

National Gas Market Development Options

Report to Gas Market Leaders Group

by

Gas Market Options Working Group

3 February 2006

1. *Background*

The Gas Market Leaders Group has been established by the Ministerial Council on Energy to develop a Gas Market Development Plan which will deliver on the MCE's objectives for a competitive, reliable and secure natural gas market delivering increased transparency, promoting further efficient investment in gas infrastructure and providing efficient management of supply and demand interruptions as set out in the MCE's Expanded Gas Program.

Specifically, the Plan should provide:

- further development of Options 2 or 3 identified in the Allen Consulting Group (ACG) Report¹; or
- an alternative market development plan that provides equivalent benefits in terms of transparency and lowering barriers to market entry.

The Gas Market Leaders Group met on 12 December 2005 to establish a workplan for delivering on its terms of reference and decided to establish a Gas Market Options Working Group to assist it with this task.

1.1 Terms of Reference for the Gas Market Options Working Group

The full Terms of Reference for the Gas Market Options Group are provided in Appendix 1, and are summarized as follows:

- Define and scope Options 2 and 3 from the Allen Consulting Group Report to a sufficient level of detail to be able to make an assessment of the feasibility and cost/benefit of the options and any variations.
- Issues to address include:
 - Whether participation should be voluntary or mandatory.
 - Necessary prudential requirements.
 - Governance arrangements.
 - Market clearing mechanisms.
 - Information requirements for each option, and particularly what information would be posted on a Bulletin Board (such as system capability, supply and demand information, price etc).
 - A methodology to allow a cost benefit analysis of each option (high level).
 - Barriers to implementation.
 - An implementation path.

¹ The Allen Consulting Group, "Options for the development of the Australian wholesale gas market", June 2005

- Any legislation or code requirements or amendments.
- Production of an Annual Report focusing on supply/demand projections and system constraints.
- Assessment against the MCE Gas Market Principles (in Appendix 2 as augmented by the Gas Market Leaders Group).

1.2 Membership of the Group

Members of the Gas Market Options Working Group are as follows:

- Matt Zema, CEO VENCORP (Chair)
- Patricia McKenzie, CEO Gas Market Company
- Julian Turecek (Origin Energy), representing ERAA
- Peter Geers (AGL), representing ERAA
- Stephen Livens (Epic Energy), representing APIA
- Rod Johannessen (APT), representing APIA
- Peter Fennessy (Alinta), representing ENA
- Mark Frewin (TRUenergy) representing NGF
- Matthew Arnold (ExxonMobil), representing APPEA
- David Headberry, representing End Users
- Darren Nelson, representing NT Power and Water
- Mark Nielsen, representing Western Power
- Terry Grimwade (VENCORP)
- Marie Taylor, MCE Secretariat

1.3 Timeframe

The Working Group is requested to provide the Gas Market Leaders Group with an initial report on the above issues by **3 February 2006**.

2. Definition and Scoping of Options

Options 2 and 3 of the Allen Consulting Group Report were :

- Option 2 – “The current market with bulletin board facilities”; and
- Option 3 – “The city gate scheme”

The Allen Consulting Group Report described these options at a relatively high level, requiring significant further detail to be defined for there to be a clear and common understanding of the information and operational requirements. Further, while that Report based its description of Option 3 on a concept contained in a submission to the MCE by the Energy Retailers Association of Australia (ERAA)², it was noted that there were some key differences between the description in the Allen Consulting Group Report and the intent of the original ERAA proposal.

The Gas Market Options Working Group has, therefore, developed the following more detailed descriptions of Options 2 and 3.

² ERAA Wholesale Gas Standing Working Group, “An Australian Wholesale Gas Market – Its Justification, Framework and Governance”, September 2004

The Allen Consulting Group Report referred to Option 3 as “The city gate scheme” on the basis that it would involve spot prices being set at notional nodes where transmission pipelines fed into and out of major load centres or “city gates”. However, footnote 47 of the Allen Consulting Group Report (page 46) explained that, provided there was enough liquidity, nothing precluded prices being set at other hubs, potentially even injection or interconnection points rather than demand centres; for example Iona, Moomba, Longford or Culcairn. Therefore, rather than pre-empt the choice of preferred pricing nodes at this stage, the Gas Market Options Working Group has agreed to refer to Option 3 in this report as the “Short-Term Trading Market”.

2.1 Option 2 – Bulletin Board

2.1.1. What is a Bulletin Board?

A “Bulletin Board”, in this context, refers to an electronic device (e.g. such as a web-page) for the posting of information.

Implementation of this option could involve a single Bulletin Board, which contained information pertaining to all participating pipelines, or, alternatively, a number of Bulletin Boards, each containing information specific to individual pipelines or regions.

2.1.2. Bulletin Board – Objectives

The objective of a Bulletin Board service would be to facilitate trade in gas over the relevant pipeline system through the provision of system and market information, which would be readily available to all users, potential users and other interested parties. A Bulletin Board would not provide a mechanism for setting a spot price, or clearing price, for gas, and it would not impose mandatory mechanisms for the trading of imbalances.

As such, the Bulletin Board may provide limited added value to the existing major players in the national gas market who, through their existing contractual arrangements or industry networks, already have access to much of the information it would provide. Its primary purpose would be to provide readily accessible and updated information to end-users, smaller or potential new market entrants, and market observers (including Governments), on the state of the market, system constraints and market opportunities.

2.1.3. What information would be provided?

As a minimum, the Bulletin Board should provide up to date information on the overall physical condition and capacity of the pipeline system to supply projected demand, along with contact details for key industry participants. Further details on the type of information that should be published on the Bulletin Board are provided below. The objective should be to provide up to date information to users or potential users of the pipeline as to where supply or pipeline constraints exist in real time, or may occur under certain conditions, and thus assist them in identifying potential trading, risk mitigation or investment opportunities. It is emphasized that parties should not be encouraged to rely solely on information on the Bulletin Board as a basis for entering into commercial arrangements, but rather that the Bulletin Board information would provide a basis for interested parties to commence commercial negotiations with other appropriate parties in the gas industry³.

³ The legal status of information posted on the Bulletin Board is a matter for further advice and consideration as part of implementation. The intent is that, provided the responsible parties have used reasonable, bona-fide endeavours to provide the required information, they should not be exposed to liability for losses or damages incurred by third parties acting solely on information posted on the Bulletin Board (see also section 12.1.10) .

