

## 26 June – 2 July 2016

### Weekly Summary

#### *Prices*

There were price records in Sydney and Adelaide, with Sydney reaching \$28.81/GJ (\$29/GJ ex post)<sup>1</sup> on Thursday 30 June and Adelaide reaching \$24/GJ<sup>2</sup> on Saturday 2 July. Prices reached \$25.74/GJ on Monday 27 June in Victoria and \$15/GJ in Brisbane. Figure 2 below shows that prices in all regions have remained above \$10/GJ since 27 June.

High prices in southern markets appear to have led to competition for gas for domestic consumption (away from export use) through the Wallumbilla Gas Supply Hub – with 26 trades recorded this week. In particular, pricing of gas supply at Wallumbilla of up to \$15/GJ appears to be shadowing the price of buying gas from downstream markets factoring in additional transportation costs to bring the gas south.

#### *Demand*

A combination of cold weather, high levels of output from gas fired generators in the National Electricity Market (NEM) – due to a number of baseload outages and network constraints – and continued high demand from LNG exports contributed to price increases in all markets.

The increase in market demand in Sydney and Victoria<sup>3</sup> has been more pronounced than Adelaide, with Victoria in particular more sensitive to low temperatures due to the greater penetration of residential gas heating. Whilst the level of gas market demand in these regions is not unusual for winter<sup>4</sup>, the combination of additional demand from gas generation<sup>5</sup>, southern gas being sent to export and tighter supply conditions appear to have combined to produce higher prices across all regions.

#### *Supply factors*

Victorian gas production has been running at record levels. As Victoria supplies a significant proportion of the gas requirements in both Sydney and Adelaide the high Victorian prices have also had a flow on effect on prices in those regions. Since 1 June average daily gas production in 2016 for the Victorian gas basins (1,443 TJ/d this week, see figure 5.1) is around 130 TJ/day higher than last year on a week to week basis.<sup>6</sup>

<sup>1</sup> This record excludes the \$390/GJ ex post price set on 8 October 2010 (due to an allocation data error) and \$150/GJ (ex ante) and \$400/GJ (ex post) prices set on 1 November 2010 (due to erroneous capacity figure on the MSP).

<sup>2</sup> This record was subsequently exceeded on 6 July and 13 July, which will be notified in future monitoring reports.

<sup>3</sup> Combined Victorian market scheduled demand on 4 days this winter has already exceeded 1,100 TJ (up to 30 July).

<sup>4</sup> Demand over 1,100 TJ also occurred in Victoria last winter without prices exceeding \$11/GJ.

<sup>5</sup> For example, Victorian Gas generation is up from between 10 - 30 TJ per day in June and July last year to between 40 - 100 TJ this year. Since 1 June SA generation demand has been 72 TJ/d higher than the same period last year.

<sup>6</sup> 1308 TJ/day in 2015 (1 June to 2 July) compared to 1440 TJ/day in 2016 (1 June to 2 July).

AGL reported to the Australian Stock Exchange on 7 July that it had purchased significant gas at Wallumbilla as a result of a recent curtailment<sup>7</sup> of its Queensland supply, other supply constraints, and increased demand at its Torrens power station.

Industry has also informed us that higher gas production is leading to higher volumes of gas being transported on some pipelines which is in turn leading to higher transportation ‘penalty charges’ related to higher than normal pipeline use. This is also being factored in to gas prices.

### Impacts from the Electricity market

In addition to the recent baseload outages across the NEM<sup>8</sup>, low levels of wind generation in South Australia and limitations to the amount of interstate generation assistance from Victoria has put further upwards pressure on gas prices (due to the higher gas demand upstream of the Adelaide market). Wind levels this week were particularly low from 26 – 28 June and 1 – 2 July over peak periods, driving the majority of the regions electricity supply being provided by gas generators following the shutdown of the coal powered Northern power station earlier this year.

## 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**). Price and demand information is also shown for the voluntary Wallumbilla and Moomba Gas Supply Hubs (**GSH**).

**Figure 1: Average daily prices and demand – all markets (\$/GJ, TJ)<sup>9</sup>**

	Victoria		Sydney		Adelaide		Brisbane		Wallumbilla	Moomba		
	Price	Demand	Price	Demand	Price	Demand	Price	Demand	Price	Quantity	Price	Quantity
26 Jun - 02 Jul 2016	16.20	986	15.76	304	16.18	86	11.72	96	11.58	203	-	-
% change from previous week	42	5	108	9	66	1	40	1	28	68	-	-

<sup>7</sup> <https://www.agl.com.au/about-agl/media-centre/article-list/2016/july/agl-update-on-fy17-gas-portfolio-margins>  
Curtailment arising from safety issues affecting its key supplier’s project.

<sup>8</sup> Baseload outages in the NEM have occurred, largely as a result of planned outages, at the following generating units: Stanwell 2 (off since 25 June), Torrens Island B3 (since 29 June), Liddell 2 (since 30 June), Yallourn 4 (since 1 July), Eraring 3 (since 3 July), Gladstone 3 (since 4 July), Loy Yang A1 & A2 (since 6 July – due to coal issues), Hazelwood (units 1 & 2 since 1 July and unit 5 since 5 July).

<sup>9</sup> Average daily quantities are displayed for each region, with the exception of Gas Supply Hubs (GSH). The weighted average daily imbalance price applies for Victoria. The prices shown for the GSH in Wallumbilla and Moomba are volume weighted average prices for all products traded across the period. The total quantity contributing to the weighted price is displayed for these GSH.

	Victoria		Sydney		Adelaide		Brisbane		Wallumbilla		Moomba	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand	Price	Quantity	Price	Quantity
15-16 financial YTD	4.99	558	5.05	238	5.74	61	4.66	84	4.37	7558	-	-
% change from previous financial YTD	37	0	47	-2	52	-4	104	-35	60	137	-	-

Figure 2 illustrates the daily prices in each gas market, as defined in figure 1.

