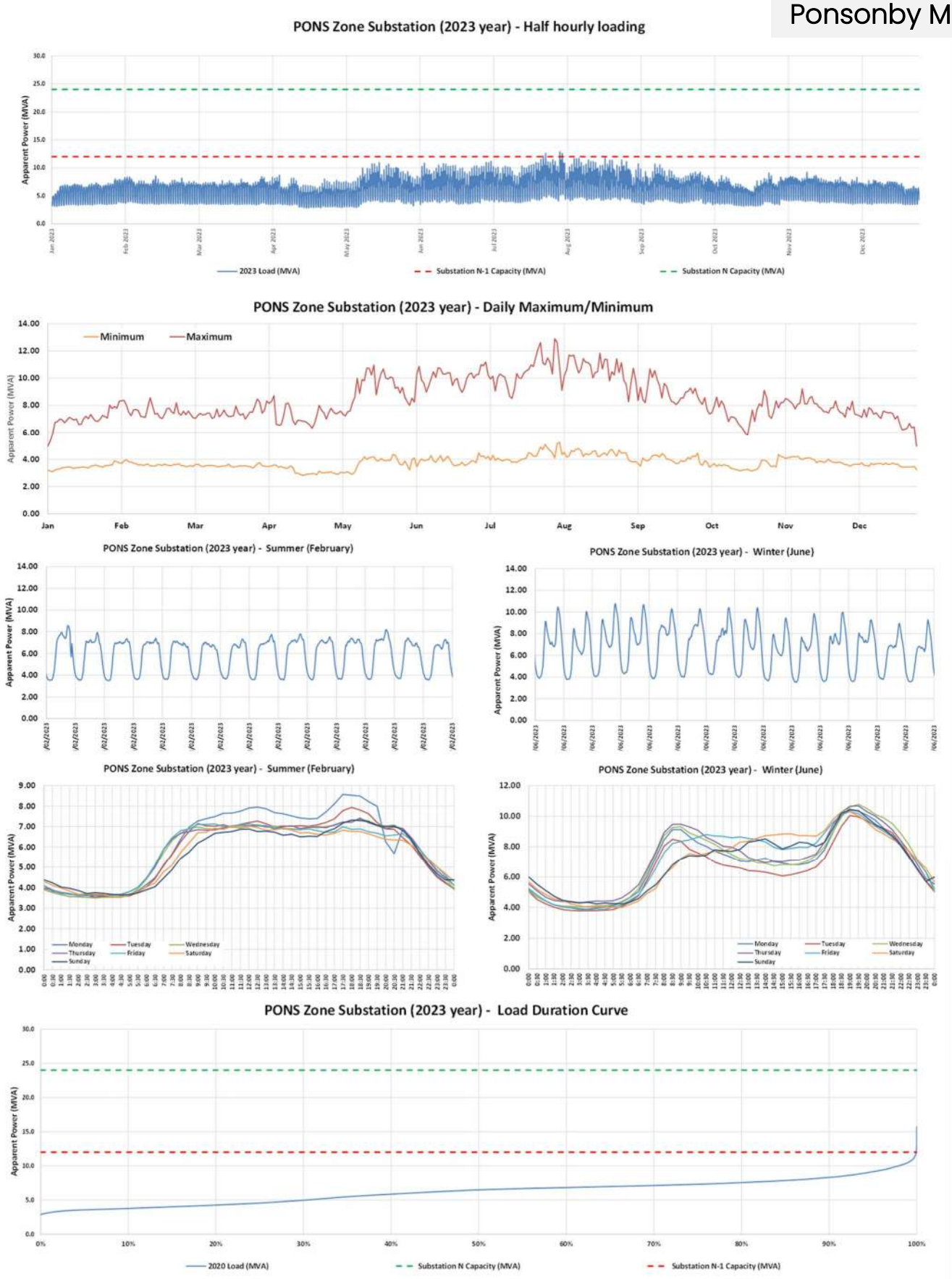

Figure 77. Ponsonby 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Rānui MVA

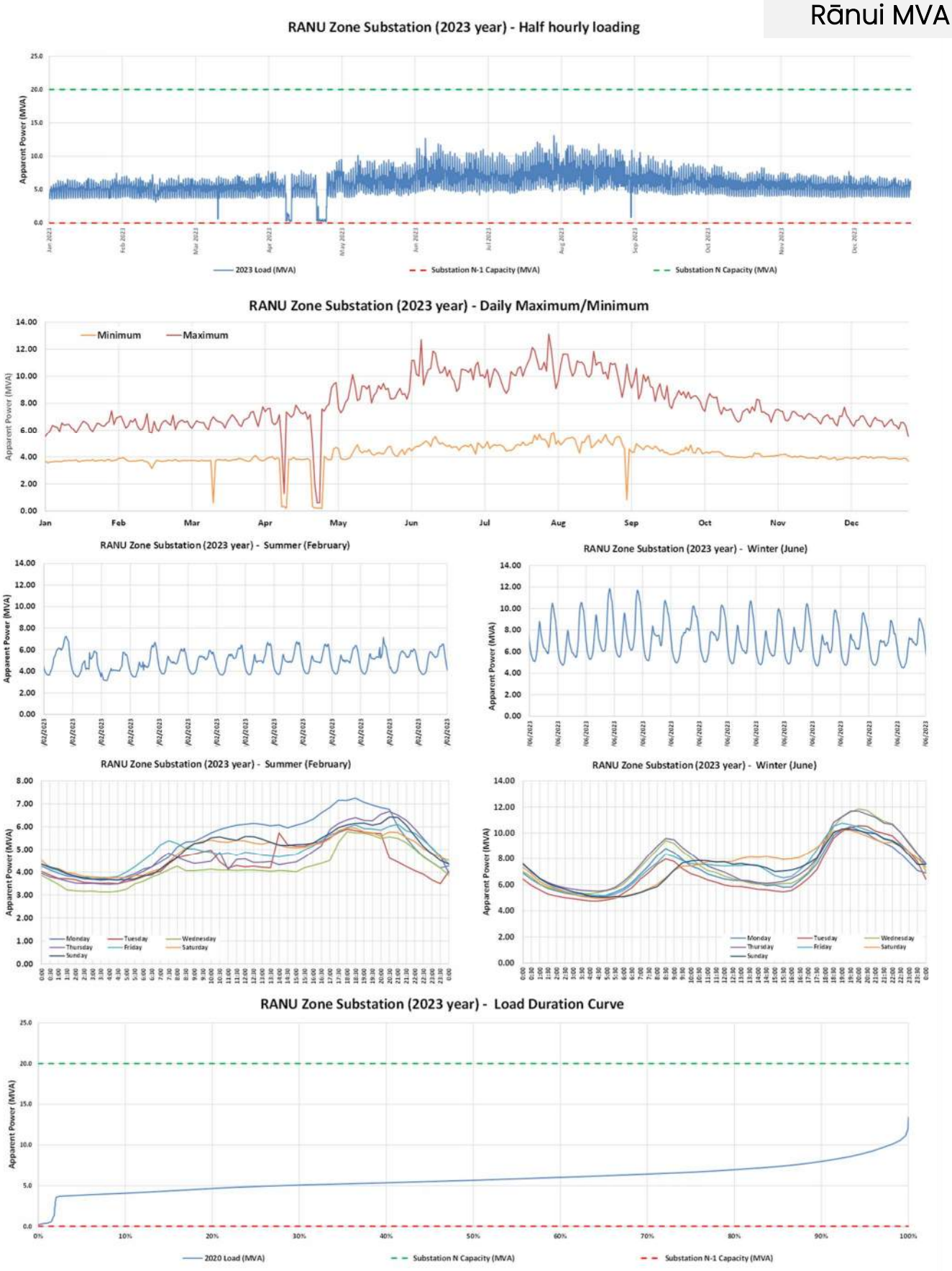

Figure 78. Rānui 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Red Beach MVA

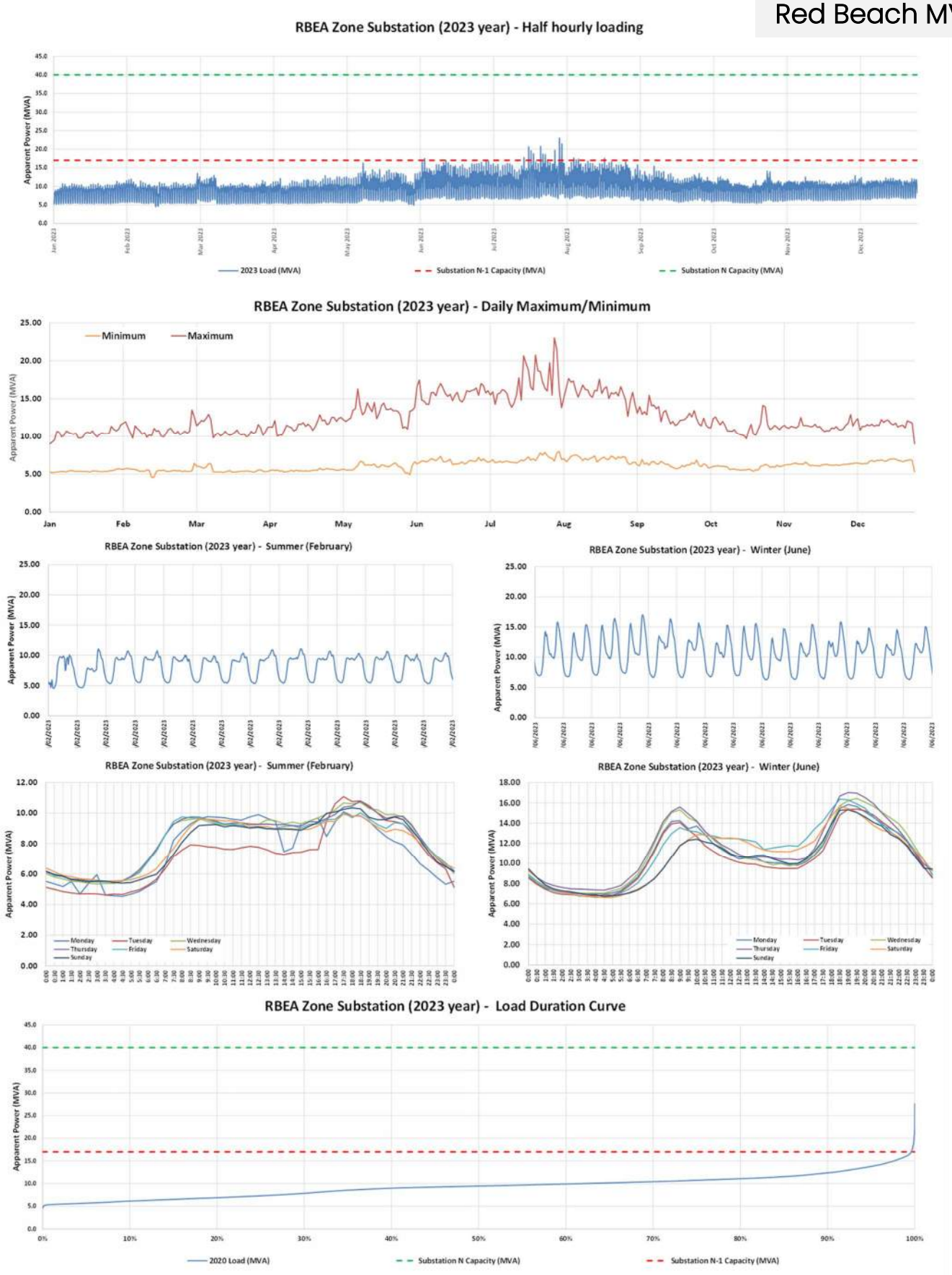

Figure 79. Red Beach 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Rosedale MVA

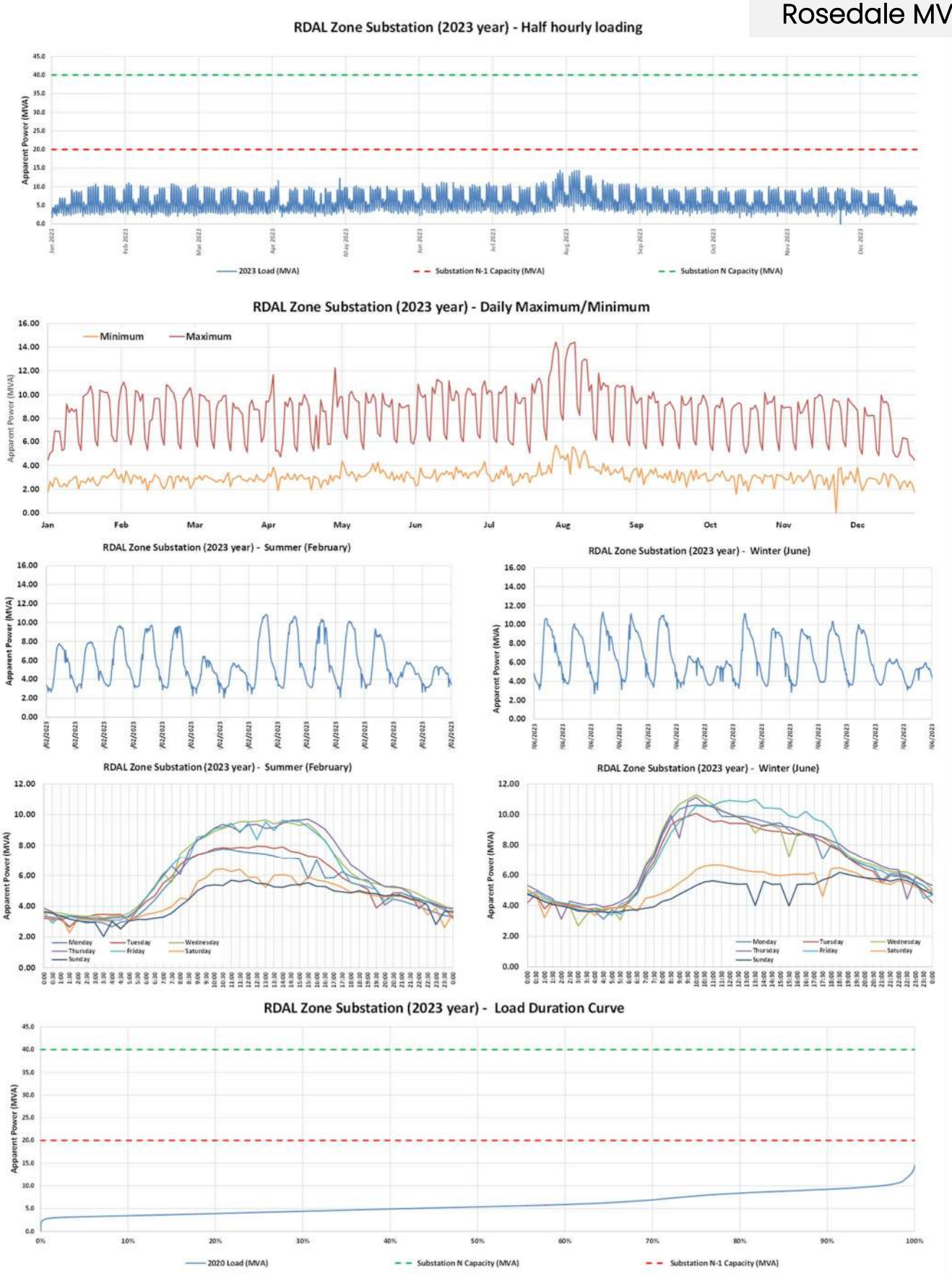

Figure 80. Rosedale 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Remuera MVA

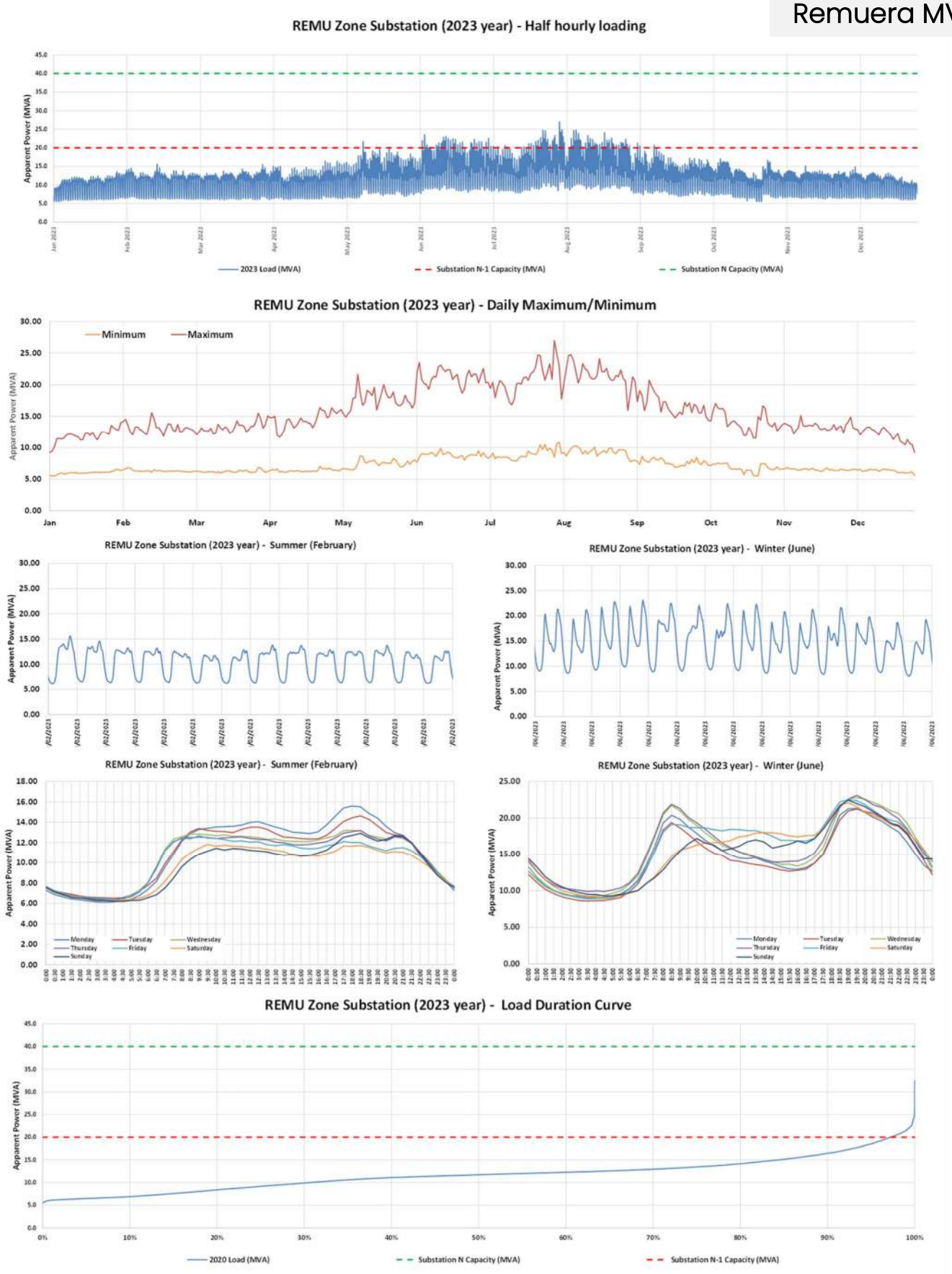

Figure 81. Remuera 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Riverhead MVA

