

## 10 – 16 July 2016

### Weekly Summary

#### *Prices*

Prices generally remained above \$10/GJ across all gas markets throughout the week, peaking in Southern markets on 13 July.

On 13 July prices reached \$43.55/GJ in Victoria (the highest price since 2008)<sup>1</sup>, \$25.88/GJ in Adelaide (exceeding records set in previous weeks)<sup>2</sup>, and \$16/GJ in Sydney. In Victoria the day started with line pack around 35 TJ short of target requiring more supply to be scheduled across the day. Preliminary inquiries indicate that weather patterns were difficult to predict around the 13 July gas day leading to the line pack shortfall.

Aligned with prices in Southern markets, the price paid for gas at the Wallumbilla Gas Supply Hub reached \$14.25/GJ for gas traded on 12 July for delivery on 13 July.

#### *Supply and Demand*

As we recently reported<sup>3</sup>, high gas prices reflect general tightness across the market whereby gas production is running close to capacity to satisfy a combination of Southern winter demand, Queensland exports and high levels of gas power generation, particularly in South Australia. The Gippsland and Otway Basins production facilities in Victoria have been producing at close to full capacity to meet demand<sup>4</sup>. At the same time gas storage facilities in Victoria and New South Wales (including the Dandenong/Newcastle LNG storage facilities), have been drawn upon regularly with Iona storage reported as being around 40 per cent full in early July.<sup>5</sup>

AGL reported on 7 July that it had acquired a higher than anticipated proportion of wholesale gas for the first quarter of FY17 in part because of a supply constraint in Queensland.<sup>6</sup> On the Gas Bulletin Board, QCLNG and Santos have reported the need for maintenance of their LNG trains during the periods 25 July to 2 August and 5 to 23 October respectively. This should increase supply available for the domestic market.<sup>7</sup>

### 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 publishes a range of [longer term statistics](#) on the

<sup>1</sup> On 22 November 2008 the average daily price was \$54.88/GJ.

<sup>2</sup> The ex-ante price in Adelaide reached \$18.99/GJ on 24 June, \$24/GJ on 2 July and \$25.45/GJ on 6 July.

<sup>3</sup> <http://www.aer.gov.au/wholesale-markets/market-performance/gas-report-26-june-2-july-2016>

<sup>4</sup> The Longford Gas Plant has been averaging close to 99% of its daily capacity forecast since 1 June 2016.

<sup>5</sup> The reservoirs were replenished in the following week with some injections into storage during milder weather.

<sup>6</sup> AGL media release: <https://www.agl.com.au/about-agl/media-centre/article-list/2016/july/agl-update-on-fy17-gas-portfolio-margins>, accessed 28 July 2016.

<sup>7</sup> <http://www.gasbb.com.au/Reports/Medium%20Term%20Capacity.aspx> (as at 22 July 2016).

performance of the gas sector including gas prices, production, pipeline flows and consumer demand.

## Market overview

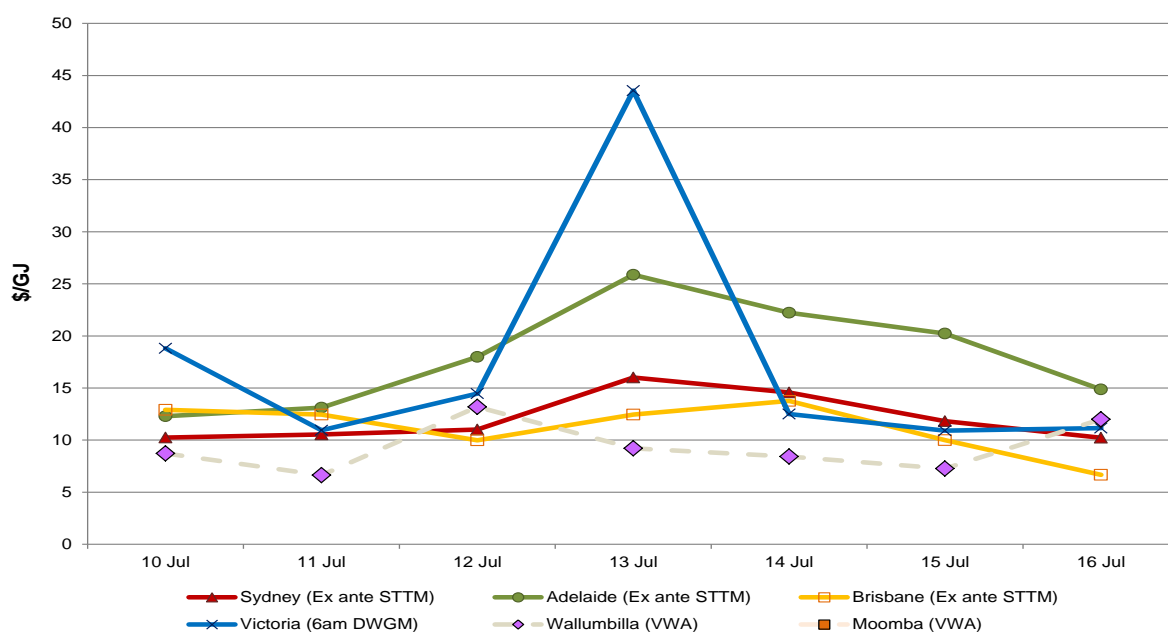
Figure 1 sets out the average daily prices (\$/GJ) for the current week, and demand levels, compared to historical averages. Regions shown include the Victorian Declared Wholesale Market (**VGM or Victorian gas market**) and for the Sydney (**SYD**), Adelaide (**ADL**) and Brisbane (**BRI**) Short Term 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>8</sup>**

	Victoria		Sydney		Adelaide		Brisbane		Wallumbilla		Moomba	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand	Price	Quantity	Price	Quantity
10 Jul - 16 Jul 2016	17.62	970	12.06	307	18.09	95	11.18	96	9.55	253	-	-
% change from previous week	24	4	0	3	0	2	-26	-1	4	-89	-	-
16-17 financial YTD	15.34	945	12.18	303	18.48	93	13.39	96	9.28	2638	-	-
% change from previous financial YTD	237	-8	144	0	262	2	223	-2	112	798	-	-

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

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



<sup>8</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.

