

## 17 – 23 June 2018

### Weekly Summary

This week saw significant price rises across all markets, following a number of unplanned outages at the Longford gas plant in Victoria which occurred on 17, 21 and 22 June. The unplanned outage at the Longford Gas Plant on 21 June reduced available production across the gas days 21–23 June. High prices on the 21 and 22 June occurred across markets and also coincided with high demand from gas powered generators (GPG) in South Australia, Victoria and Queensland, and an outage on the Silver Springs pipeline in QLD.

The Longford outage on 21 June coincided with days of negligible electricity wind generation supply in Victoria and South Australia. This increased demand for electricity generation from other sources, and the increases in Victoria and SA gas generation occurred alongside a number of baseload electricity generator outages in NSW and Victoria.

### Long term statistics and explanatory material

The AER has published an [explanatory note](#) to assist with interpreting the data presented in its weekly gas market reports. The AER also publish a range of [longer term statistics](#) on the performance of the gas sector including gas prices, production, pipeline flows and consumer demand.

### Market overview

Figure 1 sets out the average daily prices (\$/GJ) for the current week, and demand levels, compared to historical averages. Regions shown include the Victorian Declared Wholesale Market (**VGM or Victorian gas market**) and for the Sydney (**SYD**), Adelaide (**ADL**) and Brisbane (**BRI**) Short Term Trading Market hubs (**STTM**).

**Figure 1: Average daily prices and demand – all markets (\$/GJ, TJ)<sup>1</sup>**

	Victoria		Sydney		Adelaide		Brisbane	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand
17 Jun - 23 Jun 2018	10.06	980	9.87	288	9.83	87	10.65	108
% change from previous week	14	15	10	-1	19	31	18	26
17-18 financial YTD	7.99	564	8.47	251	8.02	60	7.38	95
% change from previous financial YTD	-7	2	-4	3	-9	-3	-10	13

<sup>1</sup> Average daily quantities are displayed for each region. The weighted average daily imbalance price applies for Victoria.

Figure 2 sets out price and demand information for the voluntary Wallumbilla and Moomba Gas Supply Hubs (GSH).

**Figure 2: Average prices and total quantity – Gas supply hub (\$/GJ, TJ)<sup>2</sup>**

	Moomba		South East Queensland		Wallumbilla	
	Price	Quantity	Price	Quantity	Price	Quantity
17 Jun - 23 Jun 2018	-	-	11.39	134	10.77	35
% change from previous week	-	-	24	5	18	6
17-18 financial YTD	5.52	13	7.41	9253	7.72	4349
% change from previous financial YTD	-	-	1	940	-7	-48

Figure 3 illustrates the daily prices in each gas market, as defined in figures 1 and 2.

**Figure 3: Daily gas market prices (\$/GJ)**

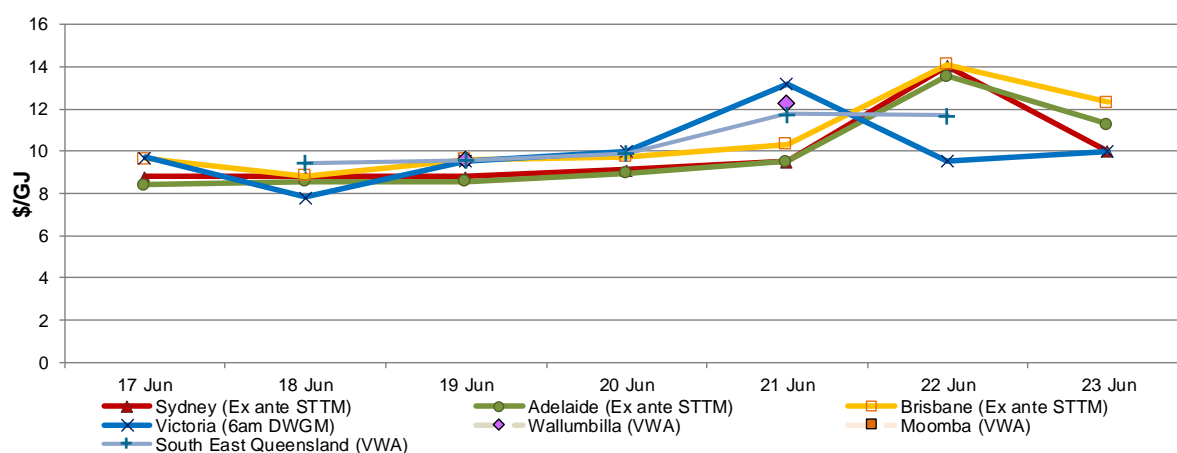


Figure 4 compares average ancillary market payments (VGM) and balancing gas service payments (STTM) against historical averages.

**Figure 4: Average ancillary payments (\$000)**

	Victoria Ancillary Payments*	Sydney MOS	Adelaide MOS	Brisbane MOS
17 Jun - 23 Jun 2018	-	35.70	7.40	0.61
% change from previous week	-	60	83	-52
17-18 financial YTD	-	30.67	5.38	2.13
% change from previous financial YTD	-	-39	-69	28

\* Ancillary payments reflect the compensation costs for any additional injections offered at a price higher than the market price. Note: only positive ancillary payments, reflecting system constraints will be shown here.

<sup>2</sup> The prices shown for the GSH in Moomba, South East Queensland and Wallumbilla are volume weighted average (VWA) prices for all products traded across the period. The total quantity contributing to the weighted price is displayed for these GSH. Reported values for Moomba are the aggregate of trades on the Moomba to Adelaide Pipeline (MAP) and the Moomba to Sydney Pipeline (MSP). Historic trades for RBP and SWQP are grouped under WAL, (including in-pipe trades on the RBP).

More detailed analysis on the VGM is provided in section 1.

Figure 5 shows the quantity and volume weighted prices of products traded in the Gas Supply Hub locations at Moomba, South East Queensland and Wallumbilla.

