Gas Market Report

AUSTRALIAN ENERGY REGULATOR

20 – 26 November 2016

Weekly Summary

Average daily prices were between $7 and $7.50/GJ across all gas markets (see figure 1). However, high Market Operator Service (MOS) payments were recorded at the Adelaide STTM adding to overall market costs — there was a record MOS payment of $367 334 on 21 November. This MOS payment breached the AER's $250 000 reporting threshold and we will investigate further and report on its causes.

On 24 November, a compressor outage at Victoria's Longford Gas Plant restricted flows on the Eastern Gas Pipeline (EGP), triggering a potential contingency gas event in the Sydney STTM. Participants subsequently renominated onto the Moomba Sydney Pipeline (MSP), averting any need for contingency gas.

Liquid Natural Gas (LNG) production in south east Queensland continued to rise, passing the highs of the previous week. Production facilities around Roma have reported record output.

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

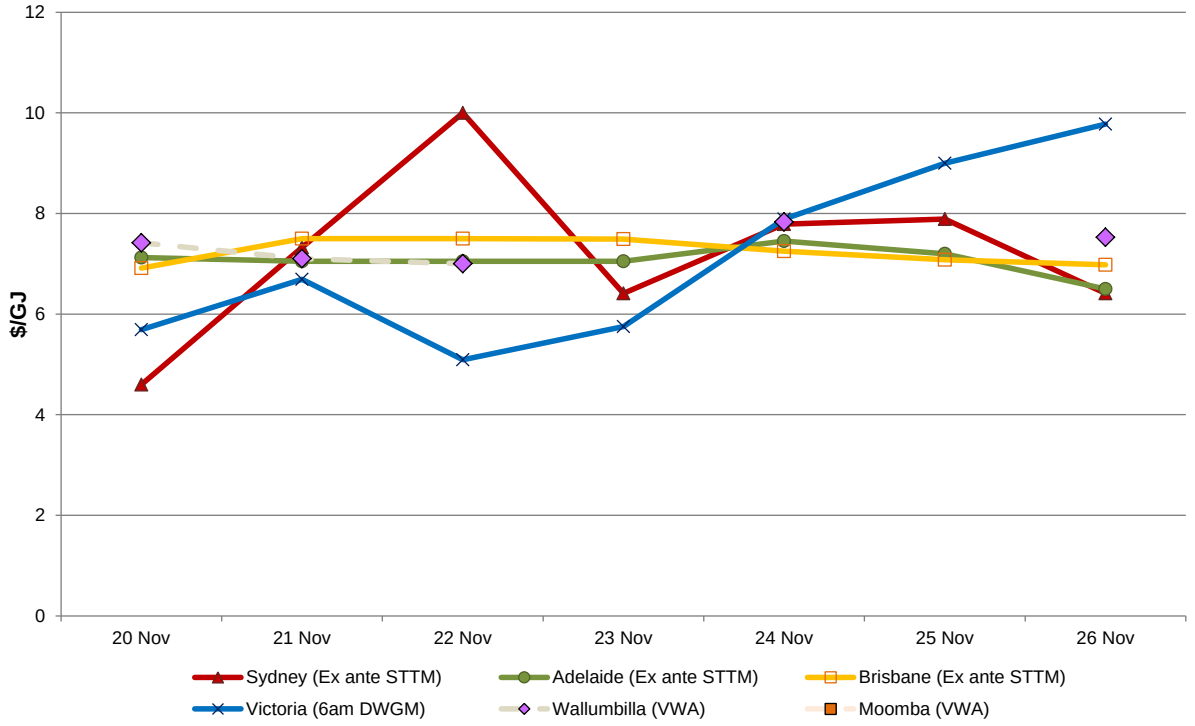
Figure 1 sets out the average daily prices ($/GJ) for the current week, and demand levels, compared to historical averages. Regions shown include the Victorian Declared Wholesale Market **(VGM or Victorian gas market)** and for the Sydney **(SYD)**, Adelaide **(ADL)** and Brisbane **(BRI)** Short Term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

	Victoria		Sydney		Adelaide		Brisbane		Wallumbilla		Moomba	
	Price	Demand	Price	Demand	Price	Demand	Price	Demand	Price	Quantity	Price	Quantity
20 Nov - 26 Nov 2016	7.27	428	7.20	245	7.06	52	7.25	84	7.42	74	-	-
% change from previous week	37	-3	9	-5	4	-2	-3	6	2	376	-	-
16-17 financial YTD	7.87	685	7.30	264	8.37	73	6.96	86	7.86	4491	-	-
% change from previous financial YTD	78	-2	56	6	66	2	85	-6	116	16	-	-

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

Figure 2: Daily gas market prices ($/GJ)[2]



1 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.

2 Figure 2 shows the daily price of gas in the mandatory gas markets and voluntary gas supply hubs (GSH). The weighted average daily imbalance price applies for Victoria. Prices shown for the GSH in Wallumbilla and Moomba are volume weighted average prices for all products traded on each day.

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
20 Nov - 26 Nov 2016	-	37.44	70.01	1.81
% change from previous week	-	-27	105	-33
16-17 financial YTD		61.89	30.29	1.52
% change from previous financial YTD		172	209	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.