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
10 Jul - 16 Jul 2016	-	103.75	8.44	1.53
% change from previous week	-	132	-63	113
16-17 financial YTD		87.97	15.85	1.27
% change from previous financial YTD		117	8	-17

\* 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.

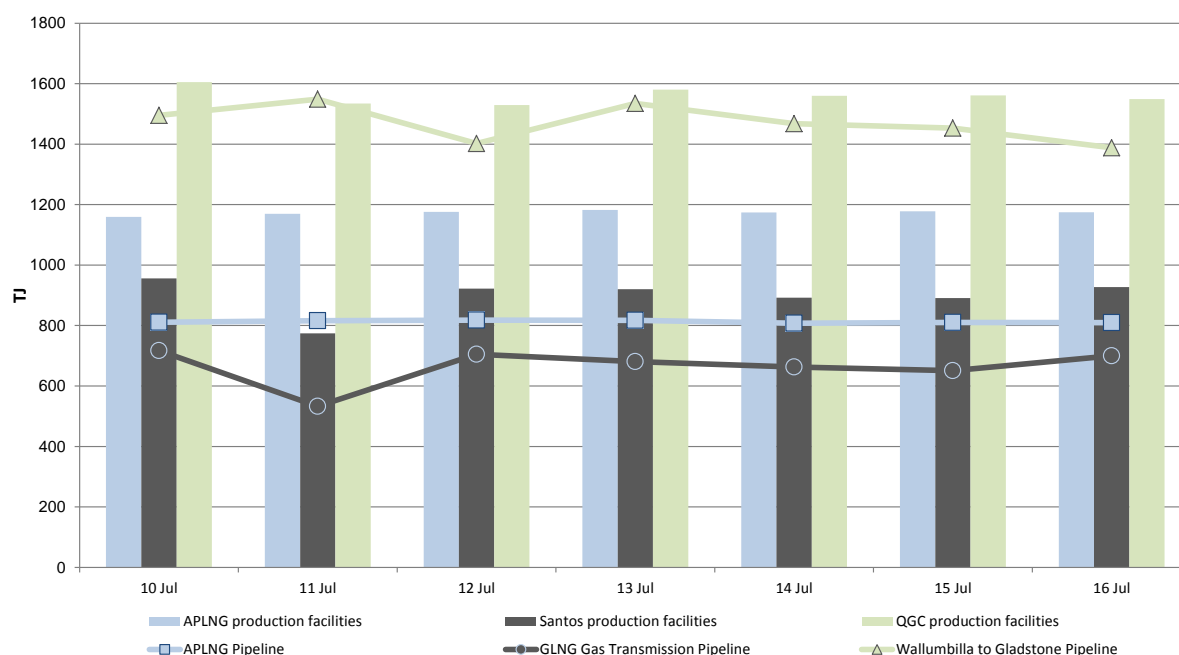
**Figure 4: Gas supply hub products traded for the current week (\$/GJ, TJ) \***

	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>	7.04	55.3	8.50	4.9	-	-	-	-	-	-
<b>Daily</b>	7.24	27.0	12.99	51.0	-	-	-	-	-	-
<b>Day ahead</b>	7.87	76.0	13.63	39.0	-	-	-	-	-	-
<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

On gas days Tuesday 12 July, Wednesday 13 July and Friday 15 July, a number of significant price variation (SPV) triggers were exceeded in the Adelaide and Sydney STTM hubs and the Victorian gas market:

- 12 July, Adelaide STTM, \$12/GJ variation between the D-1 and D+1 schedule prices.
- 13 July, Adelaide STTM, \$8.08/GJ variation between the D-2 and D-1 schedule price.
- 13 July, Victoria, \$43.33/GJ imbalance price.
- 15 July, Adelaide STTM, \$9.12/GJ variation between the D-2 and D-1 schedule price.

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:

- 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. In summary:

### Adelaide

Higher demand from gas-fired generators in South Australia on 13 and 14 July (with Pelican Point restarting on 14 July) outside of the Adelaide STTM, along with high demand in neighbouring markets (Sydney and Victoria) appeared to contribute to the \$25.88/GJ and \$22.22/GJ price in the Adelaide STTM on 13 and 14 July.

The Moomba Adelaide Pipeline flagged potential load shedding of interruptible gas customers for 14 July (an amber flag) but did not provide a reason. We will be following this up with the operator.

### *Sydney*

In Sydney, demand reached close to record levels exceeding 350 TJ for the first time this winter. This contributed to pushing the price up to \$16/GJ on 13 July. The high demand was partly met by unusually high flows of gas supplied by the Newcastle LNG storage facility. Separately, demand in Sydney was over forecast each day between 10 – 15 July resulting in high daily MOS payments in Sydney of over \$100 000 on four of the six days.