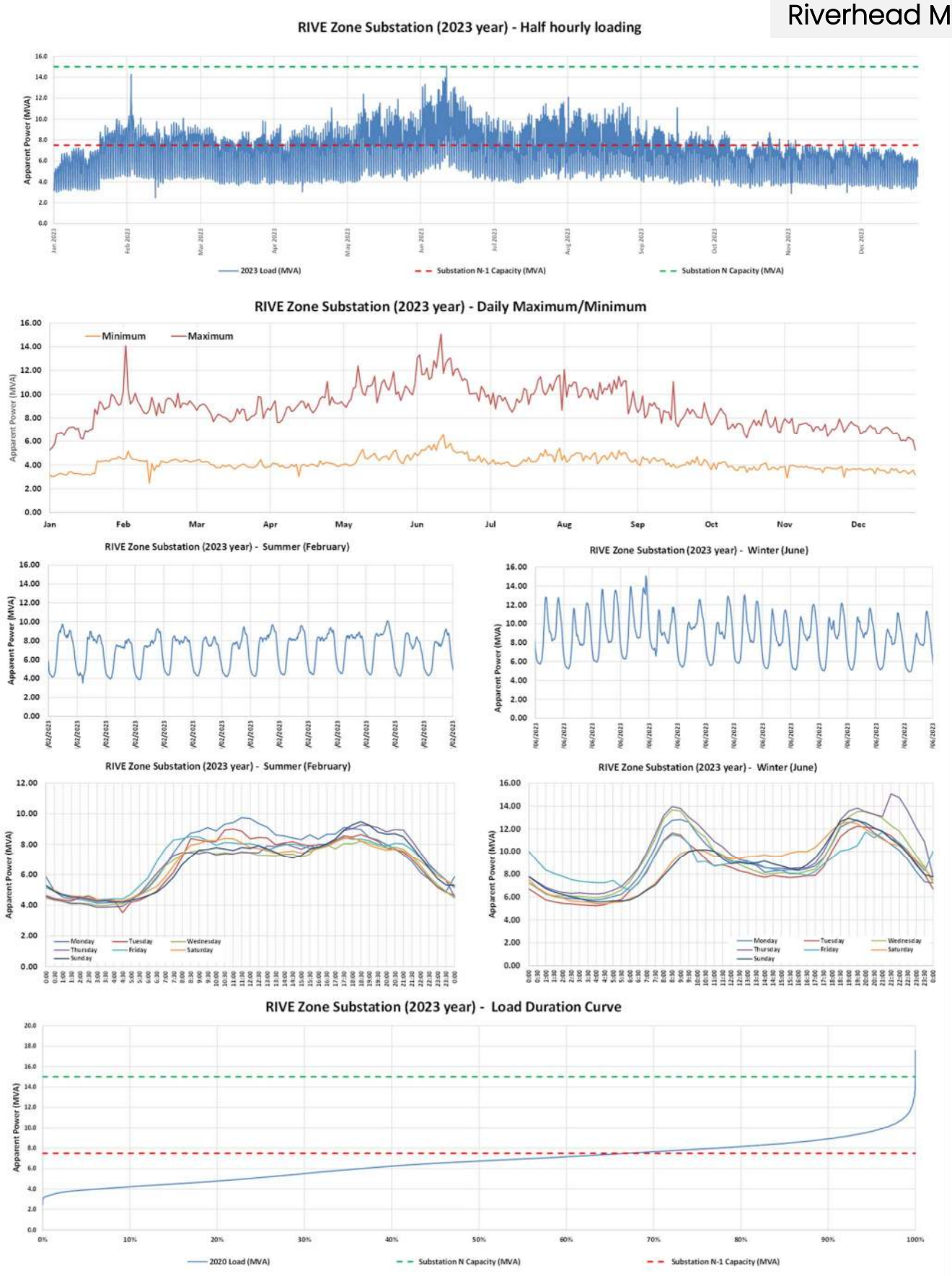

Figure 82. Riverhead 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Rockfield MVA

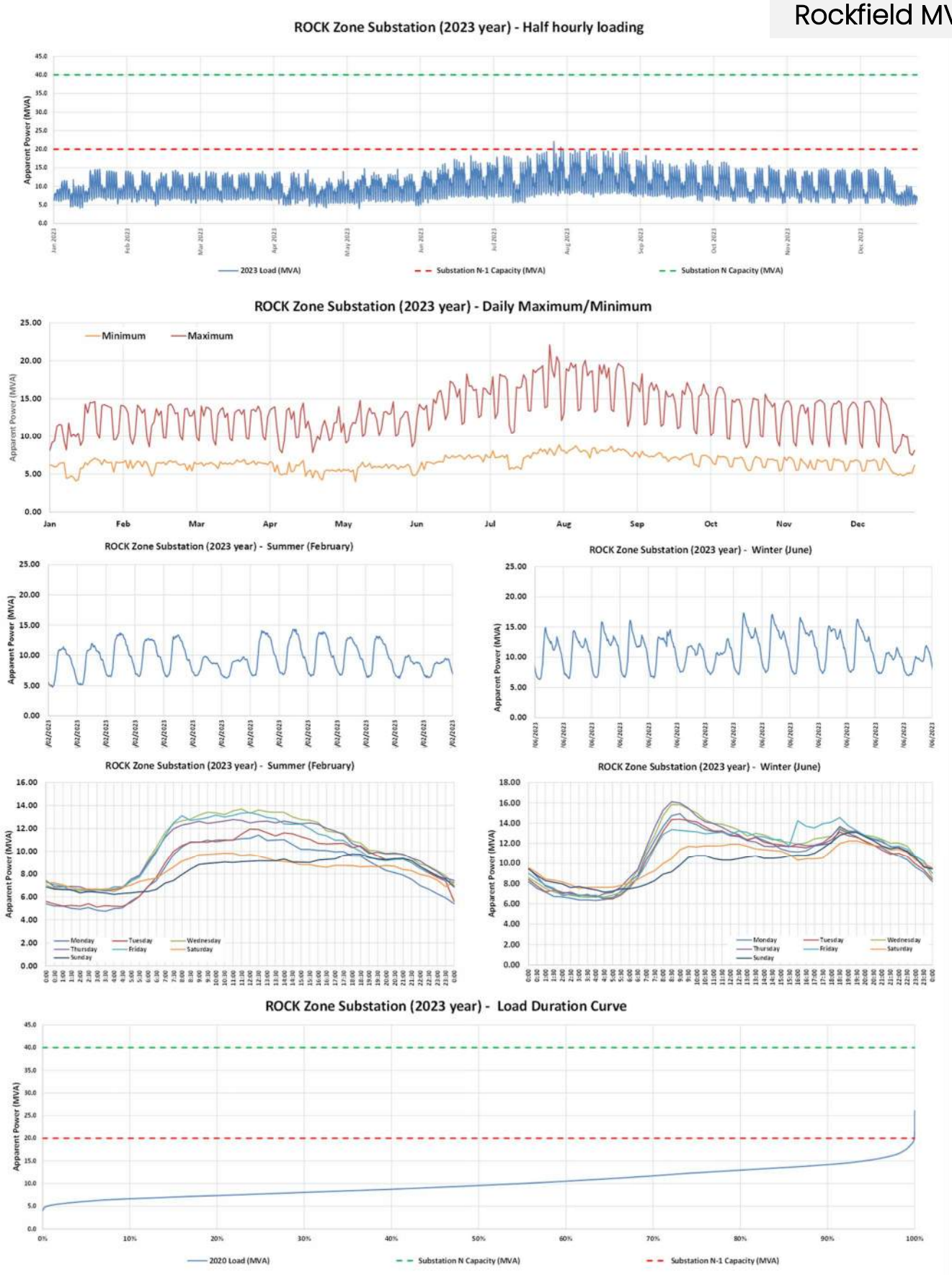

Figure 83. Rockfield 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Rosebank MVA

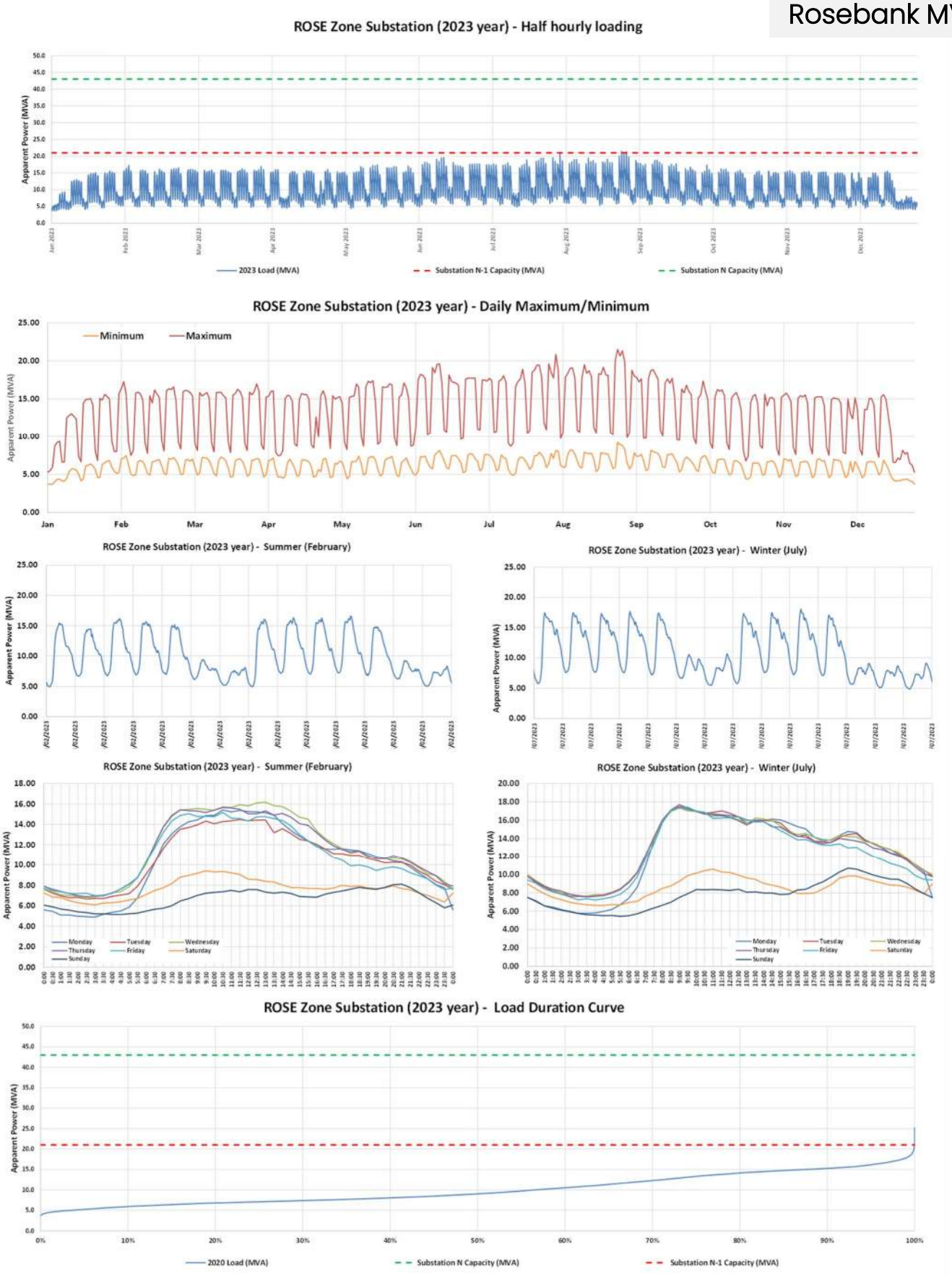

Figure 84. Rosebank 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Sabulite Road MVA

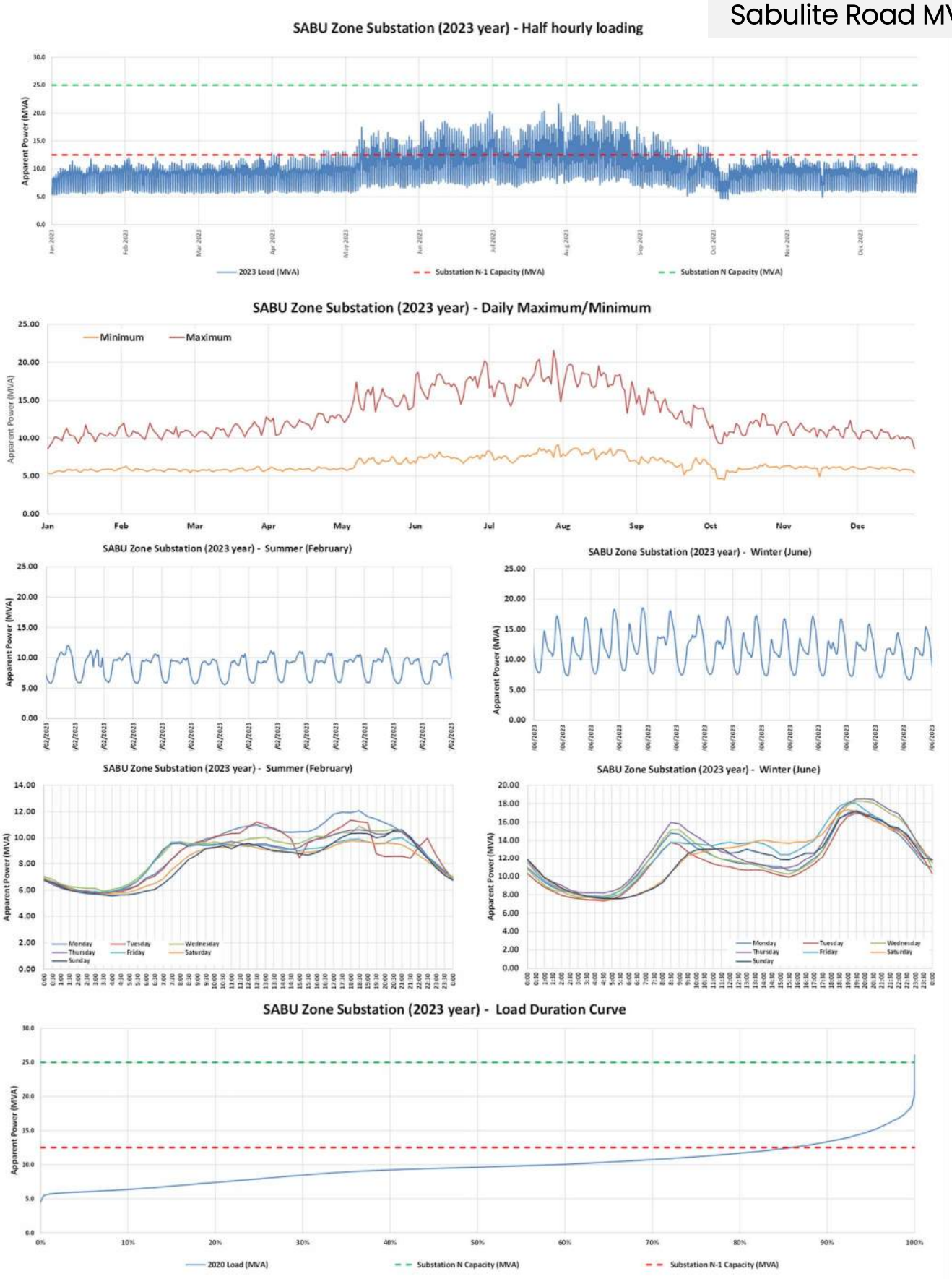

Figure 85. Sabulite Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Sandringham MVA

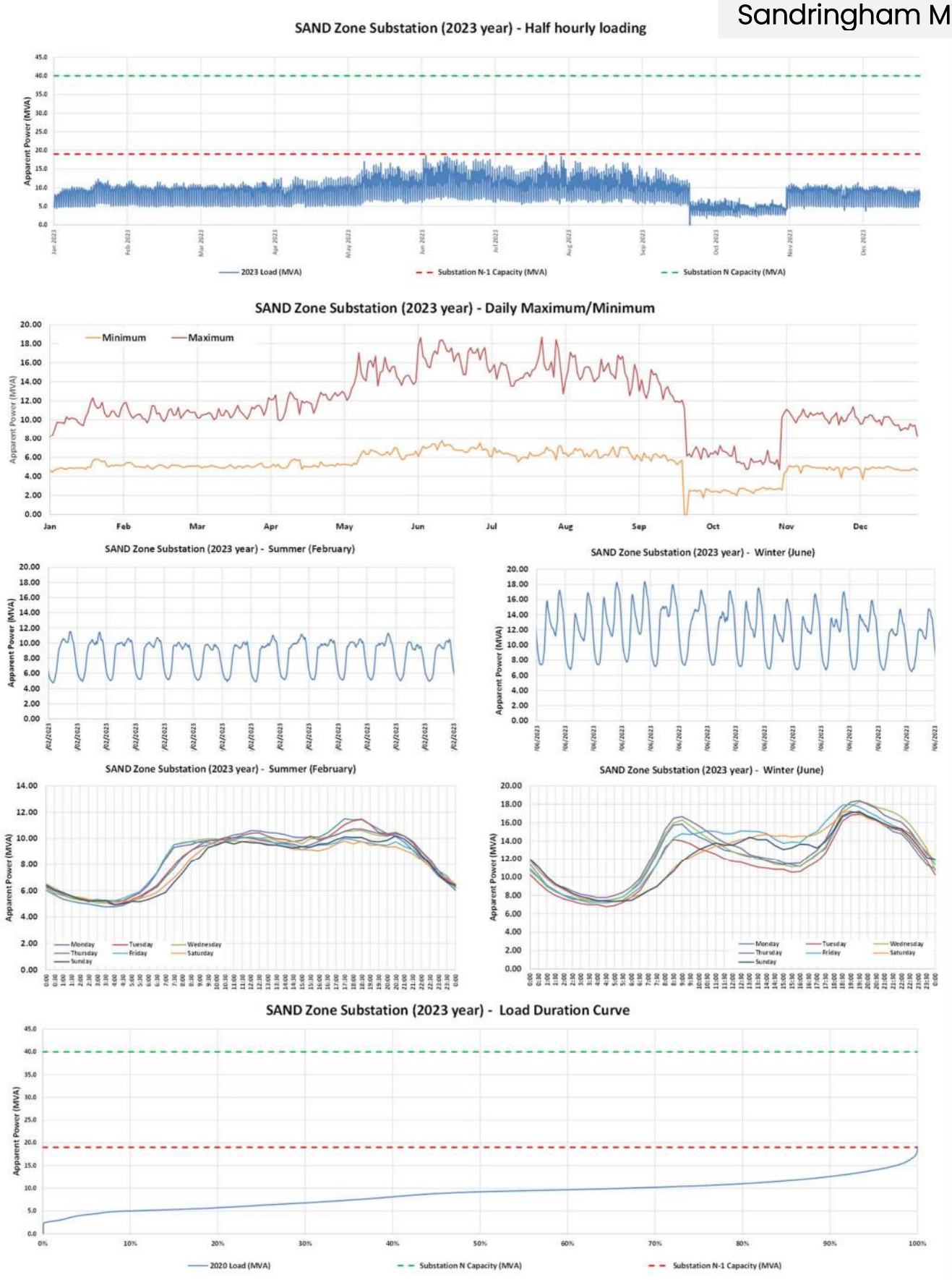

Figure 86. Sandringham 22/11 kV zone substation: Apparent Power (MVA) load characteristics

