Hugh Grant

AER Consumer Challenge Panel (CCP4)

Submission to the AER

AER Draft 2018-22 Revenue Decision

Powerlink Revised 2018-22 Revenue Proposal

23 December 2016

1 Summary Of Key Points

1.1 Current Regulatory Period Outcomes

CCP4's previous submission outlined that during the current (2013-17) regulatory period:

- Powerlink achieved extraordinary profitability levels – achieving annual return on equity levels of up to 75%, compared to the AER''s assumed 9.4%
- Powerlink achieved major windfall gains from over-forecasting its capex needs – being rewarded with around $300 million in 'windfall gains', due to its revenue allowances including returns on capex that it did not incur
- Many of the stakeholders' criticisms of the AER's 2013-17 allowances have proven to be correct (e.g. Powerlink's actual demand was 40% lower than its forecast demand during the period)
- Powerlink's over-investments continued to result in increasing levels of excess capacity and major declines in asset utilisation levels
- Powerlink's operational efficiency continued to decline significantly over the period
- Powerlink continued to receive very high bonuses from the AER's Service Target Performance Incentive Scheme (STPIS) - achieving annual bonuses of over $20 million

The above outcomes illustrate that Powerlink's 2013-17 allowances were well above the efficient levels.

CCP4's previous submission urged the AER not to fall into the false sense of security that could arise from making simple comparisons between Powerlink's proposed 2018-22 allowances and its 2013-17 allowances.

Disappointingly the AER has fallen into that trap and is proposing to provide 2018-22 revenue allowances to Powerlink well above the efficient levels.

1.2 The AER's Draft Decision On Powerlink's 2018-22 Revenue

The AER has effectively accepted Powerlink's revenue proposal, other than applying some minor changes to Powerlink's proposed replacement capex and applying changes to reflect movements in market conditions (e.g. the risk free rate) since Powerlink's revenue proposal was submitted.

The reductions in Powerlink's revenue compared to the previous regulatory period are purely due to reductions in interest rates. If interest rates had remained at the same level as the previous regulatory period, Powerlink's revenue would be around 25% higher.

Returns on Powerlink's regulatory asset base (RAB) are continuing to drive Powerlink's revenue to a greater degree than all of other Australian energy networks, accounting for 71% of Powerlink's 2018-22 revenue.

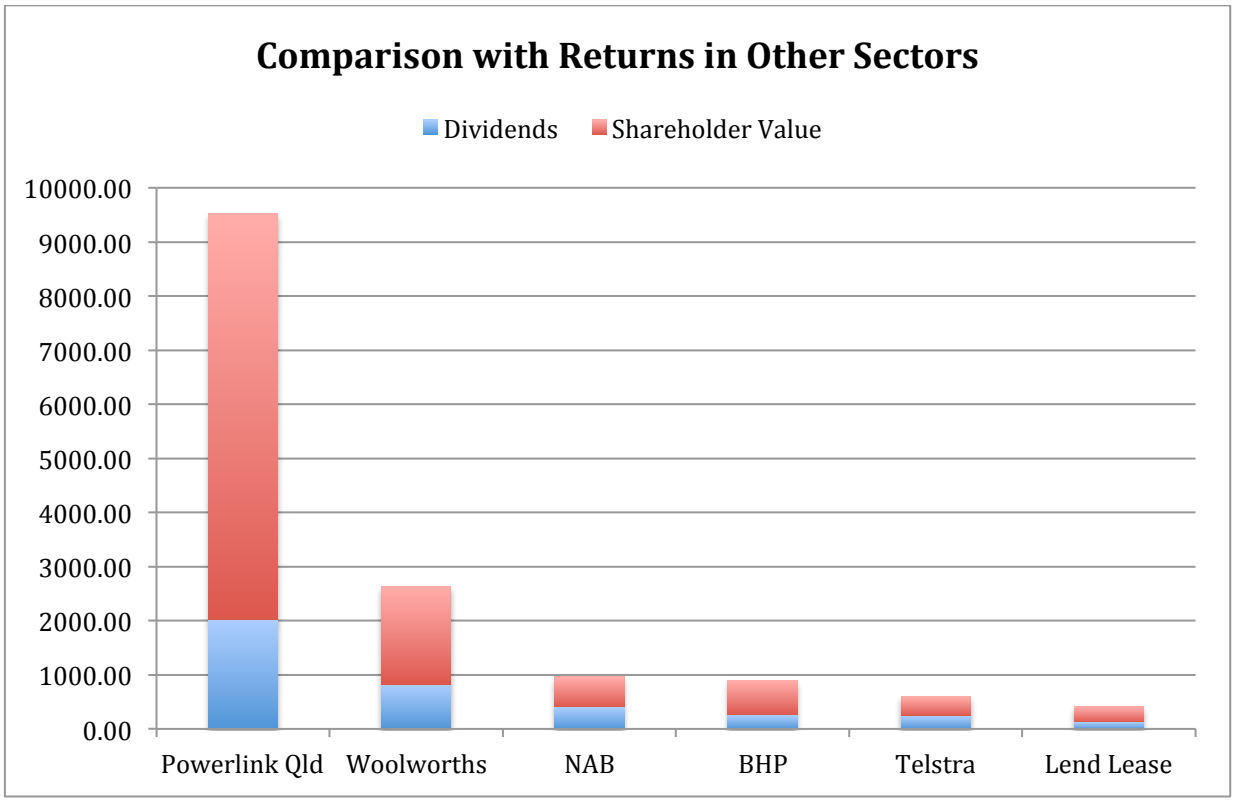
1.3 Return on Capital

The AER's has accepted Powerlink's proposed return on capital allowances, with some minor changes to reflect movements in market conditions (e.g. the risk free rate) since Powerlink's revenue proposal was submitted.

1.3.1 Powerlink's Extraordinary Profitability

Powerlink is extraordinarily profitable, achieving many multiples of the returns that the AER assumes and many multiples of the returns being achieved by Australia's best performing ASX 50 companies.

The chart below compares the returns that the Queensland government is realising from its ownership of Powerlink with the returns that it would have been achieved if it had invested in blue chip stocks in other sectors of the Australian economy.



Note – the above chart actually understates Powerlink's returns, as:

- It does <u>not</u> include the income that the Queensland Government has extracted through unconventional equity drawdowns (i.e. the extraction of RAB indexation from Powerlink's book equity)
- It does <u>not</u> include the other pecuniary benefits that the Queensland Government has realised from its investment in Powerlink (tax receipts and debt fees)
- The Queensland government is unlikely to have actually invested the reported "share capital" levels

The above chart illustrates that over the past 15 years, the Queensland government's investment in Powerlink Queensland has accrued total returns of:

- 23 times the returns achieved by the Australian construction sector (Lend Lease)
- 15.5 times the returns achieved by the Australian telecommunications sector (Telstra)
- 10.5 times the returns achieved by the Australian minerals and resources sector (BHP)
- 10 times the returns achieved by the Australian banking sector (NAB)
- 3.6 times the returns achieved by Australia's most profitable supermarket (Woolworths)

No other ASX 50 stock came close to Powerlink's returns.

Importantly, those returns are being realised despite Powerlink being the most inefficient transmission network in the National Electricity Market (NEM).

Clearly those returns are grossly excessive and are not in consumers' long-term interest.

The primary driver of Powerlink's extraordinary profitability is the AER's provision of excessive 'return on capital' allowances.

The AER's draft decision has attempted close down any serious discussion on Powerlink's extraordinary profitability and the deficiencies with the AER's 'return on capital' determination approach, by misrepresenting CCP4's analysis and recommendations.

It is clear that the networks' actual profitability is an "inconvenient truth" to the AER, and to the networks.

The AER's defiant indifference to the networks' actual returns and its focus on defending its current 'rate of return' estimation approach is alienating stakeholders from the network revenue determination process.

1.3.2 The WACC/RAB Inconsistency

The AER's methodology for determining the networks' 'return on capital' allowances does not appropriately consider the impacts of RAB indexation:

- The AER's methodology for estimating the required percentage returns (for both equity and debt) is based on the returns that investors require on their *actual* capital investments
- However, the AER calculates its 'return on capital' allowances by multiplying those percentage returns to *artificially inflated* capital bases

This inconsistency, together with the AER's incorrect gearing assumptions, is resulting in the AER providing 'return on capital' allowances well above the required levels – e.g. it is currently resulting in the AER is providing 'return on equity' allowances to Powerlink of around 4 times the required level.

The AER's misplaced confidence in its 'return on capital' determination approach is based on an 'apples to oranges' comparison of the networks' returns with other companies, i.e.:

- An (ex ante) estimation of the networks' expected 'return on capital' calculated on the basis of artificially inflated capital bases
- An (ex post) estimation of the 'return on capital' being achieved by other companies, calculated on the basis of their **actual** capital bases

Rather than misrepresenting stakeholders' criticisms and defending its current approach, the AER needs to revise its 'return on capital' estimation approach, informed by an 'apples for apples' comparison of the returns being realised by the networks and other companies.

Unless the AER is prepared to do that, any further debate with the AER on the issue is futile and consumers will need to explore alternative mechanisms to resolve the issue.

1.3.3 The AER's Weighted Cost of Capital (WACC) Parameters

The AER's draft decision has applied an equity risk premium (ERP) of 4.55% and a debt risk premium of 2.85% - similar to the risk premiums that the AER provided to the electricity networks during the previous regulatory period – **i.e. in the midst of the Global Financial Crisis.**

The AER needs to have greater regard to stakeholders' critiques of its market risk premium (MRP) estimation approach and to apply an MRP at the lower end of the AER's range (i.e. 5.0% or below).

The AER needs to have greater regard to stakeholders' critiques of its equity beta estimation approach and to apply an equity beta at the lower end of the AER's range (i.e. 0.4 or below)

The AER needs to have greater regard to stakeholders' critiques of its 'return on debt' estimation approach and to determine a return on debt allowance for Powerlink that is more reflective of the borrowing costs that Australia's electricity networks actually incur.

This will result in the AER determining significantly lower return on capital allowances that would better meet the National Electricity Objective (NEO), whilst still delivering generous returns to Powerlink.

1.4 Capital Expenditure

The AER is proposing to provide Powerlink with a total capex allowance of $775.2 million ($2016/17) over the next five years, by accepting Powerlink's proposed capex in full, other than applying a minor reduction to Powerlink's proposed repex.

Overall, the AER has failed to set Powerlink's capex allowances on the basis of efficient costs.

Rather, the AER's draft capex allowances have predominantly been determined by trending forward Powerlink's inefficient capex policies and practices.

By doing so, the AER is proposing to provide capex allowances to Powerlink well in excess of prudent and efficient levels, thereby not meeting the capex objectives and violating the AER's obligations under the National Electricity Rules (NER).

1.4.1 Replacement Capex

1.4.1.1 The AER's Inadequate Adjustment to Powerlink's Assumed Asset Lives

The AER's proposed adjustments to Powerlink's assumed asset lives are inadequate as they are much shorter than the asset lives that Powerlink and other networks actually achieve in practice.

The AER needs to adjust the asset lives to the asset lives being achieved by networks that implement best practice asset management strategies.

Furthermore, the AER has not applied any adjustments to Powerlink's assumed asset lives for the unmodeled asset categories - i.e. telecommunications, substation buildings, communications buildings and site infrastructure assets.

In light of Powerlink's systemic material underestimation of the asset lives for all of the modeled asset categories, the AER needs to apply adjustments to Powerlink's proposed asset lives for **all** asset categories.

1.4.1.2 The AER's Failure To Address The Major Systemic Deficiencies Identified By The AER And EMCa Reviews

The AER's draft repex determination has not applied the adjustments necessary to address the major systemic deficiencies with Powerlink's' repex forecasts identified by the AER and EMCa reviews.

The AER needs to revise its draft repex determination by:

- Setting Powerlink's repex allowances on the basis of efficient costs, rather than trending forward Powerlink's inefficient repex policies and practices
- Applying adjustments to address Powerlink's inadequate asset condition assessments
- Applying adjustments to address Powerlink's inadequate options analysis
- Applying adjustments to reflect the implications of Powerlink's excess system capacity and declining asset utilisation levels
- Applying adjustments to remove the unnecessary repex arising from Powerlink's inappropriate "bundling strategies"
- Applying adjustments to address Powerlink's systemic overestimation of project scopes
- Applying adjustments to address Powerlink's inadequate adoption of life extension strategies
- Removing Powerlink's unjustified transformer repex
- Applying adjustments to address Powerlink's overestimation of the unit replacement costs
- Clearly demonstrating the system performance outcomes that its proposed repex will deliver

1.4.1.3 The AER's Inappropriate Provision Of 15% Additional Allowances For Preventative And Corrective Asset Reinvestment Capex

The AER's proposal to provide 15% additional allowances for preventative and corrective asset reinvestment capex is inappropriate, as the AER's repex allowances already include funding for such activities.

1.4.2 Security and Compliance Capex

Despite the EMCa review outlining a number of concerns with Powerlink's security and compliance capex forecast, the AER has accepted Powerlink's proposed $18.8 million ($2016/17) for security and compliance capex in full – a similar level to Powerlink's actual/forecast expenditure in the current (2013–17) regulatory control period.

The AER is required to determine efficient capex allowances, rather than trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past 'security and compliance' expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so the AER has failed to meet its NER obligation to determine efficient capex allowances.

1.4.3 Other Non Load Driven Capex

Despite the AER and EMCa identifying major deficiencies with Powerlink's proposal (including its unjustified *Wide Area Network (WAN) Stage Two* project), the AER has fully accepted Powerlink's proposed $30.1 million ($2016/17) for 'other non load capex '.

The NER requires the AER to determine efficient capex allowances.

If the networks' do not provide sufficient information to demonstrate the efficiency of their proposed capex, then it is inappropriate for the AER to include that expenditure in its capex allowances.

By doing so, the AER is proposing to provide capex allowances that do not meet the capex objectives.

1.4.4 Information And Communications Technology (ICT) Capex

The AER has fully accepted Powerlink's proposed $56.1 million ($2016/17) for ICT capex – a spend of around 2.5 times Powerlink's spend during the 2002-07 regulatory period.

This submission demonstrates that Powerlink has failed to demonstrate the prudency or efficiency of its proposed ICT projects and programs.

The AER has not subjected Powerlink's ICT proposal to any scrutiny.

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past ICT expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so, the AER has failed to meet its NER obligation to determine efficient capex allowances.

1.4.5 Motor Vehicles Capex

The AER has fully accepted Powerlink's proposed motor vehicle capex of $12.3 million ($2016/17) for the 2018–22 regulatory control period.

The AER has not explained why it considers a reduction of 16% in Powerlink's motor vehicle capex to be appropriate, when Powerlink claims that its vehicle fleet has reduced by 29%.

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past motor vehicle expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so the AER has failed to meet its NER obligation to determine efficient capex allowances.

1.4.6 Buildings and Property Capex

The AER has accepted Powerlink's proposed $23.5 million ($2016/17) for buildings and property capex in full.

A key component of Powerlink's proposed buildings and property capex is its proposed $16.1 million *"office fitout replacement project"* for its Virginia head office – an expenditure that amounts to around $30,000 per staff member.

It is clear that the AER has not performed any actual assessment of the prudency or efficiency of that project.

Powerlink's Virginia office accommodation is commonly referred to as Australia's "*Trump Tower",* as it is one of Australia's most opulent and luxurious office environments.

Very few businesses would be able to justify the construction of Powerlink's Virginia offices, or the ongoing replacement and refurbishment costs that Powerlink has expended on the Virginia facility since its construction.

Powerlink's existing office fitouts are in very good condition and Powerlink's proposal to replace them clearly represents premature asset replacement.

If the AER were to calculate the whole of life costs of Powerlink's accommodation it would identify that Powerlink's *accommodation cost per staff member* amounts to many multiples of the costs incurred by any other Australian business of its size.

It is insulting to consumers for Powerlink to continue to claim the need for such opulent expenditure and for the AER to provide guaranteed returns on such extravagance.

1.4.7 Tools and Equipment Capex

The AER has fully accepted Powerlink's proposed tools and equipment capex of $5.0 million; on the basis that it is similar to Powerlink's spend during the current regulatory period.

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past 'tools and equipment' expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so the AER has failed to meet its NER obligation to determine efficient capex allowances.

1.5 Operating Expenditure

The AER has accepted Powerlink's proposed opex forecast of $976.7 million ($2016/17) in full.

1.5.1 The AER's Base Year Opex Determination

The AER is proposing to provide Powerlink with a base year opex allowance well above the efficient level.

The Rules require the AER to have regard to the outcomes of its benchmarking in its determination of efficient opex allowances for the networks.

The AER has not justified its reasons for not applying benchmarking to the determination of Powerlink's base year opex.

Rather than applying benchmarking, the AER's base year opex determination has trended forward Powerlink's historical opex, which has been demonstrated to be materially inefficient by various reviews and benchmarking studies (including the AER's transmission benchmarking reports).

The AER needs to set Powerlink's base year opex on the basis of benchmark efficient costs.

The AER's base year opex determination has also failed to incorporate the opex reductions that Powerlink should be realising from its major capex programs over previous regulatory periods (e.g. the opex reductions that Powerlink should be realising from its very young asset ages and its very low asset utilisation levels)

1.5.2 Labour Price Increases

The AER has accepted Powerlink's proposal to apply real labour price growth factors during the next regulatory period.

The electricity network sector is currently in a major contraction phase due to declining demand for its services.

Industries in contraction do not face real labour price increasing drivers.

The AER needs to determine efficient labour prices based on forecasts that consider the specific drivers of labour prices in the Australian electricity network sector

Those forecasts need to take into account:

- The electricity network sector is currently in a major contraction phase
- The evidence that demonstrates that Powerlink's labour costs are grossly excessive
- The evidence that demonstrates that Powerlink's labour and workforce practices are highly inefficient
- The interaction between labour price change and productivity change – i.e. real labour price increases need to be compensated by offsetting productivity improvements

An appropriate consideration of the above issues will confirm that Powerlink's labour prices should be reducing rather than increasing.

