

10 – 16 April 2016

Weekly summary

Average prices in all regions increased this week. The largest increase was 27 per cent in Adelaide. From 12 April, the Adelaide price ranged between \$6.95/GJ – \$8.20/GJ. Sydney and Victoria also saw significant price increases.

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) in 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**) for the current week compared to historical averages.

Figure 1: Average daily prices – all markets (\$/GJ)¹

Region	Victoria	Sydney	Adelaide	Brisbane
10 Apr - 16 Apr 2016	6.08	5.65	7.29	5.39
% change from previous week	21	18	27	7
15-16 financial YTD	4.47	4.61	5.22	4.19
% change from previous financial YTD	28	39	43	76

Figure 2 compares average weekly gas prices, ancillary market payments and scheduled injections against historical averages for the Victorian gas market.

¹ The weighted average daily imbalance price applies for Victoria.

Figure 2: Victorian Gas Market

	Price (\$/GJ)	Ancillary payments (\$000)*	BOD forecast demand quantity (TJ)
10 Apr - 16 Apr 2016	6.08	-	411
% change from previous week	21	-	-2
15-16 financial YTD	4.47	-	526
% change from previous financial YTD	28	-	4

* Note: only positive ancillary payments, reflecting system constraints will be shown here.

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

Figures 3 to 5 show average ex ante and ex post gas prices, Market Operator Service (MOS) balancing gas service payments together with the related daily demand quantities against historical averages for the Sydney, Adelaide and Brisbane STTM hubs, respectively.

Figure 3: Sydney STTM

	Ex ante price (\$/GJ)	Ex post price (\$/GJ)	MOS payments (\$000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
10 Apr - 16 Apr 2016	5.65	4.77	13.85	225	214
% change from previous week	18	7	18	-2	-5
15-16 financial YTD	4.61	4.24	29.09	233	227
% change from previous financial YTD	39	28	116	-2	-5

Figure 4: Adelaide STTM

	Ex ante price (\$/GJ)	Ex post price (\$/GJ)	MOS payments (\$000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
10 Apr - 16 Apr 2016	7.29	7.53	5.89	55	56
% change from previous week	27	24	-56	6	0
15-16 financial YTD	5.22	5.33	8.40	59	60
% change from previous financial YTD	43	50	-37	-3	-1

Figure 5: Brisbane STTM

	Ex ante price (\$/GJ)	Ex post price (\$/GJ)	MOS payments (\$000)	Ex ante quantity (TJ)	Ex post quantity (TJ)
10 Apr - 16 Apr 2016	5.39	5.46	1.67	89	91
% change from previous week	7	14	34	14	16
15-16 financial YTD	4.19	4.19	1.55	83	82
% change from previous financial YTD	76	86	-3	-39	-39

More detailed analysis of the STTM hubs is found in sections 2 to 4.

Section 5 provides analysis on production and pipeline flows on the National Gas Bulletin Board (**Bulletin Board**), as well as gas powered generation (**GPG**) volumes in each state, and section 6 provides information on the Gas Supply Hub (**GSH**) at Wallumbilla.

Detailed market analysis

High prices in Victoria

On the following days, there were a number of high prices in Victoria linked to the under forecasting of demand by participants and/or maintenance at Longford (which reduced the supply of low priced gas – see figure 1.5 on page 6):

- 10 April – both factors led to prices up to \$9.74/GJ (at the 6 am schedule) and the merit order injection of 3.9 TJ of LNG.
- 12 April – lower supply from Longford likely contributed to high prices across all five schedules (the weighted average imbalance price for the day was \$5.70/GJ).
- 13 April – Despite the anticipation of lower flows due to maintenance, the actual flows from Longford were even lower than expected, which resulted in the 2 pm price increasing to \$6.80/GJ.
- 14 April – Both factors contributed to prices up to \$7.85/GJ (at the 2 pm schedule) and supply being scheduled from both Iona underground storage and Dandenong LNG.

High prices in Adelaide

Analysis indicates a significant driver behind the high prices in Adelaide during the week was high demand within the distribution network. From 13 April, higher ex ante prices were also influenced by participants rebidding capacity into higher price bands (above \$6/GJ). Figure 5.1 on page 11 shows an overall increase in the gas demand from gas powered generators (GPG). However, this demand may have been a less significant contributor to the high prices, as prices remained high as GPG gas demand reduced later in the week.

Prices in Sydney

In Sydney, price taker demand reduced from levels forecast in provisional schedules from 14 April, generally leading to lower ex ante prices. However, the price increased to \$5.99/GJ on 16 April, influenced by a reduction in offers below \$6/GJ (reflecting the lower demand).²

This was also affected by the limited availability of offers at low prices on the MSP, which resulted in a pipeline flow direction constraint (PFDC) price of \$0.98/GJ (for additional gas scheduled to

² Offers and price taker bids reduced from the D-2 provisional schedule, however higher priced bids both on the EGP and within the hub were increased in the D-1 (ex ante) schedule.

supply back haul on the pipeline).³ Figure 2.3 shows the entire hub demand on the day was provided by forward haul on the EGP.⁴

Figure 6 shows the provisional forecast (D-3 and D-2) and ex ante (D-1) offers and bids in the Sydney hub for 16 April.⁵