**Figure 2: Daily gas market prices (\$/GJ)**

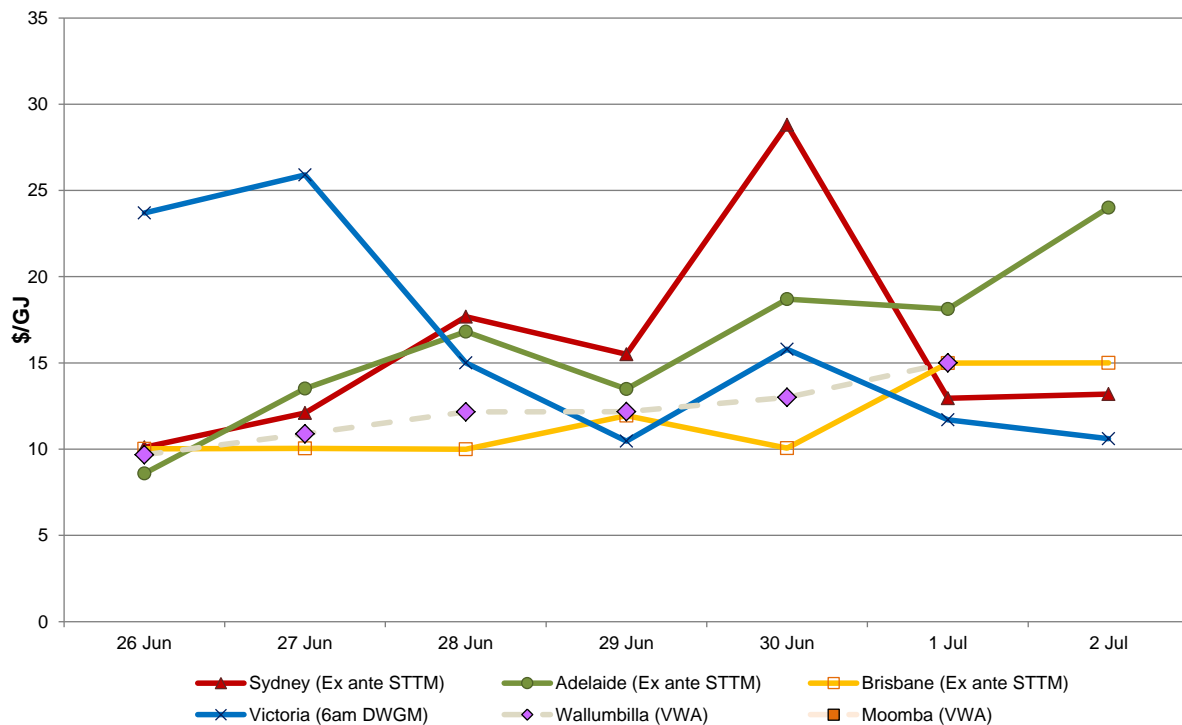


Figure 3 compares average ancillary market payments (VGM) and balancing gas service payments (STTM) against historical averages.

**Figure 3: Average ancillary payments (\$000)**

	Victoria Ancillary Payments*	Sydney MOS	Adelaide MOS	Brisbane MOS
26 Jun - 02 Jul 2016	-	88.06	18.68	1.46
% change from previous week	-	127	-1	1
15-16 financial YTD	-	28.06	11.36	1.54
% change from previous financial YTD	-	67	-14	-13

\* 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.

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

Figure 4 shows the quantity and volume weighted prices of products traded in the Gas Supply Hub locations at Wallumbilla and Moomba.

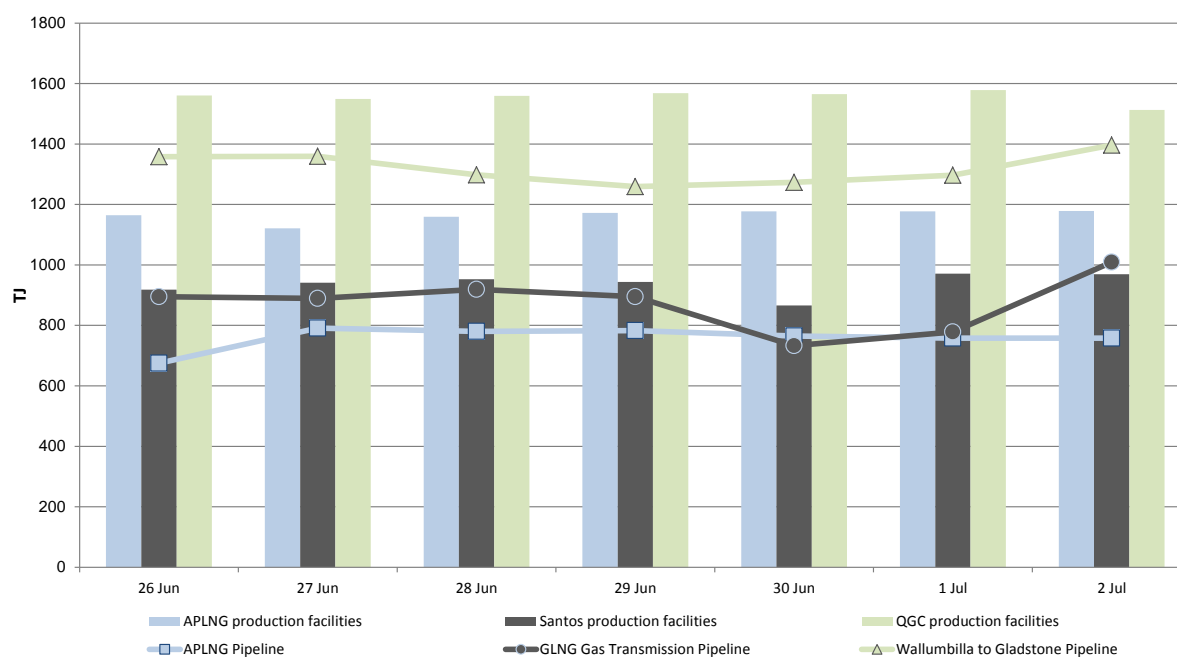
**Figure 4: Gas supply hub products traded for the current week (\$/GJ, TJ)\***

	RBP		SWQP		MAP		MSP		QGP	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
<b>Balance of day</b>	9.00	5.0	10.50	16.0	-	-	-	-	-	-
<b>Daily</b>	-	-	12.63	40.0	-	-	-	-	-	-
<b>Day ahead</b>	10.17	21.0	11.74	121.0	-	-	-	-	-	-
<b>Weekly</b>	-	-	-	-	-	-	-	-	-	-
<b>Monthly</b>	-	-	-	-	-	-	-	-	-	-

\* Non-netted products are not shown here. For information about these products, refer to figure 6.1.

