

30 July – 5 August 2017

Weekly Summary

AEMO declared a threat to system security for the Victorian gas market on the 2nd highest day of demand ever for the Victorian gas market. LNG from Dandenong was brought on to assist to manage high residential demand and high demand from gas-powered electricity generators (refer to detailed market analysis).

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)¹

	Victoria		Sydney		Adelaide		Brisbane	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand
30 Jul - 05 Aug 2017	8.62	980	9.57	286	8.82	87	7.09	87
% change from previous week	-2	9	-2	1	4	12	0	-3
17-18 financial YTD	9.04	995	9.78	294	8.93	84	6.86	88
% change from previous financial YTD	-26	9	-2	0	-36	-6	-30	-8

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

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

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

	Moomba		South East Queensland		Wallumbilla	
	Price	Quantity	Price	Quantity	Price	Quantity
30 Jul - 05 Aug 2017	-	-	7.32	137	7.23	59
% change from previous week	-	-	2	17	-7	16
17-18 financial YTD	-	-	7.00	775	7.69	622
% change from previous financial YTD	-	-	-	-	-15	-79

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

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

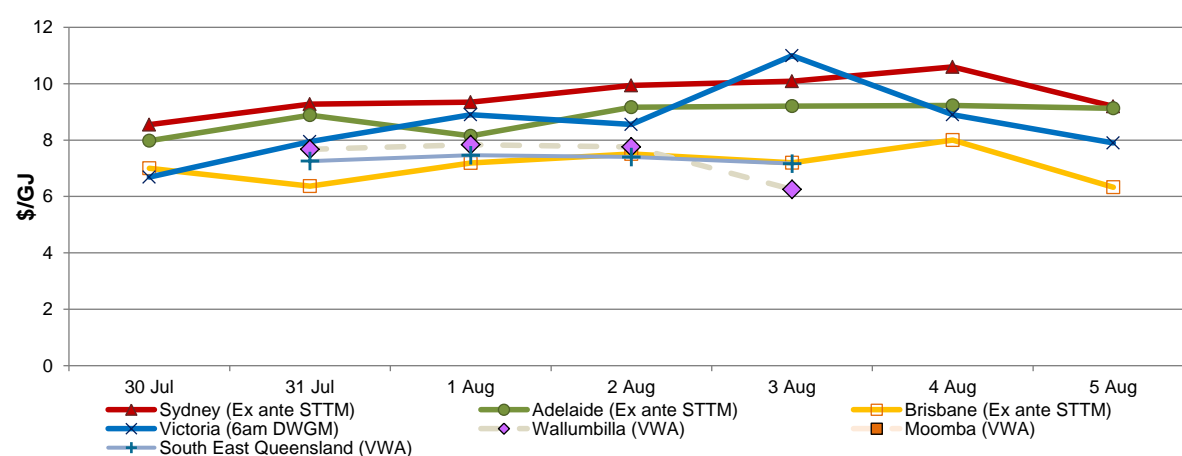


Figure 4 compares average ancillary market payments (VGM) and balancing gas service payments (STTM) against historical averages.

Figure 4: Average ancillary payments (\$000)

	Victoria Ancillary Payments*	Sydney MOS	Adelaide MOS	Brisbane MOS
30 Jul - 05 Aug 2017	1.54	65.01	11.56	1.07
% change from previous week	-	23	-7	-33
17-18 financial YTD		66.48	8.54	1.78
% change from previous financial YTD		-18	-40	59

* 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.

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

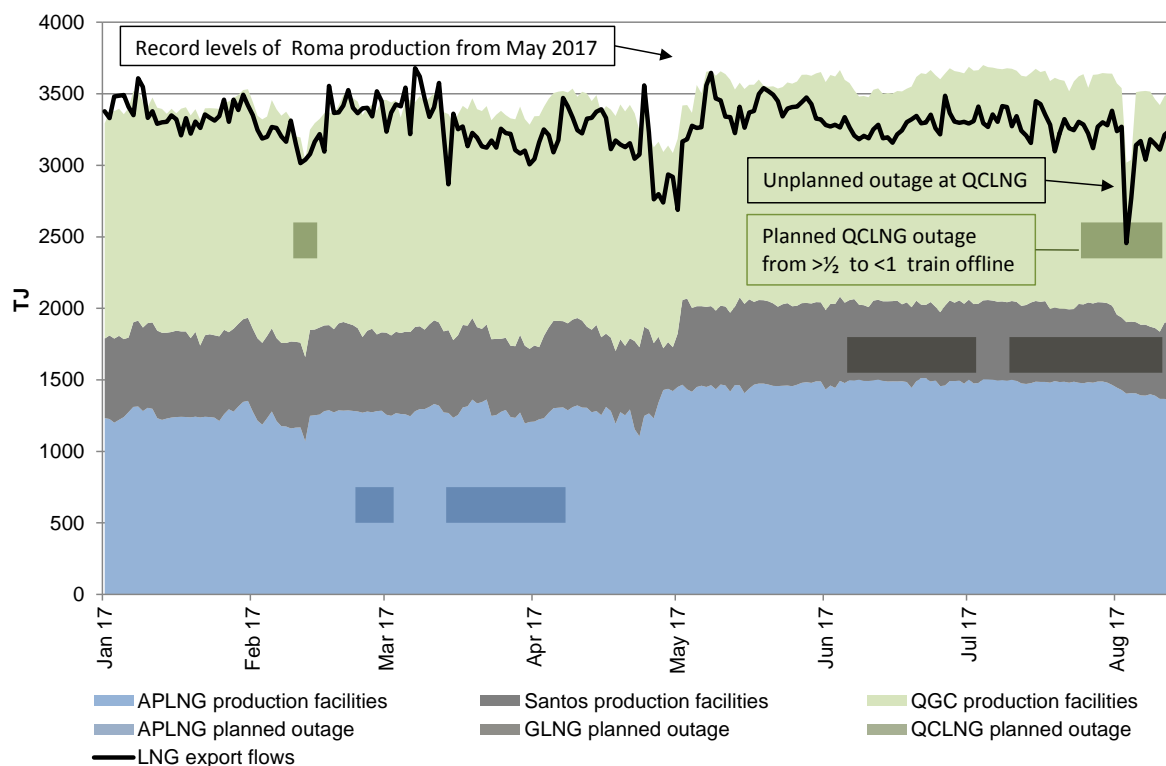
Figure 5: Gas supply hub products traded for the current week (\$/GJ, TJ)

