10th August 2015

Mr Warwick Anderson
General Manager
Network Finance and Reporting
Australian Energy Regulator
GPO Box 3131
CANBERRA ACT 2601

By email to: AGN2015GAAR@aer.gov.au

Dear Mr Anderson

Re: Australian Gas Networks (SA) Access Arrangement Proposal

Thank you for the opportunity to make this submission to the Australian Energy Regulator (AER) regarding the Access Arrangement proposal by Australian Gas Networks (SA).

About the ATA

Founded 35 years ago, the ATA is a national, not-for-profit organisation with almost 6,000 members. Our members are largely residential consumers of energy, water and transport.

ATA presents a two-fold perspective as an energy consumer advocacy organisation. ATA brings experience in energy policy, markets and technology, and with the support of Energy Consumers Australia is a strong and informed voice for energy consumers Australia-wide. We also speak with authority on behalf of the growing portion of the consumer base with an active interest in demand side participation in energy markets.

2014 ATA Research: "Are We Still Cooking With Gas"

The ATA was commissioned by the Consumer Advocacy Panel in 2014 to conduct research on the impact of rising gas prices on residential consumers and to identify cost effective alternatives, where they may exist.

The research analysed the economics of new, high efficiency gas appliances as compared with equivalent new efficient electric appliances for space heating, water heating and cooking for households. By 'efficient electric appliances' we mean heat pumps for water heating, reverse cycle air conditioners for space heating, and induction cook tops and efficient electric ovens.

The analysis was conducted across each jurisdictions (including South Australia) and differentiated by climate zones, household types and gas pricing zones, to understand potential costs and benefits. Although South Australia has five gas zones, there is very little variation in gas tariffs. They were consolidated for the purposes of our analysis.

This report stands as the authoritative body of work on the economics of fuel choice for homes in the NEM.

The major finding of the research was that mains gas is no longer the cheapest fuel source for some residential activities in many locations. In particular, the research found that:

- It is no longer economic for any new home, or existing all-electric home, located anywhere in South Australia (or indeed anywhere in Australia), to connect to mains or bottled gas – as compared with installing and operating efficient electric appliance alternatives.

  For example, taking into account all ownership costs over 10 years, a new home in Adelaide would save over $6,000 (on a net present value basis) by choosing to go all electric with efficient electric appliances, as compared with connecting to the mains gas network for space heating, hot water and cooking (see next section and AWSCWG p62). Any higher capex of the electric option is paid back is in less than 5 years.

- For the many existing dual-fuel homes in South Australia (and other warmer climate jurisdictions), progressively switching all appliances from gas to efficient electric – when they are due for replacement, and in some cases beforehand – is more cost effective than replacing the same appliances with efficient gas ones.

  Where a standard sized existing Adelaide home uses mains gas for space heating and cooking, and where one of these appliances is near the end of its expected lifespan, they would save over $3,000 by switching to efficient electric appliances and disconnecting from the gas network. Any higher capex of the electric option is paid back in less than 10 years.

Our report has been well received. Individual gas distributers engaged with us in producing the report, and it has been extensively reviewed by the Energy Networks Association. On the basis of our research, one gas retailer and one academic institution commissioned us (separately) to build a forecasting model of gas demand.

The report has been utilised by the Australian Energy Markets Operator[1], the Grattan Institute[2] and the Melbourne Energy Institute[3] in their own analyses; and the ATA has briefed governments in Victoria, ACT and NSW on its findings.

These findings are significant in the context of the continued reliance on gas by many households in South Australia.

Research Context

The new Liquefied National Gas (LNG) export market from Eastern Australia is pushing up retail prices for domestic gas, a situation expected to worsen in coming years with substantial impacts on the affordability of gas for households.

At the same time, electrical technology to heat air and water is increasingly efficient. While gas remains cheaper for each unit of energy supplied at the meter, an efficient electric space or water heater now uses only 1/7 to 1/5 of the metered energy that the most efficient equivalent gas appliance. As a result, efficient electric appliances for space and water heating have lower running costs than efficient gas appliances.