**Figure 5: Gas supply hub products traded for the current week (\$/GJ, TJ)**

	Moomba		South East Queensland		Wallumbilla*	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
<b>Balance of day</b>	-	-	10.24	30.0	11.65	20.0
<b>Daily</b>	-	-	12.20	5.0	9.60	10.0
<b>Day ahead</b>	-	-	11.39	15.0	9.60	5.0
<b>Weekly</b>	-	-	11.76	84.0	-	-
<b>Monthly</b>	-	-	-	-	-	-
<b>Total</b>	-	-	<b>11.39</b>	<b>134.0</b>	<b>10.77</b>	<b>35.0</b>

\* includes non-netted (off-market) trades.

Figure 6 shows Bulletin Board pipeline flows for the three LNG export pipeline facilities and the production output at related production facilities in the Roma region.

**Figure 6: Average daily LNG export pipeline and production flows (TJ)\***

	APLNG	GLNG	QCLNG	Total
Production	1516	832	1642	3989
Export Pipeline Flows	1317	770	1123	3209
% change from previous week (pipeline flows)	0	0	-7	-3
17-18 financial YTD Flows	1406	873	1072	3350

\* Production quantities represent flows from facilities operated by APLNG, Santos and QGC. Gas from individual facilities may also supply the domestic market, other LNG projects or storage facilities.

## Detailed market analysis

### ***Longford outages and price impact***

The first unplanned outage at Longford on 17 June, resulting in a full plant shutdown, had the biggest schedule price impact in Victoria, increasing to \$15.32/GJ at 10 pm. As the price spike only occurred at the 10pm schedule, there was minimal impact to the daily weighted price which ended up as \$9.69/GJ.

The second Longford outage occurred due to unplanned maintenance on Longford's gas plant unit 2 early on 21 June and lasted until 22 June. This outage seemed to cause a larger impact on injections into VIC and NSW, leading to weekly price spikes of \$12.98/GJ in Victoria, \$14.05/GJ in Sydney, \$13.55/GJ in Adelaide and \$14.11/GJ in Brisbane on 22 June.

The outages at Longford meant the plant's average daily injections into Victoria over the week was 624 TJ/day, well below the 900 TJ production capacity recently listed on AEMO's Bulletin Board.<sup>3</sup> Figure 1.5 shows the reduction in Longford supply during the week, with the Iona storage facility providing the majority of back-up supply that amounted to around 1.2 PJ for the week. Figure 1.5 also shows gas supplies injected from NSW at Culcairn via the NSW-VIC interconnect provided notable support during the Longford outage.<sup>4</sup> These gas injections from Iona and Culcairn are typically more expensive than gas injected at Longford which also put upward pressure on prices.

Additional supply disruption occurred in Queensland with an outage of the Silver Springs pipeline which connects a 46 PJ capacity storage facility to the East Coast Gas Market, with a daily supply capacity of 30 TJ. In the week prior to this outage, the Silver Springs pipeline had been delivering 25 TJ/day. The outage at the Silver Springs pipeline reduced supply from storage to zero over 19–26 June, placing further upward pressure on prices.

### ***High levels of gas-powered generation***

Figure 5.1 shows large increases in gas used for electricity generation in SA and NSW which experienced low wind generation and a number of baseload outages over 21–22 June. Outages at baseload plants included the Bayswater 1 and Liddell 3 units which went offline for the entire week in NSW, and the Yallourn unit 2 was offline from 17–19 June in Victoria.

### ***High market operator service (MOS) requirements***

On 21 June, unscheduled backhaul nominations led to under supply to the Adelaide hub, driving increase MOS requirements of 11.1 TJ at a cost of \$23 338. Costs for MOS services the following day were also around the same level due to counteracting MOS deliveries. On both days the Moomba to Adelaide Pipeline (MAP) was delivering gas to the hub at capacity. With limited gas available from Victoria due to the Longford outage, increase MOS was supplied from the MAP (see figure 3.4), which was also affected to some extent by unscheduled backhaul and reduced supply renominations on the 22<sup>nd</sup>.

Sydney also experienced significant MOS requirements on 22 June, with unscheduled backhaul and under supply on the Eastern Gas Pipeline (EGP), and over supply nominated on the Moomba to Sydney Pipeline (MSP), the nominated deliveries exacerbated counteracting MOS allocations and led to service costs accumulating to \$68 296.

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<sup>3</sup> AEMO, Gas Bulletin Board: Medium term capacity notices Longford production outlook, <https://gbb.aemo.com.au/Reports/Medium%20Term%20Capacity%20Outlook.aspx>, accessed 16 July 2018.

<sup>4</sup> On 21 June, flows south into Victoria from the NSW-Vic interconnect reached record levels (flows south from Queensland on the QSN link were also at near record levels) indicating gas from Northern production centres were supplying Victoria.

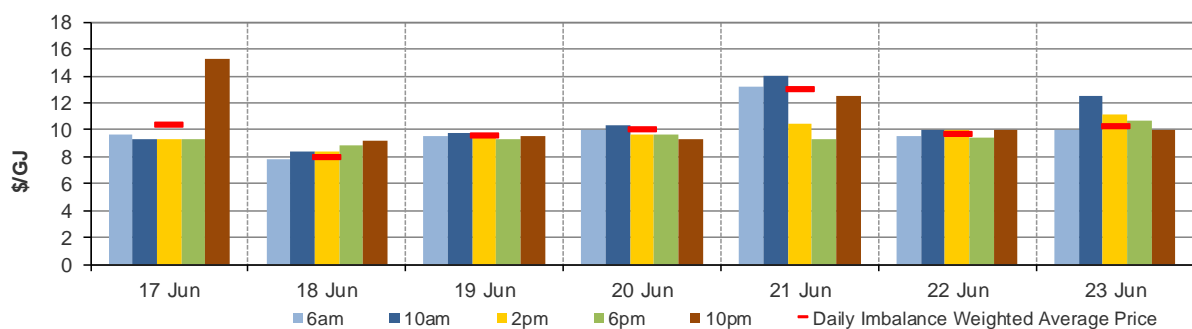
## 1. Victorian Declared Wholesale Market

In the Victorian gas market, gas is priced five times daily at 6 am, 10 am, 2 pm, 6 pm and 10 pm. The imbalance weighted price on a gas day tends towards the 6 am price<sup>5</sup> which is the schedule at which most gas is traded.