Figure 6: Forecast schedules in Sydney for the 16 April gas day

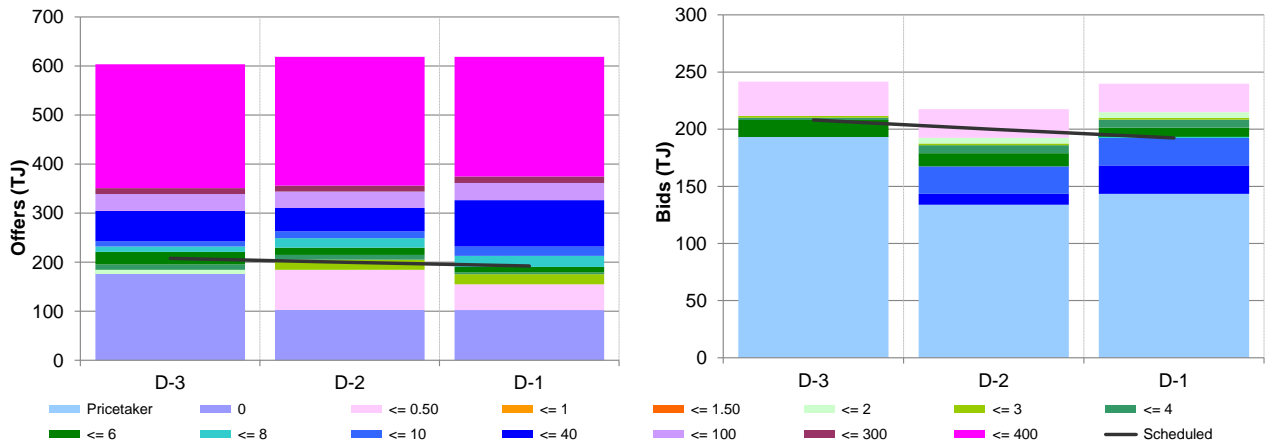
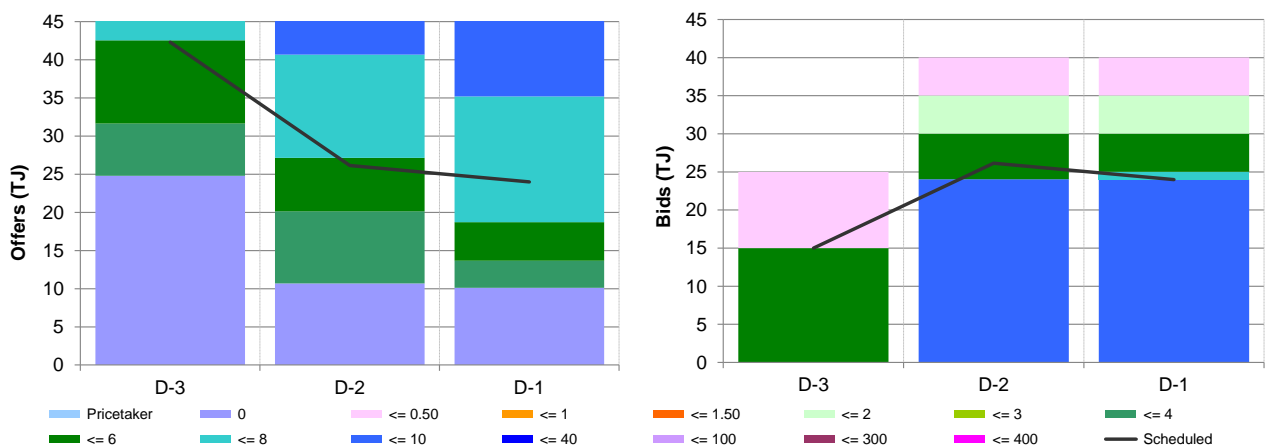


Figure 7 shows the provisional forecast (D-3 and D-2) and ex ante (D-1) offers and bids on the Moomba to Sydney Pipeline for 16 April.⁶ The figure demonstrates how rebidding back haul into higher price bands (on the right hand side) influenced the implementation of the PFDC mechanism for the D-2 and D-1 schedules. The figure also shows that a reduction in low priced offers on the pipeline (on the left hand side) influenced more supply on the EGP being required to set the market price, reducing the amount of economically available forward haul on the pipeline.

Figure 7: Forecast schedules in Sydney on the MSP for the 16 April gas day



³ The PFDC mechanism allows additional forward haul to be scheduled on the pipeline to economically supply back haul bids. A provisional PFDC price in the D-2 schedule was set at \$4.88/GJ, reflecting the larger difference in the cost of additional back haul and the low D-2 provisional price of \$0.02 (set by a bid on the EGP).

⁴ There was no gas offered at Rosalind Park (ROS) from 11 April. This may be due to maintenance at the facility.

⁵ Some of the available offers shown in figure 6 (on the EGP) were not scheduled in merit order, with additional offers above the market price scheduled on the MSP to set the PFDC price.

⁶ Offers are only shown up to 45 TJ (total offers exceeded 300 TJ on the MSP for the gas day).

10 – 16 April 2016

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 price⁷ which is the schedule at which most gas is traded.

The main drivers⁸ 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 forecasts⁹, 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.