1 http://www.aemo.com.au/Electricity/Planning/Forecasting/National-Electricity-Forecasting-Report/~/media/Files/Electricity/Planning/Reports/NEFR/2015/Emerging%20Technologies%20Information%20Paper.ashx Accessed 08/07/2015

2 http://grattan.edu.au/wp-content/uploads/2014/10/817-gas-at-the-crossroads.pdf Accessed 08/07/2015

3 http://www.energy.unimelb.edu.au/files/site1/docs/2323/The%20dash%20from%20gas.%20Could%20demand%20in%20New%20South%20Wales%20fall%20to%20half%3F_1.pdf Accessed 08/07/2015

For cooking, electric induction cook tops are increasingly affordable, and provide similar amenity and higher safety than gas equivalents, such that they are preferred by many consumers.

These trends - higher retail gas prices and improved performance and price of efficient electrical technologies - are now firmly established within Australia. And whilst the efficiency of electric space and water heating appliances is continuing to improve, that of gas appliances is forever limited.

Economic Variables

The economics of gas versus electricity for households is sensitive to a wide range of interrelated factors, which include:

- whether or not an appliance is at or near the end of its asset life;
- whether the decision incurs the cost of a new connection or new fixed charges;
- whether the decision avoids the cost of existing fixed charges;
- current gas and electricity tariffs and tariff structures;
- forecast prices for electricity and gas;
- the annual input energy use of individual gas and/or electric appliances, which is itself influenced by:
    - building type, size and thermal performance;
    - the type and mix of existing appliances in the home;
    - climate zone (with particular reference to space and water heading loads and the performance of electric systems); and
    - consumer financial expectation, including the cost of capital and return on investment expectations for any individual consumer; and
    - consumer behaviour.

Please refer to our report[4] for the full details of the methodology.

Economic Results – Adelaide Gas Pricing Zone

ATA developed six 'Household Scenarios' that could be applied to each location modelled. The scenarios considered a range of housing types and sizes, with differing characteristics in terms of gas and electric appliance use and overall energy use.

The exception to this is the newly built home scenario (*Scenario 6: New Build*). As there are no existing appliances in place, a consumer is assumed to choose between installing either gas or electric appliances as the initial appliance investment.

The ATA also developed six 'Replacement Case' scenarios. For existing dual fuel homes, where an existing gas appliance has failed (or is highly likely to require replacement within five years), replacing it with one appliance avoids the capital expense of another in the near to medium term. Hence the up-front cost impact on the consumer will be the difference in capital cost between the two appliances.

Alternatively, the existing appliance may be still in good working order and unlikely to require replacement in the next five years. In this case, the decision does not lead to any avoided capital cost in the near to medium term and up-front cost to the consumer will be the full capital cost of the new appliance. If the appliance can be replaced with efficient electric the consumer may be able to avoid the need for an existing gas supply.

[4] http://www.ata.org.au/ata-research/new-report-on-economics-of-gaselectric-appliances

Economic results for each Household Scenario were defined as net present values (NPV) over a ten year period. Payback time was also indicated and defined as the time taken to return the additional capital invested into the efficient electric option as compared with the gas option. All cash flows were discounted at current mortgage rates. In reading the larger results table, ATA's advice to consumers was as follows:

Cell Colour	Economic Result	ATA Advice
$NPV	A positive NPV with a payback time of five years or less.	Definitely choose efficient electric over gas: any extra up-front cost will be recouped through savings within five years.
$NPV	A positive NPV with a payback time of between six and ten years.	Consider choosing efficient electric over gas: any extra up-front cost will be recouped through savings within ten years.
- $NPV	A negative NPV over 10 years.	Choosing electricity over gas is unlikely to save any money: any extra up-front cost will not be recouped within ten years.

The results table for the Adelaide gas zone is contained below. Results are presented by appliance type (i.e. space heating, water heating, cooking) and replacement case for each Household Scenario:

