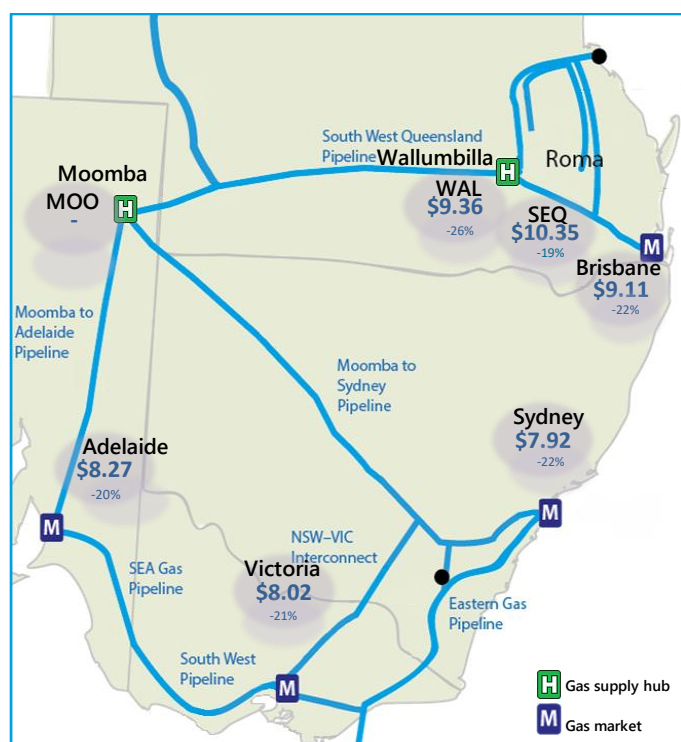


## 26 December 2021 – 1 January 2022

### Weekly Summary

Downstream wholesale gas market prices (marked M on the map below) reduced further this week in all four markets, after starting to settle below \$10/GJ from 25 December (percentage change from previous week shown on map). Similarly, demand has dropped in all the markets, most significantly in Brisbane. This occurred alongside increasing temperatures.

At the Wallumbilla upstream supply production hubs (marked H), the average price decreased again at the WAL trading point and SEQ trading point.



Trading in the Wallumbilla gas supply hub was concentrated around shorter-term deliveries for products at SEQ (20 TJ) and WAL (148 TJ) this week (see section 6).<sup>1</sup>

Mainland gas powered generation decreased this week, most significantly in Queensland. Export pipeline flows reduced slightly but remain high, above 4000 TJ/day (see more detailed map and table at figure 5.1).

<sup>1</sup> The South East Queensland (SEQ) trading point in the Wallumbilla (WAL) Gas Supply Hub (GSH) supplies gas to an in-pipe notional delivery point on the Roma to Brisbane Pipeline (RBP), located in close proximity to a number of large production facilities in the Roma region. The WAL product location covers the remaining gas deliveries between the South West Queensland Pipeline (SWQP), Roma to Brisbane Pipeline (RBP), Queensland Gas Pipeline (QGP) and other interconnected pipelines in Queensland.

## 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 (or **Victorian Gas Market - VGM**) 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>2</sup>**

	Victoria		Sydney		Adelaide		Brisbane	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand
26 Dec - 01 Jan 2022	8.02	263	7.92	194	8.27	37	9.11	76
% change from previous week	-21	-12	-22	-12	-20	-14	-22	-19
21-22 financial YTD	10.04	612	10.82	253	11.07	60	10.76	92
% change from previous financial YTD	99	1	109	-2	94	-2	106	-9

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 Hubs (\$/GJ, TJ)<sup>3</sup>**

	Moomba		South East Queensland		Wallumbilla	
	Price	Quantity	Price	Quantity	Price	Quantity
26 Dec - 01 Jan 2022	-	-	10.35	20	9.36	148
% change from previous week	-	-	-19	-13	-26	-49
21-22 financial YTD	8.42	250	10.80	2167	10.85	8477
% change from previous financial YTD	181	-25	143	-12	132	21

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

<sup>2</sup> Average daily quantities are displayed for each region. The weighted average daily imbalance price applies for Victoria.

<sup>3</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).

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

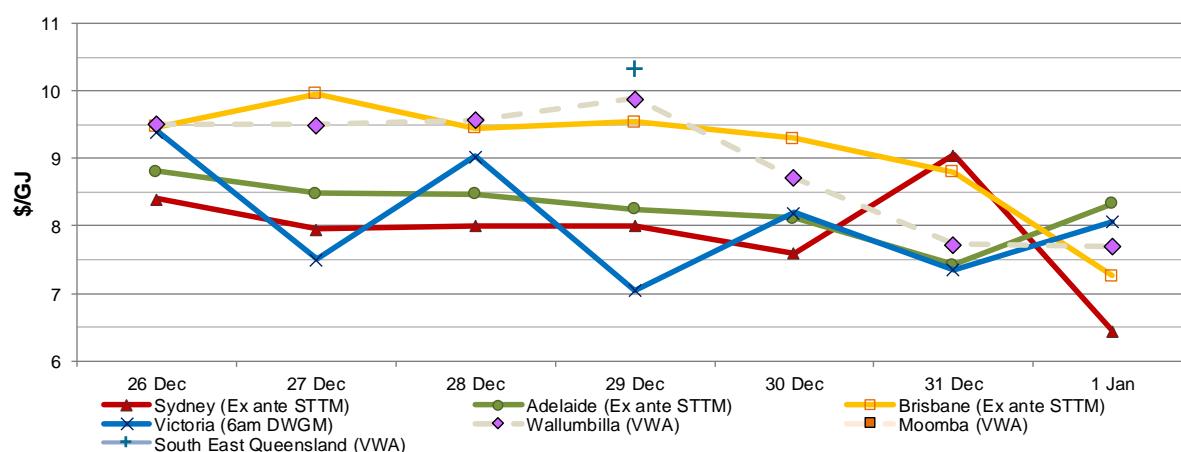


Figure 4 compares average ancillary market payments (for the VGM) and balancing gas service payments (STTM) against historical averages.