1.5.3 Productivity

Powerlink had the highest productivity declines of all the transmission networks in recent years (including a 10% decline in 2015 and a 4.9% decline in 2014).

The AER's opex determination will ensure that Powerlink's declining productivity trend will continue over the next 5 years.

All of Powerlink's directly connected customers operate within capital intensive industry sectors that have consistently delivered much higher productivity improvements over the past decade.

There is no justification for Powerlink to continue to deliver lower productivity outcomes than other comparable industry sectors.

The AER needs to apply an appropriate combination of labour price and productivity change factors to move Powerlink's productivity back into line with the levels being achieved by other capital-intensive industry sectors.

2 Introduction

This submission outlines the perspectives of AER Consumer Challenge Sub Panel 4 (CCP4) Member, Hugh Grant, on the AER's Draft 2018-22 Revenue Determination for Powerlink Queensland and Powerlink's 2018-22 Revised Revenue Proposal.

The use of the term CCP4 (HG) throughout this submission should be interpreted as Hugh Grant's perspectives as a CCP4 member.

The use of the terms "CCP4's previous submission" and "CCP4's previous advice" refers to the following documents:

- Addressing The RAB/WACC Disconnect issues within The Current Rules (Hugh Grant, CCP4 Panel Member, 18 July 2016)
- The Methodology For The Comparisons of The Electricity Networks' Return On Equity With The Returns Of ASX 50 Companies – In The Context Of The Powerlink/Telstra Comparison (Hugh Grant, CCP4 Panel Member, 26 July 2016)
- CCP4 (Hugh Grant and David Headberry) Submission to the AER on Powerlink Queensland's 2018-22 Revenue Proposal (June 2016)

Any unattributed statements or opinions expressed within this submission should be attributed to Hugh Grant.

It is understood that the other CCP4 members (David Headberry and Jo De Silva) will also be providing brief submissions on the AER's Draft Powerlink Decision and Powerlink's Revised Revenue Proposal.

3 Current Regulatory Period Outcomes

CCP4's previous submission outlined that during the current (2013-17) regulatory period:

Powerlink Achieved Extraordinary Profitability Levels

Powerlink achieved extraordinary profitability levels achieving returns on equity levels of up to 75%, compared to the AER's assumed 9.4%

Powerlink Achieved Major Windfall Gains From Over-Forecasting Its Capex Needs

Powerlink achieved around $300 million in 'windfall gains' over the period, due to its revenue allowances including returns on forecast capex that it did not incur

Stakeholders' Criticisms Of The AER's 2013-17 Revenue Determination Were Correct

Many of the stakeholders' criticisms that the AER received during Powerlink's 2013-17 revenue determination have proven to be correct, e.g.:

- The AER's excessive return on capital allowances enabled Powerlink to achieve extraordinary profitability levels
- Criticisms of the AER's demand forecasts - demand and consumption continued to decline during the period as predicted by numerous stakeholders, in stark contrast to Powerlink's forecast demand growth of 40% and the AER's forecast demand growth of 27%
- Powerlink's operational efficiency continued to decline significantly over the period due to the AER setting Powerlink's opex allowances on the basis of Powerlink's historical costs, rather than benchmark efficient costs

Powerlink's Excess Capacity Level Increased and Its Asset Utilisation Levels Decreased

Powerlink's over-investment continued to result in increasing levels of excess capacity and declining network utilisation

Powerlink Continued To Receive Very High Bonuses Under the STPIS Scheme

Powerlink continued to receive very high bonuses from the AER's Service Target Performance Incentive Scheme (STPIS) – achieving annual bonuses of over $20 million

Returns On Past investments Drive Powerlink's Prices More Than Other Australian Networks

Returns on Powerlink's regulatory asset base (RAB) are continuing to drive Powerlink's prices to a greater degree than all of the other Australian energy networks

The above outcomes illustrate that Powerlink's 2013-17 allowances were well above the efficient levels.

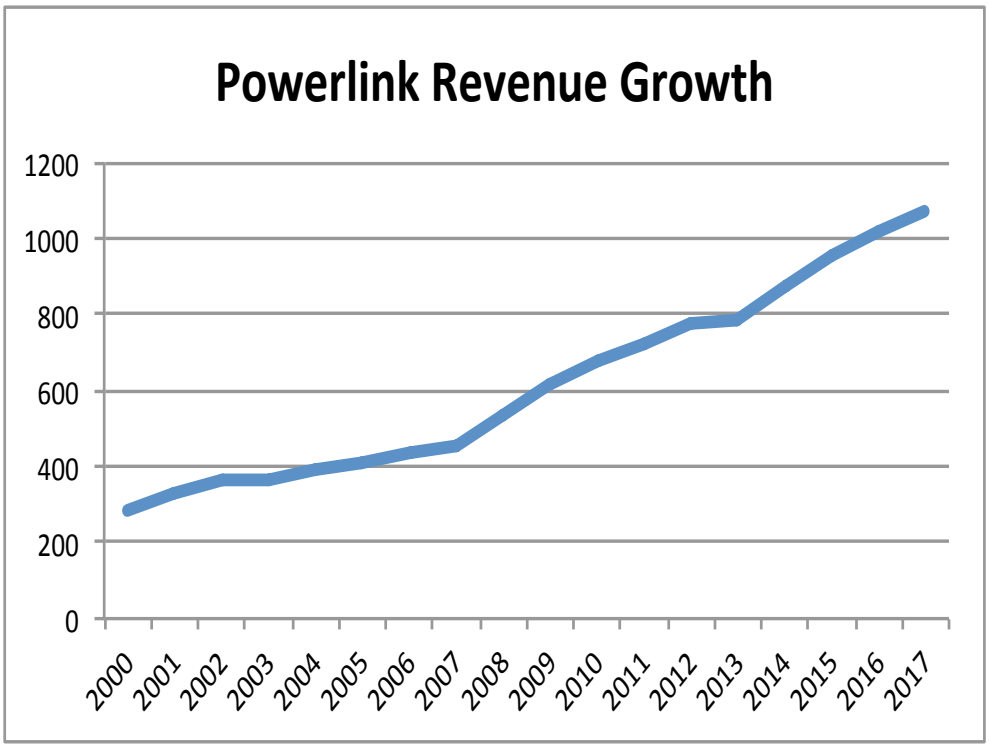
CCP4's previous submission urged the AER not to fall into the false sense of security that could arise from making simple comparisons between Powerlink's proposed 2018-22 allowances and its 2013-17 allowances.

Disappointingly the AER has fallen into that trap and is proposing to provide 2018-22 revenue allowances to Powerlink well above the efficient levels.

4 Powerlink's Proposed Revenue

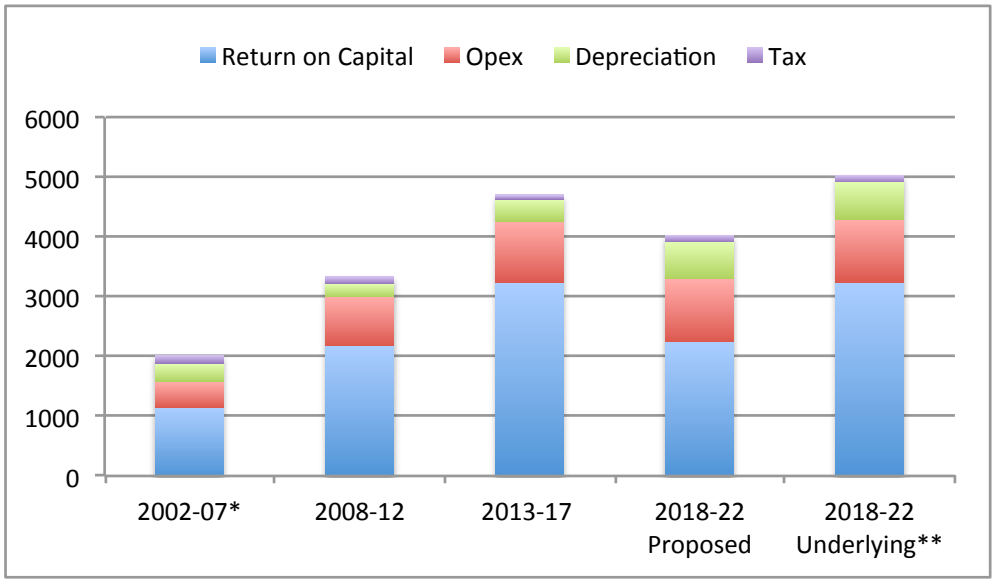
4.1 Powerlink's Historical Revenue Growth

The chart below outlines the growth in Powerlink's revenue over the previous three regulatory periods.



4.2 Powerlink's Proposed Revenue - Comparison with Previous Periods

CCP4's previous submission compared Powerlink's proposed revenue building block components with the previous regulatory periods.



The “2018-22 underlying revenue” is the revenue that would apply if the risk free rate remained at the average rate that prevailed during the previous regulatory periods.

CCP4’s previous submission outlined that:

- If interest rates had remained at the same level as the previous regulatory periods, Powerlink’s proposed revenue and prices would be around 25% higher
- Powerlink is continuing to propose very high opex levels
- Powerlink is proposing a 68% increase in depreciation allowance compared to the current period
- Returns on past investments will continue to drive Powerlink’s future revenue and prices, accounting for 71% of Powerlink’s proposed 2018-22 revenue

4.1 The AER’s Draft Decision On Powelink’s 2018-22 Revenue

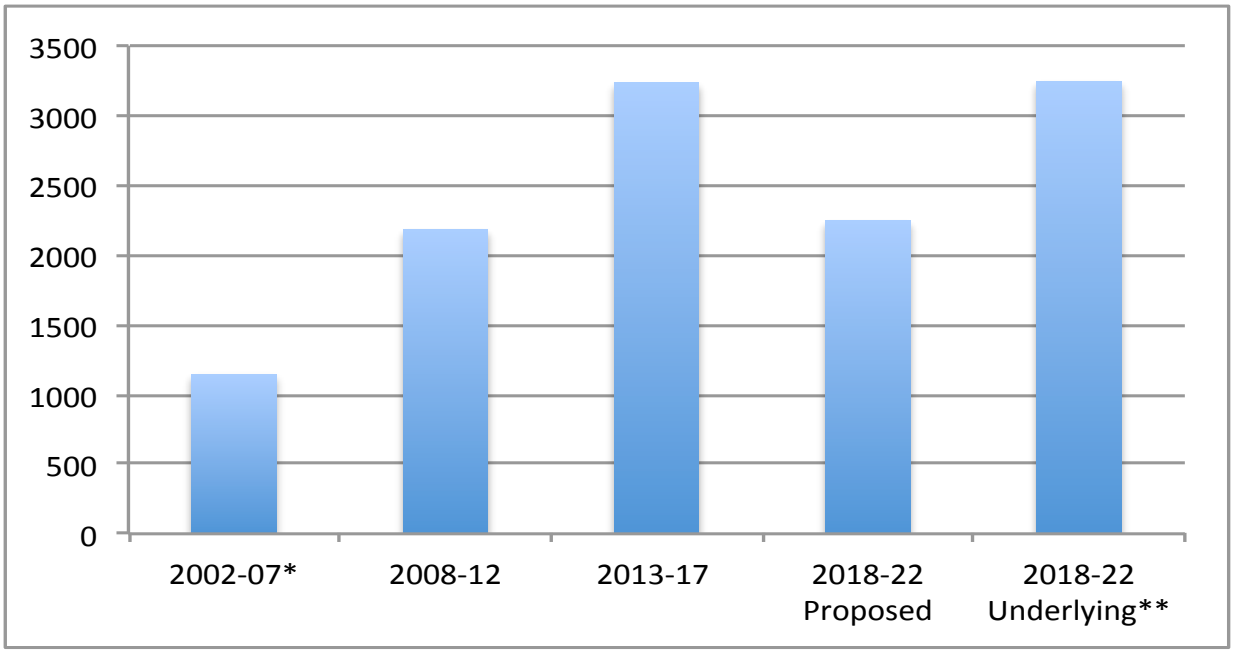
In essence, the AER’s draft determination has accepted Powerlink’s revenue proposal, other than applying some minor changes to Powerlink’s proposed replacement capex and applying changes to reflect movements in market conditions (e.g. the risk free rate) since Powerlink’s revenue proposal was submitted.

5 Return on Capital

5.1 Powerlink's Proposed Return On Capital

CCP4's previous submission compared Powerlink's proposed return on capital for the 2018-22 regulatory period with its return on capital allowances for the previous regulatory periods.

As illustrated in the chart below, CCP4's analysis identified that if interest rates had remained the same level as the previous period, Powerlink's proposed return on capital would be higher than its return on capital allowance for all of the previous periods – **i.e. it would be higher than the record-high return on capital allowance that the AER provided to Powerlink in the midst of the Global Financial Crisis (GFC).**



* 2002-07 figures pro-rated to 5 years (rather than 6 years) for comparison purposes

** The "2018-22 underlying" return on capital is the return on capital that would apply if the risk free rate had remained at the average rate that prevailed during the previous three regulatory periods

5.2 The AER's Draft Return On Capital Determination

The AER's draft return on capital determination has accepted Powerlink's proposed return on capital allowances, with some minor changes to reflect movements in market conditions (e.g. the risk free rate) since Powerlink's revenue proposal was submitted.

5.3 CCP4's Concerns With The AER's Draft Return On Capital Determination

5.3.1 CCP4's Previous Advice

CCP4's previous advice included a comprehensive 27 page critique of the AER's return on capital determination methodology (17 pages in the formal CCP4 submission, plus 10 pages of supplementary information), which demonstrated that:

- Powerlink is extraordinarily profitable, achieving many multiples of the returns being achieved by Australia's best performing ASX 50 companies.
- The key driver of Powerlink's extraordinary profitability is the AER's provision of excessive 'return on capital' allowances
- The AER's WACC estimation methodology is inconsistent with the RAB valuation methodology, as it does not appropriately consider the impacts of RAB indexation, i.e.:
    - The AER's methodology for estimating the required percentage returns (for both equity and debt) is based on the returns that investors require on their ***actual*** investments
    - However, the AER calculates its 'return on capital' allowances by multiplying those percentage returns to ***artificially inflated*** capital bases
- This inconsistency, together with the AER's incorrect gearing assumptions, is resulting in the AER providing return on capital allowances well above the required levels - e.g. it is resulting in the AER providing 'return on equity' allowances to Powerlink of around 4 times the required level

5.3.2 The AER's Response To CCP4's Critiques

Disappointingly, the AER's draft determination has:

- Essentially ignored the primary issue that CCP4 raised in its previous submissions – i.e. the WACC/RAB inconsistency
- Misrepresented CCP4's critiques and recommendations
- Focused its commentary on responding to issues that CCP4 did **not** raise (e.g. the removal of RAB indexation)

The following sections of this chapter outline CCP4's perspectives on the AER and Powerlink's responses to its critiques, broken down to:

- CCP4's analysis of the networks' actual profitability
- The AER's response to CCP4's profitability analysis
- Powerlink's response to CCP4's profitability analysis
- The AER's response to the WACC/RAB inconsistency
- CCP4's perspectives on the AER's proposed WACC parameters

5.4 Powerlink's Actual Profitability

CCP4's previous submission provided a comprehensive analysis of the actual returns being realised by two Queensland networks (Powerlink Queensland and Energex) over the past 15 years, and compared those returns with the returns being realised by businesses in other sectors of the economy, **on an 'apples for apples' basis.**

In essence, CCP4's analysis compared the returns that Powerlink's owner (the Queensland government) has realised from its equity investment in the Queensland networks with the returns it would have received if it had invested the same dollars in blue-chip ASX 50 companies in other sectors of the Australian economy.

This is the first time that such an analysis has been performed on the Australian electricity networks' actual profitability.

5.4.1 CCP4's Profitability Analysis – Definitions, Data Sources And Calculations

CCP4's profitability analysis involved the calculation of the two key returns that investors realise from their equity investments:

- Annual Income – calculated as the annual % return on shareholder equity
- Growth in Shareholder Equity – calculated as the growth in shareholder equity over the 15 year period

There are two recognised methods for expressing shareholder equity:

Book Value - calculated as the sum of shareholder contributions plus retained earning; and

Market value – calculated as share market valuation less debt

Both of those definitions are appropriate, dependent upon the context of their use.

To be clear, the CCP4 profitability analysis used both of those methods as follows:

Annual Return On Equity Calculations

The Annual Return on Equity is the ratio (expressed in % terms) of the annual profit achieved by the business, divided by the equity investment, i.e.:

$$\text{Return on Equity} = \frac{\text{Net Profit After Tax (NPAT)}}{\text{Shareholder Equity}}$$

The CCP4 profitability analysis used the "book value" definition of equity when calculating the annual return on equity levels – i.e. the definition used by all Australian businesses outside of the energy network sector when calculating their annual return on equity levels.

Note - the "book value" of equity is sometimes referred to as *"shareholder contribution".*

Using the book value (or shareholder contribution) definition ensured that the annual returns on the actual equity invested by the businesses were compared on an "apples for apples" basis.

Importantly, CCP4's return on equity calculations did not include:

- The income that the networks' owner (the Queensland Government) has extracted through unconventional equity drawdowns (i.e. the extraction of RAB indexation from Powerlink's book equity)
- The other pecuniary benefits that the Queensland Government has realised from its investment in the networks (i.e. tax receipts and debt fees)

Growth In Shareholder Equity Calculations

The growth in shareholder equity was calculated using the "market value" definition of equity (i.e. business value less debt) – i.e. the definition commonly used by all Australian businesses outside of the energy network sector when calculating their changes in shareholder value.

Again, using that definition ensured that changes in shareholder value were compared on an "apples for apples" basis.

All data (e.g. NPAT, share capital and retained earnings) was taken directly from Powerlink and Energex's audited annual financial reports over the analysis period.