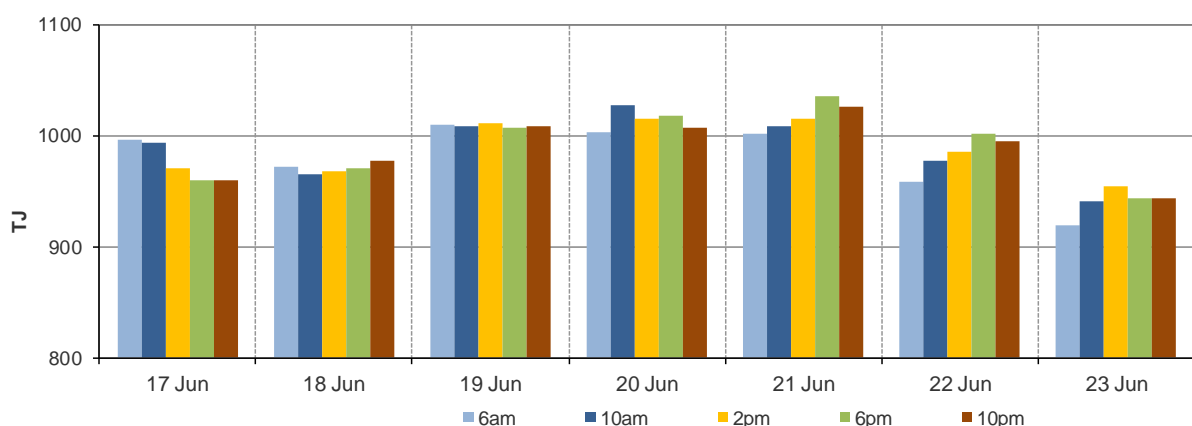
The main drivers<sup>6</sup> of price are demand forecasts and bids to inject or withdraw gas from the market. Figures 1.1 to 1.4 below show the daily prices, demand forecasts<sup>7</sup>, and injection/withdrawal bids for each of the five pricing schedules. Figure 1.5 provides information on which system injection points were used to deliver gas, in turn indicating the location and relative quantity of gas injection bids cleared through the market.

Ancillary payments for gas injected above the market price are shown above in figure 3.

**Figure 1.1: Prices by schedule (\$/GJ)**



**Figure 1.2: Demand forecasts (TJ)**

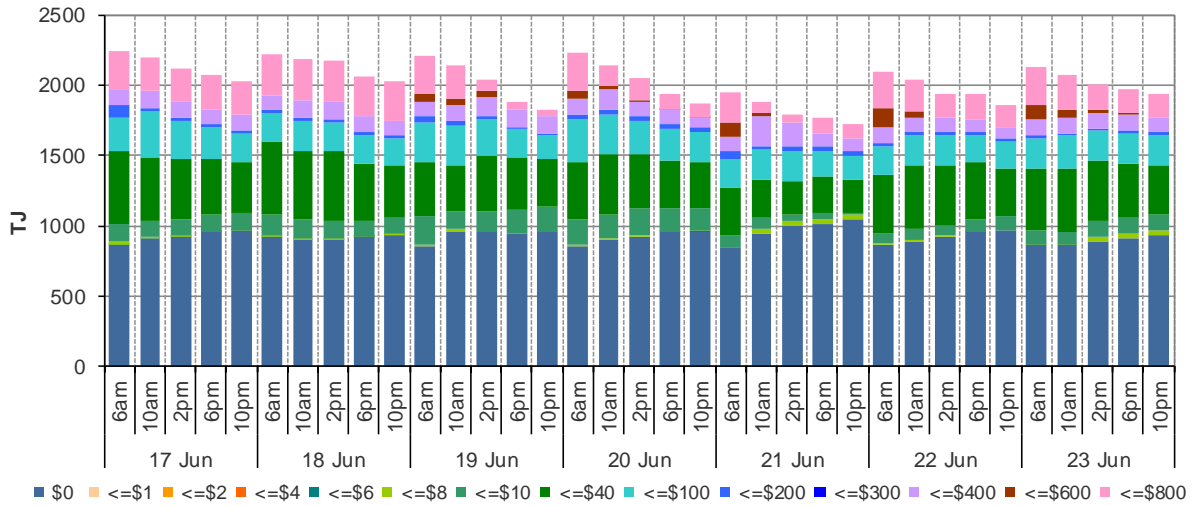


<sup>5</sup> Prices for subsequent schedules are applied only to the differences in scheduled quantities (imbalances) to calculate the weighted price. The 6 am price applies to the entire scheduled quantity in the initial schedule.

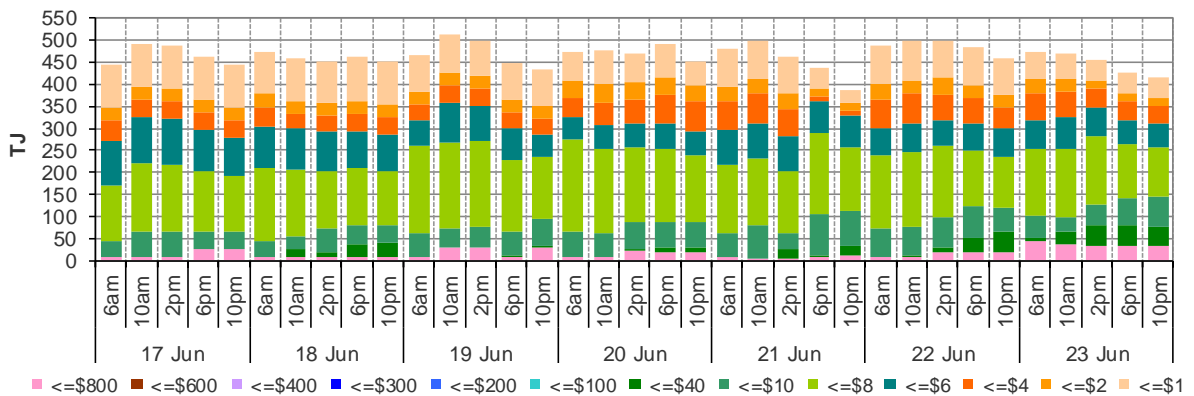
<sup>6</sup> The price might also be affected by transmission or production (contractual) constraints limiting how much gas can be delivered from a locale or System Injection Point (SIP) from time to time.