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

	Victoria Ancillary Payments*	Sydney MOS	Adelaide MOS	Brisbane MOS
26 Dec - 01 Jan 2022	-	11.68	10.36	0.79
% change from previous week	-	-48	31	-48
21-22 financial YTD	-	22.90	8.20	0.86
% change from previous financial YTD	-	2	-13	-85

\* 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 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 total traded for the current week (\$/GJ, TJ)<sup>4</sup>**

	Moomba		South East Queensland		Wallumbilla*	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
<b>Balance of day</b>	-	-	-	-	9.31	79.0
<b>Daily</b>	-	-	10.35	10.0	10.05	18.0
<b>Day ahead</b>	-	-	10.35	10.0	9.18	51.0
<b>Weekly</b>	-	-	-	-	-	-
<b>Monthly</b>	-	-	-	-	-	-
<b>Total</b>	-	-	<b>10.35</b>	<b>20.0</b>	<b>9.36</b>	<b>148.0</b>

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

<sup>4</sup> Further information about new product trading locations in Victoria (Culcairn) and Sydney (Wilton) is available in section 6. Gas Supply Hub).

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	1545	933	1757	4235
Export Pipeline Flows	1552	1017	1471	4040
% change from previous week (pipeline flows)	-4	0	2	-1
21-22 financial YTD flows	1437	1107	1340	3885

\* 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

### *High export flows in December*

Strong export gas flows in the month of December, with 31 cargoes shipped out of Queensland, was consistent with the high international prices which ranged \$37-79/GJ over December in Asia and Europe.

### *Sydney STTM*

On 1 January, a pipeline flow direction constraint (PFDC) was set on the Moomba to Sydney Pipeline (MSP), allowing for economic scheduling of additional gas, see Box 1 below. This is the 26<sup>th</sup> day in the Sydney STTM a PFDC has occurred on the MSP compared to zero on EGP. It occurred as a result of relatively low supply being scheduled into the Sydney STTM on the MSP in comparison to high scheduled supply on Eastern Gas Pipeline (EGP), at the same time as there being sufficient competitively priced withdrawal bids on the MSP to take gas out of Sydney.

### **Box 1: Pipeline Flow Direction Constraint (PFDC)**

#### **PFDC market mechanism**

The PFDC is a market mechanism that facilitates increased flow to a hub when:

- there are participants requiring backhaul from the hub; and
- there is not enough cheap gas scheduled to flow to the hub to facilitate the required backhaul<sup>5</sup>

Gas offers must equal the hub demand and the backhaul bids. If economical, extra forward haul can be scheduled on a pipeline to facilitate the required backhaul from the hub.

It is rare for the PFDC mechanism to come into effect as flows to the hub usually exceed flows from the hub. While PFDC outcomes have only occurred irregularly in the Sydney Hub on the MSP, their occurrence is more likely on the MSP than the EGP where frequently on the MSP the amount of scheduled offers into Sydney can be close to the amount scheduled from the hub. The higher likelihood of PFDC price outcomes on the MSP is reflected in there being 26 PFDCs on the MSP since market start compared to zero on the EGP.

<sup>5</sup> A backhaul service involves the transportation of gas in the opposite direction to the predominant flow. Backhaul can only be scheduled when there is enough supply on the pipeline as pipelines can only physically flow gas in one direction.

## PFDC price

A PFDC price is set to reflect the marginal cost of increasing scheduled offers to the hub. It is the difference between the market price, and either:

- the price of the highest offer cleared on the out-of-merit-order pipeline
- the price of the highest cost backhaul bid cleared on that pipeline (if there is not enough gas offered at cheap prices to clear the entire bid quantity (as applied on January 1).

To compensate the supplying participants, the participants who required backhaul pays the PFDC price, on top of the market price, to the supplying participants.

There were 35.1 TJ of bids on the MSP to purchase gas priced above the ex ante price of \$6.45/GJ but some of these bids could not be scheduled through the normal ex ante price schedule as it would have caused scheduled pipeline flows on the MSP to be negative. The STTM rules prohibit negative scheduled ex ante flows on a facility, noting gas on the MSP cannot physically flow backwards from Sydney.

So, the ex ante price of \$6.45/GJ was set by a partially cleared AGL offer on EGP, at this point the MSP had zero net flow scheduled into the distribution system, with 20.4 TJ of MSP supply offers catering for 20.4 TJ of backhaul demand on the pipeline including a partially filled bid by Origin.

However, additional gas supply on the MSP was still available below the price of further MSP backhaul bids, allowing more gas to be scheduled economically on the MSP, with those participants backhauling gas paying a premium above the ex ante price.<sup>6</sup> The PFDC price was set at \$0.86/GJ with 2.59 TJ more backhaul delivered on the MSP.

AGL, Origin, SGMT and Weston Energy paid the PFDC for their withdrawals on the MSP to Brickworks, CSR, Eastern Energy Supply, Macquarie, Orica, Powershop, SGMT and Weston Energy – paying \$7.31/GJ in total when combined with the ex ante price.<sup>7</sup>