	Moomba		South East Queensland		Wallumbilla*	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
Balance of day	-	-	7.28	43.0	7.70	10.0
Daily	-	-	7.37	62.0	7.84	10.0
Day ahead	-	-	7.37	18.0	6.55	25.0
Weekly	-	-	7.12	14.0	7.67	14.0
Monthly	-	-	-	-	-	-
Total	-	-	7.32	137.0	7.23	59.0

* 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. Planned maintenance outage windows for 2017 have been overlayed on the chart for each of the three export pipelines.³

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



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

³ [Voluntary Information from LNG Producers in Queensland](#)

Detailed market analysis

Victoria

A threat to system security was issued for Victoria on Thursday 3 August. This was associated with an alignment of factors, including high residential and gas-powered generation demand, an unplanned maintenance outage at the Dandenong LNG storage facility and very cold temperatures in Victoria.⁴ AEMO raised amber flags on three Bulletin Board pipelines (the South West Pipeline, Longford to Melbourne Pipeline and NSW-Vic interconnect) representing a system-wide threat.⁵

Dandenong LNG's unplanned maintenance period commenced from 1 August and was expected to last one week. In response to the threat to system security on 3 August, AEMO overrode constraints applied to Dandenong LNG and scheduled additional gas from the facility into Melbourne. This is commensurate with the facility's primary role as emergency back-up, injecting into Victoria's Declared Transmission System (DTS) during potential supply shortfalls.

Demand on the day, included 263 TJ⁶ for Victorian gas powered generation (GPG). This was the second highest day of GPG demand in the region for the 2017 winter.

Actual demand⁷ was the highest since August 2008. Given the high demand forecast for the day, prices were already moderately high (\$11/GJ) for the 6 am scheduling period. They did not get much higher, increasing to a maximum of \$13.86/GJ for the 2 pm scheduling period. Gas reserved for system security at Dandenong was scheduled for injection across the 6 pm scheduling period.⁸

Sydney

Sydney MOS service payments averaged approximately \$65,000 per day for the week. This continued the recent high daily average trend across May (\$65,000), June (\$57,000) and July (\$67,000). Two daily MOS service payments were in excess \$100,000 on 31 July (\$120,000) and 3 August (\$104,000).

Queensland LNG

Figure 6 shows the total export pipeline flows towards Curtis Island for the three LNG projects, overlaid with planned maintenance outage periods. During a recent outage window for QCLNG's export pipeline, an unplanned outage from 3 August resulted in a significant decrease in flows on the Wallumbilla to Gladstone Pipeline. There was also lower output at each of the production facilities operated by QGC.

Since the outage, total production has remained around 3500 TJ.⁹

⁴ This was Melbourne's coldest day for the 2017 calendar year to date, with a daily maximum temperature of just 9 degrees.

⁵ An Amber flag raise on facilities within the Victorian declared transmission system indicates LNG is being vaporised at a rate of no more than 100 tonnes/h, or out of merit order gas being scheduled in response to a threat to system security. Amber flags were raised on the Bulletin Board during the 2 pm scheduling period and cancelled during the 6 pm scheduling period.

⁶ GPG demand taking gas from within the Victorian DTS was around 127 TJ, largely supplying Laverton and Newport.

⁷ Note that Figure 2.2 is based on forecast participant demand. Actual system demand on the day (including injections for linepack, gas fuelling compressors and unaccounted for gas) reached 1149.7 TJ across the gas day, with total uncontrollable withdrawals reaching their second highest level at 1276.6 TJ (based on settlement account energy data). This was only 5 TJ lower than the highest demand day of 1281.5 TJ which occurred a decade ago on 17 July 2007. Supply from LNG has been added to figure 1.5.

⁸ There were only minimal ancillary payments for the 6 pm schedule, accruing to \$10,982.

⁹ Record production from the combined output of the Roma facilities was 3710 TJ on 4 July 2017.

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 price¹⁰ which is the schedule at which most gas is traded.