Figure 5 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 5: LNG export pipeline and production flows (TJ)**



## Detailed market analysis

### Significant price variations (Adelaide, Brisbane, Sydney and Victoria)

On gas days from Sunday 26 June to Tuesday 28 June and Thursday 30 June to Saturday 2 July, a number of significant price variation (SPV) triggers were exceeded in the Adelaide, Brisbane and Sydney STTMs and the Victorian gas market:

- 26 June, Sydney, \$7.78 variation between the D-1 and D+1 schedule prices.
- 27 June, Sydney, \$12.40 variation between the D-1 and D+1 schedule prices.

- 27 June, Sydney, \$24.50/GJ ex post (D+1) price.
- 27 June, Victoria, \$25.74/GJ imbalance price.
- 28 June, Sydney, \$7.68 variation between the D-2 and D-1 schedule prices.
- 28 June, Sydney, \$11.32 variation between the D-1 and D+1 schedule prices.
- 28 June, Sydney, \$29/GJ ex post (D+1) price.
- 30 June, Sydney, \$16.66 variation between the D-2 and D-1 schedule prices.
- 30 June, Sydney, \$28.81/GJ ex ante (D-1) price.
- 30 June, Brisbane, \$8.84 variation between the D-1 and D+1 schedule prices.
- 1 July, Sydney, \$257 440 MOS service cost.
- 2 July, Adelaide, \$14.39 variation between the D-2 and D-1 schedule prices.

Under Rules 498 and 355 of the Gas Rules, the AER is required to identify and report on any significant price variations (SPVs) in the STTM and Victorian gas market, respectively.

In the Victorian gas market, an SPV occurs when the Trade Weighted Market Price (imbalance price) published by AEMO on a gas day is more than three times the average price for the previous 30 days and is greater than or equal to \$15/GJ.

In the STTM, an SPV occurs when:

- an ex ante (D-1) price or ex post (D+1) price is greater than three times the 30 day rolling average of that price and greater than \$15/GJ.
- there is a variation of greater than \$7/GJ between either the D-2 provisional price and ex ante price, or the ex ante and the ex post price.
- a MOS service payment exceeds \$250 000.

In accordance with the Gas Rules, we will publish a separate detailed report into the events leading to the significant price variations on the identified gas days.

### ***Preliminary analysis of significant prices***

#### *Pipeline flows between demand centres*

The NSW-Vic interconnect reversed direction to flow into Victoria on 27 June supplementing the high demand in the region, while flows on the QSN link into QLD ceased from 26 to 28 June. As demand in Victoria and Sydney increased from 24 June, the quantity of gas supply to the Sydney hub on the EGP decreased and more gas was provided on the MSP. Likewise, the quantity of supply to Adelaide on the SEAGas pipeline decreased from 24 to 26 June. This highlights the tight balance between supply from Victoria and demand across the markets.

On 28 and 29 June, an amber Linepack Capacity Adequacy (LCA) flag was raised on the SEAGas pipeline due to a Miakite compressor valve fault (upstream of Port Campbell in Victoria).<sup>10</sup>

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<sup>10</sup> An Amber LCA flag on the Bulletin Board indicates actual or potential load shedding of interruptible gas customers on non-Victorian pipelines.

## *Victoria*

Victoria experienced high schedule prices on 26 and 27 June as demand exceeded 1.1 PJ on both days. Similar to the 24 June gas day reported in the previous weekly, colder than expected weather drove the high demand, with minimum overnight temperatures as low as 3 degrees and maximum temperatures not exceeding 11.1 degrees in Melbourne over the period. On 26 June prices increased to \$36.65/GJ at 6 pm, while prices at 2 pm the following day reached \$34.81/GJ.<sup>11</sup> With Longford running flat out over most days this winter, the tight supply and demand conditions have seen market response injections from Dandenong LNG on a number of high demand days.

## *Sydney*

In Sydney, there were a number of variations throughout the week between schedule prices in the provisional (D-2), ex ante (D-1) and ex post schedules (D+1) which were greater than \$7/GJ. The deviations between the provisional and ex ante schedules were generally the result of reductions to the low priced offers in the stack (supply being shifted towards higher prices, as opposed to increased demand). This led to the ex ante price reaching a record \$28.81/GJ on 30 June.<sup>1</sup> Deviations leading to higher ex post prices from 26 to 29 June resulted from under forecast demand, while over forecast demand on 30 June and 1 July led to large MOS decrease requirements and MOS payments of \$257 440 and \$110 253 respectively (counteracting MOS also influenced the higher service payments on both days).

## *Adelaide*

In Adelaide prices increased across the week despite there being no substantial increase in demand in the hub. Adelaide market prices however are likely to have been influenced additionally by the stronger demand for gas by power generators around the Adelaide hub, up around 30 TJ per day from the previous week. Offers into the Adelaide hub were rebid into higher price bands.

## *Brisbane*

In Brisbane, the high ex post price on 30 June resulted from a steep supply curve. With all offers below \$10/GJ exhausted<sup>12</sup>, the slight imbalance of 2.3 TJ from under forecast demand was enough to shift the demand curve across to \$18.90/GJ.<sup>13</sup>

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<sup>11</sup> Prices have not reached this level since 22 November 2008.