## Table of Offers and Bids including further economic scheduling on MSP

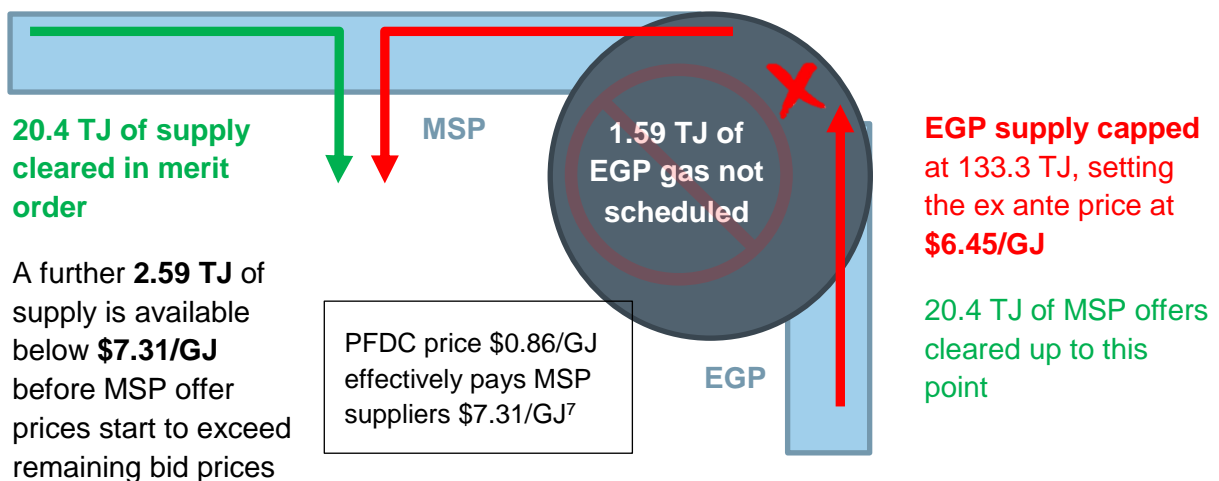
Offers in merit order	Bids in merit order	Comment
157,354 GJ of offers, including 20,443 GJ of MSP offers, were priced up to \$6/GJ (111,354 GJ priced at \$0/GJ)	28,427 GJ of bids, including 16,334 GJ of bids on MSP, priced at \$15.14/GJ or higher (3,233 GJ of MSP 4,000 GJ bid cleared)	<b>Scheduled ex ante</b> There were sufficient MSP offers to schedule these bids without the MSP schedule becoming negative
5,109 GJ of \$6.45/GJ AGL offer (EGP)	2,342 GJ of \$7.52/GJ by Origin (4,000 GJ bid), plus remaining 767 GJ MSP bid at \$15.14/GJ, 1,000 GJ (MSP, \$13.78/GJ), 1,000 GJ (EGP, \$10.50/GJ)	Offer <b>partially scheduled</b> only to meet bids – more not scheduled to prevent MSP gas schedule being negative (up to this point MSP bids scheduled reach 20,443 GJ)

<sup>6</sup> Participants backhauling gas on the MSP also pay the difference between the ex ante price and the PFDC price, which was set by the last partially cleared bid on the MSP (\$7.31/GJ).

<sup>7</sup> The PFDC price is paid by all shippers withdrawing gas from the hub on that pipeline. To compensate the supplying shippers (who would otherwise only receive the ex ante market price), the PFDC price is paid to all shippers supplying the hub on that pipeline (\$6.45/GJ + \$0.86/GJ = \$7.31/GJ).

Offers in merit order	Bids in merit order	Comment
<b>PFDC – Further scheduling only matches offers and bids on the MSP (other facilities excluded)</b>		
590 GJ offered at \$6.60/GJ on MSP by Eastern Energy	590 GJ of \$7.52/GJ bid by Origin (4,000 GJ bid)	Further economic scheduling of gas
2,000 GJ offer at \$6.98/GJ by SGMT	1,068 GJ of \$7.52/GJ bid by Origin (4,000 GJ bid) 932 GJ of Origin bid at \$7.31/GJ (4,000 GJ bid)	Further economic scheduling of gas
5,000 GJ offer at \$7.75/GJ on MSP by Arrow	3,068 GJ of Origin bid at \$7.31/GJ 9,000 GJ of bids priced between \$6.51 and \$6.75/GJ on MSP by Origin, Eastern Energy, Shell, Alinta not scheduled	<b>Not scheduled, Arrow offer priced above next bids on MSP</b>

Figure depicting ex ante schedule and PFDC scheduling / pricing interaction



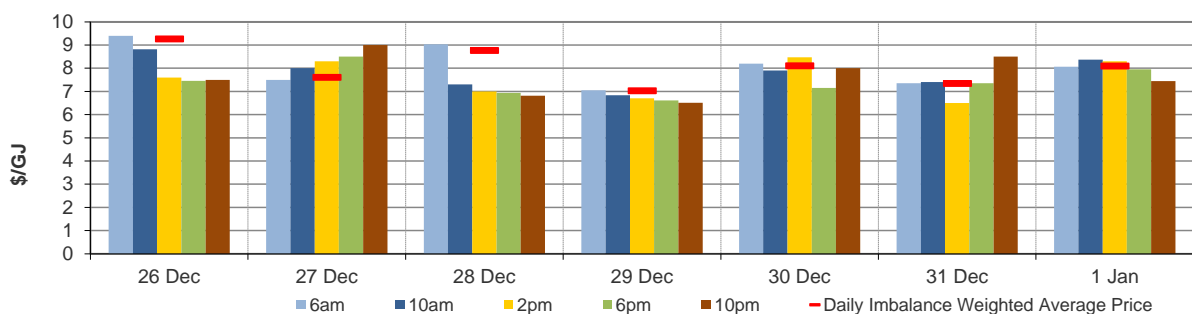
## 1. Victorian Declared Wholesale Market

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>8</sup> which is the schedule at which most gas is traded.

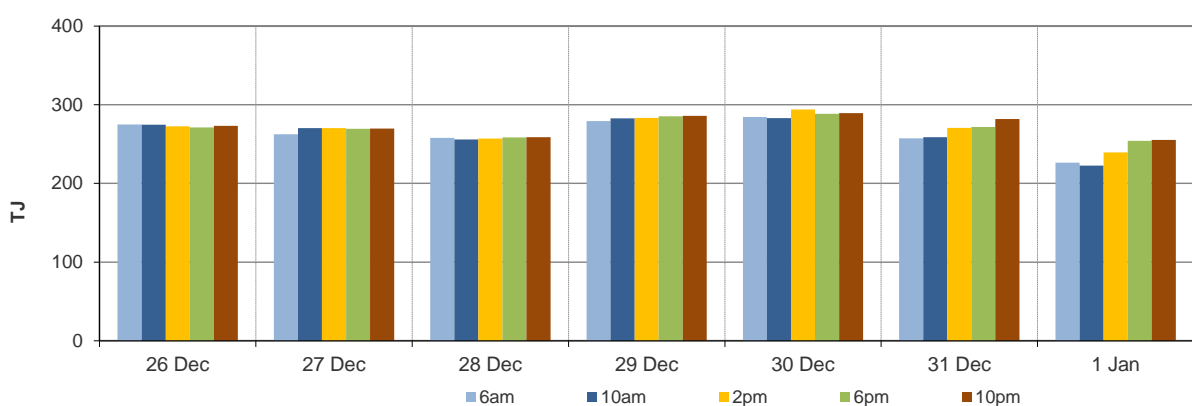
The main drivers<sup>9</sup> of price are demand forecasts and bids to inject or withdraw gas from the market. Figures 1.1 to 1.4 below show the daily prices, demand forecasts<sup>10</sup>, and injection/withdrawal bids for each of the five pricing schedules. Figure 1.5 provides information on which 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)**