<sup>7</sup> These are Market Participants' aggregate demand forecasts adjusted for any override as applied by AEMO from time to time. These forecasts must be scheduled and cannot respond to price like withdrawal bids.

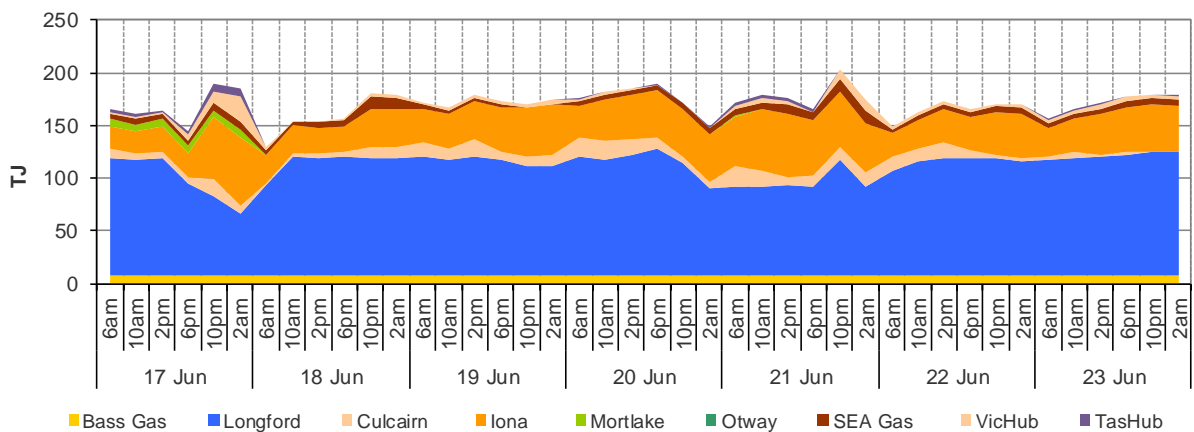
**Figure 1.3: Injection bids by price bands (TJ)**



**Figure 1.4: Withdrawal bids by price bands (TJ)**



**Figure 1.5: Metered Injections by System Injection Point (TJ)**



Note that in figure 1.5, the last 8-hour schedule from 10 pm has been separated into two 4-hour blocks to provide a consistent comparison with earlier scheduled injection volumes.

## 2. Sydney STTM

In each STTM hub, a daily gas price is calculated before the gas day (the ex ante price) and after the gas day (the ex post price). The main drivers of these prices are participant demand forecasts, and offers to inject or bids to withdraw gas traded at the hub.<sup>8</sup> Divergences in ex ante and ex post prices for a gas day may occur due to differences in scheduled (forecast) and allocated (actual) quantities. Pipeline acronyms are defined in the [user guide](#).

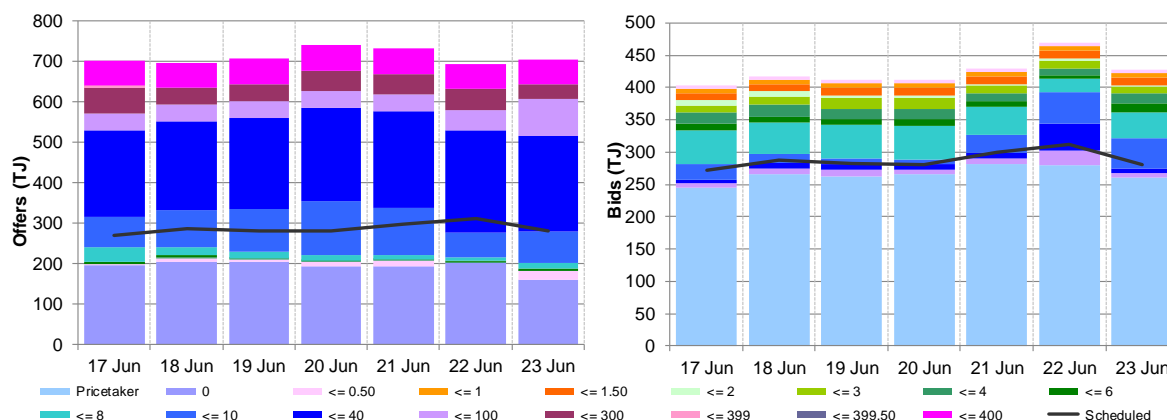
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.<sup>9</sup>

Figures 2.1 and 2.2 show daily prices, demand, offers and bids. Figures 2.3 and 2.4 show gas scheduled and allocated on pipelines to supply the hub, indicating the location and relative quantity of gas offers across pipelines and also the amount of MOS allocated for each pipeline.