St Heliers MVA

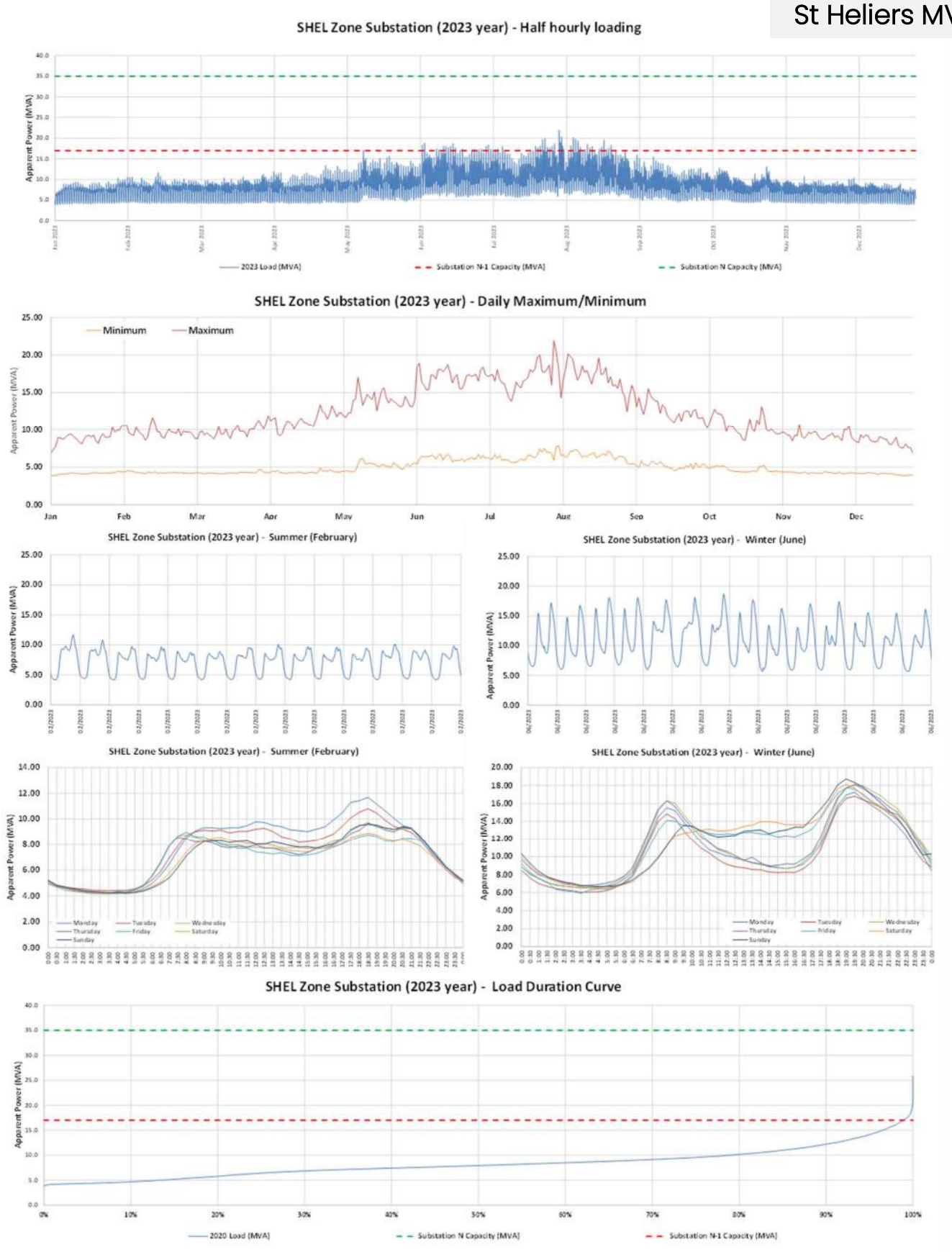

Figure 87. St Heliers 33/11 kV zone substation: Apparent Power (MVA) load characteristics

South Howick MVA

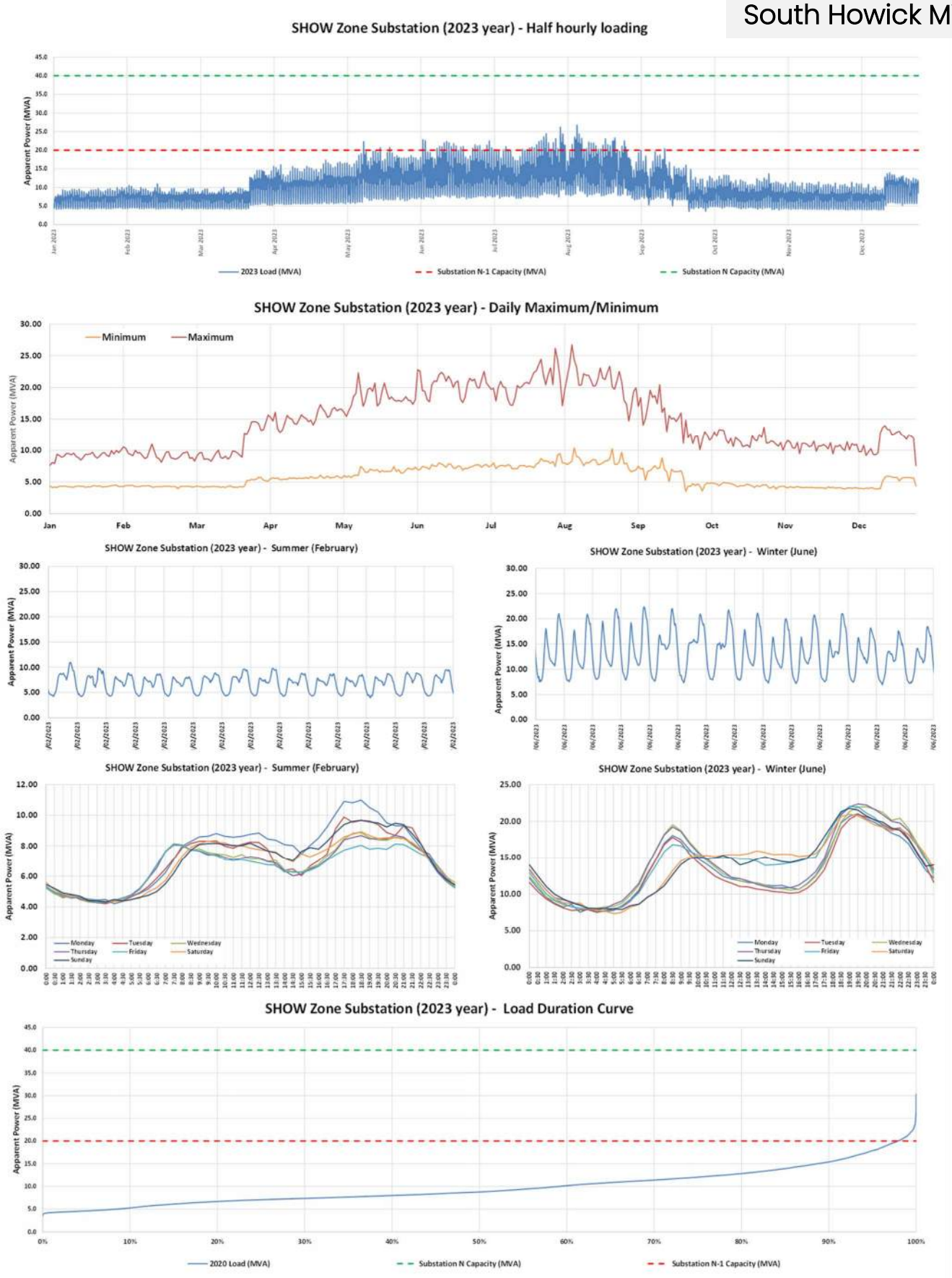

Figure 88. South Howick 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Simpson Road

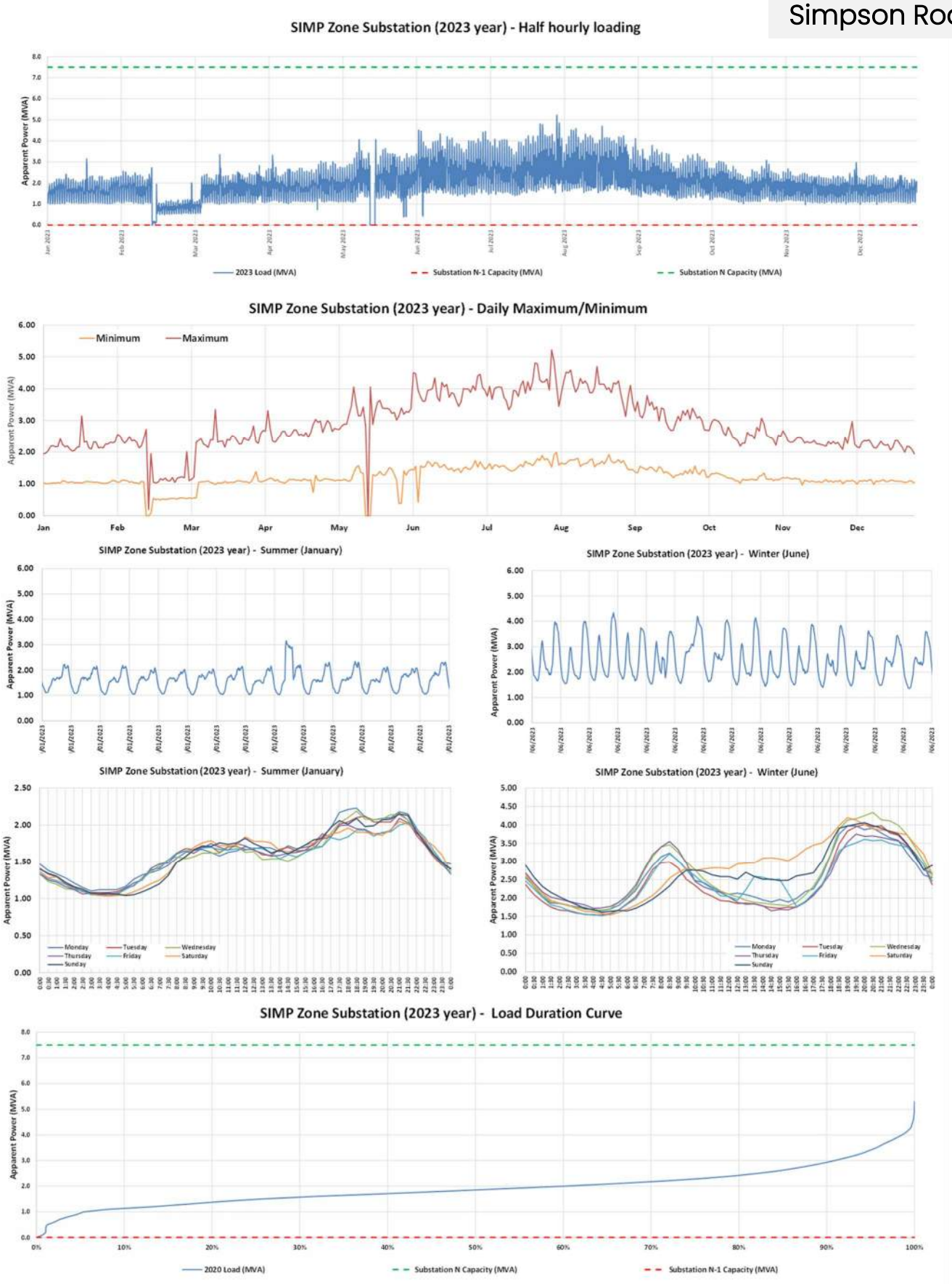

Figure 89. Simpson Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

St Johns MVA

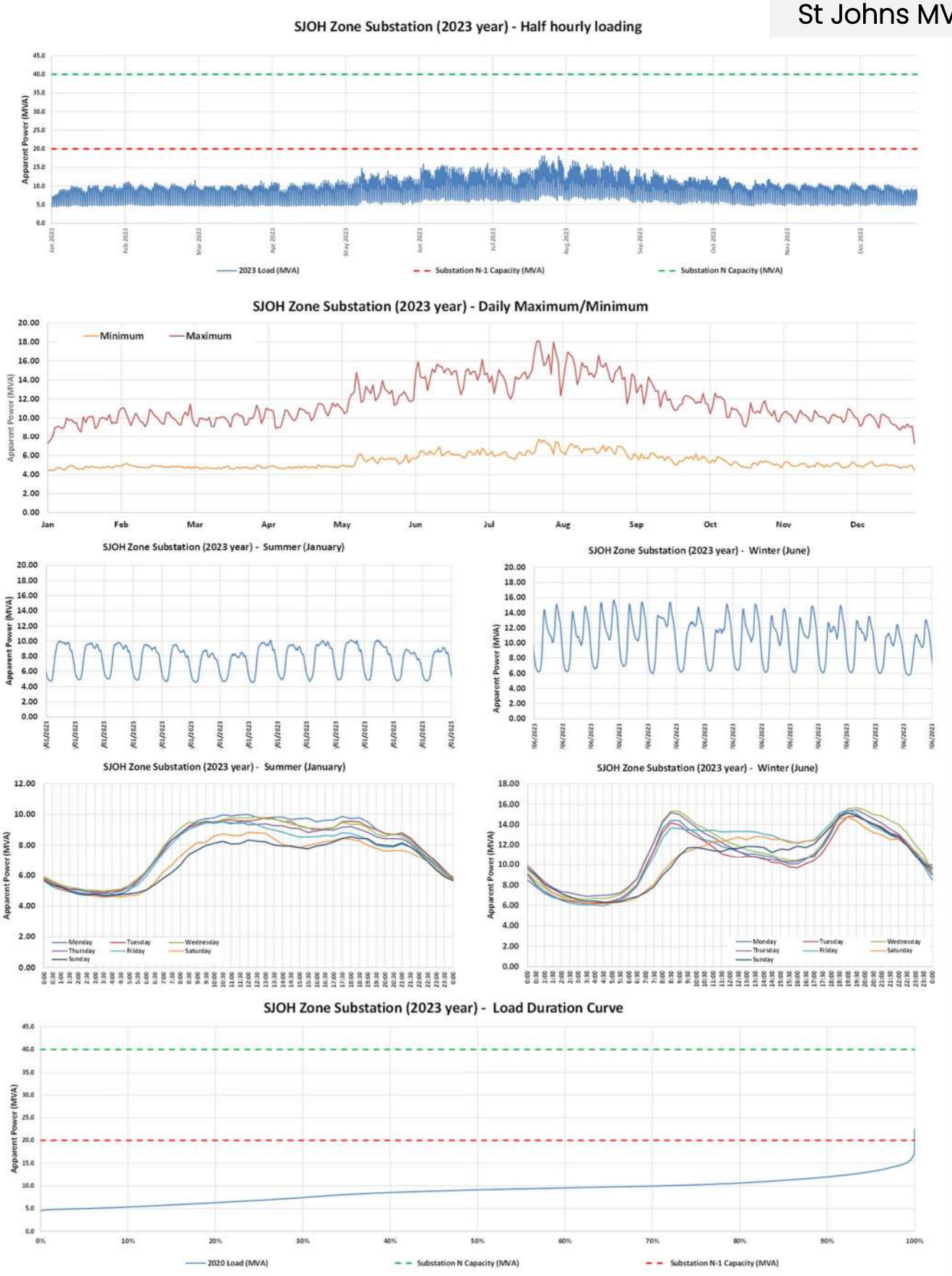

Figure 90. St Johns 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Snells Beach MVA