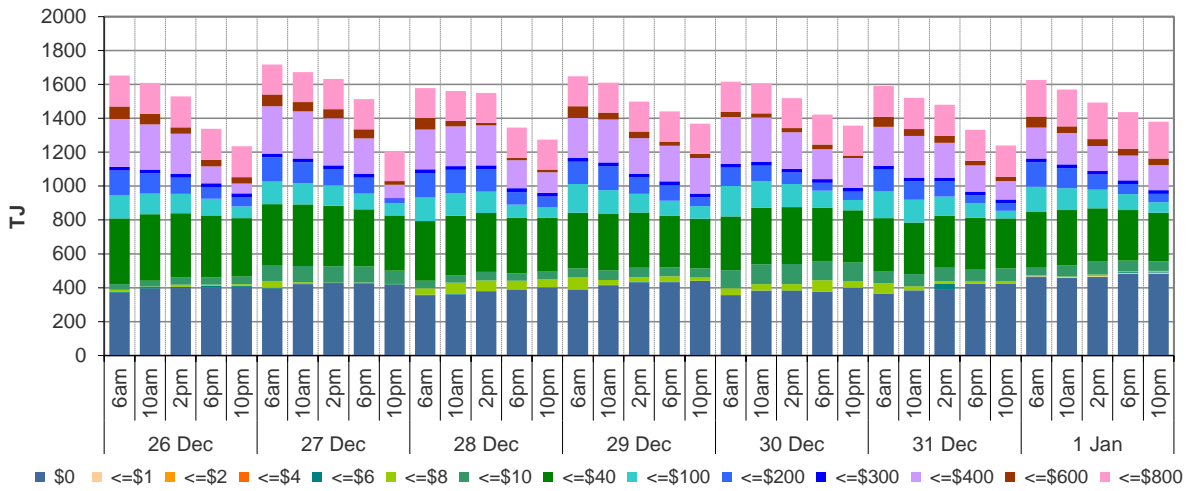


<sup>8</sup> Prices for subsequent schedules are applied only to the differences in scheduled quantities (imbalances) to calculate the weighted price. The 6 am price applies to the entire scheduled quantity in the initial schedule.

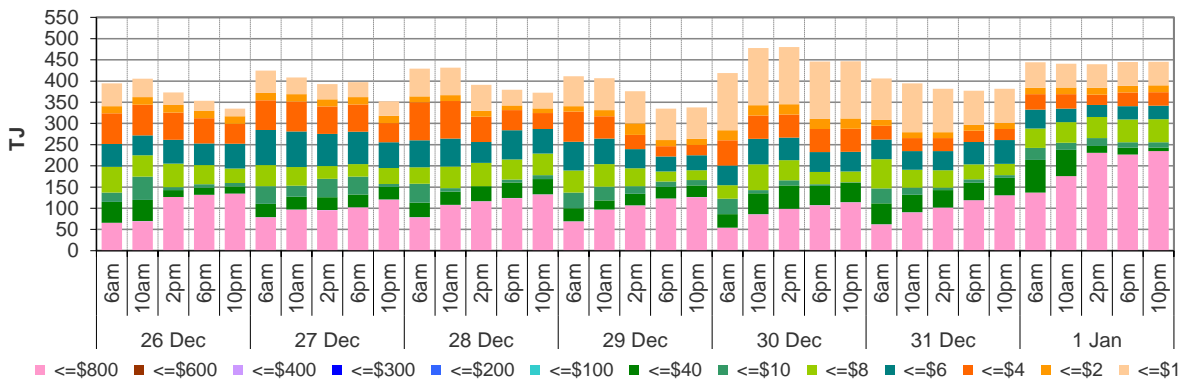
<sup>9</sup> The price might also be affected by transmission or production (contractual) constraints limiting how much gas can be delivered from a locale or System Injection Point (SIP) from time to time.

<sup>10</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.

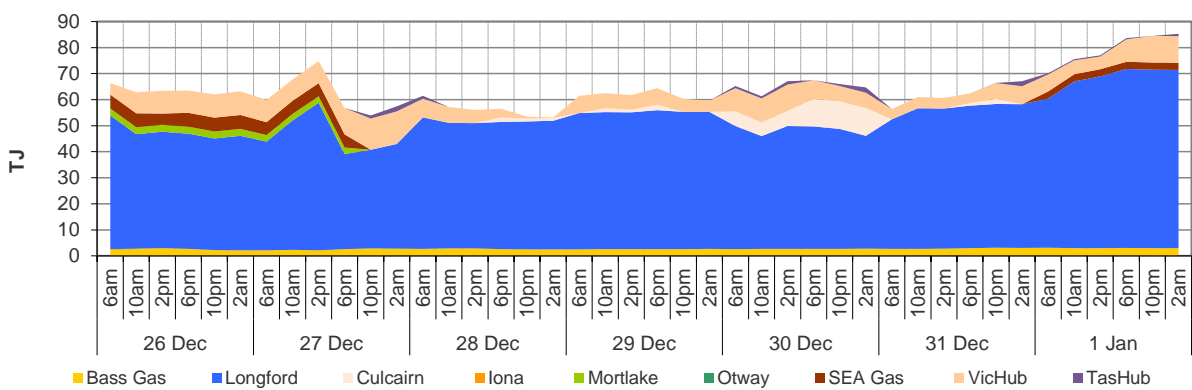
**Figure 1.3: Injection bids by price bands (TJ)**