**Figure 2.1: SYD STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	8.79	8.80	8.80	9.11	9.52	14.05	10.00
Ex ante quantity (TJ)	272	288	282	281	300	312	281
Ex post price (\$/GJ)	8.80	8.97	9.30	9.15	9.60	14.05	10.00
Ex post quantity (TJ)	277	296	299	283	303	311	284

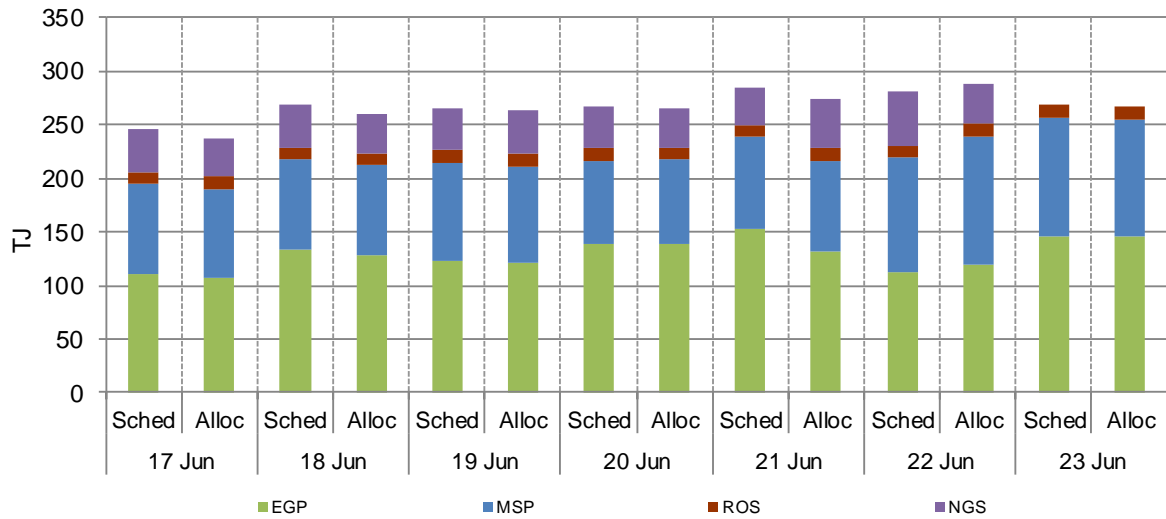
**Figure 2.2: SYD daily hub offers and daily hub bids in price bands (\$/GJ)**



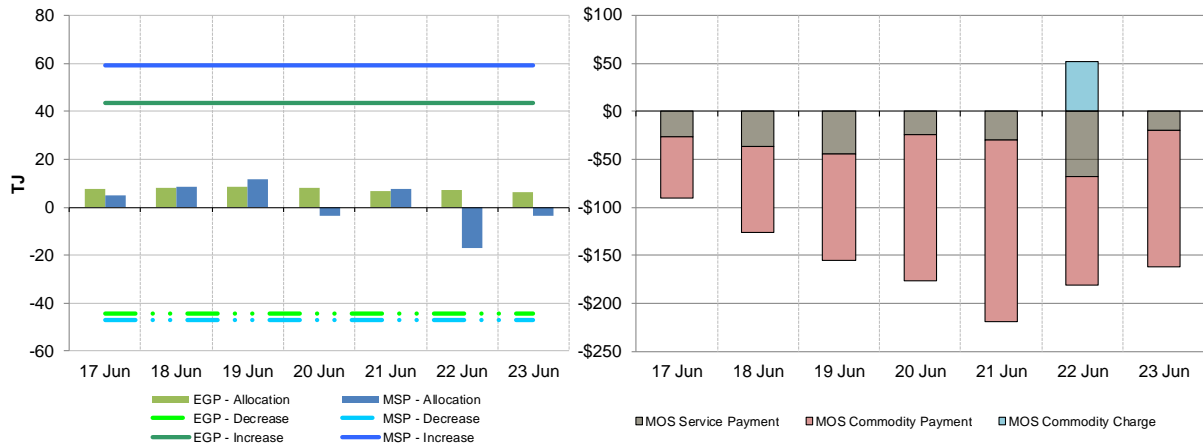
<sup>8</sup> The main driver of the amount of gas scheduled on a gas day is the 'price-taker' bid, which is forecast hub demand that cannot respond to price and which must be delivered, regardless of the price.

<sup>9</sup> MOS service payments involve a payment for a MOS increase service when the actual quantity delivered exceeds final gas nominations for delivery to a hub, and a payment for a MOS decrease service when the actual quantity delivered is less than final nominations. As well as a MOS 'service' payment, as shown in figure 2.4, MOS providers are paid for or pay for the quantity of MOS sold into the market or bought from the market (MOS 'commodity' payments/charges).

**Figure 2.3: SYD net scheduled and allocated gas hub supply (excluding MOS)**



**Figure 2.4: SYD MOS allocations (Tj), service payments and commodity payments/charges (\$000)<sup>10</sup>**



<sup>10</sup> The commodity cost of MOS illustrated on the right of the figure represents the commodity quantity at the D+2 ex ante price. Commodity payments and charges for a given gas day relate to quantities traded two days earlier. That is, the commodity cost for services provided on Sunday will appear in the chart for Tuesday, when the D+2 price is set. In contrast, service payments are shown alongside the day they occurred.



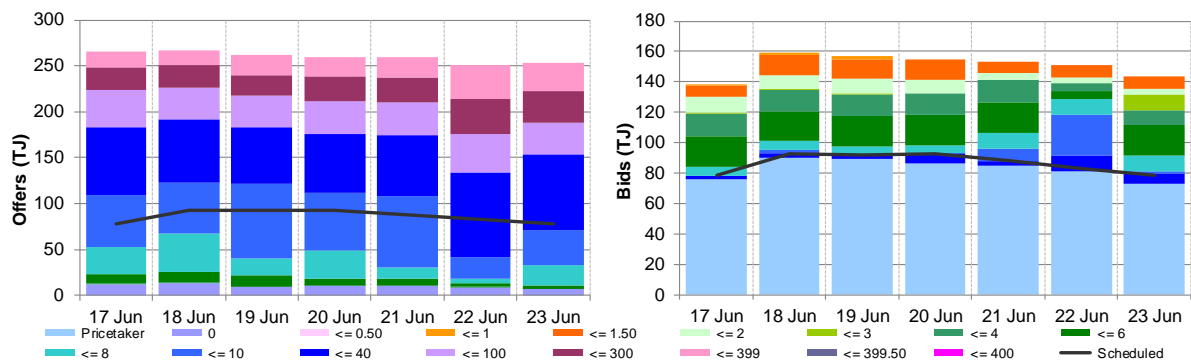
### 3. Adelaide STTM

The Adelaide STTM hub functions in the same way as the Sydney STTM hub. The same data that was presented for the Sydney hub is presented for the Adelaide hub in the figures below.