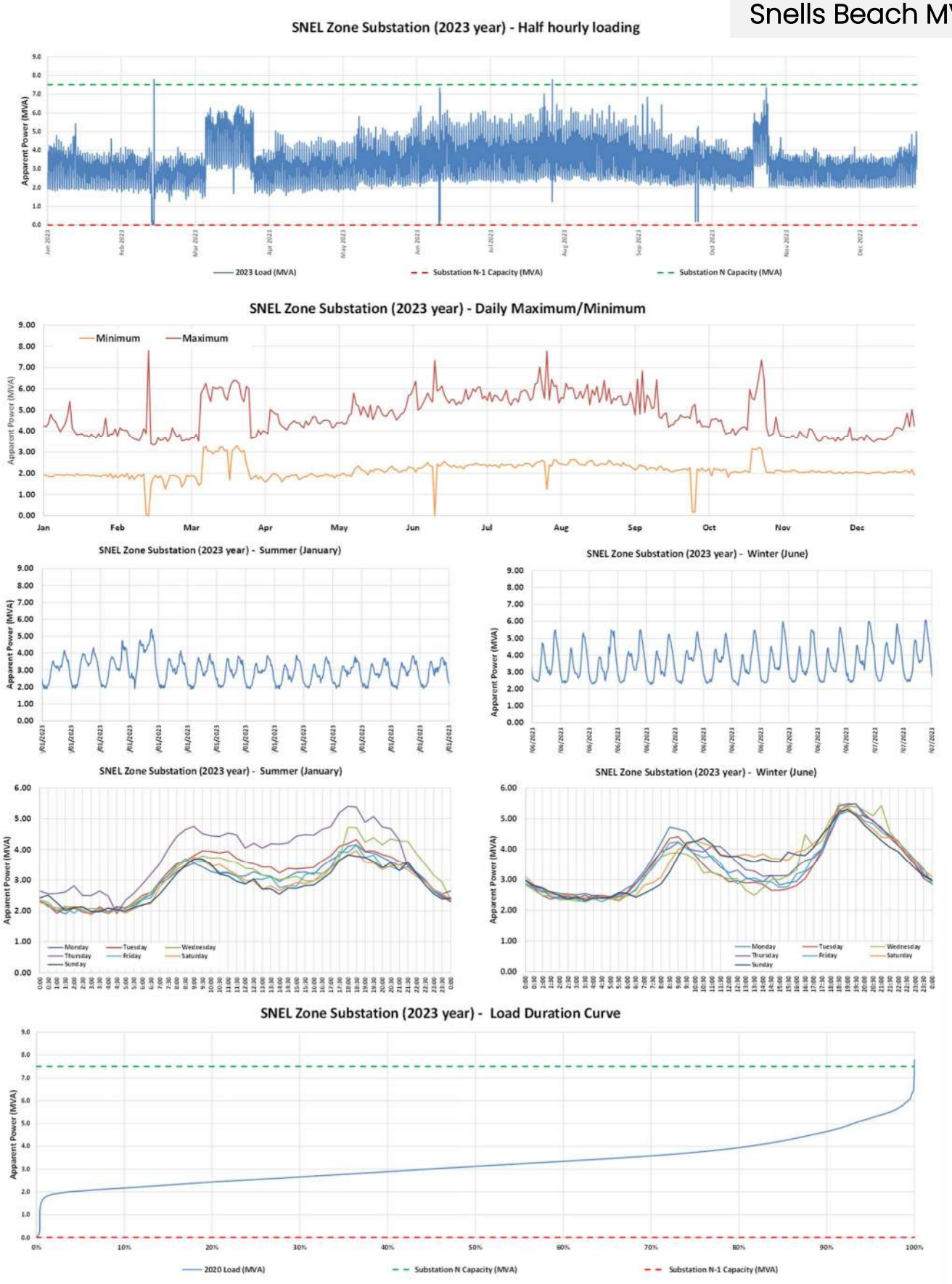

Figure 91. Snells Beach 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Spur Road MVA

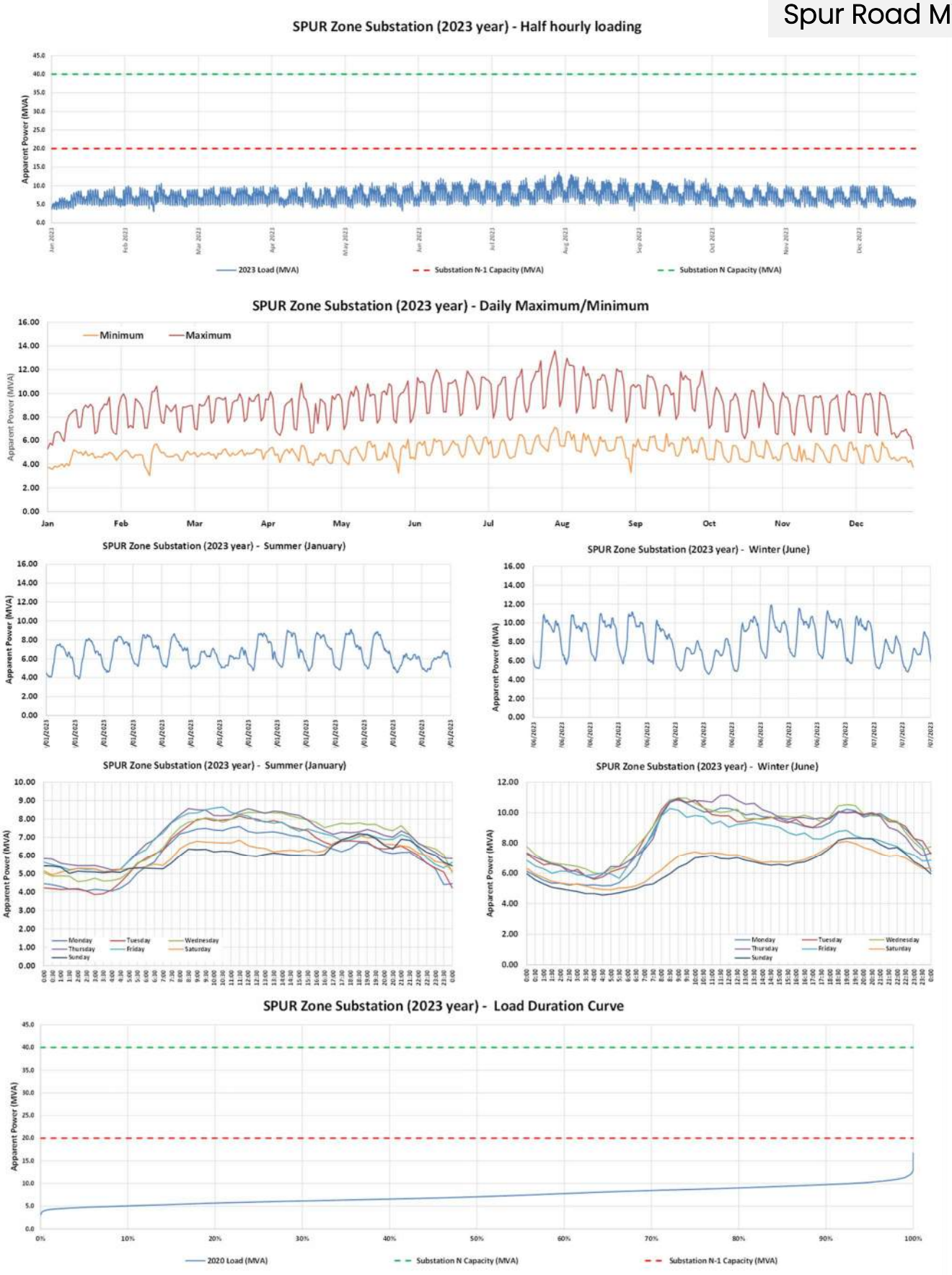

Figure 92. Spur Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Sunset Road MVA

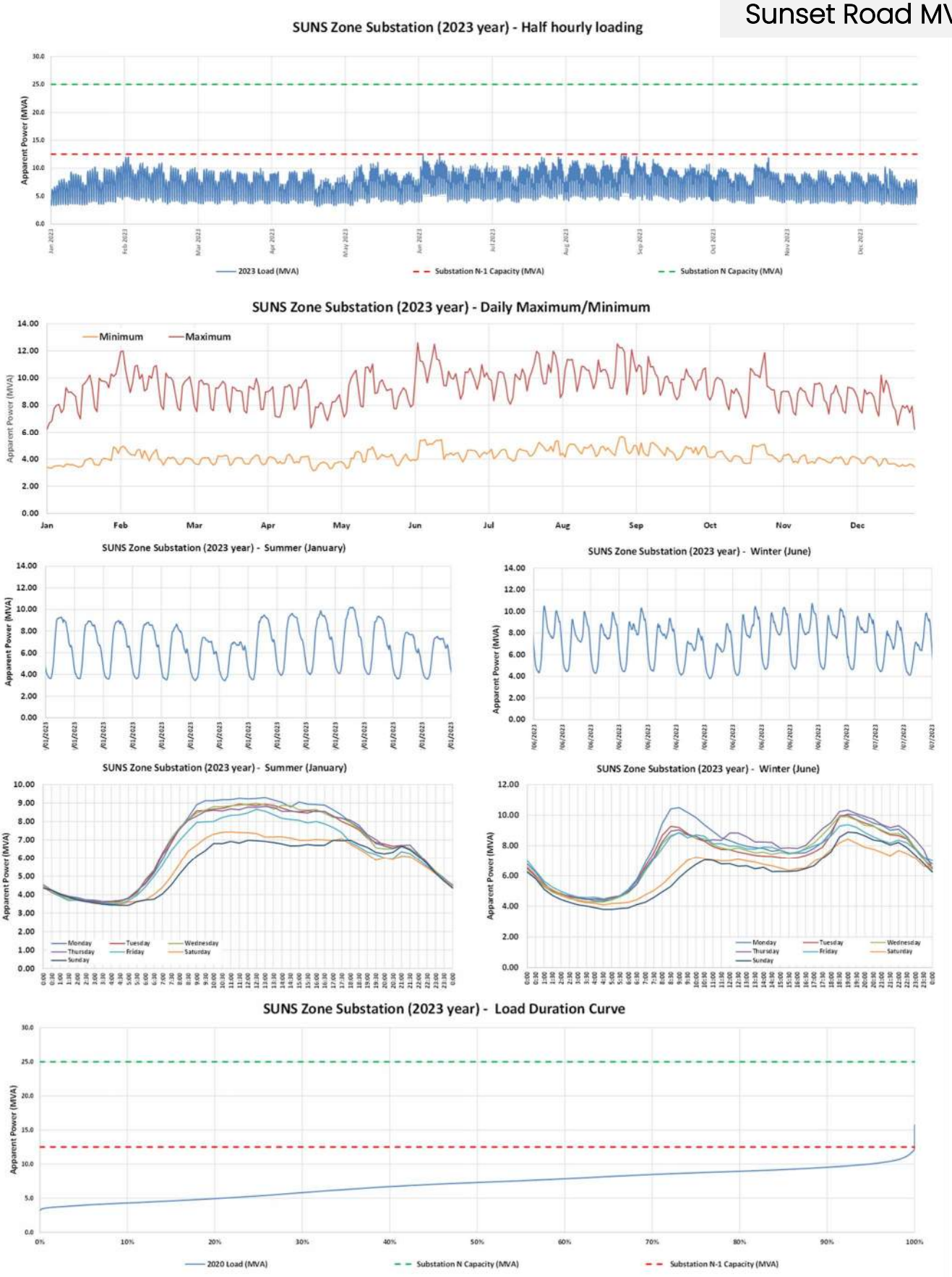

Figure 93. Sunset Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Swanson MVA

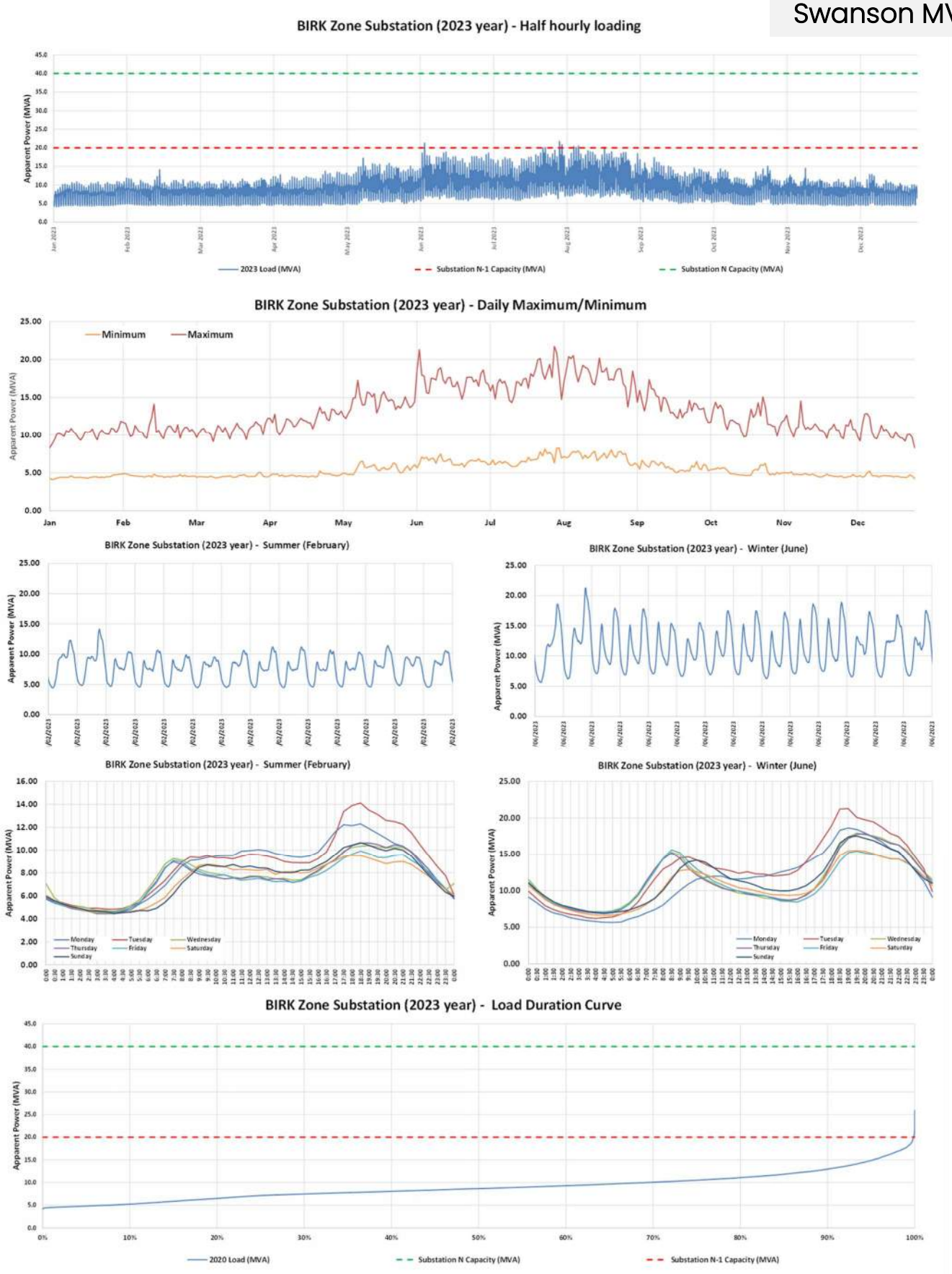

Figure 94. Swanson 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Sylvia Park MVA

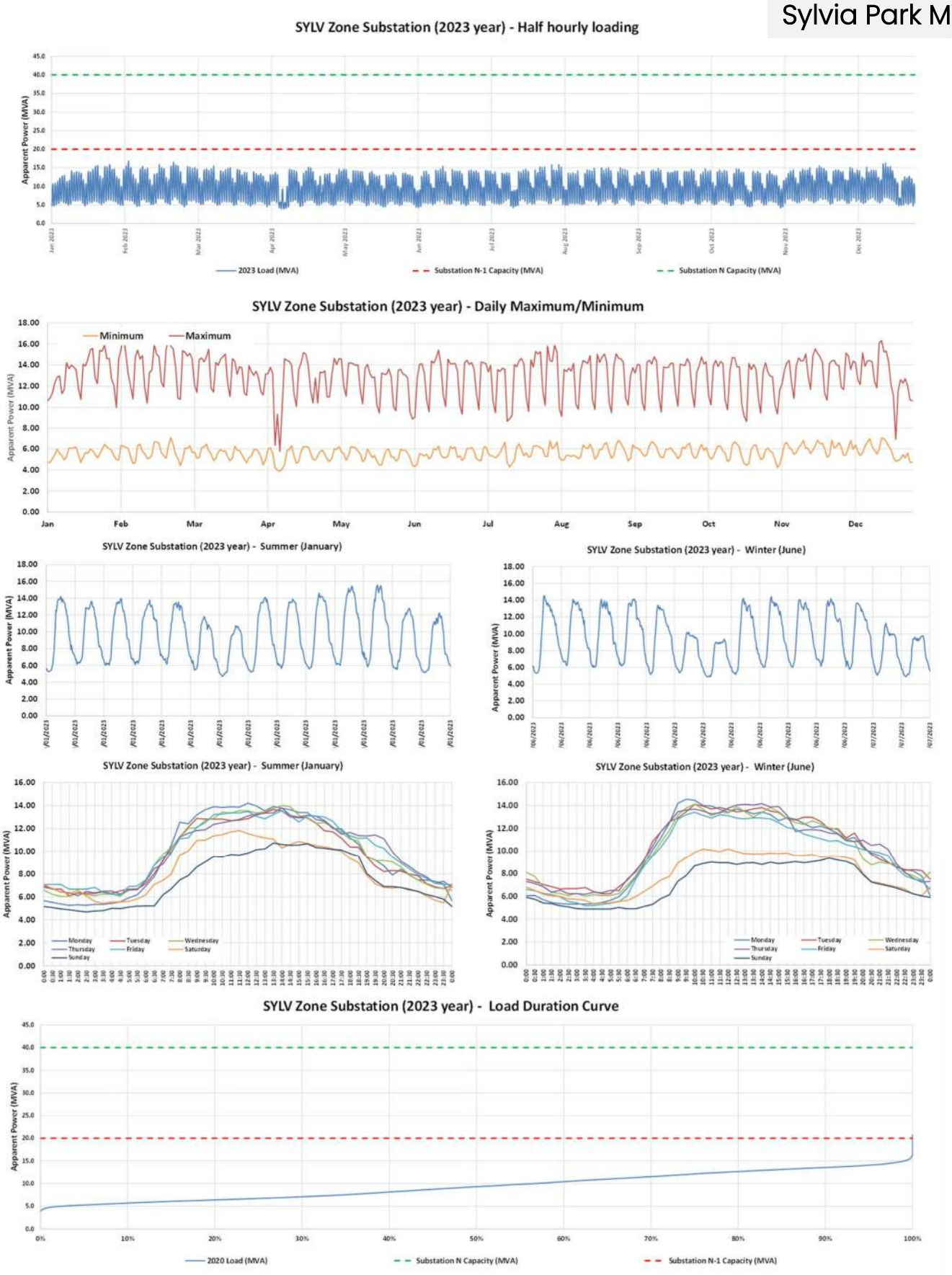

Figure 95. Sylvia Park 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Takanini MVA

