Gas Supply Hub Industry Guide

October 2019

Version 6.0

Important notice

AEMO has prepared this Gas Supply Hub Industry Guide (Guide) to provide guidance on the use of the Gas Supply Hub for the purposes of the gas trading exchange established by AEMO under the National Gas Law, National Gas Rules and Gas Supply Hub Exchange Agreement, as at the date of publication.

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VERSION CONTROL

Version	Release date	Changes from Version 1.0
2.0	May 2015	Updated document to incorporate Monthly Products and Benchmark Price.
3.0	May 2016	Updated document to incorporate Moomba trading locations, spread product, non-netted trades and alternate delivery point addendum. General tidy up of document language.
4.0	October 2016	Updated document to incorporate Wallumbilla Compression Service product.
5.0	March 2017	Incorporate single Wallumbilla hub changes.
6.0	December 2018	Updated to include Gas Day Harmonisation rule change

ABBREVIATIONS AND SYMBOLS

These abbreviations, symbols, and special terms assist the reader's understanding of the terms used in this document. For definitions of these terms, the reader should always refer to the applicable market Rules. Refer to the Gas Supply Hub Exchange Agreement for further defined terms[1].

Abbreviation	Term
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
DWGM	Declared Wholesale Gas Market
ETS	Exchange Trading System
MAP	Moomba Adelaide Pipeline
MSP	Moomba Sydney Pipeline
NEM	National Electricity Market
NGL	National Gas Law
NGR	National Gas Rules
QGP	Queensland Gas Pipeline
RBP	Roma Brisbane Pipeline
STTM	Short Term Trading Market
SWQP	South West Queensland Pipeline
WAL	Wallumbilla Trading Location

[1] At http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations.

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1. Introduction

1.1 Background

In 2014, the Australian Energy Market Operator Limited (AEMO) established a gas trading exchange known as the Gas Supply Hub at the request of the Standing Council on Energy and Resources (SCER), and in accordance with the National Gas Law and National Gas Rules. AEMO, in conjunction with the Gas Supply Hub Reference Group (GSHRG), created the market facilities and rules for the Gas Supply Hub during 2013.

The Gas Supply Hub takes the form of an electronic trading platform, standardised terms and conditions and a market settlement facility for the short-term trading of physical gas and related products. Participation is voluntary and designed to complement existing bilateral gas supply arrangements and gas transportation agreements.

The Gas Supply Hub was established with products for the sale and purchase of gas delivered at one of the three major connecting pipelines at Wallumbilla. Two additional trading locations at Moomba commenced on 1 June 2016, as well as a feature that links trading between the Wallumbilla and Moomba markets. This feature is referred to as a Spread Product (see Section 6). Spread products represent the price to traders to transport gas between two trading hubs.

In October 2016 a Wallumbilla Compression Service product was introduced, as the first part of a staged implementation of the single product at Wallumbilla, which subsequently commenced in March 2017.

On 1 March 2019 Pipeline Capacity Trading (PCT) commenced, which utilises the Gas Supply Hub trading exchange. More details on PCT can be found in the Pipeline Capacity Trading Industry Guide.

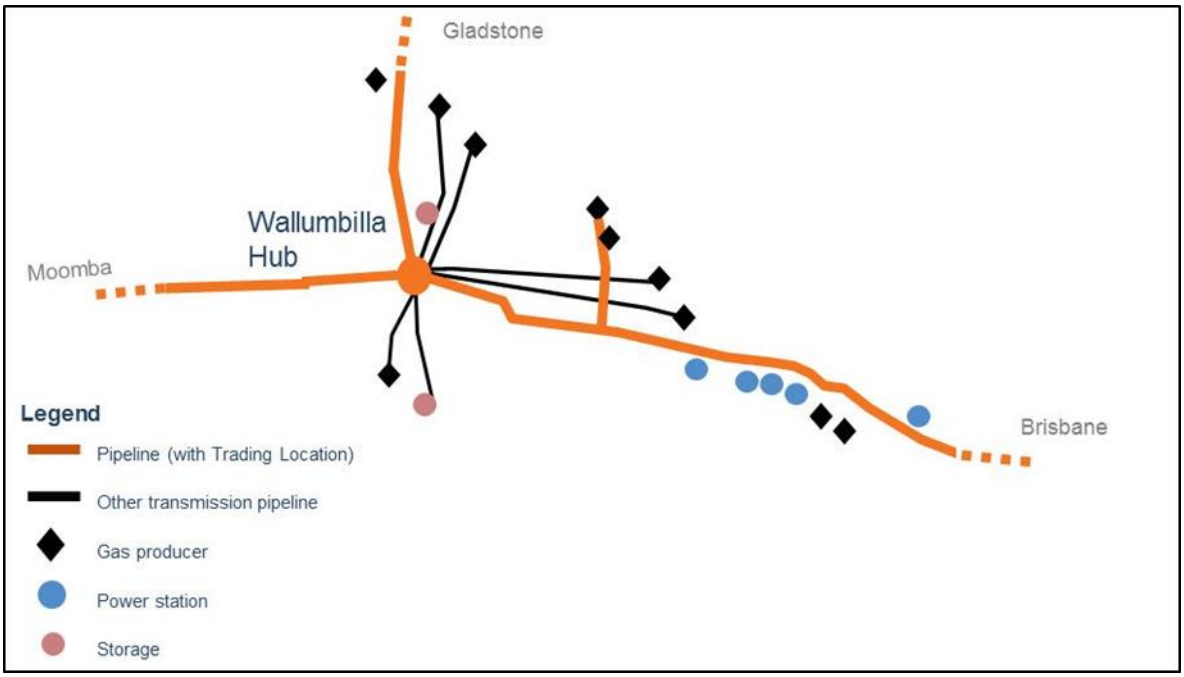
The exchange, and its associated standardised trading arrangements for pipeline capacity, supports the efficient trading of gas between gas markets across Australia's east coast. Trading via an exchange "pools" potential buyers and sellers; it brings them together and competition between Trading Participants strengthens their ability to allocate and price gas efficiently. Standardising the trading arrangements potentially reduces negotiation time and transaction costs of trading on the exchange. The ability to transact quickly and for a relatively short period of time allows industry participants to better manage their gas portfolio requirements. This is particularly important given the gas industry is increasingly being driven to manage portfolio requirements on a daily basis.

Trading of natural gas on the exchange also provides industry with greater transparency of natural gas prices. The creation of a reference price may ultimately support the evolution of financial products that will become essential for industry participants to manage their portfolio and market risk.

1.2 Wallumbilla Hub

The Gas Supply Hub was initially established to trade gas at Wallumbilla because it is close to significant gas supply and demand and is a major transit point between Queensland and the gas markets on Australia's east coast. As illustrated in Figure 1, Wallumbilla acts as a collection point for major gas fields and a supply point for demand centres in Gladstone and Brisbane and is located near gas storage facilities and gas-powered generation. The diversity of business activities and the number of industry participants at Wallumbilla creates a natural point of trade.

Figure 1 Wallumbilla Gas Supply Hub

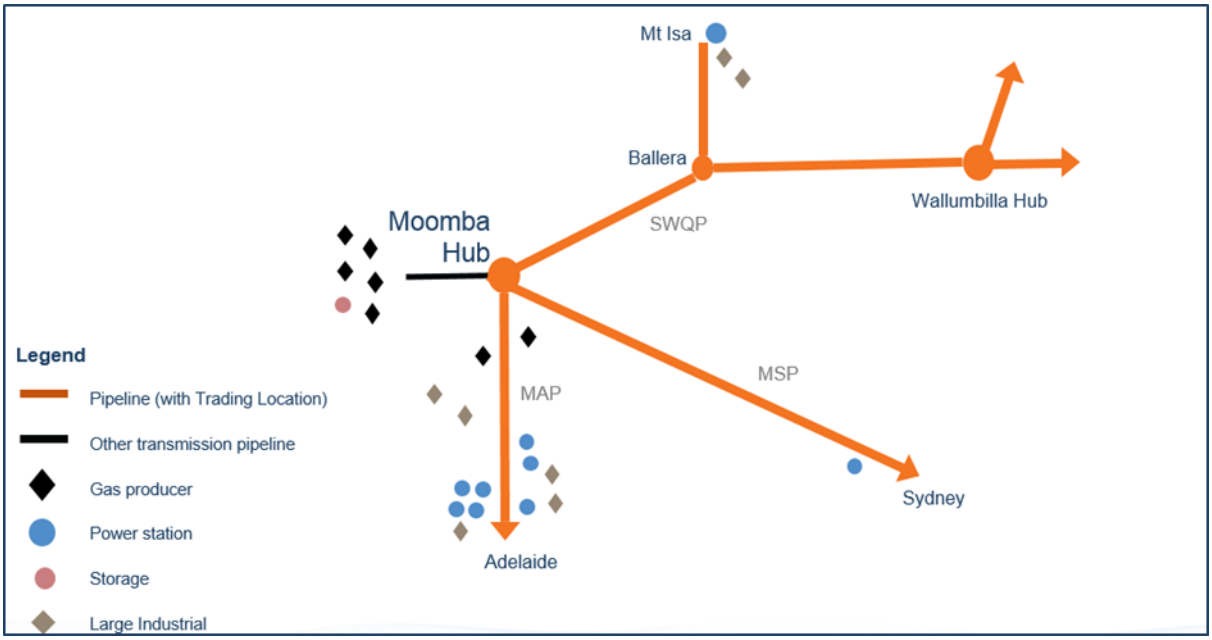


1.3 Moomba Hub

As a major trans-shipment point, Moomba is a natural location for wholesale gas trading. Like Wallumbilla, Moomba is located at the intersection of gas pipelines that supply downstream markets and large industrial users in eastern Australia. With its significant gas processing and storage capacity, a Moomba hub can pool together a broad spectrum of potential trading participants operating in southern/eastern Australia.

The Moomba Hub operates with the same market and legal framework as Wallumbilla. The standardisation of gas products and the easy-to-use electronic trading platform reduces transaction costs and assists short-term wholesale gas trading.

Figure 2 Moomba Gas Supply Hub



1.4 Market overview

1.4.1 Market framework

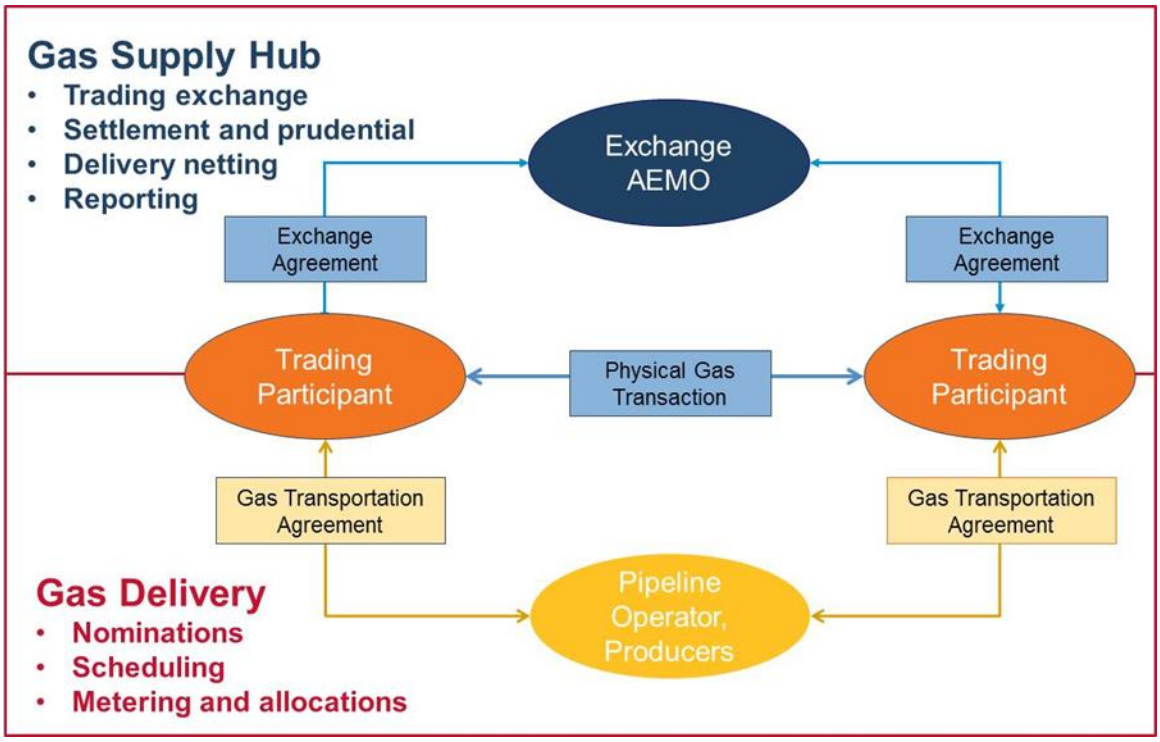
The Gas Supply Hub is an exchange for the wholesale trading of natural gas and compression services. Participants place anonymous offers (to sell) or bids (to buy) for a specified quantity at a specified price, which are automatically matched on the exchange to form transactions.

AEMO operates the exchange which is open daily for trading from 0900 hrs to 1900 hrs. AEMO provides additional services to support the trading activities, including:

- Settlement and prudential management of transactions.
- Netting gas delivery obligations for products traded more than one day prior to delivery.
- Reporting orders, transactions and settlement support data.

Trading Participants are responsible for delivering gas in accordance with their Gas Transportation Agreement with the relevant pipeline operator.

Figure 3 Market framework



1.4.2 Legal framework

The Gas Supply Hub has been established through amendments to the National Gas Law (NGL), National Gas Rules (NGR), an Exchange Agreement and a set of procedures. The Exchange Agreement sets out the terms of participation in the Gas Supply Hub and the terms governing transactions entered into through the exchange.

1.4.3 Participation

To participate in the Gas Supply Hub an organisation must become a member of the exchange and register to participate in one or more of the following three categories:

- Trading Participant: authorised to place orders and form Transactions through the exchange and can gain authorisation to enter into Reallocations.

- Reallocation Participant: authorised to enter into Reallocations only. Can gain access to the Exchange by registering in the category of Viewing Participant.
- Viewing Participant: authorised to view orders and transactional information through the trading exchange. Does not have any trading or financial involvement in the market.
- Broker Participant: an authorised broker has the ability to submit Over The Counter (OTC) trades to AEMO for settlement

1.4.4 Products

Products are for physically delivered gas, the terms of which include a warranty that the transacting parties have the necessary rights at the delivery point to give effect to the delivery and receipt of the gas. Products listed on the exchange are for the sale and purchase of gas delivered at one of the three major connecting pipelines at Wallumbilla or one of two pipelines connecting at Moomba. There are separate products for each pipeline (Trading Location) and delivery period (on-the-day, day ahead, daily, weekly and monthly).

Products are available on a short-term basis and provide Trading Participants with an efficient option for balancing their gas portfolio requirements around long-term agreements.

1.4.5 Trading Locations

Trading Locations are defined by a grouping of Delivery Points—either physical or virtual—to which gas is delivered and where title is transferred from a seller to a buyer. Trading Locations have been established in two regions comprising of Wallumbilla and Moomba.

Prior to 28 March 2017, the Wallumbilla trading locations were:

- The Roma Brisbane Pipeline (RBP),
- Queensland Gas Pipeline (QGP), and
- South West Queensland Pipeline (SWQP)).

From 28 March 2017, the Wallumbilla trading locations became a single location which incorporates all delivery and receipt points where gas can be traded, .i.e. points where title can be transferred:

- The South East Queensland (SEQ) trading location, which is the RBP In-pipe trade point.

The Moomba trading locations are:

- The Moomba Adelaide Pipeline (MAP), and
- Moomba Sydney Pipeline (MSP).

1.4.6 Gas delivery

The buyer and seller are responsible for the delivery of gas in accordance with their contractual arrangements with the relevant pipeline operator. To meet their gas delivery obligations, the buyer and seller need to make nominations to their pipeline operator.

A delivery netting service is provided for all products traded more than one day from delivery. Rather than deliver gas against each individual transaction, delivery netting produces a single net gas delivery obligation for each Trading Participant across their relevant transactions. Netting applies to gas delivery obligations only, all transactions must be financially settled.

The netting of gas delivery obligations eliminates the requirement to deliver offsetting delivery obligations (delivery and receipt) which in some cases could act as a hurdle to efficient portfolio management. Delivery netting also reduces the administration associated with nominations, measurement and communication of actual gas deliveries.

For each specific delivery period, trading in products that are not netted for delivery commences after trading in netted products has closed.

1.4.7 Settlements

The Gas Supply Hub features a centralised settlement model to settle transactions with AEMO facilitating payments from buyers to sellers. The centralised settlement model involves collating transactional information from the trading system, collating delivery information from Trading Participants, calculating settlement amounts, and issuing statements.

Participants must maintain credit support to cover the exposure associated with their transactions.

1.5 Structure of guide

This guide advises participants and interested parties about the operation of the Gas Supply Hub in the following areas:

- Legal Framework
- Participation
- Products
- Gas Trading Exchange
- Spread Products
- Gas Delivery
- Settlements and Prudential
- Trading Systems.

2. Legal framework

2.1 National Gas Law and Rules

AEMO operates the Gas Supply Hub as one of its statutory functions under the National Gas Law (NGL). The National Gas Rules (NGR) provide for the establishment of the Exchange Agreement, participation rights, and market conduct.

2.2 Exchange Agreement

The Exchange Agreement sets out the terms of participation in the Gas Supply Hub and the terms governing transactions entered into through the exchange. The body of the Exchange Agreement contains the trading, delivery and settlement obligations common to all products. The product specifications, which are schedules to the Exchange Agreement, contain details unique to each product. Queensland law governs the Exchange Agreement.

A person becomes a party to the Exchange Agreement, and bound by its terms, by executing a Membership Agreement with the Operator. Members must apply to be registered in one or more of three categories; Trading Participant, Viewing Participant or Reallocation Participant.

The Exchange Agreement may only be amended after consultation with members. AEMO must produce an impact and implementation report and allow at least one round of consultation allowing 20 business days for submissions (10 business days for minor, administrative or urgent amendments). Gas Supply Hub procedures are subject to the same amendment process.

2.3 Procedures

A suite of procedures, made in accordance with the Exchange Agreement and the NGR, outline detailed market processes and calculations. The procedures that form part of the Gas Supply Hub legal framework include:

- Settlement and prudential methodology
- Reallocation procedure
- Gas Supply Hub interface protocol
- Exchange fees
- Guide to security deposit.

2.4 Governance

The roles of governance bodies within the national energy market framework are:

- AEMO:
  - Establish and modify the Exchange Agreement.
  - Operation of the Gas Supply Hub.
  - The Exchange Agreement permits the Operator to give a default notice to a member for defined 'default events', such as financial default or insolvency events.
  - Investigate unusual market outcomes or behaviour and refer breaches of market conduct to the AER for further action.
- AER:
  - Monitor and enforce compliance with the NGL and NGR, in particular the market conduct rules.
- AEMC:
  - Rule-making function for the elements of the legal framework contained in the NGR.