The information to be published on the Bulletin Board would be in aggregated form so as not to reveal commercially confidential contractual quantities or other details. The published information should include the following:

- (a) A “baseline” set of information on supply and pipeline capacity. This should be in the form of “nameplate ratings” of each major supply or storage facility’s daily production capacity and the daily transportation capabilities of each transmission pipeline, and, where bi-directional flows are possible, in each direction. This information should be updated annually, or whenever significant changes occur.
- (b) Temporary changes to the baseline data should be reported, on an exception basis, whenever maintenance or unplanned outages result in material changes in supply capacity or constraints in transportation capacity. It would be preferable that such advice includes details of the estimated extent and duration of the resultant restriction on supply or transportation capacity. However, it is acknowledged that when plant or pipeline failures or outages occur, such estimates can be problematic and the asset operator/owners’ priority will be to channel their efforts to rectifying the problem. Therefore, on occasions, it may be impractical to require detailed and frequently updated information to be posted while the fault is being rectified. Nevertheless, as a minimum, advice should be provided to the market of the existence of a problem and a qualitative statement on the impact on supply or transportation capacity, even if this impact is of uncertain magnitude and duration.
- (c) Details of available firm and non-firm pipeline capacity, including prices⁴.
- (d) Details of forecast aggregate daily demand on the pipeline, or at major demand centres (city gates), should be provided and updated on a daily basis, for each of the next 3 days.
- (e) Key contact details for pipeline operators, producers, storage providers, shippers and retailers (this could be done through hyper-links to their individual web-sites).

While the presentation format for this information is an issue for detailed implementation rather than policy, the Gas Market Options WG considers that it would be helpful if the above information were to be presented in both schematic diagram and tabular form.

The Bulletin Board should also offer a facility for the voluntary posting of buy/sell offers for supply or transportation capacity. The Allen Consulting Group Report (section 4.2) suggested that Option 2 should also include a requirement that all short term contract trades for periods of one year or less be recorded on the Bulletin Board, regardless of whether they were traded through the Bulletin Board or not.

The Market Options WG considers that such a requirement is unlikely to be either viable or useful. The intended objective for requiring details of such trades to be published is, presumably, to provide increased price discovery and transparency. However, unless all the terms and conditions of a negotiated trade are fully known and understood, then the price and quantity involved would not be particularly meaningful to third parties.

⁴ The proposal is based on details being provided by pipeline operators of spare, uncontracted, pipeline capacity and does not extend to a mandatory requirement on shippers to provide details of any unused contracted capacity. This is because to do so would only be useful to the extent that a shipper was willing to on-sell any such spare capacity, in which case the shipper could voluntarily offer such capacity for sale via the Bulletin Board. The Bulletin Board would not directly address any potential “hoarding” by shippers of unused contracted capacity.

If there were to be an objective to provide some element of price discovery through the Bulletin Board option, then the first requirement would be, as a minimum, to establish a standard contract, with standard terms and conditions. It is understood that AFMA is currently working with its members to develop a standardised contract for gas trading that may prove useful for this purpose. However, as discussed in section 2.1.4, below, it is likely that many trades would still involve negotiated variations to these standard terms and conditions to suit the specific circumstances and requirements of the parties involved.

2.1.4. Voluntary or Mandatory?

Provision of the physical system information for posting on the Bulletin Board would need to be standardised and mandatory – at least for all interconnected pipelines. This may necessitate imposing obligations (on a reasonable endeavours basis) on pipeline owners/operators, storage operators, producers and/or shippers to provide timely information in a specified, standard format. Even if there were a number of Bulletin Boards, each operated and updated by the respective pipeline owners/operators, for interconnected pipelines this information would need to be presented and updated in a consistent format and with consistent timing across the interconnected system.

If a single Bulletin Board was implemented to cover all pipelines, or all interconnected pipelines, then the content and format of the information to be provided by the various parties to the Bulletin Board “operator” would also need to be standardised to the extent possible – recognising that even with an interconnected system, individual pipelines or components of pipeline systems may have specific characteristics that may warrant the provision of specific information or specific treatment of that information.

Posting of buy/sell offers on a Bulletin Board would necessarily be voluntary.

A mandatory requirement to post buy/sell offers on the Bulletin Board, and/or details of any trades that are completed as a result, would be very difficult to monitor and enforce. Furthermore, even with standardised terms for buy/sell offers, subsequent bilateral negotiations may see such terms and conditions varied prior to completion of a trade, making price information unreliable for comparison purposes.

Consequently, it is not considered that any attempt to enforce mandatory publication of completed trades on a Bulletin Board would be successful in providing effective price discovery.

2.1.5. Single or Multiple Bulletin Boards?

There should be a single Bulletin Board for all interconnected pipelines, currently including the interconnected systems of South Australia, NSW, Tasmania and Victoria. Other pipelines in Queensland, Northern Territory and Western Australia could either have separate Bulletin Boards, or preferably separate pages on the same site.

The alternative of each pipeline owner/operator developing and administering their own bulletin boards would appear likely to add additional costs in duplication of effort, and introduce the potential for inconsistency in the format and content of the information provided. Plus, if the Bulletin Board were to provide a mechanism through which industry participants could post buy/sell offers, then a single interface would have advantages for participants who trade across multiple pipelines.

2.1.6. Bulletin Board Administration/Maintenance

The aim should be to minimise any additional work and costs imposed on those parties required to provide the required data – likely to include producers, storage providers, pipeline operators and shippers/retailers.

The preferred approach is that the Bulletin Board is developed in such a way as to enable each party responsible for providing the required information to access, input and update that data directly through an electronic and (as far as possible) automated system.

Even so, with a single, central Bulletin Board covering a number of pipelines, it is likely that an independent administrator or service provider would be required to oversee the development, maintenance and ongoing smooth operation of the Bulletin Board. This function should be provided by an entity with appropriate governance arrangements and expertise to ensure the integrity of the data and information on the Bulletin Board. Should it also be decided that such an entity is required to provide support to the National Gas Emergency Response Advisory Committee (NGERAC) in developing and maintaining similar information for the national management and coordination of gas emergencies (see section 2.1.9), and/or a market operator for Option 3 (see section 2.2.7), then it would make sense for the same entity to perform this role. Establishment and implementation costs would likely be minimised if an existing independent organisation could take on this role rather than establishing a new entity. Funding of this function would need to be resolved once the final roles and responsibilities are more clearly defined.

