# GAS STATEMENT OF OPPORTUNITIES

# ATTACHMENT B: VICTORIAN GAS PLANNING REVIEW 2015

FOR EASTERN AND SOUTH-EASTERN AUSTRALIA

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AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

# IMPORTANT NOTICE

## Purpose

AEMO has prepared this document in accordance with Rule 323 of the National Gas Rules, as an attachment to the 2015 Gas Statement of Opportunities (GSOO). It contains data and charts previously published as the Victorian Gas Planning Report (VGPR). This publication is based on information available to AEMO as at 31 December 2014.

In March 2014, the Australian Energy Market Commission (AEMC) approved Rule Changes that align publication of both the GSOO and VGPR to 31 March from 2015. This change improves consistency between the reports, removes duplicated effort, and allows AEMO to utilise the most recent winter demand trends in both reports.

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# CONTENTS



# TABLES

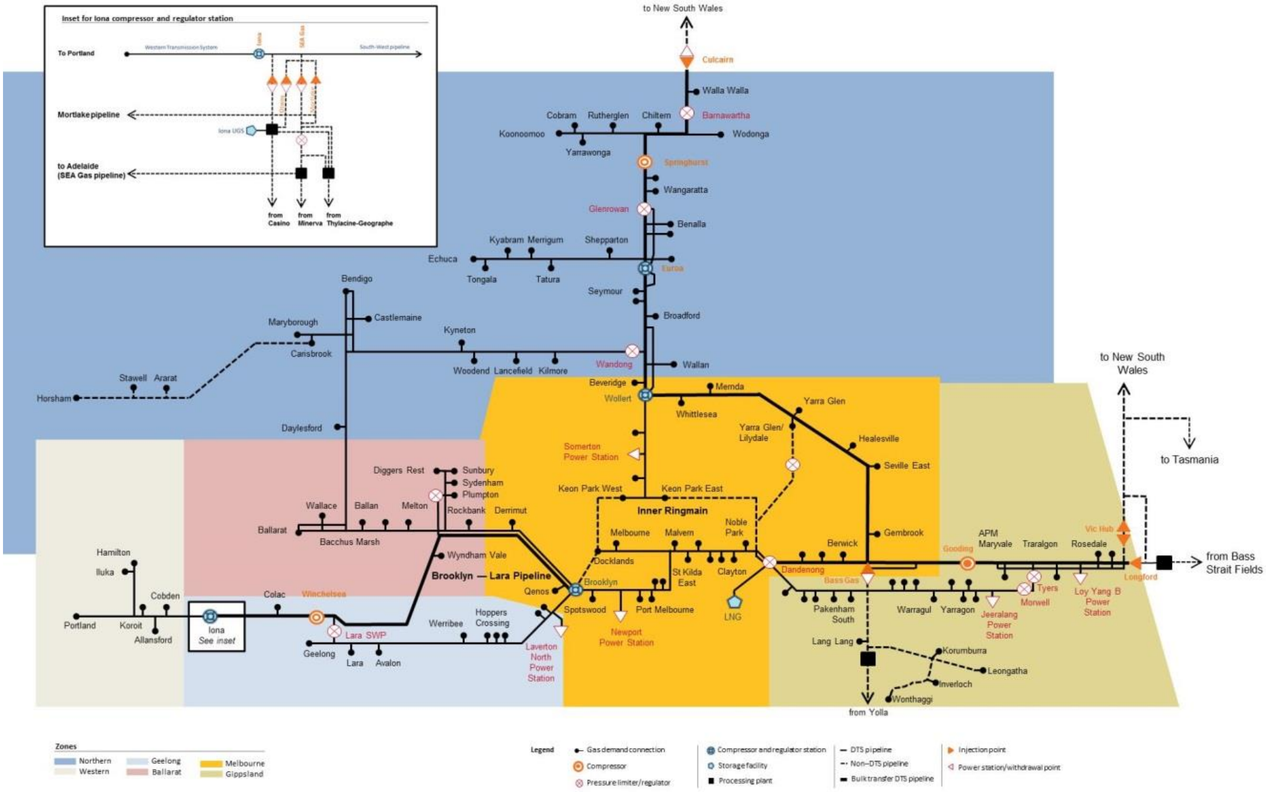
# FIGURES

# INTRODUCTION

AEMO has published planning assumptions and methodology separately on the AEMO website, in a document called Victorian Gas Planning Approach[1].

As a reference for readers, Figure 1 is a schematic of Victoria's Declared Transmission System.

**Figure 1 System Withdrawal Zones (SWZ)**




[1] Available: http://www.aemo.com.au/Electricity/Planning/Related-Information/Planning-Assumptions.

# CHAPTER 1. DEMAND FORECAST

### Table 1 Annual system consumption forecasts excluding GPG (PJ)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| System consumption | 191.7 | 194.6 | 192.9 | 191.7 | 189.3 |
| System consumption forecast by market segment | | | | | |
| Residential and commercial[2] | 121.1 | 121.9 | 122.9 | 123.7 | 124.0 |
| Industrial | 70.6 | 72.7 | 70.0 | 68.0 | 65.3 |

### Table 2 Annual system consumption forecasts by SWZ (PJ/yr)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Ballarat | 8.7 | 8.8 | 8.9 | 9.0 | 9.0 |
| Geelong | 22.3 | 23.2 | 22.8 | 22.8 | 22.8 |
| Gippsland | 14.9 | 15.1 | 12.5 | 11.3 | 9.4 |
| Melbourne | 124.1 | 125.3 | 126.0 | 125.8 | 125.4 |
| Northern | 17.4 | 17.7 | 17.9 | 18.0 | 18.0 |
| Western | 4.4 | 4.5 | 4.7 | 4.7 | 4.8 |
| Total system consumption | 191.7 | 194.6 | 192.9 | 191.7 | 189.3 |

### Table 3 Annual DTS-connected GPG consumption forecasts by SWZ (PJ/yr)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Ballarat | - | - | - | - | - |
| Geelong | 0.06 | 0.06 | 0.11 | 0.22 | 0.15 |
| Gippsland | 0.00 | 0.01 | 0.01 | 0.02 | 0.02 |
| Melbourne | 0.25 | 0.24 | 0.29 | 0.49 | 0.34 |
| Northern | - | - | - | - | - |
| Western | - | - | - | - | - |
| Total DTS-connected GPG consumption | 0.30 | 0.31 | 0.41 | 0.74 | 0.51 |

### Table 4 Monthly system consumption forecasts for January – December 2015 (PJ)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| System consumption | 9.0 | 8.9 | 10.4 | 13.0 | 20.1 | 24.5 | 26.3 | 24.1 | 18.6 | 15.4 | 11.6 | 9.8 |

[2] Distribution loss forecasts added to the residential and commercial forecast component.

### Table 5 Monthly system consumption forecasts by SWZ for 2015 (PJ)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ballarat | 0.3 | 0.3 | 0.4 | 0.6 | 1.0 | 1.2 | 1.4 | 1.2 | 0.9 | 0.7 | 0.5 | 0.3 |
| Geelong | 1.4 | 1.3 | 1.4 | 1.6 | 2.2 | 2.5 | 2.6 | 2.4 | 2.0 | 1.8 | 1.5 | 1.4 |
| Gippsland | 0.9 | 0.8 | 1.0 | 1.1 | 1.4 | 1.6 | 1.7 | 1.6 | 1.4 | 1.3 | 1.1 | 1.0 |
| Melbourne | 5.3 | 5.2 | 6.3 | 8.2 | 13.4 | 16.7 | 17.8 | 16.2 | 12.1 | 9.8 | 7.1 | 5.9 |
| Northern | 0.8 | 0.9 | 1.1 | 1.2 | 1.8 | 2.1 | 2.3 | 2.2 | 1.7 | 1.4 | 1.0 | 0.8 |
| Western | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.4 | 0.5 | 0.5 | 0.4 | 0.4 | 0.4 | 0.3 |
| System consumption | 9.0 | 8.9 | 10.4 | 13.0 | 20.1 | 24.5 | 26.3 | 24.1 | 18.6 | 15.4 | 11.6 | 9.8 |

### Table 6 Monthly DTS-connected GPG consumption forecasts by SWZ for 2015 (TJ)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ballarat | - | - | - | - | - | - | - | - | - | - | - | - |
| Geelong | 6 | 10 | 0 | 0 | 22 | 0 | 19 | 0 | 0 | 0 | 0 | 0 |
| Gippsland | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Melbourne | 31 | 43 | 12 | 12 | 50 | 12 | 20 | 14 | 13 | 13 | 12 | 13 |
| Northern | - | - | - | - | - | - | - | - | - | - | - | - |
| Western | - | - | - | - | - | - | - | - | - | - | - | - |
| Total GPG | 38 | 53 | 12 | 12 | 74 | 12 | 39 | 14 | 13 | 13 | 12 | 13 |