3. Participation

3.1 Membership of the Exchange

To participate in the Gas Supply Hub an organisation must become a member of the exchange. An organisation becomes a member of the exchange by executing a Membership Agreement. The Membership Agreement binds the organisation to the terms of the Exchange Agreement.

3.2 Categories of Participation

To enter the market an organisation must become a member of the exchange, and register in one or more of the following categories:

Trading Participant

- Authorised to place orders and form transactions on the trading exchange. Provided with a licence for a user account to access the exchange. Additional user accounts can be established for a Trading Participant by purchasing additional licences.

- Can gain authorisation to transact settlement reallocations by making an application to AEMO Settlements.

Reallocation Participant

- Authorised to enter into settlement reallocation transactions.
- Can also register as a Viewing Participant.

Viewing Participant

- Authorised to view orders and transactional information through the trading exchange.
- Does not have any financial involvement in the market.
- Can use the Capacity Listing Service.

Trading Participants and Viewing Participants have access to the exchange and can view price and quantities of active orders and recent transactions.

In the Exchange Agreement, the term Market Participant is used in place of Trading Participant and Reallocation Participants when describing settlement and prudential obligations.

Viewing Participants pay an upfront annual fee for a licence to access the exchange, while Market Participant fees are recovered on a monthly basis through the transaction settlement process.

Broker Participant

- Authorised to enter OTC trades to AEMO for settlement
- Does not incur variable transaction fees as per the GSH Exchange fees schedule

Under this arrangement, the Broker Participant enters two 'netted' trades (i.e. stand on each side of the transaction) to ensure they have a net zero position and no gas delivery obligations. Trades are submitted to AEMO using the pre-match trade functionality and as such require the participants involved in the transaction to confirm the trade. The two Trading Participant trades are matched for delivery in AEMO's netting module as per the standard process (that is the non-broker parties involved in the trade may or may not be matched for delivery).

3.3 Registration process

An organisation intending to participate in the Gas Supply Hub can obtain the Membership Agreement and registration form from the registration page of the AEMO website.

The registration process is summarised in the following four steps:

1. Execute the Membership Agreement.

Applicants should conduct a legal review of the Exchange Agreement prior to executing the Membership Agreement. Once the Membership Agreement has been executed, the organisation becomes a member of the exchange and is bound by the terms of the Exchange Agreement.

2. Complete the registration form.
   - This step requires information relating to the organisation, participation category, the number of user accounts required for the Exchange Trading System, MarketNet connection, and contact details of the person submitting the registration.

More detailed information on how to register is available in the Gas Supply Hub Registration Guide.

3. Submit the Membership Agreement and registration form.

- Submit the completed application and all supporting documents to the registration desk. Trading Participants and Reallocation Participants must also complete and submit a Recipient Created Tax Invoice (RCTI) Agreement.

4. AEMO processes the registration application.
   - AEMO validates that the application contains all the necessary information. If additional information is required, AEMO will contact the person nominated on the registration form.
   - If approved, the organisation becomes a member and is registered in the nominated participation categories. If denied, the applicant will be notified of the reasons why it was denied.

Allow up to 15 business days for application processing.

4. Products

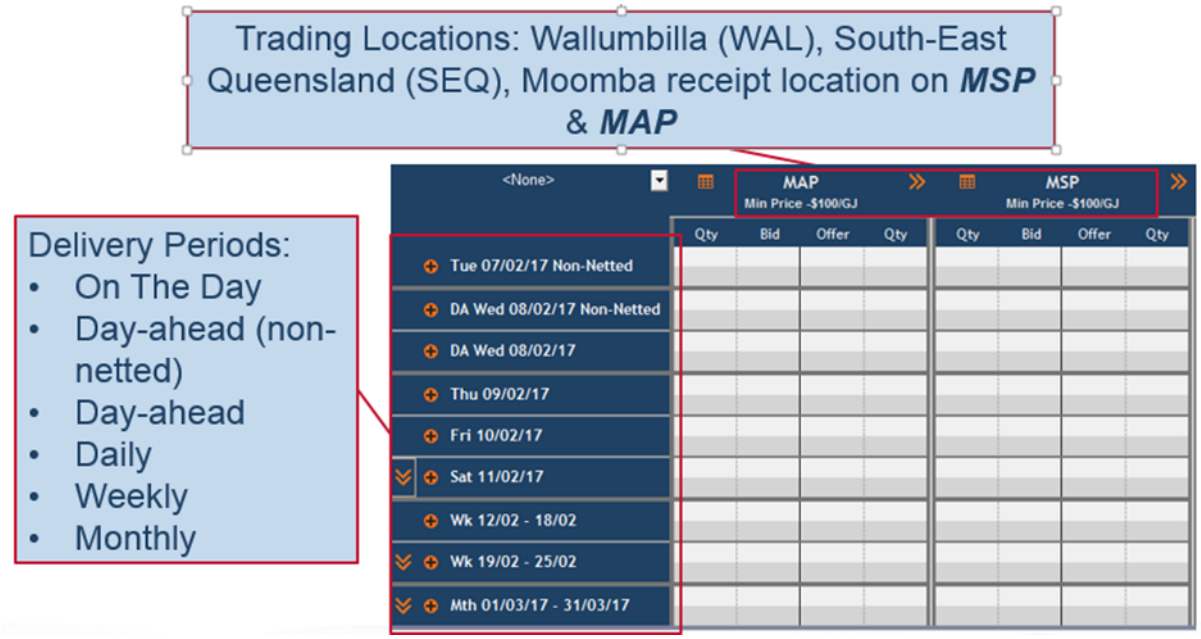
4.1 Products

Products are for physically delivered gas, the terms of which include a warranty that the transacting parties have the necessary rights at the delivery point to give effect to the delivery and receipt of the gas. There are separate Products for each pipeline (Trading Location) and delivery period (on the day, day-ahead non-netted, day ahead, daily, weekly and monthly).

The Exchange Agreement contains the standard terms and conditions for trading, gas delivery and settlement that are common to all Products. Product specifications, contained in the schedules to the Exchange Agreement, outline the details unique to each product.

In addition to the general definitions common to all products, each product has a specific Trading Location and Delivery Period. As shown below in Figure 4, products are grouped and presented on the exchange by Trading Location (columns) and Delivery Period (rows).

Figure 4 Display of commodity products on the exchange



4.2 General Definitions

4.2.1 Physical Delivery

All products require the physical delivery of gas. The location and specification of gas deliveries are detailed in the relevant product specification.

4.2.2 Gas Day

Gas delivery and settlement obligations are connected to each Gas Day within the delivery period of a 24-hour period commencing at 0600 hrs Australian Eastern Standard Time (AEST).

4.2.3 Transaction Quantity

The Transaction Quantity for all products is measured as a quantity per Gas Day (GJ/day). Minimum quantities and parcel size for the product are detailed in the product specifications found in the Exchange Agreement.

Unless otherwise agreed between the parties, gas delivery is at a constant hourly flow rate for the period of a transaction.

4.2.4 Transaction Price

The Transaction Price is a function of the price of the orders matched to form a transaction. All prices quoted on the exchange are in $/GJ to an accuracy of $0.01.

4.3 Delivery period

Each product listed on the exchange has a specific delivery period (tenor). Products are available for the following delivery periods:

- On the day (today)
- Day-ahead non-netted (tomorrow)
- Day-ahead netted (tomorrow)

- Daily (two to seven days ahead)
- Weekly (next four weeks)
- Monthly (next three months).

From On the day to Monthly, the product suite provides Trading Participants with the ability to trade up to 3 months in advance of the delivery period. As illustrated in Figure 4, spot and short-term forward products are available for trading through the Gas Supply Hub.

The presentation of these products on the exchange is shown below in Figure 5.

Figure 5 Delivery Periods listed on the Exchange

4.3.1 On the day

On the day products (previously called Balance-of-day) are traded and delivered on the same day as the transaction. The delivery period is a single Gas Day.

4.3.2 Day-ahead (non-netted)

The delivery period for the day-ahead product is a single Gas Day. The trading window for the day-ahead product opens at the start of 12:30 AEST on D-1 and closes at the end of that trading day.

The transaction requires delivery separate to other exchange transactions, that is the gas delivery obligations of a transaction in this product are not netted against any other transactions.

4.3.3 Day-ahead (netted)

The delivery period for the day-ahead product is a single Gas Day. The trading window for the day-ahead product opens at the start of trading on D-1 and closes at 12:30 AEST.

Day-ahead products are netted against other day-ahead, daily, weekly and monthly transaction obligations.

Note. This guide refers to market operations relating to a particular gas day D, including activities that occur before (D-) or after (D+) the gas day. The term D-1 refers to actions taken the day before the gas day with respect to gas day D.

4.3.4 Daily

The delivery period for the daily products is a single Gas Day. The trading window for the daily product opens on D-7 and closes at the end of the trading day on D-2.

Daily products have the same definition as the day-ahead products with the exception that the gas delivery obligations are netted against other day-ahead (netted), daily, weekly and monthly transaction obligations.

4.3.5 Weekly

The delivery period for the weekly products is a period of seven Gas Days beginning on a Sunday. Each Gas Day within the delivery period is treated as a separate delivery obligation. For example, a weekly product transacted for 1 TJ requires the 1 TJ to be delivered (and receipted) for each of the seven gas days within the delivery period.

The delivery period commencing on a Sunday (gas day D), with the trading window for the opening 4 weeks prior to gas day D and closing at the end of the trading day on D-2.

Weekly products are not available for the Wallumbilla Compression Service product.

Weekly products are traded as a stand-alone product and not as a strip of Daily contracts.

4.3.6 Monthly

The delivery period for the monthly products is a period of one calendar month. Like Weekly products, each Gas Day within the delivery period is treated as a separate delivery obligation.

Trading of the monthly products closes two days prior to the first delivery gas day of the contract.

Monthly products are traded as a stand-alone product and not as a strip of Weekly or Daily contracts.

4.3.7 Trading window

The trading window is the time period a product is made available for trading on the exchange. The trading window associated with each of the products is detailed below in Table 1.

Table 1 Trading window

Product	Trading window	Product instances	Gas delivery
On the day	The Balance of day product is available for trading on the gas day.	One active product	Each individual transaction must be delivered
Day-ahead (non-netted)	A gas day product that is available on for trading on the day prior to the delivery gas day, from 12:30 AEST.	One active product	
Day-ahead (netted)	A gas day product that is available on for trading on the day prior to the delivery gas day, up until 12:30 AEST.	One active product	Delivery obligations are netted
Daily	A gas day product that is available for trading between 2 and 7 days prior to the delivery gas day. All other specifications for the product are same as the Day-ahead product except that netting is applicable. (delivery netting is described in section 7.4).	Six active products	
Weekly	Trading commences on a Saturday four weeks prior to the commencement of the Weekly delivery period. Trading closes on the Friday (2 days) prior to the prior to the commencement of the Weekly delivery period.	Four active products	
Monthly	Trading commences three calendar months prior to calendar month of Gas Day D.	Three active products	

Product	Trading window	Product instances	Gas delivery
	Trading closes on D-2 prior the commencement of calendar month of Gas Day D.		

4.4 Trading Locations

The Trading Location of a product defines the locations at which gas delivery can occur. Each Trading Location consists of group delivery points, that are physical or virtual, at which gas is delivered to and where title is transferred from the seller (Delivering Participant) to the buyer (Receipting Participant).

The legal framework and market systems of the exchange provide the flexibility to add new delivery points to a Trading Location if required by industry.

4.4.1 Delivery Points

A Delivery Point is the specific location at which the delivery of gas, associated with a transaction, takes place. Delivery Points may either be physical or virtual points:

- A physical point is one that is defined by a specific piece of pipework, which is metered for the purposes of title transfer.
- A virtual point is one that covers a nominal location at which gas can be transferred between shippers by the infrastructure owner.

4.4.1.1 Multiple Delivery Points

Where practicable, the definition of the Trading Locations specify multiple Delivery Points. Providing that all buyers can access the delivery points, the more locations included in the definition of the Trading Location the greater the number of potential sellers that are able to trade that product.

To trade a product, a buyer must have the contractual right to receipt gas at each of the delivery points that form part of the Trading Location definition. The seller specifies a delivery point at the time of their order submission, which if matched becomes the delivery point of the transaction.

4.4.2 Wallumbilla

The Wallumbilla product (WAL) is a single product for commodity trading at the Wallumbilla hub. In March 2017 this replaced the 3 separate trading locations at Wallumbilla, which were Roma-Brisbane Pipeline (RBP), South West Queensland Pipeline (SWQP) and Queensland Gas Pipeline (QGP).

The Wallumbilla product include multiple delivery locations comprising the pipelines connecting at Wallumbilla. Buyers and sellers of the product are able to select their preferred delivery location.

4.4.3 South-East Queensland (SEQ)

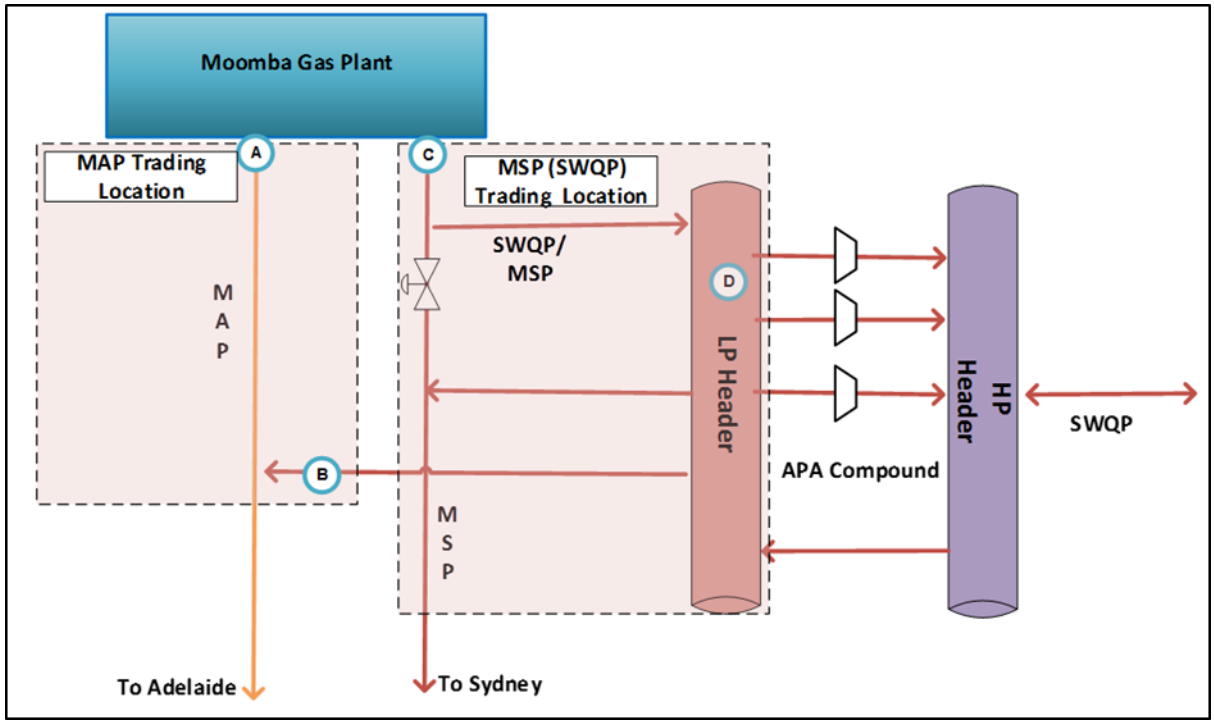
This product is for trading specifically on the RBP. Trading can only occur through the RBP In-pipe trade point. There are no Wallumbilla delivery points associated with this product.

4.4.4 Moomba

Trading locations have been created for each of the main pipelines connected to Moomba. Products link the delivery of gas to one of these standard Trading Locations.

4.4.4.1 Moomba Trading Locations

Figure 6 Moomba Trading Locations



As shown in Figure 6, the Moomba Adelaide Pipeline (MAP) Trading Location includes two physical delivery points:

- Point A – the Moomba physical point, which is the inlet at the Moomba Gas Plant into the MAP.
- Point B – The QSN point, which is the physical receipt point from the SWQP Moomba APA Compound.

The Moomba Sydney Pipeline (South West Queensland Pipeline) (MSP (SWQP)) trading location includes a physical and notional delivery point:

- Point C – the physical inlet at the Moomba gas plant into the SWQP pipeline at Moomba.
- Point D – a Notional point within the APA compound.

4.4.5 Schedule of Trading Locations

A schedule of the Trading Locations and their associated Delivery Points are specified in Schedule 2 of the Exchange Agreement and as summarised below in Table 2 and 3.

Table 2 Wallumbilla Trading Points

Pipeline	Point	Description
South West Queensland Pipeline	Wallumbillah High Pressure Trade Point (HPTP)	A virtual point, located in the high pressure header within APA's Wallumbilla compound
	Wallumbillah Low Pressure Trade Point (LPTP)	A virtual point, located in the low pressure header within APA's Wallumbilla compound Note: the Wallumbillah LPTP may be used by traders on the SGP, DDPL, BWP, RBP (western haul) or CRWP for the transfer
	Fairview	Interconnection of the SWQP and the Fairview Pipeline
	SWQP in Pipe Trade Point	A virtual point notionally located on the SWQP
Roma to Brisbane Pipeline	Run 3	Upstream of the common pipework header at the entry of the RBP from the SWQP through Wallumbillah Run 3
	Run 4	Centre of the orifice plate used to measure gas entering the RBP from the QGP through Wallumbillah Run 4
	Run 7	Centre of the orifice plate used to measure gas entering the RBP from the Spring Gully Pipeline through Wallumbillah Run 7
	RBP in Pipe Trade Point	A virtual point notionally located on the RBP

Table 3 Moomba Trading locations and delivery points

Trading Location	Facility Operator	Delivery Point Name	Delivery Point Description
MAP	Epic Energy	Moomba	Interconnection of the Moomba Gas Plant and MAP
		QSN	Interconnection of the QSN and MAP
MSP (SWQP)	APA Group	Moomba Gas Plant	Interconnection of the Moomba Gas Plant and SWQP at Moomba
		Moomba Compound notional trade point	Any notional trading point within the SWQP Compound nominated by the Gas Transporter at which transfers of title in gas can be effected

4.5 Alternate Delivery Point addendum

The Alternative Delivery Point (ADP) addendum is a standard contract that can document a bilateral agreement to carry out gas delivery at an alternative delivery point. The ADP addendum can be from an existing product location or a location that is not defined within an existing product (i.e. the delivery point does not have to be located at the Wallumbilla or Moomba hub).Trading participants can agree on an ADP when they receive their Delivery Obligation report post trade, or during an off-market trade negotiation for a Balance-of-Day and Day-Ahead product. The ADP addendum can also be used with non-netted products to negotiate and then designate an alternate delivery point for an off-market trade in all product tenors. For further information on non-netted products, see Section 8.5.