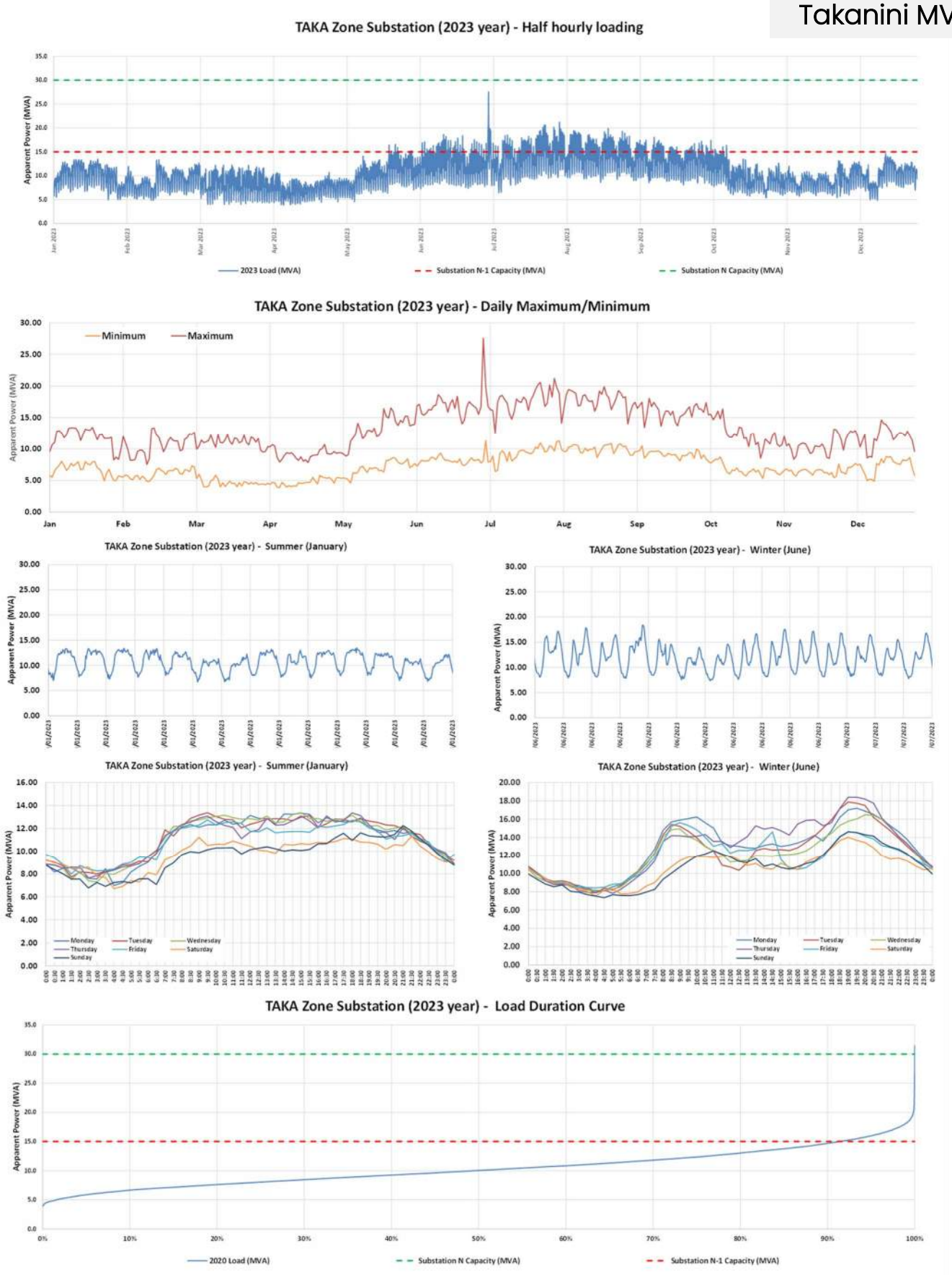

Figure 96. Takanini 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Takapura MVA

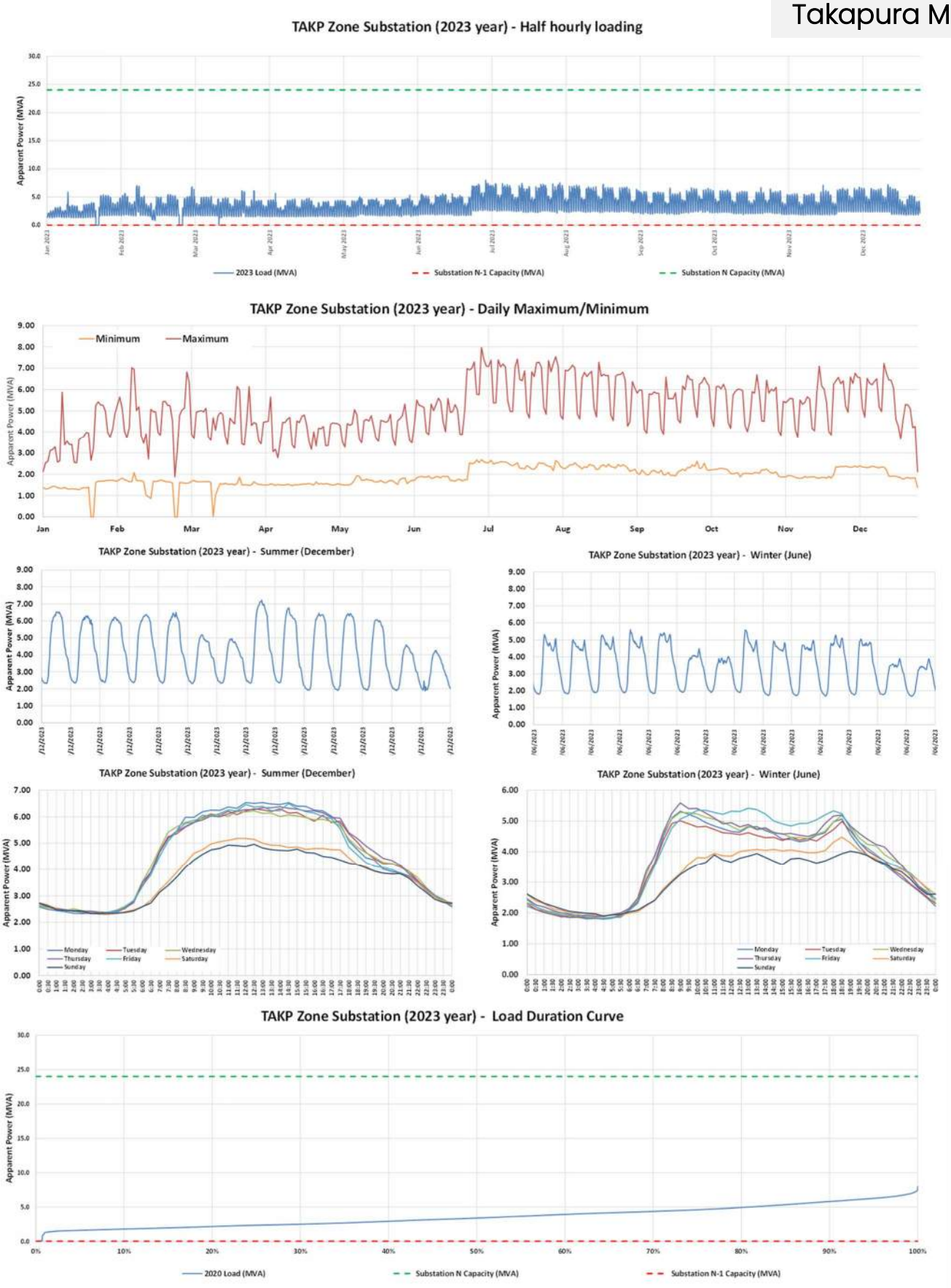

Figure 97. Takapuna 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Te Atatū MVA

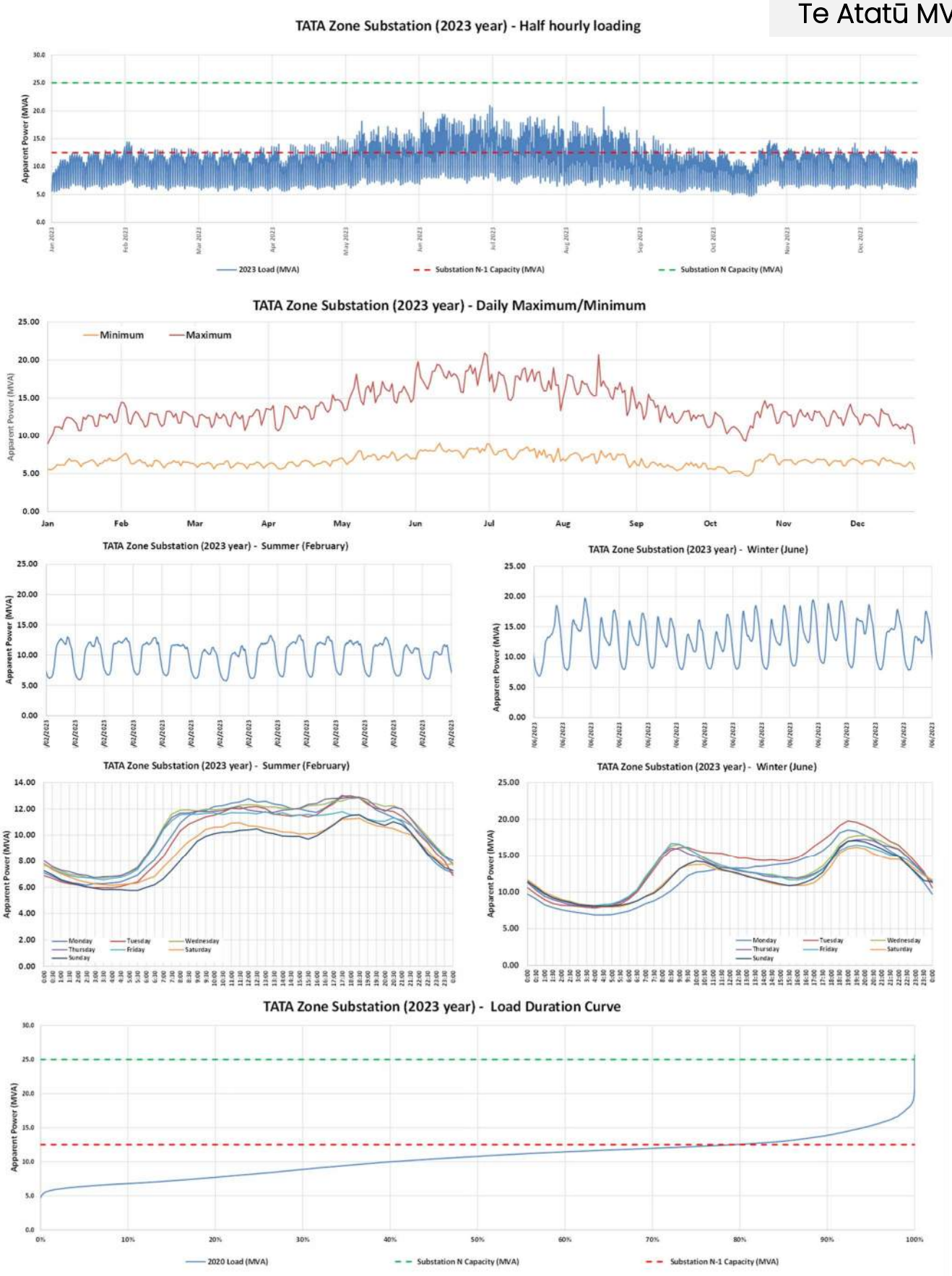

Figure 98. Te Atatū 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Torbay MVA

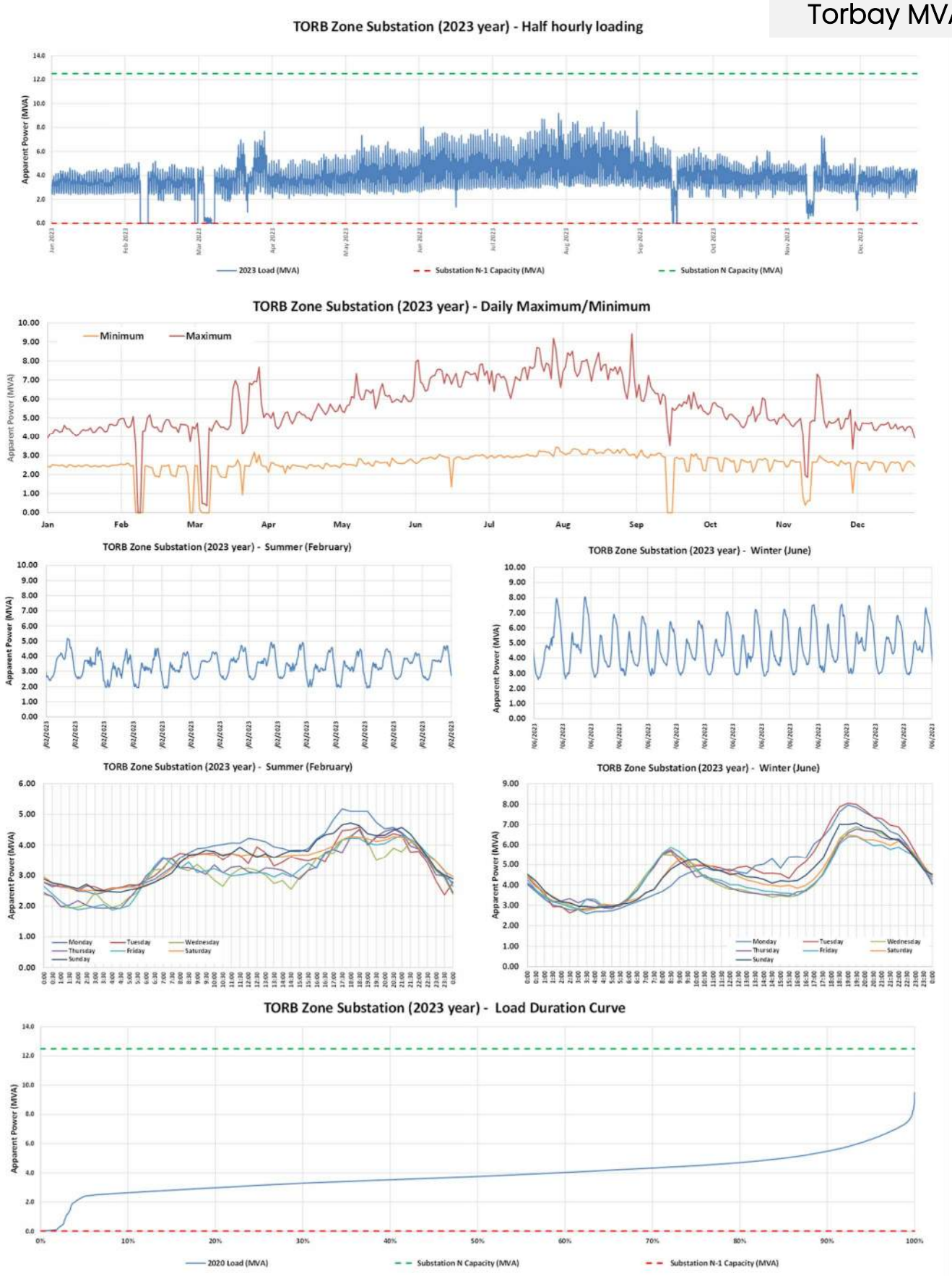

Figure 99. Torbay 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Te Papapa MVA

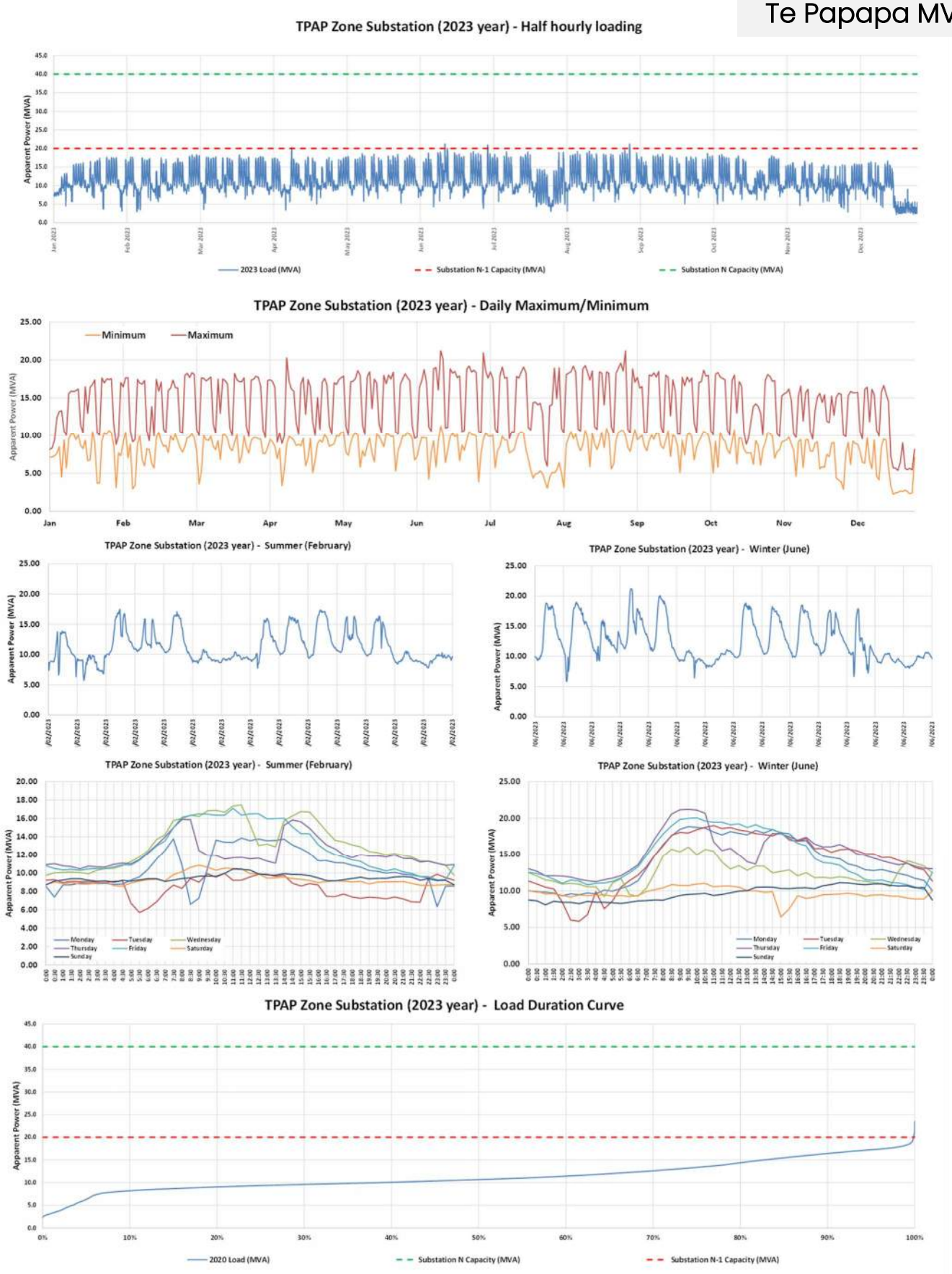

Figure 100. Te Papapa 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Triangle Road MVA