<sup>12</sup> The ex ante price was set by a \$10.06/GJ withdrawal bid (for back haul on the RBP) which could not be fully cleared by the available offers.

<sup>13</sup> There was only 1.5 TJ of offers at \$14.80/GJ in the offer curve before the next highest price offer which set the ex post price.

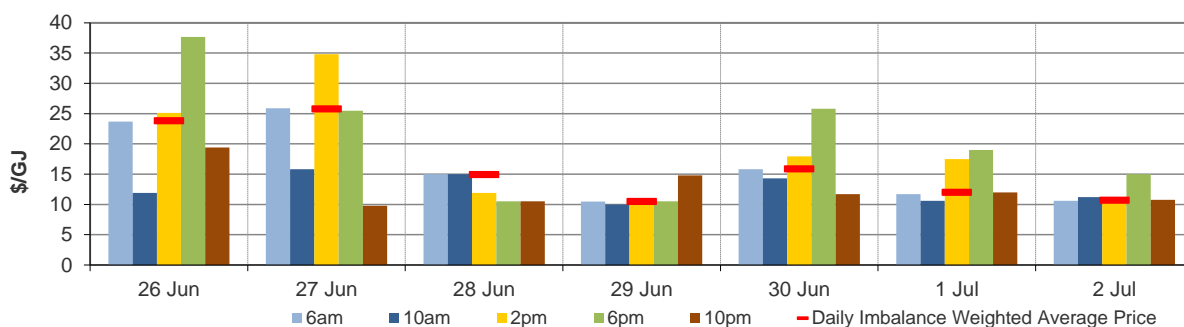
## 1. Victorian Declared Wholesale Market

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>14</sup> which is the schedule at which most gas is traded.

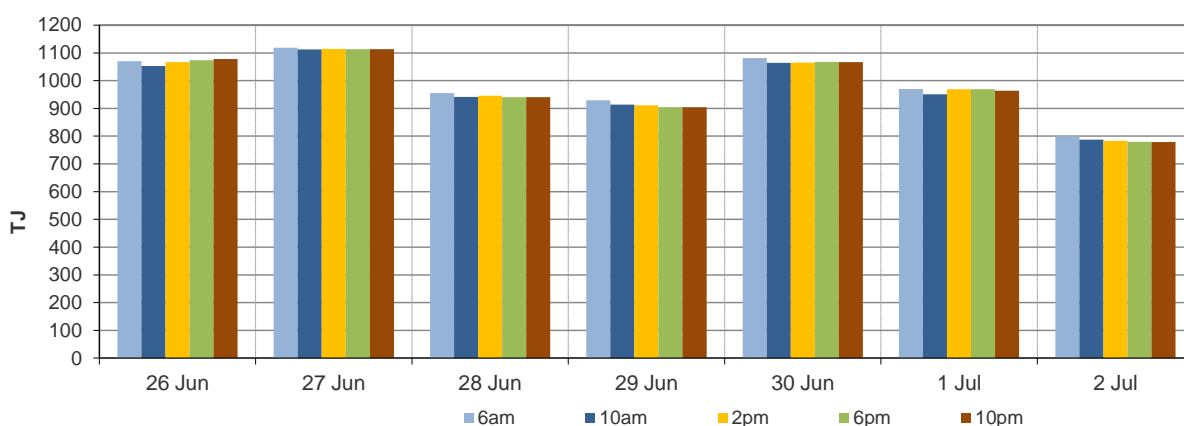
The main drivers<sup>15</sup> of price are demand forecasts and bids to inject or withdraw gas from the market. Figures 1.1 to 1.4 below show the daily prices, demand forecasts<sup>16</sup>, and injection/withdrawal bids for each of the five pricing schedules. Figure 1.5 provides information on which 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)**

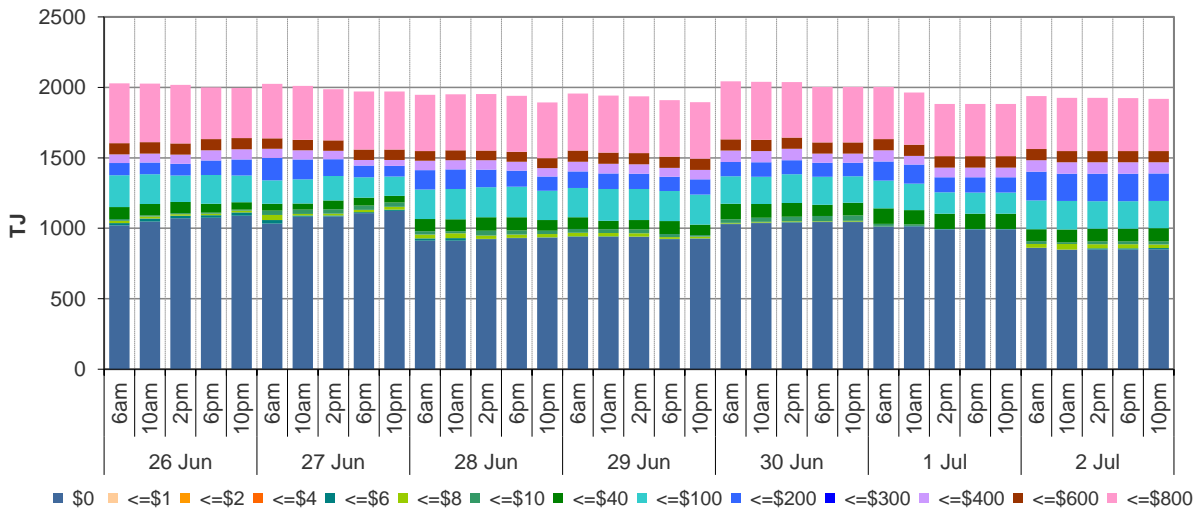


<sup>14</sup> Prices for subsequent schedules are applied only to the differences in scheduled quantities (imbalances) to calculate the weighted price. The 6 am price applies to the entire scheduled quantity in the initial schedule.