Figure 1.1: Prices by schedule

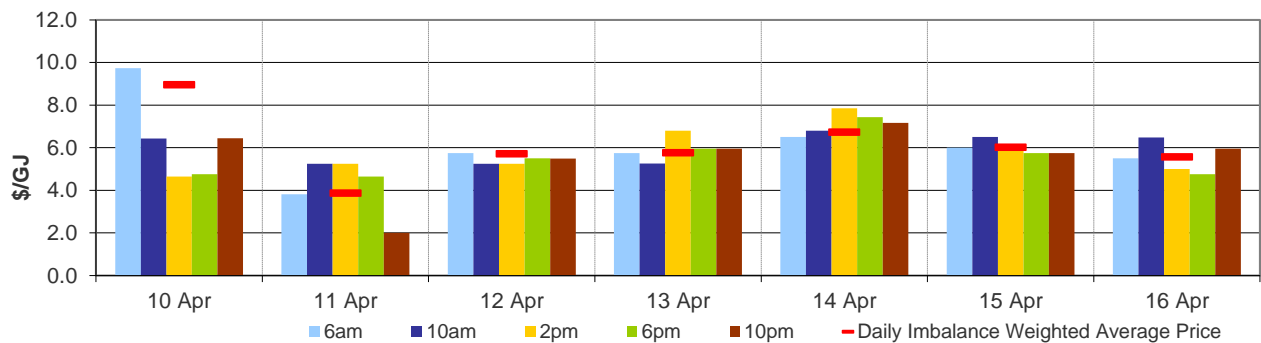
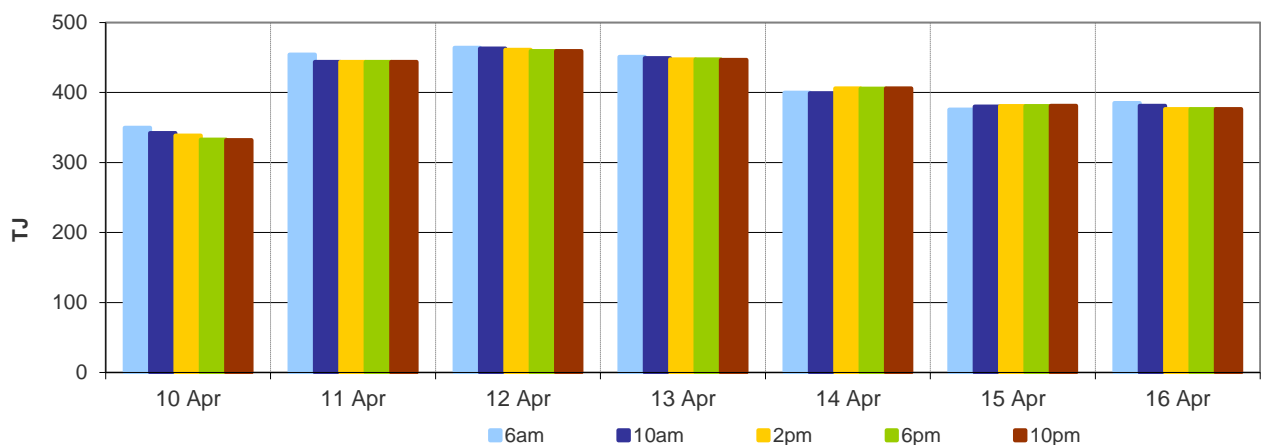


Figure 1.2: Demand forecasts



⁷ 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.

⁸ 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.