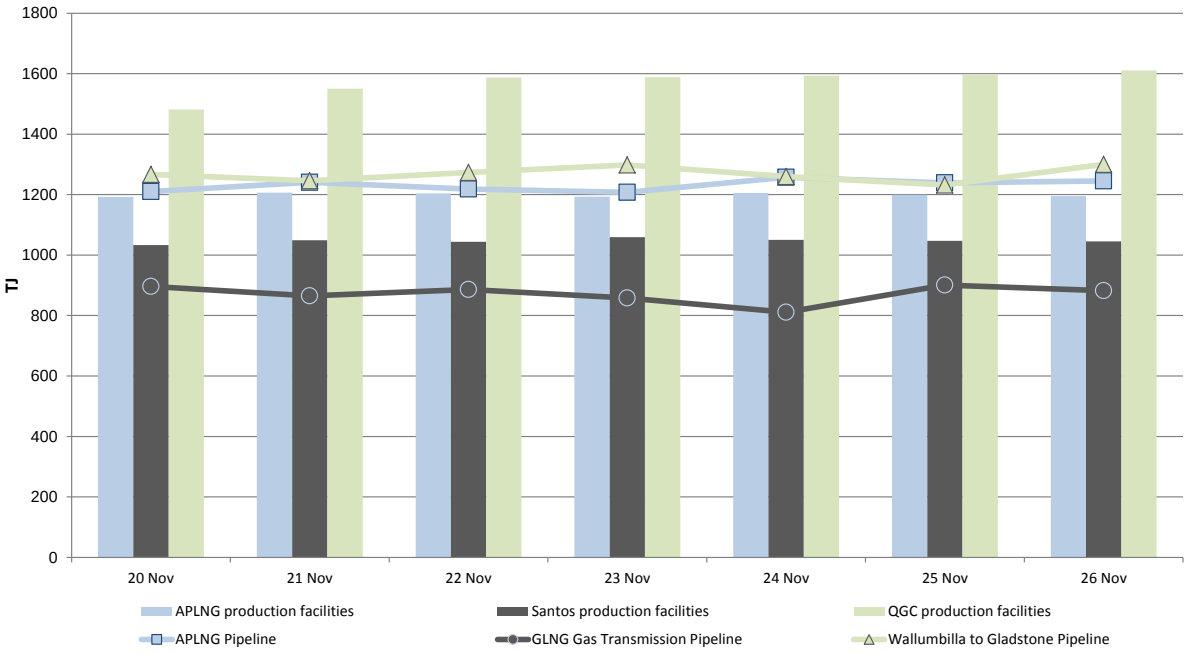
Figure 4: Gas supply hub products traded for the current week ($/GJ, TJ)*

	RBP		SWQP		MAP		MSP		QGP	
	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity	VWA price	Quantity
Balance of day	7.05	36.6	8.23	20.1	-	-	-	-	-	-
Daily	-	-	-	-	-	-	-	-	-	-
Day ahead	7.28	17.0	-	-	-	-	-	-	-	-
Weekly	-	-	-	-	-	-	-	-	-	-
Monthly	-	-	-	-	-	-	-	-	-	-

* 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)*



* 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.

Detailed market analysis

On 21 November, the record MOS payment ($367 334) for the Adelaide hub resulted from the highest level of counteracting MOS (CMOS) to date in the region.[3] This was preceded by MOS payments of $107 531 at the hub on 20 November. On both days, the payments were associated with CMOS. Consistent with its reporting threshold, the AER will be conducting an investigation of the 21 November event, including analysis of the accrual of high CMOS.

The AER previously reported on high CMOS, at the Adelaide hub, during the 2013 winter and will explore for any consistencies across the two event periods. On both occasions, the payments accrued from increase MOS on the Moomba Adelaide Pipeline (MAP) and decrease MOS on the SEAGas pipeline.

We have had initial discussions on the CMOS with SEAGas who identified the instance the following day and are considering along with the low total MAP flows relative to SEAGas total scheduled flows on the day, the profiling of gas for delivery on SEAGas towards the end of the day on this day. We will examine whether there are any common factors across a number of CMOS days (albeit of lower magnitude than 21 November) in the last few months.

MOS payments in excess of $50 000 were recorded for the Sydney STTM across the three days of 21-23 November. This continued a trend in high MOS, for the Sydney hub, from the previous week, albeit with smaller payments.

On 24 November, injections at Victoria's Longford Gas Plant declined by almost half (compared to daily injections across the previous three days) following a compressor outage

[3] The quantity of increase MOS allocated on the Moomba to Adelaide Pipeline (MAP) supplying an additional 21.4 TJ of gas to the hub was offset by a counteracting 22.3 TJ of decrease MOS allocated on the SEAGas pipeline which was pressured out of the hub and parked on the pipeline.

(see Figure 1.5). The outage restricted deliveries on the Eastern Gas Pipeline (EGP).[4] The Natural Gas Services Bulletin Board displayed a red flag for the EGP (indicating that involuntary load-shedding of firm load was likely or happening on that day).

As evidenced in Figure 2.3, market participants renominated supply to the Moomba Sydney Pipeline (MSP) in response to the Longford outage. There was no increase in the daily gas price compared to prices earlier in the week. The potential gas shortfall in Victoria was largely met by Iona Underground Gas Storage (see Figure 1.5), which increased injections by almost 100TJ between 23 and 24 November. Whilst the 2pm gas price in Victoria was high at $20/GJ (see Figure 1.1) following constraints being applied to injections at Longford, the average price for the day was just over $9/GJ.