### *Victoria*

On 13 July, the 6 am price in Victoria reached \$43.55/GJ as temperatures dropped to some of the coldest levels seen this winter, leading to forecast demand exceeding 1.15 PJ.<sup>9</sup> This was further exacerbated by lower than expected levels of line pack due to participants under forecasting demand.

On 14 July, Iona in Victoria's south west was constrained to 0 TJ injections from 2 to 6 pm due to a plant trip, which coincided with the scheduled price jumping to \$20.45/GJ (see figure 1.1).

### *Bulletin Board gas flows*

Flows on the QSN-link changed direction to flow gas towards Southern Australia on 12 July. This appears likely to have been driven by the high winter demand forecasts in the southern states on 13 July. On 14 July the Victoria–NSW interconnect also changed direction to flow gas into Victoria.

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<sup>9</sup> While temperatures weren't necessarily at their lowest levels this winter, the wind chill had a more significant effect which led to overnight temperatures plummeting and snow in a number of areas across the state. Actual demand exceeded 1200 TJ.

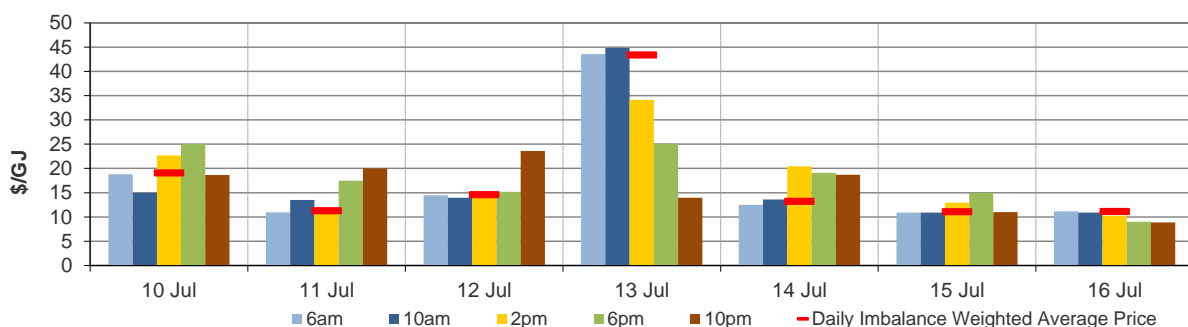
## 1. Victorian Declared Wholesale Market

In the Victorian gas market, gas is priced five times 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>10</sup> which is the schedule at which most gas is traded.

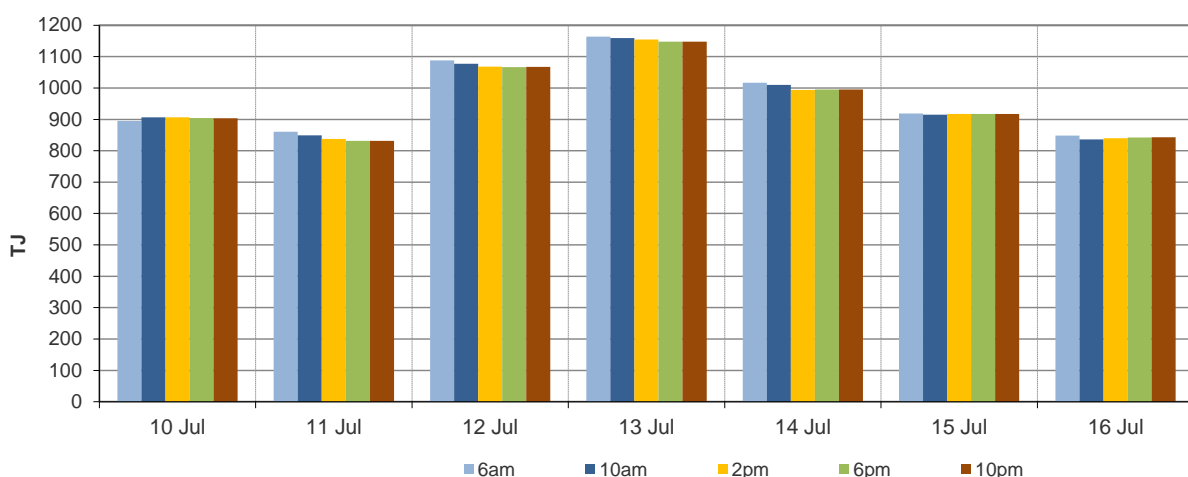
The main drivers<sup>11</sup> of price are demand forecasts and bids to inject or withdraw gas from the market. Figures 1.1 to 1.4 below show the daily prices, demand forecasts<sup>12</sup>, and injection/withdrawal bids for each of the five pricing schedules. Figure 1.5 provides information on which 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)**