Gas Zone: Envestra Adelaide			**Electricity Zone: SA Power Networks**			
Example Location: Marion, 5034, SA			**Climate Zone: Balanced Moderate Demand**			
Household Scenario	Ref home	Small home	Large home	Public housing	LPG home	New build
Switching a gas appliance, within 5 years of end of life, staying on gas network.						
Space Heating	$863	$1,346	$687	$1,548	$2,050	$1,844
Hot Water	-$1,107	-$1,314	-$1,895	-$906	$1,190	-$1,597
Cooking	-$462	-$182	-$680	-$441	n/a	-$680
Switching a gas appliance, not within 5 years of end of life, staying on gas network						
Space Heating	-$1,937	-$854	-$2,713	-$1,452	$550	n/a
Hot Water	-$2,607	-$2,514	-$3,695	-$2,106	-$10	n/a
Cooking	-$2,262	-$1,982	-$2,480	-$2,241	n/a	n/a
Switching one gas appliance, of any age, disconnecting from gas network						
Space Heating	$2,303	$2,548	$1,593	$2,458	n/a	n/a
Hot Water	$1,796	$884	$911	$2,070	n/a	n/a
Cooking	$246	$244	$247	$246	n/a	n/a
Switching two gas appliances, at least one is within 5 years of end of life, disconnecting from gas network						
Space Heating + Cooking	$3,223	$2,867	$3,114	$3,578	n/a	n/a
Hot Water+ Cooking	$1,416	$203	$833	$1,390	n/a	n/a
New & existing homes, not currently gas connected, choosing efficient electric instead of gas*						
All Heating & Cooking	$6,040	$5,224	$5,494	$6,742	$6,202	$6,310
All gas appliances switched: one is within 5 years of end of asset life, avoiding $2,000 replacement capex.						
All Heating & Cooking	-$385	$149	-$2,281	$417	$3,252	-$1,615

** Assumes full CAPEX on both electric and gas sides.*

The sensitivity of ATA's results was tested for gas and electricity price assumptions, off-peak electricity tariffs and gas appliance need.

Sensitivity of Results: Future Price Trajectories

Sensitivity analysis was undertaken to test the results against a range of forecast retail gas prices for Victoria and NSW. ATA adopted low and high ranges for the purposes of comparison against the 'medium' price trajectories (in the table above). This analysis was carried out in order to understand the underlying strength of economic results.

Although sensitivity was not done on South Australian results specifically, overall ATA found that economic results were not particularly sensitive to different retail gas price trajectories – i.e. whilst they changed the magnitude of the numbers; they largely did not change an uneconomic investment into an economic one (or vice versa).

As such, the analysis demonstrated that rising wholesale gas prices does not have a strong bearing on the economics of gas and electricity fuel switching. Rather it is the emergence of more cost effective efficient electric alternatives in the past 10 years that is driving the economic opportunity.

Sensitivity of Results: Off-Peak Electricity Tariffs

Some consumers may be able to access off-peak rates for electric resistance water heaters or indeed heat pump hot water systems. Some households (such as those in apartments) may not be able to install more efficient heat pump hot water systems due to their size and spatial requirements.

Where an economic case for switching away from gas hot water exists, a lower off-peak electricity rate makes this case even more compelling.

In gas zones where efficient electric hot water systems were largely found to be uneconomic (without subsequent gas disconnection), the ability to use off-peak rates changed this finding considerably (i.e. to a positive NPV).

Sensitivity Analysis: Gas Appliance Replacement Need

Finally, ATA also tested the sensitivity of the results on the number of gas appliances approaching the end of their asset life.

The last Replacement Case in the table above assumes that only one existing gas appliance is within five years of the end of its asset life; and yet all three gas appliances are switched to efficient electric. As such, only one gas appliance capex (assumed to be about $2,000) is avoided by the switch to electric.

If a South Australian household is in the situation of having a second gas appliance also within five years of the end of its asset life, it can reasonably be assumed that an additional $2,000 of gas appliance capex will be avoided by the switch to electric.

In this circumstance, a total avoided gas capex of $4,000 makes an otherwise borderline economic decision for small and medium homes and public housing to switch to efficient electric highly economic; and almost makes the choice economic for a larger home.

Long Term Interest of Consumers

The question of fuel choice and potential fuel switching raises an important question about the boundaries of network regulation: Where does the National Gas Objective (NGO) start and the National Electricity Objective (NEO) end?

Clearly, the NGO applies to the regulation of gas networks and therefore to current and future gas consumers. And more or less all energy consumers are electricity consumers, so the NEO applies to them.

But what about a consumer facing a decision of choosing between these fuels? For a consumer who connects to gas because it is the most cost effective option over the longer term, the NGO has arguably been achieved. However as indicated by the ATA research, this is now the minority of new connections anticipated by gas businesses.

For the consumer who prefers gas for non-price related reasons and is happy to pay a premium for it, that is consistent with the NGO too.