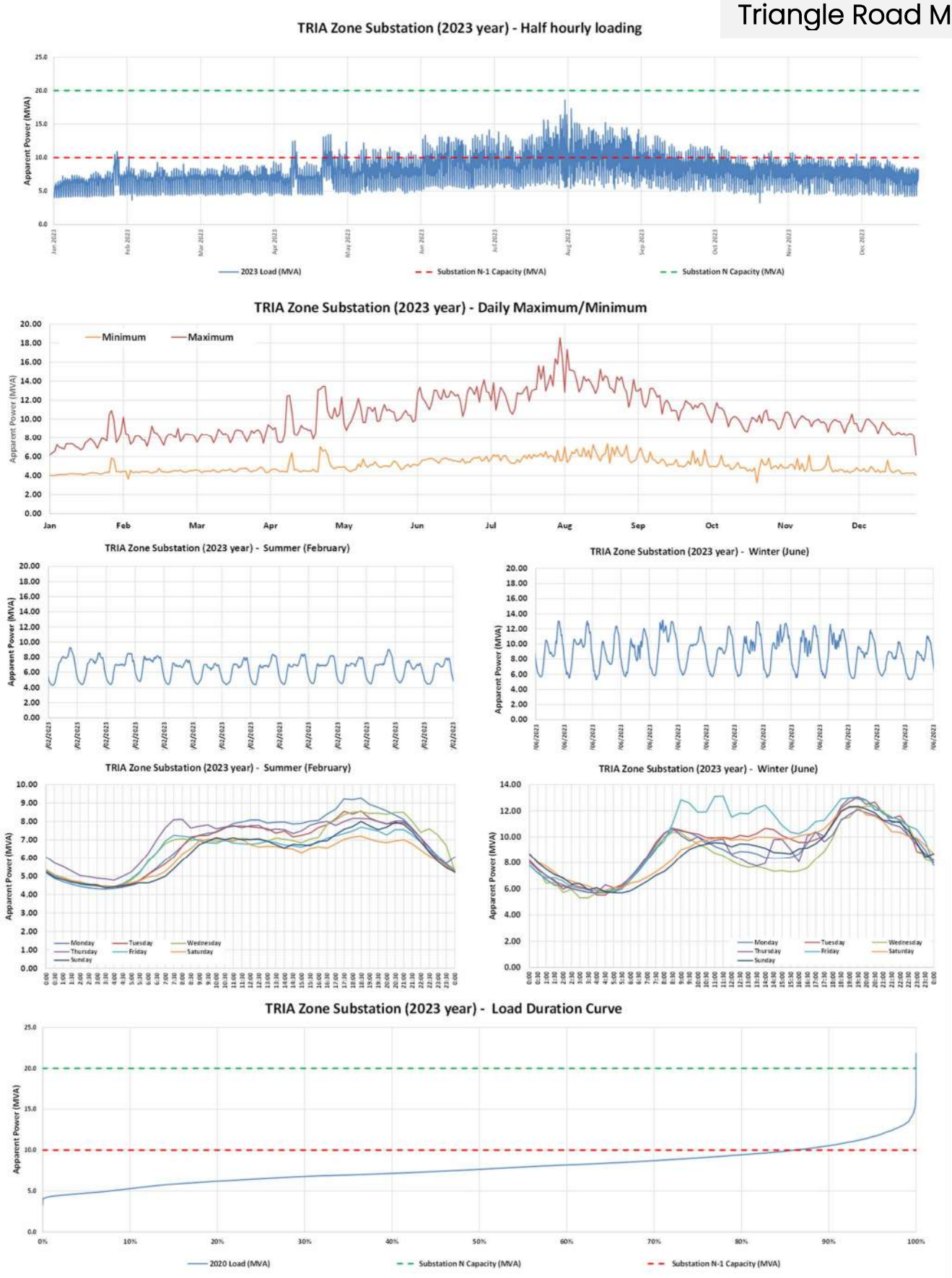

Figure 101. Triangle Road 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Victoria MVA

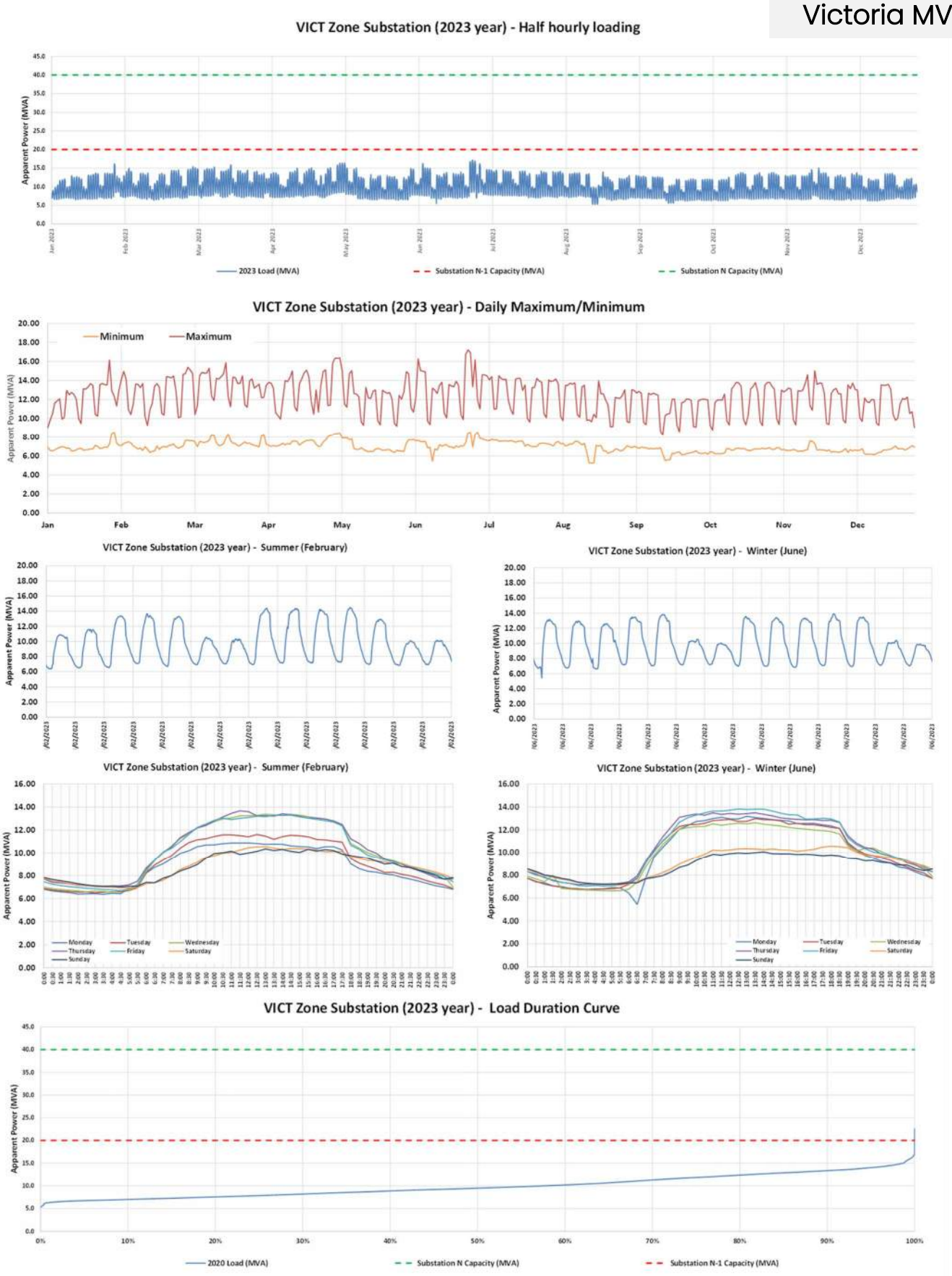

Figure 102. Victoria 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Waiake MVA

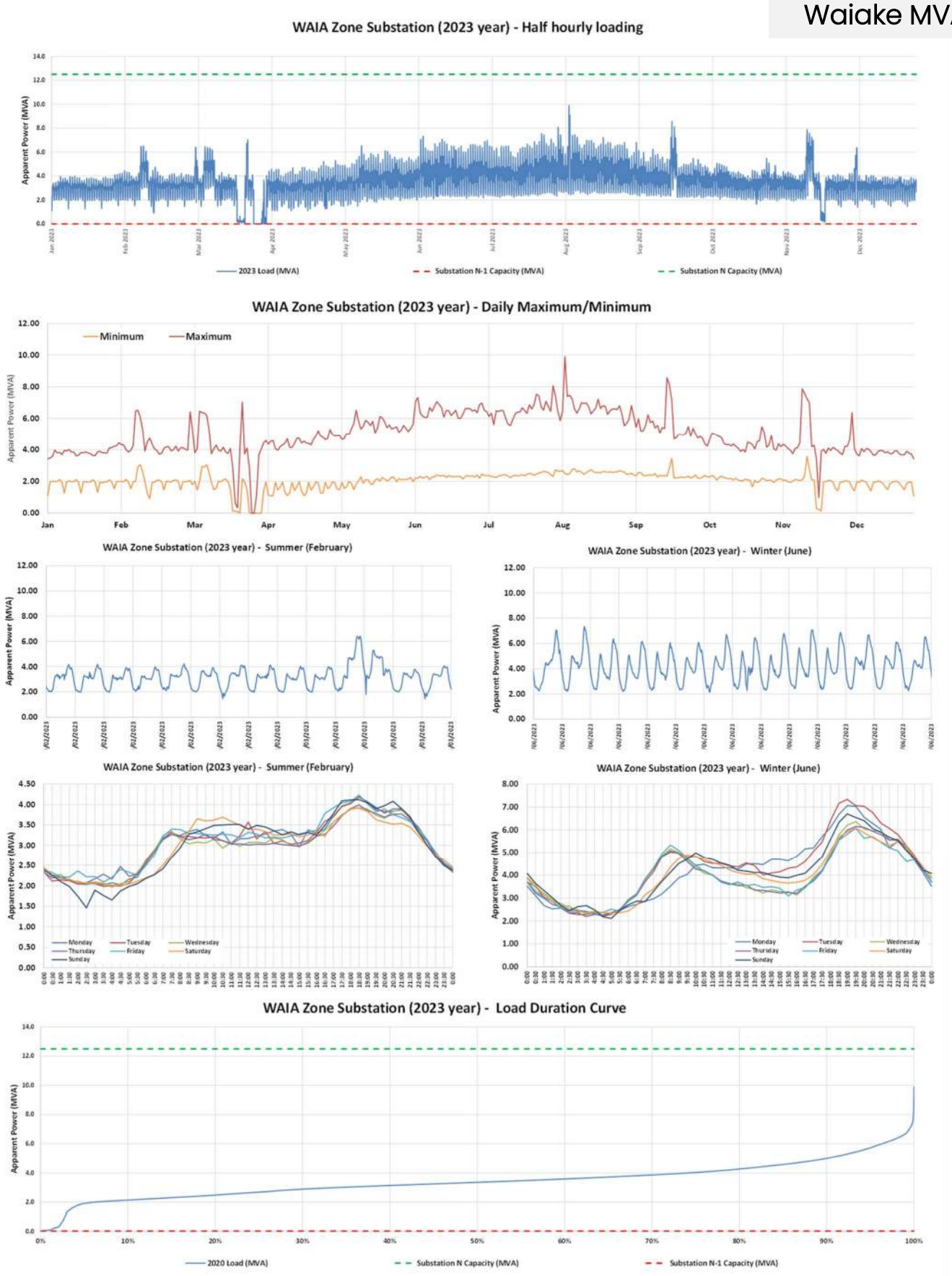

Figure 103. Waiake 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Waiheke MVA

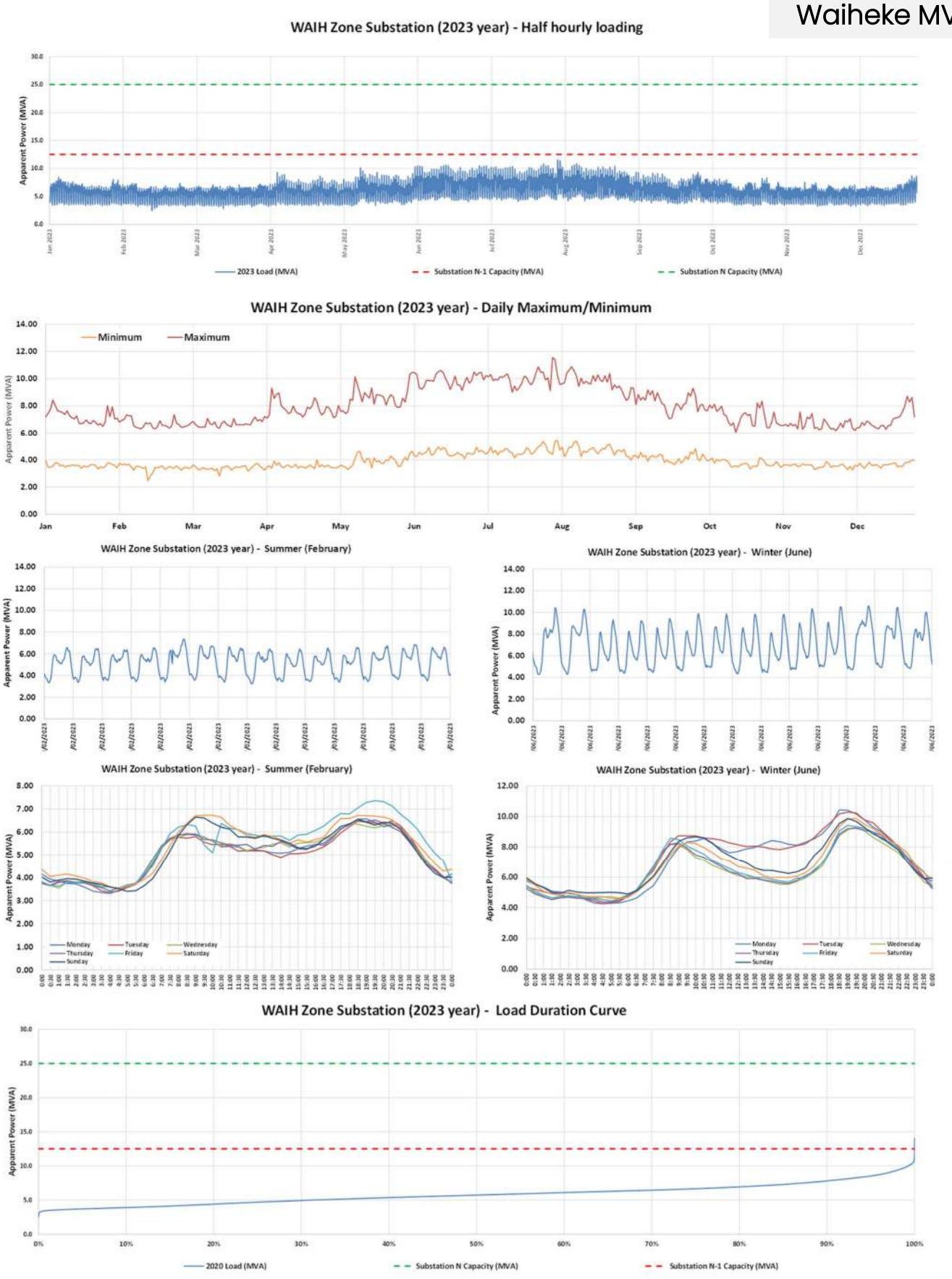

Figure 104. Waiheke 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Waikaukau MVA

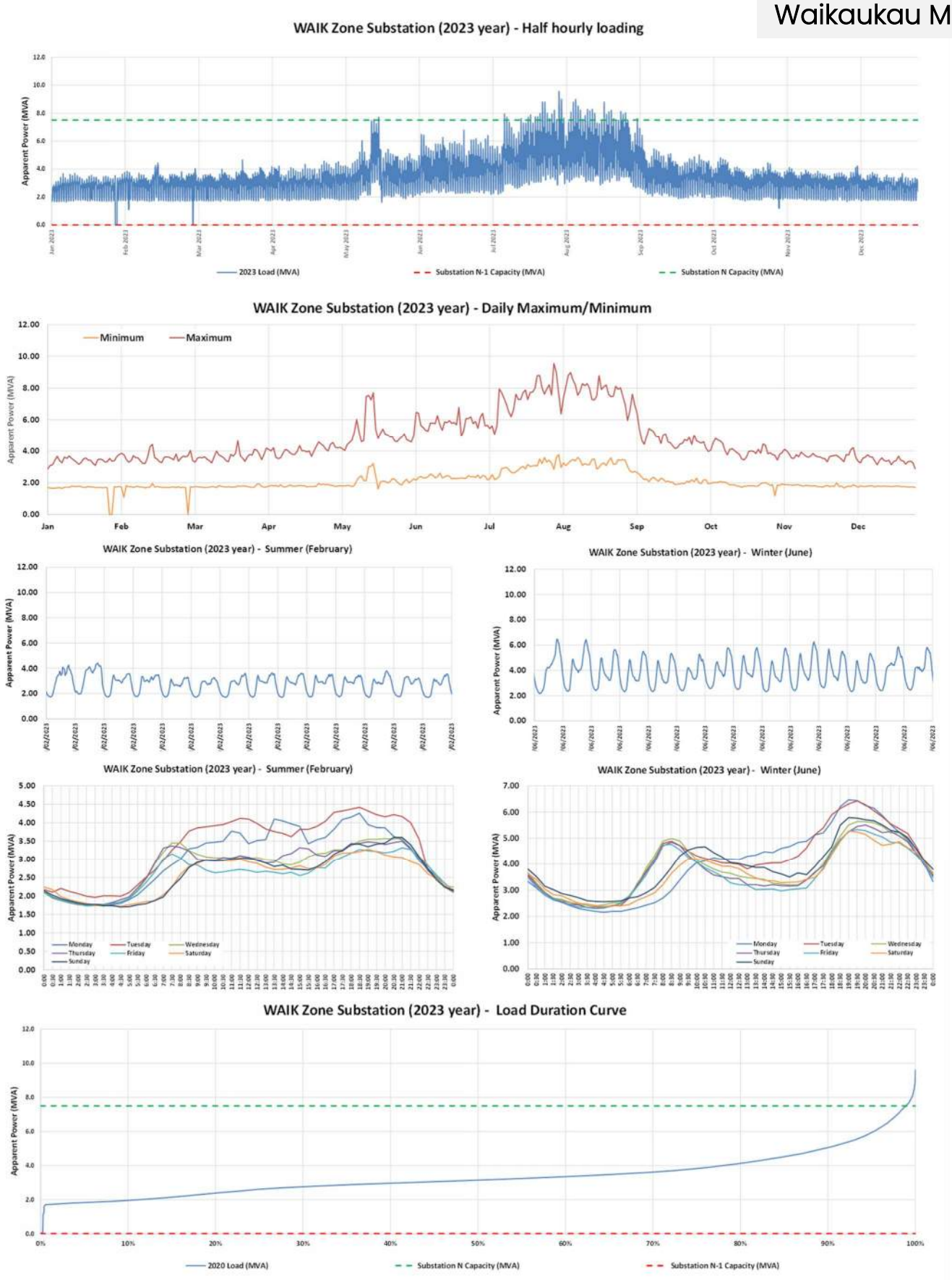

Figure 105. Waikaukau 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Waimauku MVA