5.4.2 CCP4's Profitability Analysis – Key Findings

CCP4's analysis confirmed what the networks and their investors have known for many years - that Australia's monopoly electricity networks are achieving many multiples of the returns being achieved by Australia's best performing ASX 50 companies.

It identified that the networks are achieving extraordinary returns, from both an income and an equity growth perspective.

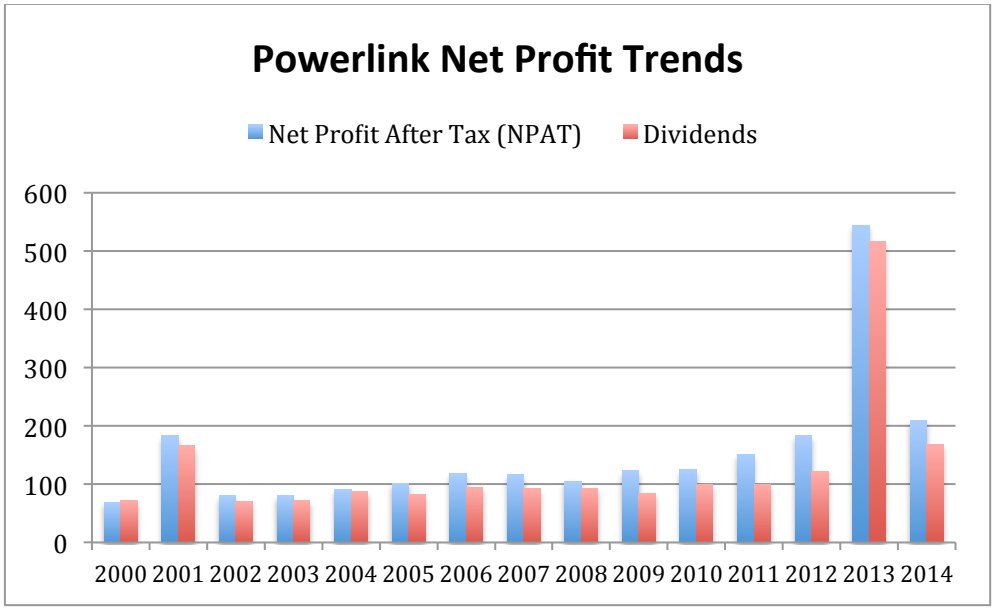
5.4.2.1 The Networks' Actual Return On Equity

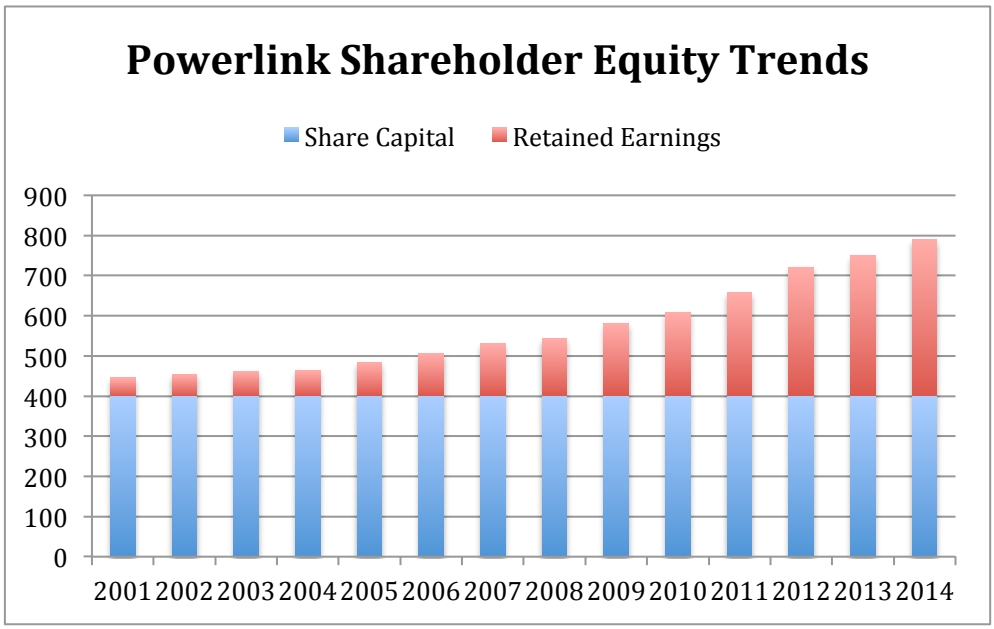
The charts overleaf illustrate the trends in the Queensland's electricity networks' profits, shareholder equity and actual 'return on equity' levels over the 2000-2014 period.

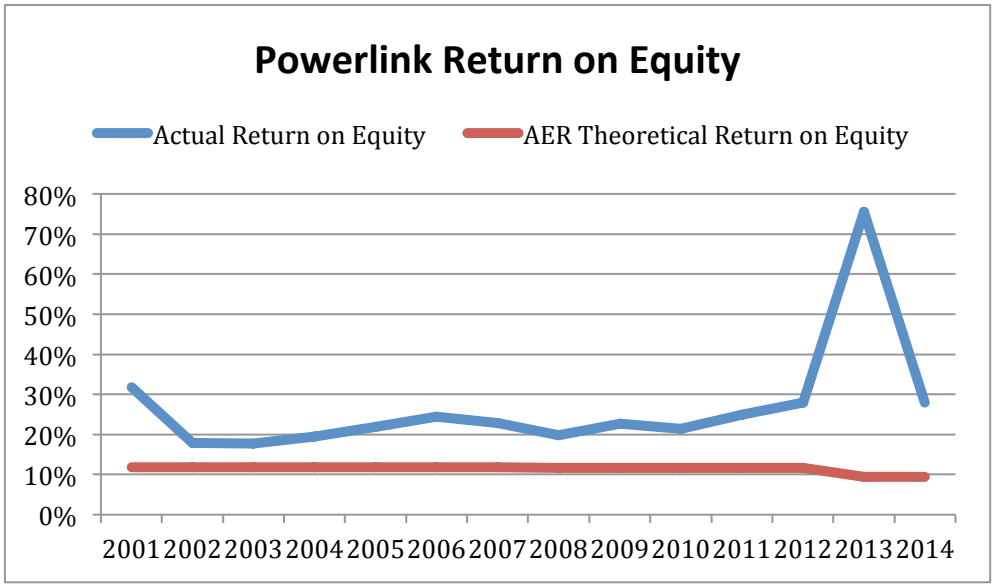
They highlight that:

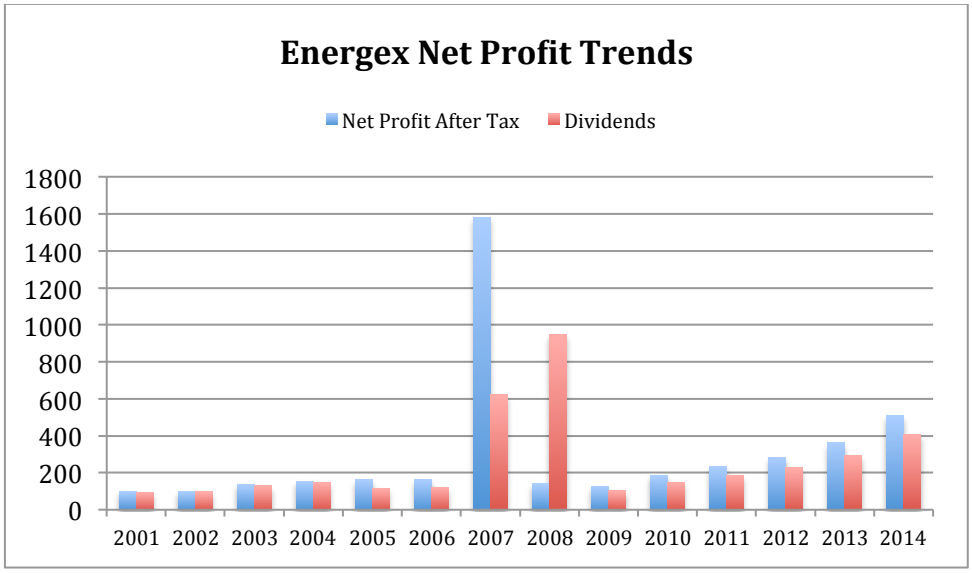
- Powerlink Queensland achieved actual 'return on equity' levels of 18% to 75%, which amounted to 1.5 -8.1 times the AER's theoretical return on equity levels
- Energex achieved actual 'return on equity' levels of 10.5% to 148%, which amounted to up to 13.5 times the AER's theoretical return on equity levels
- By comparison, most ASX50 companies struggled to achieve annual 'return on equity' levels of 5% over that period
- Over the past 15 years the Queensland networks' annual profits have grown strongly with major spikes in some years
- At no time over the past 15 years have the networks experienced low profits or losses (unlike all other businesses of their size)

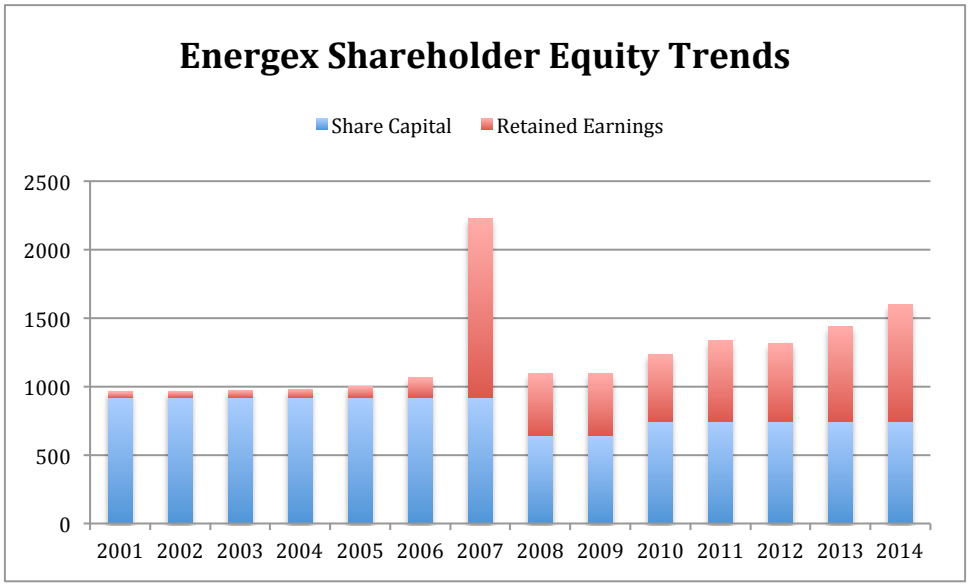
- The networks consistently extracted very high dividend levels, with dividend payout ratios averaging around 90% - i.e. they have reinvested minimal amounts of retained earnings into the business
- By contrast, ASX50 businesses typically reinvest over 50% of their earnings
- The networks' extraordinary growth levels have been predominantly funded by debt, e.g.:
  - Powerlink Queensland's RAB grew fourfold with no change to its share capital of $401 million
  - Energex's RAB grew fourfold whilst Energex reduced its invested equity' by $175 million (from $921million to $746 million)
- Funding such levels of growth through debt would be impossible for businesses that operate in any other sector of the Australian economy
- The commercial constraints that apply to all other businesses would require significant levels of equity injection to fund such growth levels

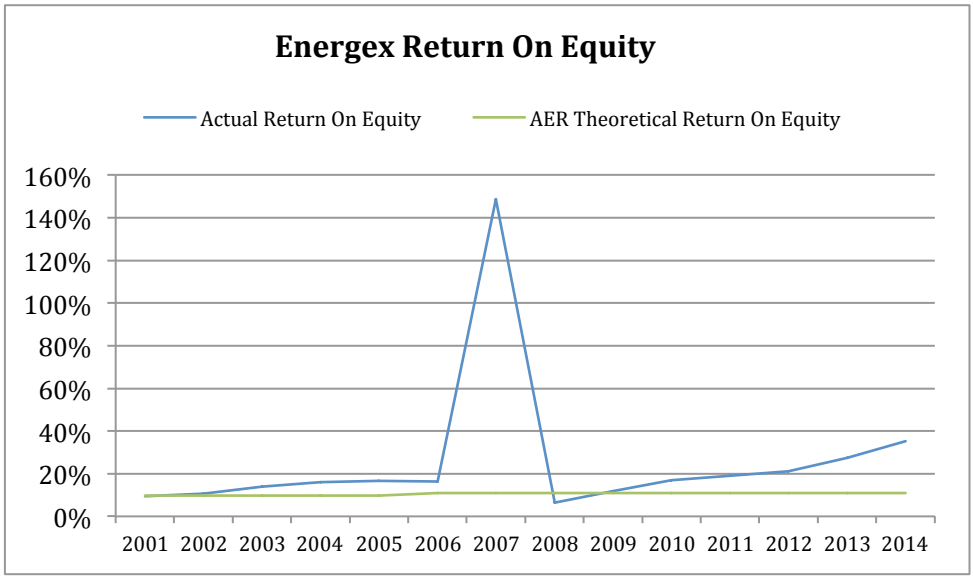

Powerlink Net Profit Trends
Net Profit After Tax (NPAT)
Dividends
600
500
400
300
200
100
0
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014


Powerlink Shareholder Equity Trends
Share Capital
Retained Earnings
900
800
700
600
500
400
300
200
100
0
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014


Powerlink Return on Equity
Actual Return on Equity
AER Theoretical Return on Equity
80%
70%
60%
50%
40%
30%
20%
10%
0%
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014


Energex Net Profit Trends
Net Profit After Tax
Dividends
1800
1600
1400
1200
1000
800
600
400
200
0
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014


Energex Shareholder Equity Trends
Share Capital
Retained Earnings
2500
2000
1500
1000
500
0
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014


Energex Return On Equity
Actual Return On Equity
AER Theoretical Return On Equity
160%
140%
120%
100%
80%
60%
40%
20%
0%
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

5.4.2.2 The Extraction Of Additional Income Through RAB Indexation Drawdowns

It is very important to note that the above returns do not include the income that the Queensland Government has extracted from the networks through unconventional equity drawdowns, involving the extraction of RAB indexation from their "book equity".

The regulatory rules require the AER to artificially inflate the networks' regulatory asset base by applying annual indexation to their ongoing valuations.

The Queensland networks allocate the cumulative value of RAB indexation to a "revaluation reserves" account within their reported equity.

The profitability analysis highlighted that the Queensland Government has taken advantage of the unique arrangements in the regulatory framework by extracting additional income from the networks by periodically extracting RAB indexation amounts from the networks' "book equity".

For example, in the most recent financial year (2015/16), the Queensland government extracted around $1 billion of RAB indexation from Powerlink's "book equity".

Such unconventional 'equity drawdowns' are not possible in any other sector of the Australian economy.

5.4.2.3 The Networks' Failure To Declare RAB Indexation Extractions As Profits

Businesses that operate in all other industry sectors adopt the standard Australian accounting practice of declaring gains arising from asset revaluations in their profit and loss accounts.

However, the Queensland networks have never declared their gains from asset revaluations as profits. Rather, their annual income statements have consistently excluded those gains from their profit and loss accounts.

For example, Powerlink's annual financial statements have consistently stated that:

"*gains on property plant and equipment are not reclassified to profit or loss*" [1]

5.4.2.4 Growth In Shareholder Equity

With Australia's electricity networks achieving such extraordinary returns, it is not surprising that investors are queuing up to purchase them when they come up for sale, paying well in excess of the networks' regulatory valuations.

5.4.2.4.1 The Recent TransGrid Sale

In November 2015, a number of Australian and international investment consortiums attempted to purchase the NSW transmission network (TransGrid), which was sold (99 year lease) for $10.3 billion – a sale price that amounted to 165% of TransGrid's regulatory asset base (RAB) value.

[1] See for example, page 9 of Powerlink's 2015/16 Annual Financial Statement

Throughout the recent TransGrid revenue determination process, TransGrid made many assertions that the AER's approach to determining its return on equity allowances would not enable it to recover efficient financing costs or to attract equity investors – claiming that it would result in lower investment in the network and a significant increase in TransGrid's financing risks.

The extraordinary sale price achieved by TransGrid makes a mockery of those claims.

As all informed investors and industry analysts are aware, the statements that Australia's electricity networks make to regulators, policy makers and consumers are very different to their statements to investors.

A review of the *Spark Infrastructure* equity investment prospectus outlines why investors are queuing up to pay such large premiums above the networks' regulatory values. [2]

Informed investors and industry analysts were not in the least surprised that TransGrid sold for 165% of its regulatory value, as they know that the AER is currently providing investors with 'return on equity' allowances of around 3-4 times the level that they actually require to invest in the networks.

The TransGrid sale price provides a very strong indication of the current market value of the Queensland electricity networks. The RAB multiple for that sale (165%) has been used in CCP4's estimates of the Queensland networks' current business value.