[4] A Contingency Gas (CG) event was triggered due to the potential shortfall affecting EGP deliveries to Sydney, but no CG was actually required in the STTM. A number of Capacity Constraint prices were set across the week as a result of the reduced STTM facility capacity following EGP compression issues from 9 November.

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[5] which is the schedule at which most gas is traded.

The main drivers[6] 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[7], 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)

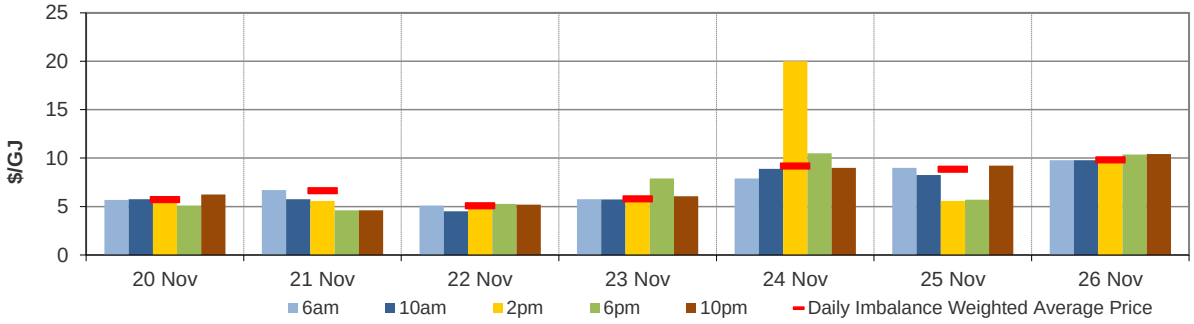
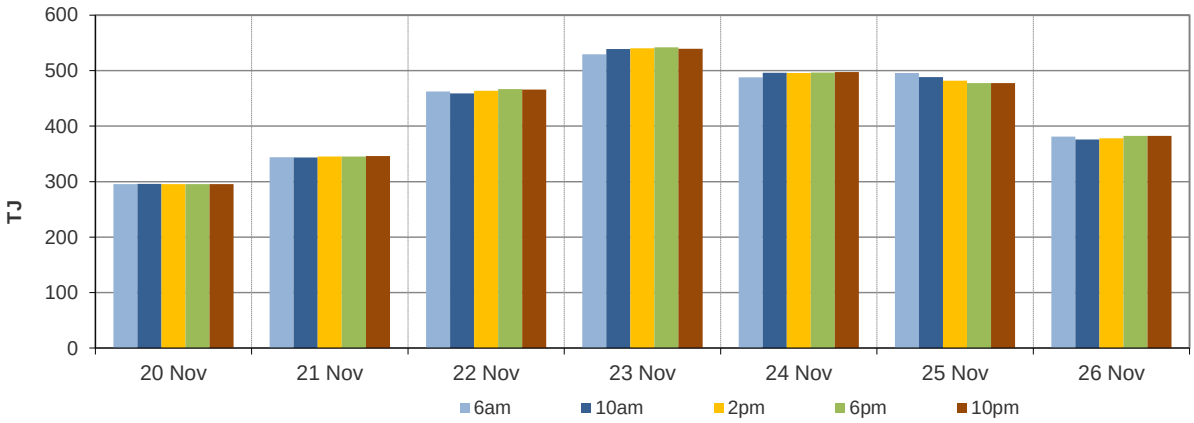


Figure 1.2: Demand forecasts (TJ)



5 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.

6 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.

7 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)

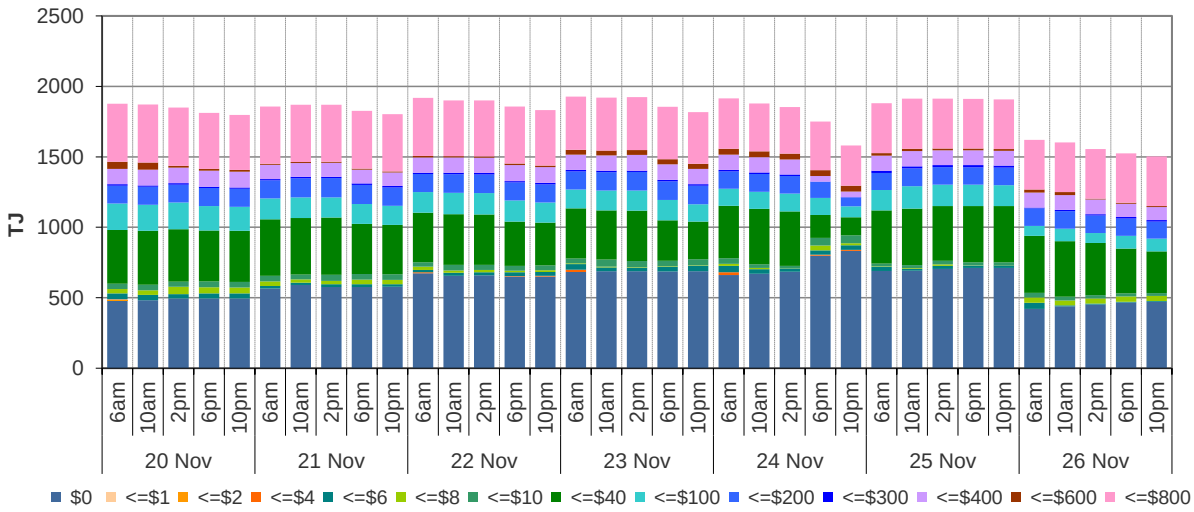


Figure 1.4: Withdrawal bids by price bands (TJ)