The main drivers¹¹ 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 forecasts¹², 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)

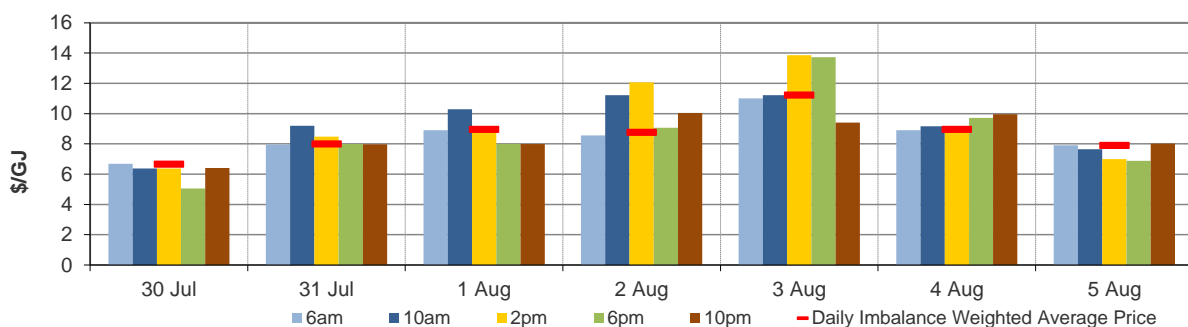
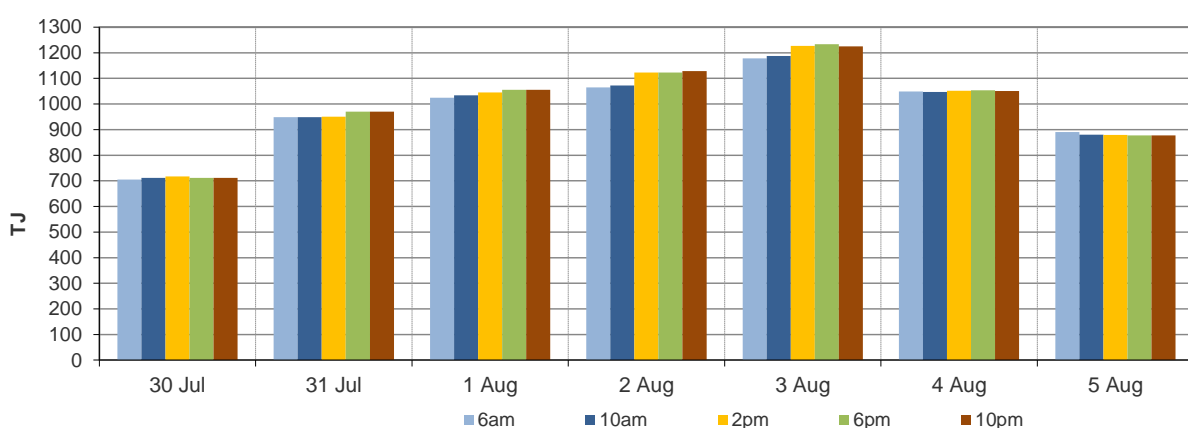


Figure 1.2: Demand forecasts (TJ)



¹⁰ 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.

¹¹ 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.

¹² 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)

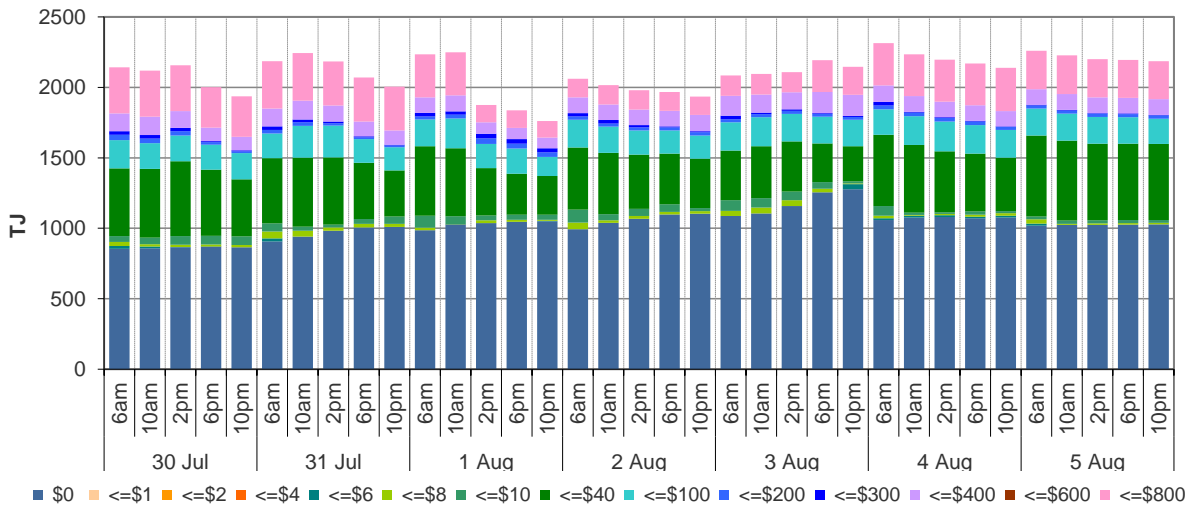


Figure 1.4: Withdrawal bids by price bands (TJ)