However, let's look at three cases that might challenge the boundaries of the NEO and the NGO:

1. If some consumers make a decision not to connect to gas, because it isn't cost effective for them, we would argue that decision is in keeping with their long term interest with respect to prices, and so is in keeping with both the NEO and the NGO.

2. Likewise, a consumer who uses gas today, and replaces that appliance with an electric one because it is more cost effective, also is in keeping with both objectives.

3. On the other hand, consumers in either of those categories making the wrong decision would be a failure under both objectives.

We have inherited a false distinction in the separation of the NGO and NEO, whereas the real issue to the consumer is the cost effectiveness of energy, irrespective of the specific fuel type. In ATA's view, in the absence of an overarching single objective, energy market institutions should have regard to both fuels in the context of each objective, and we ask the AER to do so in this case.

AGN's Proposal

ATA welcomes the proposed initial 11% cut in tariffs for residential consumers (p11). We note this is primarily driven by falling regulated financing costs (p10), as well as incurring less operating expenditure (opex) than approved in the previous Access Arrangement (p8). However the proposed Regulated Asset Base is increasing excessively, with consequential +5% pa real increases in tariffs in 2017/18 and beyond (p11).

Throughout the proposal AGN claims that gas is a "fuel of choice" (for example p20). As this appears to be used as a justification within the proposal, **ATA recommends that the AER require of AGN an explanation of they mean by this claim, and open this topic to broader stakeholder input**.

Growth or Contraction?

AGN acknowledges a history of declining demand for reticulated gas, with existing households becoming more efficient gas users (on average) and new connections using significantly less gas.

One theme of AGN's proposal is the downside risk to gas demand forecasts (e.g. p39) as a result of new factors on top of existing trends. On the basis of our report above, ATA strongly agrees with this assessment. The position of gas as a cheap fuel is now historic. Awareness by consumers understandably lags, however we clearly are on the cusp of behavioural change.

Despite a long history of steadily declining residential demand, and a worrying outlook, AGN is proposing to increase investment in their network. AGN's catch-cry, on the front page of their documents, is "Higher service levels, lower prices and increased investment." The infographic on page 6 makes it clear they are still hunting for opportunities for "delivering profitable growth" and "ongoing network growth".

ATA accepts that the existing network will require ongoing maintenance and from time to time replacement, but we believe the objective of this and future Access Arrangements in the long-term interest of gas consumers should acknowledge the inevitable **contraction** of the gas network.

Given the economics, it appears illogical to suggest that consumers will connect to the gas network at rates seen in the past, yet AGN is proposing a rise in capital expenditure (capex) by +29% over current Access Arrangement (p8).

Some of the capex rise is attributed to the 38,000+ new connections to McLaren Vale and Tanunda, the result of past regulatory decisions allowing network expansion. More relates to IT system upgrades already approved. Other capex in the proposal all seems to be proposed as a matter of safety. We address the 'safety' rationale below.

New Expansion

In regards to network expansion, ATA notes the following:

> *"AGN considers that it is in the best interests of our customers to investigate potential network expansion opportunities. This initiative received marginal support from stakeholders... no expenditure is included as a direct result of this feedback"* **(**p63).

It is also important to note the stakeholder feedback in this context:

> *"AGN explained the regulatory requirement to provide evidence that expansion is economically viable, and customers saw the benefit of expanding the network to spread costs over a larger customer base to lower the overall price."* Deloitte, Stakeholder Insights, 2015 P22

ATA's research clearly demonstrates that **no** network expansion in South Australia is clearly in the long term economic interest of existing SA gas consumers. As such, ATA believe this is an inappropriate framing for the discussion.

The "marginal support" then expressed by AGN's customers during consultation was:

> *"...customers were concerned about how much AGN knew about customer demand in the new areas they are considering. Customers want assurance that AGN will conduct an appropriate level of research to find out how many people in the area want gas before investing in a detailed feasibility study."* Deloitte, Stakeholder Insights, 2015 P22

Page 266 of the proposal also reports:

> *"AGN has commenced investigations into the feasibility of reticulating gas in Mount Barker, in the Adelaide Hills."*

It is appropriate that no direct expenditure for feasibility studies is passed through to consumers in AGN's proposal. It is a commercial decision and should be funded accordingly.