2.1.7. Impact on Scheduling/Pipeline Operation

The Bulletin Board would have no direct impact on pipeline operations, or the way in which gas injections and withdrawals are scheduled by the pipeline owner/operator. Production and pipeline operation would continue in accordance with the existing nominations and operational procedures as set out in the contractual arrangements that are in place.

2.1.8. Impact on Contracting Arrangements

A Bulletin Board scheme would have no direct impact on existing gas supply or pipeline transportation contracts. Future gas supply and pipeline transportation arrangements would generally continue to proceed on the basis of bilaterally negotiated contracts.

The Bulletin Board would provide historical (and short term future) information which existing and new industry participants could use either in negotiating new long term contracts, or for short term trading around their existing contracted positions.

To the extent that participants wish to use the Bulletin Board to post buy/sell offers and details of completed trades, then such arrangements would benefit from the use of standard terms and conditions.

2.1.9. Consistency with NGERAC direction

To assist with the national coordination and management of gas emergencies, the MCE's National Gas Emergency Response Advisory Committee (NGERAC) is developing proposals in support of the National Gas Emergency Response Protocol. While NGERAC has yet to finalise its proposals, based on its initial meeting in September 2005 and its recent draft report to the MCE, establishment of a single central Bulletin Board as proposed in 2.1.5, with the information outlined in section 2.1.3, would appear

to be entirely consistent with, and go a long way to fulfilling the approach currently being considered by NGERAC in terms of the publication of system supply/demand information.

Nevertheless, the Bulletin Board as proposed would not fully meet NGERAC's requirements. The annually published supply/demand information would likely need to be supplemented with scenario analysis of the impacts of credible significant contingency outages. This information would assist parties in identifying requirements and opportunities for risk mitigation strategies. However, the Bulletin Board would provide no pricing signals for short-term trades or demand-side response and, therefore, little improvement in the market's ability to respond to shortfalls in gas supply so as to defer or avoid intervention by operators or jurisdictions with the advice of NGERAC.

2.1.10. Implementation Issues for further consideration

There would not appear to be any substantive barriers to implementation of the Bulletin Board approach described above.

However, a number of implementation issues would require further consideration and resolution:

(a) Provision of required information

The sources/responsible parties for providing the required information need to be confirmed. Producers, storage providers and pipeline operators would be the obvious parties to provide baseline information regarding supply and pipeline transportation capacities, and to update the Bulletin Board by exception when these capacities change materially (permanently or temporarily).

Data to compile the daily demand forecasts for the next three days could possibly be provided either by the pipeline operator or by the shippers/retailers.

Legal advice would be required such that responsible parties who use bona fide and reasonable endeavours to fulfil their obligations are not exposed to liabilities as a result of errors or omissions.

(b) Bulletin Board Access

To achieve the intended transparency and availability of information, there should be public access to most, if not all, of the information referred to in section 2.1.3. Dependent on the nature of the information finally provided on the Bulletin Board it may, however, be necessary (for reasons of commercial confidentiality or security) to consider developing "public" and "restricted areas" with only registered parties having access to the restricted areas. Such a structure is in place, for example, on the Victorian Market Information Bulletin Board ("MIBB"), which provides all market participants with general access to much of the information but also has areas where confidential information is available only to the relevant individual Market Participants.

(c) Legislation and Code Requirements

For the Bulletin Board to be effective, provision of the required information would need to be mandatory, which may necessitate imposing obligations on pipeline owners/operators, storage operators, producers and/or shippers to provide timely information in a specified, standard format (subject to protections from liabilities discussed under (a) above).

Since these obligations would need to apply to both covered and uncovered pipelines, and to pipeline users as well as pipeline owners/operators, the National Gas Access Code would not be an appropriate vehicle for this purpose.

It is considered likely that it would be necessary to impose the necessary obligations through the National Gas Law. There are alternatives in the way in which this is done, either by including the detailed requirements and rules in the Law, or by the Law requiring that all users comply with an appropriate scheme approved by, and meeting requirements specified by the AEMC.

The MCE should seek legal advice and consult with industry on the most efficient and effective way of imposing these obligations on all pipeline operators and users.

2.2 Option 3 – Short-Term Trading Market

The fundamental feature of Option 3, both as described by the Allen Consulting Group Report and in the original ERAA proposal, is the establishment and publication of a market clearing price at a notional node or “hub”, or at a number of “hubs” in an interconnected pipeline system, which is (are) then used to clear shippers’, retailers’ or direct end-use customers’ trading imbalances as determined over a pre-defined trading period. The details of implementation may vary, but the basic concept of hub pricing is widely used, perhaps most notably in the USA.

Option 3 has been developed on the basis that the pricing “hubs” will initially be at the main demand centres or “city-gates”, although it is conceivable that, over time, other pricing “hubs” may develop.

The following description of this Option reflects some progression in thinking, and significant changes, since the ERAA September 2004 submission and the Allen Consulting Group Report to the MCE. The Gas Market Options WG has chosen to rename this Option the “Short-Term Trading Market” on the basis that its fundamental concept comprises the short-term (typically daily) pricing and trading of gas.

As proposed, the Short-Term Trading Market model would incorporate a compulsory balancing mechanism between retailers, self-contracting end users and shippers, which would result in the replacement of the existing balancing arrangements and systems in NSW, SA and WA⁵, which are not compatible with the proposed Short-Term Trading Market. Participants in NSW/ACT are currently considering alternatives to the existing “out of balance gas” (OBG) arrangements and participants in SA/WA are considering alternatives to the swing gas arrangements (see also section 2.2.10).

2.2.1 Objectives

Rather than viewing Options 2 and 3 as distinctly separate options, the Bulletin Board as described under Option 2 may effectively be viewed as a sub-set and essential component of the short-term trading market. As discussed below, the short-term trading market under Option 3 would require the publication of the same information as that required under Option 2. Whereas Option 2 does not set a clearing price, provide effective price discovery or incorporate a trading mechanism, Option 3 has been developed by the Gas Market Options WG to incorporate all of these features, while seeking to minimize

⁵ The proposed arrangements could apply to all pipeline systems. However, as part of any decision on whether to proceed with this Option, there is the need to consider whether there would be adequate benefits on non-interconnected pipeline systems such as (currently) WA, NT and Queensland.

any impact on existing contractual arrangements between shippers/customers and producers/pipeline operators.

The objective of the short-term trading market is, thus, to provide a short-term trading and pricing mechanism for gas delivered at the city gates and/or other "hubs". The proposed market is not intended to price directly, or impose obligations on any party in respect of, differences between the pipeline deliveries at the hub and the supply point injections⁶ (i.e. changes to linepack). Physical restoration of linepack is to remain a matter to be dealt with through balancing obligations that exist in pipeline transportation contracts between shippers or direct end-use customers and pipeline operators.