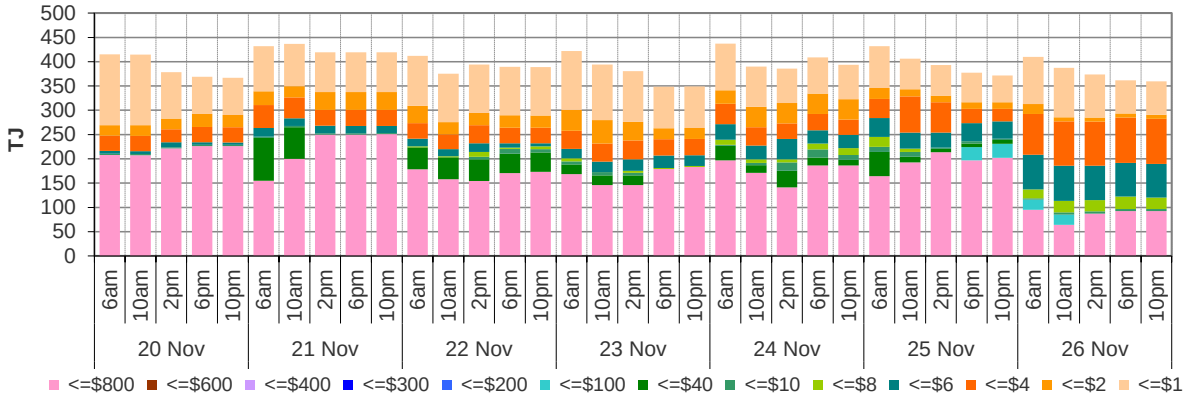
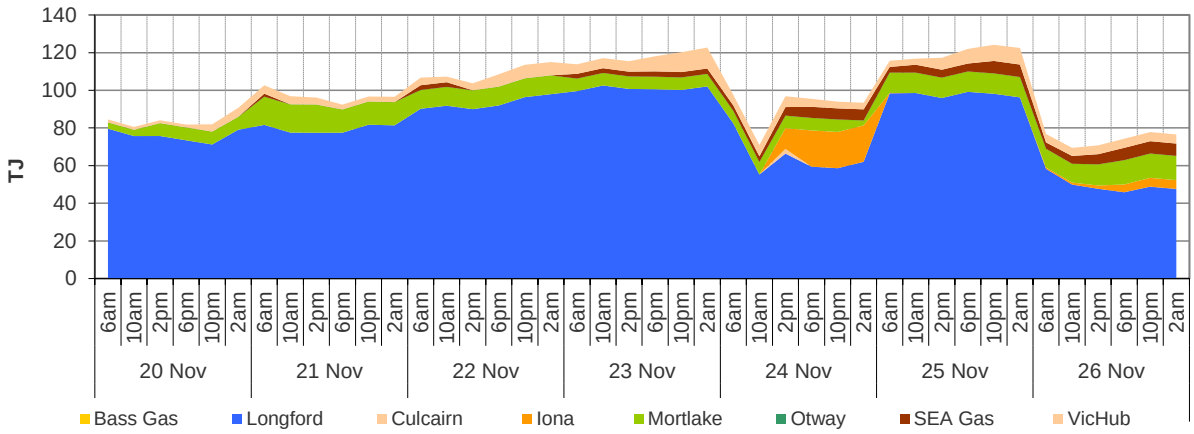


Figure 1.5: Metered Injections by System Injection Point (TJ)



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.[8] 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.

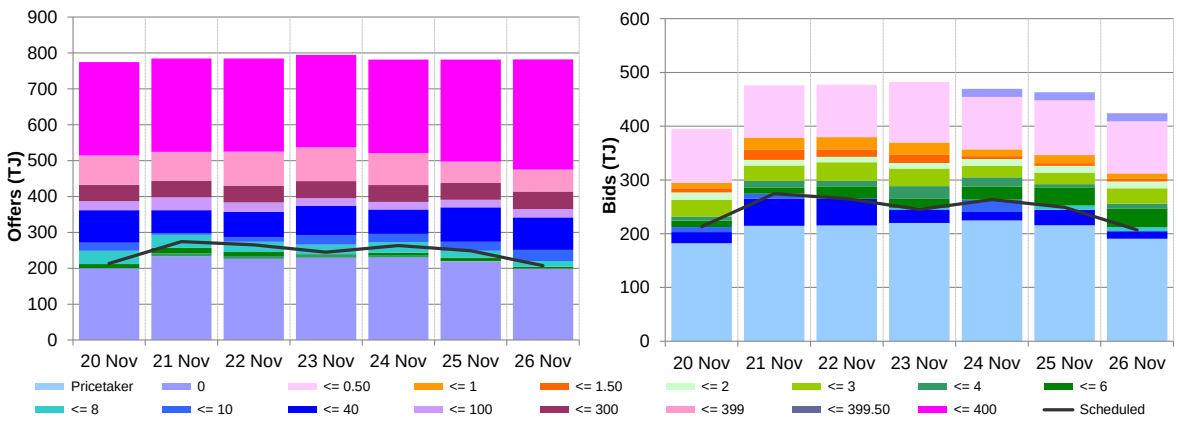
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing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

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 ($/GJ)	4.60	7.33	10.00	6.41	7.79	7.89	6.41
Ex ante quantity (TJ)	213	275	265	245	263	249	207
Ex post price ($/GJ)	6.40	6.41	8.20	6.41	4.97	6.90	4.60
Ex post quantity (TJ)	217	264	258	244	230	242	199

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



8 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.