### Table 7 Winter maximum system demand forecast[3], medium scenario (TJ/d)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| 1-in-2 | 1,126 | 1,134 | 1,130 | 1,124 | 1,115 |
| 1-in-20 | 1,248 | 1,257 | 1,252 | 1,246 | 1,238 |

### Table 8 Winter 1-in-2 maximum system demand forecast by SWZ (TJ/d)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Ballarat | 61 | 61 | 62 | 62 | 62 |
| Geelong | 114 | 112 | 111 | 111 | 111 |
| Gippsland | 71 | 70 | 62 | 58 | 52 |
| Melbourne | 761 | 772 | 775 | 772 | 770 |
| Northern | 100 | 101 | 102 | 102 | 102 |
| Western | 18 | 18 | 18 | 18 | 18 |
| System demand | 1,126 | 1,134 | 1,130 | 1,124 | 1,115 |

[3] The maximum system demand forecast does not include GPG demand, export demand to Culcairn and transmission system use gas.

### Table 9 Winter 1-in-20 maximum system demand forecast by SWZ (TJ/d)

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Ballarat | 68 | 68 | 68 | 69 | 69 |
| Geelong | 123 | 126 | 125 | 125 | 125 |
| Gippsland | 76 | 77 | 68 | 64 | 58 |
| Melbourne | 853 | 855 | 858 | 855 | 853 |
| Northern | 110 | 112 | 113 | 113 | 113 |
| Western | 19 | 19 | 20 | 20 | 20 |
| System demand | 1,248 | 1,257 | 1,252 | 1,246 | 1,238 |

### Table 10 Maximum hour system demand forecast by SWZ (TJ/hr)

| | | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| 1-in-2 peak hour | Ballarat | 4.2 | 4.3 | 4.3 | 4.3 | 4.3 |
| | Geelong | 6.8 | 6.7 | 6.7 | 6.7 | 6.7 |
| | Gippsland | 4.2 | 4.1 | 3.7 | 3.5 | 3.1 |
| | Melbourne | 51.9 | 52.6 | 52.8 | 52.6 | 52.5 |
| | Northern | 6.5 | 6.6 | 6.6 | 6.7 | 6.6 |
| | Western | 1.0 | 1.0 | 1.0 | 1.1 | 1.1 |
| | System demand | 74.4 | 74.9 | 74.6 | 74. | 73.7 |
| 1-in-20 peak hour | Ballarat | 4.7 | 4.7 | 4.8 | 4.8 | 4.8 |
| | Geelong | 7.4 | 7.5 | 7.5 | 7.5 | 7.5 |
| | Gippsland | 4.5 | 4.5 | 4.0 | 3.8 | 3.4 |
| | Melbourne | 58.1 | 58.3 | 58.5 | 58.3 | 58.1 |
| | Northern | 7.2 | 7.3 | 7.4 | 7.4 | 7.4 |
| | Western | 1.1 | 1.1 | 1.2 | 1.2 | 1.2 |
| | System demand | 82.5 | 83.0 | 82.7 | 82.4 | 81.8 |

Note: it is not appropriate to add up peak hour demand for each SWZ because all SWZs are not expected to coincide.

### Table 11 Monthly peak day system demand forecasts for January–December 2015 (TJ/d)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep[4] | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-in-2 | 394 | 416 | 496 | 668 | 878 | 1,126 | 1,126 | 1,126 | 1,126 | 792 | 657 | 512 |
| 1-in-20 | 475 | 539 | 657 | 835 | 1,055 | 1,248 | 1,248 | 1,248 | 1,248 | 953 | 824 | 678 |

### Table 12 Monthly 1-in-2 peak day demand forecasts by SWZ for 2015 (TJ/d)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep[5] | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ballarat | 19 | 21 | 25 | 35 | 47 | 61 | 61 | 61 | 61 | 42 | 34 | 26 |
| Geelong | 64 | 65 | 71 | 83 | 97 | 114 | 114 | 114 | 114 | 91 | 82 | 72 |
| Gippsland | 44 | 45 | 48 | 54 | 62 | 71 | 71 | 71 | 71 | 59 | 54 | 48 |
| Melbourne | 213 | 228 | 289 | 418 | 575 | 762 | 762 | 762 | 762 | 511 | 410 | 302 |
| Northern | 43 | 44 | 51 | 64 | 81 | 100 | 100 | 100 | 100 | 74 | 63 | 52 |
| Western | 11 | 12 | 12 | 14 | 16 | 18 | 18 | 18 | 18 | 15 | 14 | 12 |
| System demand | 394 | 415 | 496 | 668 | 878 | 1,126 | 1,126 | 1,126 | 1,126 | 792 | 657 | 512 |

[4] Historically, maximum system demand has not occurred in September for the past five years. However, for operational planning purposes maximum system demand is assumed to occur at any time in June to September period.

[5] Historically, maximum system demand has not occurred in September for the past five years. However, for operational planning purposes maximum system demand is assumed to occur at any time in June to September period.

### Table 13 Monthly 1-in-20 peak day demand forecasts by SWZ for 2015 (TJ/d)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep[6] | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Ballarat** | 24 | 28 | 34 | 44 | 57 | 68 | 68 | 68 | 68 | 51 | 44 | 36 |
| **Geelong** | 69 | 74 | 82 | 94 | 109 | 123 | 123 | 123 | 123 | 102 | 94 | 84 |
| **Gippsland** | 47 | 49 | 54 | 60 | 69 | 76 | 76 | 76 | 76 | 65 | 60 | 55 |
| **Melbourne** | 274 | 321 | 410 | 545 | 708 | 852 | 852 | 852 | 852 | 632 | 535 | 425 |
| **Northern** | 49 | 54 | 63 | 77 | 95 | 110 | 110 | 110 | 110 | 87 | 76 | 65 |
| **Western** | 12 | 13 | 14 | 15 | 17 | 19 | 19 | 19 | 19 | 16 | 15 | 14 |
| **System demand** | 475 | 539 | 657 | 835 | 1,055 | 1,248 | 1,248 | 1,248 | 1,248 | 953 | 824 | 679 |

### Table 14 Monthly maximum hour system demand forecasts by SWZ for 2015 (TJ/h)

| | SWZ | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep[7] | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1-in-2 peak hour** | Ballarat | 0.8 | 1.0 | 1.3 | 2.7 | 3.6 | 4.2 | 4.2 | 4.2 | 4.2 | 3.3 | 2.1 | 1.8 |
| | Geelong | 3.1 | 3.1 | 3.3 | 4.7 | 6.1 | 6.8 | 6.8 | 6.8 | 6.8 | 5.4 | 4.3 | 3.9 |
| | Gippsland | 1.9 | 2.0 | 2.2 | 2.9 | 3.7 | 4.2 | 4.2 | 4.2 | 4.2 | 3.3 | 2.8 | 2.3 |
| | Melbourne | 13.4 | 14.5 | 18.3 | 33.3 | 46.0 | 51.9 | 51.9 | 51.9 | 51.9 | 38.9 | 27.8 | 21.9 |
| | Northern | 2.1 | 2.3 | 2.7 | 4.0 | 6.0 | 6.5 | 6.5 | 6.5 | 6.5 | 5.4 | 3.0 | 2.7 |
| | Western | 0.5 | 0.5 | 0.5 | 0.7 | 0.8 | 1.0 | 1.0 | 1.0 | 1.0 | 0.9 | 0.8 | 0.6 |
| | System demand[8] | 21.7 | 22.9 | 27.8 | 47.3 | 65.5 | 74.4 | 74.4 | 74.4 | 74.4 | 56.4 | 40.8 | 32.9 |
| **1-in-20 peak hour** | Ballarat | 0.9 | 1.1 | 1.5 | 3.0 | 4.0 | 4.7 | 4.7 | 4.7 | 4.7 | 3.7 | 2.3 | 2.0 |
| | Geelong | 3.3 | 3.3 | 3.6 | 5.0 | 6.5 | 7.4 | 7.4 | 7.4 | 7.4 | 5.8 | 4.6 | 4.2 |
| | Gippsland | 2.0 | 2.1 | 2.3 | 3.1 | 4.0 | 4.5 | 4.5 | 4.5 | 4.5 | 3.6 | 3.0 | 2.5 |
| | Melbourne | 15.0 | 16.3 | 20.5 | 37.3 | 51.6 | 58.1 | 58.1 | 58.1 | 58.1 | 43.6 | 31.2 | 24.5 |
| | Northern | 2.3 | 2.5 | 2.9 | 4.4 | 6.6 | 7.2 | 7.2 | 7.2 | 7.2 | 5.9 | 3.3 | 2.9 |
| | Western | 0.5 | 0.5 | 0.5 | 0.7 | 0.9 | 1.1 | 1.1 | 1.1 | 1.1 | 1.0 | 0.8 | 0.7 |
| | System demand | 24.1 | 25.4 | 30.8 | 52.4 | 72.6 | 82.5 | 82.5 | 82.5 | 82.5 | 62.6 | 45.3 | 36.5 |

[6] Historically, maximum system demand has not occurred in September for the past five years. However, for operational planning purposes maximum system demand is assumed to occur at any time in June to September period.