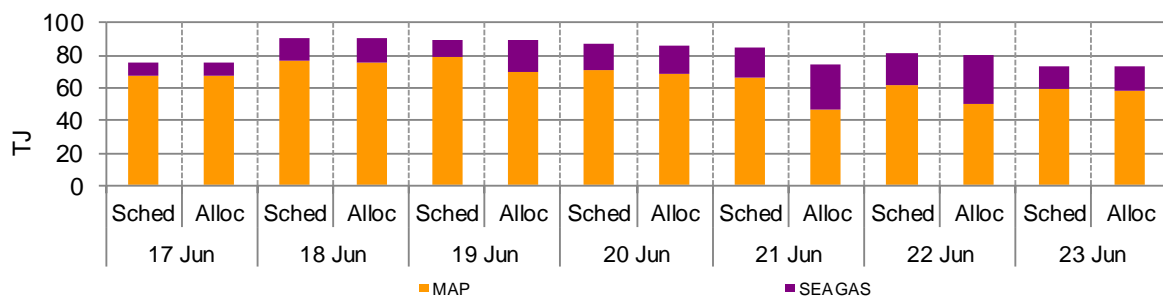
**Figure 3.1: ADL STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	8.39	8.57	8.58	8.97	9.50	13.55	11.27
Ex ante quantity (TJ)	78	93	92	93	88	83	78
Ex post price (\$/GJ)	8.39	8.29	8.69	8.97	9.50	15.00	10.58
Ex post quantity (TJ)	79	91	94	92	88	90	77

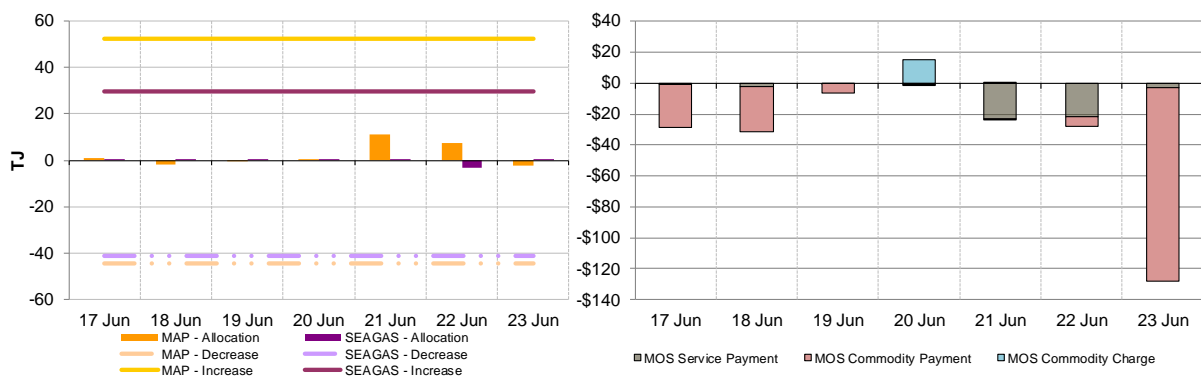
**Figure 3.2: ADL daily hub offers and daily hub bids in price bands (\$/GJ)**



**Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)**



**Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges (\$000)**



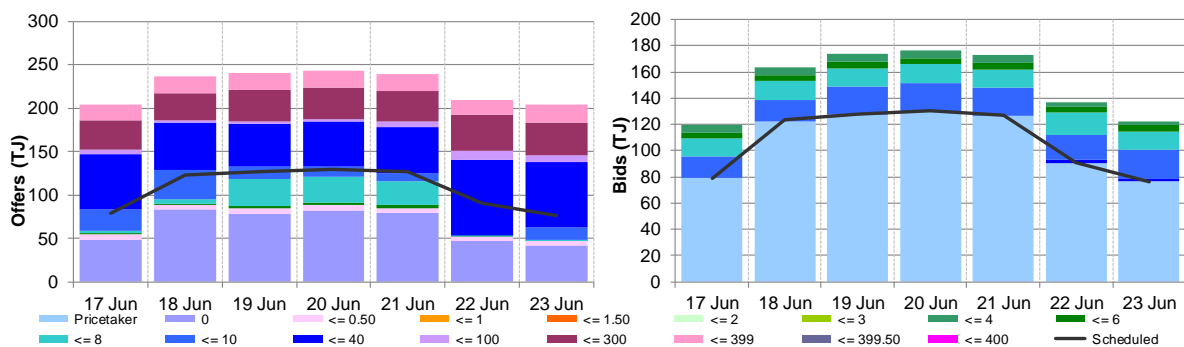
## 4. Brisbane STTM

The Brisbane STTM hub functions in the same way as the Sydney STTM hub. The same data that was presented for the Sydney hub is presented for the Brisbane hub in the figures below.