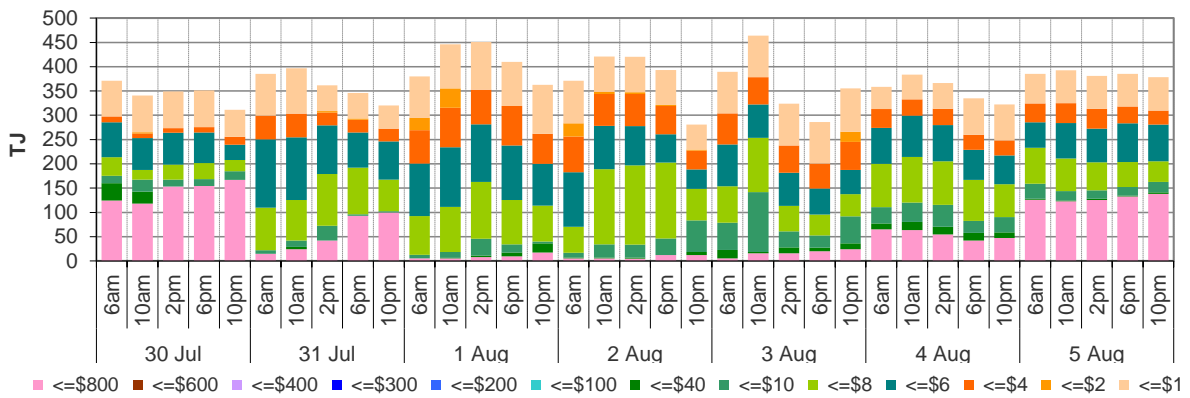
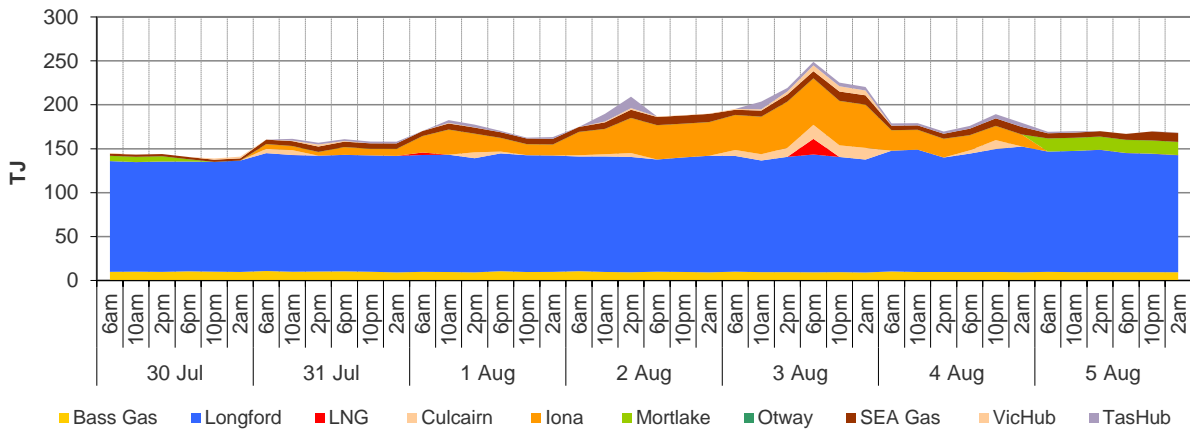


Figure 1.5: Metered Injections by System Injection Point (TJ)



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.¹³ 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](#).

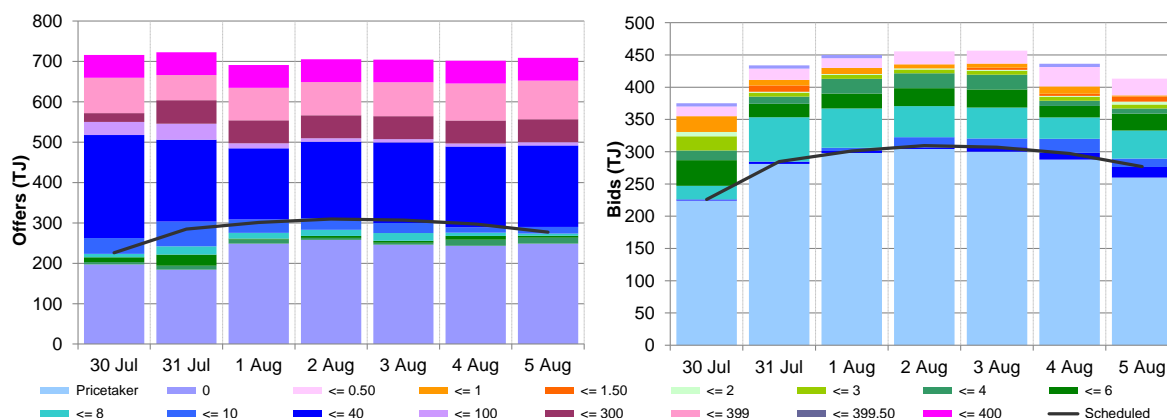
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.¹⁴

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)	8.55	9.28	9.35	9.94	10.09	10.60	9.20
Ex ante quantity (TJ)	226	285	301	310	307	297	277
Ex post price (\$/GJ)	8.00	8.75	9.99	9.94	9.28	10.59	8.98
Ex post quantity (TJ)	223	271	306	309	284	295	272

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



¹³ 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.