An alternate delivery point category has been added to the delivery locations list, allowing participants to designate their preferred delivery location with the ADP addendum. Key points of the ADP are:

- It is a standardised contract, which is not part of the Exchange Agreement, that AEMO makes available to trading participants on its website.
- Unlike other trades, these transactions are settled by AEMO as per the initial transaction details in accordance with the Exchange Agreement.

5. Gas Trading Exchange

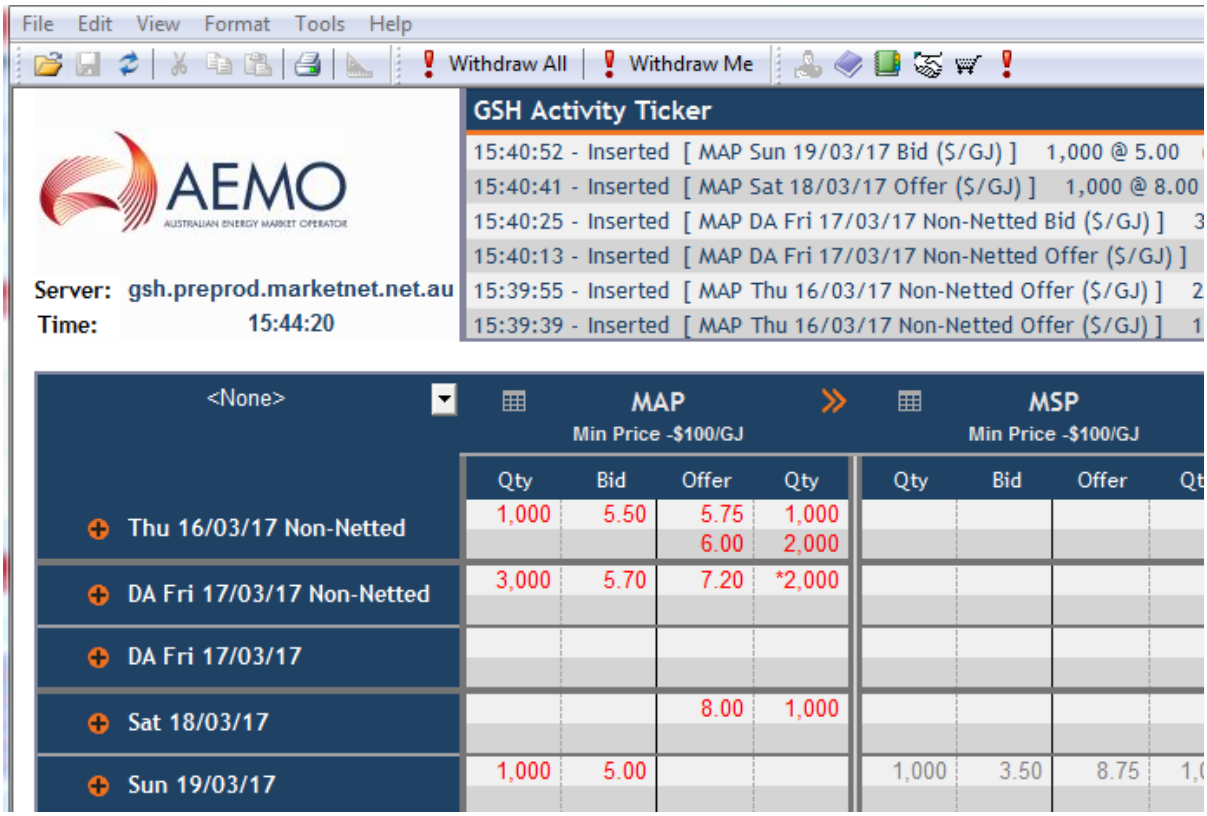
Trading Participants have direct access to the exchange to submit and manage orders for Physical Gas and compression service products. Matching orders for a product or service results in a transaction between the buyer and the seller.

The Gas Trading Exchange is built on Trayport's Global Vision Exchange Trading System (ETS). Trayport is a specialist provider of energy trading solutions to traders, brokers and exchanges worldwide.

The Exchange Trading System (ETS) consists of:

- A front-end user interface for direct trading access to the exchange,
- Real-time matching engine to form transactions,
- Order management and transaction reporting.

Figure 7 Screenshot of the Exchange Trading System



Note. All times displayed on the screen are local computer time.

In order to access the exchange, Trading Participants and Viewing Participants must install the ETS application on their workstations. The workstations must also be connected to the AEMO servers via AEMO MarketNet.

The ETS integrates into the market registration, settlement, prudential management and reporting systems (these components together comprise the Trading System). The ETS supports the Pre-trade, Order Matching and Post-trade processes detailed in this section of the document.

Guidance on the use of the ETS can be found in the Trader User Guide.

5.1 Pre-trade processes

An array of products, covering multiple Trading Locations and Delivery Periods, are available for trading on the exchange. Trading Participants must ensure they have the ability to fulfil their potential gas delivery obligations before they commence trading activities. AEMO does not verify that a participant has the necessary contracts or trading rights. There are potential consequences for a Trading Participant if gas delivery obligations are breached including:

- *Regulatory*: Gas delivery is a core obligation within the Exchange Agreement and compliance with these obligations are defined in National Gas Rule 543.
- *Financial*: If a Trading Participant breaches its gas delivery obligation, and the variance is outside the 5% tolerance, then it must pay compensation to its counterparty.

The order submission process, order components and validations are set out in this section. These apply to both the commodity and compression service products.

5.1.1 Order Submission Process

Trading Participants submit an order for a product onto the exchange to initiate the trading process. Trading Participants, once logged into the ETS, have direct access to submit orders onto the exchange:

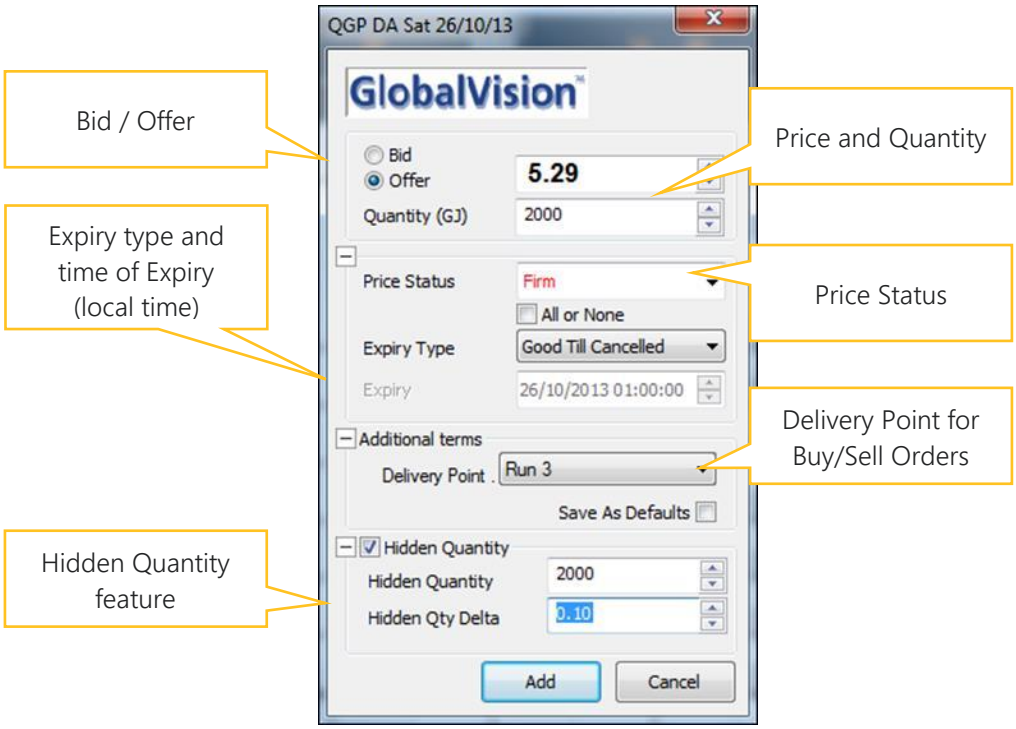
1. Trading Participants select the product they would like to trade and then complete the required information.
2. The order is validated by the Trading Systems
3. Confirmation of the order submission is provided on screen and through a market report.

All orders are anonymous within the exchange until a transaction is formed and the counterparty for delivery is communicated.

5.1.2 Order components

A valid order must be designated as a bid or offer and must contain a price and quantity. The exchange also allows a participant to specify order characteristics that determine the processing and validity of the order.

Figure 8 Order components



5.1.2.1 Bid / offer

The Trading Participant must indicate if the order is to buy or sell the product:

- Buy order (Bid) indicates that the participant is willing to receipt gas at the Trading Location at a price equal to or below their order price.
- Sell order (Offer) indicates that the participant is willing to deliver gas to the Trading Location at a price equal to or above their order price.

5.1.2.2 Delivery Point

A sell order must specify a Delivery Point. If transacted, the Delivery Point specified in the order is the location for gas delivery.

The Delivery Point field is active for buy orders for the Wallumbuilla product only.

5.1.2.3 Order price

Order prices are specified to an accuracy of 0.01 $ / GJ. The exchange has a minimum order price of -100.00 $/GJ and a maximum order price of 999.00 $ / GJ.

5.1.2.4 Order quantity

The quantity represents an amount of energy to be delivered or receipted at the Trading Location each gas day during the delivery period.

The order quantity must be greater than or equal to the minimum quantity and must be a multiple of the parcel size. The parcel size is the minimum permitted increment in the size of an order quantity.

The minimum quantity and the parcel size can vary by product and as such, the values of these parameters are detailed in the product specifications. For all products the minimum quantity and the parcel size is defined as a quantity (GJ) per gas day.

5.1.2.5 Price status

The Price Status order characteristic defines how the order is processed once it is submitted onto the exchange. Processing options available include:

- *Firm*: the order is capable of acceptance. If the order cannot be matched on submission then it continues to be active until it reaches its specified expiry.
- *Firm Fill or Kill*: the order is cancelled if it cannot be matched in its entirety at the time of submission.
- *Firm Fill and Kill*: as much of the order as possible is filled on submission of the order. Any remaining order quantity that cannot be matched is cancelled.
- *Withheld*: order is not active. Only the submitting participant (and AEMO) can view the order. The trading participant can reactivate the order later avoiding the re-entry of the order components.

Example: Fill and Kill

An offer for 10TJ is submitted with a price status of *Fill and Kill*. The order is matched with a bid that has an order quantity of 8TJ. The remaining 2TJ of the order cannot be filled and as such, it is cancelled.

5.1.2.6 All-or-none

If the *All-or-none* characteristic is selected then the order can only be accepted if the order quantity can be matched in its entirety. Orders not capable of partial acceptance are visible to other Trading Participants by the presentation of an asterisk (*) next to the quantity value on the ETS screen.

Orders with ***All-or-none*** selected are not included within the trading days' opening auction. Firm orders with this characteristic are withheld by the system prior to the auction and need to be ***re-firmed***, by Trading Participants when the trading session opens.

5.1.2.7 Expiry Type

Trading Participants can use the Expiry Type characteristic to specify the period of time the order remains active on the exchange. After the expiry period has lapsed, the order is automatically withdrawn by the ETS but can be reactivated (renew Price Status) by the Trading Participant.

Expiry Type options include:

- *Good till cancelled*: order expires at the end of trading for the selected product. For example, an order for a weekly product would remain active on the exchange until 5pm on the Friday prior to the delivery period.
- *Good for a Day*: the order remains active until the close of the current trading day.
- *Good till date*: the order remains active until the specific date and time.

Note. The selection of the ***Good till date*** option activates the ***Expiry*** field. This feature could be used by Trading Participants to manage specific nomination time obligations in accordance with their GTA or GSA. Time is local computer time and may not be market time, depending on your location.

All orders are withdrawn at the close of a trading day. An order can be reactivated once the market has entered the ***Pre-Open*** or ***Market Open*** status.

5.1.2.8 Hidden Quantity

The selection of the Hidden Quantity characteristic allows a participant to enter an order with a portion of the order quantity not visible to other Trading Participants. The Hidden Quantity characteristic could be used by a Trading Participant that has a relatively large order quantity that it would like released onto the exchange in parcels.

The Trading Participant enters a Hidden Quantity (GJ), which is the total of the additional gas to be made available if the order quantity is dealt. If the order is matched, a further portion of the hidden quantity (submitted order quantity) is activated on the exchange.

The Hidden Quantity can be released onto the exchange at a price different to the initial order price by submitting a value for the ***Hidden Qty Delta***. For an offer, the order price increases by the ***Hidden Qty Delta*** if it has a positive value (vice versa for bids).

5.1.3 Validation

The trading systems validates orders on submission, performing the following checks:

- The order contains all the required Order Components in the correct format.
- The order quantity and price adheres to the minimum, maximum and parcel size rules.
- The Trading Participant has adequate trading margin available to execute the transaction.

The Trading System does not permit a Trading Participant to submit a new or amended order if the execution of the order were to cause their prudential exposure to exceed their trading limit.

Prudential assessments are performed regularly during the gas day to assess the trading position (prudential exposure) of each Trading Participant against their credit support (trading limit). The prudential exposure of each Market Participant is updated over the course of the trading day with any new orders, transactions, reallocations or delivery variance settlement amounts. Similarly, a participant's trading limit is updated with any changes to its credit support.

5.1.4 Order confirmation

Once an order has been validated, it enters onto the exchange and is available for matching. If the order is successfully validated, then the Trading Participant receives confirmation through the ***Order Confirmation Report***. If the order fails validation, then the Trading Participant will be provided with on-screen notification that includes the reason the order failed validation.

The ETS also provides Trading Participants with an Order Book facility to review and manage their active orders. See the Trader User Guide for Exchange Trading System for details.

5.1.5 Order management

Participants can change or withdraw any orders that are completely or partially unmatched.

5.1.5.1 Order amendment

If an order is active on the exchange then a Trading Participant can amend one or more of the components of the order and resubmit the order onto the exchange. The amended order is validated on submission by the Trading System.

5.1.5.2 Order withdrawal

A Trading Participant can withdraw their active orders through the ETS. The withdrawal of an order means that it cannot be matched by the exchange and can only be viewed by Trading Participant that created the order. An order that has been withdrawn can be reactivated by a Trading Participant avoiding the need to re-enter the components of the order.

5.1.5.3 Order cancellation

Trading participants can cancel any orders that are completely or partially unmatched.

Additionally, AEMO may reject or withdraw any order where:

- The order, if matched (in full), would cause the trading participant to exceed its trading limits;
- The trading participant has already exceeded its trading limits; or

- The trading participant is suspended from trading.

5.2 Order matching

The exchange has an order matching process and rules for the matching of orders to form a transaction.

5.2.1 Order acceptance rules

The exchange matches bids and offers for a given product based on price/time priority:

- Orders are in the first instance matched based on price priority, with new offers matched against the highest price bid, and new bids matched against the lowest price offer.
- Where two or more orders for a product share the same price and are 'capable of being executed because the bid price exceeds the offer price (in the money), the order with the earlier submission time is matched first.

A bid and offer may overlap in price if orders from different participants enter the exchange around the same time or when a trading participant is dealing multiple orders at once (also referred to as Dealing Volume). In this event, and as per the general rule, the Transaction Price is set at the initiator's order price.

5.2.2 Order matching process

During the Market Open period, the exchange operates in a state of continuous automated trading, which means that a transaction is automatically formed by the exchange when two orders can be matched, in accordance with the order acceptance rules.

The process commences with the submission of an order by a participant. If the order cannot be matched (or part thereof) then it remains active on the exchange (subject to its Price Status). Such an order is referred to as the initiator's order for the purpose of this discussion.

A transaction is formed if another participant (the aggressor), with an opposing trade interest, aggresses the initiator's order by matching its order price.

The **Transaction Price** is the price of the **initiator's order**. The quantity of the **aggressor's order** that can be matched to the **initiator's order** is the **Transaction Quantity**.

5.2.2.1 Order matching example

The order matching process can be illustrated through an example bid and offer stack for a specific product as shown in Table 4.

Table 4 Order matching example – bid offer stacks

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
G	4,000	4.00		5.00	6,000	C
F	4,000	3.00		6.00	4,000	B
E	1,000	1.00		8.00	2,000	A

A transaction cannot be formed from between any of the bids and offers. Buyer G is willing to pay the most with a bid of $4 / GJ. However, the bid is $1 per GJ lower than Seller C's offer at $5 / GJ.

As shown in the example in Table 5, Buyer G increases its bid price to that of Seller C's offer price. A transaction is formed between Buyer G and Seller C for a quantity of 4,000 GJ at $5 / GJ.

Table 5 Example of order matching

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
G	4,000	4.00		5.00	6,000	C
F	4,000	3.00		6.00	4,000	B
E	1,000	1.00		8.		

Buyer G aggresses Seller C's order to execute transaction.

Once the transaction has been formed, all of Buyer G's order quantity has been matched but 2,000 GJ of Seller C's order remains active as shown below in Table 6.

Table 6 Example order matching – resultant bid offer stack

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
F	4,000	3.00		5.00	2,000	C
E	1,000	1.00		6.00	4,000	B
				8.00	2,000	A

5.2.3 Dealing Volume

The exchange provides participants with the ability to deal multiple orders with a single submission by entering an order for the cumulative volume at the highest (buying) or lowest (selling) order price.

This feature provides efficiencies for participants when entering trades. Instead of entering separate orders at different prices, the submitting party can realise the same outcome with a single order submission.

5.2.3.1 Dealing Volume example

To illustrate the Dealing Volume feature, consider the bid and offer stacks presented in the previous example (Table 6). The stacks show that the parties closest to executing a match are seller C and buyer G, but there remains $1.00 between the bid and the offer price and as such, a transaction cannot be formed.

Table 7 Example bid offer stack – dealing a volume

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
G	4,000	4.00		5.00	6,000	C
F	4,000	3.00		6.00	4,000	B
E	1,000			8.00	2,000	A

Initiator's orders that will be aggressed by Buyer D

Buyer D enters a bid for 12 TJ at a price of $7.00/GJ.

The following two matches results in transactions at the initiator's order price:

- Buyer D and Seller C match for 6 TJ @ $5.00/GJ
- Buyer D and Seller B match for 4 TJ @ $6.00/GJ

In this example, the unfilled 2 TJ from Buyer D's order remains in the bid stack at $7.00/GJ with the resultant order stacks shown below in Table 8.

Table 8 Resultant bid offer stack – dealing a volume

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
D	2,000	7.00		8.00	2,000	A
G	4,000	4.00				
F	4,000	3.00				
E	1,000	1.00				

Buyer D's residual order quantity.

5.2.4 Matching restrictions for *All-or-none* orders

The *All-or-none* order characteristic (see section 5.1.2.6) can be used by a Trading Participant when an order is capable of full acceptance only. As the order is capable of being matched only in its entirety, an order with this characteristic may be skipped if another order with a different price/time priority is capable of acceptance.

Table 9 Example bid offer stack – All-or-none

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
G	4,000	4.00		5.00	6,000	C
F	4,000	3.00		6.00	4,000*	B
E	1,000	1.00		8.00	2,000	A

Seller B's order is *All-or-none*.