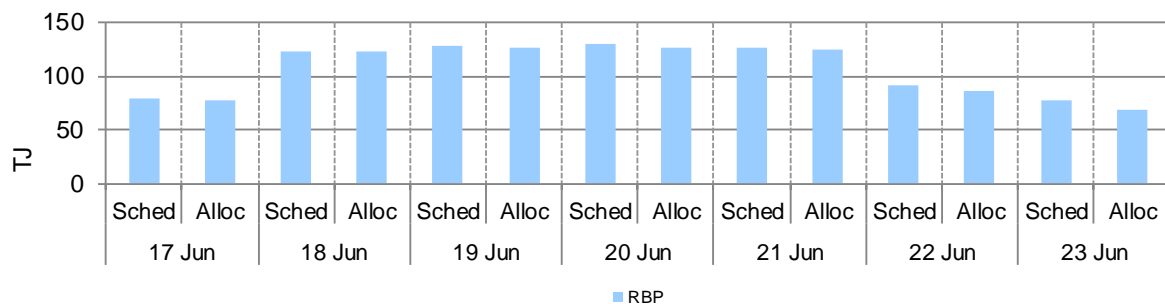
**Figure 4.1: BRI STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	9.65	8.83	9.60	9.73	10.31	14.11	12.30
Ex ante quantity (TJ)	79	124	128	130	127	91	76
Ex post price (\$/GJ)	9.55	8.92	9.40	9.55	9.61	13.55	10.51
Ex post quantity (TJ)	79	124	127	128	125	86	67

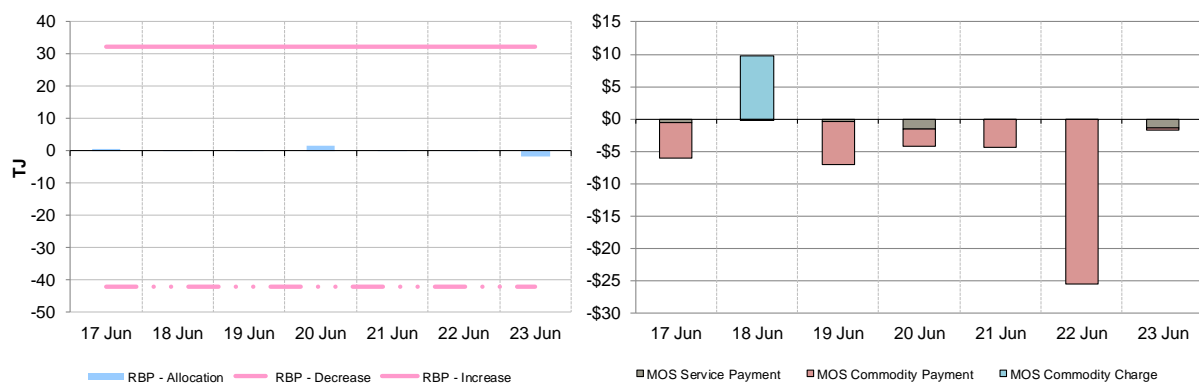
**Figure 4.2: BRI daily hub offers and daily hub bids in price bands (\$/GJ)**



**Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)**



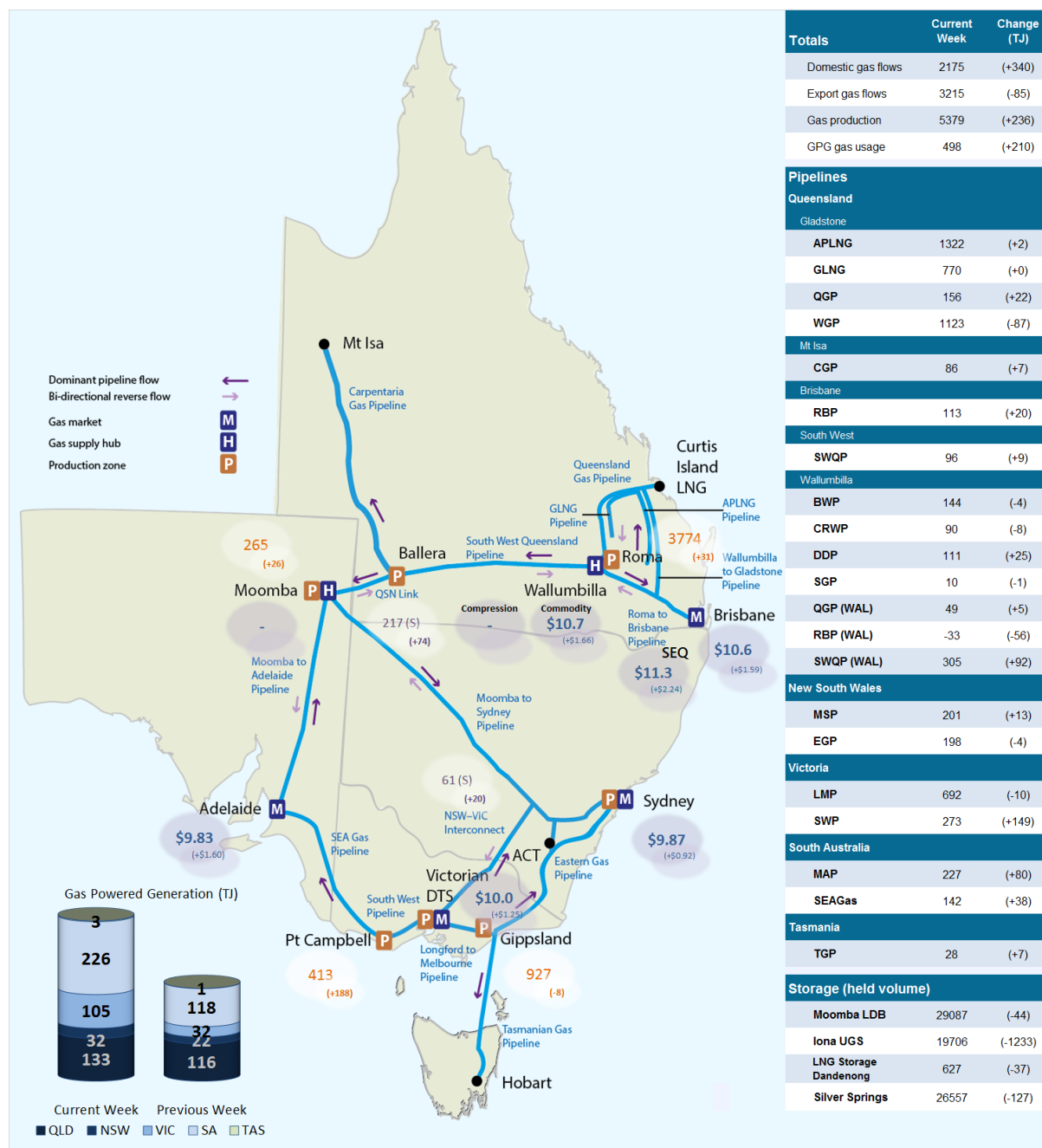
**Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)**



## 5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week<sup>11</sup> from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices<sup>12</sup> are provided for gas markets and gas supply hubs. Average daily quantities are provided for gas powered generation for each region.