¹⁴ 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)

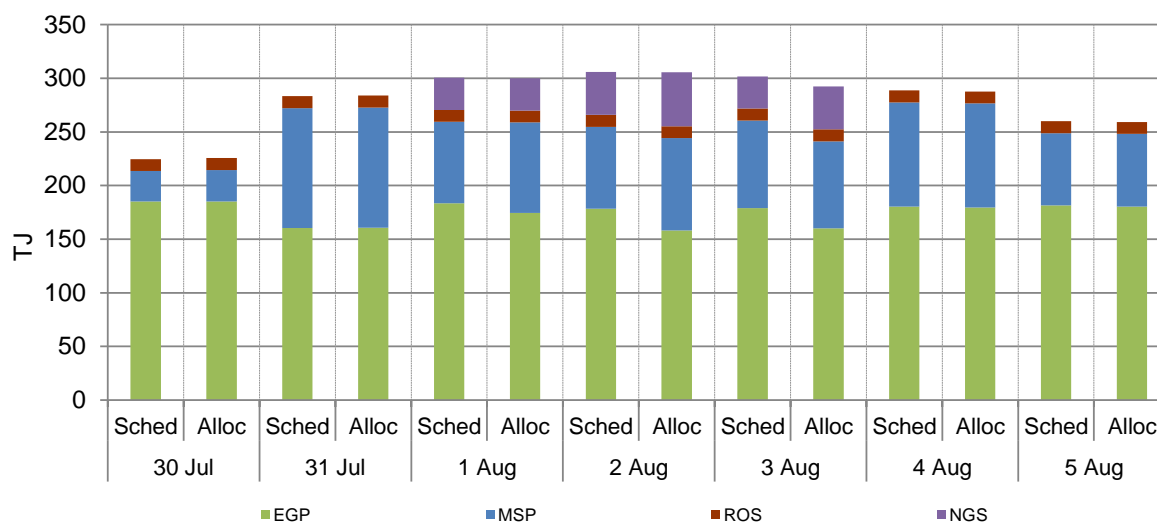
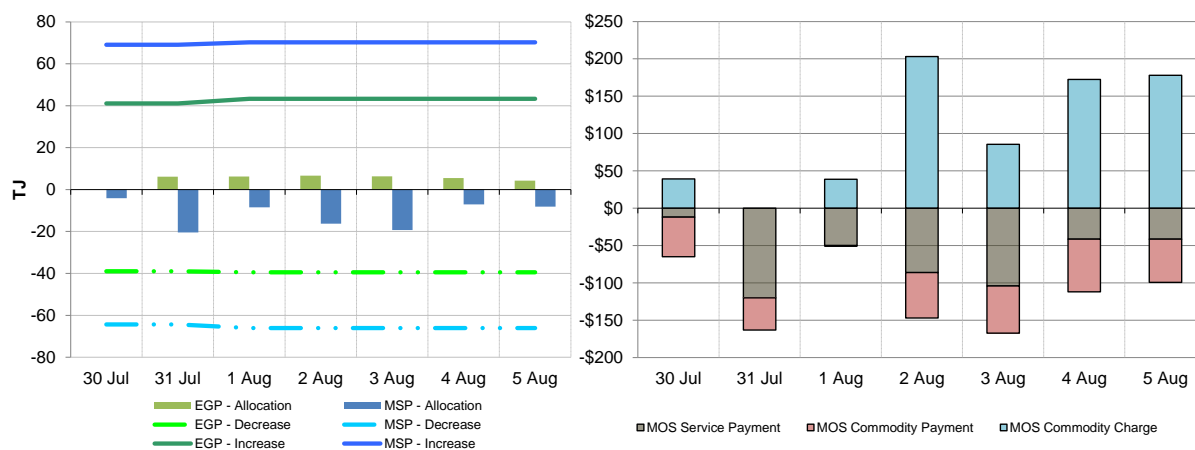


Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges (\$000)¹⁵



¹⁵ 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)	7.97	8.89	8.15	9.17	9.21	9.23	9.13
Ex ante quantity (TJ)	73	88	89	93	93	91	81
Ex post price (\$/GJ)	7.42	8.89	8.33	9.19	9.21	9.99	9.63
Ex post quantity (TJ)	71	88	90	95	93	100	84