Even in the ACT – where gas is more heavily relied on by consumers than in SA – customers told ActewAGL that they:

> *"Believe it is important that current customers are not subsidising new customers, or that existing customers were not being burdened with the costs of paying for infrastructure that is for the long-term and therefore the benefit of future customers."*
>
> *"… don't want to see us invest in infrastructure that may be obsolete in the long-term future. Questioned if the growth of the gas network, by increasing the number of customers, the right long-term strategy?"*

Indeed, the ATA strongly advocates that businesses intending to expand gas networks into new housing developments are subject to a Regulatory Investment Test, as electricity networks are for asset replacement - to ensure the development is indeed in the long term interests of consumers. As part of this process, the suite of technology and fuel choice options available to consumers must be considered.

New Connections & Disconnections

The existing methodology of forecasting connections and disconnections relies on historical trends. As ATA has established, the economics of gas versus efficient electric appliances has changed. AGN's proposal agrees, warning of downside risk to the demand forecasts.

One factor is the future penetration rate of gas into new housing, which is said by AGN to be consistent with past history (p233). Yet Core reports it expects *"to see a continuation of declining trends in gas connection penetration"* (Core Energy, Demand Forecasts, p19). However we were unable to find the specific assumption used by its forecasts – greater clarity on this point is needed.

When it comes to the competitive position of a gas and electricity, an economic concept called "cross price elasticity" is used. Core Energy's *"extensive"* literature search came up with only four estimates (Core Energy, Demand Forecasts, p88).

The ATA is highly suspicious of relying on cross price elasticity estimates. **ATA would prefer the gas businesses or their consultants be required to analyse the competitive position of gas against electricity**. In this context, ATA's research appears to remain the only comprehensive and up-to-date body of work that has assessed competitive positioning in the AGN areas.

ATA believes that declining demand for gas because of a more efficient/cost effective competitor should be considered as a business risk that is accepted by the owners of gas distributers and its bond holders.

Demand Forecasting Incentives

It is worthwhile considering the incentives gas businesses face in forecasting demand.

The AER currently sets gas distribution Access Arrangements taking into account forecasts of average demand and new connections. Once total revenue and the number of connections forecast are set, average prices are then calculated. If the forecasts for average demand are not met, the capped revenue will not be achieved by the business.

With price cap, rather than revenue cap, regulation, structurally the gas distributers have an interest to err on over-forecasting new connections, specifically because new connections can justify new capex.

The ATA draws an analogy with the incentives facing electricity businesses regulated by price caps in previous years. Rising peak demand justified expanding their asset base, however as customers responded to rising prices, electricity consumption patterns changed. Peak demand started to decline, as did average demand.

Likewise, gas businesses regulated by revenue cap face an incentive to assume the continuation of existing trends of connections and ignore the changes in consumer behaviour that suggest otherwise, in an attempt to justify capex to expand the network, expand their RAB and maximise revenue. It's not merely an absence of good information, but strong incentive to assume the continuation of existing trends.

ATA believes that, like in electricity, average gas demand and the number of new connections are not independent variables, but have a relationship. It appears illogical to expect consumers to connect to the gas network at rates seen in the past.

Incentives / Efficiency Benefit Sharing Schemes

Customer research conducted for AGN yielded these insights:

> *"The price of energy and the total gas bill is the major concern for customers. As mentioned previously, there is a common perception among customers that energy prices are increasing even though consumption levels are falling."* Deloitte, Stakeholder Insights, 2015 P24
>
> *"Customers also told us they are reducing their energy consumption but their bill keeps 'creeping up'."* Deloitte, Stakeholder Insights, 2015 P12

AGN is advocating for *"strengthening"* the AER's existing opex incentive scheme and extending it to incentives for innovation and customer service as well as introducing incentives for efficiency gains/losses in capex.

In the context of incentives for security of supply, customers say with *"the general view was that AGN shouldn't need an incentive to provide good service."*Deloitte, Stakeholder Insights, 2015 P17

In particular the innovation incentives are AGN's response to "a negative spiral" of demand (p202). The criteria seems good, but then AGN cautions *"that this assessment of projects against the criteria is not intended to be an assessment of the broader merits, or efficiency of the expenditure after it has been incurred"* (p205). ATA believes that declining demand for gas because of a more efficient competitor is better characterised as a business risk and *"innovation incentives"* are inappropriate.