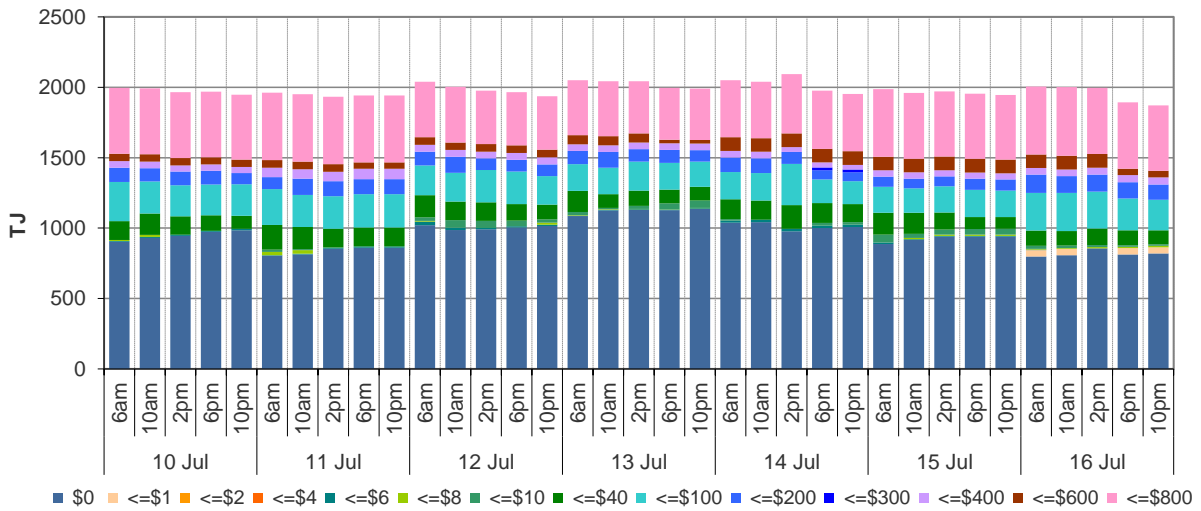


<sup>10</sup> Prices for subsequent schedules are applied only to the differences in scheduled quantities (imbalances) to calculate the weighted price. The 6 am price applies to the entire scheduled quantity in the initial schedule.

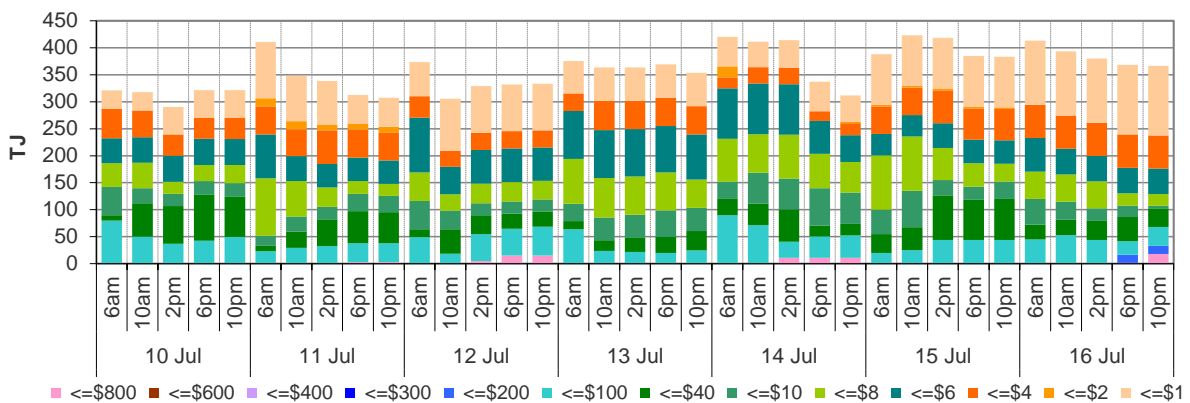
<sup>11</sup> The price might also be affected by transmission or production (contractual) constraints limiting how much gas can be delivered from a locale or System Injection Point (SIP) from time to time.

<sup>12</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.

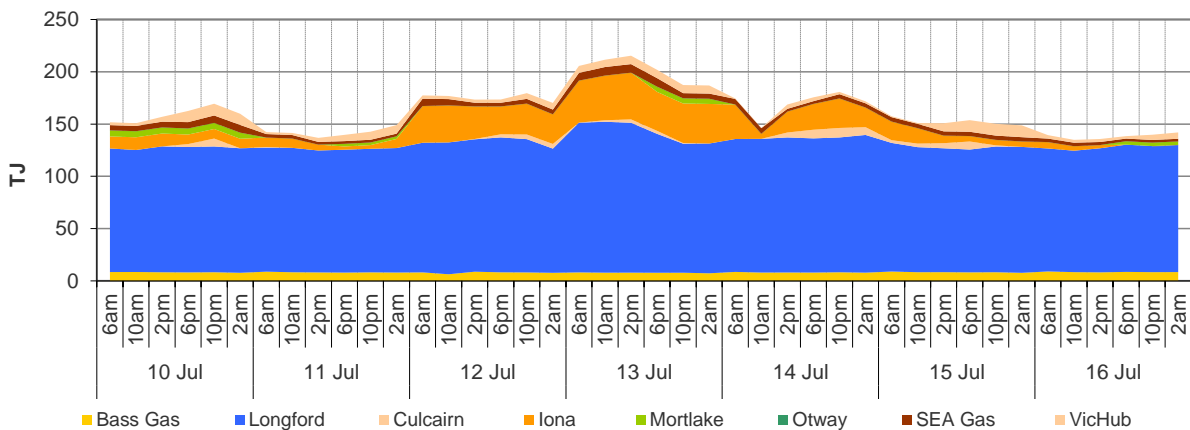
**Figure 1.3: Injection bids by price bands (TJ)**



**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>13</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 on our website](#).