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

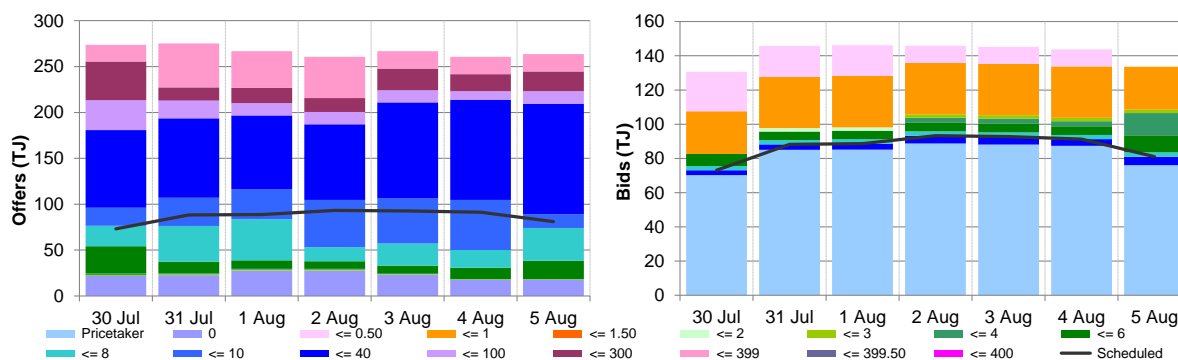


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

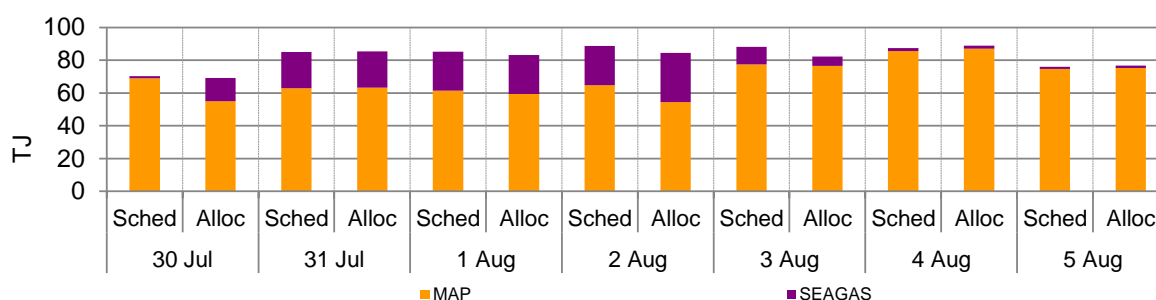
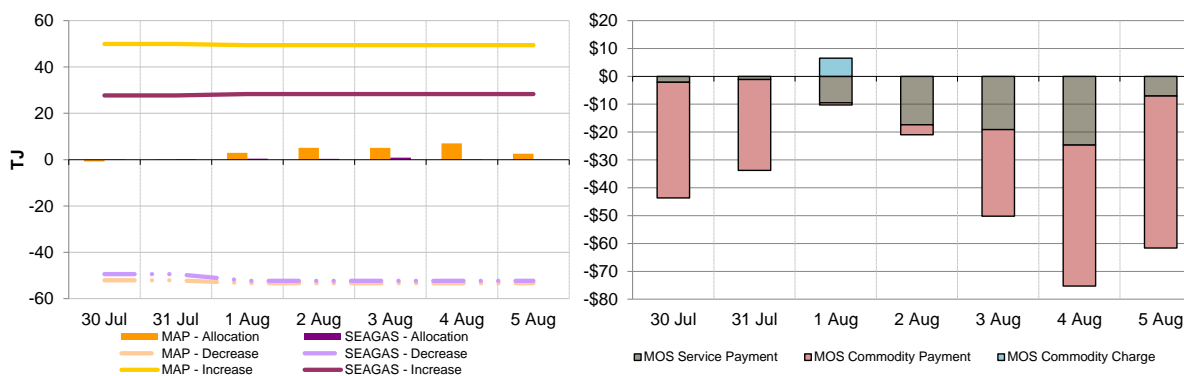


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges (\$000)



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)	7.00	6.37	7.19	7.51	7.20	8.00	6.33
Ex ante quantity (TJ)	76	92	94	94	93	85	74
Ex post price (\$/GJ)	7.16	6.07	6.76	6.98	7.20	8.08	6.56
Ex post quantity (TJ)	76	90	91	91	93	87	79