9 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)

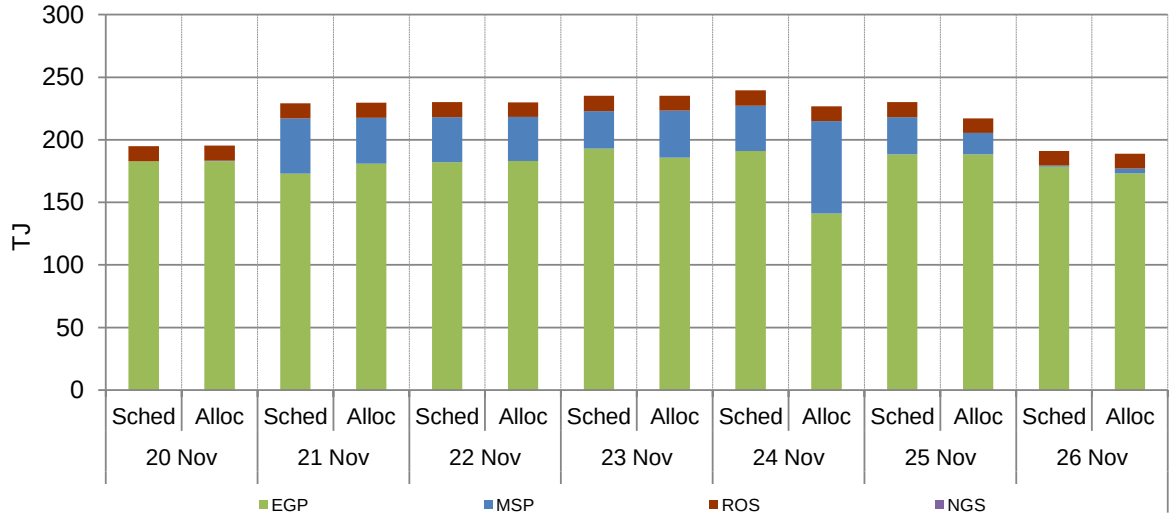
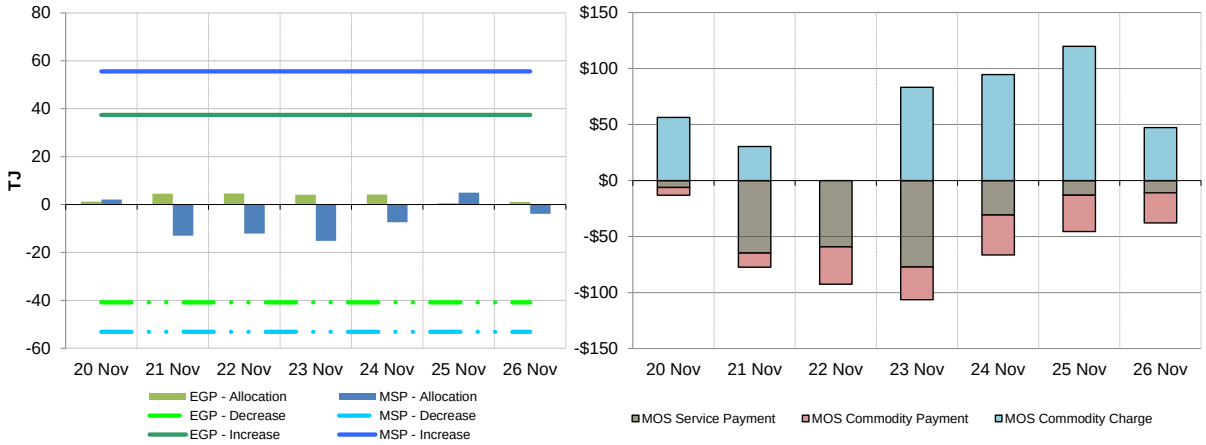


Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges ($000)[10]



10 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 ($/GJ)	7.12	7.05	7.05	7.05	7.45	7.20	6.50
Ex ante quantity (TJ)	38	50	59	59	58	54	45
Ex post price ($/GJ)	7.40	6.88	6.57	7.05	7.28	7.05	6.77
Ex post quantity (TJ)	43	48	55	55	55	53	45