Buyer D enters a bid this time for a 9 TJ quantity at a price of $7.00/GJ. Buyer D is matched with Seller C to form a transaction:

- Buyer D and Seller C match for 6 TJ @ $5.00/GJ

After matching Seller C, Buyer D only requires a further 3 TJ. As Seller B is not willing to accept partial acceptance (All-or-none) the trading system progresses to the next offer (if there is one) which is capable of acceptance. As a result, a transaction is formed with Seller A:

- Buyer D and Seller A match for 2 TJ @ $7.00/GJ

Table 10 Resultant bid offer stack – All-or-none

Buyer	Qty (GJ)	Price ($/GJ)		Price ($/GJ)	Qty (GJ)	Seller
D	1,000	7.00		6.00	4,000*	B
G	4,000	4.00				
F	4,000	3.00				
E	1,000	1.00				

Seller B's order is all-or-none.
Order price is less than the bid price.

Buyer D's residual order

No further transactions can be formed leaving the unfilled 1 TJ from Buyer D active in the bid stack at $7.00/GJ as shown above in Table 10. Seller B's order is All-or-none and as such it cannot be matched with any of the active orders resulting in the crossing of the bid and offer price.

5.2.5 Pre-matched trades

The exchange provides a mechanism for participants to bring a bilateral trade to the market for settlement.

Note. Pre-matched trades are also called off-market trades and manual trades.

The facility can be used by parties:

- that do not have bilateral trading arrangements,
- prefer the centralised settlement and credit support of the exchange, and
- for the netting of gas delivery obligations against other exchange transactions.

All gas delivery and settlement obligations are in accordance with the product of the registered trade.

Pre-matched trades must comply with the requirements of orders (and resulting transactions) for the relevant product specification. A pre-matched order is taken to have been accepted and a Transaction formed (a Pre-matched Trade) when both trading participants have confirmed the order details within the ETS.

The time of transaction for pre-matched trades (deal time) is the time at which the ***initiator*** confirms the details of the pre-matched trade.

Note. Deal time shown on the deal confirmation window is ***local computer time***.

5.2.6 Opening auction

The exchange runs an opening auction to match any overlapping bids and offers (crossed) activated during the Pre-Open period. The opening auction will run prior to the commencement of the continuous trading period (Market Open). Transactions formed through the opening auction are executed at a single opening (auction) price.

Note. Orders with the All-or-none characteristic selected ***are not*** included in the opening auction.

5.3 Post-trade

Once a bid and offer is matched by the ETS the counterparties is notified that a trade has been executed through Trade Execution Report.

If delivery netting is applicable to the product then the trade confirmation does not contain the details of counterparty and delivery point.

5.3.1 Displaying active orders and recent transaction history

Trading Participants and Viewing Participants can view the price and quantity of active orders and recent Transactions through the ETS.

5.3.1.1 Deals Window

The transaction history of specific products can be viewed through the Deals Window of the ETS. The Deals Window shows details of the most recent 1,000 deals held in the ETS. See the Trader User Guide for Exchange Trading System for details. The Deals Window functionality within Trayport can be used to manage a trading participant's trade book across multiple Products.

Note. Time viewed through Deal window and Order management screens is in computer local time.

5.3.1.2 Product statistics

The ETS allows the viewing of the following transaction statistics:

- Current bids and offers including price and quantity,
- The last transacted price for a product,
- High and low price for a trading window,
- Aggregate quantity traded for a trading window.

5.4 Pipeline capacity listing service

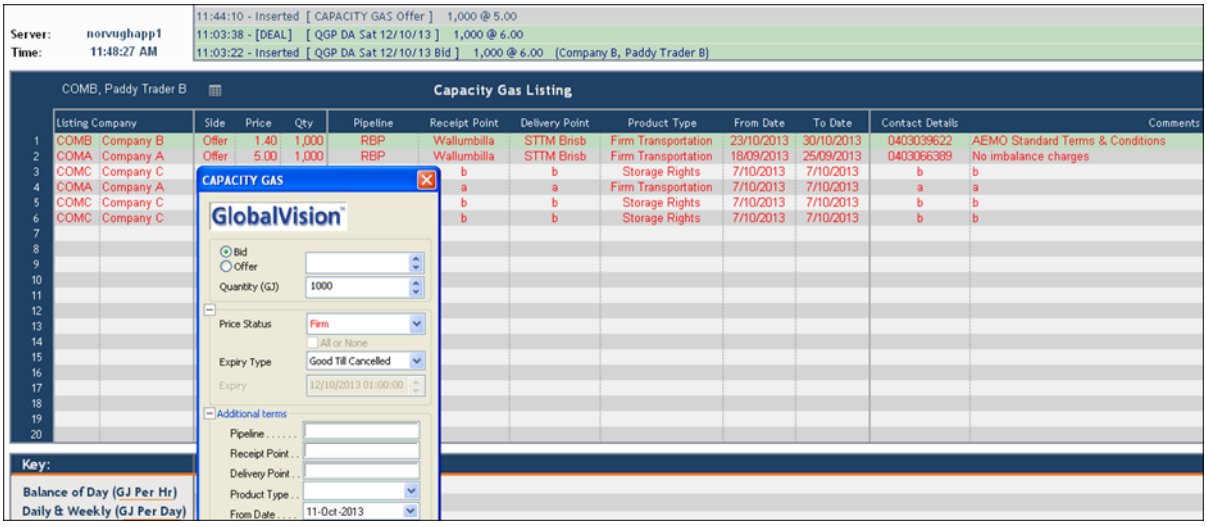
AEMO has implemented a capacity listing service in conjunction with the commencement of the Gas Supply Hub. AEMO has developed the capacity listing service to support voluntary shipper-to-shipper (Bare Transfer) trading of pipeline capacity, which allows participants to advertise an interest to buy or sell spare gas transportation services. The listing functionality can also be used for other services such as storage or compression services.

5.4.1 Listing service

Access to the capacity listing service is through the ETS. Both viewing and trading participants can use the ETS to list capacity. The capacity listings are available on a trading screen adjacent to the gas commodity trading screens to help participants identify gas commodity and transportation trading opportunities.

Once a participant has submitted their capacity listing it is made available for other participants to view through the ETS as per the example shown below. The capacity listing is displayed up until the expiry date submitted by the listing party.

Figure 9 Capacity gas listing screenshot



5.4.2 Information Requirements

The listing party provides the following information as part of their capacity submission:

- *Receipt and Delivery Point*: Available for trade between shippers for the transportation of gas between a receipt point and a delivery point.
- *From Date and To Date*: The term of the gas transportation services available for trade.
- *Product Type*: The type of service offered by the listing participant. May include firm transportation, storage rights.

- *Volume*: The volume of gas transportation services available for trade.
- *Order Type*: The submitting participant registers their interest to buy or sell.
- *Listing Party*: Name and contact details of the submitter is recorded so that potential counterparts can obtain their contact details.
- *Expiry date*: The capacity listing remains active and visible on the screen up until the expiry date entered by the listing participant.

5.4.3 Bilateral negotiation process

The capacity listing service provides a facility for participants to identify potential trading counterparties. Once participants have been matched they will initiate a bilateral negotiation of a capacity trade.

A capacity trade can be initiated as follows:

1. Participants submit information about spare capacity available to trade.
2. AEMO presents capacity listings on the ETS trading screen.
3. A Trading Participant with a matching interest to any of the capacity listings retrieves the contact details of the submitting participant.

Bilateral negotiation processes (outside of the Gas Supply Hub):

4. Trading Participants commence bilateral negotiation of shipper-to-shipper capacity transaction.
5. Operational obligations in accordance with agreed transaction - nominations, allocations etc.
6. Billing and financial settlement of capacity transaction.

AEMO and industry have developed terms and conditions for the trading of capacity.

5.5 Trading statistics

AEMO reports on the average transaction price and the aggregate quantity of transactions at the end of each day:

- ***Daily transaction summary report***: is a summary of trades executed during the trading day including high and low prices, total traded quantities and number of trades.
- ***Historical gas day transaction report***: average price for historical gas days.

The average price is determined for each Gas Day and Trading Location as a volume weighted average of transaction prices across all products. The average price is used in the settlement of energy reallocations and in the settlement of delivery variations for netted products.

6. Spread Products

6.1 General overview

Spread products link the trading of physical gas between two trading locations. The price of a spread product represents the difference in the price of physical gas traded at the two locations. Moomba-Wallumbilla and Wallumbilla-SEQ spread products are listed on the exchange. The products link trading between the MSP trading location (Moomba) and the WAL trading location (Wallumbilla), as well as Wallumbilla and South-East Queensland (SEQ).

Trading participants, typically those that intend to buy or sell a transportation service, can enter an order in the spread product (referred to as an outright order). The matching of spread product orders creates a transaction in the Moomba and Wallumbilla products or Wallumbilla and SEQ products.

The exchange creates a link between the spread product and two physical gas products. This link allows the exchange to generate and display implied orders by combining the orders in the linked products.

6.2 Legal framework

Spread products and implied orders are defined in the Exchange Agreement as follows:

- *Spread products*
  - A spread product links the trading of physical gas products at two different locations. An order for a spread product represents an offer to enter into a transaction as a buyer at one location and to enter into a transaction as a seller at another location. Matching of orders in a spread product occur in accordance with the rules for physical gas products (as set out in section 5.2).

Off-market trades are not permitted for Spread Products.

- *Implied orders*
  - The link created between a spread product and the related products allows implied orders to be displayed on the exchange. Implied orders are a means by which participants are informed about what bids and offers for products would result in transactions in physical gas products. Transactions in each of the related products are generated if an implied order is aggressed by a trading participant.

Product specifications for Spread Products are set out in Schedules 14, 15 and 16 of the Exchange Agreement. The specifications define the physical gas products that are linked together by a spread product (for example, day-ahead Wallumbilla and MSP products). The specifications also define the trading window, default delivery points, default reference price, parcel size and price limits.

6.3 Spread product conventions

6.3.1 Related products

Spread products link trading between two physical gas products. The Moomba-Wallumbilla spread product links trading between the MSP trading location (Moomba) and the WAL trading location (Wallumbilla), and the WAL and SEQ trading locations. The matching of Moomba-Wallumbilla spread product orders generates transactions in the WAL and MSP products, and the matching of Wallumbilla-SEQ spread product generations transactions in the WAL and SEQ products.

6.3.2 Pricing convention

The price of a spread product represents the price differential between two trading locations.

The specification of a spread product requires a convention to be defined for the pricing of a premium market. In setting the pricing convention it is assumed that gas will flow from one trading location (base product) towards a higher priced trading location (premium product). As such, a positive spread product price reflects a notional gas flow from the base product to the premium product.

In the case of Moomba and Wallumbilla, the hubs are physically connected by the SWQP. While flows will change direction depending on supply and demand, long-term forecasts are for gas flows predominately from Moomba to Wallumbilla. The pricing convention for the Moomba-Wallumbilla spread product is therefore based on flows from Moomba to Wallumbilla, and as such:

- MSP trading location (Moomba) is the base product, and
- WAL trading location (Wallumbilla) is the premium product.

The Moomba-Wallumbilla spread product has a positive value for gas notionally moving east to Wallumbilla, and a negative value for gas notionally moving west to Moomba. In accordance with the pricing convention for Moomba-Wallumbilla Spread Products, buy and sell order prices represent:

Spread Product *buy* order price = Wallumbilla *buy* order price *less* Moomba *sell* order price

Spread Product *sell* order price = Wallumbilla *sell* order price *less* Moomba *buy* order price

Examples:

Spread Product buy order ($1.50) = Wallumbilla buy order at $1.50 premium to the Moomba sell order.

Spread Product sell order ($2.50) = Wallumbilla sell order at $2.50 premium to the Moomba buy order.

Spread Product buy order (-$1.25) = Wallumbilla buy order at $1.25 discount to the Moomba sell order.

6.3.3 Default Delivery Point

For physical gas products traded through the GSH, the seller nominates the Delivery Point for a transaction when submitting an order.

When submitting a spread product order, the seller does not provide a delivery point. Because a delivery point is not provided as part of the order submission, a default delivery point is assigned to each trading location. For the Moomba-Wallumbilla Spread Product the default delivery points are:

- APA compound Notional Trading Point for the MSP trading location, and
- Wallumbilla Notional Point for the WAL trading location.

When outright spread product orders are matched, the default delivery point is applied to both transactions.

There are scenarios where an implied order is generated from orders that include an offer for the Base or Premium product. In the event the implied order is matched, the delivery point submitted as part of the order for the Base or Premium product will be the delivery point for that transaction.

6.4 Outright spread product orders

Traders enter a spread product price and quantity when submitting an outright order. When two outright spread product orders are matched, the exchange knows the difference between the price of the two trading locations but not the price at which the trades should be set. As such, a reference price is used to set the transaction prices for the Moomba and Wallumbilla trades.

The reference price methodology uses the price of the most recent (on the trading day) transaction at either trading location if available. If no trades have occurred on the trading day then the default reference price (Wallumbilla Benchmark Price - see section 12) is used in the calculation.

Example: ***Matching outright orders in a spread product***

Trader A places an outright spread product bid for $1.25/GJ. Trader B submits an outright spread product offering for the spread product at $1.25/GJ. As a result, the exchange matches the orders.

For this example, it is assumed that the most recent trade on the day for the Wallumbilla product is $6.15/GJ.

The matching of spread product orders creates the following Wallumbilla and Moomba transactions:

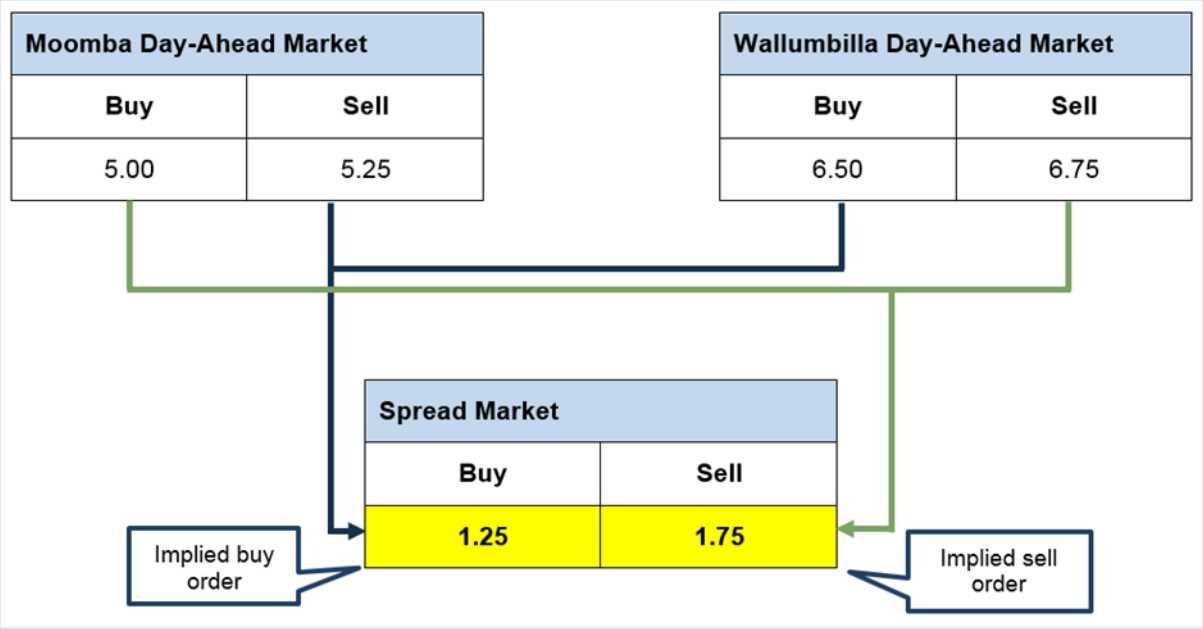
- Trader A buys gas from Trader B at Wallumbilla for $6.15 (as per reference price), and
- Trader A sells gas to Trader B at Moomba for $4.90 (reference price less Spread Product price).

6.5 Implied spread product orders

Spread product orders when combined with a buy or sell order in one of the linked trading locations creates an implied order. The price of an implied order reflects the price required to form a transaction in the related products. The quantity for the implied order is the lesser of the quantities for the orders used to calculate the implied order.

Section 6.8 outlines the potential implied orders that may be formed by combining orders in related products as well as the order price at which it would be displayed.

Example**: **Implied Spread Product order



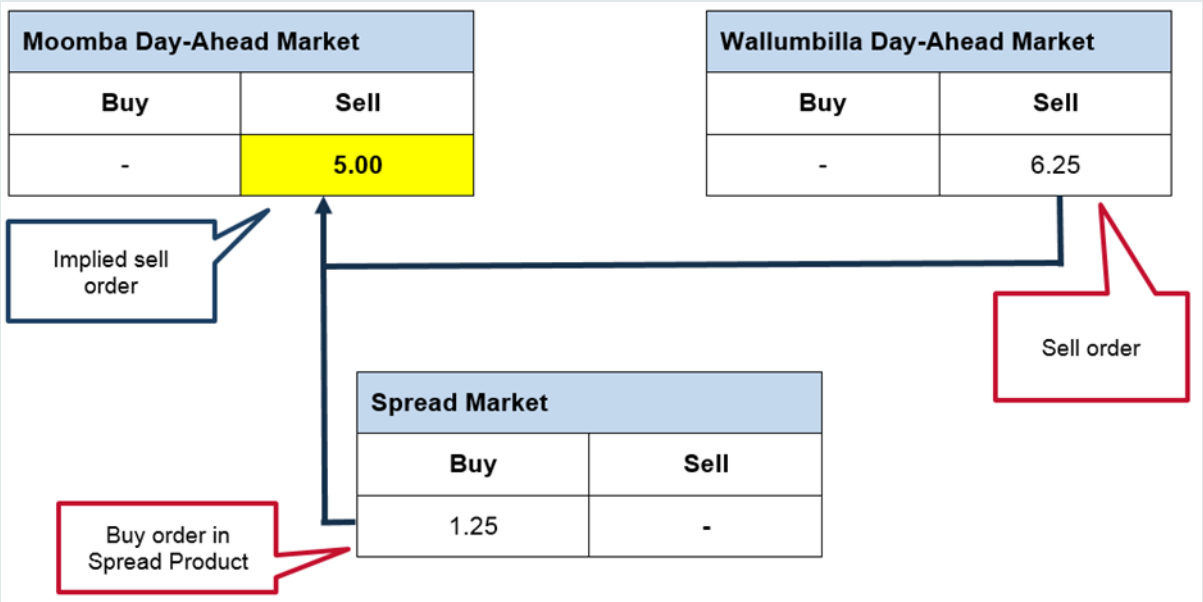
Trader A places a sell order of $5.25/GJ in the Moomba product. Trader B places a buy order of $6.50/GJ in the Wallumbilla product. This creates an implied buy spread product order of $1.25 / GJ.

Trader C places a buy order of $5.00/GJ in the Moomba product. Trader D places a sell order of $6.75 in the Wallumbilla product. This creates an implied sell spread order of $1.75/GJ.