The short-term trading market will not replace bilaterally negotiated longer-term contracts between shippers and producers, storage providers and pipeline operators, as the primary mechanism for the wholesale sale and purchase of gas, or for underpinning investment. It will, however, allow retailers or direct end users to purchase gas on a short-term basis without contracting with producers or transmission pipeline operators for delivery, and will allow those shippers who have such supply and transportation agreements to manage short-term variations to their contracted quantities as their customers' usage of gas changes from day to day.

The proposed market will establish a price for imbalances between deliveries at the hubs each gas day, made on behalf of retailers and direct end use customers, and the actual gas "burnt" or used on the day by those parties or their customers. The short term clearing prices determined at the hubs, together with published system supply/demand information, would provide pricing signals and facilitate secondary trading between shippers, for gas fired power generators, for trading over interconnecting pipelines between hubs, and for demand side response, particularly at times of supply shortages or constraints.

While intended to have no (or minimal) immediate or direct impact on the operation of existing shipper-pipeline operator transportation contracts, the existence of the short-term trading market may, over time, increase the value and provide greater incentives for parties to seek park/loan, storage or other transportation services that may increase their flexibility to manage their exposures in the short-term market.

2.2.2. Short-Term Trading Market - Concept

Figure 1 illustrates schematically a hub supplied by one or more pipelines and the terminology used in this report to describe the proposed short-term trading market concept.

"Shippers" are the parties who arrange for gas to be produced or released from storage and transported over transmission pipelines to the customer demand centres, or "hubs".

"Retailers" may either act as shippers themselves or purchase their gas from Shippers at the delivery point, or "hub", and then on-sell to end-use customers.

"Direct end-use customers" purchase their gas directly (rather than through a retailer), either at the point of use from Shippers, or from producers/storage providers and act as shippers themselves.

⁶ "injections" of gas into a pipeline, or "injection points" are sometimes referred to as "receipts" and "receipt points" by pipeline operators.

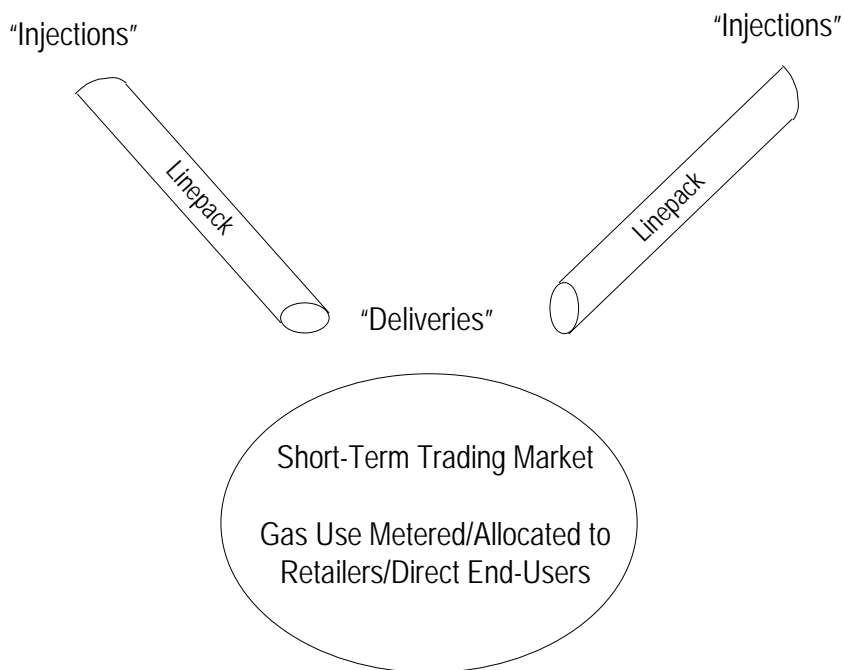


Figure 1: Short-Term Trading Market – Terminology

Gas "Injections" or "Receipts" are those quantities that are supplied to the pipeline on a day (typically) by the producers/storage providers, in accordance with contractual orders or nominations placed by shippers.

Gas "Deliveries" are those quantities that are delivered to the point of use or hub in accordance with contractual nominations made by the shippers to the pipeline operator.

At the hub, the delivered gas is supplied into the distribution networks to be used/burnt by the end-use customers who, with the advent of retail competition, may now purchase gas directly or from a retailer of their choice.

Thus, at the hub, there are two different types of "imbalances" that may occur on any given day:

- (i) the total amount of gas used at the hub may be different to the nominated gas deliveries, because end use customers actually use more or less gas than was arranged to be delivered by the shippers on that day; and
- (ii) the gas used by individual direct end-use customers or individual retailers' customers may be different to the deliveries that they nominated to the pipeline operator directly or via their shipper.

In the event of (i), and assuming that Receipts are made in accordance with the nominated quantities for the day, the difference between nominated deliveries and total usage at the hub will result in a change in linepack on the transmission pipeline. This is because, ignoring linepack in the distribution system, *actual* deliveries will, more or less, equal *actual* end-usage of gas. Therefore, the difference between actual and nominated deliveries will be made up either by an increase or decrease in linepack. The management of this type of "imbalance" is through the transportation contracts between pipeline operators and shippers. Under these contracts, shippers typically have imbalance tolerances within which they are allowed to operate, with a requirement to physically restore linepack and return into balance within an agreed timeframe, which can be a day or two or, in the case of some pipelines, can

even extend to a number of weeks. The precise arrangements will depend upon contractual negotiations, price and the physical characteristics of the pipeline.

In case (ii), assuming that the actual total hub deliveries are equal to the nominated total deliveries, then the imbalances that arise between individual customers' or retailers' nominated deliveries and actual usage will effectively result in customers or retailers using gas that has been delivered on behalf of other customers or retailers. With the advent of retail competition and large numbers of customer transfers on a daily basis, plus increasingly unpredictable end-usage for gas fired power generation, gas retailers need to manage a portfolio of supply, transportation and demand contracts to deal with these daily imbalances and their commercial implications. The short-term market is, thus, proposed as a transparent mechanism for pricing and trading imbalances between deliveries and actual gas usage at the hub by individual direct end-use customers, retailers or their customers.