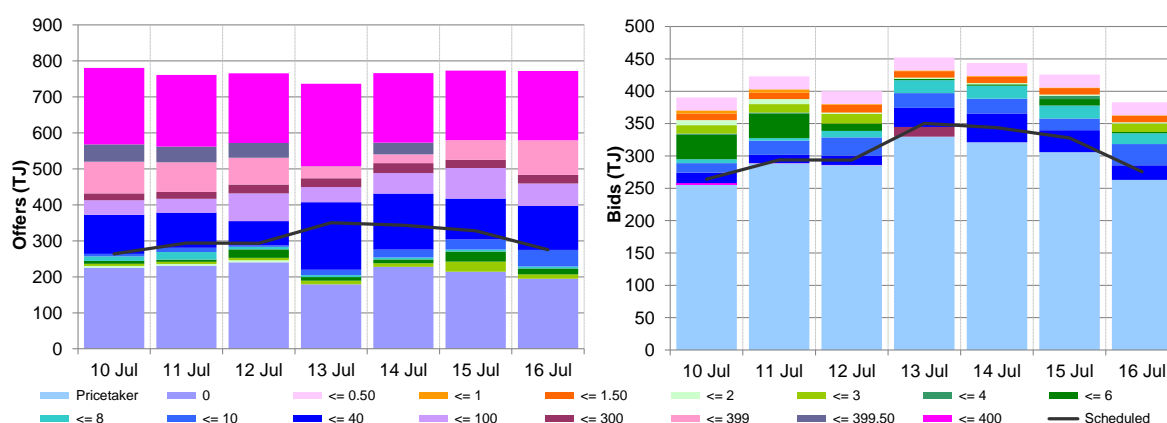
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.<sup>14</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)	10.25	10.55	11.01	16.00	14.58	11.83	10.23
Ex ante quantity (TJ)	264	294	294	350	344	328	275
Ex post price (\$/GJ)	9.52	10.15	10.51	15.00	13.60	11.80	10.23
Ex post quantity (TJ)	247	280	282	336	335	321	275

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

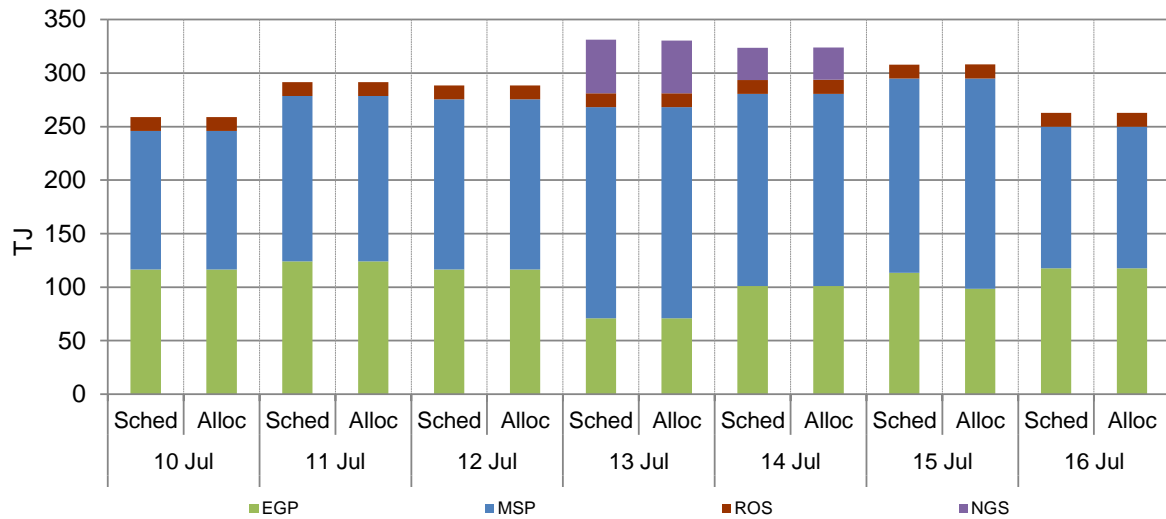


<sup>13</sup> The main driver of the amount of gas scheduled on a gas day is the 'price-taker' bid, which is forecast hub demand that cannot respond to price and which must be delivered, regardless of the price.

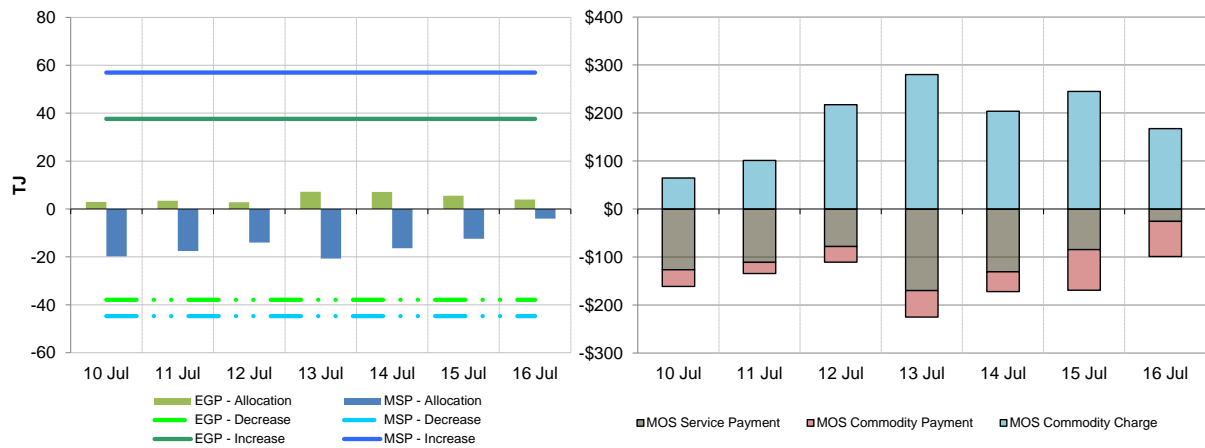
<sup>14</sup> MOS service payments involve a payment for a MOS increase service when the actual quantity delivered exceeds final gas nominations for delivery to a hub, and a payment for a MOS decrease service when the actual quantity delivered is less than final nominations. As well as a MOS 'service' 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>15</sup>**



<sup>15</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.