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

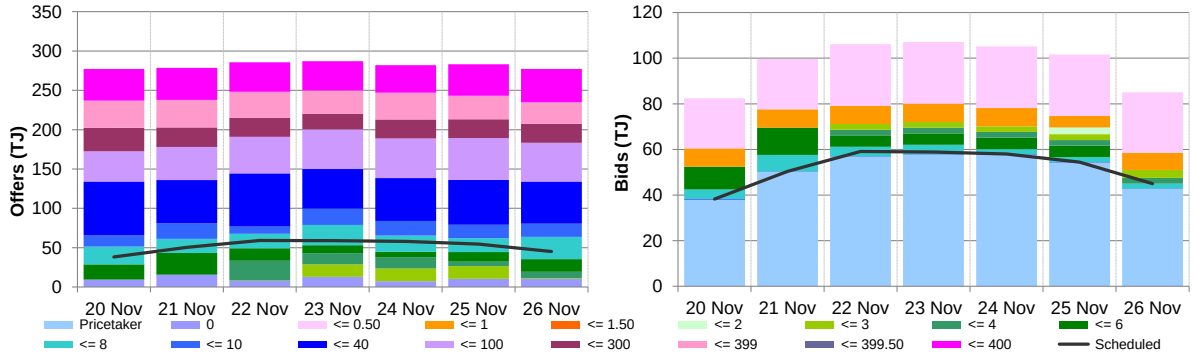


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

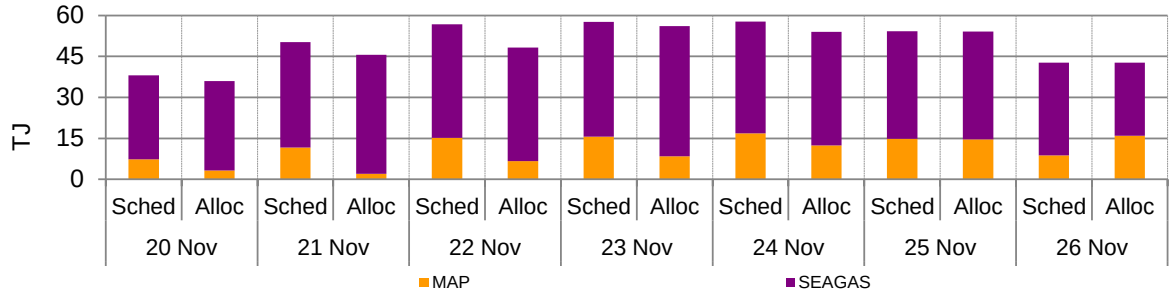
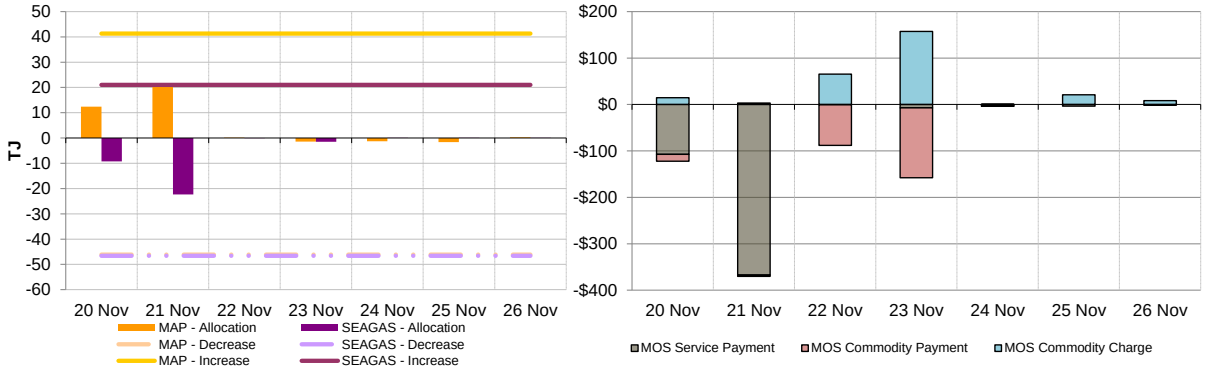


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges ($000)



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 ($/GJ)	6.92	7.50	7.50	7.49	7.25	7.08	6.98
Ex ante quantity (TJ)	70	89	90	90	91	86	75
Ex post price ($/GJ)	7.75	7.50	7.73	7.74	7.25	7.08	7.15
Ex post quantity (TJ)	75	90	93	94	94	89	77