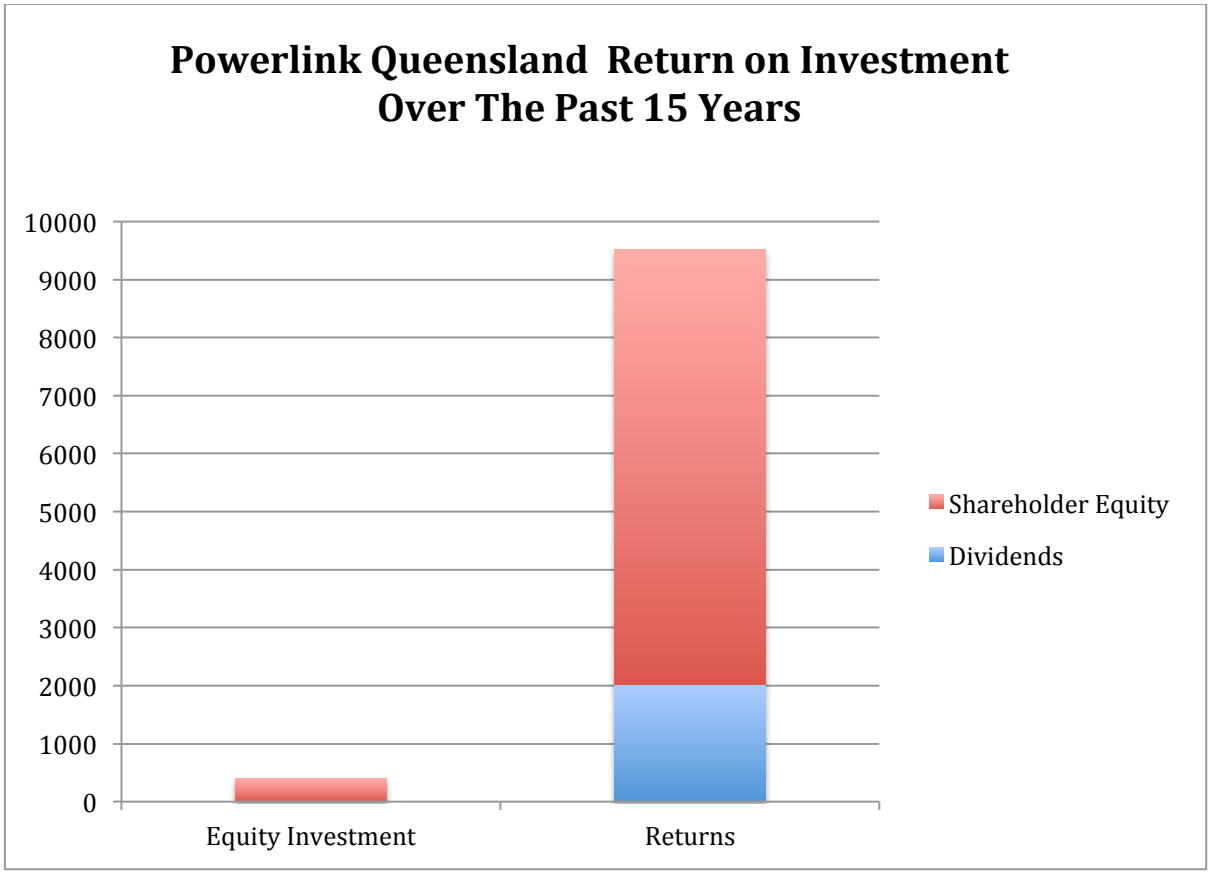
5.4.2.5 The Queensland Networks' Total Returns

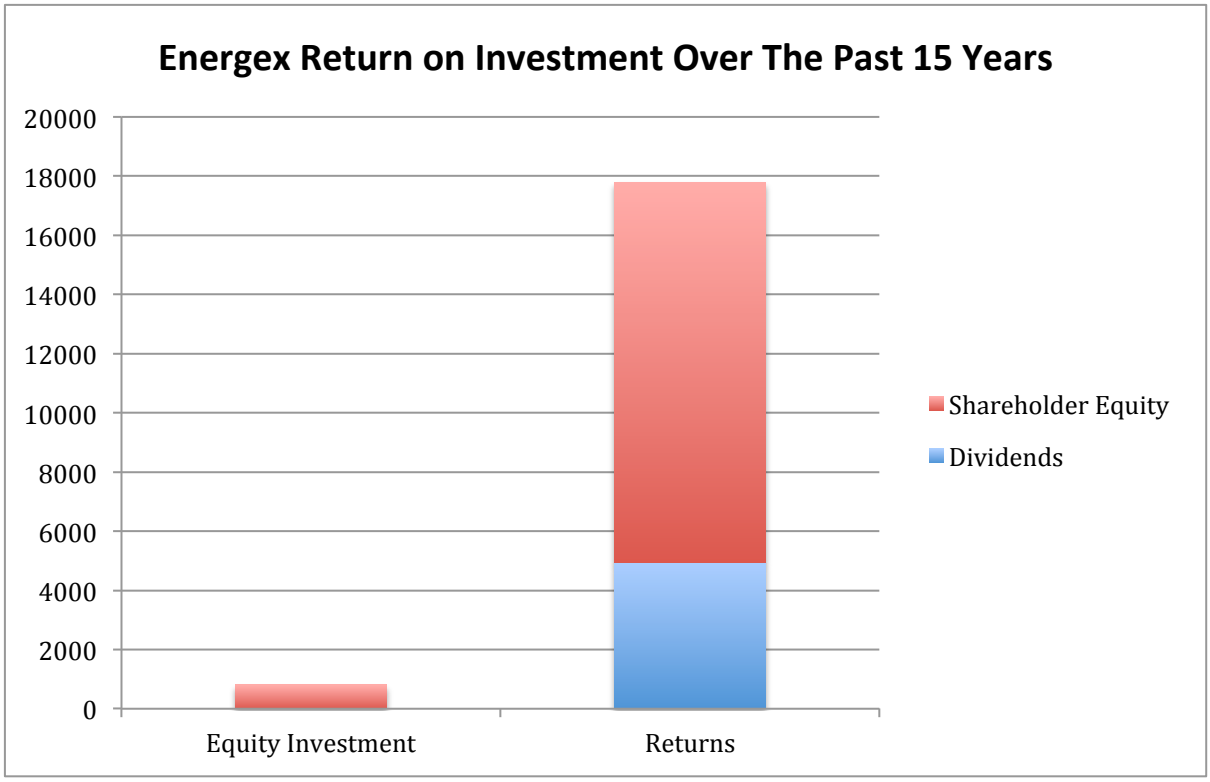
The charts overleaf illustrate that the total returns (income plus growth in shareholder equity) that the Queensland government has accrued from its investments in Powerlink Queensland and Energex over the past 15 years.

They illustrate that:

- The Queensland Government's $401 million equity investment in Powerlink Queensland has accrued total returns of around $9.4 billion – i.e. 23 times the equity investment
- The Queensland Government's average equity investment of $814 million in Energex over the period has accrued total returns of $17.8 billion - i.e. 22 times the equity investment

[2] Spark Infrastructure - Equity Investment in TransGrid and Equity Raising, 25 November 2015





- Shareholder Equity is calculated as Current Business Value less Current Debt
- Current Business Value has been calculated as 165% of RAB, as per the recent TransGrid sale

5.4.3 Comparing Powerlink's Returns With Real World Returns

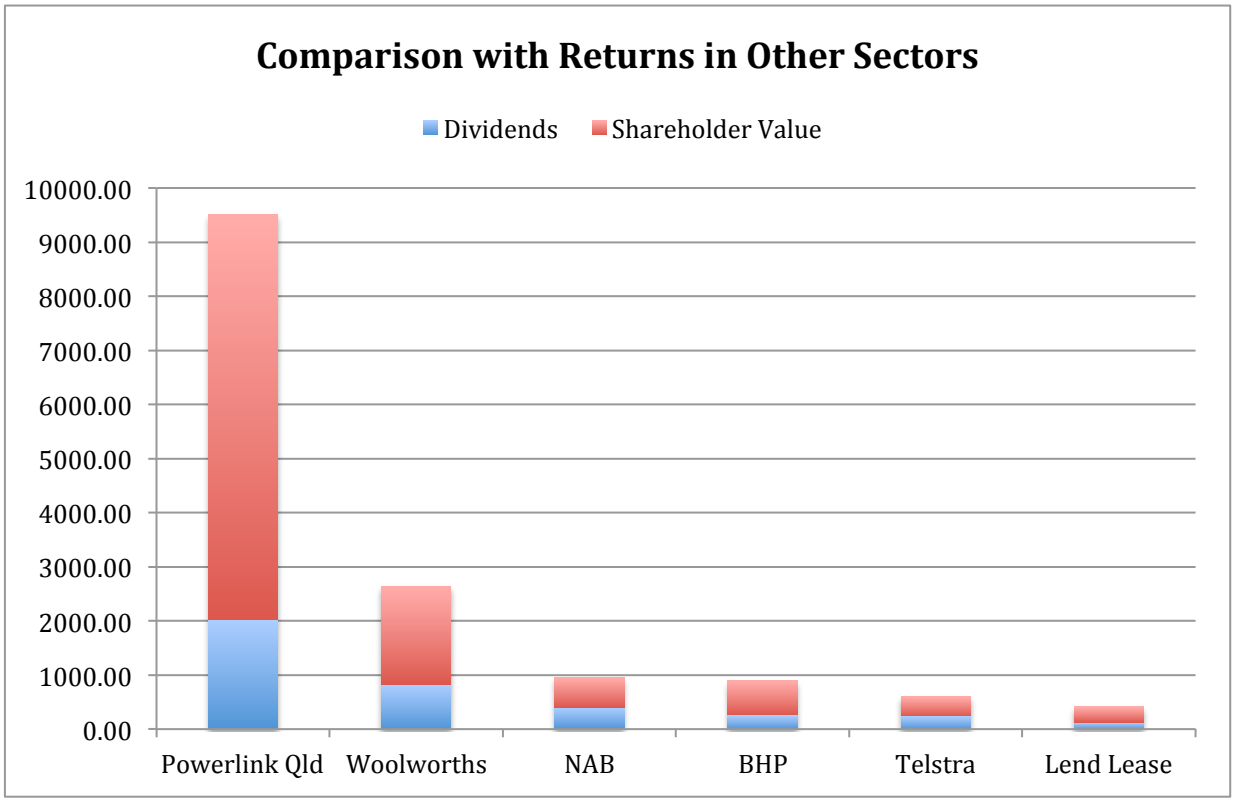
These are clearly extraordinary returns and represent many multiples of the returns that were achieved by Australia's best performing ASX50 entities over the period.

The chart overleaf compares the returns that the Queensland government is realising from its ownership of Powerlink with the returns that it would have been achieved if it had invested in blue chip stocks in other sectors of the Australian economy.

It illustrates that over the past 15 years, the Queensland government's investment in Powerlink Queensland has accrued total returns of:

- 23 times the returns achieved by the Australian construction sector (Lend Lease)
- 15.5 times the returns achieved by the Australian telecommunications sector (Telstra)
- 10.5 times the returns achieved by the Australian minerals and resources sector (BHP)
- 10 times the returns achieved by the Australian banking sector (NAB)
- 3.6 times the returns achieved by Australia's most profitable supermarket (Woolworths)

No other ASX 50 stock came close to Powerlink's returns.



Note – the above chart actually understates Powerlink's returns, as:

- It does <u>not</u> include the income that the Queensland Government has extracted through unconventional equity drawdowns (i.e. the extraction of RAB indexation from Powerlink's book equity)
- It does <u>not</u> include the other pecuniary benefits that the Queensland Government has realised from its investment in Powerlink (tax receipts and debt fees)
- The Queensland government is unlikely to have actually invested the reported "share capital" levels.[3]

[3] Assets or Liabilities – The Need To Apply Fair Regulatory Values To Australia's Electricity Networks, Hugh Grant, 5 May 2016

Importantly, those returns are being realised despite Powerlink being the most inefficient transmission network in the National Electricity Market (NEM).

Clearly those returns are grossly excessive and are not in consumers' long-term interest.

5.4.3.1.1 Powerlink's Returns are Extraordinary from an Income and Capital Growth Perspective

CCP4's analysis identified that Powerlink is delivering extraordinary returns from both an income and a capital growth perspective

Income

From an income perspective, over the past 15 years, Powerlink achieved an average annual *'return on equity'* level of 27%.

By contrast, most ASX50 companies struggled to deliver annual return on equity levels of 5% over that period.

Capital Growth

The Queensland government's $401 million equity investment in Powerlink is now valued at around $7.4 billion – i.e. it has grown by over 18 times over the past 15 years.

By contrast, most ASX 50 companies struggled to grow their shareholder value by 50% over that period, with the share prices of many companies actually reducing, e.g.:

- Telstra's share price dropped by 11%
- Lend Lease's share price dropped by 30%

5.4.4 The AER'S Response To CCP4's Profitability Analysis

The AER's responses to CCP4's profitability analysis include a number of incorrect, unsubstantiated and misleading statements.

The following sections of this submission outline CCP4's perspectives on the AER's responses.

5.4.4.1 The AER's Indifference To The Networks' Actual Profitability

With the networks' extraordinary returns driving the majority of their revenue, it is reasonable to expect the AER to explain why the networks that it regulates are achieving returns well in excess of the returns that it assumes, and many multiples of the returns being achieved by businesses in all other sectors of the economy that face much higher risks.

However, the AER has never performed an analysis of the networks' actual profitability, and has never used the networks' actual profitability to inform its approach to setting the networks' 'return on capital' allowances, despite numerous calls from many stakeholders over the past decade for it to do so.

CCP4's previous submissions have asserted that the National Electricity Rules (NER) actually require the AER to consider the networks' actual profitability when setting their 'return on capital' allowances.

For example, NER Clause 6A6.2 (e) (1) requires the AER to consider *"relevant estimation methods, financial models, market data and other evidence"* when determining its rate of return.

However, the AER adopts a much narrower interpretation of its obligations and claims that the rules do not require it to consider the networks' actual profitability.

Disappointingly, the AER has a track record in demonstrating a defiant indifference to the networks' actual profitability.

Every time stakeholders raise issues regarding the networks' actual profitability, the AER attempts to shut down the conversation and defend its existing 'return on capital' estimation approach.

The profitability analysis has been in the public domain for over 9 months and the AER and Powerlink's limited responses have clearly been aimed at deflecting attention from the analysis and shutting down any serious conversation on the findings.

It is clear that the networks' actual profitability is an "inconvenient truth" to the AER, and to the networks.

As outlined within various submissions to the AER, the AER's focus on defending its rate of return guideline is alienating consumers and other stakeholders from the network revenue determination process. [4]

5.4.4.2 The AER's Approach Is Not Informed By The Networks' Actual Returns

The AER makes some statements that suggest that its return on capital determination methodology is informed by the networks' actual returns:

AER Statements

"We do agree that there is some merit to the analysis of profitability outcomes"

"If the service provider can outperform the regime within a regulatory control period, we can then use its outturn performance to inform our revenue decision for the next regulatory control period"

"Over time, this should encourage service providers towards efficiency and share benefits of the outperformance with customers"

CCP4 (HG) Response

The above statements sound good in theory, but in reality **the AER's approach is not informed by the networks' actual returns.**

As outlined above, CCP4 (HG) considers that the Rules actually require the AER to take into account the outcomes of its previous determinations when making its return on capital determinations.

[4] See for example the VECUA and CCP3 Submission on the AER's Determinations for the Victorian Distribution Networks

Over recent years, the AER has received numerous submissions that have provided evidence that demonstrates that: [5]

- Australia's electricity networks are much more profitable than the AER assumes
- Equity markets and investors are valuing the electricity networks significantly higher than their regulated asset bases (RABs) – with the most recent sale (TransGrid) being over 165% of RAB
- Lenders are lending to the networks at significantly lower rates than the 'cost of debt' allowances provided by the AER
- The AER is inappropriately applying the discretion it has been provided under the Rules, by selecting WACC input parameters at the top end of the possible ranges
- The AER has consistently set higher WACCs than other comparable regulators in Australia and overseas

As outlined above, the AER has never performed an analysis of the networks' actual profitability, or used the outcomes of a profitability analysis to inform its 'return on capital' decisions, despite extensive calls from numerous stakeholders over many years for the AER to do so

5.4.4.3 Limitations in The CCP's Profitability Analysis?

The AER's draft determination makes the following unsubstantiated statement that suggests that there may be limitations in CCP4's profitability analysis.

AER Statement

"At the highest level, the CCP members' analysis attempts to draw conclusions about the regulatory regime based on a limited set of observed market 'outperformance'"

CCP4 (HG) Response

This statement is incorrect.

The CCP's analysis is based on an extensive long-term analysis of Powerlink's actual profitability over a 15-year period.

This is the first time that such a comprehensive profitability analysis has been performed. It was performed to fill the vacuum created by the AER's unwillingness to consider the networks' actual profitability.

It is extremely disappointing and galling that the AER is attempting to dismiss or discredit CCP4's profitability analysis without identifying any specific errors in the analysis and without performing its own substitute analysis.

Furthermore, it is not the role of the CCP to perform this analysis. CCP4 considers that it is the AER's role, although it is clear that the AER has no intention of doing so.

[5] See for example:
AER Consumer Challenge Panel (CCP3) Submission on the Victorian distributors 2016-20 Revenue Proposals, Sept 2015
AGL Submissions to the AER on the NSW Electricity Distribution Networks 2014-19 Revenue Proposals, August 2014
PIAC submission to the Australian Energy Regulator's NSW electricity distribution network price determination, August 2014
CCP2 (Hugh Grant) Submission to the AER on the AER's Preliminary Revenue Determinations for the Queensland Distributors

5.4.4.4 Concerns with The Reliability Of Powerlink's Reported Equity?

The AER's draft determination indicates that the AER has concerns regarding the reliability of Powerlink's reported equity:

AER Statement

"The absence of reliable data on initial shareholder equity means it is difficult to accept the CCP members' profitability analysis"

CCP4 (HG) Response

This unsubstantiated assertion is concerning.

Powerlink's shareholder equity was taken directly from Powerlink's audited annual financial reports – reports that have been independently audited for compliance with Australian accounting standards and that have been signed off by Powerlink's Chairman and shareholder.

Rather than making such unsubstantiated assertions, the AER needs to explain on what basis it considers Powerlink's equity reporting in its audited annual financial reports to be unreliable.

5.4.4.5 Errors In Powerlink's Initial Equity Stake?

The AER's draft determination makes the unsubstantiated assertion that CCP4 has underestimated the value of Powerlink shareholders' initial equity stake:

AER Statement

"We consider that the CCP members have underestimated the value of this initial equity stake, and so overestimated the 'actual' return on equity and relative profitability of Powerlink"

CCP4 (HG) Response

This unsubstantiated statement is incorrect.

The CCP's profitability analysis meticulously tracks changes in Powerlink's contributed equity (i.e. share capital plus retained earnings) in every year of the analysis and expresses the annual return on equity on the opening contributed equity in each year.