In practice, the imbalances at the hub will almost always be a combination of (i) and (ii) above. To the extent that total usage differs from total nominated deliveries, this will have some flow-on impact on future nominated receipts and deliveries by shippers to meet customer requirements on future days and also to restore linepack as required under the shippers' transportation contracts with the pipeline operators. The extent and nature of this impact will depend upon and be driven by the flexibility provided in the transportation contracts. The actions that are required of shippers under these contracts will be reflected in the prices at which they offer gas for delivery into the short-term market in subsequent days.

The model relies on there being sufficient linepack available in the pipeline system to manage imbalances of type (i), above, during the pricing period. With the exception of the Victorian principal gas transmission system, it is considered likely that most Australian pipelines could operate a short-term trading market as described here with a daily pricing or trading period. This being the case, the short-term market would price individual customer/retailer imbalances on a daily basis. A clearing price would be determined from a supply/demand curve developed for the hub each day. Individual retailer/customer imbalances at the hub would be "cashed out" at the clearing price determined for the following day (i.e. imbalances on Day 1 are priced at the clearing price determined on Day 2), this reflecting any cost impacts (if any) that such imbalances have on shippers in rectifying the previous day's pipeline imbalance.

While it is acknowledged that some transportation contracts allow a number of days, or even weeks, for shippers to return to balance, the establishment of a daily clearing price for short-term market imbalances is not seen as presenting operational difficulties or significant commercial inconsistencies. Actions taken to restore physical imbalance on the pipeline would proceed in accordance with contractual requirements. If such actions are not required the following day, then there ought not to be any cost impact from the previous day's imbalance reflected in delivery prices offered to the short-term market the following day⁷.

⁷ There is some potential for market distortion if shippers are allowed to accumulate imbalances over a few days, or even weeks, as allowed under their contracts, until such time as some remedial action is required to restore linepack. Conceivably, the cost impacts of the accumulating imbalance may be seen in a high short-term market price on one day - with the possibility that this cost is not allocated to those parties who have contributed to it over a number of days, but just to those parties who incurred an imbalance on the previous day. This issue and its materiality should be considered further in the detailed design and implementation of this Option should it proceed.

With the exception of the Victorian principal gas transmission system, the following is an overview of how the short-term trading market would operate each day (discussion of the Victorian gas spot market arrangements is provided in section 2.2.8):

- prior to the start of each gas day, retailers and direct end-use customers would advise the Market Operator of their projected or nominated usage for the day and would also submit price-related offers for deliveries at the hub for the day;
- from the projected usage quantities and price-related offers, the Market Operator would construct a simple supply/demand curve⁸ and, hence, establish a clearing price for the day⁹;
- a mechanism would be required by which to determine or assign both deliveries and daily usage at the hub to each participant in the short-term market (typically, retailers or direct end-use customers). This would entail collection of actual daily meter data or profiling – some such process is already required and in place at each city gate where retail competition has been implemented.
- Each short-term trading market participant's daily imbalance (= deliveries minus usage for the day) is calculated by the Market Operator
- Each short-term trading market participants' market exposure is then calculated as the clearing price, determined based on the supply/demand curve for Day 2, multiplied by the imbalance incurred on Day 1.

For those familiar with the Victorian gas spot market, it is important to note the difference with the above proposal. In Victoria, the spot market is integrated with physical operation of the pipeline system such that there is no requirement for transportation contracts to include balancing obligations – this is all dealt with through the spot market. The Victorian spot market prices imbalances but, here, imbalances are calculated as the difference between a Market Participant's total daily metered or allocated injections aggregated from the various supply points and their total metered or allocated withdrawals (or end usage).

The short-term trading market proposed above recognises that, other than the Victorian principal transmission system (PTS), pipelines typically operate with pipeline imbalances being managed under transportation contracts, some of which have up to ten years or so to run. The characteristics of most of these pipelines also provide greater ability than exists on the Victorian PTS for pipeline operators to manage daily imbalances through linepack and, potentially, in some cases, to offer other pipeline services such as "park and loan".

The proposed short-term trading market has therefore been developed to separate and isolate, as much as possible, the physical balancing of the pipelines themselves from the "market" balancing mechanism. Thus, the management of differences between "injections" and "deliveries" is intended to remain the province of the shipper-pipeline operator contracts, while the short-term trading market is intended to

⁸ The supply/demand curve only needs to include projected demand requirements for each day. The demand curve does not need to be adjusted up or down to reflect changes to linepack the previous day, as was stated in the original ERAA September 2004 submission. This is because the demand referred to here is that at the delivery point, not the injection point. The price offers should still reflect any costs incurred on Day 2 to restore linepack on day 2 – i.e. if a shipper's projected demand on Day 2 is 100TJ, but it is required to restore 10TJ of linepack to the pipeline operator, then if the additional 10TJ results in additional costs to the shipper, then this should be reflected in the price offer for the delivery of 100TJ – because to deliver 100TJ will require injections of 110TJ.

⁹ The intent is to set a single clearing price for each hub, even though it may be supplied by two or more pipelines; i.e. assumes no constraints between delivery points on multiple pipelines. This assumption will not always hold. However, there is a number of market design options to deal with the setting of prices in the event of constraints and this matter would need to be considered further and resolved as part of the detailed market design/implementation.

price imbalance transactions, with “imbalance” here referring to differences between “deliveries” and withdrawals or actual usage.

2.2.3. Information Requirements

There will be a requirement for the publication of system and market information. This would be by way of web-page or other electronic bulletin board format. As such, the information requirements set out for Option 2 are a sub-set of those for this Option 3.

The same physical system information that was proposed for Option 2, see section 2.1.2, would be required to be collected and made available under this Option – i.e. standing or “baseline” system data, daily information provided by way of exception reports on material changes to supply or transportation constraints, and details of forecast aggregate demand and/or aggregate nominated flows should be updated on at least a daily basis, preferably providing information for each of the next 2-3 days. The initial ERAA proposal suggested that participants be required to submit, daily, bona fide estimates of demand requirements and supply/price data for the next gas day and the following 2 gas days.

Market information, including the clearing prices at each city gate/hub would be published as soon as practical each day, along with projected clearing prices for the following two days.

In addition, market participants will require facilities to submit their daily nominations/bids/offers to the market operator and are likely to require confidential access to data on their own market positions – scheduled quantities, imbalances (in GJ/TJ), market exposures (in dollars).

While some of these functions may be split between the pipeline operators and the market operator, this would likely lead to an unnecessary duplication of effort and potentially inconsistencies in the interfaces participants will require with multiple systems. As was the case with the Bulletin Board facility in Option 2, there would appear to be value in establishment of a single, central electronic bulletin board-type facility to collect, publish or distribute this information – at least for interconnected pipeline systems.