[7] Historically, maximum system demand has not occurred in September for the past five years. However, for operational planning purposes maximum system demand is assumed to occur at any time in June to September period.

[8] System demand is not the sum of all SWZs as it refers to the maximum hour system demand for the DTS.

# CHAPTER 2. SUPPLY FORECAST

**Table 15 Annual supply forecast by SWZ and injection point/or aggregated injection points (PJ/yr)**

| SWZ | Injection point | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Gippsland | Longford available | 299 | 291 | 304 | 100 | 85 |
| | Longford prospective | 26 | 45 | 24 | 253 | 288 |
| | BassGas available | 24 | 25 | 25 | 25 | 25 |
| | BassGas prospective | 0 | 0 | 0 | 0 | 0 |
| | **Total available** | **323** | **316** | **329** | **125** | **110** |
| | **Total available plus prospective** | **349** | **361** | **353** | **379** | **397** |
| Geelong | Port Campbell available | 59 | 43 | 45 | 46 | 41 |
| | Port Campbell prospective | 0 | 9 | 9 | 7 | 0 |
| | **Total available plus prospective** | **59** | **52** | **54** | **53** | **41** |
| Northern | Culcairn available | 2 | 2 | 2 | 2 | 2 |
| | Culcairn prospective | 2 | 2 | 2 | 2 | 2 |
| | **Total available plus prospective** | **4** | **4** | **4** | **4** | **4** |
| Melbourne | LNG available* | 0.55 | 0.55 | 0.46 | 0.30 | 0.30 |
| Total available | | 384 | 361 | 377 | 174 | 153 |
| Total prospective | | 28 | 56 | 35 | 262 | 290 |
| Total available plus prospective | | **412** | **417** | **411** | **436** | **443** |

* LNG available is the LNG contracted by market participants.

**Table 16 Peak day supply forecast by SWZ and injection point (TJ/d)**

| SWZ | Injection Point | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Gippsland | Longford available | 956 | 944 | 1,035 | 304 | 260 |
| | Longford prospective | 92 | 124 | 63 | 680 | 783 |
| | BassGas available | 67 | 67 | 67 | 67 | 67 |
| | BassGas prospective | 0 | 0 | 0 | 0 | 0 |
| | **Total available** | **1,023** | **1,011** | **1,102** | **371** | **327** |
| | **Total available plus prospective** | **1,115** | **1,135** | **1,166** | **1,051** | **1,111** |
| Geelong | Port Campbell available | 520 | 398 | 404 | 239 | 223 |
| | Port Campbell prospective | 0 | 45 | 45 | 45 | 0 |
| | **Total available plus prospective** | **520** | **443** | **449** | **284** | **223** |
| Northern | Culcairn available | 58 | 58 | 58 | 58 | 50 |
| | Culcairn prospective | 5 | 5 | 5 | 5 | 5 |
| | **Northern available plus prospective** | **63** | **63** | **63** | **63** | **55** |
| Melbourne | LNG available | 87 | 87 | 87 | 87 | 87 |
| Total available | | 1,600 | 1,467 | 1,565 | 668 | 600 |
| Total prospective | | 97 | 174 | 113 | 730 | 788 |
| Total available plus prospective | | **1,697** | **1,641** | **1,678** | **1,398** | **1,389** |

### Table 17 Available monthly peak day gas supply forecast, January to December 2015 (TJ/d)

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Longford[a] | 676 | 597 | 754 | 767 | 982 | 1,010 | 1,011 | 1,019 | 1,003 | 964 | 956 | 950 |
| BassGas[b] | 67 | 0 | 0 | 67 | 0 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Port Campbell[c] | 482 | 482 | 482 | 211 | 520 | 520 | 520 | 520 | 520 | 498 | 482 | 482 |
| Culcairn | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| LNG[d] | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 |
| Total supply | 1,361 | 1,215 | 1,372 | 1,181 | 1,638 | 1,733 | 1,734 | 1,742 | 1,726 | 1,665 | 1,641 | 1,635 |

a. Longford includes gas supply from both the Longford gas plant and the VicHub injection point.
b. BassGas plant has planned maintenance in February, March, and May.
c. Port Campbell includes gas supply from Iona underground gas storage (UGS), South East Australia Gas Pipeline (SEA Gas), Otway, and Mortlake injection points. Port Campbell supply is subject to the net transportation capacity of the South West Pipeline (SWP) and Western Transmission System (WTS). Planned maintenance at Iona UGS in April will reduce injection into the SWP. SEA Gas, Otway and Mortlake can still inject into the SWP.
d. Vaporising capacity of up to 100 t/h will be available over 16 hours for peak shaving. This capacity equates to the vaporisation of 87 TJ/d, reflecting the contracted available rate for the outlook period.

### Table 18 Dandenong LNG facility capacity and operating parameters

| | | Note |
|---|---|---|
| Storage capacity | 12,400 tonnes (680TJ) | |
| Available to market participants | 10,036 tonnes (550TJ) | from 1 February 2015 |
| Operational or contractual commitments to third party customers | 2,372 tonnes (130TJ) | from 1 February 2016 |
| Vaporising rate | 100 tonne/hour (87TJ/d) | available over 16 hours for peak shaving. It is contracted available rate |
| Maximum vaporising rate | 180 tonne/hour | |
| Liquefaction rate | 1,500 tonne/month | averaging approximately 50 tonne/d or 2.7 TJ/d |

### Table 19 Iona UGS capacity and operating parameters

| | | Note |
|---|---|---|
| Storage capacity | 22,000 TJ | from 2015 to 2019 |
| Available to market participants (injection) | 420 TJ | from 2015 to 2019 |
| Available to market participants (withdrawal) | 124 TJ | from 2015 to 2019 |
| Maximum injection rate | 500 TJ/d | from 2015 to 2019 |
| Maximum withdrawal rate | 160 TJ/d | from 2015 to 2019 |