**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>11</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](#).

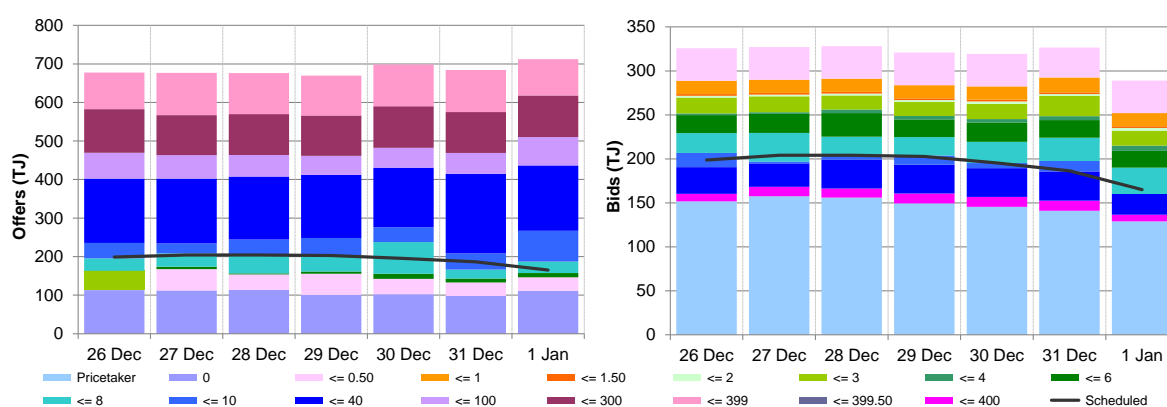
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.<sup>12</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)	8.40	7.95	8.00	8.01	7.60	9.05	6.45
Ex ante quantity (TJ)	199	204	204	203	195	186	165
Ex post price (\$/GJ)	8.40	7.96	9.00	9.00	7.85	9.98	7.52
Ex post quantity (TJ)	202	208	226	225	220	207	170

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

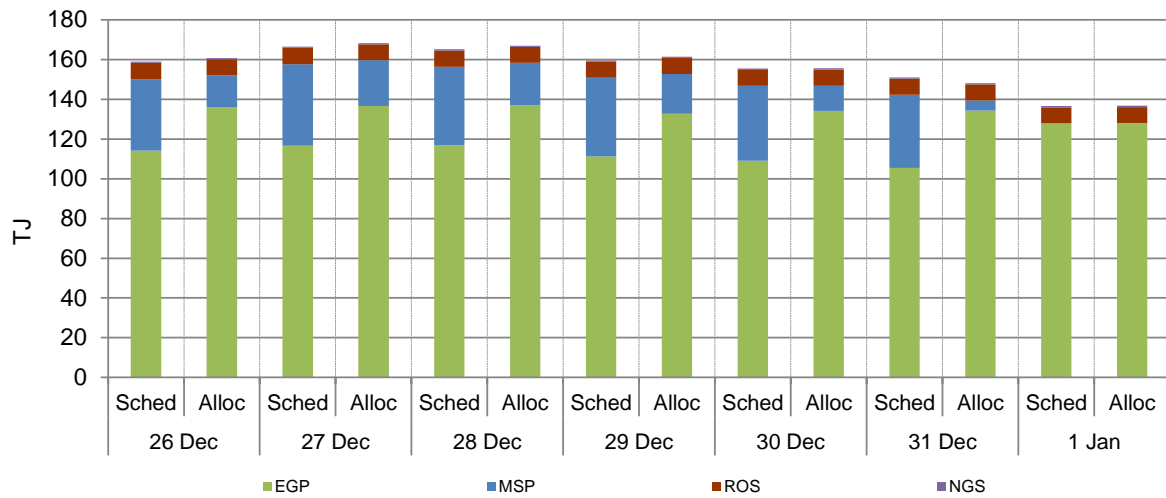


<sup>11</sup> The main driver of the amount of gas scheduled on a gas day is the 'price-taker' bid, which is forecast hub demand that cannot respond to price and which must be delivered, regardless of the price.

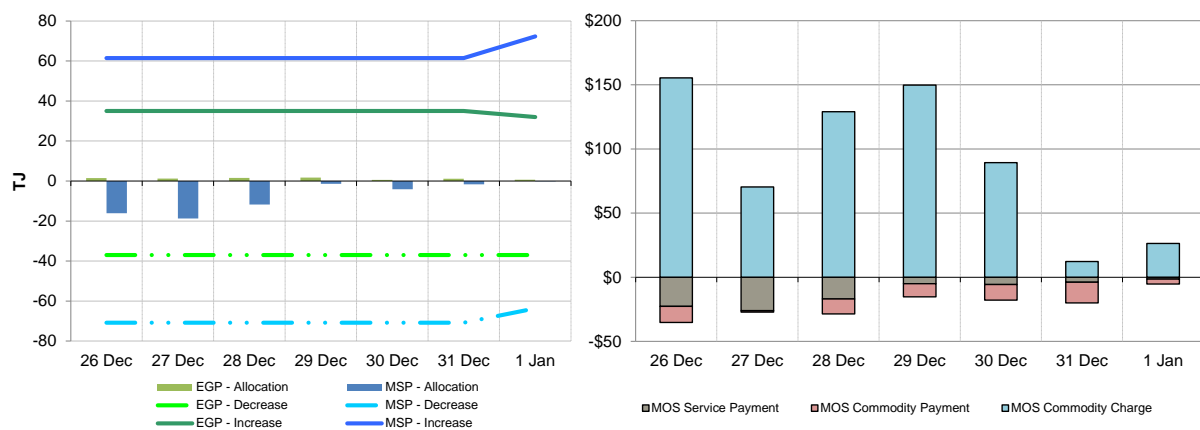
<sup>12</sup> MOS service payments involve a payment for a MOS increase service when the actual quantity delivered exceeds final gas nominations for delivery to a hub, and a payment for a MOS decrease service when the actual quantity delivered is less than final nominations. As well as a MOS 'service' 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 2.3 shows the daily scheduled and allocated quantities sorted by facility for Sydney this week. For a more detailed description of this figure, please refer to the user guide.



**Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges (\$000)<sup>13</sup>**



<sup>13</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.