In this example, Trader E who holds pipeline capacity to transport gas from Moomba to Wallumbilla sells the spread product at $1.25/GJ. The matching of spread product orders would create a transaction in the Wallumbilla and Moomba products:

- Trader E buys gas at Moomba for $5.25 (matched with the Trader A's sell order in the Moomba product), and
- Trader E sells gas at Wallumbilla for $6.50 (matched with Trader C's buy order in the Wallumbilla product).

***Example**: Implied sell order from Spread Product*



Trader A enters a buy order for $1.25 / GJ in the spread product. Trader B enters a sell order at Wallumbilla for $6.25/GJ. This creates an implied sell order in the Moomba product of $5.00/GJ.

In this example, Trader C aggresses the implied sell order in the Moomba product of $5.00/GJ. The action, combined with the Trader A's spread product order and Trader B's Wallumbilla sell order, allows transactions to be created in Wallumbilla and Moomba products:

- Trader A sells gas at Moomba for $5.00/GJ (matched with Trader C that aggressed the implied order), and
- Trader A buys gas at Wallumbilla for $6.25/GJ (matched with Trader B's sell order at Wallumbilla).

6.6 Spread product – negative order prices

In accordance with the pricing convention, a negative price in the spread product occurs when the price of gas is higher at Moomba than it is at Wallumbilla (a notional flow from Wallumbilla to Moomba).

The exchange permits orders in the spread product to have a negative price.

***Example**: Negative order price for spread products*

Active orders in the market:

- Trader B places a bid to buy gas at MSP for $6.00 / GJ.
- Trader C places an offer to sell gas at SWQP for $4.00 / GJ.
- The combination of Trader B and Trader C's orders creates an implied offer of -$2.00 for the spread product.

In this example, Trader A has a Gas Transportation Agreement for the transportation of gas from Wallumbilla to Moomba. Trader A submits a bid for the Spread Product at a price of -$2.00 / GJ. The exchange matches the spread product orders creating the following transactions:

- Trader A buys gas from Trader C at the SWQP trading location for $4.00 / GJ, and
- Trader A sells gas to Trader B at the MSP trading location for $6.00 / GJ.

6.7 Settlement and Prudential

The matching of spread product orders generates a Moomba/SEQ and a Wallumbilla transaction. These transactions are settled as per the normal settlement process (see Section 10). The Moomba/SEQ and Wallumbilla transactions may also be subject to the delivery netting process if applicable to those products (see Section 8). A spread product does not form any transactions, and hence there is no settlement in a spread product.

On submission of an order in the ETS, AEMO conducts a credit risk validation process to ensure the trading participant has sufficient credit to meet their prudential requirement if the order were to be transacted. If the trading participant has insufficient credit, the order is rejected, as outlined in Section 11.3. For a Spread Product order, the credit risk validation process is based on the Spread Product price and quantity.

The prudential requirements for the Moomba/SEQ and Wallumbilla transactions that are formed through the matching of orders in the Spread Product are as per the GSH Settlements and Prudential Methodology for the relevant products and delivery periods.

6.8 Pricing of implied orders

Table 11 presents the potential combination of orders that may generate implied orders, as well as the price of that implied order.

Table 11 Potential combination of orders

Product A	Product B	Implied Order	Pricing for Implied Order
Bid for the Premium Product	Offer for the Base Product	Bid for the Spread Product	Spread Product Price equal to A - B
Offer for the Premium Product	Bid for the Base Product	Offer for the Spread Product	Spread Product Price equal to A - B
Bid for the Premium Product	Offer for the Spread Product	Bid for the Base Product	Price equal to A - B
Offer for the Premium Product	Bid for the Spread Product	Offer for the Base Product	Price equal to A - B
Bid for the Base Product	Bid for the Spread Product	Bid for the Premium Product	Price equal to A + B
Offer for the Base Product	Offer for the Spread Product	Offer for the Premium Product	Price equal to A + B

7. Market operation

7.1 Market operation

The Gas Supply Hub trades seven days a week. Trading hours (Market Open) are 09:00 hrs to 19:00. The ETS operates in a mode of continuous trading throughout the Market Open period.

Gas Supply Hub market time is Australian Eastern Standard Time (AEST). No adjustments for daylight saving are made.

Each product has a set trading window that defines the period when orders can be submitted and when matching can occur.

Business Days for the supply hub are **National Business Days**, the same as other AEMO operated markets.

Each trading day (24 hours) is divided into three distinct periods:

- Pre-Open 08:30 – 09:00
- Market Open (trading session) 09:00 – 19:00
- Market Closed 19:00 – 08:30

Pre-matched, non-netted trades can be traded 24 hours, 7 days per week for the Wallumbilla and Moomba trading locations.

7.1.1 Order submission

Order submission for a product commences at the beginning of the trading window (midnight) for the respective delivery period and ceases at 19:00 on the last day of the trading window.

7.1.2 Pre-Open period

At the commencement of the Pre-Open period, all orders have the status of 'withheld'. Trading Participants can activate their orders during the Pre-Open period. Trading participants can also enter new orders and amend or cancel existing orders during the Pre-Open period.

The exchange runs an opening auction to match overlapping bids and offers at the end of the Pre-Open period.

Note. Orders with the All-or-none characteristic selected are not included in the opening auction.

7.1.3 Market open (continuous trading period)

The market operates daily from 09:00 to 19:00 hrs. Transactions can be formed during the *Market Open* period only. Trading Participants can also enter, amend and cancel orders during the *Market Open* period.

At the close of the trading session all firm orders are changed to 'withheld' status.

7.1.4 Market closed

The market is closed from 19:00 to 08:30 hrs. In this period, trading participants can cancel orders. The ETS permits the submission of new orders or the amendment of existing orders, but these orders are assigned the status of *withheld* and need to be activated by the Trading Participant during the *Pre-Open* or *Market Open* periods in order to be available for matching.

Table 12 provides a summary of the trading activities available to trading participants for each market status.

Table 12 Permitted actions during market periods

Market status (Trayport term)	Permitted actions on new orders	Status of firm order if not amended	Permitted actions on existing orders
Pre-Open	Trading participants can: • Enter new orders with status 'firm' • Enter new orders with status 'withheld'	Firm	Trading participants can: • Withhold orders • Cancel orders • Re-firm orders • Modify orders
Market Open		Firm	
Market Closed	Trading participants can:	Withheld	Trading participants can: • Cancel orders

Market status (Trayport term)	Permitted actions on new orders	Status of firm order if not amended	Permitted actions on existing orders
	• Enter new orders with status 'withheld'		• Modify orders but status remains 'withheld'

During the Pre-Open period, the same actions are permitted as the Market Open period except that there is no matching of orders.

7.1.5 Market support

Settlement services, including funds transfer and management of bank guarantees, are performed on business days only. If a trading participant breaches its trading limit over the weekend then it needs to wait until the next business day to post additional collateral so that it can resume trading.

Settlement calculations and prudential assessments are automated and run at least once each business day. The daily settlement calculations use the latest exchange transactions and delivered gas quantities confirmed by Participants.

Participants are issued market reports each day that detail their exchange transactions, delivery obligations and indicative settlement obligations.

7.1.6 Support available to Participants

Information and help desk service for Gas Supply Hub market operations are provided by the AEMO Information and Support Hub. The Information and Support Hub also assists Participants with the resolution of IT related problems. Support for IT related problems is available 24 hours, 7 days a week through the Support Hub phone number. Contact details are available through the AEMO website[2].

7.1.6.1 Working days

The Information and Support Hub operates during business hours.

Support to participants is provided on:

- Market operations
- Trading outcomes
- Prudential management
- Settlement outcomes

7.1.6.2 Weekends

Support on the weekend is restricted to handling requests on:

- Participant access to the systems (account resets, network connectivity etc.)
- Issues relating to participant interfaces to the market and availability of reports/data
- Addressing trading system issues and notifying participants if the service is unavailable.

7.1.7 Suspension of trading

AEMO will suspend operation of the ETS (entire exchange or individual products) where it confirms that there is a problem with the trading system.

The suspension triggers include:

- The Trading System has been unavailable to Trading Participants for a period of 15 minutes or longer.
- Core functionality of the exchange isn't available:

[2] AEMO Support Hub, at http://www.aemo.com.au/Contact-us.

- Order submission,
- Execution of transactions, or
- Prudential validation of orders.

7.1.8 Process for trading suspension

Normal supply hub processes, such as settlement and delivery confirmation, continue during trading suspension to the extent possible.

The process for suspending the market is as follows:

1. AEMO determines that a trigger event has occurred.
2. AEMO suspends operation of the ETS operation and sets the status of all orders to '*withheld*'.
3. AEMO issues a notice to participants of the trading suspension; providing as much notification and information on the expected duration as possible.

7.1.9 Process to re-open trading

AEMO will notify participants as soon as practicable of the expected duration and anticipated time of conclusion of the trigger event and when normal trading processes will resume. If trading suspension is to be extended beyond the expected duration time, then a notification of this delay will be provided.

The process re-opening the market is as follows:

1. Issue a notice to participants containing the time at which the market suspension is lifted.
2. A pre-opening period precedes the re-commencement of trading and begin when AEMO lifts the trading suspension. The opening procedure, which matches any overlapping bids and offers, runs just prior to the resumption of trading.
3. Open market for trading.

7.2 Market conduct

Part 22 of the National Gas Rules for the Gas Supply Hub includes Rules relating to market conduct, which seek to protect the integrity of the market. In complying with the Rules, participants have a general obligation to observe high standards of market conduct and to act with due skill, care and diligence in using the trading system and performing transactions. Specific conduct obligations extend to the submission of orders, the provision of information to AEMO, compliance and performance of transactions.

7.2.1 Monitoring by AEMO

If AEMO has reasonable grounds to believe a Member has breached the Rules, AEMO may raise the matter with the Member concerned and, if it is satisfied with the Member's response, take no further action.

AEMO may also refer the conduct to the Australian Energy Regulator (AER).

7.2.2 Monitoring by AER

The AER is charged with ensuring that members act in compliance with the market conduct rules.

The AER may in conjunction with its monitoring role request that AEMO suspend a Member in relation to market conduct. AEMO must comply with this request.

A breach of the Market Conduct Rules may lead to AEMO declaring that a Default Event has occurred.

8. Gas delivery

8.1 Overview

The trading of Physical Gas products creates an obligation for the seller to deliver gas and for the buyer to take receipt of that gas. Buyers and sellers are responsible for the delivery of gas in accordance with their contractual arrangements with the operator of the relevant pipeline.

The delivery process consists of the following steps:

1. AEMO informs the trading counterparts of their gas delivery obligations including the delivery counterpart, quantity and Delivery Point.
2. The Trading Participants make nominations to the relevant pipeline operator to meet their gas delivery obligations. A party that has not made gas delivery nominations in accordance with the transaction requirements is in breach of the exchange agreement.
3. The pipeline operator schedules gas in accordance with the Trading Participant's nominations.
4. The pipeline operator provides allocation data to the Trading Participants.
5. Trading Participants determine the Actual Delivered Quantity against each gas delivery obligation.
6. Trading Participants can provide actual gas delivery information to AEMO if they choose to settle a variation through the market as part of the regular billing period transaction settlement process.

Figure 10 Gas delivery process

8.2 Gas delivery obligations

Gas delivery obligations (also referred to as delivery transactions) are generated in one of two ways:

- Delivery obligations that are linked to a transaction (non-netted products), or
- Netting of gas delivery obligations across relevant transactions. (netted products)

Trading in netted and non-netted products for a specific delivery are separated. For a given Gas Day, trading in netted products runs up until 13:00 one day prior to the gas day (D-1). Trading in non-netted products commences at the start of the next Trading Day.

Netting is applicable to the gas delivery obligations associated with Day-ahead (netted), Daily, Weekly and Monthly products.

Table 13 Application of netting to products

Product	Delivery Netting
On-the-Day	Netting is not applicable
Day-ahead (non-netted)	
Day-ahead (netted)	Delivery obligations are netted
Daily	
Weekly	
Monthly	

8.2.1 Delivery Point – Moomba only

The designation of the Delivery Point at the Moomba trading locations to a transaction is a seller led process

1. Seller must specify a Delivery Point at time of order entry. The Delivery Point specified by seller becomes the transaction delivery point.
    a. If the product is netted for delivery then delivery point associated with the most recent transactions are applied to the gas delivery obligation.
2. Once orders have been matched to form a transaction, the buyer and seller receive a report detailing the assigned Delivery Point.
    a. If the product is netted for delivery this confirmation is issued after the netting process has been completed.
3. Buyer nominates to the relevant pipeline operator for the receipt of gas at the Delivery Point.
4. Title transfer occurs in accordance with the allocation agreement at the Delivery Point.

8.2.2 Delivery Point – Wallumbilla only

At Wallumbilla, when entering orders both buyers and sellers nominate a preferred location for gas delivery. Buyers and sellers are matched on the exchange based on price and quantity to form transactions.

After a transaction has occurred, to minimise gas delivery obligations, the netting process will first attempt to match participants' netted trades at preferred locations or within priority groups. Any trade position unable to be matched at a more preferential point will be matched at the Wallumbilla high pressure trade point (this is the default point).

8.2.3 Delivery Quantity

Physical Gas products require a quantity of gas to be delivered (Delivery Quantity) each Gas Day within the delivery period. For products that netting is applicable to, the Delivery Quantity is the Trading Participant's net quantity across all relevant transactions. Where netting is not applicable, the Delivery Quantity is equal to the Transaction Quantity.

Within each Gas Day, and unless the parties have agreed to an alternative delivery profile, gas is to be delivered uniformly across the Gas Day.

8.2.4 Gas specification

The seller must ensure that gas delivered meets the quality specification and is within the pressure range for the relevant delivery point. Gas quality and pressure specifications are defined in the product schedules.

Note. Section 14.5 of the Exchange Agreement outlines the responsibilities and the process for managing off-specification gas.

8.3 Individual contract delivery

Gas delivery obligations associated with transactions made less than two days prior to the delivery Gas Day are not netted against other transactions. Gas must be delivered by the seller to the buyer in accordance with each individual transaction:

- Delivery parties are those that are party to the Physical Gas Transaction.
- Delivery Quantity is equal to the Transaction Quantity.
- Delivery Point is specified by the Seller as part of their order submission.

8.4 Netting of delivery obligations

8.4.1 Delivery netting concept

The netting of gas delivery obligations allows a Trading Participant to enter into buy and sell transactions to adjust their gas delivery position prior to the delivery gas day. The netting of gas delivery obligations eliminates the requirement to deliver offsetting delivery obligations which in some cases could act as a hurdle to efficient portfolio management.

Delivery netting also reduces the number of transactions that must be delivered by Trading Participants which reduces the administration associated with nominations, measurement and communication of actual gas deliveries.

Netting applies to gas delivery obligations only; all transactions must be financially settled.

Example: ***Delivery netting***

Gas Producer has spare gas production above its long-term gas sale commitments.

Gas Producer sells 5 TJ of the Weekly product for the period Sun 22/06 to Sat 28/06 (Run3) at 3:00pm on 4 June.

The following week the Gas Producer decides to reduce its sell position, purchasing of 5TJ of the Weekly product for the period Sun 22/06 to Sat 28/06 at 11:00am on 11 June.

The producer decides to make additional sales for Gas Day 26/06 entering into transactions:

- Sell 5 TJ for Gas Day 26/06 (Run 7) at 10:30am on 24 June 2014.
- Sell 5 TJ for Gas Day 26/06 (Run 3) at 2:15pm on 24 June 2014.

AEMO determines each Trading Participant's net delivery position by aggregating buy and sell transactions across all netted products for each Trading Location and Gas Day. AEMO matches net buy and net sell positions to form a gas delivery schedule. Trading parties remain anonymous until the gas delivery schedule is issued to participants.

The delivery netting process differs between Moomba and Wallumbilla trading locations.

Note. Netting applies to gas delivery obligations only. All transactions entered into on the exchange are financially settled.

8.4.2 Delivery netting process

The delivery netting process runs every day at 13:00. Transactions in products subject to delivery netting are retrieved for the calculation of the net delivery position.

AEMO determines each trading participant's net delivery position and then match those net delivery positions amongst participants to form a delivery schedule.

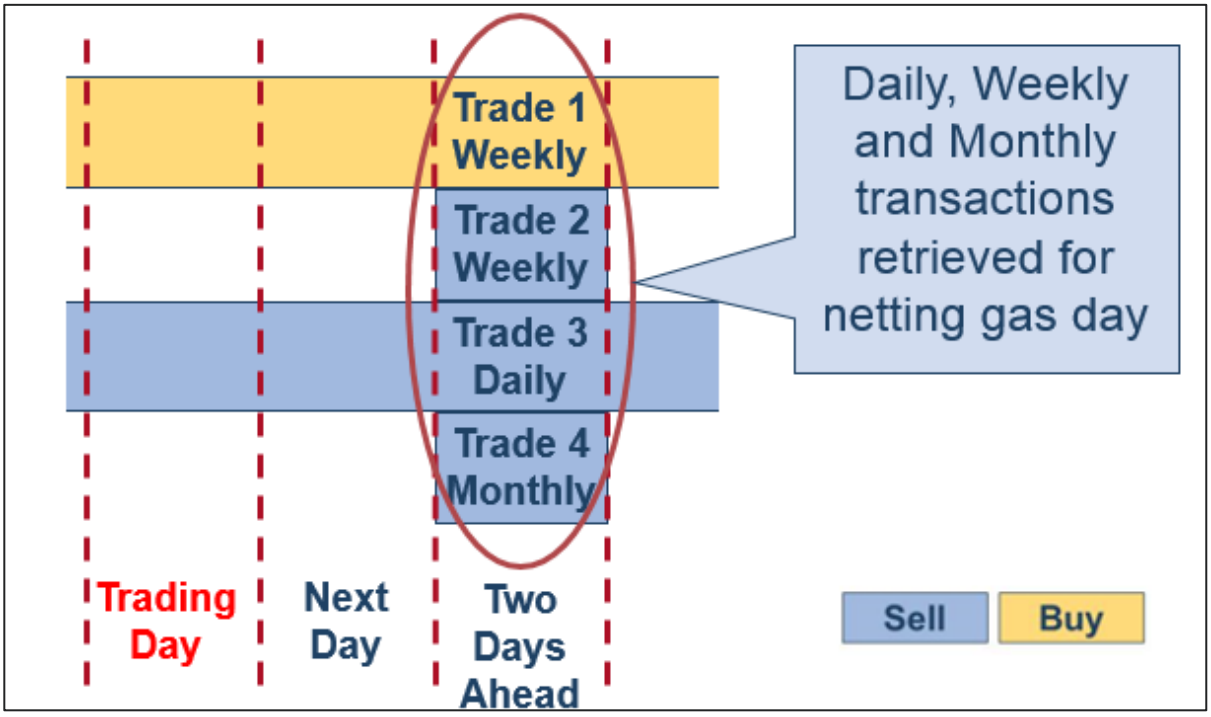
AEMO then issues a gas delivery schedule to Trading Participants so that they can carry out their gas delivery obligations.