# CHAPTER 3. CAPACITY INFORMATION

**Figure 2 DTS system capacity to supply demand between Longford and Iona**

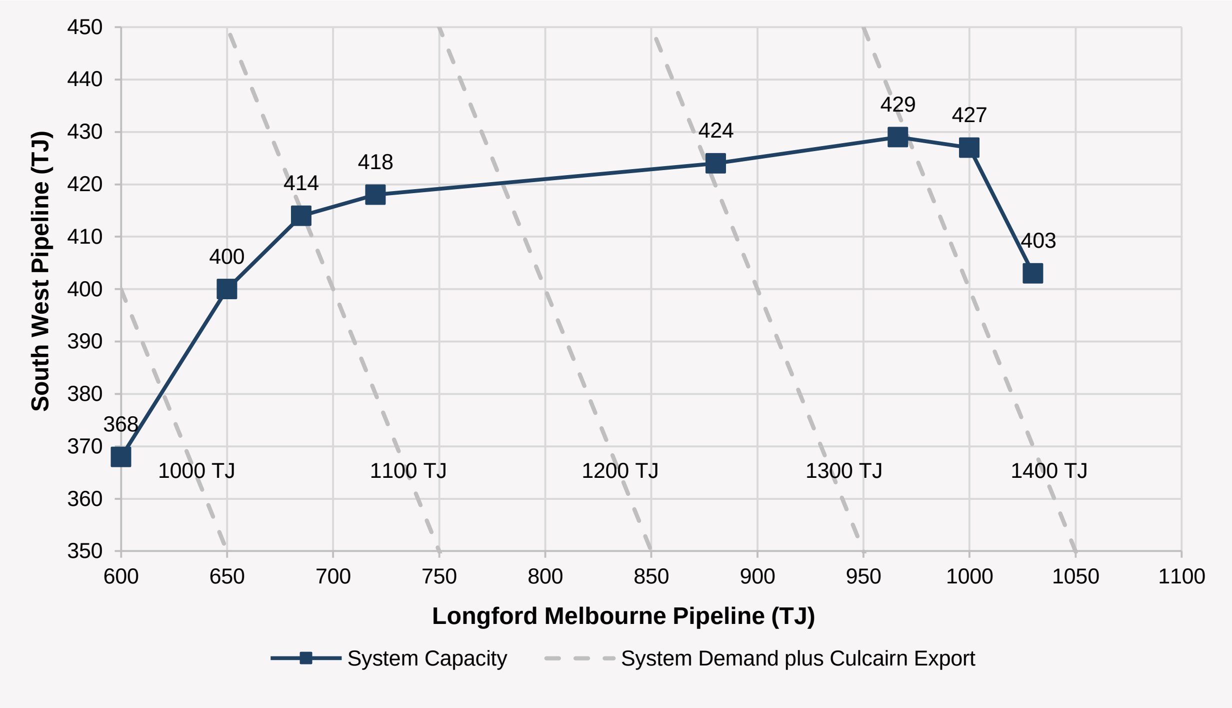



**Figure 3 SWP capacity with varying system demand days**

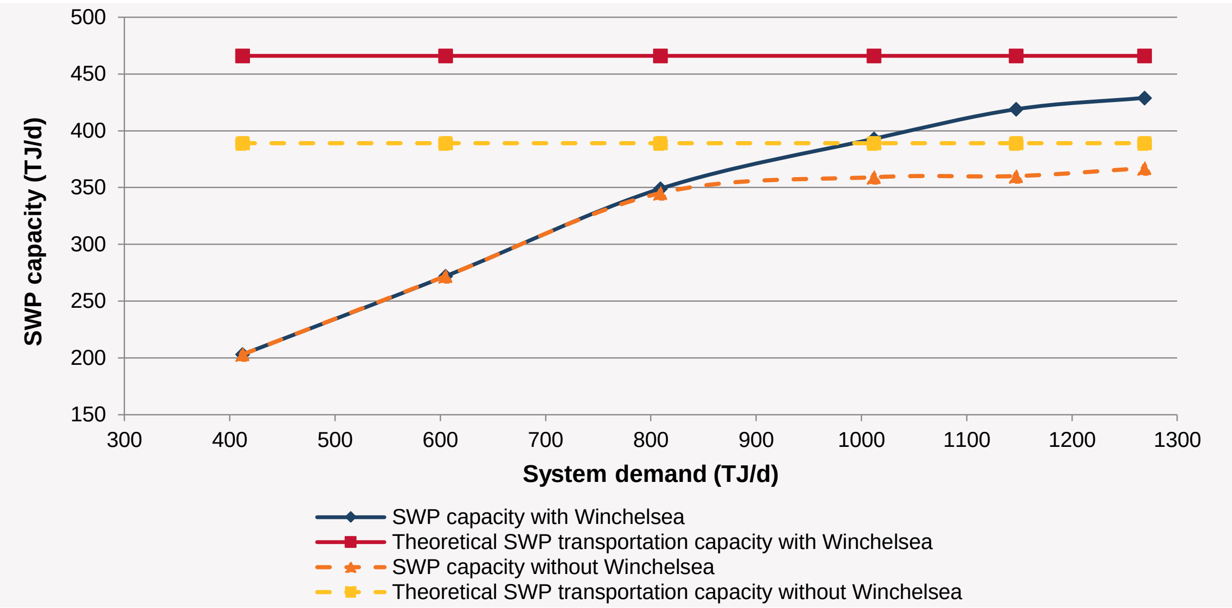


**Figure 4 SWP capacity with varying Iona pressure**

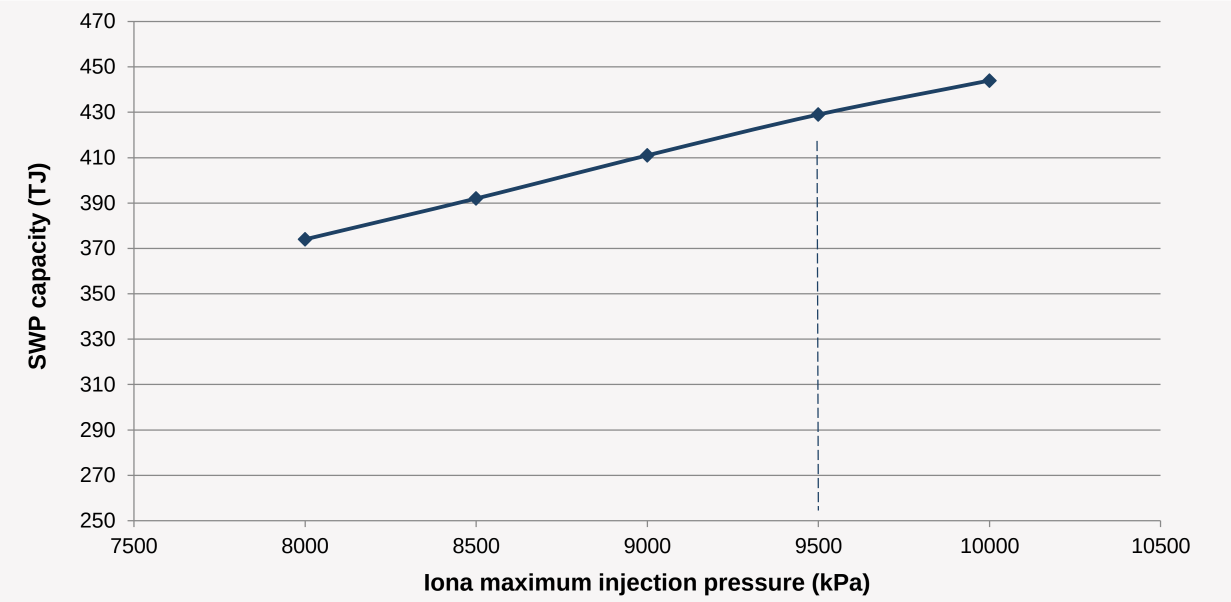



**Figure 5 Withdrawals at Iona as a function of system demand**

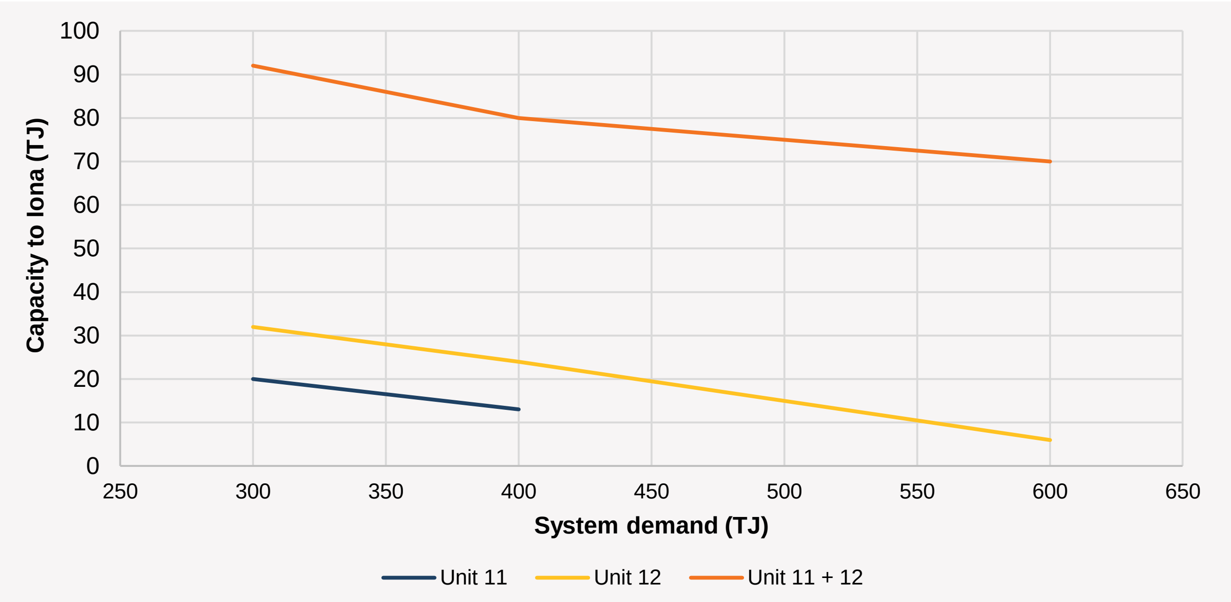


**Figure 6 Imports from New South Wales through Culcairn**

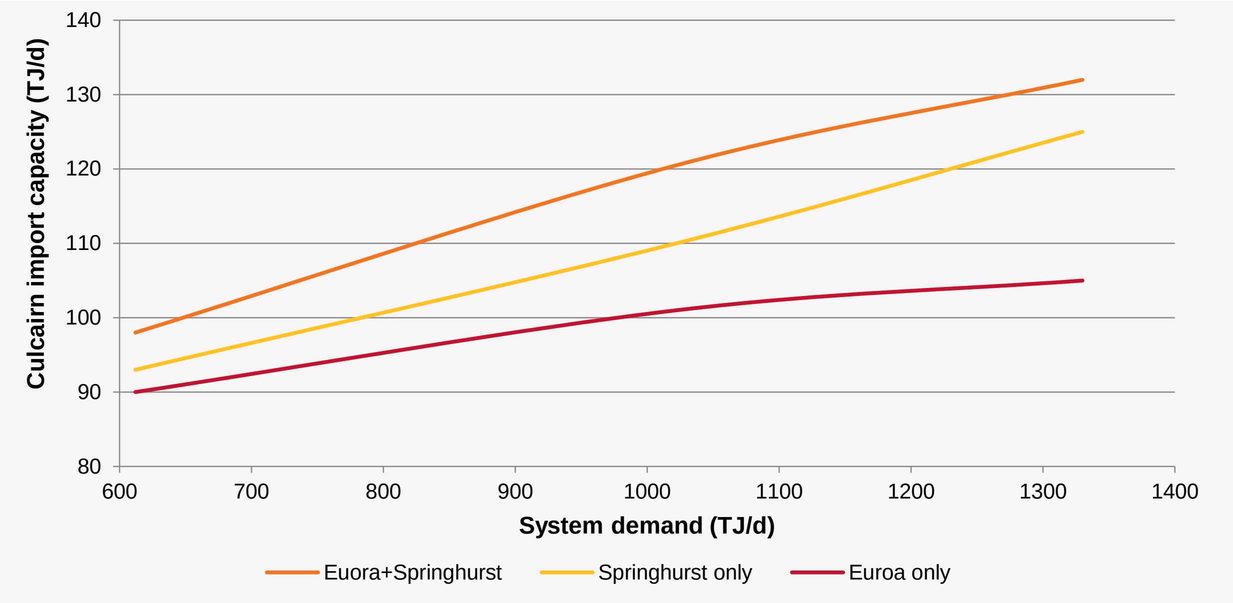