Figure 5.1: Gas market data (\$/GJ, TJ); Bulletin Board flows (TJ)<sup>13</sup>



<sup>11</sup> Domestic gas flows are calculated as the total of: SA = MAP + SEAGAS; VIC = SWP + LMP + (flows towards Victoria on the 'NSW-VIC interconnect'); NSW/ACT = EGP + MSP; TAS = TGP; QLD (Brisbane) = RBP; QLD (Mt Isa) = CGP; and QLD (Gladstone) = QGP.

<sup>12</sup> Export gas flows are calculated as the total of: the APLNG pipeline; the GLNG pipeline; and the Wallumbilla to Gladstone pipeline.

<sup>13</sup> GPG volumes may include gas usage that does not show up on Bulletin Board pipeline flows.

<sup>12</sup> GSH supply is the average daily volume of gas 'traded', while price is a volume weighted average. Optional hub services (for compression and redirection) are shown separately from commodity trades.

<sup>13</sup> Net flows are shown for Bulletin Board facilities, as outlined in the [user guide](#).

## 6. Gas Supply Hub

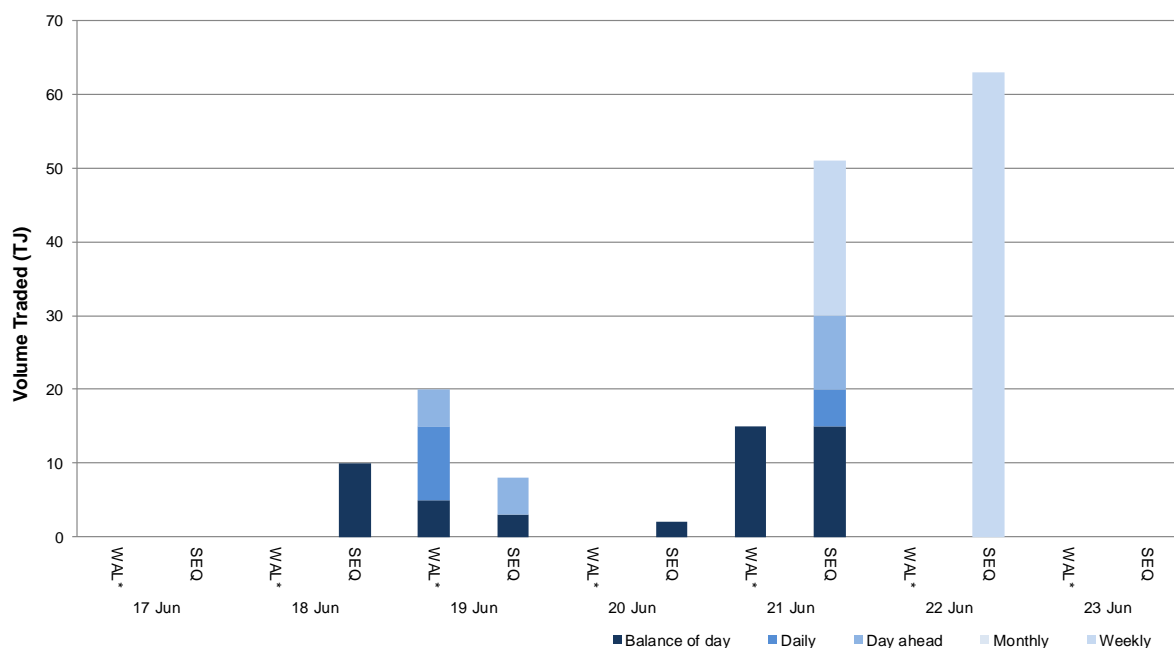
The gas supply hub was established at Wallumbilla in March 2014 to facilitate the voluntary trading of gas between participants, with products listed for sale and purchase at delivery points on three major connecting pipelines. There are separate products for each trading location and delivery period (daily, day-ahead, balance-of-day, weekly and monthly products).<sup>14</sup>

The Moomba hub commenced operation from June 2016 to further facilitate trading on the **MAP** and **MSP**, with trading between the two hubs on the SWQP via a spread product (representing the price differential between the hubs). From October 2016, the addition of a Wallumbilla Compression Product was introduced to facilitate the supply hub's transition from three different trading locations into one. From March 2017, Wallumbilla transitioned into an optional hub services model, replacing the three trading locations (QGP, SWQP and RBP) with a single product at Wallumbilla (**WAL**) and an in-pipe RBP trading location at South East Queensland (**SEQ**).

This week there were 26 trades for 169 TJ of gas at a volume weighted price of \$11.26/GJ. These consisted of 6 trades at WAL (35 TJ at \$1.077/GJ) and 20 trades at SEQ (134 TJ at \$11.39/GJ, 84 TJ was traded as weekly products matched largely on the exchange).

Figure 6.1 shows the quantity of gas traded by product type for each trading day on pipeline trading locations in the Wallumbilla and Moomba Gas Supply Hubs.<sup>15</sup>

**Figure 6.1: GSH traded quantities**



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<sup>14</sup> Additional information on trading locations and available products is detailed in the [user guide](#).

<sup>15</sup> Non-netted (off-market) trades, allowing the selection of specific delivery point at a trading location, are included with other Wallumbilla trades (WAL\*).