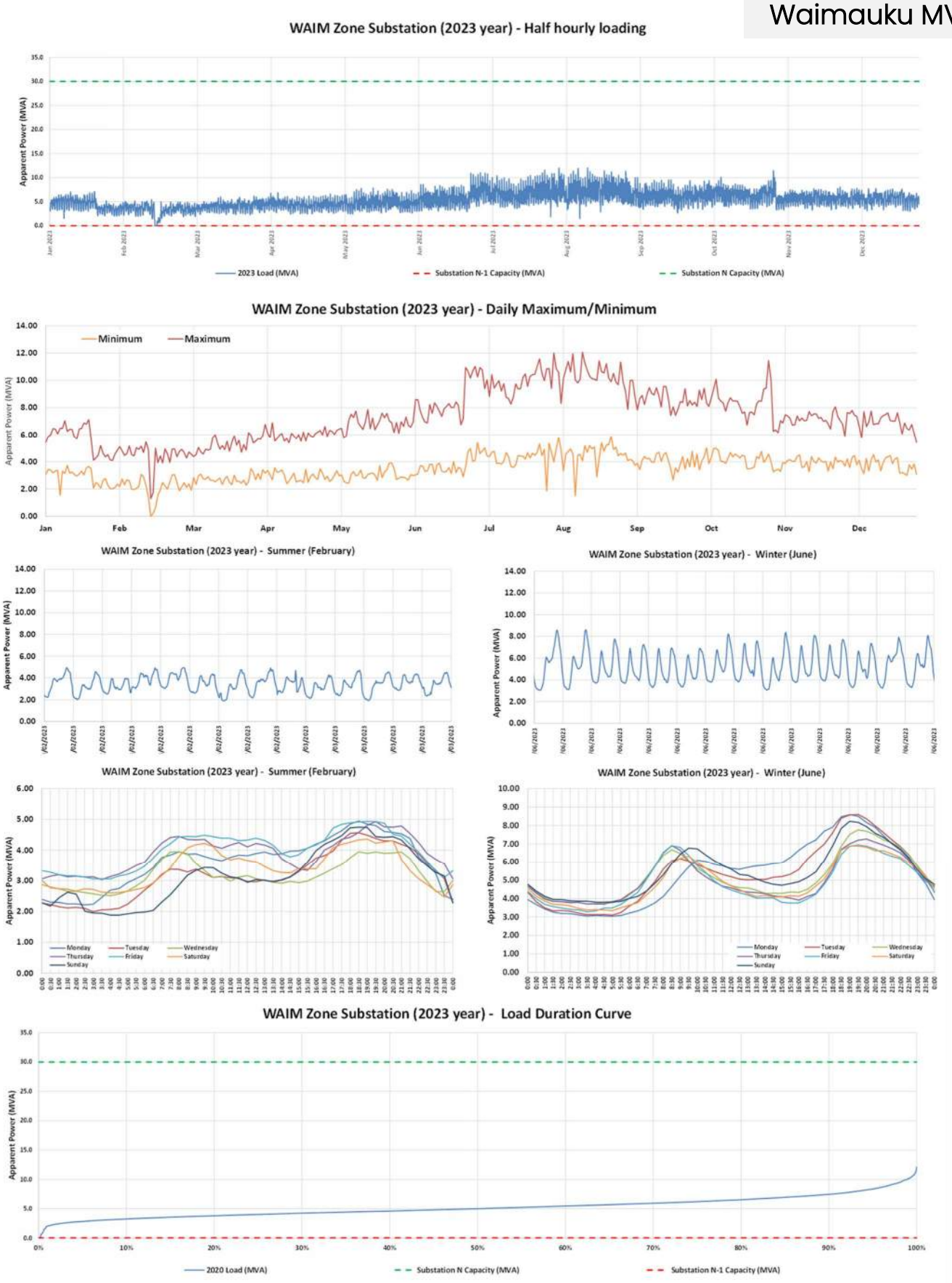

Figure 106. Waimauku 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Wairau Road MVA

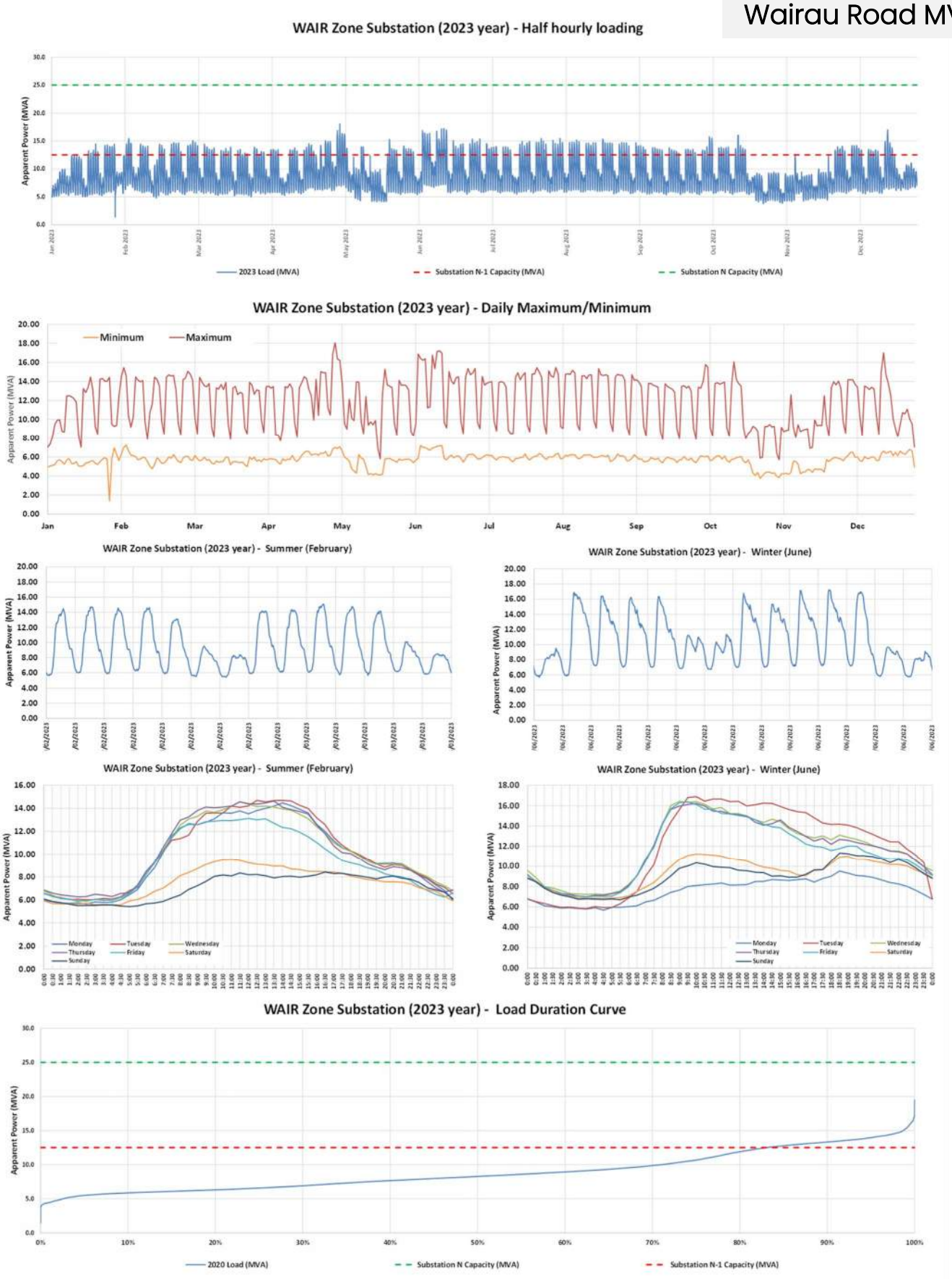

Figure 107. Wairau Road 110/11 kV zone substation: Apparent Power (MVA) load characteristics

Warkworth MVA

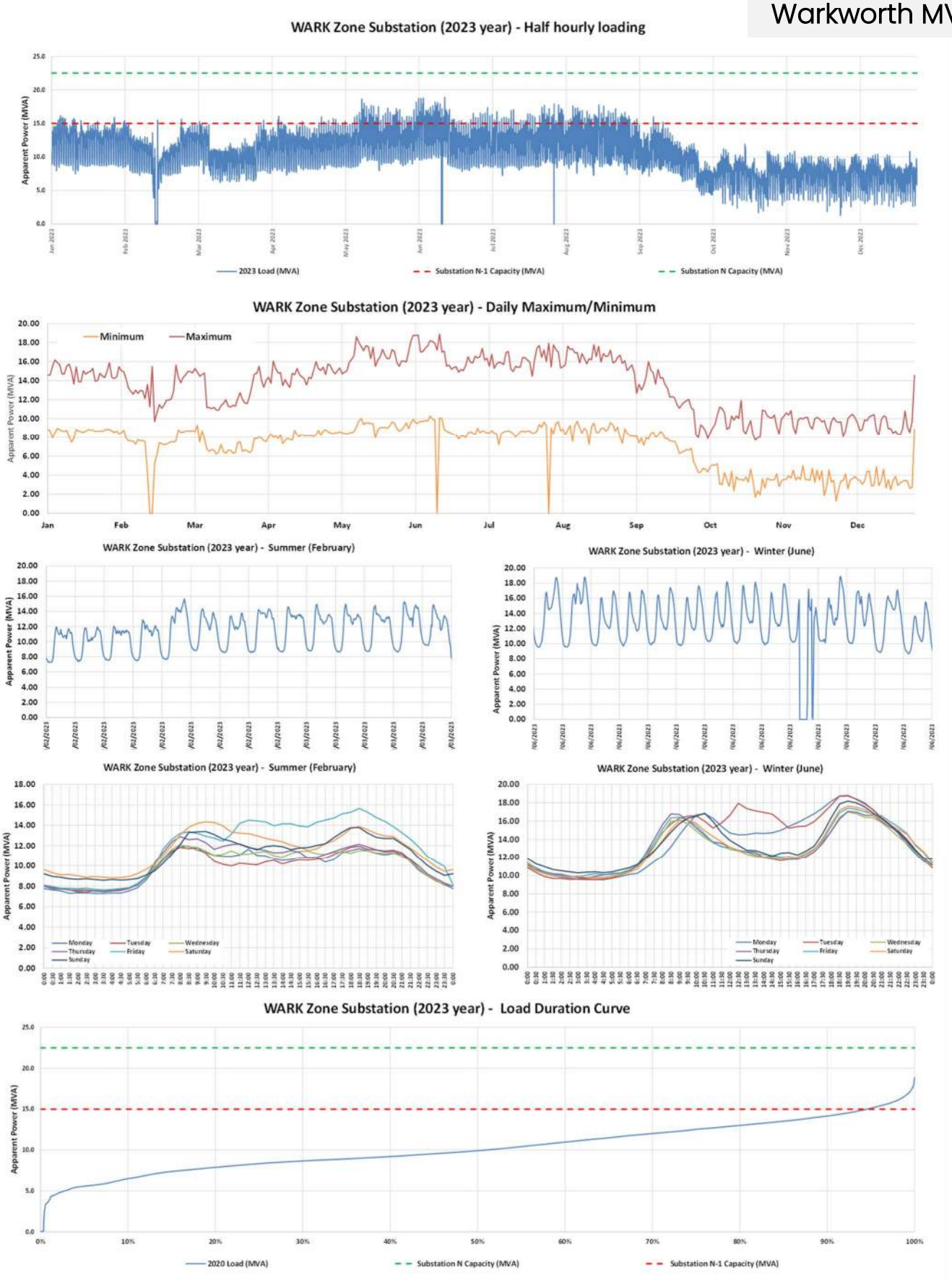

Figure 108. Warkworth 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Wellsford MVA

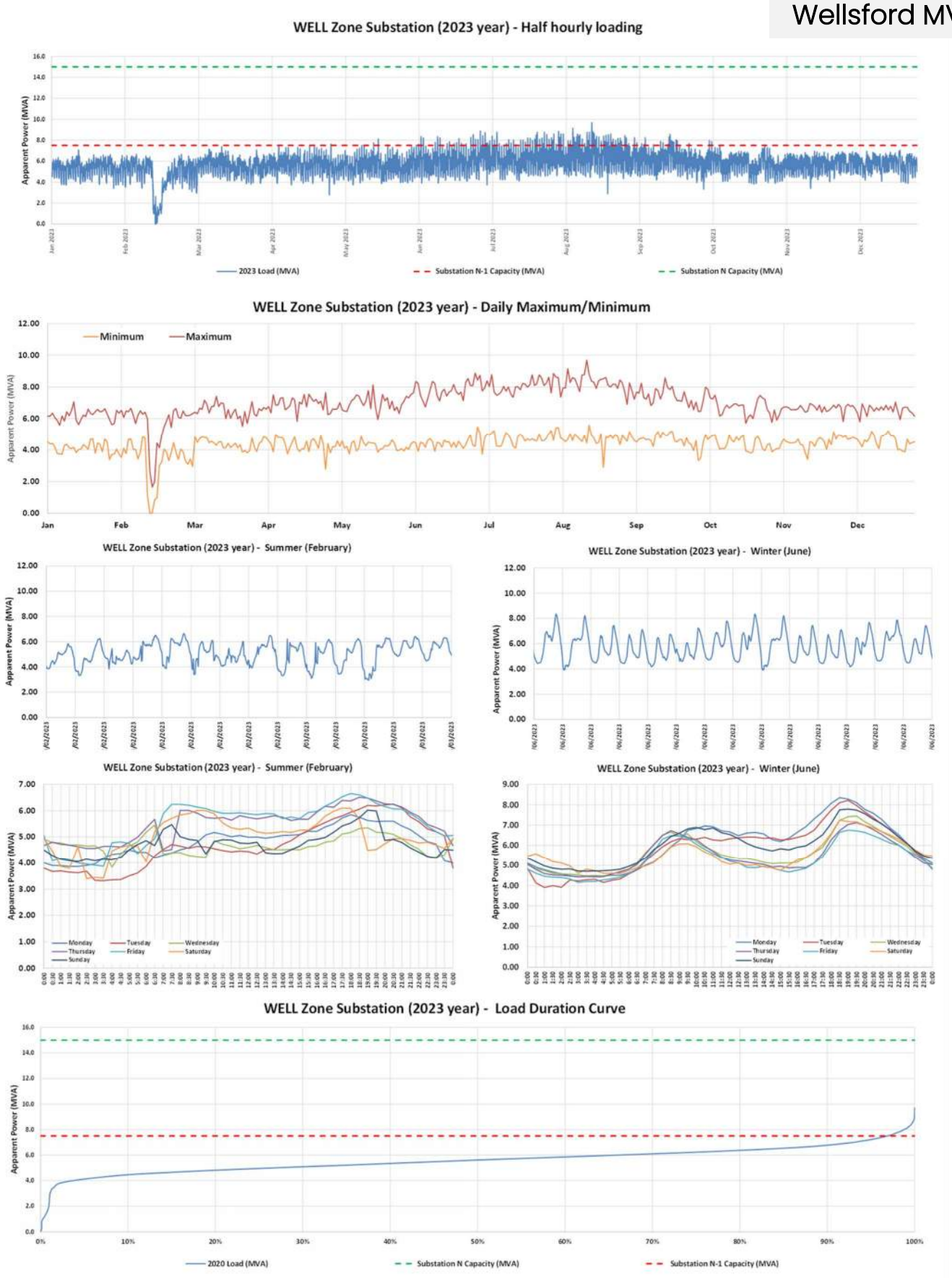

Figure 109. Wellsford 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Westfield MVA