**Table 20 Culcairn export capacity based on forecasted 1-in-20 demand (TJ/d)**

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Forecast system demand | 1,248 | 1,257 | 1,252 | 1,246 | 1,238 |
| Northern Zone demand | 110 | 112 | 113 | 113 | 113 |
| Culcairn export | 118 | 118 | 118 | 118 | 119 |

**Figure 7 Exports to New South Wales at 5,850 kPa minimum modelled pressure at Culcairn**

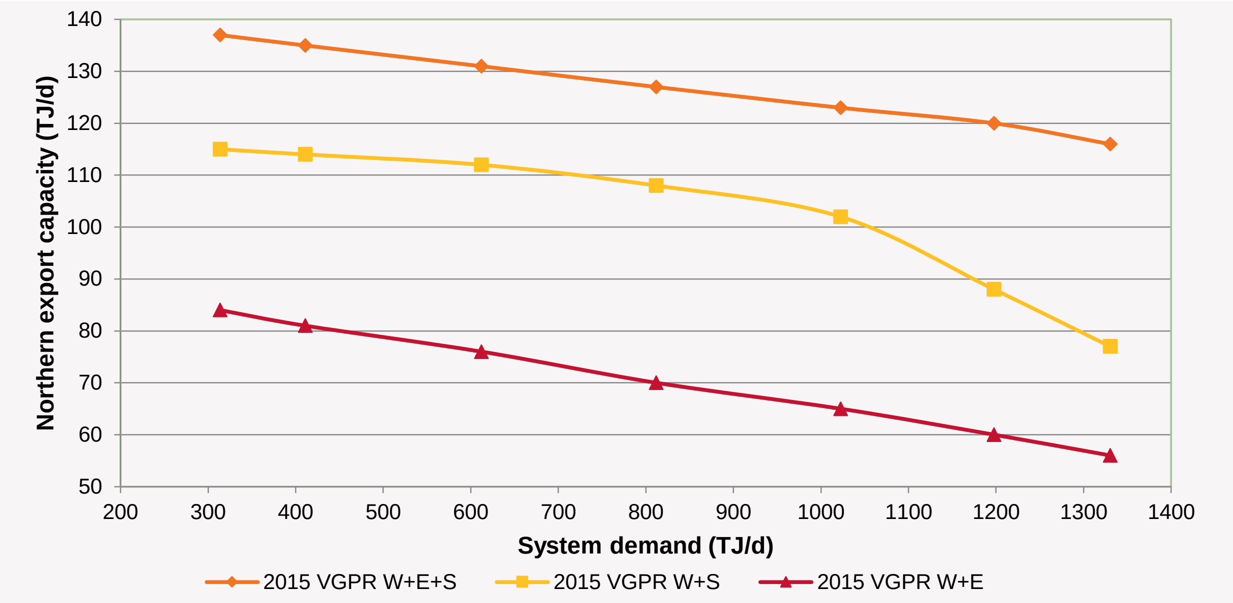


**Figure 8 Impact of Northern Zone local demand on Culcairn export capacity**

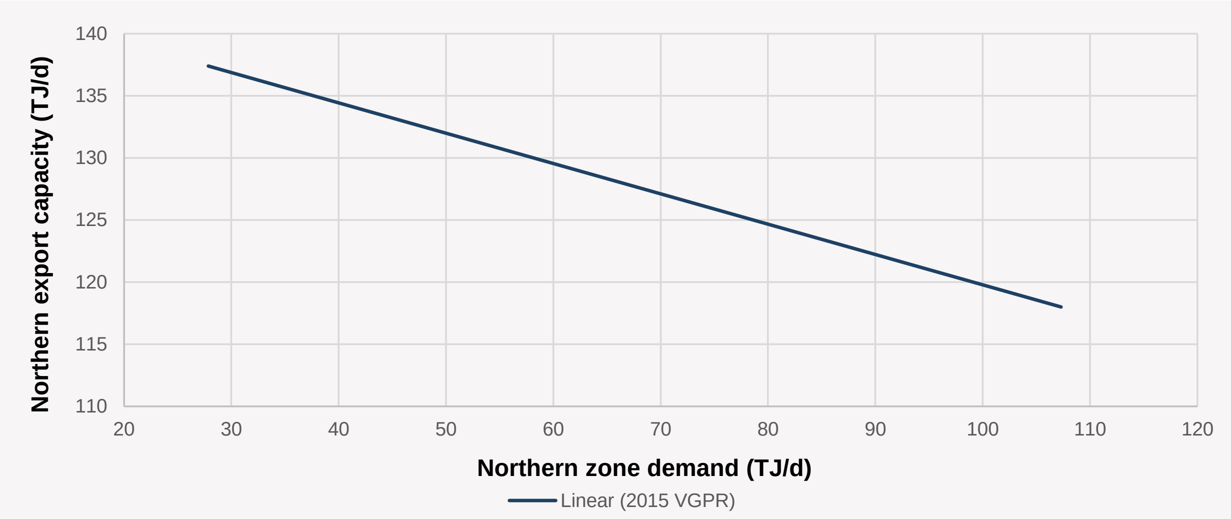
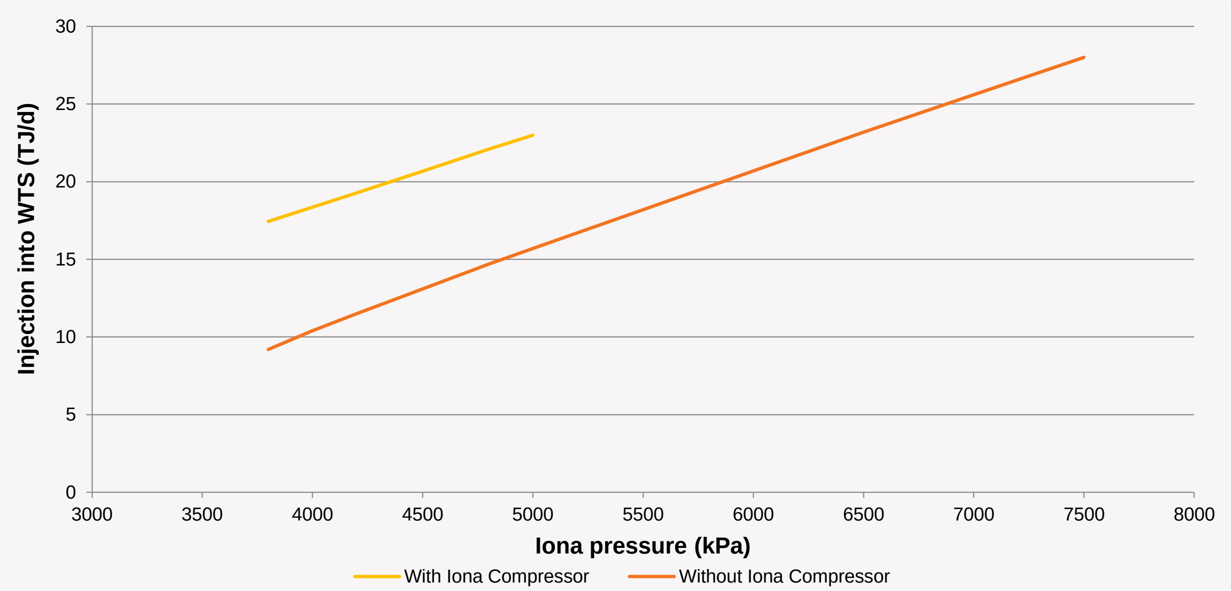