8.4.3 Transactions eligible for netting

If netting is applicable to a product then it is defined as such in the product specification. The netting of delivery obligations is applicable to all ***Day-ahead (netted), Daily, Weekly*** and ***Monthly*** products. Pre-matched transactions are included in the delivery netting process, unless the Wallumbilla or Moomba Non-netted product is used.

As shown in Figure 11, following the close of the trading day AEMO retrieves all Daily, Weekly and Monthly transactions covering the netting gas day (D-2).

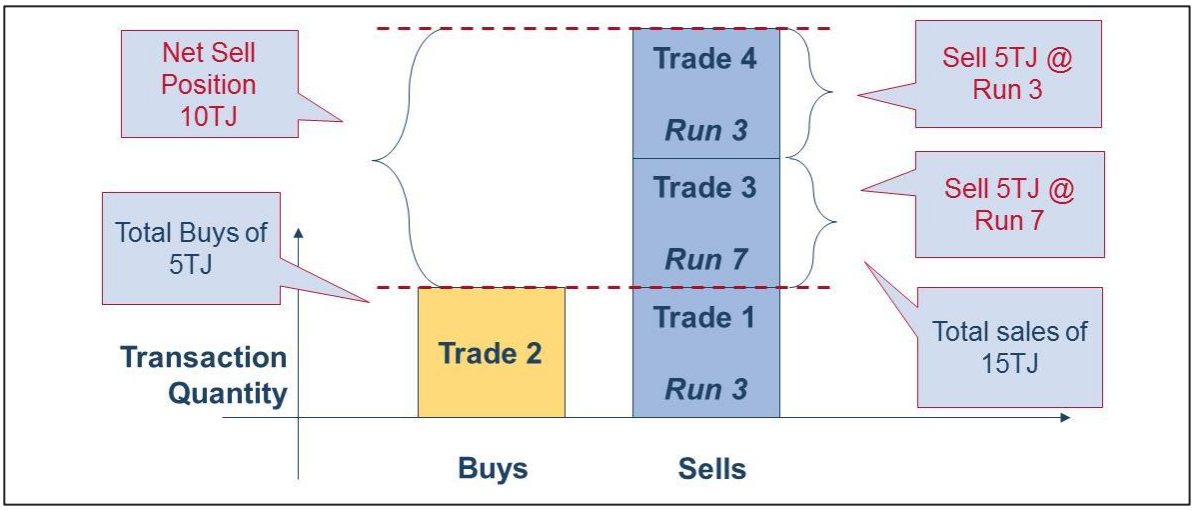
Figure 11 Netted Transactions



8.4.4 Net delivery position

Offsetting buy and sell transactions are aggregated together to determine a net delivery position for each gas day and Trading Location. In the case of Weekly and Monthly transactions, each gas day within the transaction is considered at close of trading on D-2 when calculating a participant's net gas day position.

Figure 12 Net delivery position



The Delivery Point submitted by a seller at the time of their order submission is applied to their net position.

However, a Trading Participant may enter into offsetting buy and sell transactions that could result in multiple delivery points being be attributable to a net position. In this event, the Delivery Points associated with the most recent transactions are applied to the net position. The net position is split by Delivery Point so that the inputs to the matching process have a single Delivery Point.

Example*: *Delivery netting

The Gas Producer has aggregate purchases of 5TJ, aggregate sales 15TJ and a net sell position of 10TJ.

There are multiple Delivery Points associated with the net position, as such the latest transaction information is assigned to the net position:

- Trade 4: Sell 5 TJ for Gas Day 26/06 (Run 3) at 2:15pm on 24 June 2014
- Trade 3: Sell 5 TJ for Gas Day 26/06 (Run 7) at 10:30am on 24 June 2014.

If a trading participant has a net zero delivery position, then it does not have a gas delivery obligation.

8.4.5 Delivery schedule

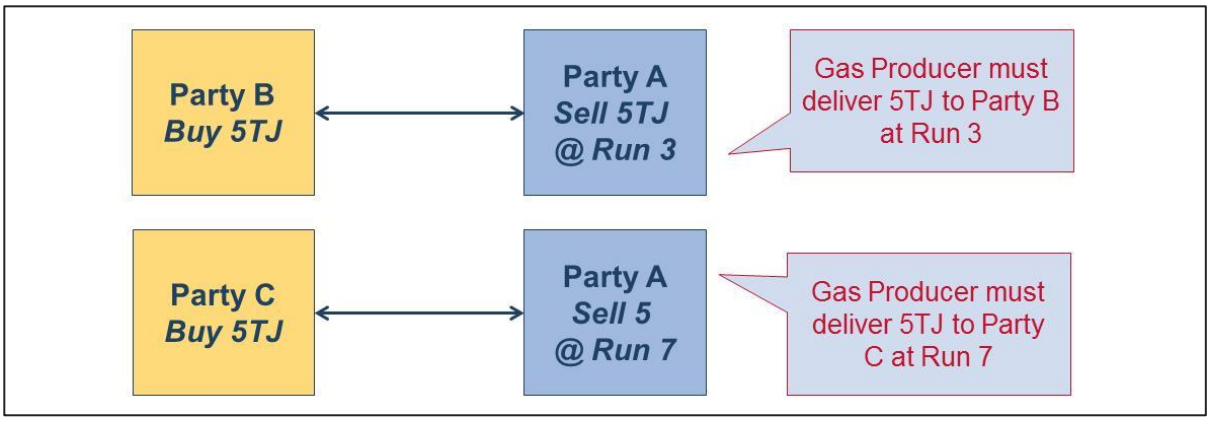
Net delivery and receipt positions are matched together to form gas delivery obligations. AEMO uses a simple matching algorithm that aims to minimize the number of matched delivery obligations.

Example*: *Delivery netting

The Gas Producer is matched with parties that have complementing net buy positions to form the delivery schedule:

- Gas Producer must deliver 5TJ to Party B at Run 3.
- Gas Producer must deliver 5TJ to Party C at Run 7.

Figure 13 Matched delivery schedule



Each matched delivery obligation consists of a gas day, delivering participant (or seller), a receipting participant (or buyer), the gas delivery quantity and the delivery point at which gas must be delivered to.

The party to each matched delivery obligation is provided with a delivery schedule at the completion of the delivery netting process.

8.4.6 Gas delivery information

Information required by Trading Participants to carry out their gas delivery obligations is issued to participants in the ***Delivery Obligation Report***. The ***Delivery Obligation Report*** contains:

- Gas Day
- Gas delivery counterpart
- Delivery Quantity
- Delivery Point.

The report is issued through the reporting system to Trading Participants that are a party to a gas delivery obligation each time a new obligation is created:

- At the completion of a delivery netting schedule, and
- Upon the execution of a transaction that is not netted for delivery.

The report is also issued to Trading Participants after the end of trading each day containing all of their gas delivery obligations for Gas Days in the future.

Trading Participants with a zero net position are informed of their net gas delivery position in the ***Delivery Obligation Report***.

8.5 Non-netted transactions

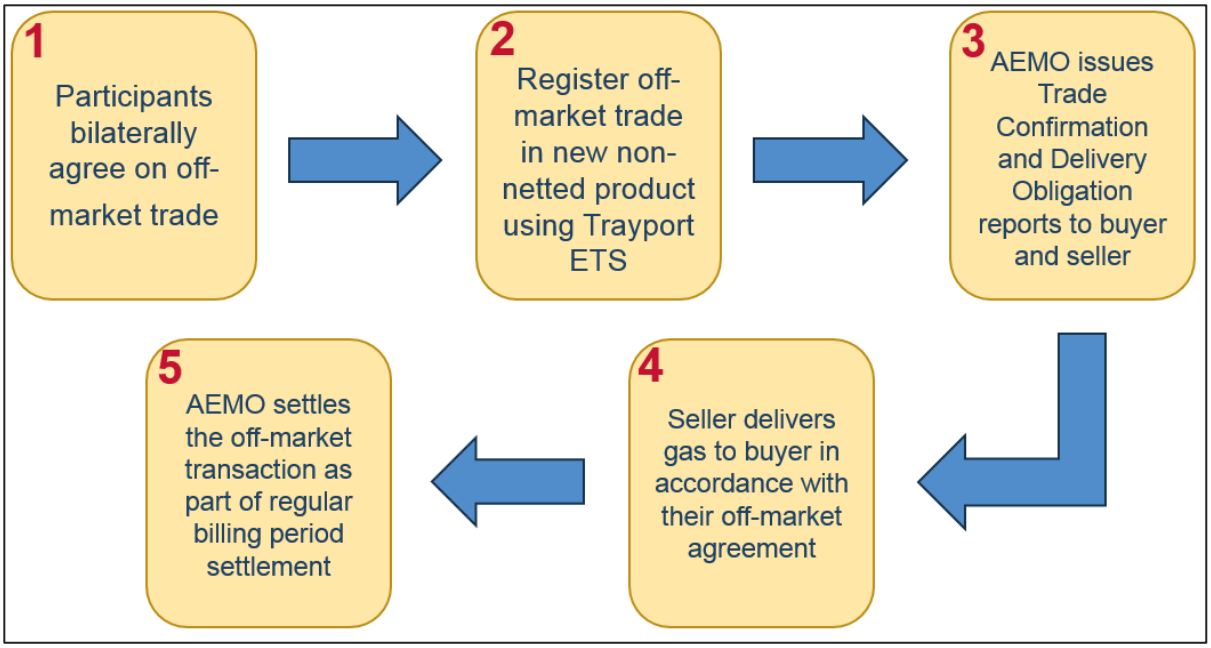
The exchange provides trading participants with the ability to register an off-market trade that is excluded from the gas delivery netting and matching process. The delivery obligations (including delivery counterpart and delivery point) for a non-netted transaction are as per the details registered for the off-market trade.

Registration of a non-netted transaction can be made by trading participants using the ETS. Non-netted transactions are registered against a separate product (for example, Wallumbilla Non-Netted) and is only available for an off-market trade. The registration of non-netted transactions could occur in conjunction with the Alternate Delivery Point addendum to document and designate a delivery point that is not defined within an existing GSH product. Delivery locations for non-netted product are existing delivery points located at Wallumbilla hub or an alternate delivery point.

Note. Non-netted transactions are available for Wallumbilla trading locations only.

Because trades in this product are not netted, participants need to make delivery on a transaction even if they have an offsetting position for the gas day.

Figure 14 Off-market non-netted trade process



8.6 Actual Delivered Quantity

The Actual Delivered Quantity is determined by Trading Participants based on allocation data or metered data provided to them by the relevant pipeline operator. The Actual Delivered Quantity must be determined in accordance with the allocation agreement relevant to the Delivery Point associated with the gas delivery obligation.

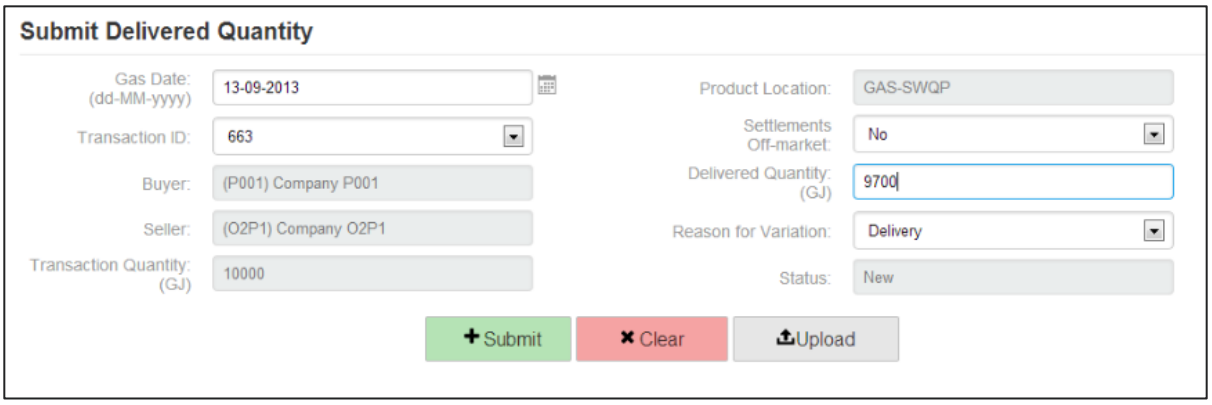
Transactions are settled at the transaction price and quantity (face value) and as such any variation in Actual Delivered Quantity from the transaction quantity must be settled between the parties. Parties can elect to settle a variation from the transaction quantity bilaterally which would allow parties to agree, outside of the market, to physically settle the obligation by delivering gas on subsequent gas day. Alternatively, Trading Participants can provide actual gas delivery information to AEMO so that the variation can be settled through the market as part of the monthly billing period settlement process.

8.7 Delivered Quantity interface

A web-based interface is available for Trading Participants to communicate actual gas delivery information to AEMO for settlement purposes:

- The gas day and delivery obligation reference,
- The Actual Delivered Quantity, and
- The reason for the delivery variation.

Figure 15 Delivered Quantity Participant interface



Trading Participants that are party to a gas delivery are responsible for submitting and confirming the actual gas delivery information. The receipting participant or the delivery participant can submit the actual gas delivery information. The information is not used in settlements until it is confirmed by the counterparty.

In addition to the manual web-based interface Trading Participants can upload or FTP a file containing multiple delivery records.

Note.

More information about the file submission of gas delivery information can be found in the Guide to Gas Supply Hub CSV File Transactions.

8.8 Failure to meet gas delivery obligations

Failure to deliver or receipt gas is a breach of the Exchange Agreement. The sole remedy for Trading Participants for a breach of the gas delivery obligations within the Exchange Agreement is the Delivery Variance Settlement mechanism. The Delivery Variance Settlement mechanism allows a variation between the gas delivery quantity and actual delivered quantity to be brought to AEMO for settlement as part of the monthly billing process.

Force majeure applies to gas delivery obligations but only to the extent that the cause of the gas delivery variation is due to an issue at the physical pipeline point that is outside of the control of the delivering participant and the receipting participant.

If a Trading Participant is the subject of repeated breaches of their gas delivery obligations, then it could be in default in accordance with the Exchange Agreement.

Repeated failure to deliver gas is also a Suspension Event under the Exchange Agreement, for which the Operator may impose a Trading Halt. AEMO may also apply the strict seller margin rule as an alternative to a Trading Halt on the occurrence of a Suspension Event. This provides increased protection for buyers and compliance incentive without necessarily excluding the trading participant from trading.

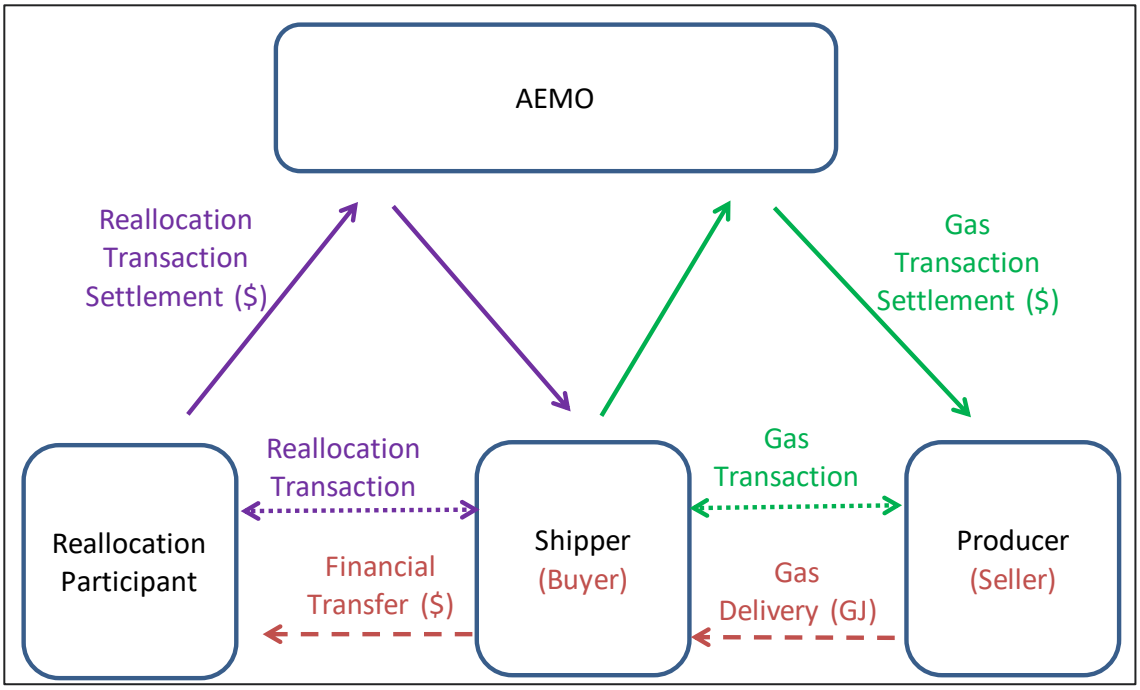
9. Settlement reallocation

9.1 Reallocations

A reallocation is a financial arrangement between two Market Participants and AEMO to transfer settlement commitments between the Market Participants.

Figure 16 below illustrates the interaction between AEMO, a Reallocation Participant (the Debit Participant), the buyer (the Credit Participant) and the seller of a Physical Gas Transaction.

Figure 16 Reallocation Cash flow



The parties to a Reallocation must be authorised by AEMO:

- *Financial participants:* can register as a Reallocation Participant. Allows the Reallocation Participant to enter into reallocations with other Market Participants.
- *Trading Participants*: must lodge a written request for authorisation to use reallocations.

A Reallocation can be for a single Gas Day or may span multiple Gas Days and multiple Billing Periods.

Settlement Amounts are determined with respect to each Gas Day within the term of a Reallocation in accordance the Settlements and Prudential Methodology. If a Reallocation covers multiple Billing Periods, then the Reallocation Amount for each Gas Day is settled for the Billing Period in which that Gas Day falls.

Once a Reallocation Request has been registered, an estimate of the Reallocation Amounts are incorporated in the calculation of a Market Participant's Prudential Exposure in accordance with the Settlements and Prudential Methodology.

9.2 Reallocation Types

The Gas Supply Hub (consistent with the NEM) supports two reallocation types:

- *Dollar Reallocation ($):* The Dollar Amount specified for each Gas Day of the Reallocation is debited to a Market Participant (Debit Participant) and credited to another Market Participant (Credit Participant).
- *Energy Reallocation (GJ):* The Reallocation Amount debited to the Debit Participant and credited to the Credit Participant is the product of the Energy Reallocation Quantity (GJ/day) and the Applicable Reference Price ($/GJ). The Reallocation Request for Energy Reallocations must specify a Trading Location, which determines the Applicable Reference Price.