It is extremely important to note that Powerlink's reported initial equity (share capital) is most likely to have been over-estimated, rather than under-estimated

It is well understood that Powerlink's initial DORC valuation and balance sheet did not necessarily bear any relation to its actual investment. In reality, Powerlink was most likely fully debt funded and it is unlikely that Powerlink's reported "share capital" was actually invested. [6]

Despite those concerns, CCP4 did not challenge Powerlink's reported "share capital" and simply accepted Powerlink's' reported "share capital" in accordance with its audited financial reports.

Clearly, Powerlink and its shareholder have details on the initial contributed equity and the AER can source that information if required. If the AER does that, it will find that Powerlink's owner extracted major equity drawdowns shortly after Powerlink's formation.

As outlined in the CCP's analysis, Powerlink's contributed share capital has been $401 million for the majority of Powerlink's existence (i.e. since 1 July 2000)

[6] Assets or Liabilities – The Need To Apply Fair Regulatory Values To Australia's Electricity Networks, Hugh Grant, 5 May 2016

5.4.4.6 Temporary Out-Performance?

The AER's draft determination attempts to dismiss the networks' excessive profits as simply reflecting some "temporary outperformance":

AER Statement

"Some amount of outperformance is to be expected in an incentive regime"

"Even where market outperformance is observed, this does not mean that the outperformance was guaranteed in advance and may simply reflect an outcome towards the high end of the spread of possible outcomes"

CCP4 (HG) Response

Of course, some level of out-performance is to be expected in an incentive regime.

However, some amount of **under-performance** is also to be expected.

CCP4's analysis demonstrates that Powerlink and Energex **systemically outperformed their theoretical returns, achieving multiples of the regulators' theoretical returns in <u>every</u> year of the 15-year analysis period**, with no single year of under-performance.

This clearly demonstrates that there are systemic deficiencies with the AER's 'return on capital' determination approach.

5.4.4.7 The Networks' Actual Returns Are <u>Not</u> Unexpected

The AER's draft determination attempts to suggest that the networks' returns are unexpected.

AER Statement

"Even where market outperformance is observed, this does not mean that the outperformance was guaranteed in advance and may simply reflect an outcome towards the high end of the spread of possible outcomes"

CCP4 (HG) Response

This assertion is clearly incorrect.

There is nothing surprising about the actual profitability levels being achieved by Powerlink.

The returns are close to what is expected due to the excessive return on capital allowances arising from the AER's WACC/RAB inconsistency.

The regulators' theoretical % ROE over the period varied from 11.8% in 2002 to 9.4% in 2014 – based on an assumed equity base (including RAB indexation) of 40% of RAB

When expressed **as a percentage of Powerlink's <u>actual</u> equity investment**, those allowances equate to an ROE of 24% in 2002, rising to around 34% in 2014 – i.e. similar to the percentage returns that Powerlink actually achieved.

5.4.4.8 The Networks' Extraordinary Returns Are Not Simply Due To Their High Gearing

The AER appears to be suggesting that the networks' extraordinary returns can be simply explained by its high gearing ratio:

AER Statement

"A business adopting an above-benchmark gearing level accepts a higher level of risk than the benchmark. We would expect to observe, on average, higher returns as a consequence of this higher risk strategy"

CCP4 (HG) Response

Powerlink's outperformance is not simply due to its high gearing ratio

Whilst Powerlink's high gearing ratio contributes to its extraordinary profitability, the main driver of Powerlink's extraordinary profitability is the AER's provision of excessive 'return on capital' allowances arising from the inconsistency between the AER's WACC determination methodology and the artificially inflated capital bases that it applies its % returns to

5.4.4.9 The Impact Of Including Non-Regulated Activities

The AER's draft determination attempts to criticise CCP4's analysis for its inclusion of non-regulated activities, suggesting that it has resulted in the overestimation of Powerlink's profitability.

AER Statement

"The CCP members' submissions appear to include one–off and unregulated revenue for Powerlink. This causes overestimation of Powerlink's profitability relative to the regulated benchmark"

CCP4 (HG) Response

As Powerlink does not provide segregated accounts for its regulated and non-regulated business, it was necessary for the CCPs' profitability analysis to be performed on Powerlink's total business.

CCP4 carefully considered the impact of the inclusion of Powerlink's non-regulated business, taking into account Powerlink's statements regarding the materiality of its non-regulated revenues and profits over the analysis period.

CCP4 was also very careful in ensuring that its conclusions were not distorted by abnormal non-regulated events. For example, CCP4 concluded that "Powerlink typically achieved an actual return on equity of 20-30 %" and ignored the 75% ROE that Powerlink achieved in 2012/13 arising from its sale of ElectraNet.

CCP4 agrees that the AER needs to perform a profitability analysis on Powerlink's regulated activities. That will obviously require an appropriate allocation of Powerlink's shareholder equity between its regulated and non-regulated businesses.

Powerlink clearly has the required information and the AER should obtain that information.

5.4.4.10 Is Powerlink's Non-Regulated Business More Profitable Than Its Regulated Business?

The AER makes the unsubstantiated assertion that Powerlink's non-regulated activities are more profitable than its regulated activities.

AER Statement

"The CCP members' submissions appear to include one–off and unregulated revenue for Powerlink. This causes overestimation of Powerlink's profitability relative to the regulated benchmark"

CCP4 (HG) Response

The AER's assertion that the inclusion of non-regulated profits results in an over-estimation of Powerlink's regulated profits is unsubstantiated and may be incorrect.

Whilst in theory, it should be expected that Powerlink's non-regulated activities are more profitable than its regulated activities, in light of the excessive return on capital allowances being provided by the AER, that may be an incorrect assumption.

The AER needs to perform a proper profitability analysis to test that assumption.

5.4.4.11 The Use Of Nominal Or Real Dollars Does Not Change The Conclusions

The AER's draft determination attempts to suggest that the use of nominal, rather than real dollars changes the conclusions of the profitability analysis"

AER Statement

"The CCP members start their analysis as at 30 June 2000 using figures taken from Powerlink's oldest available financial report. This is problematic because the book value of share capital ($401 million) is used without adjusting for the time that has passed between the initial investment and the valuation date"

CCP4 (HG) Response

CCP4's analysis tracks changes in the equity investment in Powerlink over the 15-year study period, with the annual return on equity being calculated on the basis of the opening contributed equity in each year of the analysis.

The analysis consistently uses nominal dollars for Powerlink and for the ASX50 comparator companies.

Converting the figures to real dollars does **not** change the findings or conclusions of the analysis.

Irrespective of whether the analysis is performed in nominal or real dollars, Powerlink achieved actual return on equity levels of many multiples of the returns realised by ASX 50 companies in all other industry sectors.

5.4.4.12 Artificial Inflation of The Equity Base is Not Common Practice

The AER's draft determination attempts to create the impression that artificial inflation of the equity base is common practice:

AER Statement

"*Revaluation Reserves should be included in the calculation of shareholder's equity, in accordance with commonly accepted valuation practices"*

CCP4 (HG) Response

Artificially inflating a businesses equity investment is not common practice for Australian businesses – it is unique to the monopoly energy networks that the AER regulates

In order to compare the networks' returns with the returns of other companies **on an 'apples for apples' basis**, CCP4's analysis used the commonly accepted equity valuation practice used by all other Australian businesses.

Of course, the profitability analysis could have been performed by using the energy networks' approach (artificially inflating the equity base), but that would not change the results and conclusions of the analysis.

Irrespective of whether the analysis is performed using the networks' approach or the standard Australian practice to valuing equity, Powerlink achieved actual return on equity levels of many multiples of the returns realised by ASX 50 companies in all other industry sectors

5.4.4.13 The AER's Misplaced Confidence In Its Approach Is Based On An 'Apples to Oranges' Comparison

The AER's misplaced confidence in its *'return on equity'* determination approach is **not** based on an "apples for apples" comparison of the networks' returns with other companies

It is actually based on an "apples to oranges" comparison, i.e.:

- An (ex ante) estimation of the networks' expected 'return on equity' calculated on the basis of **artificially inflated** capital bases
- An (ex post) estimation of the return on capital being achieved by other companies, calculated on the basis of **actual** capital bases

These inconsistencies mean that the resulting ROE ratios are not directly comparable, as the AER is significantly underestimating the networks' actual ROE

The AER clearly needs to compare the returns being realised by the networks and other companies **on an 'apples for apples' basis**

Until the AER does that, any further debate with the AER on the issue is futile.

5.4.5 CCP4's Response To Powerlink's Letter To The AER (28 April 2016)

Powerlink's CEO sent a letter to the AER on 28 April 2016 that was clearly aimed at discrediting the CCP4 (Hugh Grant) presentation to the AER March Public Forum.

That letter contained a number of misleading and unsubstantiated claims.

It opened with the sweeping allegation that the presentation *"contained a number of invalid assumptions, material errors and "unsubstantiated claims"* **– yet it provided no credible evidence to substantiate those claims.**

It is deeply concerning that, in the absence of a detailed understanding of the issues, many stakeholders may have been inappropriately influenced by Powerlink's letter and Powerlink CEO's subsequent media statements.

The following sections of this submission outline CCP4's response to the key assertions in Ms York's letter.

5.4.5.1 The Interrelationships of The Regulatory Framework Have Been Fully Considered

Powerlink's letter made the unsubstantiated assertion that CCP4 had not fully considered the regulatory framework interrelationships:

Powerlink CEO Statement

"Powerlink considers that Mr Grant has undertaken his analysis selectively and in a way that does not recognise that the regulatory framework is an interrelated package of arrangements. By way of example, the current regulatory framework includes indexation of the regulated asset base. Correspondingly it also includes the use of economic depreciation (i.e. offset by indexation) instead of straight line depreciation"

CCP4 (HG) Response

This statement is incorrect and misleading.

CCP4's critiques and proposed solutions carefully considered and were fully cogniscant of the relevant regulatory framework interrelationships, including the interrelationship between RAB indexation and economic depreciation.

Powerlink is clearly attempting to distract attention from its extraordinary profitability and to confuse the debate by suggesting that the issues are more complex than they actually are.

Nothing in Powerlink's letter changes the fact that Powerlink is achieving actual return on equity levels of many multiples of the returns realised by ASX 50 companies in all other industry sectors

5.4.5.2 Shareholder Equity Definition

Powerlink's letter made some incorrect assertions regarding CCP4's definition of shareholder equity:

Powerlink CEO Statement

"Mr Grant appears to have interchangeably defined shareholder equity as either contributed shareholder capital or the sum of contributed shareholder capital and retained earnings"

CCP4 (HG) Response

This statement is incorrect.

To be clear, as outlined above, when calculating the annual 'return on equity' levels, CCP4's profitability analysis used the "book value" definition of shareholder equity (i.e. it is the sum of shareholder contributions plus retained earnings). This is the definition used by all Australian businesses outside of the energy network sector when calculating their annual return on equity levels.

As outlined above, the "book value" of equity can also be referred to as *"shareholder contribution"*

Using this definition ensured that the annual returns on the actual equity invested were being compared on an "apples for apples" basis.

5.4.5.3 Powerlink's Claim That CCP4's Equity Definition Excluded Retained Earnings

Powerlink CEO Statement

"Mr Grant appears to have inappropriately limited his definition of shareholder equity for Powerlink to contributed shareholder capital, excluding both retained earnings and asset revaluation reserves that would typically flow through as returns to shareholders"

CCP4 (HG) Response

This statement is incorrect

As outlined above, when calculating the network's annual return on equity levels, CCP4's analysis consistently defined shareholder equity as the sum of contributed share capital plus retained earnings. That definition clearly includes retained earnings – i.e. it does **not** exclude retained earnings as stated by Powerlink.

Of course, asset revaluation reserves (RAB indexation) were excluded to **enable an 'apples for apples' comparison** of Powerlink's returns with the returns of ASX50 companies.

5.4.5.4 Unclear Assumptions?

Powerlink's letter attempts to suggest that the assumptions in CCP4's profitability analysis were unclear:

Powerlink CEO Statement

"The lack of transparency through to Mr Grant's underlying analysis also means that it is not clear on what basis he has measured the returns on the other companies, nor is it possible to confirm if those measures are valid"

CCP4 (HG) Response

The assumptions and definitions were laid out in the CCP4 submission and have been further clarified within this submission.

All data on the networks' returns (e.g. NPAT, share capital and retained earnings) was taken directly from Powerlink and Energex's audited annual financial reports over the analysis period.

All data on the ASX50 companies' returns was taken directly from the investor information section of their websites and from publicly available ASX information.

5.4.5.5 Powerlink's Misleading Statements On its Actual Equity Investment

The Powerlink letter makes a blatantly misleading statement regarding Powerlink's actual equity investment:

Powerlink CEO Statement

"In either case, he has omitted from his analysis asset valuation reserves. *For example, as at 30 June 2014 Powerlink's financial statements showed Actual Shareholder Equity as $2.582 billion. Mr Grant has calculated shareholder equity as at 30 June 2014 as $791 million (the sum of contributed shareholder equity $401m and retained earnings $390m).*

CCP4 (HG) Response

This statement is incorrect and misleading.

Powerlink's shareholder has **not** invested $2.582 billion in equity – its actual equity investment (at 30 June 2014) was $791 million (comprising $401 million in contributed share capital and $390 million in retained earnings).

Powerlink's claimed $2.582 billion figure obviously includes $1.8 billion in RAB indexation (revaluation reserves).

5.4.5.6 Powerlink's Incorrect Statements Regarding Annual Return on Equity Comparisons

Powerlink's letter made the unsubstantiated claim that CCP4's analysis was not performed on a 'like for like' basis:

Powerlink CEO Statement

"Mr Grant asserted that Powerlink delivered a 20-30% return on equity and has compared this to ASX50 companies' typical return on equity of 5%. Powerlink considers this comparison has not been made on a like-for-like basis"

CCP4 (HG) Response

This statement is incorrect.

CCP4's analysis clearly identifies that, **on an *'like for like'* basis**, Powerlink achieved an average annual return on equity of 27% compared to less than 5% for ASX 50 companies.

5.4.5.7 Powerlink's 'Apples and Oranges' Comparison of Return on Equity

Powerlink's letter made the unsubstantiated assertion that Powerlink's actual return on equity over the past 15 years on a like for 'like basis' was 7.6%:

Powerlink CEO Statement

"To be clear, Powerlink's actual average return on equity over the 15 year period is 7.6%, when presented on a like-for-like basis with typical ASX50 returns referred to by Mr Grant"

CCP4 (HG) Response

This statement is incorrect.

The CCP's analysis clearly demonstrates that, **on a 'like-for-like' basis**, Powerlink achieved an average annual return on equity of 27%, compared to less than 5% for ASX50 companies

Powerlink's assertion that its average return on equity was 7.6% is clearly based on the inclusion of RAB indexation (revaluation reserves) in Powerlink's equity base.

As demonstrated in the CCP's analysis, the inclusion of RAB indexation overstates Powerlink's equity base by a factor of around 4 – i.e. it understates Powerlink return on equity to around one quarter of the returns that Powerlink is actually achieving.

When expressed as a % of Powerlink's <u>actual</u> equity investment, Powerlink's 7.6% claim equates to an average annual return of around 30% - i.e. similar to the returns that Powerlink actually achieved.

5.4.5.8 Powerlink's Unsubstantiated Claim Regarding "Estimates From Independent Sources"

Powerlink's letter made the following unsubstantiated claim regarding "estimates from independent sources":

Powerlink CEO Statement

"Estimates sought from independent sources show that over the past five years, the annual returns on the S&P/ASX50 Index have been consistently above Powerlink's annual return on equity, contrary to Mr Grant's claims"

CCP4 (HG) Response

This unsubstantiated statement is clearly incorrect.

Firstly, Powerlink does not state which "independent sources" it is referring to

Secondly, **Powerlink could only reach this conclusion by making comparisons on an 'apples and oranges' basis** – i.e. comparing Powerlink's returns on an **artificially inflated** equity base with S&P/ASX 50 companies' returns on an **actual** equity basis.

The publicly available S&P/ASX 'return on equity' information is expressed in terms of the companies' returns on their **actual** equity investment – not on **artificially inflated** equity.

Over the past 15 years, Powerlink has averaged 27% on its **actual** equity investment, whereas most ASX50 companies achieved less than 5%.

5.4.5.9 Artificially Inflating Shareholder Equity is Not Common Practice

Powerlink's letter attempts to create the impression that inflating shareholder equity is common practice:

Powerlink CEO Statement

"It is common practice for all regulated network businesses in Australia to treat Asset Revaluation Reserves as shareholder equity"

CCP4 (HG) Response

Artificially inflating shareholder equity is **not** common practice - it is unique to Australia's monopoly networks.

For businesses in all other sectors of the Australian economy, there is no automatic inflation of their asset values. Rather, their plant and equipment valuations reduce in value each year as their assets are depreciated.

In order to compare the networks' returns with the returns of other companies **on an 'apples for apples' basis**, the CCP's analysis used the commonly accepted practice for valuing equity used by all other Australian businesses.

If the profitability analysis had been performed by using the energy networks' approach (artificially inflating the equity base) that would not change the results and conclusions of the analysis.

Irrespective of whether the analysis is performed using the networks' approach or the commonly accepted approach to valuing equity, Powerlink is achieving actual return on equity levels of many multiples of the returns being realised by ASX 50 companies in all other industry sectors.

5.4.5.10 The WACC/RAB Inconsistency Issues – CCP4's Previous Advice

The cumulative value of RAB indexation accounts for a large component of the networks' RAB valuations, currently accounting for over 30% of some networks' 2015 RAB values. [7]

Having such levels of 'artificial capital' contained within the networks' regulatory valuations is not necessarily troublesome provided that it is appropriately considered in the determination of the networks' 'return on capital' allowances.

However, the AER's methodology for determining the networks' 'return on capital' allowances does not appropriately deal with the impacts of RAB indexation.