**Figure 9 Western Transmission System injections and Iona pressures**



# CHAPTER 4. ADEQUACY ASSESSMENT

**Figure 10 Annual supply forecast compared with annual system demand plus DTS-connected GPG demand forecast**

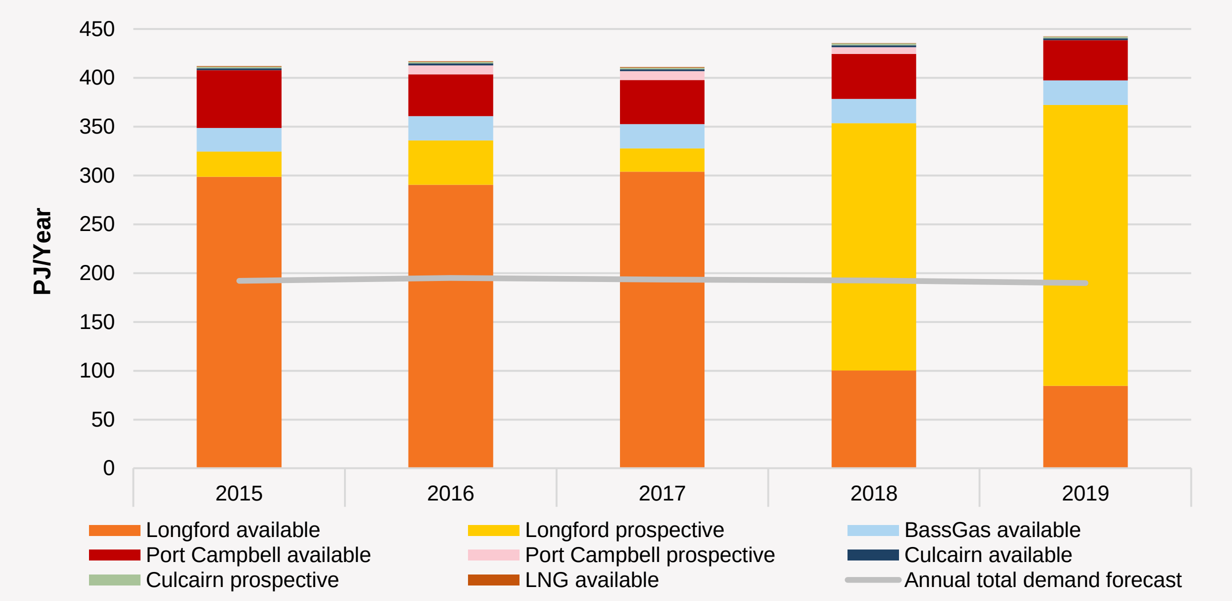



**Table 21 Peak day supply–demand outlook**

| | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| 1-in-20 peak day system demand (TJ/d) | 1,248 | 1,257 | 1,252 | 1,246 | 1,238 |
| GPG demand (TJ/d) | 25 | 25 | 25 | 25 | 25 |
| Culcairn Export (TJ/d) | 118 | 118 | 118 | 118 | 119 |
| Total demand (TJ/d) | **1,391** | **1,400** | **1,395** | **1,389** | **1,382** |
| Port Campbell (TJ/d) | 429 | 429 | 429 | 429 | 429 |
| BassGas (TJ/d) | 67 | 67 | 67 | 67 | 67 |
| Without LNG (TJ/d) | 0 | 0 | 0 | 0 | 0 |
| Required Longford supply without LNG (TJ/d) | 895 | 904 | 899 | 893 | 886 |
| With LNG (TJ/d) | 87 | 87 | 87 | 87 | 87 |
| Required Longford supply (TJ/d) | **808** | **817** | **812** | **806** | **799** |

**Figure 11 Peak day supply forecast compared with scenario demand**

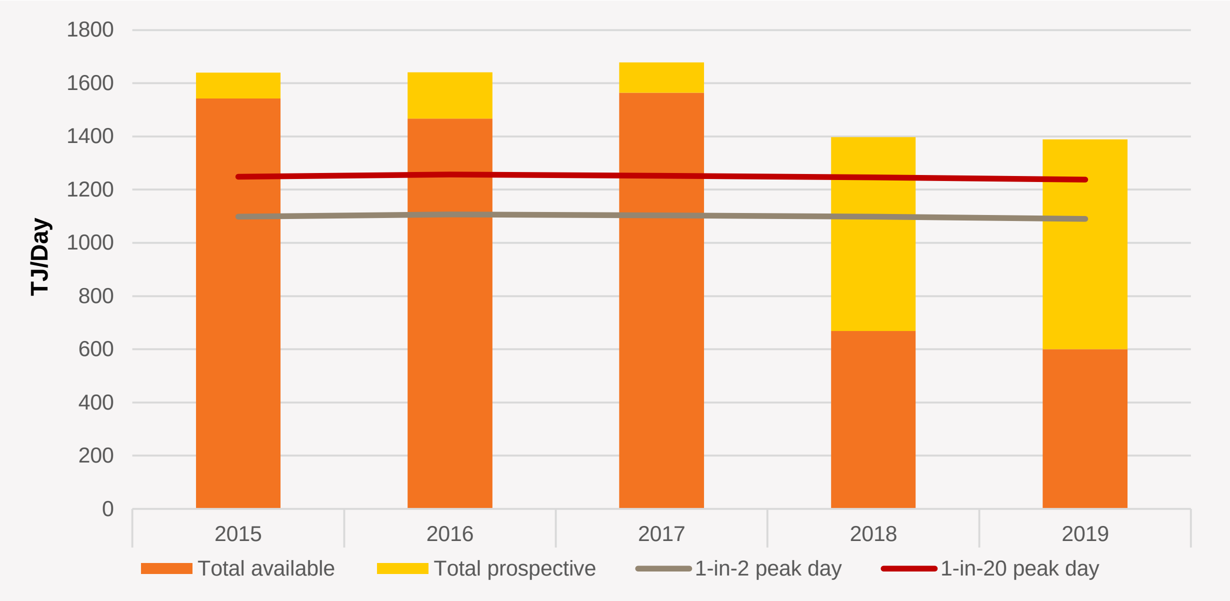



**Table 22 Monthly supply–demand outlook for 2015**

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1-in-20 (TJ/d) | 475 | 539 | 657 | 835 | 1055 | 1,248 | 1,248 | 1,248 | 1248 | 953 | 824 | 679 |
| Culcairn Export (TJ/d) | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 | 118 |
| GPG Demand (TJ/d) | 164 | 164 | 164 | 164 | 164 | 25 | 25 | 25 | 25 | 164 | 164 | 164 |
| Total Demand (TJ/d) | 757 | 821 | 939 | 1117 | 1337 | 1391 | 1391 | 1391 | 1391 | 1235 | 1106 | 961 |
| Port Campbell (TJ/d) | 429 | 429 | 429 | 211 | 429 | 429 | 429 | 429 | 429 | 429 | 429 | 429 |
| BassGas (TJ/d) | 67 | 0 | 0 | 67 | 0 | 67 | 67 | 67 | 67 | 67 | 67 | 67 |
| Required Longford supply without LNG (TJ/d) | 261 | 392 | 510 | 839 | 908 | 895 | 895 | 895 | 895 | 739 | 610 | 465 |
| With LNG (TJ/d) | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 | 87 |
| Required Longford supply (TJ/d) | 174 | 305 | 423 | 752 | 821 | 808 | 808 | 808 | 808 | 652 | 523 | 378 |