⁹ 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

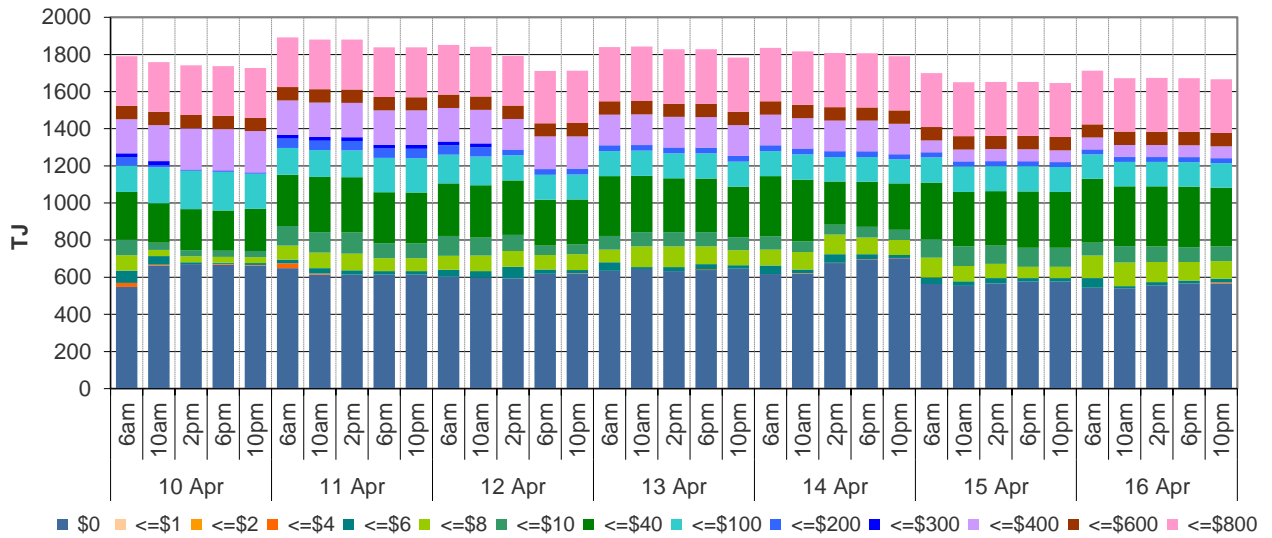


Figure 1.4: Withdrawal bids by price bands

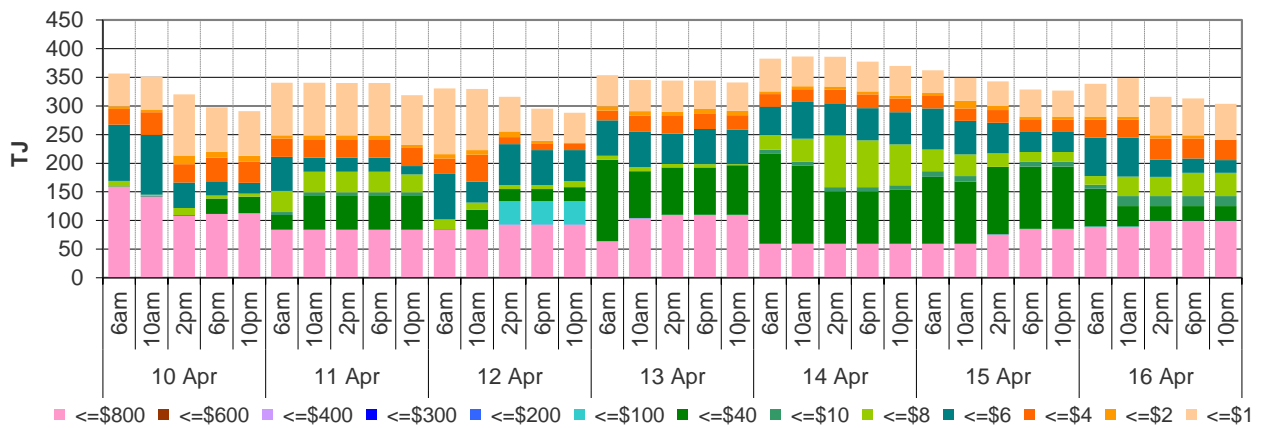
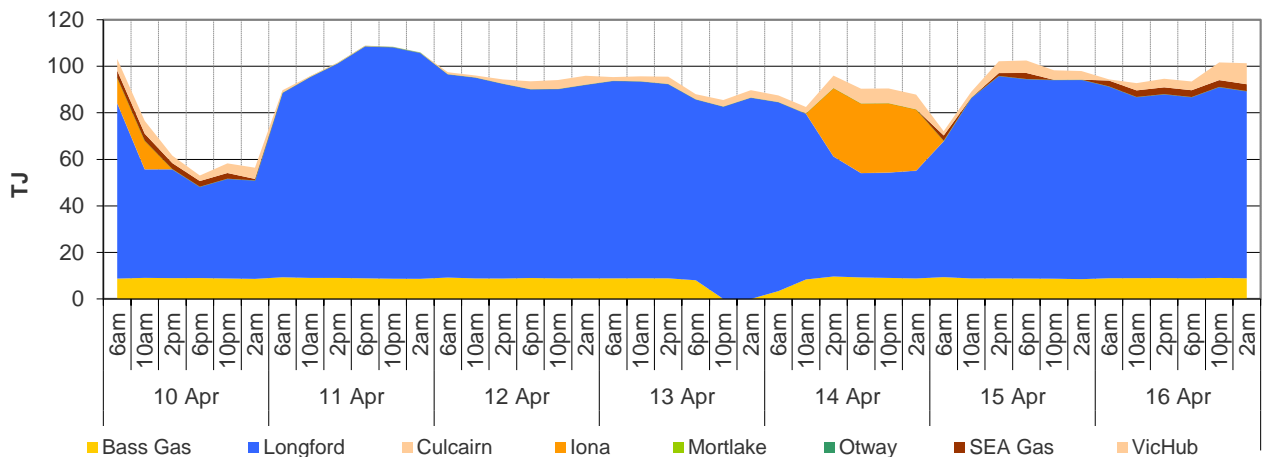


Figure 1.5: Metered Injections by System Injection Point



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.¹⁰ 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](#).

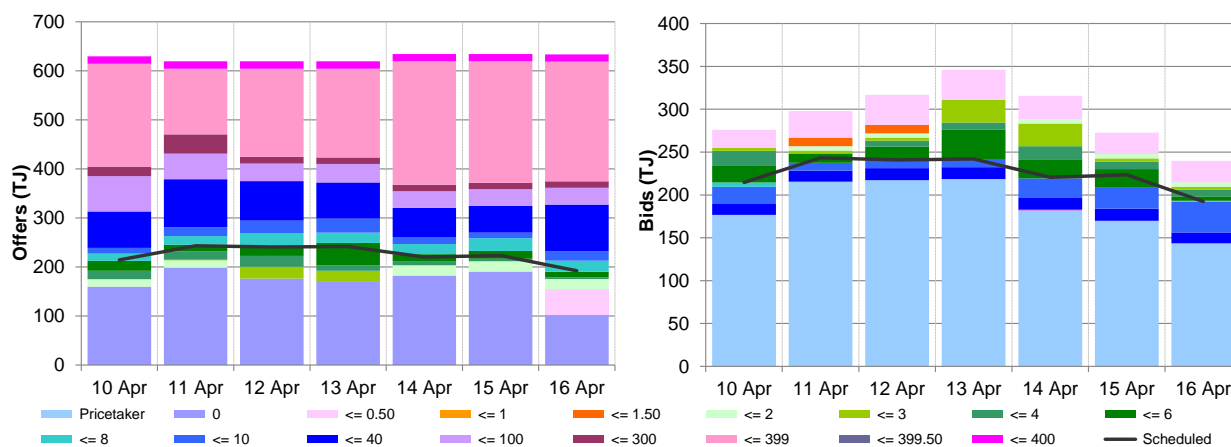
Market Operator Service balancing gas (MOS) payments arise because the amount of gas nominated on pipelines for delivery on a gas day will either exceed or fall short, by some amount, of the amount of gas consumed in the hub. In such circumstances, MOS payments are made to participants for providing a service to park gas on a pipeline or to loan gas from a pipeline to the hub.¹¹

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)	6.61	4.85	5.99	5.99	5.36	4.75	5.99
Ex ante quantity (TJ)	215	243	241	242	220	224	192
Ex post price (\$/GJ)	4.95	4.75	5.99	4.75	5.36	4.51	3.10
Ex post quantity (TJ)	203	238	235	196	220	219	184

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



¹⁰ 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.