2.2.4. Voluntary or Mandatory?

All shippers, retailers and direct end-use customers participating in the short-term trading market would be required to be subject to the market-determined clearing price for their imbalances. In this respect, participation by all shippers would be mandatory.

As is the case under existing gas supply and transportation contracts, all shippers would also be required to provide daily nominations to their gas suppliers and pipeline operators.

The submission of price-based bids or offers to take or supply gas would, however, be voluntary.

There would be no obligation on upstream producers or storage providers to submit bids/offers or otherwise participate in the short-term trading market arrangements. However, such producers/storage providers would have the option of participation through offering spare capacity into the market on any given day, at a price of their choosing.

Pipeline operators would continue to contract their own capacity and services and be accountable for their operating practices through their transmission agreements.

2.2.5. *Impact on Pipeline Scheduling/Operation*

Other than on the Victorian principal gas transmission system (see section 2.2.8), it is not envisaged that an independent transmission system operator will be required. Although an independent *market* operator will be required to collect bids/offers, assemble bid stacks, determine the clearing prices¹⁰, collect metering data and settle the short-term trading market, it is anticipated that the large transmission pipelines can continue to be operated by the pipeline owners/operators under their transportation contracts.

While the short-term trading market may well impact on shippers' nominations to producers and pipeline operators, the pipeline operators should see no change in the nomination process itself. Shippers will continue to nominate based on their contractual rights. These contractual rights will, in effect, have been offered to the market¹¹ and only those bids accepted by the market would be required to flow. These would then form the basis for shippers' nominations to the pipeline operator(s).

2.2.6. *Impact on Contracting Arrangements*

The development of the proposed short-term trading market arrangements has been aimed at having no direct impact on existing gas supply, transportation or retailer/shipper contracts, although further investigation and, possibly, design work is required to confirm that this has, or can be, achieved. A key issue would appear to be the need to align the allocation (both in the short-term market and by the pipeline operator for its contractual arrangements) of delivery quantities where actual deliveries do not match nominated quantities, either in total or for individual shippers.

Future gas supplies and pipeline transportation arrangements would be expected to continue largely on the basis of bilaterally negotiated contracts.

The short-term trading market would provide a mechanism for short term (day to day) trading around longer term contracted positions. The system and market information that is made available through the short-term trading market arrangements may also facilitate short term bilateral trades, and provide a basis for negotiation of new long term contracts.

2.2.7. *Governance, Legislation and Code Requirements*

An independent, "market operator" would be required to manage the short-term trading market arrangements. The market operator's roles would include:

- development and administration of the detailed trading rules;
- facilitation of participant interfaces;
- collection of bids/offers;
- construction of the daily bid-stacks;
- setting the clearing prices;
- notifying shippers of scheduled quantities as cleared by the short-term trading market;
- collection of metering data and/or overseeing injection and withdrawal allocations to determine participants' imbalances;
- managing prudential requirements;

¹⁰ In determining clearing prices for each city gate/hub, the market operator will need to be cognisant of pipeline constraints. This need not require a complex market clearing algorithm, but does require some further consideration.

¹¹ Parties will only be permitted to submit bids/offers in accordance with contractual rights to both supply and pipeline capacity. If bids/offers are submitted and accepted by the short-term trading market but are not supported by contractual rights, then producers/pipeline operators may refuse to physically schedule these quantities and relevant parties will be exposed to the market for these quantities the next day.

- settling the market; and
- collection, assimilation, publication and distribution of system and market information.

The market operator should be a “market responsive” body, governed by an independent Board that includes representation by industry participants. There are a number of existing “market operator” models that could be assessed, adopted or modified to suit the requirements of jurisdictional governments and industry – these include NEMMCO, REMCO, GMC and VENCORP. With the recent MCE reforms and establishment of AEMC and AER, all of these market operator models allow, in different ways and to different degrees:

- Government to control policy outcomes through the involvement of the MCE and AEMC,
- Industry to control costs incurred and the implementation of rules and systems – through representation on or to the market operator’s independent Board, involvement in consultative forums established by the market operator, and/or making representations to the AEMC and AER;
- Industry to determine the process for rule changes, which can be as dynamic and timely as necessary for a wholesale market; and
- Rule breaches to be dealt with through dispute resolution processes without involvement of courts or the Regulator.

The choice of the market operator model that is best suited for the proposed short-term gas market model is a matter that should be considered by the Gas Leaders Group and/or MCE should it be decided to proceed with implementation of a short-term trading market, or perhaps even a centralized Bulletin Board under Option 2. Such consideration should also take into account the outworkings of the National Gas Emergency Response Advisory Committee.

There will need to be a legal and/or regulatory framework to enforce the Short Term Trading Market arrangements. All shippers will need to be compelled to meet their market exposures for daily imbalances and to meet some, yet to be determined, level of prudential requirements.

Pipeline operators and participants will also need to be compelled to meet specified information provision requirements (as for Option 2).

A possible regulatory framework to govern the short-term trading market could be as follows:

- the market operator develops detailed rules to meet principles specified by AEMC (the market operator would do this through industry working groups/ industry) ;
- the AEMC approves rules developed by the market operator;
- once approved by AEMC, the rules are given some form of legal/regulatory effect (perhaps through the National Gas Law, although external legal advice should be sought by the Gas Leaders Group/MCE on how this is best done).

2.2.8. Consistency with NGERAC direction

Under this Option, the physical system supply/demand information, as provided under the Bulletin Board option, would be supplemented by establishment and publication of a daily clearing price at each hub. The absence of such pricing signals is currently seen as a barrier to the ability of the market to adequately respond in a timely manner to emergencies or, at least, to partial shortages in gas supply or pipeline constraints (for example, through secondary trading over interconnecting pipelines, voluntary use of alternate fuel, or other demand side response), in order to defer, minimise or avoid the adverse commercial impacts of intervention and/or exercise of emergency powers by jurisdictions in rationing scarce gas supplies.

This Option would therefore be an enhancement over the Bulletin Board approach in achieving the objectives of the National Gas Emergency Response Protocol and NGERAC.

2.2.9. Interfacing with the Victorian Gas Spot Market

The unique characteristics of the Victorian system, being a “meshed” network rather than a point-to-point system, and with volatile and potentially high system demand, but limited usable linepack, mean that an ex-ante pricing mechanism for daily imbalances would be problematic. This is because within day rescheduling of gas supplies is frequently required to maintain linepack within acceptable tolerances.