In essence:

- The AER's methodology for estimating the required percentage returns (for both equity and debt) is based on the returns that investors require on their *actual* capital investments
- However, the AER calculates its 'return on capital' allowances by multiplying those percentage returns to *artificially inflated* capital bases

In relation to return on equity, the AER estimates the percentage return on equity that it considers investors require to invest in businesses with similar risk profiles to the electricity networks.

Importantly, the AER's calculation of that percentage return uses a market risk premium (MRP) that equity investors require derived from share market information – i.e. it is based on the MRP required by companies that do not inflate their equity investment base.

Consequently, the AER is applying an outcome from the share market that is not applicable to the setting of the return on equity for entities that inflate their asset base.

5.4.5.11 CCP4's Analysis Of The Networks' Actual Investment Levels

The AER assumes that efficient network businesses fund their investments by borrowing 60 per cent of the required funds, whilst raising the remaining 40 per cent from equity.

CCP4's previous submission provided a detailed analysis of the Queensland networks' actual investment levels.

The tables overleaf outline the differences between the AER's assumed investment levels for Powerlink Queensland and Energex and the networks' actual investment levels.

[7] Assets or Liabilities – The Need To Apply Fair Regulatory Values To Australia's Electricity Networks, Hugh Grant, 5 May 2016

5.4.5.12 Theoretical vs. Actual Investment Levels

CCP4's analysis identified that:

Total Investment Levels

- Powerlink's RAB valuation is 1.55 times Powerlink's actual total investment
- Energy's RAB valuation is 1.39 times Energex's actual total investment

Equity Investment Levels

- The AER's assumed equity investment for Powerlink is 3.9 times Powerlink's actual equity investment
- The AER's assumed equity investment for Energex is 2.8 times Energex's actual equity investment

Debt Investment Levels

- The AER's assumed debt level for Powerlink is over 10% higher than Powerlink's actual debt level
- The AER's assumed debt level for Energex is 4% higher than Energex's actual debt level

5.4.5.13 Theoretical vs. Actual Debt/Equity Ratios

CCP4's analysis identified that:

As a percentage of their actual investment levels:

- Powerlink funded 16% of its investment from equity and 84% from debt
- Energex funded 20% of its investment from equity and 80% from debt

As a percentage of RAB:

- Powerlink's equity investment amounts to 10.4% of RAB, rather than 40% assumed by the AER
- Energex's equity investment amounts to 14.3% of RAB, rather than 40% assumed by the AER
- Powerlink's debt investment amounts to 54.4% of RAB, rather than 60% assumed by the AER
- Energex's debt investment amounts to 58% of RAB, which is close to the 60 % assumed by the AER

Powerlink Queensland Investment Levels (30 June 2014)

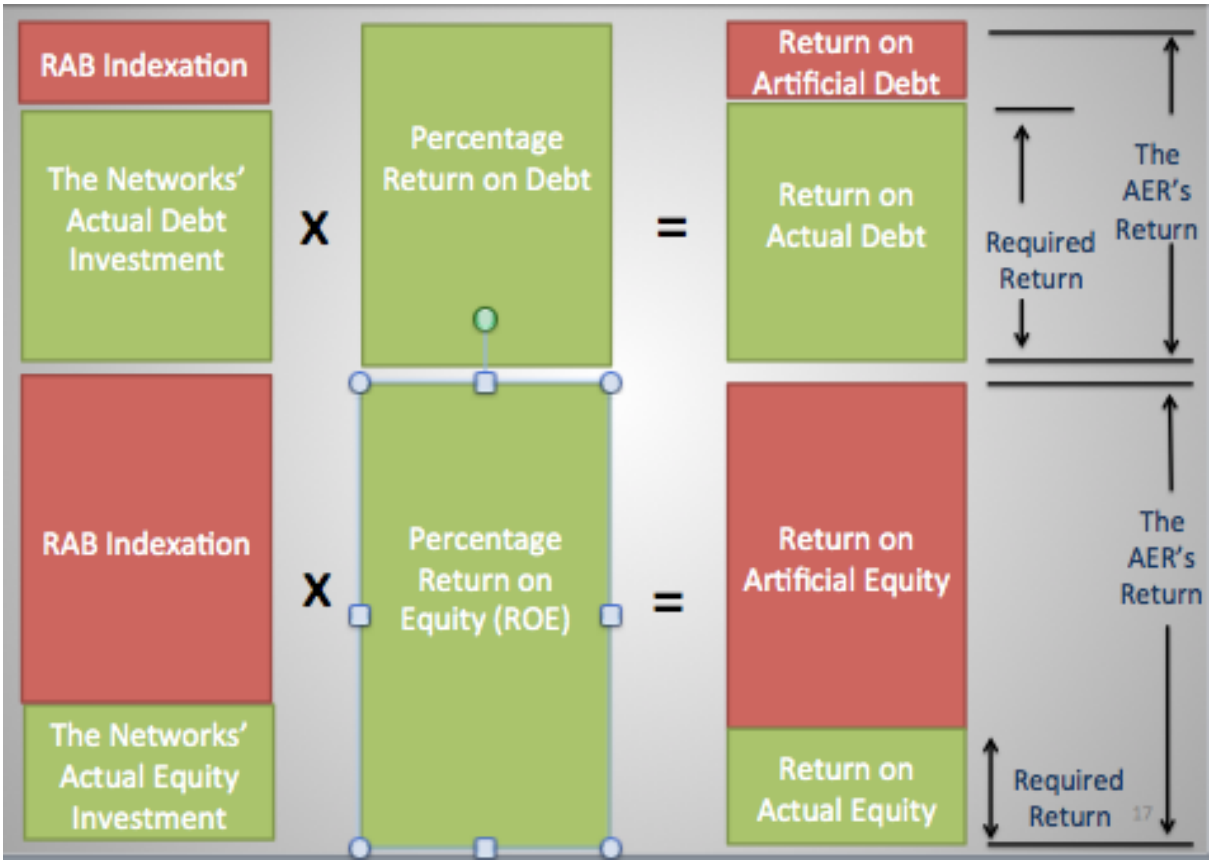
	The AER's Assumed Investment Bases		Powerlink Queensland's Actual Investment Bases			Difference
	Value ($bn)	% of RAB	Value ($bn)	% Of Total Investment	% Of RAB	
Equity	3.056	40%	0.791	16%	10.4%	**The AER's assumed equity level is 3.9 times Powerlink's actual equity investment**
Debt	4.585	60%	4.154	84%	54.4%	**The AER's assumed debt level is 10.4% higher than Powerlink's actual debt level**
Total	**$7.641 billion**		**$4.945 billion**			**The AER's assumed total investment is 1.55 times Powerlink's actual investment**

Energex Investment Levels (30 June 2014)

	The AER's Assumed Investment Bases		Energex's Actual Investment Bases			Difference
	Value ($ bn)	% Of RAB	Value ($ bn)	% Of Total Investment	% Of RAB	
Equity	4.471	40%	1.597	20%	14.3%	**The AER's assumed equity level is 2.8 times Energex's actual equity investment**
Debt	6.707	60%	6.465	80%	58%	**The AER's assumed debt level is 4% higher than Energex's actual debt level**
Total	**$11.178 billion**		**$8.062 billion**			**The AER's assumed total investment is 1.39 times Energex's actual investment**

5.4.5.14 Outcomes Of The AER's RAB/WACC Inconsistency and Incorrect Capital Base Assumptions

As illustrated in the chart below, the AER is inappropriately providing returns on 'artificial capital' that the networks have not invested.



CCP4's analysis demonstrated that **due to the combination of** the AER's RAB/WACC inconsistency and the AER's incorrect capital base assumptions:

- The AER is providing 'return on equity' allowances to Powerlink of at least 3.9 times the required level
- The AER is providing 'return on equity' allowances to Energex of at least 2.8 times the required level
- The AER is providing 'return on debt' allowances to Powerlink of over 10% above the required level
- The AER is providing 'return on debt allowances to Energex of over 4% above the required level

5.4.6 The WACC/RAB Inconsistency – CCP4's Proposed Solution

5.4.6.1 CCP4's Primary Recommendation

Hugh Grant's consistent position as an AER CCP member over the past 3 years has been that, in order to address the WACC/RAB inconsistency within the current rules (which require the RAB to be indexed), the AER needs to modify its WACC estimation methodology to reflect that the % returns are applied to inflated capital bases.

5.4.6.2 Alternative Solution To Retain The AER's Current WACC Estimation Approach

During CCP4's discussions with the AER on this issue, it became clear that the AER had no appetite for revising its WACC estimation methodology.

That resulted in CCP4 discussing a possible alternative solution for addressing the RAB/WACC inconsistency that could potentially allow the AER to retain its existing WACC estimation approach. Specifically, it involved a discussion on whether the AER could apply its % returns to capital bases that are more reflective of the networks' actual investment levels.

When discussing that potential solution with the AER, CCP4 (HG) stressed that such a solution would obviously require the AER to apply an unconventional interpretation of the NER requirement for the AER to apply its rate of return to "the value of the regulatory asset base" (NER Clause 6A.6.2 (a)).

Importantly, Hugh Grant's submissions and engagement with the AER as a CCP member have **never** challenged the RAB indexation rule requirement.

As stated in the previous CCP4 submission (page 44):

"CCP4 urges the AER not to confuse the issue as it has in its previous responses to those recommendations, by suggesting that CCP4 is seeking the removal of RAB indexation.

To be clear, CCP4 is not challenging the rule requirement for the RAB to be indexed. Rather, CCP4 is simply recommending that the AER applies its calculated percentage returns to capital bases that are more reflective of the networks' actual investment, thereby ensuring consistency with the methodology that the AER applies when estimating the required percentage returns".

That alternative solution was only ever contemplated on the expectation that the AER would work constructively to explore a potential solution to the RAB/WACC inconsistency issue that enables the AER to retain its existing WACC estimation methodology, whilst complying with its NER obligations.

Based on the AER's statements in its draft return on capital determination for Powerlink, it is clear that the AER never had any intention of working constructively to explore such a solution.

5.4.6.3 The WACC/RAB Inconsistency Issues – The AER's Response

In essence, the AER's draft decision for Powerlink has:

- Ignored CCP4's primary recommendation – i.e. that the AER needs to revise its WACC estimation methodology to reflect that its % returns are applied to artificially inflated capital bases
- Focused its commentary on misrepresenting and taking "pot shots" on the potential alternative solution, e.g.:
  - Suggesting that CCP4 is challenging the rule requirement to index the RAB – despite CCP4 (HG) reiterating to the AER many times that it was not challenging that requirement
  - Suggesting that CCP4 is proposing solutions that would violate the NPV = Zero principle (based on the above misrepresentation)

It is extremely disappointing that the AER has devoted 15 pages in its draft determination responding to an issue that CCP4 did not recommend (removal of RAB indexation).

5.5 The AER's Weighted Cost of Capital (WACC) Parameters

5.5.1 Return on Equity

The AER's draft decision has applied an equity risk premium of 4.55%, based on a market risk premium (MRP) of 6.5 and an equity beta of 0.7.

This is similar to the equity risk premium that the AER provided to the electricity networks during the previous regulatory period – **i.e. in the midst of the Global Financial Crisis.**

CCP4's perspectives on the AER's return on equity parameters are outlined below.

5.5.1.1 Market Risk Premium (MRP)

The AER's draft decision has applied a Market Risk Premium (MRP) of 6.5%.

Over the past three years the AER has received numerous submissions from a broad range of stakeholders outlining that the regulatory framework for Australia's monopoly energy networks provides an extremely low business risk environment, demonstrating that the market risk premium (MRP) should be set at the bottom of the AER's guideline range (i.e. 5.0% or below).

Despite those submissions, the AER has continued to apply an MRP of 6.5%.

5.5.1.2 Equity Beta

The AER's draft decision has applied an equity beta of 0.7 - i.e. the top end of the 0.4-0.7 range outlined in the AER's *Rate Of Return (ROR) Guideline*.

Over the past three years the AER has received a number of submissions from a broad range of stakeholders that have strongly challenged the AER's approaches to estimating equity beta.

Many of those submissions referred to Professor Olan Henry's April 2014 expert report [8], commissioned by the AER as part of its Better Regulation Program, which provided compelling evidence that the AER should be applying an equity beta of 0.4 or lower.

Of the nineteen calculations on which Professor Henry based his recommended range, most of the calculations were clustered at the lower end, with fourteen calculations between 0.3 and 0.5.

Importantly, Professor Henry's results included networks that were regulated under a 'price cap' – i.e. it includes networks that were subjected to volume risk. However, the AER is now applying 'revenue cap' regulation to all of its revenue determinations, thereby insulating the networks from any volume risk. This further strengthens the argument for an equity beta of 0.4 or below to be applied.

CCP4 strongly asserts that the AER has not provided any substantive evidence that supports its decision to apply an equity beta significantly higher than Professor Henry's estimate of 0.4.

5.5.2 Return on Debt

The AER is proposing to provide a 'return on debt' allowance of 5.2%.

This represents a debt margin (nominal debt less the nominal risk free rate) of around 2.85%, which is:

- Similar to the debt margin that the AER provided to Australian networks for the previous regulatory period **– i.e. during the Global Financial Crisis**
- Over twice the debt margin that was provided by the ACCC for the 2002-07 regulatory period
- Around five times the debt margin currently being provided by Ofgem for the UK networks

Over the past three years the AER has received numerous submission providing detailed critiques of the AER's approaches to estimating the networks' return on debt allowances.

The key criticisms include:

5.5.2.1 The Use of BBB+ Ratings

The AER claims that it has used BBB+ ratings in the development of its return on debt allowances.

However it is well understood that due to limitations in the availability of Australian BBB+ data, in practice BBB ratings are used. Consequently the AER's draft return on debt determination has predominantly been based on more expensive debt ratings – i.e., the AER is providing significantly higher return on debt allowances than appropriate.

5.5.2.2 The AER's Lack of Consideration of the Networks' Actual Borrowing Costs

It is well understood that the Australian electricity networks' actual borrowing costs are much lower than the costs assumed by the AER, resulting in the networks realising billions of dollars in 'windfall profits'.

[8] Henry O. T., Estimating Beta: An Update, April 2014

Various stakeholders, including the AER Consumer Challenge Panel (CCP), have repeatedly criticised the AER for not considering how the actual costs of debt incurred by the networks compares with the AER's theoretical debt costs.

CCP4 considers that the AER needs to have greater regard to those critiques.

CCP4 also concurs with CCP3's recent recommendation that the AER should benchmark the networks' actual debt costs to inform its 'return on debt' allowances. [9]

5.6 Summary of CCP4's Perspectives on the AER's Draft Return on Capital Determination

5.6.1 Powerlink's Actual Profitability

Powerlink is achieving many multiples of the AER's theoretical returns and many multiples of the returns being achieved by Australia's best performing ASX 50 companies.

The primary driver of Powerlink's extraordinary profitability is the AER's provision of excessive 'return on capital' allowances.

The AER has attempted close down any serious discussion on Powerlink's extraordinary profitability and the deficiencies with the AER's 'return on capital' determination approach, by misrepresenting CCP4's analysis and recommendations.

It is clear that the networks' actual profitability is an "inconvenient truth" to the AER, and to the networks.

The AER's defiant indifference to the networks' actual returns and its focus on defending its current 'rate of return' estimation approach is alienating stakeholders from the network revenue determination process.

5.6.2 The WACC/RAB Inconsistency

The AER's methodology for determining the networks' 'return on capital' allowances does not appropriately deal with the impacts of RAB indexation:

- The AER's methodology for estimating the required percentage returns (for both equity and debt) is based on the returns that investors require on their *actual* capital investments
- However, the AER calculates its 'return on capital' allowances by multiplying those percentage returns to *artificially inflated* capital bases

This inconsistency, together with the AER's incorrect gearing assumptions, is resulting in the AER providing 'return on capital' allowances well above the required levels – e.g. it is currently resulting in the AER is providing 'return on equity' allowances to Powerlink of around 4 times the required level.

[9] CCP3 Submission on the AER's Preliminary Determinations for the Victorian Distribution Networks

The AER's misplaced confidence in its 'return on capital' determination approach **is based on an 'apples to oranges' comparison** of the networks' returns with other companies, i.e.:

- An (ex ante) estimation of the networks' expected 'return on capital' calculated on the basis of **artificially inflated** capital bases
- An (ex post) estimation of the 'return on capital' being achieved by other companies, calculated on the basis of their **actual** capital bases

Rather than misrepresenting stakeholders' criticisms and defending its current approach, the AER needs to revise its 'return on capital' estimation approach, informed by an **'apples for apples' comparison** of the returns being realised by the networks and other companies.

Unless the AER is prepared to do that, any further debate with the AER on the issue is futile and consumers will need to explore alternative mechanisms to resolve the issue.

Deficiencies With The AER's WACC Parameters

The AER's draft decision has applied an equity risk premium (ERP) of 4.55% and a debt risk premium of 2.85% - similar to the risk premiums that the AER provided to the electricity networks during the previous regulatory period – **i.e. in the midst of the Global Financial Crisis.**

The AER needs to have greater regard to stakeholders' critiques of its market risk premium (MRP) estimation approach and to apply an MRP at the lower end of the AER's range (i.e. 5.0% or below).

The AER needs to have greater regard to stakeholders' critiques of its equity beta estimation approach and to apply an equity beta at the lower end of the AER's range (i.e. 0.4 or below)

The AER needs to have greater regard to stakeholders' critiques of its 'return on debt' estimation approach and to determine a return on debt allowance for Powerlink that is more reflective of the borrowing costs that Australia's electricity networks actually incur.

This will result in the AER determining significantly lower return on capital allowances that would better meet the National Electricity Objective (NEO), whilst still delivering generous returns to Powerlink.