### Table 23 DTS capacity adequacy by SWZ

| SWZ | Constraints | Additional Information |
|---|---|---|
| **Gippsland** | No constraints identified | The Longford Melbourne Pipeline (LMP) capacity is 1,030 TJ/d.<br>Although available peak day gas supply forecasts provided by market participants indicate approximately 1,000 TJ/d from Gippsland SWZ, the highest injection in the past three years is 920 TJ/d.<br>The capacity of the Longford pipeline is currently underutilised.<br>On the Warragul lateral, there was one occasion last year when the pressure of the lateral dropped below the minimum due to an unexpected high load. This issue has been temporarily solved by increasing the supply pressure to the Lurgi pipeline from the Morwell backup regulator at Dandenong. Looping of the 4.87 km lateral would be a permanent solution to this localised issue, if high demand continues in the future. |
| **Geelong** | No constraints identified | The South West Pipeline (SWP) capacity is 429 TJ/d.<br>Before the commissioning of Winchelsea Compressor Station, the pipeline was reaching its capacity during high demand days. This was demonstrated by a number of Net Flow Transportation Constraints (NFTC) on the SWP during previous winters. Given the 62TJ/d capacity increase with the Winchelsea compressor, the pipeline is sufficient, based on the demand forecast for the next five years.<br>The withdrawal capacity at Iona has been eroded due to the demands of new connections off the BLP, such as the flow through the Plumpton PRS and Qenos load. However, the maximum withdrawal capacity is 92 TJ/d when both unit 11 and unit 12 compressors are in operation at Brooklyn.<br>Recent information provided by participants indicates that gas supply to the Iona Underground Storage (UGS) plant is in decline. This could have implications for the ability of the DTS to meet peak Victorian gas demand. AEMO is investigating and will update the market as soon as practical.<br>If the future requirement for Iona withdrawal increases, there are options to increase withdrawal capacity, such as by completing the Western Outer Ring Main project. |
| **Northern** | No constraints identified | APA Group's Victoria – New South Wales Interconnect expansion project has increased the export capacity to 118 TJ/d on a 1-in-20 peak system demand day. It will be completed by winter 2015. Refer to Table 20 for Northern Zone export capacity. |
| **Melbourne** | No constraints identified | Nil. |
| **Ballarat** | No constraints identified | Nil. |
| **Western** | No constraints identified | If there is no injection at Iona and Brooklyn Compressor Station is not available, minimum pressures at Portland and Iluka will be breached during increased system load.<br>AEMO will manage the risk with ongoing consultations with market participants to ensure that Brooklyn Compressor Station will be available when Iona is not injecting.<br>Other solutions include:<br>• A new system injection point south of Hamilton to allow gas from the South East Australia Gas Pipeline (SEA Gas) to be injected into the Western Transmission System (WTS).<br>• Additional compression or looping of the WTS. |

# CHAPTER 5. IMPACT FROM GPG DEMAND

**Figure 12 System linepack without unscheduled GPG demand**

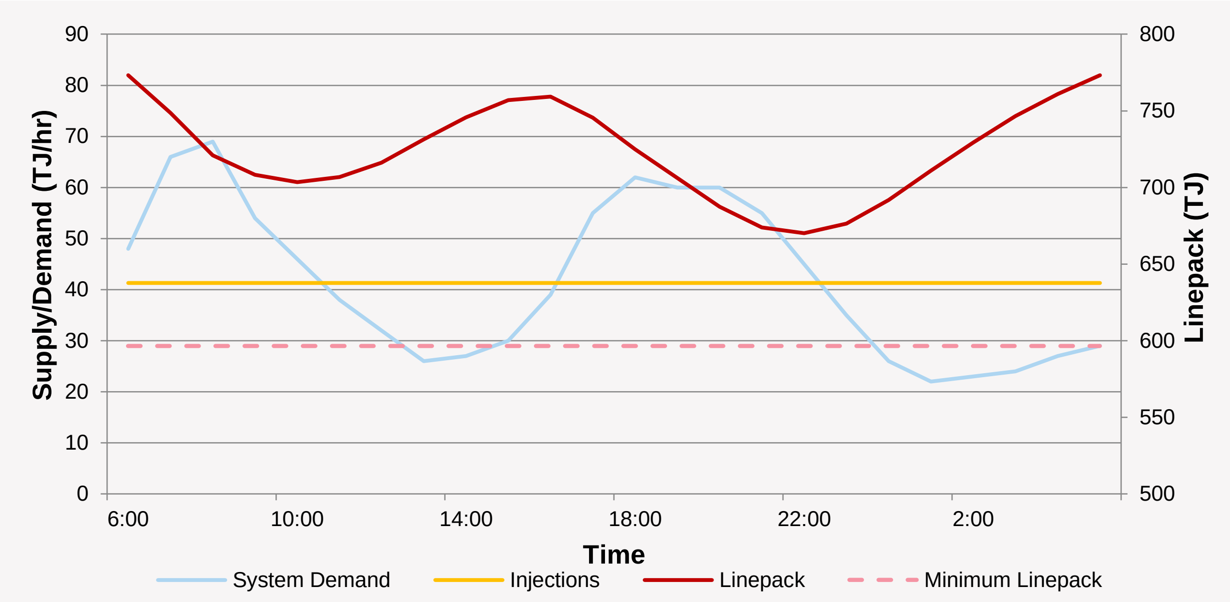



**Figure 13 Impact of unscheduled GPG demand on system linepack**

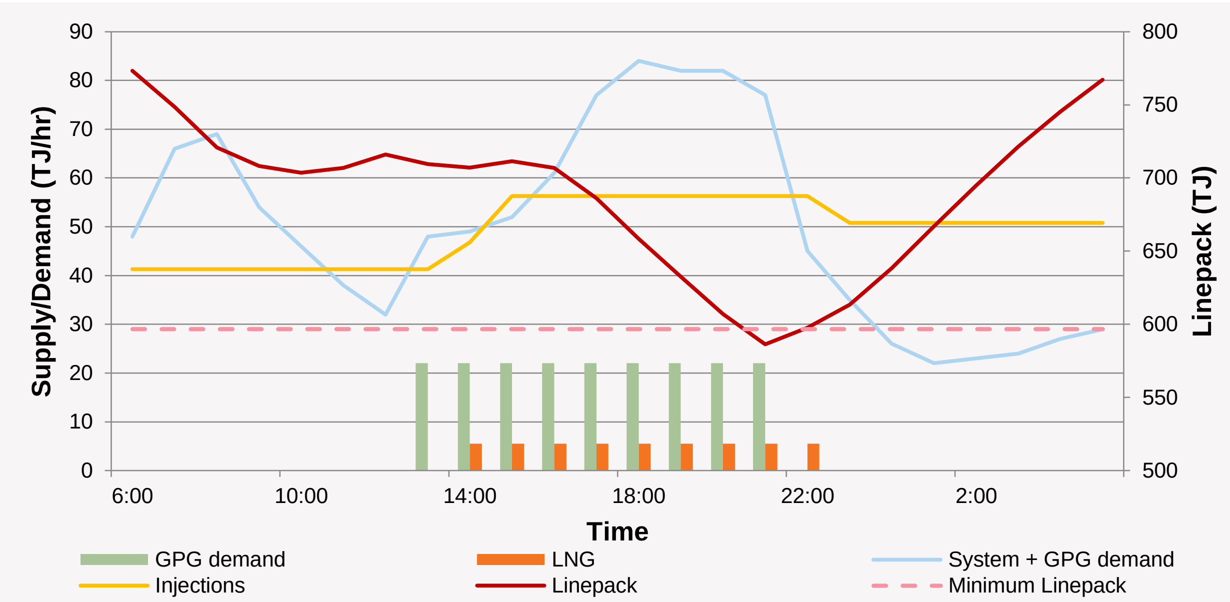
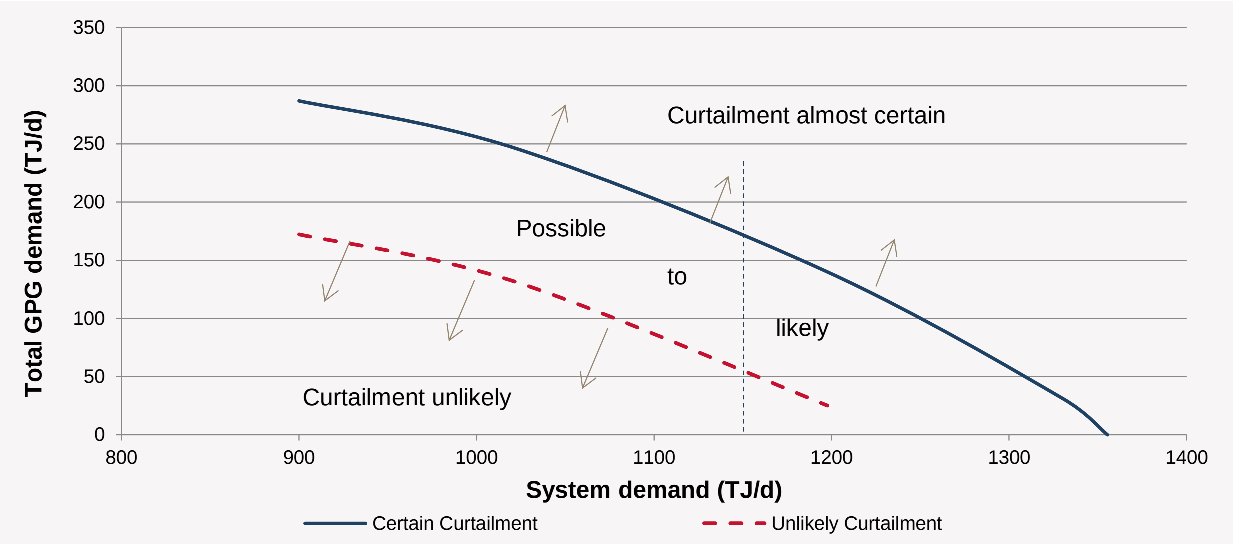