The Victorian gas spot market has operated since March 1999 with a daily, ex-post clearing price. However, following the recommendations from a Pricing and Balancing Review completed and endorsed by the Victorian Minister for Energy Industries in 2004¹², VENCorp is in the process of implementing revised spot market arrangements in Victoria which, from October 2006, will see prices set on a daily ex-ante basis but with 4-hourly rebidding and rescheduling periods, and payments for deviations from the ex-ante schedule, which will be determined and published at the start of each 4-hourly scheduling period.

Nevertheless, the principles that will be used in the revised Victorian spot pricing arrangements are broadly consistent with the proposed daily short-term trading market arrangements for other pipelines. Namely, that shippers’ “planned” or scheduled imbalances will be subject to the known ex-ante market imbalance price, and deviations from the ex-ante schedule will be exposed to a market imbalance price determined at the start of the next pricing or trading period.

As such, there is no reason to interrupt implementation of the revised Victorian gas spot market arrangements, which is well underway and on schedule for implementation in October 2006. Should a decision subsequently be taken to implement the short-term trading market on other interconnected pipelines with a daily clearing price, then there is high confidence that there will be the ability to develop an effective interface with the proposed Victorian arrangements. The Victorian arrangements may be viewed as a further refinement of the model to meet the special physical characteristics of the Victorian gas transmission system.

2.2.10. Implementation Issues for further consideration

- (a) Significant further thought needs to be applied to the governance arrangements for this market (see discussion in section 2.2.7) – legal/regulatory framework and market operator.
- (b) The proposed balancing arrangements under the Short Term Trading Market would replace the existing balancing systems in NSW/ACT, SA and WA. It is noted that participants in NSW/ACT are currently considering changes to these arrangements. Nevertheless, any cost benefit analysis would need to take into account the sunk costs in the existing systems and also the fact that operational costs of the new arrangements may be offset by the existing operational costs.

It is also understood that the NSW and SA balancing arrangements form part of the respective access arrangements and changes may, therefore, be required to these access arrangements and existing pipeline or shipper/retailer contracts.

- (c) Participants in the short-term trading market would be required to meet specified prudential requirements to cover their exposures or potential exposures in the market. The objective of

¹² VENCorp, “Victorian Gas Market Pricing and Balancing Review, Recommendations to Government”, 30 June 2004

prudential requirements is to ensure market confidence for “blind” trades between parties, such that prices can be offered on the basis that all potential counterparties meet a minimum level of financial security. As evidenced by various arrangements that exist in a number of financial trading markets, including the NEM, the Victorian gas market and the gas retail markets in NSW/SA and WA, there is a range of possible alternative frameworks for prudential requirements. These variously include requirements for lodgement of bank guarantees or other securities, margin calls by the market operator, or maintenance of an acceptable credit rating. The determination of the most appropriate prudential framework for the short-term trading market is something that should be progressed in consultation with industry as part of the detailed market implementation, but should not be critical in any policy decision over whether or not a short-term trading market should be pursued or not.

- (d) Further work is required to confirm the extent to which the proposed short-term market arrangements succeed in their aim of minimising any impact on existing contractual arrangements. Allocation methodologies for determining shippers’ delivery point quantities, under both the pipeline contracts and the short-term trading market would need to be aligned, or at least not result in inconsistent outcomes or incentives.
- (e) Detailed market design will most likely identify a number of issues that will require further consideration and resolution prior to implementation. The Market Options WG has identified the following as examples of such issues but, clearly, these do not represent an exhaustive list :
- the pricing methodology in the event of constraints between delivery points on different pipelines at the same city gate/hub (see footnote 9);
 - where a city gate is supplied by a pressure controlled and a flow controlled pipeline, the detailed market design would need to consider the methodology for allocating imbalances between shippers where an imbalance arises due to a shipper’s actions on the flow controlled pipeline but is actually physically supplied by multiple shippers through the pressure controlled pipeline;
 - potential market distortion due to implementation of a daily clearing price where physical pipeline imbalances within contractually allowable tolerances may be restored over a period of days or weeks (see footnote 7).

Issues such as these ought not, however, be a material consideration in terms of a policy decision on the desirability or viability of a short-term trading market.

3. *Initial Assessment of Options*

The Gas Market Options WG has not at this stage attempted to undertake a detailed cost/benefit assessment of the Options described in section 2.

However, Tables 3.1 and 3.2 present an initial high level and qualitative assessment of the relative “pros” and “cons” of each option (Table 3.1), and an indicative assessment of the options against each of the MCE’s Gas Market principles (Table 3.2).

While a useful starting point for further consideration, these assessments should not be viewed as representing a Gas Market Options WG recommendation to the Gas Market Leaders Group on a preferred Option.

Table 3.1 Relative “Pros and Cons” of Options 2 and 3

Option 2 - Bulletin Board		Option 3 – Short Term Trading Market	
Pros	Cons	Pros	Cons
Probably the lowest cost and simplest option.	Does not establish a clearing price, does not present any reliable pricing signals, nor directly create a market.	Sets market price and directly establishes a short-term trading market.	Implementation costs would be higher than Option 2. Would need at least partial write off of existing balancing systems in NSW/SA.
Achieves some improvement in terms of information provision and transparency. Dependent upon implementation, this could be limited to physical system information (supply/demand/delivery capability etc), or could include some pricing & trading information.	Use of Bulletin Board for posting buy/sell offers would only be useful for standardised terms and conditions and would still not provide effective price discovery.	Provides significant improvement in transparency for short-term trading– would provide the same physical system information as Option 2 PLUS much clearer pricing signals. Mandatory information requirements on participants no greater than Option 2.	Further work required to develop and implement detailed market design and rules.
Provision of information, if regularly updated, could conceivably better facilitate trade than the status quo.	Lack of price signals, and voluntary participation and provision of trading information unlikely to result in increased market liquidity or secondary trading.	Could create trading efficiencies – “automatic” trading of imbalances. Lowers barriers to entry, facilitates trade and new entry (can enter the market without contracts).	Will need a market administrator and additional costs associated with market settlements and requirements for prudentials/credit ratings.
Provision of system information could meet NGERAC requirements, – this, together with any improvement in short term trading that results, may defer government intervention in event of major contingencies.	Due to lack of pricing signals, likely to be of only limited assistance in facilitating short-term trades to assist in managing an emergency.	More overlap with NGERAC , clearer pricing signals to provide incentives for industry to “self-manage” supply shortfalls, constraints and emergencies.	
		Clearer market signals are provided to inform and influence investment, demand side management and other options for risk management.	Potentially higher risk exposure to market participants
		Creates stronger linkages between gas and electricity market and results in appropriate exposure for power generation sector	