¹¹ 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)

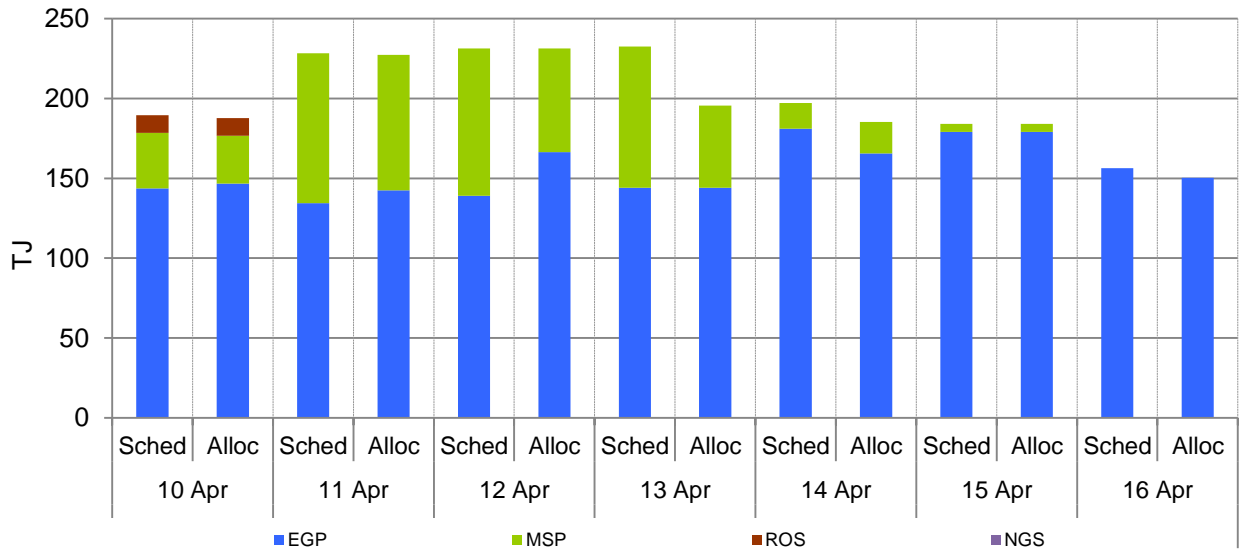
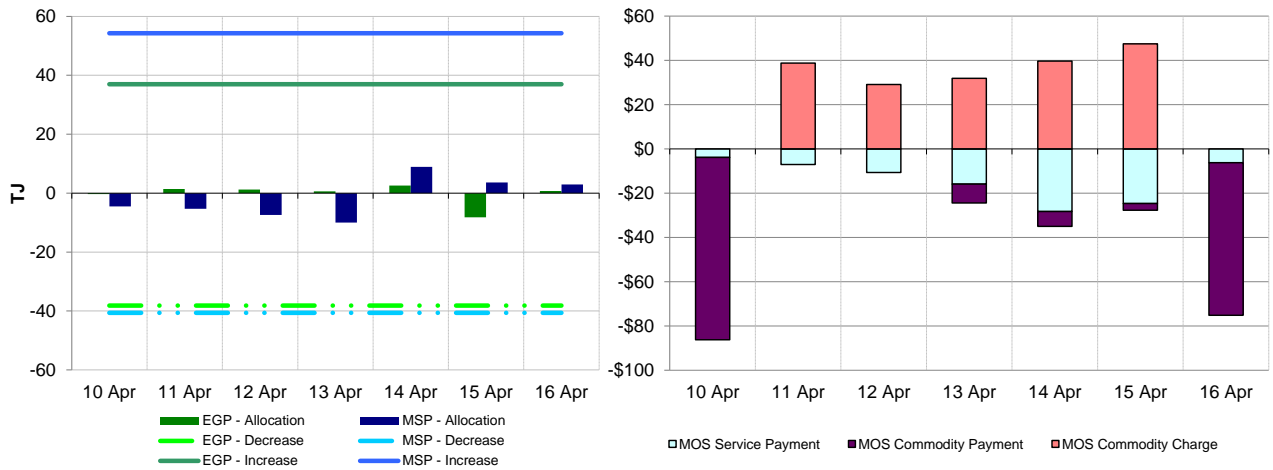


Figure 2.4: SYD MOS allocations (TJ), service payments and commodity payments/charges (\$000)



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)	6.41	6.36	6.95	7.90	7.60	8.20	7.60
Ex ante quantity (TJ)	45	57	57	59	57	60	48
Ex post price (\$/GJ)	8.02	6.47	7.10	7.90	7.60	8.20	7.42
Ex post quantity (TJ)	59	58	58	59	56	58	47

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

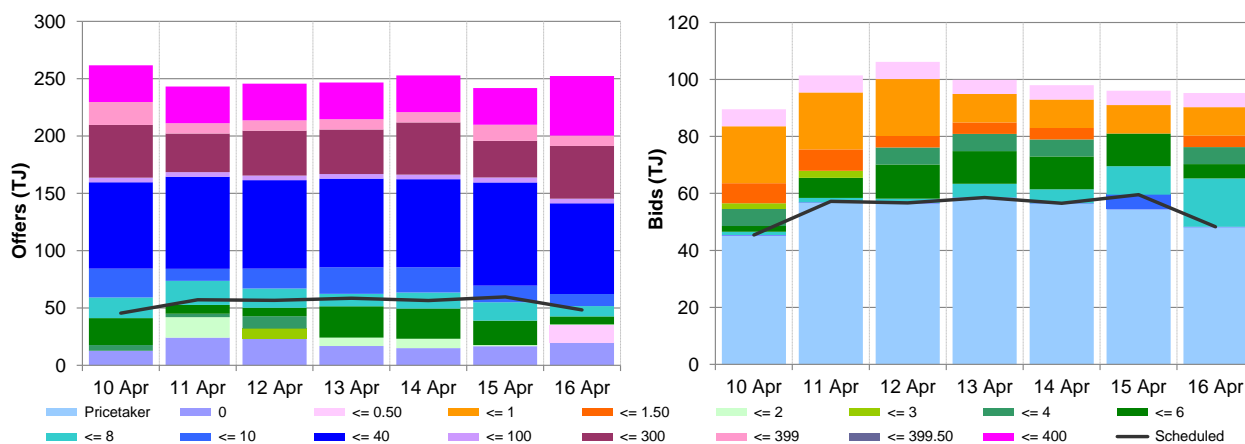


Figure 3.3: ADL net scheduled and allocated gas hub supply (excluding MOS)