6 Capital Expenditure

6.1 The AER's Preliminary Capex Determination

As outlined in the table below, the AER is proposing to provide Powerlink with a total capex allowance of $775.2 million ($2016/17) over the next five years, by accepting Powerlink's proposed capex in full, other than applying a minor reduction to Powerlink's proposed repex.

AER Draft Decision On Powerlink's Capex ($2016/17, million)

Capex Category	Powerlink Proposal	AER Draft Decision	Difference
Augmentation	3.1	3.1	-
Easements	7.7	7.7	-
Replacement	794.3	609.8	- 23%
Security & Compliance	18.8	18.8	
Other Non Load Driven Capex	30.1	30.1	-
Information and Communications Technology (ICT)	56.1	56.1	-
Motor Vehicles	12.3	12.3	-
Buildings and Property	23.5	23.5	-
Tools and Equipment	5.0	5.0	-
Total Capex	**959.7**	**775.2**	**- 19.2%**

6.2 CCP4's Concerns With The AER's Draft Capex Determination

6.2.1 Issues That Apply To All Capex Components

CCP4 (HG) has a number of major concerns with the AER's draft Powerlink capex determination. CCP4 (HG's) detailed concerns for each element of the AER's draft capex determination are outlined in the following sections of this chapter. However, CCP4 (HG) has three major concerns that apply to all components of the AER's draft capex determination:

- The AER's failure to set Powerlink's capex allowances on the basis of efficient costs
- The AER's failure to comply with the National Electricity Rule (NER) requirement that its capex determinations are to be informed by a consideration of long-term trend analysis
- The AER's failure to acknowledge that the 2013-17 capex allowances the AER provided to Powerlink were well above the efficient level has significantly distorted the AER's assessment of Powerlink's required 2018-22 capex

6.2.1.1 The AER's Failure To Set Powerlink's Capex Allowances on The Basis of Efficient Costs

The rules require the AER to determine **efficient** capex allowances, i.e.:

The AER must determine:

- *"the **efficient costs** of achieving the capital expenditure objectives"* [10]

- *"the **costs that a prudent operator would require** to achieve the capital expenditure objectives"* [11]

The AER must have regard its most recent annual benchmarking report and ***"benchmark capital expenditure that would be incurred by an efficient Transmission Network Service Provider"*** [12]

As stated by the AEMC**, "benchmarking is a critical exercise in assessing the efficiency of a NSP"** [13]

CCP4's previous submission provided a detailed 21 page critique (informed by various studies and analyses) of Powerlink's capital efficiency and the efficiency of Powerlink' capex policies and practices.

That critique (replicated in Appendix 1 of this submission) demonstrated that:

- Powerlink is the most inefficient transmission network in the NEM
- Powerlink is much less efficient than the other transmission networks, having incurred significantly higher capex over the past decade, both in absolute terms and after normalisation for changes in network outputs
- SP AusNet has invested much less and later than Powerlink to achieve the same outcomes
- SP AusNet's efficiency has not been at the expense of safety or reliability

Despite the above, the AER's draft capex determination has effectively ignored Powerlink's very poor capital efficiency, other than including a tokenistic observation of the AER's latest benchmarking report which identifies that Powerlink's capex efficiency continued to decline and is at the bottom end of TNSP efficiency scale.

The AER's capex assessment did not have any regard to its benchmarking results.

As stated by the AER:

"In our capex assessment we have not relied on our high level benchmarking metrics"

"We have not used this analysis deterministically in our capex assessment"

In essence, the AER's draft capex determination has ignored the extensive evidence outlined in various independent studies and reviews that have clearly demonstrated Powerlink's very poor capital efficiency and its inefficient capex policies and practices.

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[10] NER Clause 6A.6.7 (c) (1)
[11] NER Clause 6A.6.7 (c) (2)
[12] NER Clause 6A.6.7 (e) (4)
[13] AEMC, *National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012*, Nov 2012, p. 25.

6.2.1.2 The AER's Failure To Comply With The NER Requirement That Its Capex Allowances Are Informed By A Long-Term Trend Analysis

The AER has misrepresented the rule requirement and its obligations under the NER by stating that:

*"The NER requires that we consider the actual and expected capital expenditure during any preceding regulatory control **period**"* [14]

That statement misrepresents Clause 6A.6.7 (e) (5) of the NER which actually requires the AER to consider:

*"The actual and expected capital expenditure of the Transmission Network Service Provider during any preceding regulatory control **periods**"* [15]

By stating that the rules only require the AER to consider the networks' expenditure during the previous regulatory control period, rather than the preceding regulatory control periods, the AER has misrepresented its obligations under the rules.

As outlined within this submission, the AER's draft capex allowances have been informed by a short-term trend analysis, rather than the long-term trend analysis required by the rules.

CCP4 (HG) considers that this has resulted in the AER proposing to provide capex allowances to Powerlink well in excess of prudent and efficient levels, thereby not meeting the capex objectives and violating the AER's obligations under the National Electricity Rules (NER).

6.2.1.3 The AER's Failure To Acknowledge That Powerlink's 2013-17 Capex Allowances Were Well In Excess Of The Required Levels

The AER's failure to acknowledge the extensive evidence that the 2013-17 capex allowances the AER provided to Powerlink were well in excess of the required levels has significantly distorted the AER's assessment of Powerlink's required 2018-22 capex.

Rather than acknowledging that evidence, the AER is simply expecting stakeholders to accept Powerlink's unsubstantiated and non-credible explanations for the differences between Powerlink's actual and forecast 2013-17 expenditure.

6.2.1.3.1 Powerlink's Unsubstantiated Assertions

Powerlink made the unsubstantiated claims that the reasons for the difference between its forecast and actual capex spend during the 2012–17 regulatory control period were: [16]

*"Refinement of project scope and timing as a result of a review of ongoing asset requirements in the context of the **unexpected downturn in forecast demand** (38 per cent of underspend)"*

*"Refinement of project scope and timing arising from **more detailed asset condition assessme**nt (24 per cent of underspend)"*

*"Achievement of **lower that forecast costs for work**, due primarily to softer market conditions, a pilot program for transmission line refits, and improvements to its contracting strategy (25 per cent of underspend)"*

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[14] AER Draft Powerlink Revenue Determination, Appendix 6 (Capex), Page 37

[15] NER, cl. 6A.6.7(e)(5)

[16] Powerlink, *PQ0131, Page 2,* 30 May 2016

6.2.1.3.2 CCP4's Analysis Of The Real Reasons For The Difference

CCP4's previous submission strongly refuted the above unsubstantiated claims and outlined the real reasons for the differences between Powerlink's forecast and actual capex spend during the current regulatory period.

In relation to the above claims, CCP4's previous submission outlined that:

The "Downturn In Forecast Demand" Was Not Unexpected

CCP4's previous submission demonstrated that Powerlink's declining demand during the current regulatory period was **not** unexpected. Rather, it was forecasted by all credible forecasters and within detailed submission by various stakeholders that strongly challenged Powerlink and the AER's demand forecasts.

CCP4's previous submission outlined that Powerlink's peak demand forecast was 40% higher than Powerlink's actual peak demand, as predicted by various stakeholders.

CCP4's previous submission also provided a detailed critique of Powerlink's demand forecasting record that demonstrated that Powerlink systemically over-estimated its demand forecasts in all previous regulatory periods.

CCP4's previous submission demonstrated that the AER's capex allowances for the 2013-17 regulatory control period were based on unrealistic demand forecasts, and that the AER had not met its obligation to determine allowances based on *"a realistic expectation of the demand forecast and cost inputs required to achieve the capital expenditure objectives".*

CCP4's previous submission also demonstrated that Powerlink was rewarded with over $300 million in windfall profits for its forecasting errors during the 2013-17 regulatory period, as the AER's revenue allowances included returns on capex that it did not incur.

Powerlink's Claims Regarding Changes To Its Condition Assessment Processes Are Not Credible

As outlined within this submission, EMCa identified major deficiencies with the condition assessment processes applied by Powerlink during the current (2013-17) regulatory period.

Furthermore, Powerlink's 2013-17 revenue proposal included many assertions that Powerlink's asset condition assessment processes represented industry best practice. Those claims were strongly refuted by the AER's consultant (EMCa) and by various stakeholders that demonstrated that Powerlink's repex policies and practices are resulting in Powerlink systemically prematurely replacing its assets.

EMCa's latest reviews have yet again confirmed the falsity of Powerlink's previous claims, providing extremely damning assessment of Powerlink's systemic premature asset replacement practices. [17]

Despite those findings, yet again the AER is expecting consumers to continue to fund Powerlink's inefficient and wasteful capex policies and practices.

[17] EMCa, *Review of forecast non-load driven capital expenditure*, July 2016
EMCa, *Review of forecast non-load driven capital expenditure*, Addendum Report, September 2016

Powerlink's Claims Regarding The Impact Of Deferrals and Re-Scoping Are Not Credible

Powerlink's claims regarding the impact of project deferrals, re-scoping and reduced costs are clearly not credible and raise major concerns with Powerlink's previous claims regarding the robustness of its capex forecasting approach.

As stated by the AER:

*"It is concerning that Powerlink significantly underspent its forecast capex as a result of the deferral, re-scoping and reduced cost of planned repex following a more detailed project-level analysis of options based on updated condition data**. In our view, this suggests a historical bias towards over-forecasting the scope, timing and cost of work required"***

As outlined in CCP4's previous submission (and in Appendix 1 of this submission), Powerlink's systemic capex and opex over-spending was exposed by various reviews, including the extremely damning *Queensland Government Independent Review Panel (IRP) on Network Costs*. [18]

CCP4's previous submission outlined that the main reason for the difference between Powerlink's forecast and actual 2013-17 capex spend was that reviews such as the IRP review clearly exposed that Powerlink had managed to secure 2013-17 capex allowances from the AER well in excess of the efficient level.

CCP4's previous submission also outlined that Powerlink was fully intending to spend its excessive capex allowances until it was directed by its owner (the Queensland government) not to do so, following the IRP review.

Disappointingly, the AER's draft decision has effectively ignored CCP4 and other stakeholders' analysis of the real reasons for the differences between Powerlink's forecast and actual spend during the current regulatory period.

CCP4 (HG) considers that the AER's unwillingness to acknowledge that its 2012-17 capex allowances for Powerlink were well in excess of the required levels has severely distorted the AER's assessment of Powerlink's required 2018-22 capex.

[18] Queensland Government Independent Review Panel (IRP) on Network Costs, Final Report

6.3 Replacement Capex

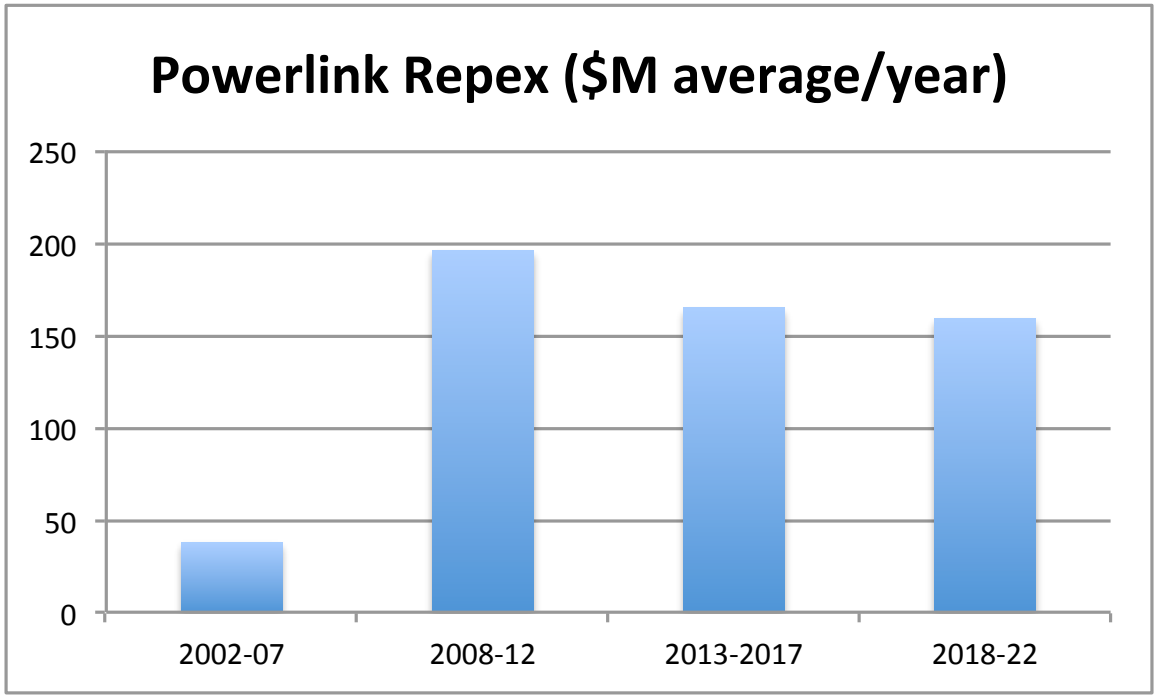
6.3.1 Powerlink's Repex Proposal

Despite haven undertaken major replacement capex programs over the past two regulatory periods, Powerlink proposed a historically high repex spend level of $794.3 million for the next regulatory period.

6.3.2 CCP4's Previous Submission

6.3.2.1 CCP4's Analysis Of Powerlink's Historical Repex Spend

The chart below compares Powerlink's proposed repex with its actual repex spend over the previous three regulatory periods.



Source: Powerlink

CCP4's analysis of Powerlink's repex allowances and actual repex spend over the previous three regulatory periods identified that:

- Powerlink proposed an average annual repex spend of around 4 times its actual spend during the 2002-07 regulatory period – which was around 20% above the level that the regulator (the ACCC) considered to be reflective of Powerlink's efficient long-term repex needs
- Powerlink's non-load capex has consistently been much higher than the other transmission networks
- Powerlink's dramatic increase in its repex spend over the 2008-12 regulatory period amounted to:
  - Around five times its repex spend during the 2002-07 period
  - 21% above its repex allowance for the period
  - 40% above the level recommended by the AER's consultant (PB) for the period

- The AER accepted Powerlink's proposed 2013-17 repex in full, much to the dismay of numerous stakeholders that outlined that Powerlink had materially overstated its repex needs [19]
- CCP4 considered that the AER did not properly scrutinise Powerlink's 2013-17 repex proposal due to the AER being overwhelmed in responding to Powerlink's extraordinary load capex proposal (which proposed a load capex allowance of over 7 times Powerlink's actual spend during the period)
- Powerlink's actual 2013-17 repex spend confirmed the views of various stakeholders that Powerlink had proposed an amount well in excess of its actual repex needs for the 2013-17 period [20]
- It is clear from Powerlink's $229m repex spend during the first year of the current regulatory period (2012/13) and from its public statements at that time, that Powerlink was intending to fully spend its 2013-17 repex allowance, until it was directed by the Queensland government not to do so following the release of the highly scathing IRP review report in May 2013

6.3.2.2 CCP4's Critique Of Powerlink's Repex Proposal

CCP4's previous submission provided a comprehensive critique of deficiencies with Powerlink's repex proposal, including:

An Over-Reliance on Top–Down Forecasting

CCP4's previous submission highlighted that Powerlink's repex forecasting methodology was overly reliant on top-down forecasting techniques.

Powerlink forecasted the majority of its asset replacement capex using a modified version of the AER's (top down) repex model.

Powerlink's over-reliance on the use of the AER repex model was foreshadowed and discouraged by CCP4 and the AER during the Framework and Approach (F&A) approval process – i.e. prior to Powerlink's submission of its revenue proposal.

For example, CCP4's submission on Powerlink's proposed forecasting methodology outlined that: [21]

"Powerlink's proposed forecasting approach was overly reliant on top-down forecasting methodologies (such as the repex model) and would not provide sufficient information on the governance behind the development of the forecast capex, the underpinning risk assessments, or the need, prudency or efficiency of the proposed capex"

"It would not provide the AER with sufficient information to enable an accurate assessment of the prudent and efficient capital expenditure required by Powerlink"

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[19] EUAA Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
Wesfarmers' Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
The Energy Consumers Group (the Group) Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
TEC Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
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[20] EUAA Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
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[21] CCP4 *Sub-Panel Submission, Draft Powerlink framework and approach (F&A)*, 3 April 2015

"It would result in an over-reliance on the use of Powerlink's historical capex costs and trends, which have not been demonstrated to be efficient"

"We consider that the boards of prudent asset intensive entities would not allow their capital investment decisions to be developed on the basis of 'top down' assessments, and would ensure that effective governance arrangements are in place that also require bottom-up assessments to be applied"

"Powerlink's lack of justification for such a radical departure from the AER's forecasting assessment guideline is very concerning"

"It would be inappropriate for such departures to be "locked in" to the Framework and Approach"

"An appropriate mix of top down and bottom up forecasting is required to demonstrate the prudency and efficiency of Powerlink's proposed repex projects"

Powerlink's Assumed Asset Lives Are Much Shorter Than The Lives Being Achieved By Other Networks

CCP4's previous submission outlined that Powerlink's repex proposal assumed much shorter asset lives than the actual asset lives being achieved by other networks.

It also outlined that Powerlink had not appropriately considered the impact of its low asset utilisation levels in its estimates of residual asset lives.