9.3 Reallocation process

Authorised Market Participants can enter into a Reallocation with another Market Participant by following the process set out in the Reallocations Procedure. The process is summarised as:

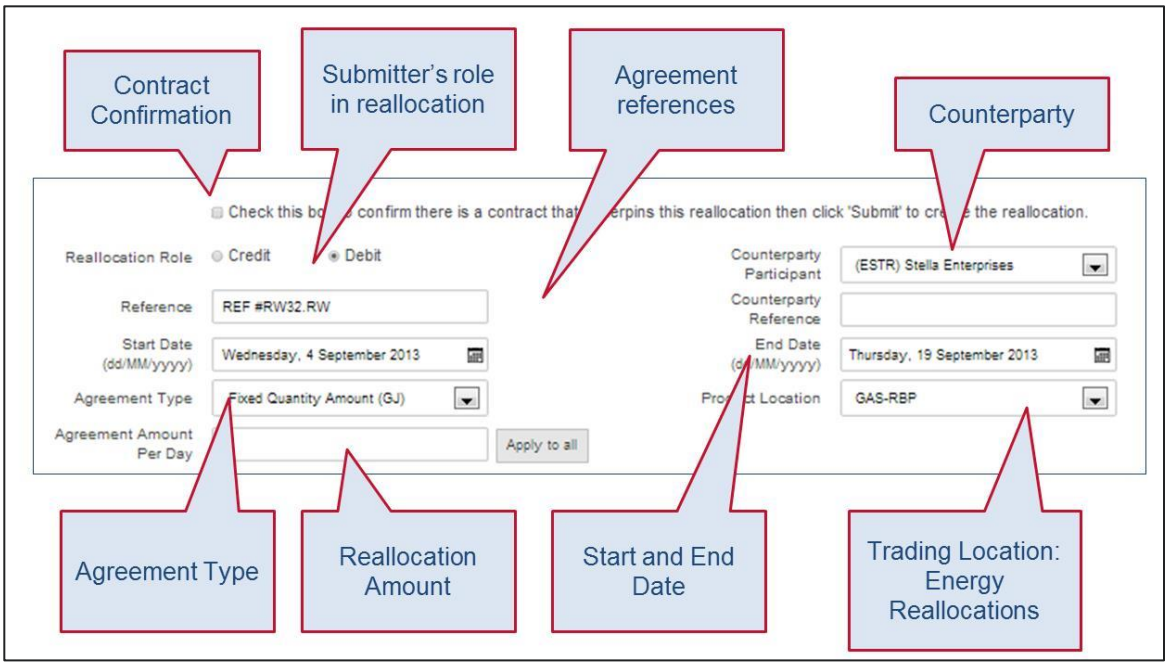
1. Market Participants enter agreement for financial transfer (off-market)
2. Submit Reallocation Request
   - The Debit Participant or the Credit Participant can submit the Reallocation Request.
   - The Reallocation Request is validated to ensure it is complete, participants are authorised to be a party to a reallocation and that the Reallocation does not cause the Debit Participant to breach their Trading Limit.
3. Confirm Reallocation Request
   - The Reallocation Request must be confirmed by the counterparty for it to become a valid Reallocation.
   - The confirmation is validated to ensure that it contains the same information as the submission. A validation is performed again to ensure the reallocation does not cause the debit participant to breach their Trading Limit.
4. Incorporate Reallocation in Prudential Exposure
5. Market Participants make any necessary off-market settlement adjustments (true up) or service payment in accordance with their agreement (off-market).
6. Incorporate Reallocation in Billing Period settlement process

9.4 Reallocation request

The Reallocations System allows authorised Market Participants to create, submit, authorise and view Reallocation Requests. Participants can manually enter a Reallocation Request through a web interface, as shown in Figure 17, or upload the request in a file.

Note. Further information on how to submit and confirm a Reallocation Request can be found in the Gas Supply Hub Reallocation Procedure.

Figure 17 Reallocation system



The Reallocation System validates the entry of Reallocation Request submissions and confirmations. Reallocation Requests that pass validation trigger the publication of the ***Reallocation Confirmation Report*** to the Debit Participant and the Credit Participant.

10. Settlement and billing

Physical Gas Transactions are settled centrally by AEMO as the operator of the exchange. AEMO collates transactional information from the trading system and gas delivery information from participants, settlement amounts are calculated, and then settlement statements are issued to participants.

Trading amounts are the amount payable by the Market Participant to AEMO, or by AEMO to the Market Participant, for a Gas Day. AEMO aggregates the Trading Amounts across the gas days in a Billing Period to determine the Settlement Amount payable to or by a Market Participant.

10.1 Settlement components

Settlement of trading activity within the Gas Supply Hub is comprised of the following elements:

- *Physical Gas Transaction Settlement*: is the settlement of the face value of each Physical Gas Transactions in accordance with its price and quantity.
- *Delivery Variance Settlement*: is the settlement adjustment (true up) of any under or over gas delivery.
- *Reallocation Settlement*: is the transfer of an amount from one participant to another in accordance with a Reallocation.
- *Market Fees*: are payable by participants in accordance with their category of participation. A variable transaction fee is settled based on each participant's quantity of transactions.
- *Ad hoc settlement*: any miscellaneous settlement items that do not fit into the above categories.

Settlement amounts for the supply and receipt of gas are calculated and presented separately on the Settlement Statement as Payments and Charges.

Note. For further detail on how each component is calculated, refer to the Settlements and Prudential Methodology.

10.1.1 Physical Gas Transaction Settlement

All transactions executed on the exchange are financially settled by AEMO. For each transaction, the buyer makes a payment to AEMO (Physical Gas Charge) and in turn AEMO makes a payment to the seller (Physical Gas Payment).

The settlement amount is the product of the transaction price and quantity. Settlement for all Transactions, including Weekly products, is calculated separately for each Gas Day. The Trading Amounts are then invoiced in the Billing Period in which the Gas Day falls.

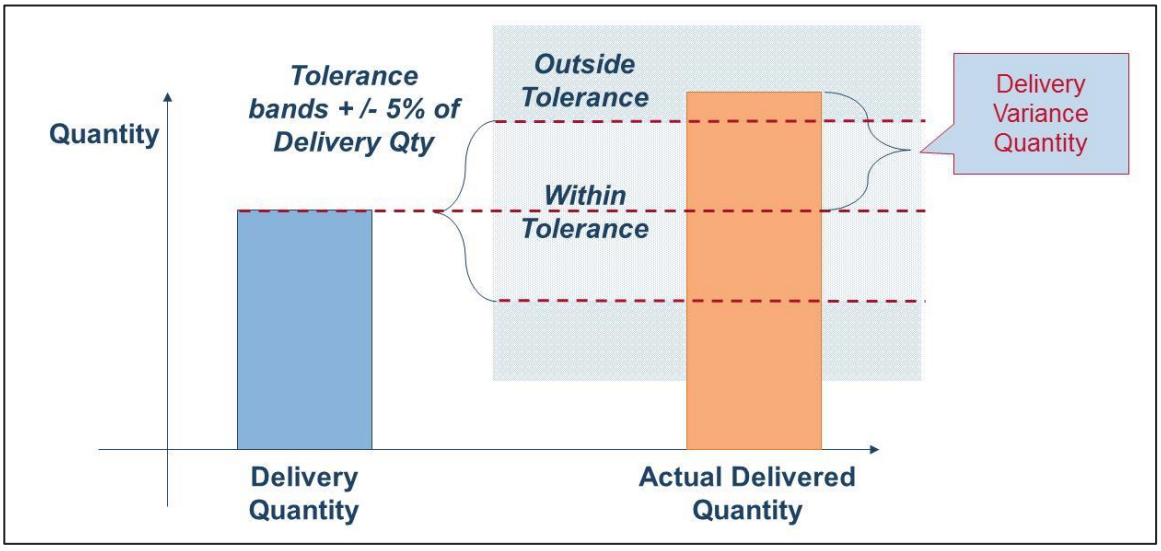
10.1.2 Delivery Variance Settlement

Delivery Variance Settlement is an optional settlement item that facilitates the transfer of compensation between the buyer and seller for a variation between the gas delivery obligation and the actual delivery.

A relatively small variation (within tolerance) is settled at the transaction price (or the average transaction price where netting applies). For relatively large variations (outside tolerance) additional compensation is paid by the party at fault to their counterparty.

The Delivery Variance Quantity is the difference between the Delivery Quantity (obligation) and the Actual Delivery Quantity. The tolerance levels are set at 5% above and below the Delivery Quantity. In the example illustrated in Figure 18, the seller (Delivering Participant) has over-delivered and the Delivery Variance Quantity is outside the permitted tolerance.

Figure 18 Delivery Variance Quantity



The Delivery Variance Quantity is settled at the Delivery Price. The Delivery Price is dependent on whether netting is applicable to the gas delivery obligation:

- Average Price for netted products, or
- Transaction Price if product is not netted.

If the delivery variance quantity is outside tolerance, then the settlement is adjusted so that the defaulting party compensates their counterpart. The party at fault compensates their counterpart for 25% of the value of

the variation quantity. However, no adjustment is processed if force majeure (pipeline issue only) applies to the delivery failure.

The reason for variation, in conjunction with the Actual Gas Delivery quantity, allows AEMO to settle the compensation as part of the Delivery Variance Settlement mechanism.

Table 14 Reason for delivery variation

Reason for Variation	Description	Example
Delivery	The delivering participant was responsible for the delivery variation.	A gas producer (delivering participant) failed to inject gas into the pipeline in accordance with their gas delivery obligation.
Receipt	The delivering participant was responsible for the delivery variation.	A shipper (receipting participant) failed to make nominations to the relevant pipeline operator in accordance with their gas delivery obligation.
No fault	Gas delivery scenario meets the definition of Force Majeure as defined in the Exchange Agreement.	Pipeline Operator notifies shippers that high pressure at the delivery point has restricted the delivery of gas into the pipeline

Consider a scenario where the Delivering Participant has delivered more gas (5,300 GJ) than its delivery obligations (5,000 GJ). The Delivery Variance Quantity (300 GJ) is outside the tolerance (250 GJ).

The Receipting Participant pays for the additional gas (300 GJ) it has receipted. Settlement amount:

- The delivery obligation is not associated with a netted transaction and as such, the variation is settled at the transaction price ($8 / GJ).
- The compensation amount (300 GJ x $8 / GJ x 25%) reduces the amount payable by the Receipting Participant (300GJ x $8 / GJ) for the additional receipted gas.
- The Delivery Variance Charge ($1,800) payable by the Receipting Participant means that the additional receipted gas is charged at a rate ($6 / GJ) that is 25% less than the Transaction Price.

Note. Delivery variances for the compression product are calculated separately from physical gas transactions and are not be settled through the market – participants could settle them bilaterally or use a reallocation.

10.1.3 Reallocation Settlement

Reallocations are settled by transferring an amount between the Debit Participant and the Credit Participant.

The settlement amount is determined separately for each Gas Day of the Reallocation as:

- *Dollar Reallocations*: the Dollar Amount assigned to the specific Gas Day.
- *Energy Reallocations*: is the product of the Energy Reallocation Quantity (GJ) and the applicable reference price ($ / GJ). The applicable reference price is the Average Price for the Trading Location designated in the Reallocation.

The Credit Participant's settlement amount has a negative sign (offsetting a pre-existing payment obligation) and the settlement amount of the Debit Participant has a positive sign.

If a Reallocation covers multiple Billing Periods then the Reallocation Amount for each Gas Day is settled for the Billing Period in which that Gas Day falls.

10.1.4 Market Fees

Market Fees consist of a fixed participation fee and a variable transaction fee.

10.1.4.1 Participation Fee

A fixed fee is payable by each member in accordance with their participation category.

Fees for Market Participants (Trading Participants and Reallocation Participants) are billed monthly as part of the regular Billing Period settlement of transactions, and the participation fee for a Viewing Participant is paid upfront on an annual basis.

10.1.4.2 Transaction Fee

Transaction fees are settled based on the quantity of transactions executed by a Trading Participant. The transaction fee applied is different for weekly and daily type products.

The Transaction Fee is settled with reference to the day the transaction is executed.

Note. Information about the current fee schedule is published in the Gas Supply Hub Exchange Fees document.

10.1.5 Ad hoc Settlement Amounts

The ad hoc settlement item can be used by AEMO to settle miscellaneous items that could include an adjustment or amount payable between the Market Participant and AEMO under the Exchange Agreement that is not specifically identified in the Settlements and Prudential Methodology.

The ad hoc settlement facility could also be used by AEMO if a default event triggers the settlement of Close-out Amounts and Offset Amounts. Further information about the management of a default event is set out in Section 11.4.

10.2 Settlement Processes

10.2.1 Daily Process

Settlement is calculated each business day based on the most up to date information of hub transactions and delivered quantities. The daily settlement calculation supports monitoring of credit risk positions across the market. Settlement amounts and quantities are reported separately to each Market Participant each day.

As there are no preliminary statements, the indicative daily settlement reports can be used to verify settlement data ahead of the final statement.

10.2.2 Monthly Billing

Final Settlement Statements are prepared and issued by AEMO to participants monthly. Trading participants must provide AEMO with their settlement input information, including gas delivery data and Reallocations, prior to the cut-off time.

The Settlement Support Report is issued to Market Participants at the same time as the Settlement Statement. The report contains settlement inputs and calculated settlement results to assist participants with the reconciliation of invoiced amounts.

Revised Settlement Statements are prepared by AEMO three months after the Final Settlement based on the most recent gas delivery information. The Revised Settlement Statement presents the amount of the adjustment to be made as well as the interest amount (simple interest calculation). The adjustment amount is included for payment in next Final Settlement Statement payment and is not sent as a separate invoice.

10.2.3 Timeline of Settlement Activities

Table 15 Settlement Timeline

Process	When	Who
Daily Settlement		
Determine the Actual Delivered Quantity based on data provided by the relevant pipeline operator or gas producer	From the end of the delivery gas day	Participants
Provide AEMO with actual gas delivery information	From the end of the delivery gas day	Participants
Prepare estimate of settlement amounts	Each business day	AEMO
Report settlement amount and quantities to participants via market report	Each business day	AEMO
Monthly Settlement		
Provide AEMO with actual gas delivery information	By 9am on the 14th business day after the end of that billing period	Participants
Submit and confirm Reallocation Requests	By 9am on the 14th business day after the end of the billing period	Participants
Issue Final Settlement Statement	By the 15th business day after the end of the Billing Period	AEMO
Make payment to AEMO	By 12 noon on the 17th business day after the end of the Billing Period	Participants
AEMO makes payments to Market Participants	By 2pm on the same day	AEMO
Provide AEMO with updated information for a revised statement	By 9am on the 1st business day of the 4th Billing Period after the settled Billing Period	Participants
Issue a Revised Settlement Statement	By 2nd business day of the 4th Billing Period after the settled Billing Period	AEMO

10.3 Funds Transfer

The electronic transfer of funds is required to support the following functions:

- The clearing of the market
- The processing of a security deposit for prudential purposes.

AEMO uses the Austraclear system for all the markets it operates, as defined in the AEMO Market Clearing Procedure. This system provides real-time gross settlement of transactions and is widely used in the finance industry for the settlement of transactions.

10.3.1 Payment default

If a participant fails to make a payment due in relation to an invoice, then the following steps occur:

1. AEMO issues notice to participant
2. The participant is suspended and given 1 hour to pay amounts outstanding and re-instate collateral.

3. If payment is not received after 1 hour, AEMO draws down collateral, does not allow submission of new orders and suspends open orders not yet traded.
4. The participant has until next business day after non-payment to pay the outstanding amount and re-instate collateral.

11. Prudential monitoring

11.1 Overview

Credit risk associated with Physical Gas Transactions is managed centrally by AEMO. AEMO regularly estimates the trading exposure generated by each Market Participant in the Gas Supply Hub.

Each Market Participant must provide credit support to cover their exposure to minimise the risk that a payment default affects orderly operation of the market. Credit risk associated with the Gas Supply Hub is managed separately from other markets operated by AEMO. As such, collateral posted by a participant for other markets operated by AEMO cannot be applied to the Gas Supply Hub and vice versa.

In the unlikely event that there is a payment default and the Market Participant's credit support does not meet their exposure then any shortfall is borne by Market Participants that are owed money by the market.

11.2 Trading Limit

A participant's Trading Limit is equal to the amount of credit support lodged with AEMO.

In the event of a payment default AEMO would make a call on that participant's collateral so that it can meet the payments to traders that are owed money from the market. Any residual shortfall would reduce the payments to traders on a pro rata basis, as in the STTM and the DWGM.

11.2.1 Form of collateral

The primary mechanism for providing collateral in AEMO's existing markets is credit support, which is an unconditional bank guarantee from an authorised financial institution or state-owned treasury. AEMO has a single financial guarantee pro forma for use in existing gas and electricity markets and all guarantees must be in the prescribed format.

11.2.2 Treatment of cash

Cash deposits are treated as an interest-bearing security deposit. As such, cash deposits are not considered a payment for goods or services but are made by the participant as a bond against future liabilities.

Market Participants liaise with the AEMO Settlements department for the lodgement of a security deposit. A security deposit is lodged against a specific Billing Period, and unless alternative instructions are provided, the security deposit and applicable interest are applied in the settlement of the designated Billing Period.

If a participant has not lodged a bank guarantee, then there is a limit of $100,000 on their security deposits. Participants that have lodged bank guarantees that exceed $100,000 can lodge security deposits up to an amount equal to the value of their bank guarantees.

Security deposits reduce a participant's exposure.

Note. For more information about security deposits refer to the Gas Supply Hub Guide to Security Deposits.

11.3 Exposure

The prudential exposure of a market participant is an amount calculated by AEMO reflecting the maximum net aggregate amount actually or contingently owing to the Operator in relation Physical Gas Transactions, Reallocations and security deposits.

11.3.1 Monitoring process

Prudential assessments are performed each business day to assess the trading position of each participant against the level of collateral provided, and determine if further collateral is required.

The trading position across hub transactions and deliveries is determined once a day within the settlement and credit risk management system. The trading position is updated during the course of the day with any new transactions entered into by the participant.

When an order is submitted onto the Exchange, real time checking of a trading participant's prudential exposure occurs to determine if the order can be accepted. The order is rejected if:

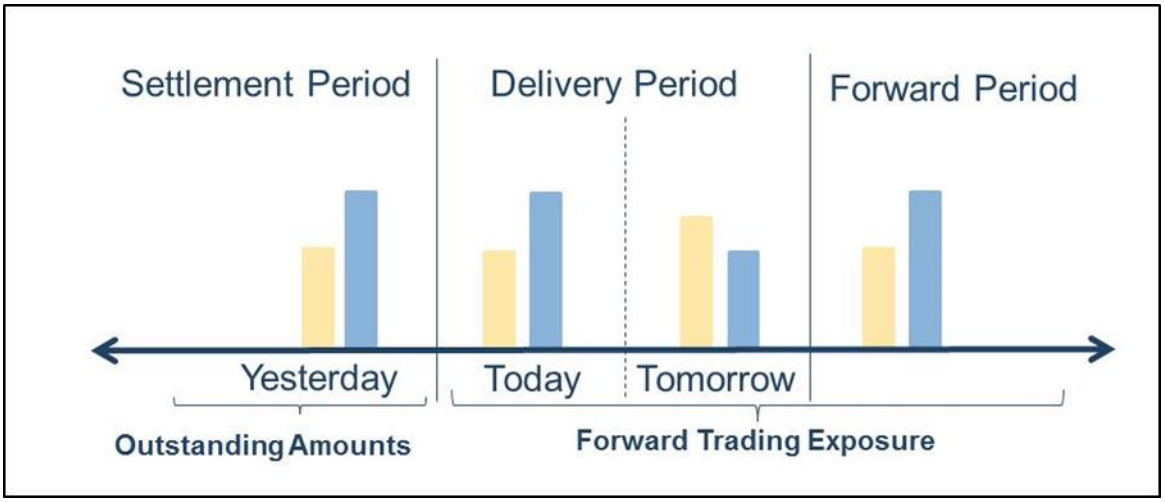
1. The Trading Participant is in a trading halt.
2. The Trading Participant's current prudential exposure amount is greater than its trading limit.
3. The order is a bid and the value of the order would cause the participant exposure to trading limit.