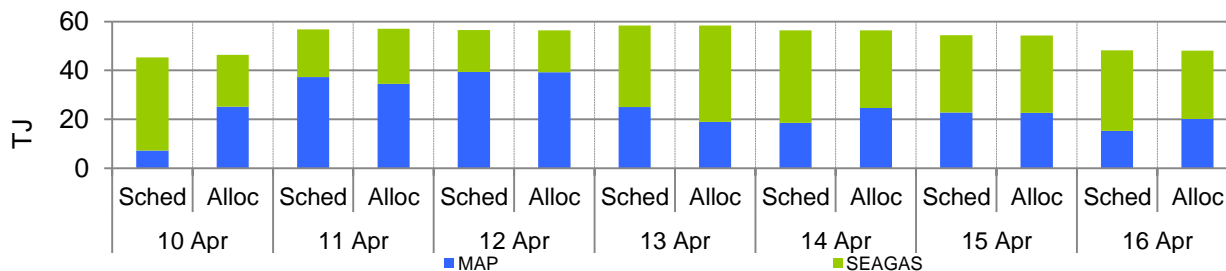
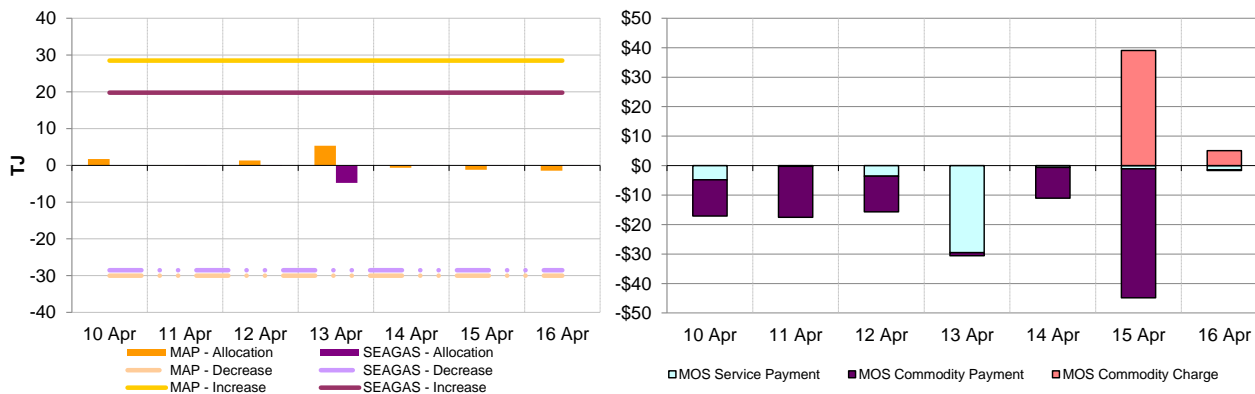


Figure 3.4: ADL MOS allocations (TJ), service payments and commodity payments/charges (\$000)



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)	4.98	4.94	5.50	5.50	5.63	5.51	5.64
Ex ante quantity (TJ)	81	97	95	94	96	85	73
Ex post price (\$/GJ)	4.98	4.94	5.50	5.50	5.63	5.64	6.00
Ex post quantity (TJ)	82	96	96	97	95	89	79

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

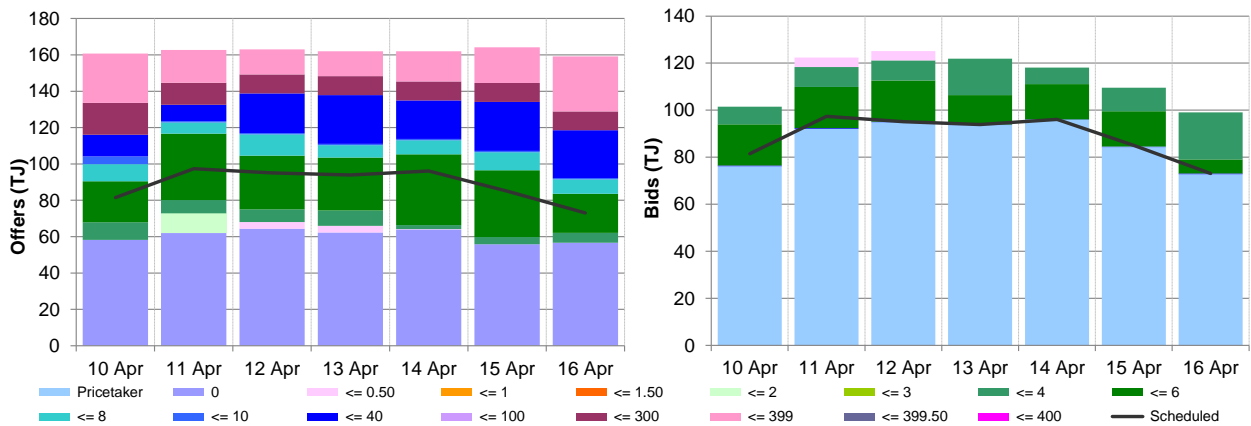


Figure 4.3: BRI net scheduled and allocated gas hub supply (excluding MOS)