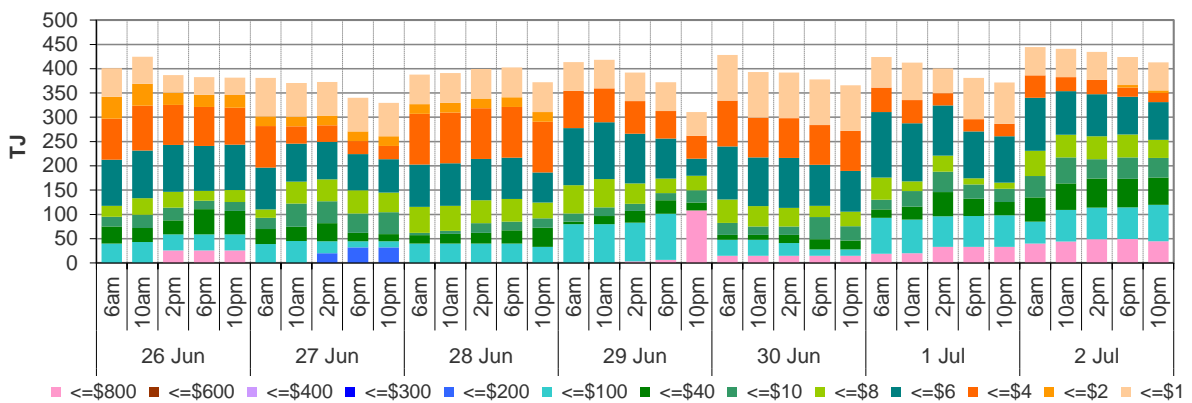
<sup>15</sup> The price might also be affected by transmission or production (contractual) constraints limiting how much gas can be delivered from a locale or System Injection Point (SIP) from time to time.

<sup>16</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.

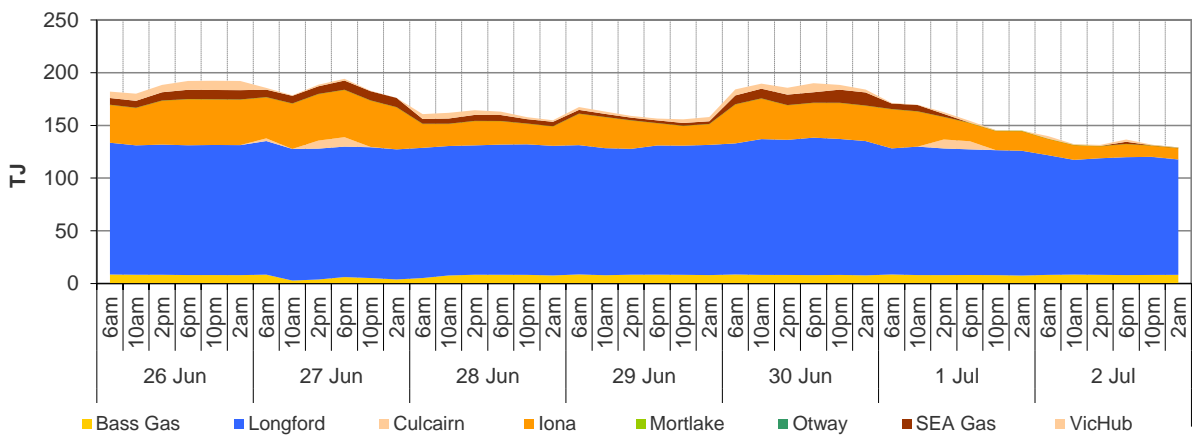
**Figure 1.3: Injection bids by price bands (TJ)**



**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>17</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](#).

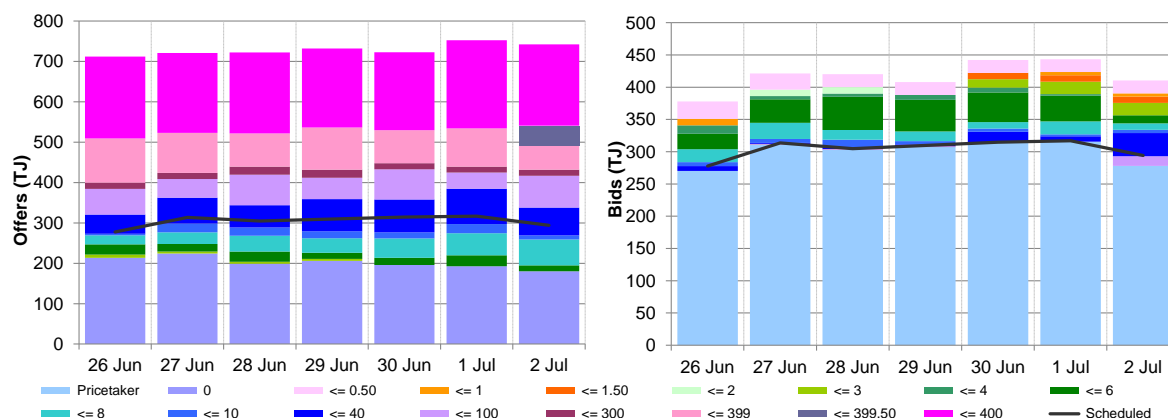
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.<sup>18</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)	10.11	12.10	17.68	15.50	28.81	12.95	13.20
Ex ante quantity (TJ)	278	314	305	310	315	317	294
Ex post price (\$/GJ)	17.89	24.50	29.00	20.90	29.00	11.22	11.80
Ex post quantity (TJ)	287	327	321	319	320	295	280