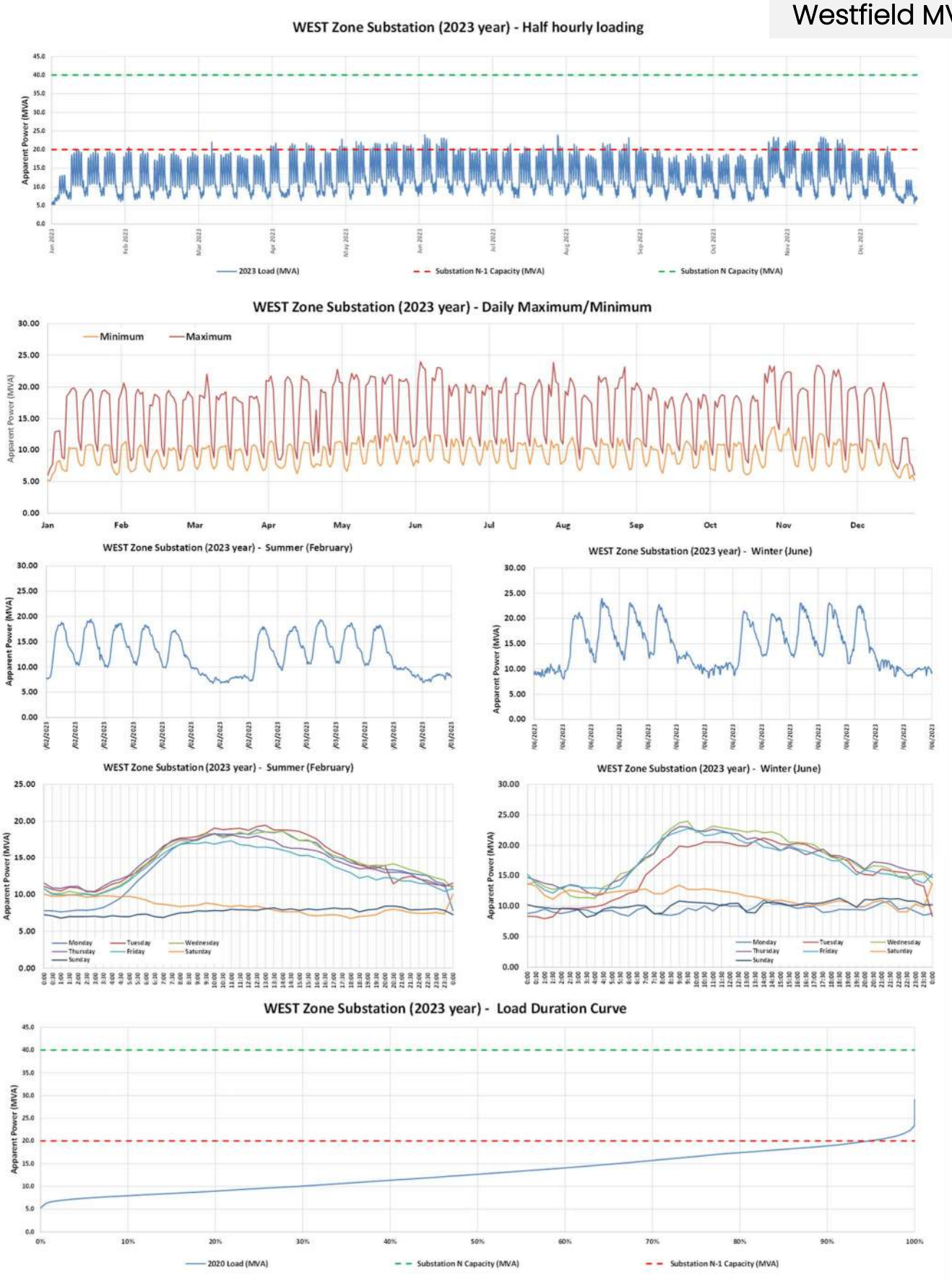

Figure 110. Westfield 22/11 kV zone substation: Apparent Power (MVA) load characteristics

Westgate MVA

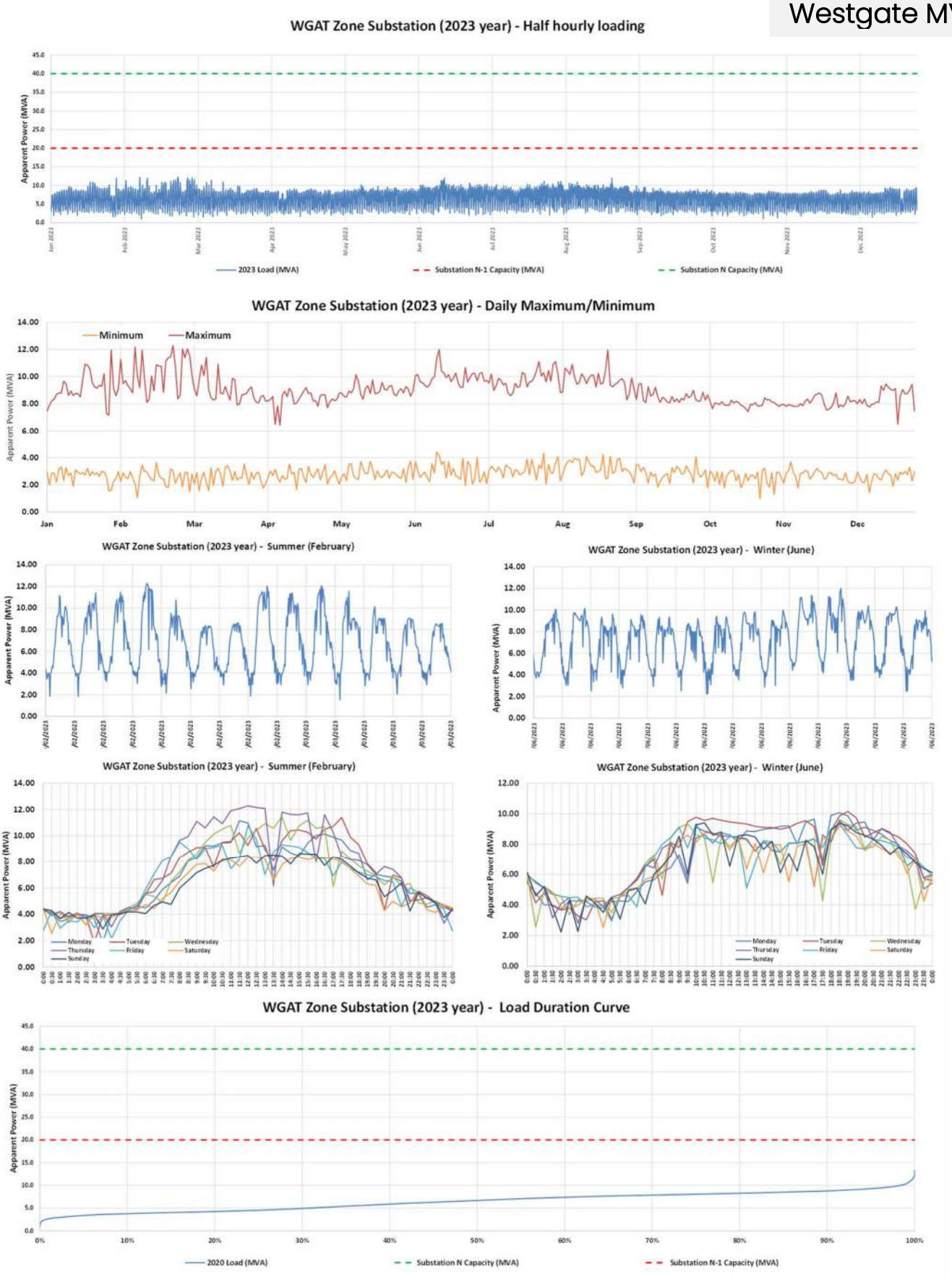

Figure 111. Westgate 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Wiri MVA

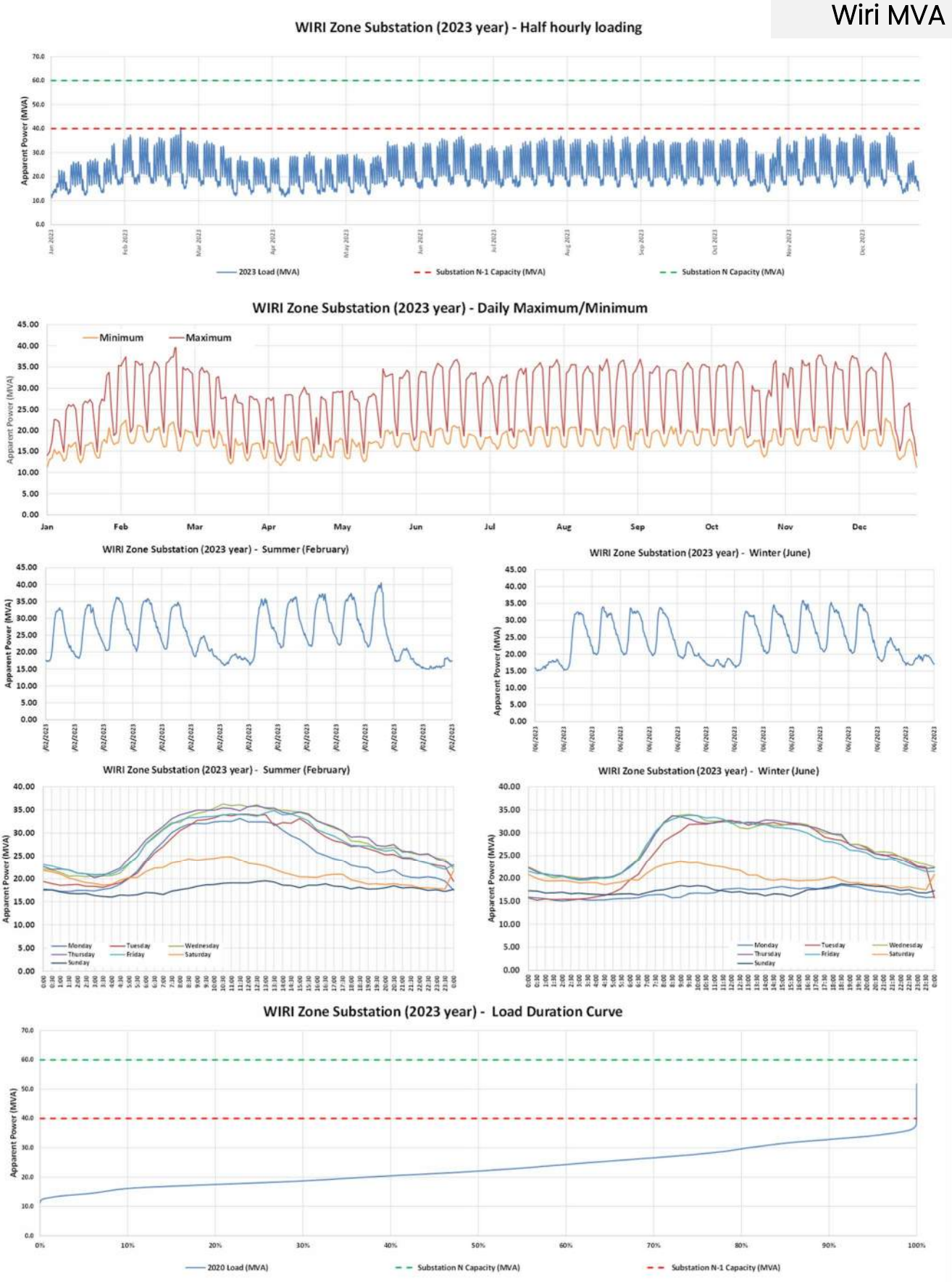

Figure 112. Wiri 33/11 kV zone substation: Apparent Power (MVA) load characteristics

Woodford MVA

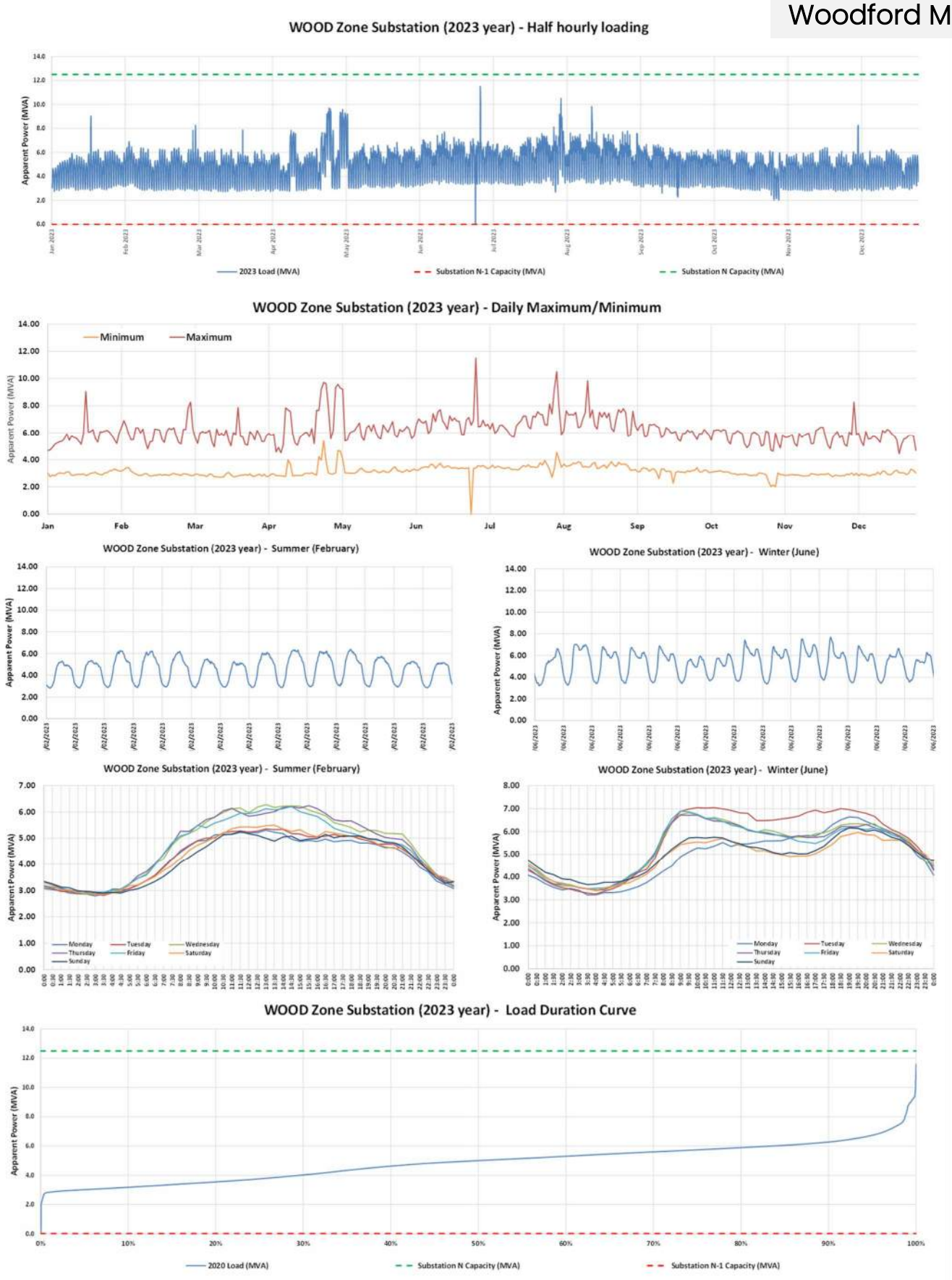

Figure 113. Woodford 33/11 kV zone substation: Apparent Power (MVA) load characteristics

White Swan MVA

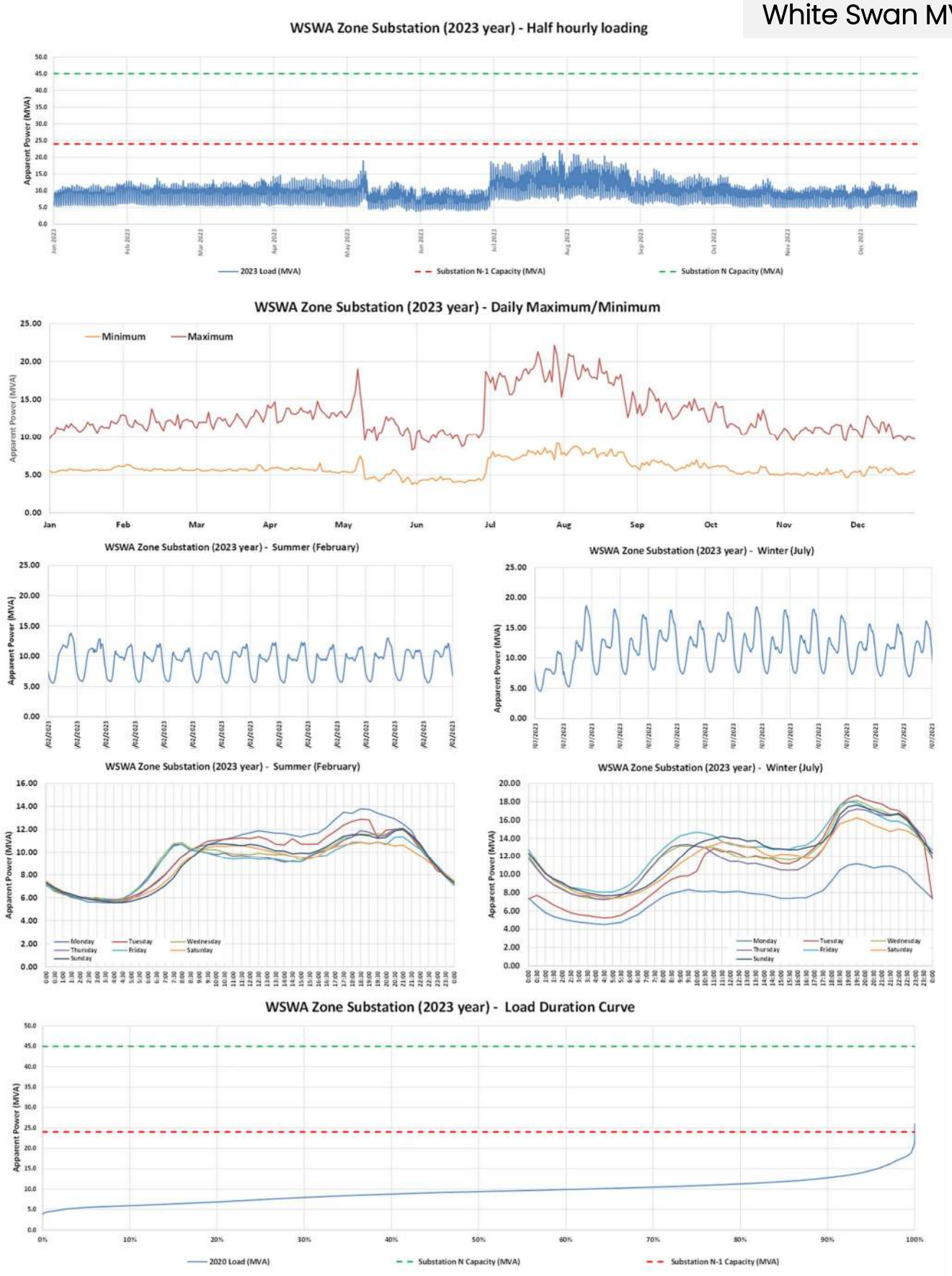

Figure 114. White Swan 22/11 kV zone substation: Apparent Power (MVA) load characteristics