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

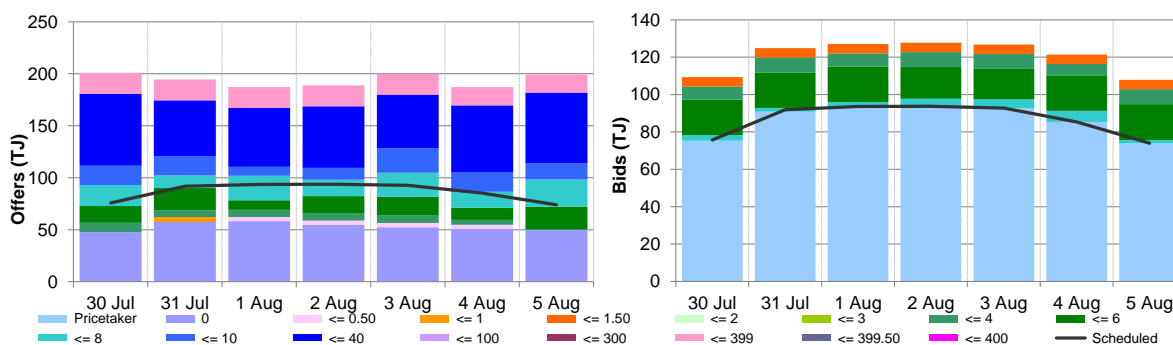


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

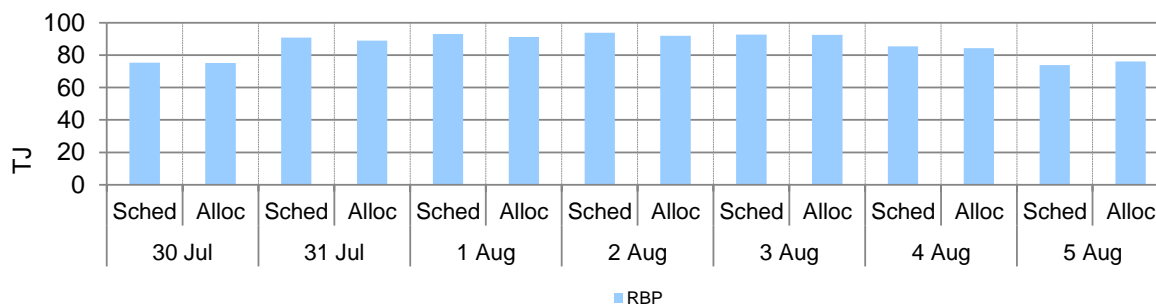
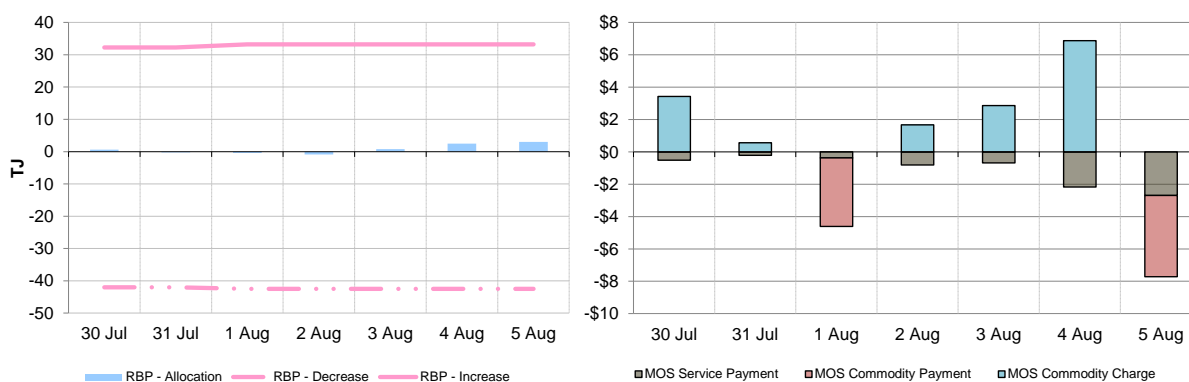


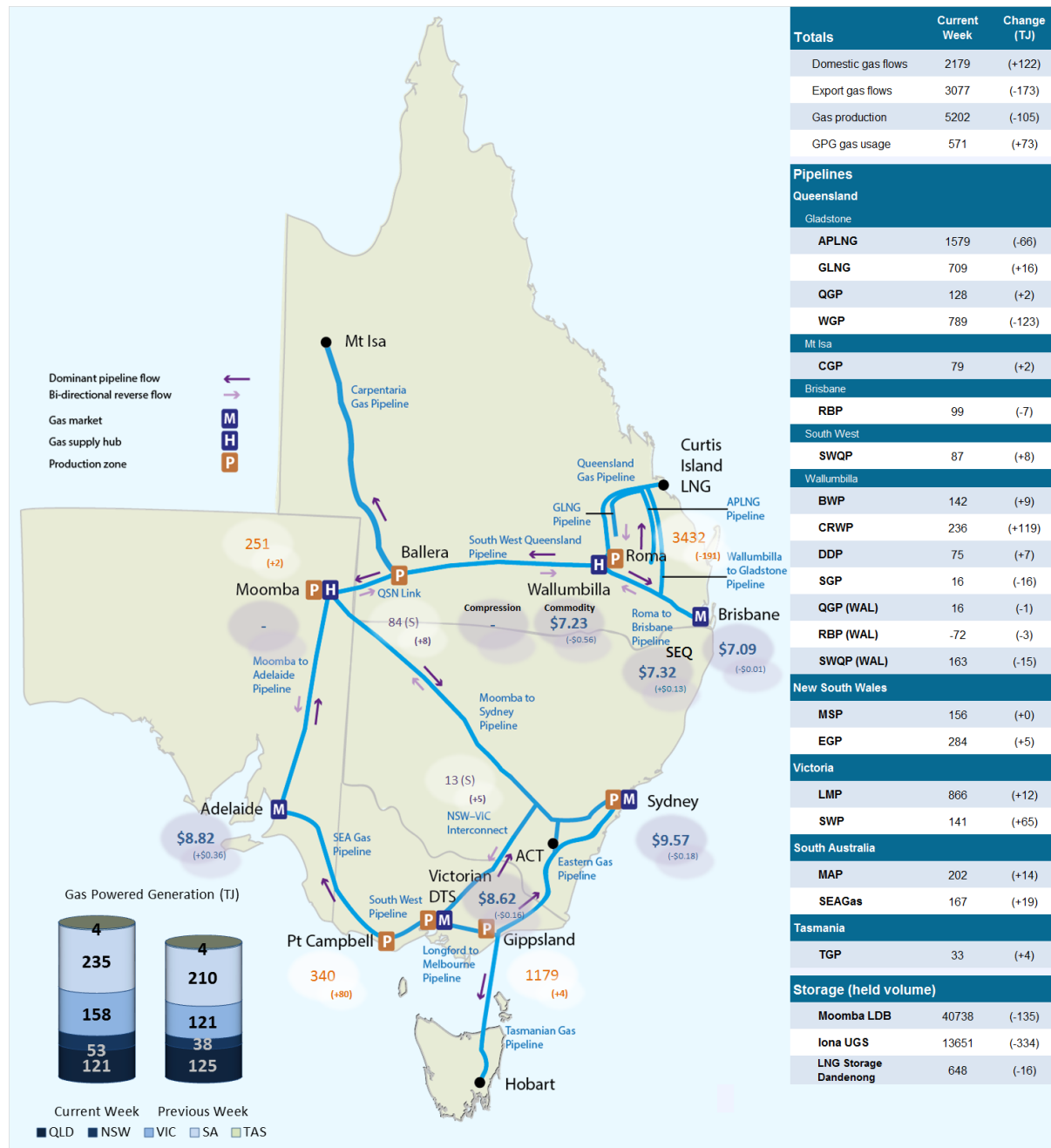
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week¹⁶ from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices¹⁷ 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)¹⁸