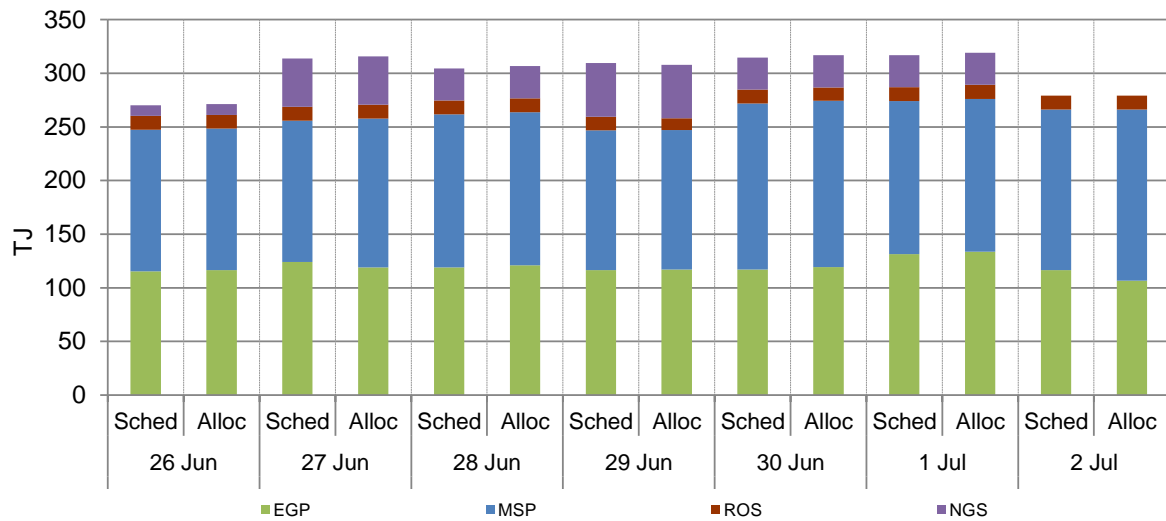
**Figure 2.2: SYD daily hub offers and daily hub bids in price bands (\$/GJ)**



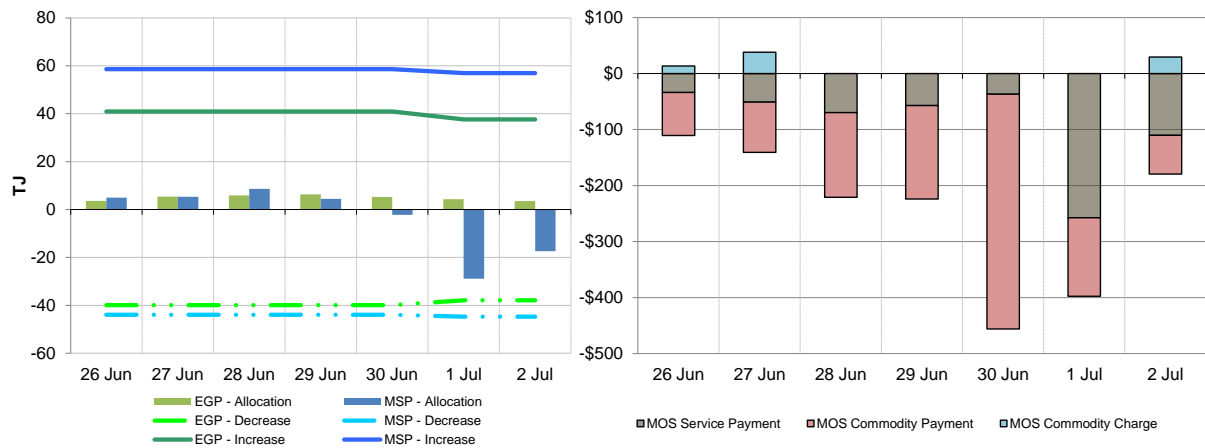
<sup>17</sup> The main driver of the amount of gas scheduled on a gas day is the 'price-taker' bid, which is forecast hub demand that cannot respond to price and which must be delivered, regardless of the price.

<sup>18</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>19</sup>**



<sup>19</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.

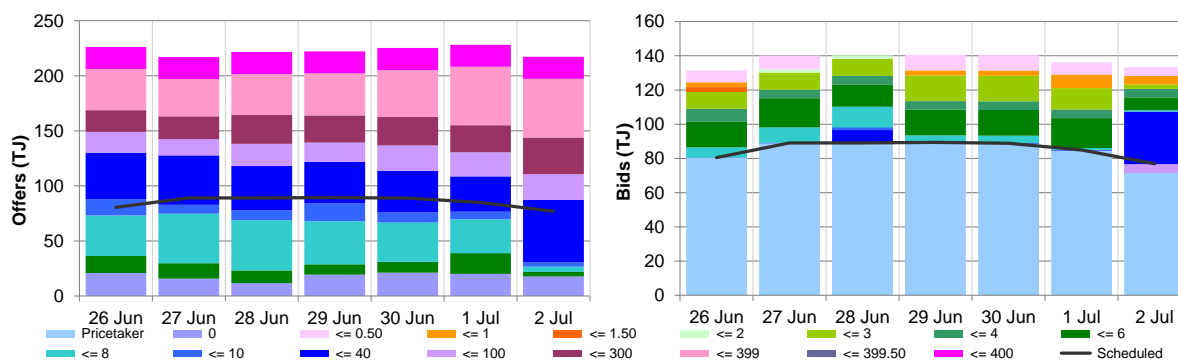
### 3. Adelaide STTM

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.

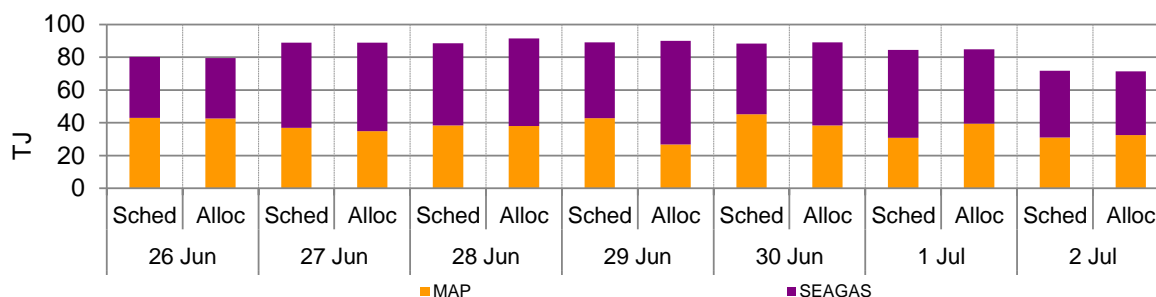
**Figure 3.1: ADL STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	8.59	13.51	16.81	13.49	18.71	18.13	24.00
Ex ante quantity (TJ)	81	89	89	89	89	85	77
Ex post price (\$/GJ)	8.59	13.51	16.81	18.71	18.81	16.99	24.00
Ex post quantity (TJ)	79	87	89	98	90	85	80