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

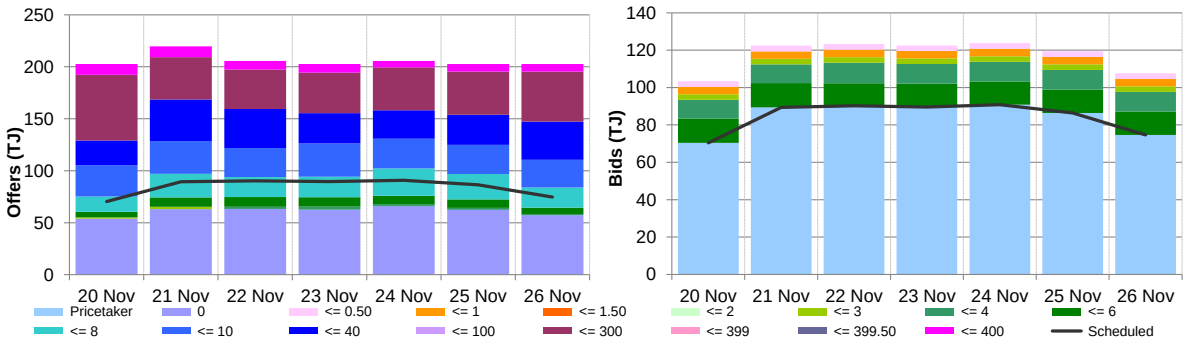


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

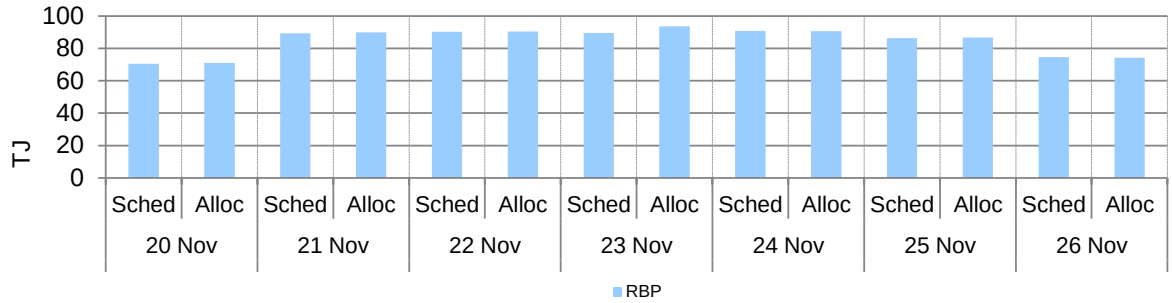
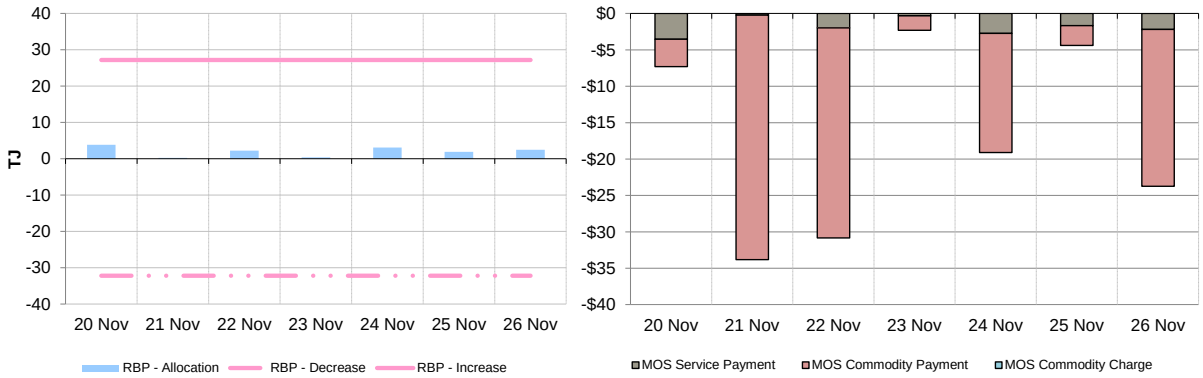


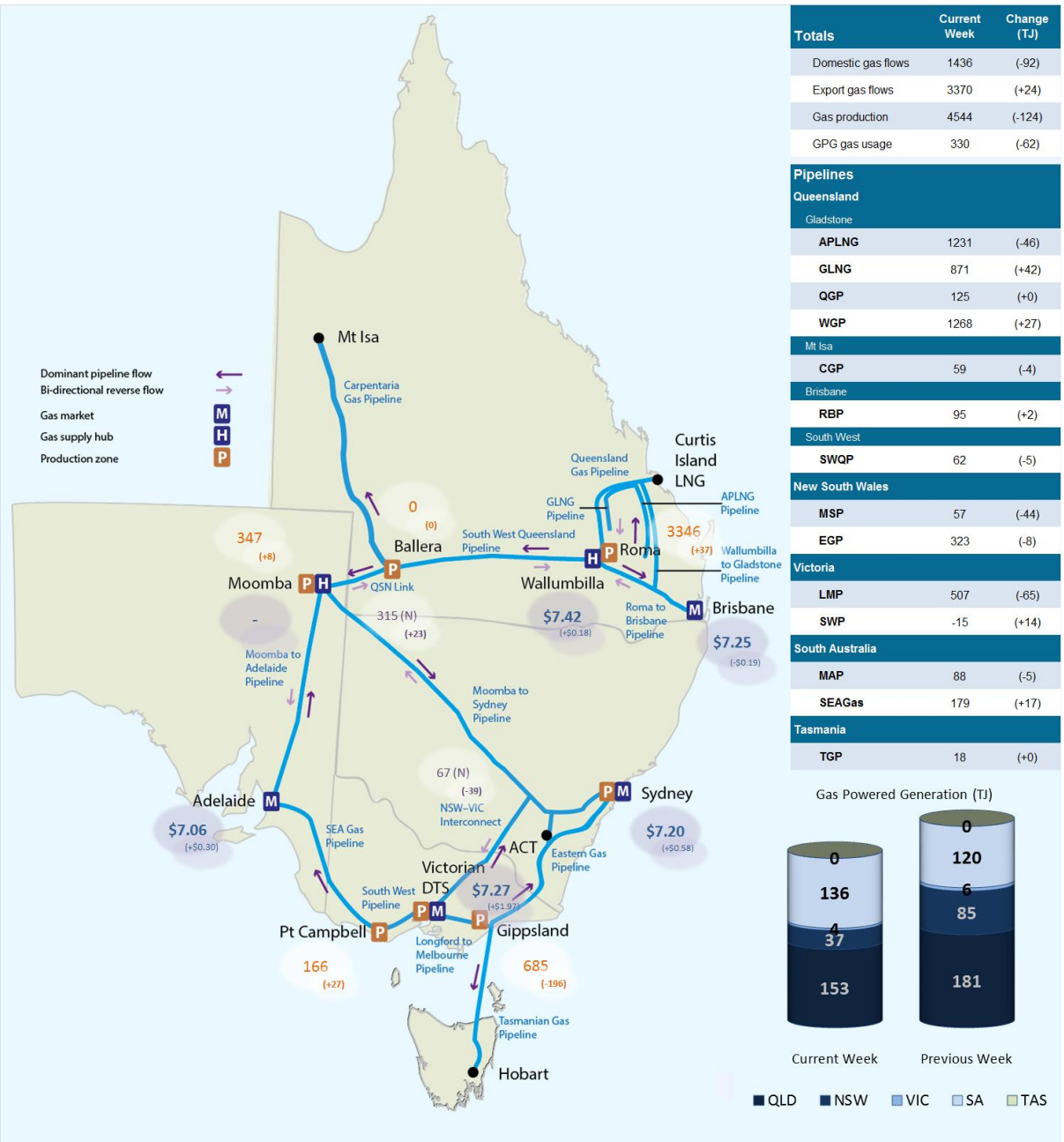
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges ($000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week[11] from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily prices[12] 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)[13]