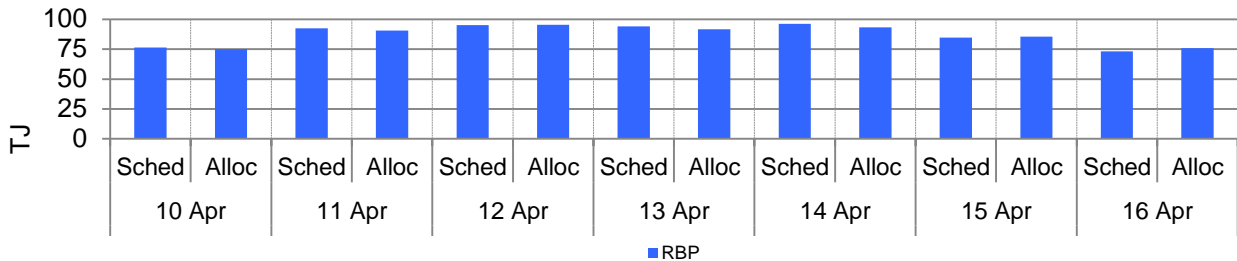
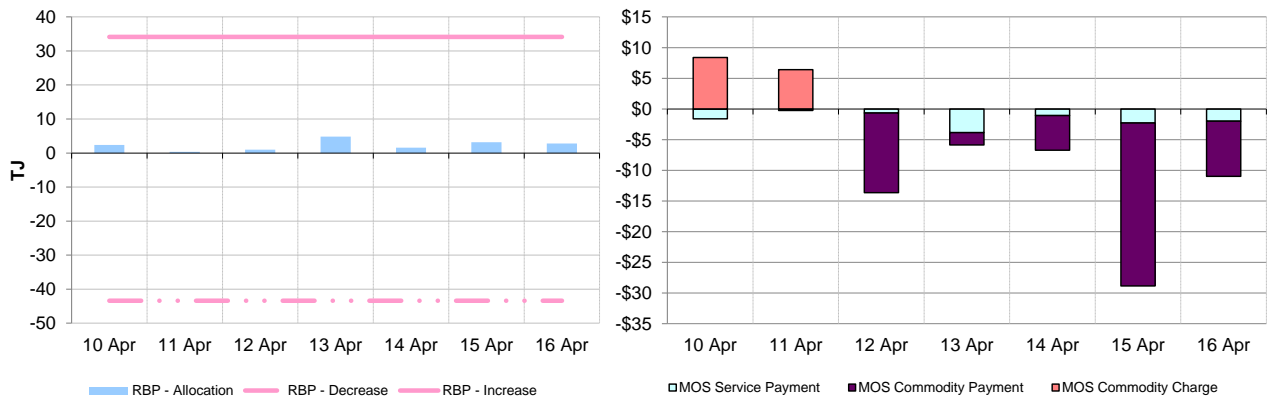


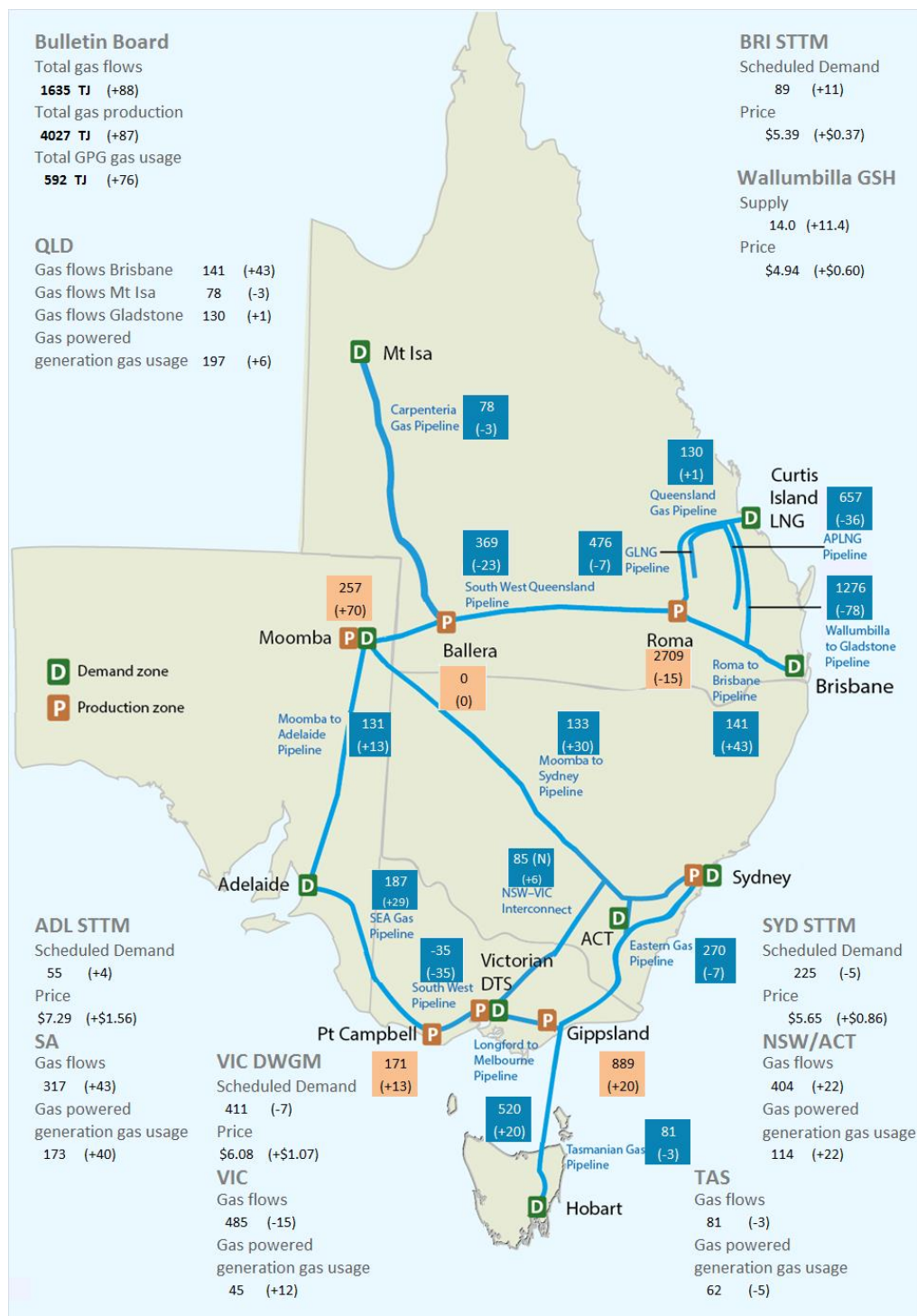
Figure 4.4: BRI MOS allocations (TJ), service payments and commodity payments/charges (\$000)