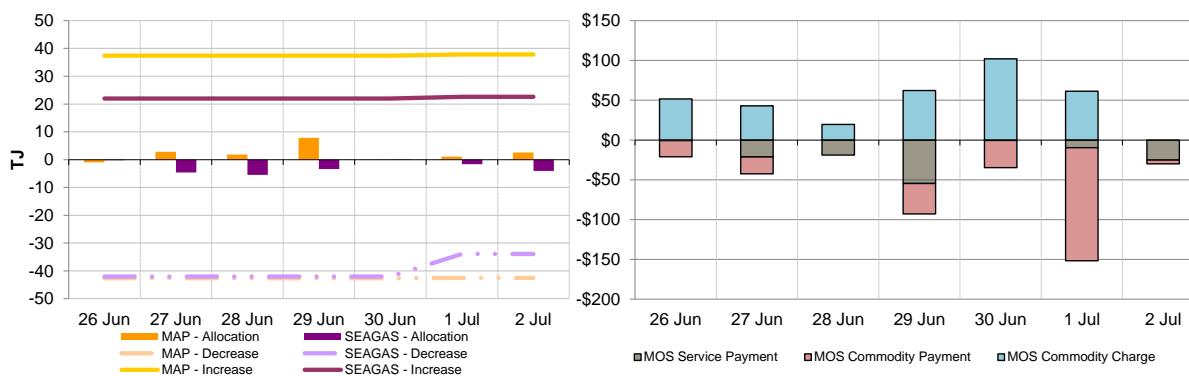
**Figure 3.2: ADL daily hub offers and daily hub bids in price bands (\$/GJ)**



**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)**



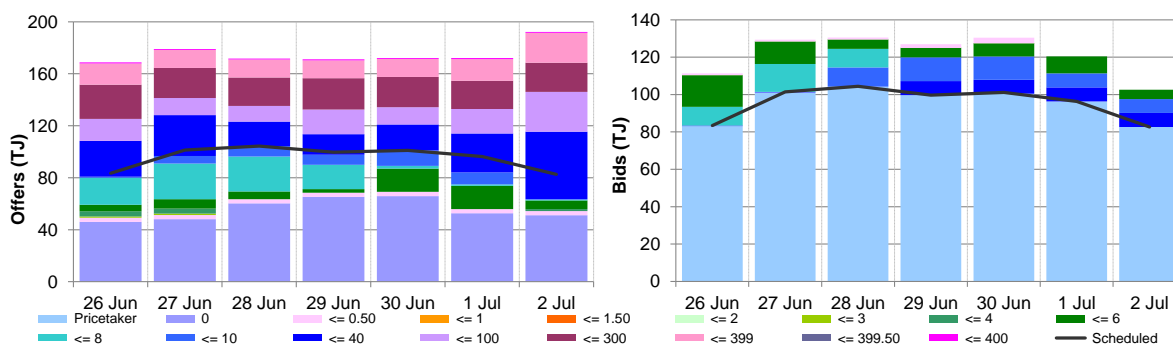
## 4. Brisbane STTM

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.

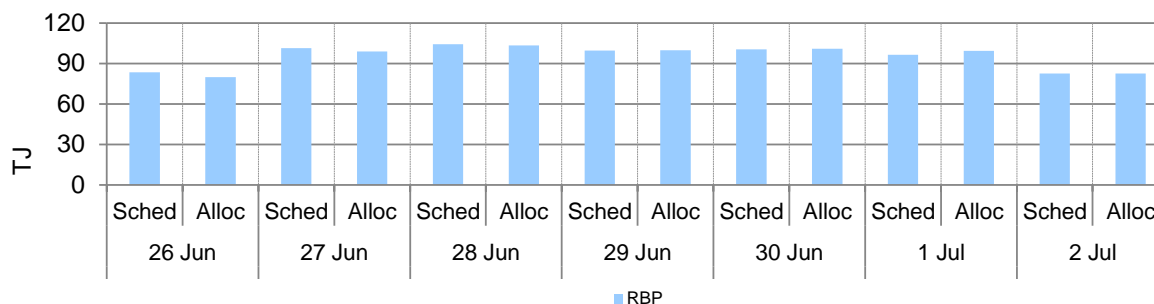
**Figure 4.1: BRI STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	10.02	10.05	10.00	11.95	10.06	14.99	15.00
Ex ante quantity (TJ)	83	101	104	100	101	96	83
Ex post price (\$/GJ)	7.61	10.05	9.05	11.95	18.90	14.99	15.00
Ex post quantity (TJ)	77	98	102	99	103	94	81

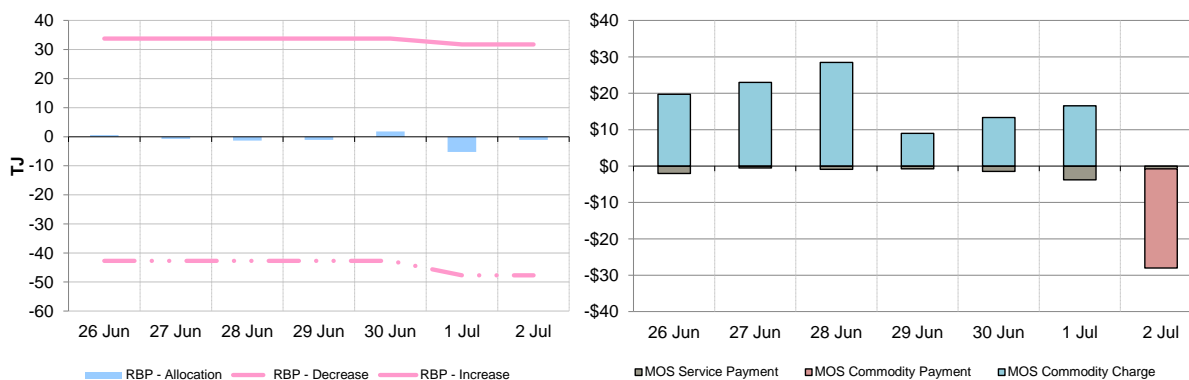
**Figure 4.2: BRI daily hub offers and daily hub bids in price bands (\$/GJ)**