Totals	Current Week	Change (TJ)
Domestic gas flows	1436	(-92)
Export gas flows	3370	(+24)
Gas production	4544	(-124)
GPG gas usage	330	(-62)
Pipelines		
Queensland		
Gladstone		
APLNG	1231	(-46)
GLNG	871	(+42)
QGP	125	(+0)
WGP	1268	(+27)
Mt Isa		
CGP	59	(-4)
Brisbane		
RBP	95	(+2)
South West		
SWQP	62	(-5)
New South Wales		
MSP	57	(-44)
EGP	323	(-8)
Victoria		
LMP	507	(-65)
SWP	-15	(+14)
South Australia		
MAP	88	(-5)
SEAGas	179	(+17)
Tasmania		
TGP	18	(+0)

11 **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.

12 GSH supply is the average daily volume of gas 'traded', while price is a volume weighted average.

13 Numbers for QSN Link, Port Campbell (Otway basin) and Gippsland (Eastern Victoria) have been adjusted to account for changes to Bulletin Board flows which came into effect from 6 October (see gas report 2-8 October 2016). Individual facilities are now required to report 'receipts' separate to 'deliveries', rather than net flows.

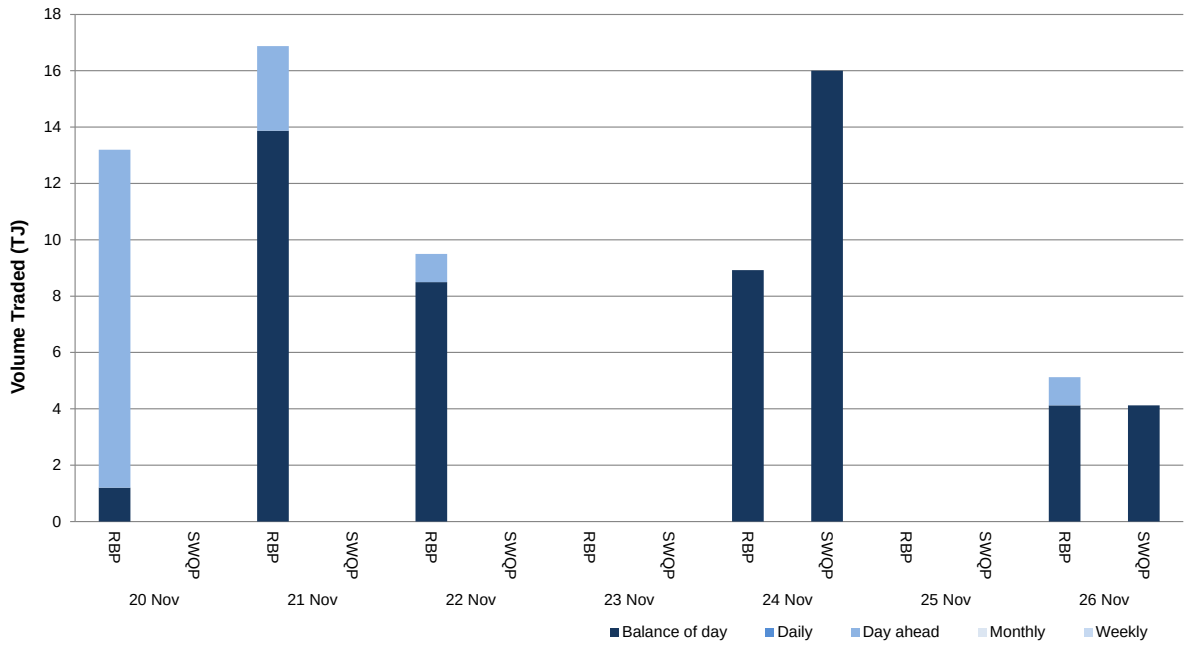
6. Gas Supply Hub

The Gas Supply Hub **(GSH)** was established in March 2014 for the trading of gas at Wallumbilla. The GSH is a voluntary market[14] for the supply of gas traded[15] 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).

This week in the Wallumbilla hub there were 17 trades for 73.75 TJ of gas at a volume weighted price of $7.42/GJ. Trades on the SWQP consisted of balance-of-day products (20.13 TJ at $8.23/GJ) and trades on the RBP consisted of day-ahead and balance-of-day products (53.63 TJ at $7.12/GJ).

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
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14 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.

15 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.