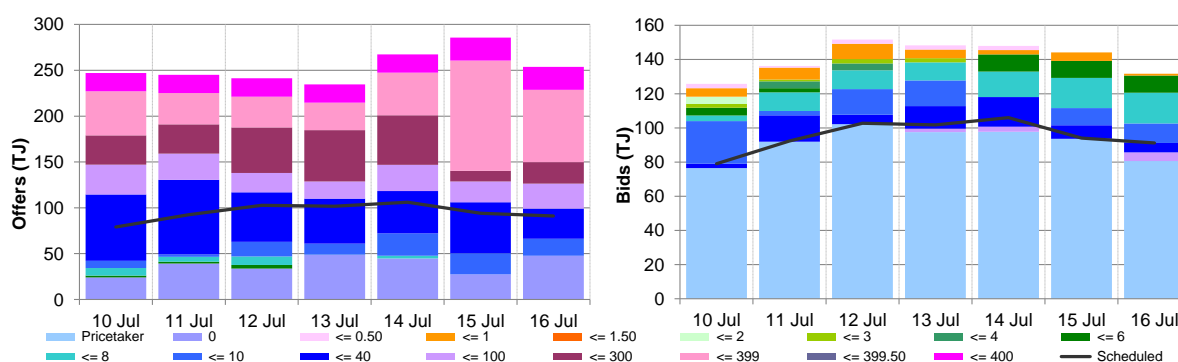
### 3. Adelaide STTM

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.

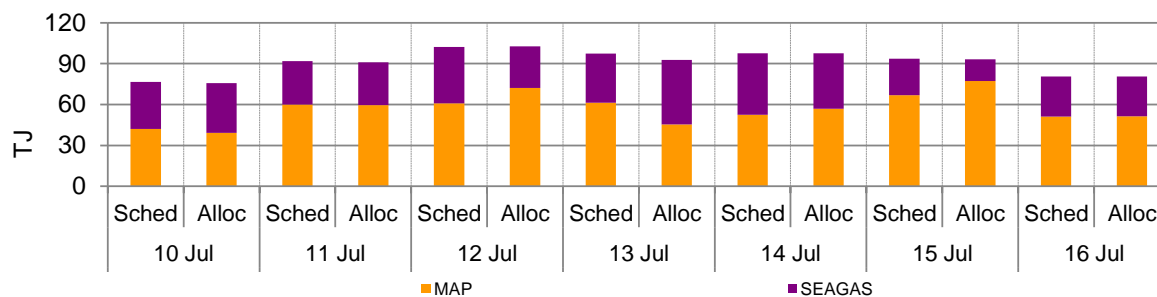
**Figure 3.1: ADL STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	12.30	13.11	17.99	25.88	22.22	20.22	14.88
Ex ante quantity (TJ)	79	92	103	102	106	94	91
Ex post price (\$/GJ)	13.50	11.73	29.99	23.50	22.22	20.22	14.00
Ex post quantity (TJ)	81	88	110	100	105	94	89

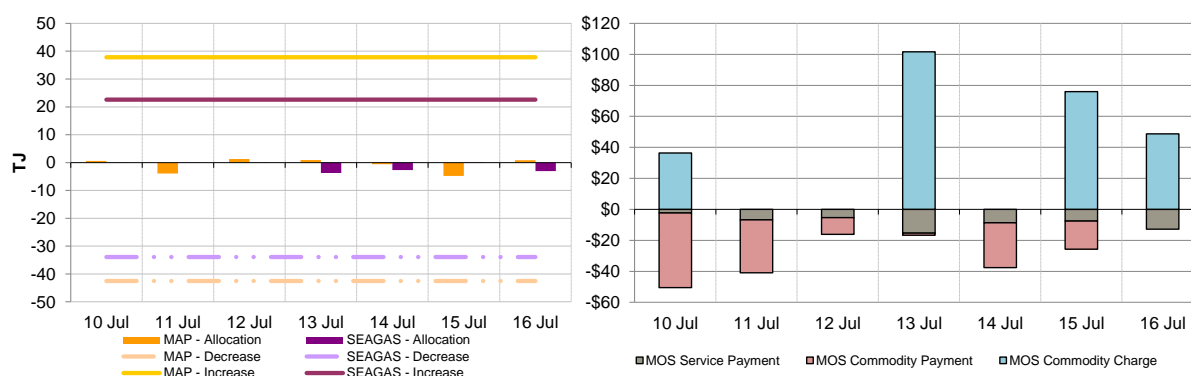
**Figure 3.2: ADL daily hub offers and daily hub bids in price bands (\$/GJ)**



**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)**



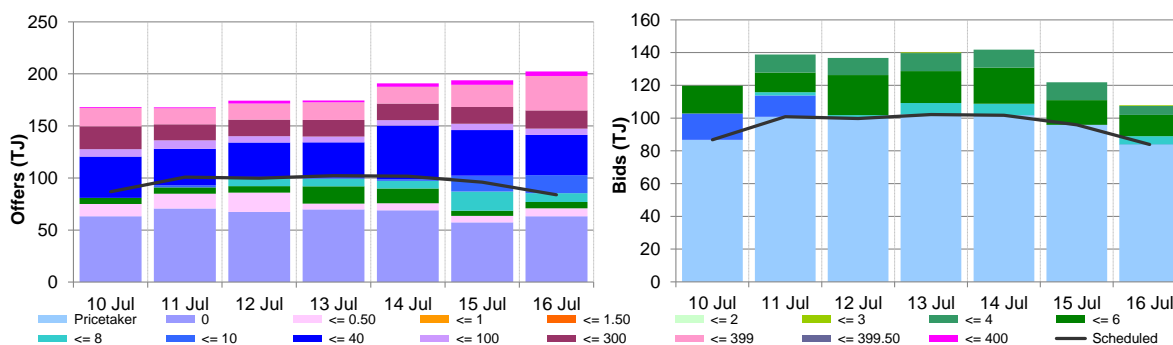
## 4. Brisbane STTM

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.