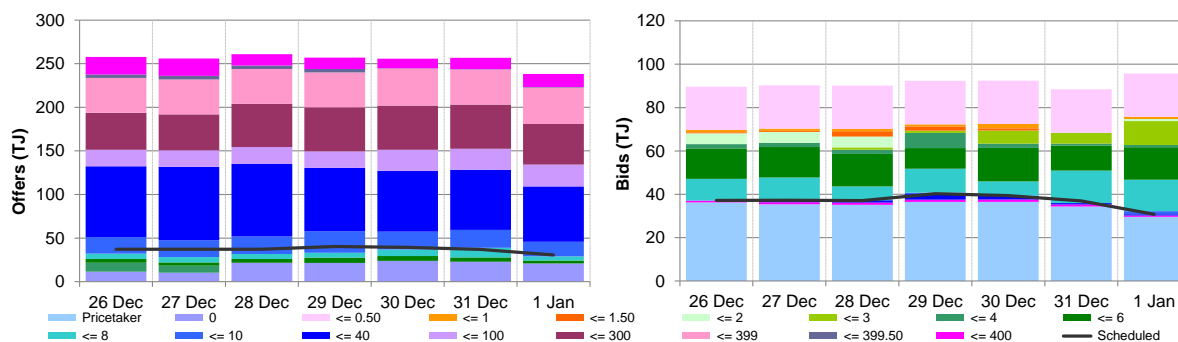
### 3. Adelaide STTM

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.

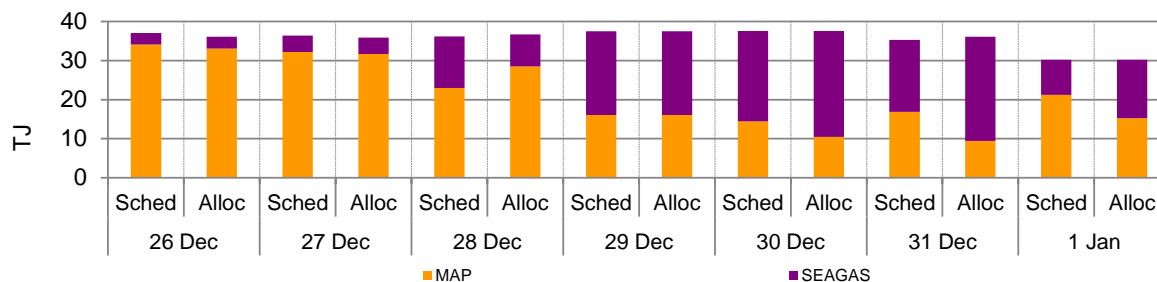
**Figure 3.1: ADL STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	8.81	8.48	8.47	8.25	8.12	7.42	8.33
Ex ante quantity (TJ)	37	37	37	40	39	37	31
Ex post price (\$/GJ)	7.72	8.48	8.47	8.21	8.16	8.12	8.40
Ex post quantity (TJ)	30	33	35	37	42	41	34

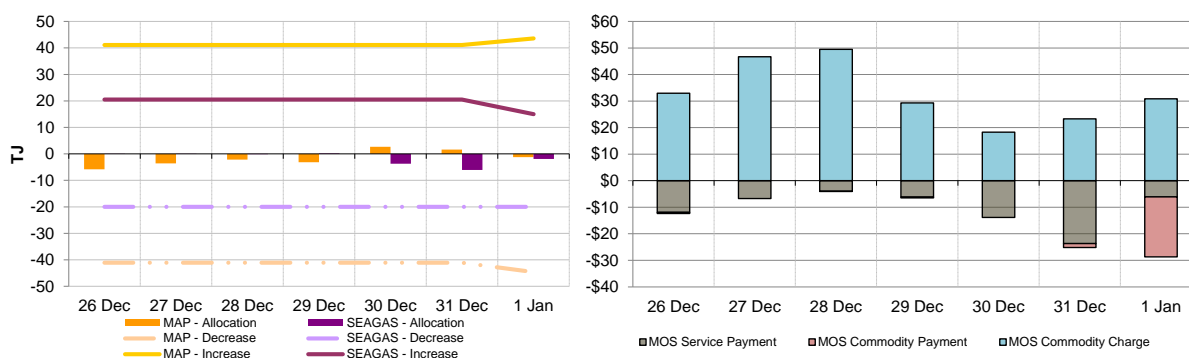
**Figure 3.2: ADL daily hub offers and bids in price bands (\$/GJ)**



**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)**



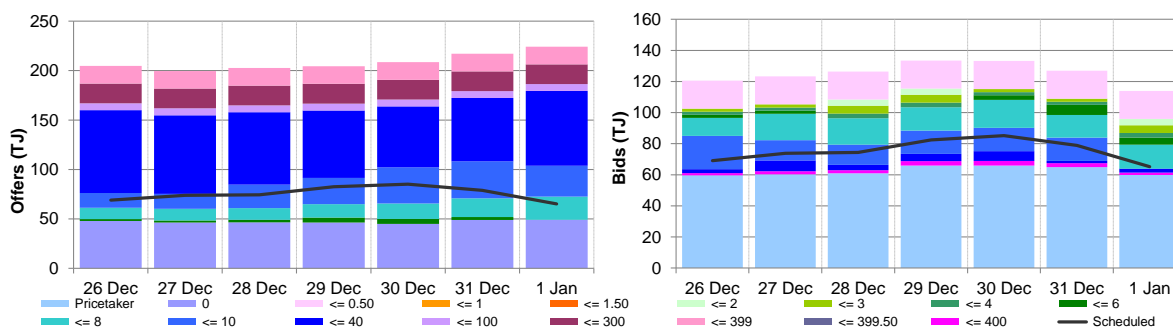
## 4. Brisbane STTM

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.

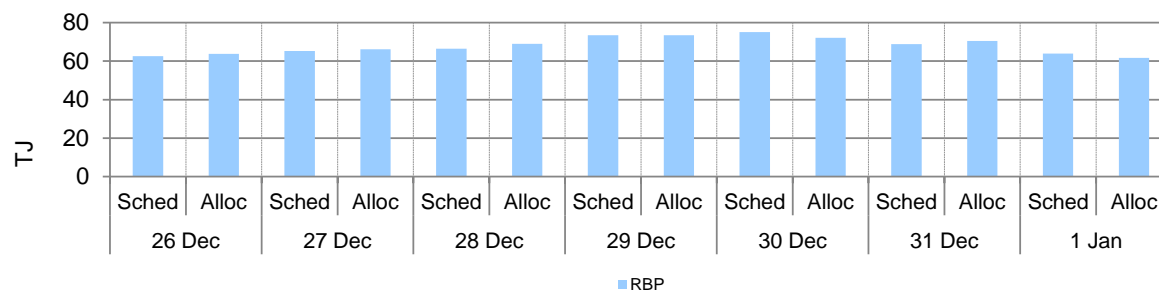
**Figure 4.1: BRI STTM daily ex ante and ex post prices and quantities**