¹⁶ 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.

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

¹⁷ 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.

¹⁸ 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 at. There are separate products for each trading location and delivery period (daily, day-ahead, balance-of-day, weekly and monthly products).¹⁹

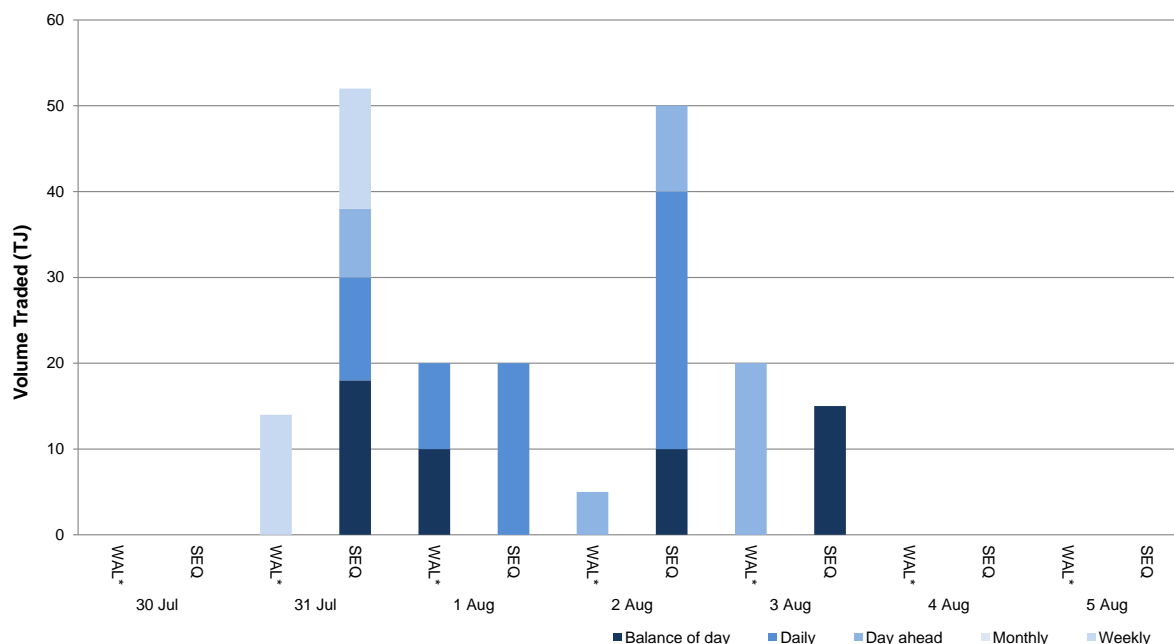
The Moomba hub commenced operation from June 2016 to further facilitate trading on the **MAP** and **MSP**, with trading between the two hubs on the SWQP via a spread product (representing the price differential between the hubs). From October 2016, the addition of a Wallumbilla Compression Product was 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 44 trades for 196 TJ of gas at a volume weighted price of \$7.29/GJ. These consisted of 11 trades at WAL (59 TJ at \$7.23/GJ) and 33 trades at SEQ (137 TJ at \$7.32/GJ). Exchange trade quantities increased from the previous week to 146 TJ, while off-market trades reduced to 50 TJ.

There were seven spread product trades this week, matching bids and offers between WAL and SEQ. Weekly product trades on 31 July cleared 1 TJ/day for two trades, while the remaining trades on 1 August were all daily products for 2 TJ of gas.

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.²⁰

Figure 6.1: GSH traded quantities



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¹⁹ Additional information on trading locations and available products is detailed in the [user guide](#).

²⁰ Non-netted (off-market) trades, allowing the selection of specific delivery point at a trading location, are included with other Wallumbilla trades (WAL*).