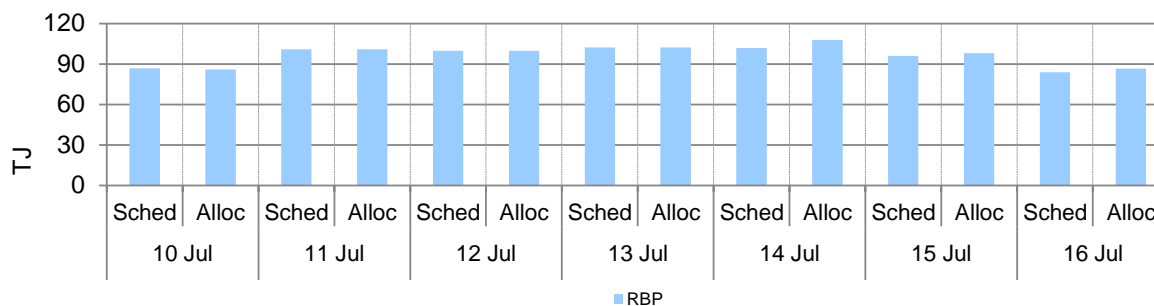
**Figure 4.1: BRI STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	12.91	12.46	9.99	12.46	13.77	10.00	6.67
Ex ante quantity (TJ)	87	101	100	102	102	96	84
Ex post price (\$/GJ)	11.01	12.46	12.46	12.46	13.77	10.00	6.67
Ex post quantity (TJ)	84	101	101	104	102	96	85

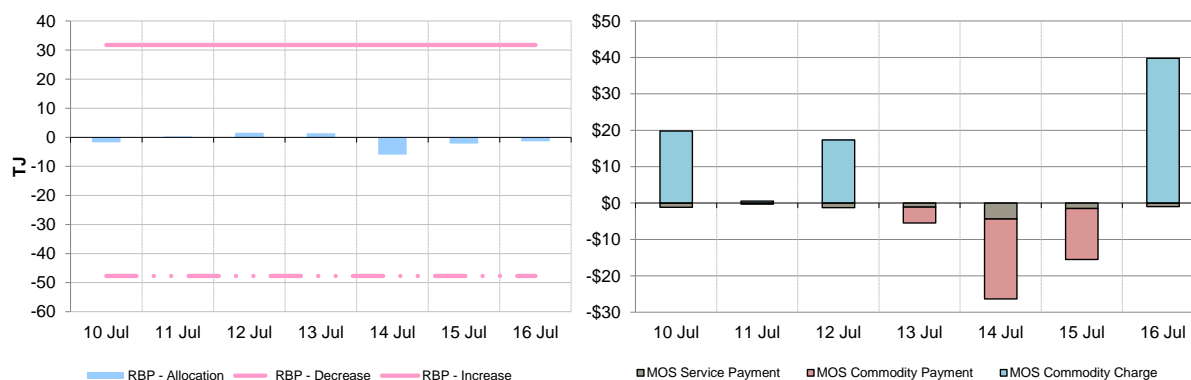
**Figure 4.2: BRI daily hub offers and daily hub bids in price bands (\$/GJ)**