5. National Gas Bulletin Board

Figure 5.1 shows average daily actual flows for the current week¹² from the Bulletin Board (changes from the previous week's average are shown in brackets). Average daily scheduled volumes and prices¹³ are provided for gas markets and gas powered generation for each region.

Figure 5.1: Gas market data (\$/GJ, TJ/day); Production, Consumption and Pipeline flows (TJ)



¹² Gas flows shown under regional headings: **SA** = MAP + SEAGAS, **VIC** = SWP + LMP – negative(NSW-VIC), **NSW/ACT** = EGP + MSP, **TAS** = TGP, **QLD (Brisbane)** = RBP, **QLD (Mt Isa)** = CGP, **QLD (Gladstone)** = QGP GPG volumes may include gas usage that does not show up on Bulletin Board pipeline flows.

¹³ Roma included export LNG production from October 2014 and LNG pipeline flows are shown from October 2015. Wallumbilla supply is the average daily volume of gas 'traded', while price is a volume weighted average.

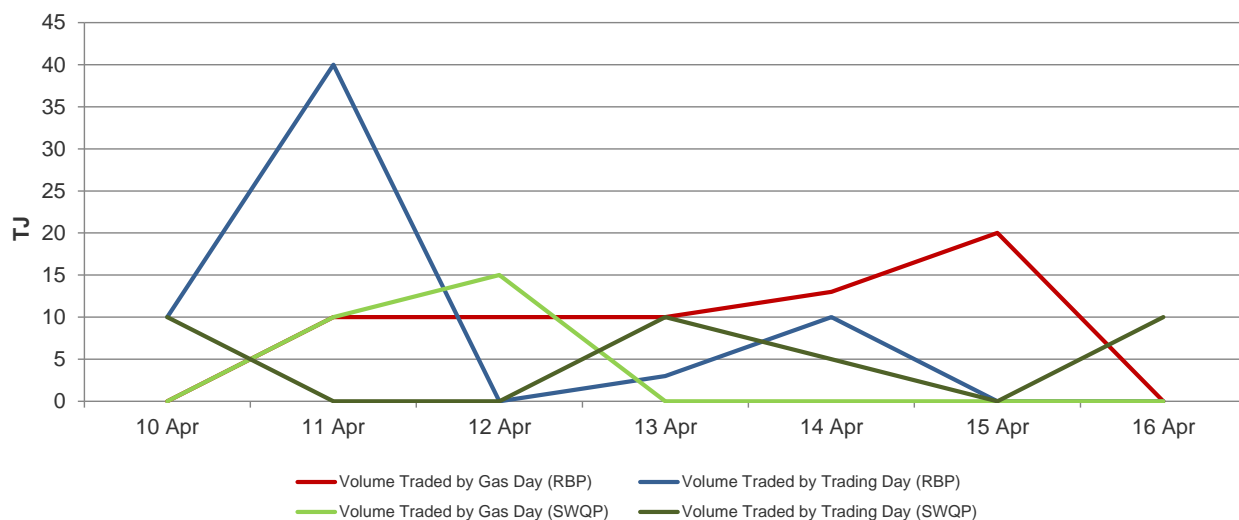
6. Gas Supply Hub

The Gas Supply Hub (**GSH**) was established for the trading of gas at Wallumbilla because it is located in close proximity to significant gas supply sources and demand locations and is a major transit point between Queensland and the gas markets on Australia’s east coast. The GSH is a voluntary market¹⁴ for the supply of gas traded between separate participants, with products listed for sale and purchase at delivery points on three major connecting pipelines at Wallumbilla – the Queensland Gas Pipeline (**QGP**), the South West Queensland Pipeline (**SWQP**) and the Roma to Brisbane Pipeline (**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 and weekly).

There were 13 trades this week for daily and day-ahead products totalling 98 TJ. These sold at a volume weighted price of \$4.94/GJ (\$5.07/GJ on the RBP and \$4.69/GJ on the SWQP).

Figure 6.1 shows volumes traded¹⁵ on each gas day and trading day for the current week.

Figure 6.1: Volume Traded (by Gas Day and by Trading Day)



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 Volumes shown for weekly products include the ‘daily’ volume for each relevant ‘gas day’, and the ‘weekly’ volume for each relevant ‘trading day’.