11.3.2 Prudential exposure

Prudential exposure of a Market Participant is an estimate of the settlement amounts it owes to the market in respect of Physical Gas Transactions and Reallocations.

The period for which a participant may generate a risk to the market spans from the listing of latest weekly product up to 3 months into the future through the payment of revised settlement amounts three months after the completion of a billing period.

Figure 19 Exposure period



For the purpose of describing the prudential exposure, the exposure period for Physical Gas transactions is split into three components:

- *Settlement period*:
  - An exposure exists for transactions covering gas days in the past until settlement statements for that period are issued and paid.

  - The exposure for the settlement period (Outstanding Amount) is that determined by aggregating transaction and delivery variance settlement amounts. For any unconfirmed gas delivery obligations, the seller's exposure is increased (Delivery Settlement Adjustment) to reflect the risk that the seller may not deliver its entire gas delivery obligation resulting in a payment back to the market.
- *Delivery period*:
  - Transactions in the delivery period are close to (within two days) or in the process of being delivered. Exposure estimates for this period are based on the assumption that the delivery of gas occurs.
  - For buyers this means that they must continue to provide enough credit support to meet the value of their transactions. For sellers, a payment for the expected delivery of gas is credited to the participant for prudential exposure calculations.
- *Forward period*:
  - Physical Gas Transactions covering future gas days. Transactions in the Forward Period are not yet due for delivery. The forward period extends as far into the future as a Trading Participant's Transactions.
  - Buyers and sellers generate an exposure for transactions in the forward period because a default and close-out of transactions would require them to make a payment to their counterparty.

Table 16 Approach to exposure calculation

		Buyer / Receipting Participant	Seller / Delivering Participant	Prudential Estimate Calculation
Settlement Period	Unconfirmed gas delivery obligations	Not applicable	Delivery Settlement Adjustment based on 20% of the value of the seller's gas delivery obligation. The charge is for the purpose of prudential monitoring only.	**Outstanding Amount**
	All other transactions	Calculated settlement charges and payments.		
Delivery Period		100% of the face value of transactions	80% of the face value of transactions payable to the seller	**Forward Trading Exposure** (Forward Reallocation Amount for reallocations)
Forward Period		25% of the face value of transactions	25% of the face value of transactions payable by the seller	

Table 16 outlines the approach to estimating the prudential exposure for buyers and sellers for Physical Gas transactions across the different exposure periods.

11.3.3 Estimating Prudential Exposure

A member's prudential exposure is estimated based on the latest transactions, gas delivery information, active buy orders and reallocations. The prudential exposure is the aggregate of calculated amounts for:

- Outstanding Amounts
- Forward Trading Exposure
- Forward Reallocation Amount

11.3.3.1 Outstanding Amount

The Outstanding Amount is the aggregate of all settlement amounts for gas days in the past including:

- Settlement Statements (including revised amounts) that have been issued to participants but for which payment is not yet due,

- Settlement amounts not invoiced,
- Reallocations,
- Security deposits and early payments.

Settlement amounts not invoiced include a settlement estimate for gas days not yet included on a Final Statement (Initial estimate) and an estimate for gas days not yet included on a Revised Statement (Adjustment estimate).

The Settlement amounts not invoiced include a charge, based on 20% of the value delivered gas, for a seller that has a gas delivery obligation for which delivery information has not been confirmed.

11.3.3.2 Forward trading exposure

Forward trading exposure is an estimate of exposure associated with transactions for gas delivery in the future (*forward period* and the *delivery period*). The exposure in relation the forward trading position is calculated for each gas day and trading location.

As illustrated in Figure 20, the calculation has two components:

- *Exposure on the net position*: The difference between a member's buy and seller transactions is referred to as their net position. To estimate the exposure, a margin is applied to the net position. As detailed in Table 16, the margin applied is different for net long and short positions.
- *Gain or loss on the offset position*: A member's offset position is the quantity of buy transactions that are offset by sell transactions. There is a gas delivery obligation associated with offsetting transactions, but they need to be settled. As such, any gain or loss on the offset position is incorporated in the exposure.

Figure 20 Forward trading position

11.3.3.3 Forward Reallocation Amount

The Forward Reallocation Amount is an estimate of the likely settlement amounts for reallocations covering future gas days.

The exposure considers reallocations lodged by market participants for gas days within the forward exposure window. The exposure window for Reallocations is 131 days for the Debit Participant and 124 days for the Credit Participant.

The exposure is determined for each Reallocation and Gas Day as:

- *Dollar Reallocations ($)*: the exposure is simply the dollar amount for the specified Gas Days.

- *Energy Reallocations (GJ)*: the exposure is the product of the Energy Reallocation Quantity (GJ), applicable Rolling Average Price and the Multiplier.

The value of the Multiplier is different for the Debit Participant and the Credit Participant. The Multiplier increases the price (and exposure) for the Debit Participant and decreases the price for the Credit Participant.

11.4 Breach of Exchange Agreement

11.4.1 Trading halt

AEMO may, in accordance with the Exchange Agreement, restrict a member from access to or use of the Trading System in whole or part if a suspension event has occurred. AEMO may also suspend a Member at the request of the AER.

A trading halt is lifted only when AEMO is satisfied that the reason for the suspension no longer applies, or the act giving rise to the suspension no longer warrants continued suspension.

11.4.2 Suspension events

A Member can be suspended from trading if a suspension event has occurred and it has not been rectified in accordance with the Exchange Agreement.

Suspension events include:

- failure to meet a margin call,
- AEMO has reasonable grounds to believe the Member can no longer trade in a product and the member has not provided AEMO with enough evidence to verify its eligibility.
- The Delivery Variance Quantity for which that Trading Participant is responsible for is greater than 25% of the Delivery Quantity and has occurred on three or more occasions in a rolling six-month period without a reasonable explanation.

11.4.3 Default events

The occurrence of a default event can trigger the termination of a participant's membership in accordance with the Exchange Agreement. Default events include:

- Failure to pay an amount due,
- The participant is found to have breached the Market Conduct Rules,
- The participant no longer meets the criteria for registration in the relevant participation category.

11.4.4 Close Out and Offset Procedure

If a participant fails to respond to a default notice, then AEMO will terminate the membership of the defaulting participant and close-out any transactions covering future Gas Days. The Close Out and Offset Procedure, within the Exchange Agreement, sets out the instructions for AEMO for the termination of transactions covering future Gas Days.

The procedure separates the defaulting participant's position into a net quantity and an offsetting quantity. Transactions associated with the net position (buy or sell) are terminated leaving the defaulting participant without any future gas delivery obligations (zero net position). The defaulting participant is removed from transactions associated with the offset position so that the non-defaulting parties can be paired together to minimise the disruption to market.

The Close-out Settlement Amount is compensation payable by the defaulting participant to any of their counterparts (via AEMO) affected by the close-out of forward transactions. Offset Settlement Amounts are determined for the defaulting participant, in aggregate they represent the gain or loss on any offsetting buy and sell transactions.

12. GSH Benchmark Price

To assist in the facilitation of derivative markets and products, AEMO publishes a daily end-of-day (EOD) benchmark price for Gas Supply Hub products for Wallumbilla and South East Queensland (SEQ).

The EOD benchmark prices are calculated by referencing trades and orders in 'Day Ahead' products on every calendar day.

Note. Prices are for the Wallumbilla trading locations only, and do not include the Moomba trading locations.

12.1 Benchmark Pricing Methodology

The Benchmark Price is the reference price for the ASX Wallumbilla futures contract.

The daily EOD Benchmark price for the 'Day ahead netted' product, is determined by the following methodology:

1. Volume Weighted Average Price of all Day Ahead Netted and Non-Netted Wallumbilla or SEQ trades; or, if no trades on the day then,
2. EOD Benchmark Price from the previous day,

   Unless

   a. the Bid price at the end of the trading day is higher than the EOD Benchmark price from the previous day, then it is the Bid price,

   or,

   b. the Offer price at the end of the trading day is lower than the EOD Benchmark price from the previous day, then it is the Offer price.

Subject to:

- Only Gas Supply Hub Trayport screen based transactions and Bids and Offers to be considered
- Pre-matched off-market trades are excluded
- Conditional orders (i.e. 'All or None') are not to be included (if no trades)
- Minimum order volume (5TJ/d) requirement to be used in methodology (if no trades)
- Minimum order active time (5 minutes) requirement to be used in methodology (if no trades)
- All trades at the SEQ or Moomba locations are excluded
- The Gas Supply Hub Benchmark price is published daily on the AEMO website in a CSV format after the end of the GSH trading day, at approximately 19:30.

13. Market systems

The Gas Supply Hub market systems consist of an Exchange Trading System (ETS) as well as a suite of market support systems.

Participants connect to the market systems through MarketNet, a private network for participant access to AEMO's gas and electricity markets. Participants access the ETS through a desktop application. Participant access to market support systems, including Reports and the Prudential Dashboard, is through the Energy Market Management System.

The ETS is licenced to AEMO by Trayport and is installed on AEMO's servers. Market support systems, including settlements and reporting applications, were developed by AEMO and are also maintained on AEMO's servers.

Orders are submitted and transactions are formed in the ETS. This data is passed to the market support systems to allow it to be reported to participants and for the settlement of transactions.

13.1 Exchange Trading System

The Exchange Trading System (ETS) consists of:

- a front-end for direct trader access to the exchange,
- real-time matching engine to form transactions,
- order management and transaction reporting.

Participants install an ETS desktop application that provides direct access to submit orders into the central order book of the exchange. The ETS collates all the orders submitted by Trading Participants and transactions are formed in the ETS by matching orders based on price and time priority (as outlined in Section 5.2).

The ETS allows participants to manage their orders individually and provides shortcuts that allow the quick withdrawal of all their active orders.

The ETS provides traders with on screen confirmation of order submissions and executed transactions. Trading Participants can also retrieve information relating to their historical orders and transactions through the ETS. Trading statistics across all exchange transactions, including average prices, can be viewed by Trading Participants and Viewing Participants.

13.2 Market support systems

A suite of systems to support trading, gas delivery and settlement obligations associated with the Gas Supply Hub are utilised by AEMO, including:

- *Registration*: manages organisational information of members and their participation details.
- *Settlement*: calculates settlement amounts based on transactions, gas delivery and reallocation data.
- *Prudential*: calculates and monitors prudential exposure and trading limits.
- *Reporting*: generates trading, gas delivery and settlement data reports. Reports are triggered by market or trading participant actions or scheduled at a specific time every day.

13.3 Gas Supply Hub Direct

Provides participants with a web interface to the market settlement, prudential and reporting systems:

- *Reallocations*: allows participants to submit and authorise reallocation requests.
- *Prudential dashboard*: participants can view their latest exposure, bank guarantees and trading limit.
- *Delivered Quantity*: allows participants to provide actual gas delivery information to AEMO for settlement purposes.

- *Publishing Direct*: Participants can download files directly or set up a delivery subscription.

13.3.1 Access to the Gas Supply Hub Direct

Access to Gas Supply Hub Direct is through AEMO's Energy Market Systems (EMS) web portal. Organisations already participating in the NEM, STTM or the DWGM can access the Gas Supply Hub Direct using their existing EMS login.

Organisations registering in the Gas Supply Hub only are issued with user account details for a super user. The super user can then create and maintain user accounts for other representatives of their organisation.

13.3.2 Reallocations

The reallocations interface allows participants to submit and confirm a reallocation request. The reallocation request can be manually entered using web interface or participants can upload a csv file.

Submissions and confirmations are validated by the reallocations system. A Reallocations Report is issued to the Debit Participant and the Credit Participant if the reallocation request passes validation.

Participants can also view reallocation requests they have submitted as well as requests awaiting their confirmation.

13.3.3 Prudential dashboard

The prudential dashboard allows participants to view their trading limit, prudential exposure, bank guarantees and security deposits.

The dashboard allows participants to retrieve detailed information about the components of their prudential exposure including settlement and reallocation amounts. Participants can also download the latest version of the ***Prudential Exposure Report*** from the dashboard.

13.3.4 Delivered Quantity

The Delivered Quantity interface allows participants to communicate actual gas delivery information to AEMO for settlement purposes. In addition to the manual web-based interface, Trading Participants can upload or FTP a file containing multiple delivery records.

Note. The contents and format of the Delivered Quantity file are set out in the Guide to Gas Supply Hub CSV File Transactions.

The Receipting Participant (buyer) or the Delivering Participant (seller) can submit the gas delivery information which must then be confirmed by their counterparty before it is included in settlement.

The delivered quantity submission is validated and if successful AEMO issues a ***Delivered Quantity Report*** to the Receipting Participant and the Delivering Participant.

The Delivered Quantity interface also allows participants to search for records they have submitted, records awaiting their confirmation and records that have been confirmed.

13.3.5 Reporting

13.3.5.1 Report publication

Reports can be accessed via Publishing Direct or through the Participant File Share.

Participants can download files directly or set up a delivery subscription. When a new version of the subscribed report is published to Gas Supply Hub Direct, depending on the participant's subscription selections, either an email or SMS, or both is sent to the participant

13.3.5.2 Market reports

Introduction to the type of reports provided to participants

There are three different categories of report distribution for the Gas Supply Hub:

- *Private*: Report contains information pertaining to the participant it is issued to only.
- *Participants*: All Market Participants receive a copy of the report.
- *Public*: report is made available to all participants and is also made available on the AEMO website.

Table 17 Gas Supply Hub reports

Report Name	Distribution	Description	Report period and trigger
Order confirmation report	Private	Provides Trading Participant with a confirmation of an order submission, modification or cancellation.	Submission, amendment or cancellation of a bid or offer order.
Trade execution report	Private	Provide buyer and the seller with the details of a transaction.	Exchange matched and off-market trades. Issued on execution of transaction. Published again after the end of the trading day with all transactions covering future gas days.
Delivered quantity report	Private	Provide the buyer and seller with a record of the submitted and confirmed Actual Delivered Quantity records as provided by the buyer or seller.	Each time an Actual Delivered Quantity record is submitted or confirmed the report is issued to the buyer and the seller. The report is also issued each morning containing all records amended in the past 30 days.
Daily transaction summary report	Public	Summary of trades executed during a trading day including high/low, open/close prices, total traded quantities and number of trades.	After the end of each trading day.
Historical gas day transaction report	Public	Average transaction price for historical gas days.	After the end of each trading day. Rolling 30 gas days.
Prudential exposure report	Private	Provide members with an estimate of their exposure, reallocations, current bank guarantees and security deposits.	Daily
Settlement supporting data report	Private	Provides a daily breakdown of settlement payments and charges, transactions and reallocations.	Upon authorisation of a Final or a Revised Settlement Statement. Daily upon approval of initial settlement estimates.
Trading and delivery contact details report	Participant	Provides all participants with a list of Trading and Delivery contacts details for all registered participants in the market.	Daily
Contact details report	Private	Record of information currently registered by a participant.	Daily
Registered participants report	Public	Register of all participants registered to participate in the Gas Supply Hub.	Daily
Reallocation confirmation report	Private	Provides confirmation of the submission, authorisation, cancellation or expiration of Reallocations to the debit and credit participants.	Each time a reallocation is submitted, authorised, cancelled or expired.

Report Name	Distribution	Description	Report period and trigger
Delivery obligations report	Private	Provides a record of delivery obligations including the counterparty, delivery point and delivery quantity.	Each time there is a transaction in a product that is not netted for delivery. Daily following the delivery netting process for netted products. At the end of each trading day containing all delivery obligations for future gas days.
Benchmark Price Report	Public	Provides daily Wallumbilla benchmark prices for each Gas Supply Hub trading location as well as for "Wallumbilla" which is a benchmark price across all trading locations.	Time triggered (report is generated and overwritten every 5 minutes starting from 08:30 to 17:00, then final report is generated at 17:30 which is not overwritten).

Within the Trading Systems the transactional details relating to settlement and gas delivery obligations are reported separately as detailed in the table below.

Table 18 Transaction and gas delivery records

Transaction Type	Product	
	Netting Not Applicable (Balance-of-day, Day-ahead)	**Netted (Daily, Weekly)**
Buy and Sell Orders	An Order ID is generated in the ETS. Details of each order, including the ID, are reported to Trading Participants as part of the ***Order Confirmation Report***.	
Exchange Transactions	Unique Trade ID generated within the Trayport and reported to participants in the Trade Execution Report. The Trade Execution Report contains the Order ID related to the transaction. AEMO systems also generate a Transaction ID which is used for delivery obligations.	
Gas Delivery Obligations	Unique Transaction ID (Netting Transaction ID) generated and reported at the time of the transaction in the Delivery Obligations Report.	Unique Transaction ID (Netting Transaction ID) generated and reported at the completion of the delivery netting process in the Delivery Obligations Report.

Note. Report file naming convention and report definitions can be found in the ***Guide to Gas Supply Hub Reports***.

14. References

The resources listed in this section contain additional related information that may assist you.

AEMO Information and Support Hub: phone: 1300 AEMO 00 (1300 236 600) and follow the prompts;

email: supporthub@aemo.com.au

National Gas Rules (NGR) and National Electricity Rules (NER): see the Australian Energy Market Commission (AEMC) website http://www.aemc.gov.au

AEMO Gas Supply Hub Exchange Agreement:

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations

The main page for the Gas Supply Hub is located at http://www.aemo.com.au/Gas/Gas-Supply-Hubs

You can find the following documents on AEMO's website relating to the Gas Supply Hub:

- Gas Supply Hub Exchange Fees

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations

- Gas Supply Hub Interface Protocol

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations

- Settlements and Prudential Methodology

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Settlements-and-payments/Settlements

- Gas Supply Hub Registration Guide

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Participant-information

- Gas Supply Hub Trader User Guide

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations

- Gas Supply Hub Security Deposits Guide

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Settlements-and-payments/Prudentials

- Gas Supply Hub Reallocation Procedure

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Settlements-and-payments/Clearing

- Guide to Gas Supply Hub Reports

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations

- Guide to Gas Supply Hub CSV File Transactions

http://www.aemo.com.au/Gas/Gas-Supply-Hubs/Market-operations