When it comes to capital expenditure efficiency sharing arrangements, AGN is proposing to limit the scope for windfall gains or losses (p200). In our view these limits are an appropriate goal, however the proposed phrasing is difficult to follow – and greater clarity would be beneficial.

Overall ATA believes it would be inappropriate for any incentive payments structured to benefit AGN occur should its demand forecasts not be met.

Safety

Capex proposals were subject to Willingness-to-Pay assessments by AGN customers (p61-62), and purportedly gained some measure of support.

When it comes to Willingness-To-Pay discussions with consumers, ATA is concerned that networks may frame the proposal inappropriately as a safety initiative, which is concerning given that safety is an emotive issue that may be exploited to provoke a particular response.

The AER should scrutinise the capex safety proposals for evidence of informed understanding by consumers about level of risk or consideration of tradeoffs.

The ATA notes that there were two levels of support among the 'safety' initiatives that AGN is putting forward in the Access Arrangement. Three initiatives received 80-90% support among customers. Two proposed initiatives failed to receive overwhelming support from customers, namely:

- increase mains replacement program to 220kms per annum; and
- relocate 'at risk' customer's gas meters (p61-62).

It is not possible to know how these questions were framed in the customer workshop. In particular there is no chart relating to the rate the replacement program in Deloitte's report. However we are struck by this description from Deloitte of AGN's proposal:

> *"Increasing the rate of its current pipe replacement program to improve safety, reliability, pressure and capacity across more of the network,* ***at a faster rate than is required to maintain safety,*** *which also allows customers to take advantage of modern high efficiency appliances. "* (our emphasis), Deloitte, Stakeholder Insights, 2015 P18

The proposed replacement rate in AGN's capex proposal appears to be beyond that needed for safety. Moreover in the context of declining total gas demand, these "modern high efficiency appliances" should be able to be accommodated already. Is it not the point of more efficient appliances that they use less energy?

We recommend the AER take into account feedback on these capex proposals from the Consumer Challenge Panel.

ATA recommends the AER should scrutinise closely the efficiency and necessity of those capex proposals that received less than 60% support from workshop participants.

In more general terms, it is ATA's view that the **AER should focus on benchmarking efficient businesses to determine revenue requirements**. It is reasonable to expect that all distributers will prioritise safety and reliability as a matter of prudent business operations. That is, how the businesses spend the allowed revenue on achieving safety and reliability is ultimately a business decision for them.

Rate of Return

AGN is proposing an overall Weighted Average Cost of Capital allowances (WACC) of 7.23% (p10). This compares unfavourably (for consumers) to the AER's recent WACC determination of 5.45% for SA Power Networks (AGN's proposed returns on equity and debt are both higher).

ATA expects the AER's determinations to be consistent with its recent decisions and provide for a lower WACC.

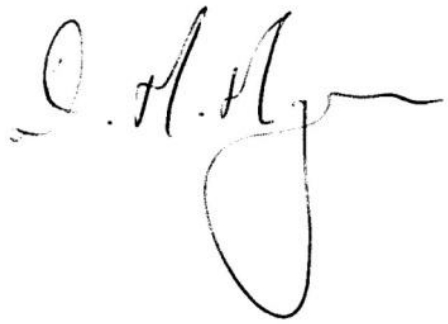
We note AGN seems to propose accelerated depreciation if the AER determines a lower WACC to maintain "financeability" (p164-165). The ATA believes that businesses should have always made past investments with an understanding of all the risks (e.g. carbon constraints). Accelerated depreciation allowances merely act to guarantee returns for today's investors. Consumers would welcome businesses choosing to accelerate depreciation. And given the risk to their assets, it would seem the logical thing to do. However we strongly oppose the idea that networks would pass the costs of accelerated depreciation through to consumers.

ATA members are concerned that long-term recovery of network capex in the context of a "death spiral" is being characterised by the businesses as an intergenerational issue for consumers, rather than an investment issue for businesses.

In this context, businesses have raised questions about whether today's consumer advocates represent tomorrow's energy consumers. We find the suggestion that consumer advocates don't represent future consumers to be quite offensive and we ask the AER to challenge any energy network businesses that make such assertions.

Thank you for the opportunity to submit to this process and should you have any queries, please do not hesitate to contact either Craig Memery on 0412 223 203 or craig@ata.org.au or myself on 03 9639 1500.

Yours sincerely



Damien Moyse
Policy & Research Manager