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



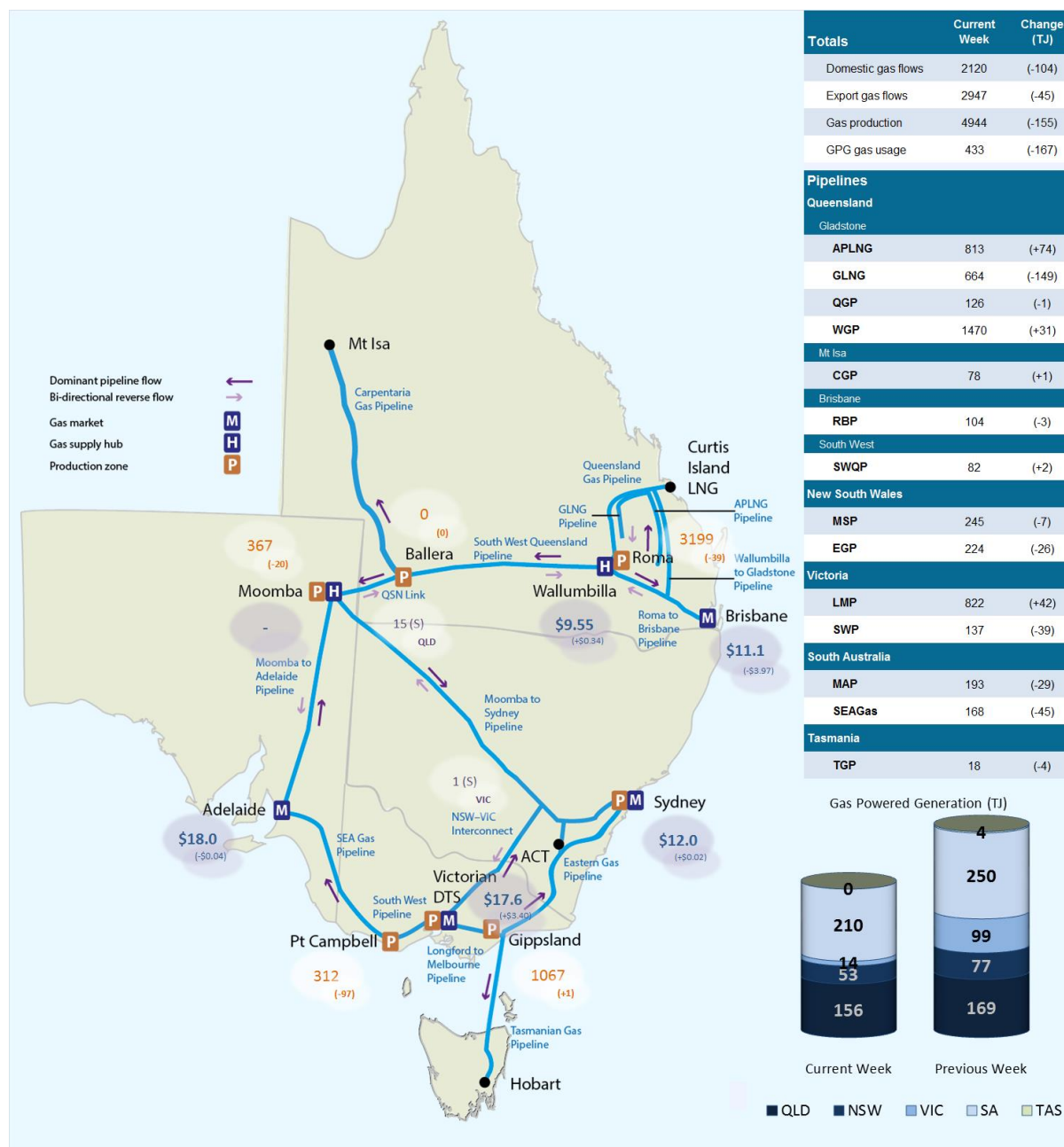
**Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)**



## 5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week<sup>16</sup> from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices<sup>17</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>16</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>17</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

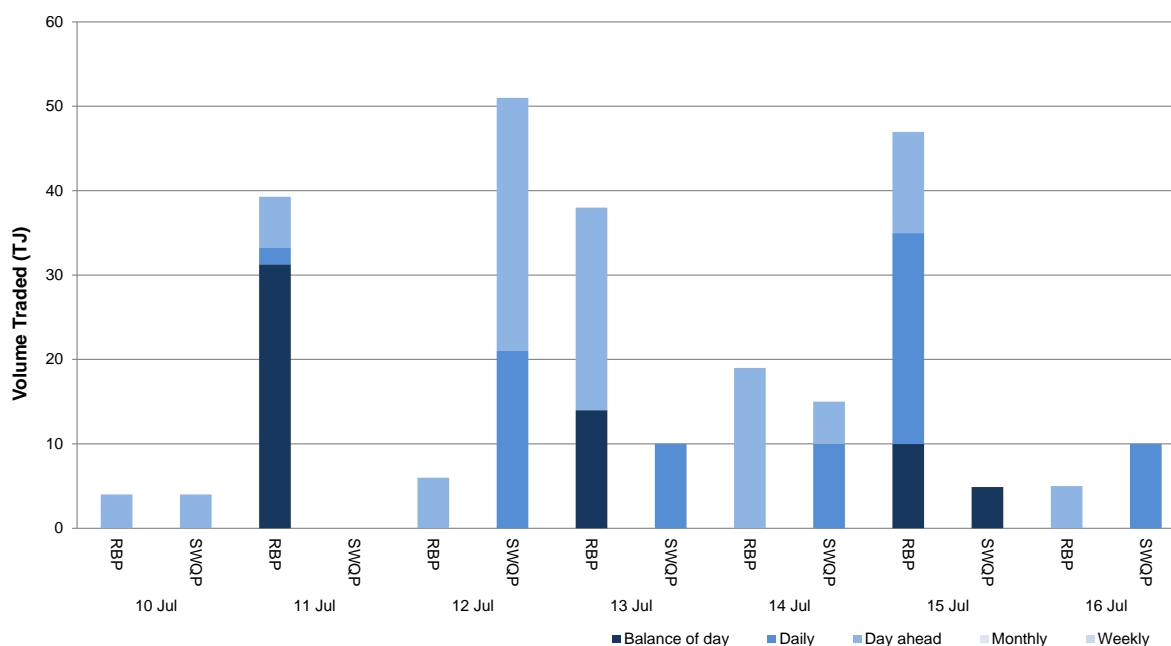
The Gas Supply Hub (**GSH**) was established in March 2014 for the trading of gas at Wallumbilla. The GSH is a voluntary market<sup>18</sup> for the supply of gas traded<sup>19</sup> between separate participants, with products listed for sale and purchase at delivery points on three major connecting 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 53 trades this week for 253 TJ of gas at a volume weighted price of \$9.55/GJ in the Wallumbilla hub. Larger gas trades on the Wallumbilla hub around high demand days in Sydney, Adelaide and Victoria coincided with reversal of the QSN-link may suggest excess gas is moving from Queensland to the southern states to meet winter demand.

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.

There were no trades this week on the QGP, MAP or MSP which have never traded to date.

**Figure 6.1: GSH traded quantities**



### Australian Energy Regulator July 2016

<sup>18</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>19</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.