**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>20</sup> from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices<sup>21</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); Production and Pipeline flows (TJ)**



<sup>20</sup> **Domestic gas flows** are calculated as the total of: **SA** = MAP + SEAGAS; **VIC** = SWP + LMP + (absolute quantity of negative flows only on the 'NSW-VIC interconnect'); **NSW/ACT** = EGP + MSP; **TAS** = TGP; **QLD (Brisbane)** = RBP; **QLD (Mt Isa)** = CGP; and **QLD (Gladstone)** = QGP.

**Export gas flows** are calculated as the total of: the APLNG pipeline; the GLNG pipeline; and the Wallumbilla to Gladstone pipeline.

<sup>21</sup> **GPG volumes** may include gas usage that does not show up on Bulletin Board pipeline flows. GSH supply is the average daily volume of gas 'traded', while price is a volume weighted average.

## 6. Gas Supply Hub

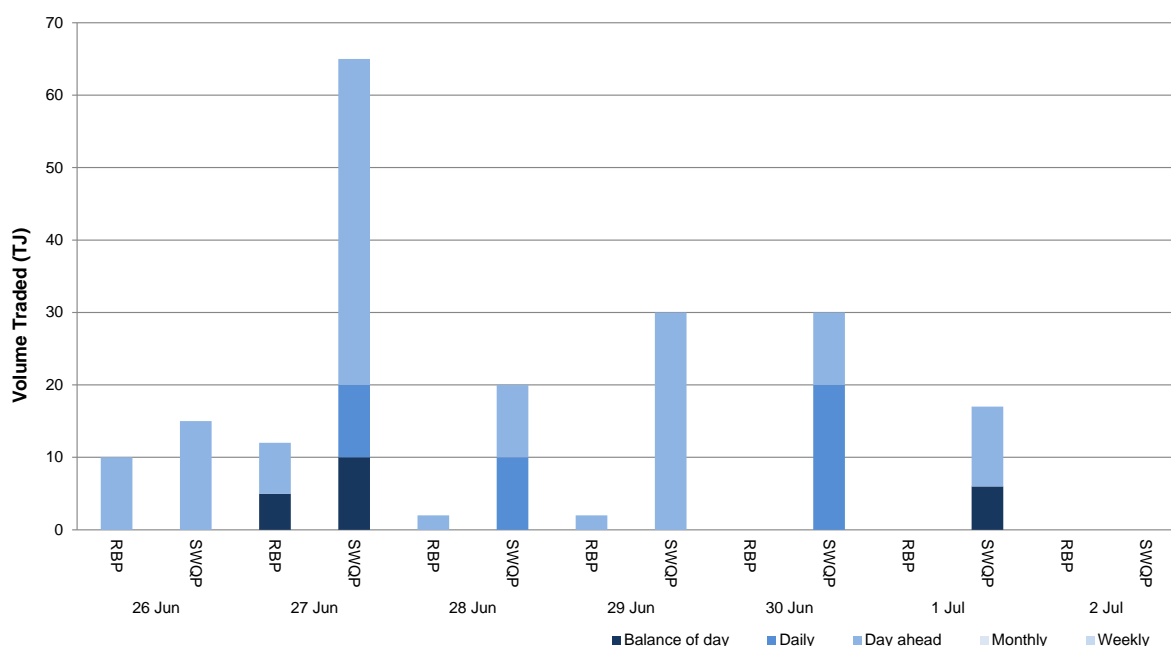
The Gas Supply Hub (**GSH**) was established in March 2014 for the trading of gas at Wallumbilla. The GSH is a voluntary market<sup>22</sup> for the supply of gas traded<sup>23</sup> between separate participants, with products listed for sale and purchase at delivery points on three major connecting pipelines at Wallumbilla – the **QGP**, the **SWQP** and the **RBP**. There are separate products for each pipeline (each pipeline is considered a trading location, and each has a number of delivery points) and delivery period (daily, day-ahead, balance-of-day, weekly and monthly products). In June 2016, a new supply hub at Moomba was created to facilitate trade on the **MAP** and **MSP**, and also allow for trading between the Wallumbilla and Moomba markets on the SWQP through a spread product (representing the price differential between the two hubs).

There were 26 trades this week for 203 TJ of gas at a volume weighted price of \$11.58/GJ in the Wallumbilla hub (26 TJ, \$9.94/GJ on the RBP and 177 TJ, \$11.82 on the SWQP). Prices reached record levels again this week, with trades for products on the SWQP priced between \$8.40–\$15/GJ and trades on the RBP priced between \$9.20–\$12.25/GJ.

Balance of day (or part day) and daily (including day-ahead) commodity gas was traded this week with no trades of gas for weekly or monthly delivery.

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.

**Figure 6.1: GSH traded quantities**



## Australian Energy Regulator July 2016

<sup>22</sup> Market trade is facilitated through an electronic trading platform, with standardised terms and conditions and a market settlement facility for the short-term trading of physical gas and related products. The market is designed to complement existing bilateral gas supply arrangements and gas transportation agreements, through the placement of anonymous offers (to sell) or bids (to buy) at specified quantity and price increments, which are automatically matched on the exchange to form transactions.

<sup>23</sup> Volume weighted average prices and traded quantities provided in this report may include off-market trades, which are not included in AEMO's reference price calculations.