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Ex ante price (\$/GJ)	9.47	9.96	9.45	9.54	9.30	8.80	7.26
Ex ante quantity (TJ)	69	74	74	82	85	79	65
Ex post price (\$/GJ)	9.47	9.91	9.62	9.51	9.01	8.63	7.25
Ex post quantity (TJ)	69	73	78	82	83	77	62

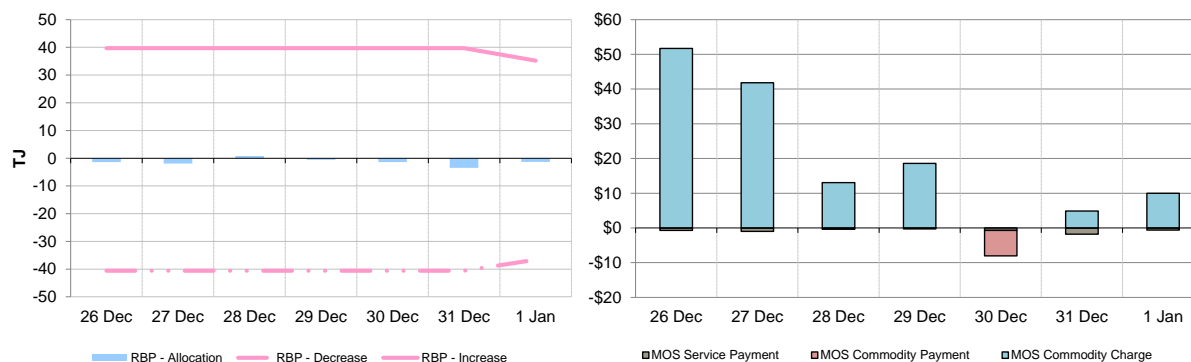
**Figure 4.2: BRI daily hub offers bids in price bands (\$/GJ)**



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



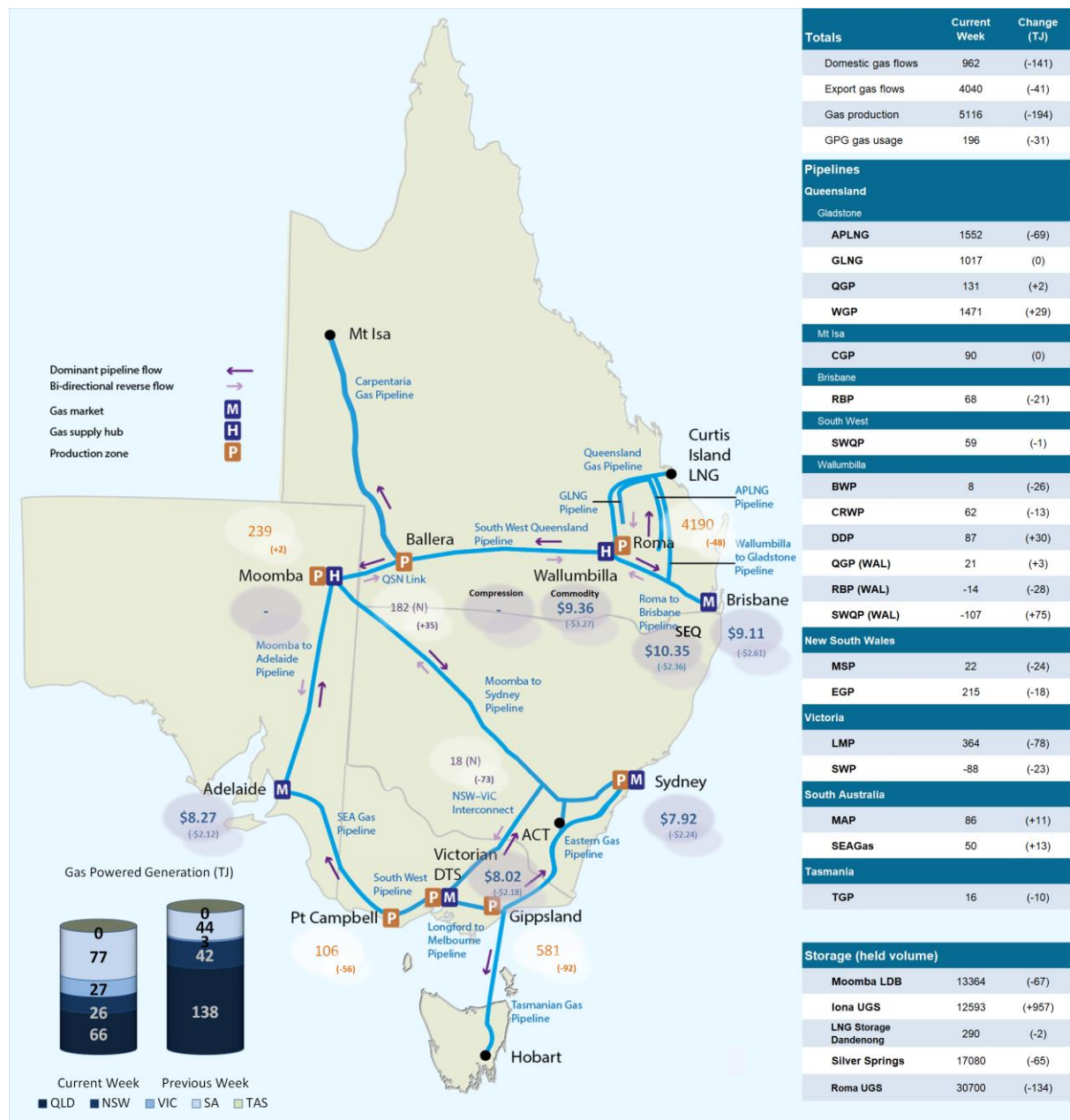
**Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)**



## 5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week<sup>14</sup> from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices<sup>15</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/day); Bulletin Board flows (TJ/day)<sup>16</sup>



<sup>14</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.

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

GPG volumes may include gas usage that does not show up on Bulletin Board pipeline flows.

<sup>15</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>16</sup> Net flows are shown for Bulletin Board facilities, as outlined in the [user guide](#).