**Figure 14 Relationship between scheduled GPG demand, system demand, and curtailment limits**



# CHAPTER 6. COMMITTED EXPANSIONS AND EXTENSIONS

**Table 24 Committed expansions and extensions of the DTS**

| Projects | Completion | Status |
|---|---|---|
| Victorian Northern Interconnect Expansion (VNIE), Stages 1-5 | June 2015 | Committed |
| Mt. Cottrell CTM | March 2015 | Committed |
| Bannockburn CTM | August 2015 | Committed |
| Winchelsea CTM | March 2015 | Committed |
| Thewlis Rd CTM, Pakenham | August 2015 | Committed |
| Tasmanian Gas Pipeline connection | March 2016 | Committed |
| Warragul Pipeline (currently in development stage) | June 2016 | Proposed |
| SWP to Anglesea Pipeline (APA/AusNet at concept stage) | pre-winter 2018 | Proposed |

# MEASURES AND ABBREVIATIONS

## Units of measure

| Abbreviation | Unit of measure |
|---|---|
| PJ | Petajoule |
| TJ | Terajoule |

## Abbreviations

These terms are used in the 2015 GSOO, Attachment A, Attachment B and/or the GSOO Methodology document.

| Abbreviation | Expanded name |
|---|---|
| AEMO | Australian Energy Market Operator |
| APLNG | Australia Pacific LNG |
| CGP | Carpentaria Gas Pipeline |
| EGP | Eastern Gas Pipeline |
| GDP | gross domestic product |
| GLNG | Gladstone LNG |
| GPG | Gas powered generation |
| GSOO | Gas Statement of Opportunities |
| LMP | Longford to Melbourne Pipeline |
| LNG | Liquefied Natural Gas |
| MAPS | Moomba to Adelaide Pipeline |
| MSP | Moomba to Sydney Pipeline |
| NQGP | North Queensland Gas Pipeline |
| QCLNG | Queensland Curtis LNG |
| QGP | Queensland Gas Pipeline |
| QLD | Queensland |
| RBA | Reserve Bank of Australia |
| RBP | Roma to Brisbane Pipeline |
| SEA Gas | South East Australia Gas Pipeline |
| SWP | South West Pipeline |
| SWQP | South West Queensland Pipeline |
| TGP | Tasmanian Gas Pipeline |
| WTS | Western Transmission System |

# GLOSSARY

These terms are used in the 2015 GSOO, Attachment A, Attachment B, and/or the GSOO Methodology document.

| Term | Definition |
|---|---|
| 1-in-2 peak day | The 1-in-2 peak day demand projection has a 50% probability of exceedance (POE). This projected level of demand is expected, on average, to be exceeded once in two years. Also known as the 50% peak day. |
| 1-in-20 peak day | The 1-in-20 peak day demand projection (for severe weather conditions) has a 5% probability of exceedance (POE). This is expected, on average, to be exceeded once in 20 years. Also known as the 95% peak day. |
| 1C contingent resources | Low estimate of contingent resources. |
| 2C contingent resources | Best estimate of contingent resources. |
| 3C contingent resources | High estimate of contingent resources. |
| 1P reserves | A low-side estimate of quantities of gas that are reasonably certain to be recoverable in future under existing economic and operating conditions. Also known as proved gas reserves. |
| 2P reserves | The sum of proved-plus-probable estimates of gas reserves. The best estimate of commercially recoverable reserves. Often used as the basis for reports to share markets, gas contracts, and project economic justification. |
| 3P reserves | The sum of proved, probable, and possible estimates of gas reserves. |
| Gas Bulletin Board (GBB) | A website **(**www.gbb.aemo.com.au**)** managed by AEMO that provides information on major interconnected gas processing facilities, gas transmission pipelines, gas storage facilities, and demand centres in eastern and south-eastern Australia. Also known as the National Gas Market Bulletin Board or simply the Bulletin Board. |
| gas powered generation (GPG) | Where electricity is generated from gas turbines (combined-cycle gas turbine (CCGT) or open-cycle gas turbine (OCGT)). |
| lateral | A pipeline branch. |
| linepack | The pressurised volume of gas stored in the pipeline system. Linepack is essential for gas transportation through the pipeline network each day, and as a buffer for within-day balancing. |
| liquefied natural gas (LNG) | Disconnection of electricity customer load.<br>Natural gas that has been converted into liquid form for ease of storage or transport. |
| LNG train | A unit of gas purification and liquefaction facilities found in a liquefied natural gas plant. |
| peak day | Over the course of a season (winter or summer), the day on which maximum gas demand occurs. |
| peak shaving | Meeting a demand peak using injections of vaporised liquefied natural gas (LNG). |
| possible reserves | Estimated quantities that have a chance of being discovered under favourable circumstances. ‘Possible, proved, and probable’ reserves added together make up 3P reserves. |
| probability of exceedance (POE) | Refers to the probability that a forecast electricity maximum demand figure will be exceeded. For example, a forecast 10% probability of exceedance (POE) maximum demand will, on average, be exceeded only 1 year in every 10. |
| probable reserves | Estimated quantities of gas that have a reasonable probability of being produced under existing economic and operating conditions. Proved-plus-probable reserves added together make up 2P reserves. |
| production | In the context of defining gas reserves, gas that has already been recovered and produced. |
| prospective resources | Gas volumes estimated to be recoverable from a prospective reservoir that has not yet been drilled. These estimates are therefore based on less direct evidence. |
| proved resources | Estimated quantities of gas that are reasonably certain to be recoverable in future under existing economic and operating conditions. Also known as 1P reserves. |
| proved-plus-probable | See 2P reserves. |
| reservoir | In geology, a naturally occurring storage area that traps and holds oil and/or gas. |
| reserves | Gas resources that are considered to be commercially recoverable and have been approved or justified for commercial development. |
| resources | See contingent resources and prospective resources. |
| shale gas | Gas found in shale layers that cannot be economically produced using conventional oil and gas industry techniques. See unconventional gas. |

| Term | Definition |
|---|---|
| **unconventional gas** | Gas found in coal seams, shale layers, or tightly compacted sandstone that cannot be economically produced using conventional oil and gas industry techniques. |
| **within-day balancing** | The balancing of supply and demand during the gas day by use of scheduled injections and depletion of system linepack. Liquefied natural gas (LNG) is used as an additional supply if linepack is predicted to fall below the minimum level required for system security. |