Table 3.2 Assessment of Options against the MCE Gas Market Principles

MCE Principles (as augmented by Gas Market Leaders Group)	Option2 : Bulletin Board	Option 3 : Short-Term Trading Market
Information publicly available and frequently updated	√	√√
Gas market structure to facilitate competitive market in all sectors	X	?
Participants able to trade freely between pipelines, regions and basins	X	√
Regulatory certainty/consistency across all jurisdictions	Depends on implementation by MCE	
Market design responsive to and reflective of market needs	Depends on implementation by MCE	
Minimise need for government intervention in market operation	√	√√
Minimise cost and complexity	√	? Will incur higher implementation costs than Option 2, and will replace existing balancing systems with sunk costs in some States. Ongoing operational costs will depend on detailed design, but may be offset by operational costs of existing balancing arrangements.
Respect existing commercial arrangements	√	? Changes to balancing arrangements in some States may impact existing Access Arrangements and contracts.
Take account of physical characteristics of the networks	√	√
Take account of interface with NEM	X	√√
Complement work of NGERAC	√	√√
Recognise importance of bilateral contracts in underpinning development	√	√

Key: X = doesn't meet principle; ? = don't know; √ = meets principle; √√ = meets principle better

Gas Market Options Working Group

Background

The Gas Market Leaders Group has been established by the Ministerial Council on Energy to develop a Gas Market Development Plan which will deliver on the MCE's objectives for a competitive, reliable and secure natural gas market delivering increased transparency, promoting further efficient investment in gas infrastructure and providing efficient management of supply and demand interruptions as set out in the MCE's Expanded Gas Program.

Specifically, the Plan should provide:

- further development of Options 2 or 3 identified in the Allens Consulting Group (ACG) Report; or
- an alternative market development plan that provides equivalent benefits in terms of transparency and lowering barriers to market entry.

Key elements of the Gas Market Development Plan should include:

- The level of information on system capabilities, supply and demand information, including secondary trades, to be provided to the market in order to increase transparency;
- How such information would be provided to the market in a transparent and accessible manner, eg market based electronic facilities to publish trading and physical system information;
- Additional market arrangements that would promote greater levels of liquidity and competition and how these arrangements would be implemented, eg the phasing in of spot market trading at major trading nodes;
- Consideration of whether publication of an annual report on the performance of the market and the emerging transmission and supply constraints (similar to the NEMMCO Statement of Opportunities) would be beneficial to gas market development;
- An implementation timetable, including milestones; and
- The identification of any regulatory and rulemaking requirements which jurisdictions would need to put in place in order to facilitate implementation of the plan.

In developing its plan, the Leaders Group should take account of the following:

- MCE's Expanded Gas Program of 19 May 2004;
- The MCE Gas Market Development Principles in Appendix 2;
- The variations between jurisdictions' gas demand profiles, network topology, and industry structure;
- The new governance and institutional arrangements for the energy sector;
- Associated gas market reform initiatives currently being undertaken by the MCE; and
- The findings of ACG's final report.

The Gas Market Leaders Group met on 12 December to establish a workplan for delivering on its terms of reference and decided to establish a Gas Market Options Working Group to assist it with this task.

Terms of Reference for the Gas Market Options Working Group

- Define and scope Options 2 and 3 from the Allens Consulting Group Report to a sufficient level of detail to be able to make an assessment of the feasibility and cost/benefit of the options and any variations.
- Issues to address include:
 - Whether participation should be voluntary or mandatory.
 - Necessary prudential requirements.
 - Governance arrangements.
 - Market clearing mechanisms.
 - Information requirements for each option, and particularly what information would be posted on a Bulletin Board (such as system capability, supply and demand information, price etc).
 - A methodology to allow a cost benefit analysis of each option (high level).
 - Barriers to implementation.
 - An implementation path.
 - Any legislation or code requirements or amendments.
 - Production of an Annual Report focussing on supply/demand projections and system constraints.
 - Assessment against the MCE Gas Market Principles (in Appendix 1 as augmented by the Gas Market Leaders Group).

Membership of the Group

Members of the Gas Market Options Working Group are as follows:

- Matt Zema, CEO VENCORP (Chair)
- Patricia McKenzie, CEO Gas Market Company
- Julian Turecek (Origin Energy), representing ERAA
- Peter Geers (AGL), representing ERAA
- Stephen Livens (Epic Energy), representing APIA
- Rod Johannessen (APT), representing APIA
- Peter Fennessy (Alinta), representing ENA
- Mark Frewin (TRUEnergy) representing NGF
- Matthew Arnold (ExxonMobil), representing APPEA
- David Headberry, representing End Users
- Darren Nelson, representing NT Power and Water
- Mark Nielsen, representing Western Power
- Terry Grimwade (VENCORP)
- Marie Taylor, MCE Secretariat
- Wilfred Antioch, MCE Secretariat

Timeframe

The Working Group is requested to provide the Gas Market Leaders Group with an initial report on the above issues by **3 February 2006**.

MCE PRINCIPLES FOR GAS MARKET DEVELOPMENT

Industry should be guided by the following MCE Principles for Gas Market Development when considering future gas market arrangements.

- Information on market and system operations and capabilities at all stages of the gas supply chain (subject to recognition of existing contractual confidentiality) should be publicly available and frequently updated.
- Gas market structure to facilitate a competitive market in all sectors.
- Gas market participants should be able to freely trade between pipelines, regions and basins.
- There should be regulatory certainty and consistency across all jurisdictions.
- Market design and institutional requirements responsive to and reflective of the needs of the market and market participants.

At its meeting on 12 December the GMLG drafted the following additional clauses to clarify and elaborate on the above principles:

Point 4 - add the words "(to the extent possible)" after "jurisdictions".

Point 5 - add the following sub-points:

- minimise the need for government intervention in the operation of the market;
- minimise cost and complexity;
- respect existing commercial arrangements;
- take account of the physical characteristics of the networks;
- take account of the interface with the National Electricity Market;
- complement the work of the National Gas Emergency Response Advisory Committee (NGERAC); and
- recognise the ongoing importance of bilateral contractual arrangements which underpin gas market development