## 6. Gas Supply Hub

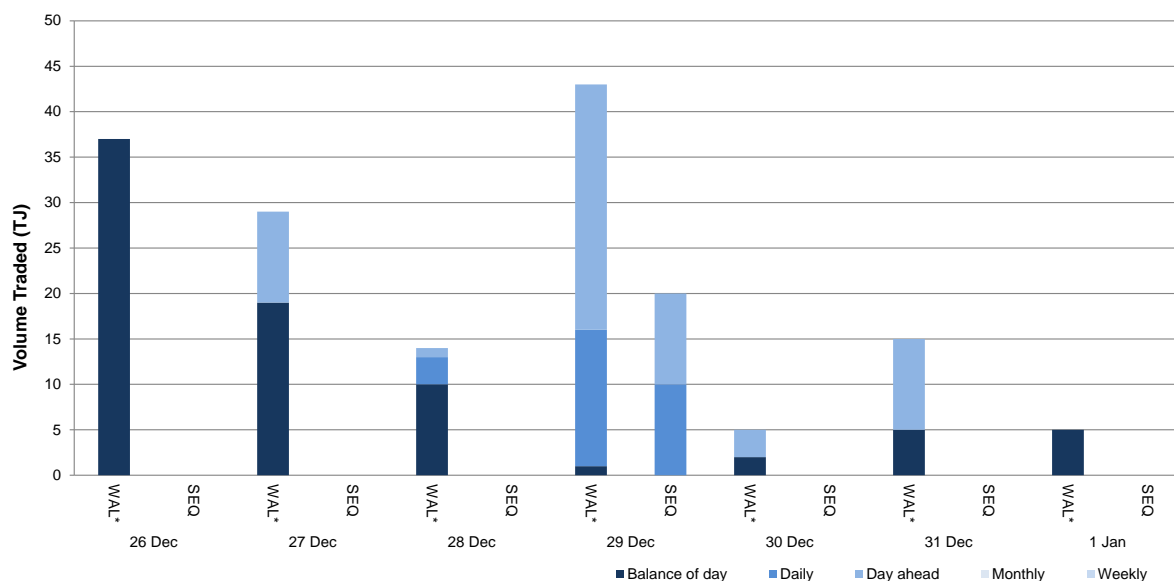
The gas supply hub was established at Wallumbilla in March 2014 to facilitate the voluntary trading of gas between participants, with products listed for sale and purchase at delivery points on three major connecting pipelines. There are separate products for each trading location and delivery period (daily, day-ahead, balance-of-day, weekly and monthly products).<sup>17</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**). On 28 January 2021, trading locations at Wilton (Sydney) and Culcairn (Victoria) were introduced.

This week there were 27 trades for 168 TJ of gas at a volume weighted price of \$9.48/GJ. These consisted of 25 trades at WAL (148 TJ at \$9.36/GJ) and 2 trades at SEQ (20 TJ at \$10.35/GJ). There were 2 spread trades this week between SEQ and WAL.

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>18</sup>

**Figure 6.1: GSH traded quantities**



<sup>17</sup> Additional information on trading locations and available products is detailed in the [user guide](#).

<sup>18</sup> Non-netted (off-market) trades, allowing the selection of specific delivery point at a trading location, are included with other Wallumbilla trades (WAL\*). Non-netted trades at Moomba are shown separately (MOO) from MAP and MSP.

## 7. Day Ahead Auction

The DAA is a centralised auction platform providing the release of contracted but un-nominated transportation capacity on designated pipelines and compression facilities across eastern Australia. The auction enables transportation facility users to procure residual capacity on a day-ahead basis after nomination cut-off, with a zero reserve price and compressor fuel provided.

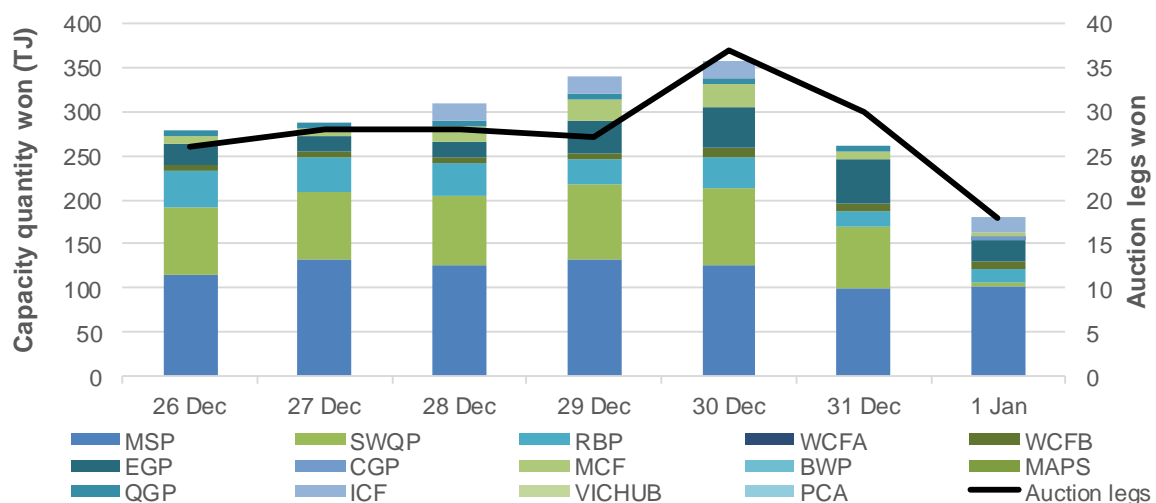
Participants may bid in to the DAA in order to procure the following services:

- park services;
- forward haul pipeline services with products offered in both directions on bi-directional pipelines;
- interruptible backhaul services; and
- stand-alone compression services.

This week, 12 participants took part in the DAA, winning 2012 TJ of capacity across 9 different facilities.

Figure 7.1 shows the quantities of gas and auction legs won through the DAA by gas date, with gas deliverable up to the level of capacity procured. Auction legs reflect each individual facility transaction.<sup>19</sup>

**Figure 7.1: DAA traded quantities (TJ) and auction legs won**



**Australian Energy Regulator  
March 2022**

<sup>19</sup> Additional information is available in the [user guide](#) to the AER gas weekly report.