Insufficient Demonstration Of Efficient Costs

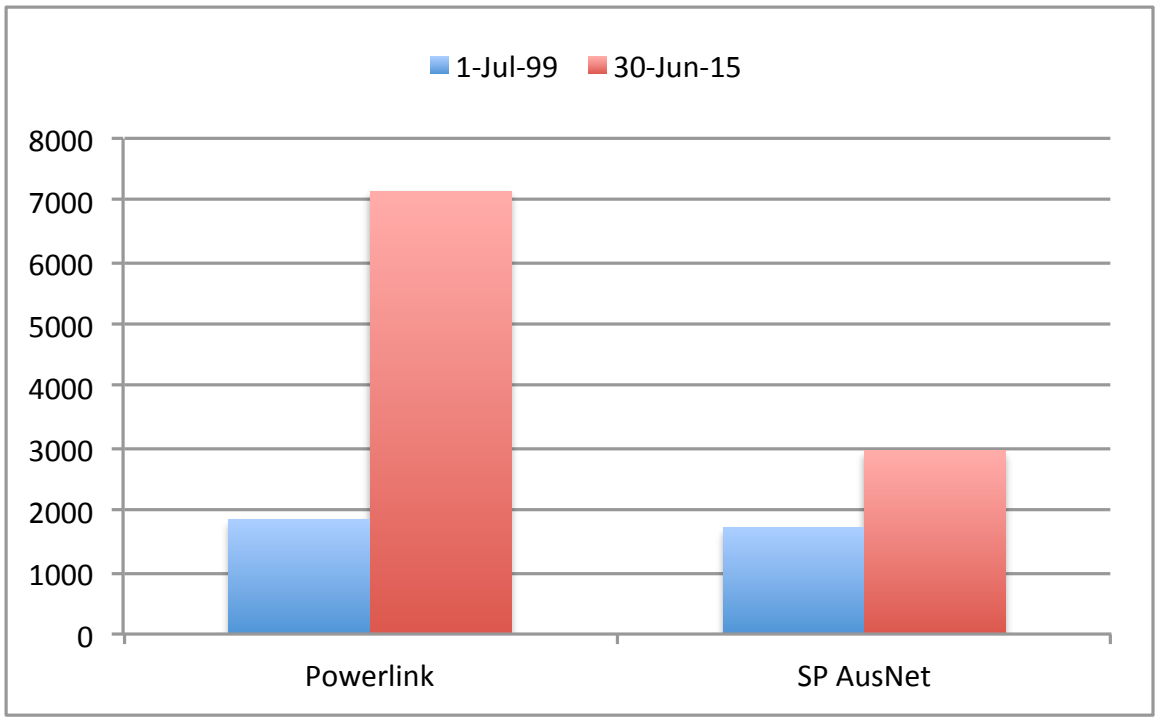
CCP4's previous submission outlined that Powerlink's forecasting approach was overly reliant on trending forward Powerlink's historical repex costs, which have been demonstrated to be materially inefficient by various independent reviews and benchmarking studies.

For example, the chart below illustrates the dramatic difference between Powerlink and SP AusNet's RAB growth over the past 16 years:

It illustrates that:

- In 1999, Powerlink's RAB value was similar to SP AusNet's
- Powerlink's RAB has subsequently grown to around 4 times its 1999 value
- By comparison, SP AusNet's RAB has grown to around 1.7 times its 1999 value

Various studies have identified that Powerlink's RAB value has grown much more significantly than all of the other transmission networks - both in absolute terms, and after normalisation for system outputs.



CCP4 outlined the AER's obligation to determine **efficient** capex allowances and to ensure that its determination of Powerlink's repex allowances was informed by an identification of "*benchmark efficient costs*".

Inadequate Provision Of Credible Asset Condition Information

CCP4's previous submission outlined that Powerlink's repex proposal provided very scant asset condition information. Rather, it was heavily reliant on unsubstantiated statements suggesting that Powerlink's assets are ageing and in need of replacement.

Inadequate and Overly Conservative Risk Assessments

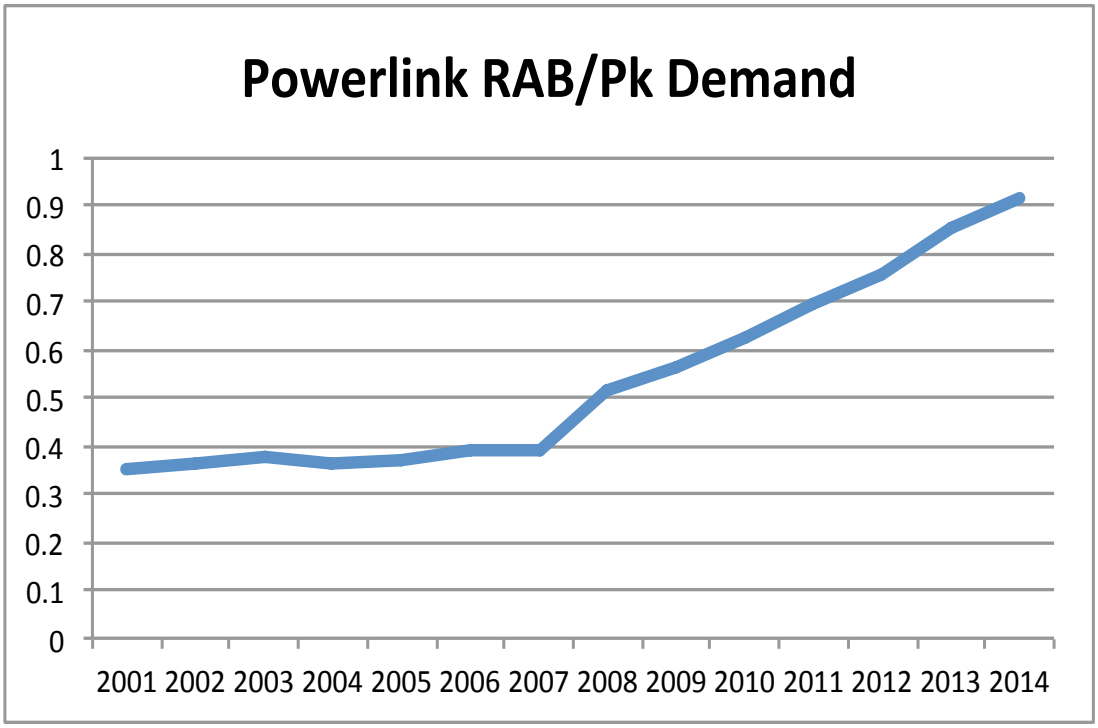
CCP4's previous submission outlined that Powerlink's repex proposal was based on inadequate and excessively conservative (predominately qualitative) risk assessments. that systematically overstate project risks and costs.

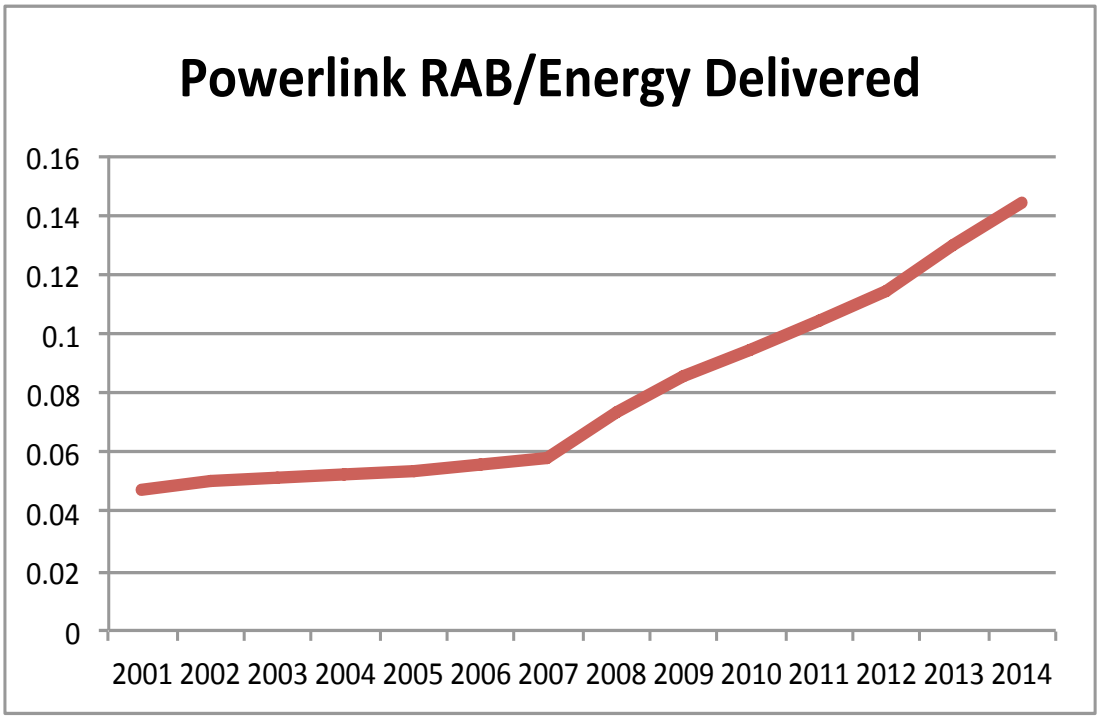
It also highlighted major disconnects between Powerlink's policy and practice as identified by the AMCL review of Powerlink's risk and prioritisation process (inadequate risk assessments, over-reliance on subjective judgment, insufficient understanding of actual failure modes, lack of integration with investment approval and asset management frameworks, etc.) [22]

[22] Appendix 5.08 of Powerlink's Revenue Proposal

Insufficient Consideration Of Powerlink's Excess System Capacity And Declining Asset Utilisation Levels

CCP4's previous submission demonstrated that Powerlink's repex proposal had insufficient regard to the fact that Powerlink's over-investment over the past decade has resulted in major levels of excess system capacity, declining network utilisation and reducing network ages. For example, as illustrated in the charts below, Powerlink's RAB/Peak Demand and RAB/Energy Delivered ratios more than doubled over 2007-14 period.





In essence, CCP4's submission demonstrated that Powerlink's systemic capex overspending over previous regulatory periods (including its overspend of its 2008-12 repex allowance) has effectively 'pre-installed' Powerlink's repex needs for future regulatory periods.

Inadequate Demonstration Of System Performance Outcomes

CCP4's previous submission outlined that Powerlink had not provided credible justifications regarding the risks or drivers of its major proposed repex program.

It highlighted that Powerlink's excessive network investments over the previous two regulatory periods are delivering reliability levels well in excess of consumers' 'willingness to pay' levels.

In essence, CCP4's previous submission outlined that Powerlink's repex proposal had failed to identify the system performance outcomes that its major proposed replacement capex program would deliver.

Insufficient Options Analysis – With A Systemic Bias Towards Asset Replacements

CCP4's previous submission outlined that Powerlink's repex proposal was very heavily biased towards asset replacements, with insufficient consideration of alternative options (revised maintenance strategies, asset refurbishments, life extensions, re-use options, etc.)

In light of the above issues, CCP4 asserted that Powerlink' replacement capex proposal was materially overstated and that the AER would be required to develop substitute repex forecasts.

6.3.3 CCP4's Critique Of The AER's Repex Assessment Methodology

CCP4's previous submission also provided a detailed critique of the AER's repex assessment methodology.

It outlined that the AER's repex assessment approach is too high level, overly reliant on acceptance of the networks' past asset replacement practices and would not apply the degree of rigour required to address the major deficiencies with Powerlink's repex proposal identified above.

6.3.4 CCP4's Recommendations Regarding The AER's Repex Assessment

In light of the deficiencies with Powerlink's repex proposal and the AER's repex assessment methodology, CCP4 recommended that AER needed to improve its repex assessment methodology, having greater regard to:

- Incorporating a more appropriate combination of top down and bottom up modeling to ensure that an appropriate level of overall restraint has been brought to bear
- Replacing Powerlink's proposed standard asset lives with the asset lives being achieved by other networks that implement best practice asset management strategies
- Detailed assessments of the prudency and efficiency of Powerlink's proposed repex programs and projects

- Ensuring that asset replacements are based on robust assessments of actual asset condition information
- Incorporating more appropriate risk assessments to address the disconnects between Powerlink's policy and practice identified by the AMCL review of Powerlink's risk and prioritisation process
- The implications of Powerlink's very high excess capacity and very low asset utilisation levels – i.e. an assessment of the extent to which Powerlink's previous replacement capex programs have 'pre-installed' its replacement capex requirements for the next regulatory period
- A critical assessment of the outcomes (e.g. system performance outcomes) that Powerlink's proposed repex programs and projects will deliver
- Ensuring that alternative options to asset replacement (e.g. revised maintenance strategies, asset refurbishments, life extensions, and other risk mitigation options) are appropriately considered

6.3.5 The AER's Assessment Of Powerlink's Repex Proposal

The AER's assessment of Powerlink's repex proposal involved:

- A trend analysis of Powerlink's historical and proposed replacement capex spend
- An assessment of Powerlink's use of the AER repex model
- A review (by EMCa) of the prudency and efficiency of Powerlink's asset replacement forecast, including the governance and management of Powerlink's forecasting methodology, inputs and assumptions
- A review (by EMCa) of selected historical and proposed projects and programs
- A consideration of asset health indicators and system performance trends

CCP4's perspectives on the AER's repex assessment approach, its key findings and conclusions, and the AER proposed repex allowances are outlined in the following sections of this submission.

6.3.5.1 Trend Analysis

Despite CCP's previous submission outlining the AER's obligations for its repex allowances to be informed by a **long-term** trend analysis, the AER restricted its trend analysis to the current and previous regulatory period only.

The AER's trend analysis identified that Powerlink's proposed repex spend for the 2018-22 regulatory period is similar to its actual/forecast repex for the current (2013–2017) regulatory period – i.e. it would effectively represent a continuation of Powerlink's major step increase in repex since the AER took over responsibility for Powerlink's regulation in 2007.

As outlined above, if the AER had performed a long-term trend analysis, as required by the rules, it would have identified that:

- Powerlink' repex spend over the previous two regulatory periods was significantly higher than its repex spend during the prior periods
- Powerlink proposed an average annual repex spend of around 4 times its actual spend during the 2002-07 regulatory period – which was around 20% above the level that the regulator (the ACCC) considered to be reflective of Powerlink's efficient long-term repex needs
- Powerlink's non-load capex has consistently been much higher than the other transmission networks
- Powerlink's dramatic increase in its repex spend over the 2008-12 regulatory period amounted to:
    - Around five times its repex spend during the 2002-07 period
    - 21% above its repex allowance for the period
    - 40% above the level recommended by the AER's consultant (PB) for the period
- The AER accepted Powerlink's proposed 2013-17 repex in full, much to the dismay of numerous stakeholders that outlined that Powerlink had materially overstated its repex needs [23]
- CCP4 considered that the AER did not properly scrutinise Powerlink's 2013-17 repex proposal due to the AER being overwhelmed in responding to Powerlink's extraordinary load capex proposal (which proposed a load capex allowance of over 7 times Powerlink's actual spend during the period)
- Powerlink's actual 2013-17 repex spend confirmed the views of various stakeholders that Powerlink had proposed an amount well in excess of its actual repex needs for the 2013-17 period [24]
- It is clear from Powerlink's $229m repex spend during the first year of the current regulatory period (2012/13) and from its public statements at that time, that Powerlink was intending to fully spend its 2013-17 repex allowance, until it was directed by the Queensland government not to do so following the release of the highly scathing IRP review report in May 2013

6.3.5.2 Powerlink's Unjustified 57% Step Increase In Repex From 2016/17

Powerlink's repex forecast is based on Powerlink's unjustified assumption that its repex spend will dramatically increase by 57% in 2016/17 (the final year of the current regulatory period) and that it will remain at that increased level for the following 5 years.

[23] EUAA Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
Wesfarmers' Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
The Energy Consumers Group (the Group) Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
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[24] EUAA Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
Wesfarmers' Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
The Energy Consumers Group (the Group) Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
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PAGE Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision

Powerlink made the unjustified and non credible claims that its proposed dramatic repex increase in 2016/17: [25]

"Reflects a correction from lower levels of expenditure in 2015–16 to a more typical profile of investment"; and

"Is largely driven by its decision to take a more detailed review of its overall network planning and investment process (including a review of Area Plans) in response to the changed demand environment, the timing of establishment of its transmission line refit panel, and other factors"

CCP4 is extremely disappointed that, rather than analysing the reasons for Powerlink's proposed 57% step increase in repex, the AER has simply accepted the above unjustified claims and has not subjected them to any scrutiny.

In doing so, CCP4 considers that the AER has violated its NER obligations to ensure the prudency and efficiency of its proposed capex allowances.

6.3.5.3 The AER's Repex Model

The AER's repex model is used to estimate 'business as usual' repex for the modeled repex categories. It aims to predict the volume of assets that may need to be replaced over the next 20 years, based on the number and age of assets in commission, the assumed asset replacement ages and their corresponding unit costs.

Importantly, the AER's repex model:

- Replicates the networks' historical repex practices and costs – i.e. it does **not** identify efficient repex forecasts and does **not** challenge the prudency or efficiency of the networks' historical repex practices
- Uses asset age as a proxy for the many factors that influence asset replacements.
- Is heavily dependent upon assumptions and data provided by the networks

6.3.5.4 Powerlink's Use of The AER Repex Model

Powerlink used a modified version of the AER's repex model to forecast its repex requirements for the following asset categories for the 2017–22 regulatory period: [26]

- Transmission line structures
- Substation switchgear
- Secondary systems and telecommunications; and
- Substation buildings and infrastructure

Powerlink is the first transmission network to use the repex model to forecast capex in this manner.

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25 Powerlink, *Response to AER information request #004 follow up question, 20 June 2016, p. 1.*

26 Powerlink, *Appendix 5.05 - Non-load driven network capital expenditure forecasting methodology*, January 2016, p. 26.

The forecasts derived from Powerlink's use of the repex model accounted for approximately 90 per cent of Powerlink's total forecast repex for the 2017–22 regulatory period.[27]

6.3.5.5 The AER's Assessment Of Powerlink's Use Of The Repex Model

The AER and its consultant (EMCa) identified a number of major systemic flaws with Powerlink' use of the repex model and with Powerlink's forecasting assumptions, including:

6.3.5.6 Powerlink Assumed Asset Lives Much Shorter Than The Lives That It Achieves In Practice

The key parameter for predicting asset replacement needs through the AER's repex model is *asset life*.

The AER and EMCa reviews identified that Powerlink's repex proposal had assumed asset lives much shorter than actual asset lives that Powerlink achieves in practice.

For example, as stated by the AER/EMCa:

"There is a bias in Powerlink's repex modeling, to underestimating the remaining life of the assets in question and thereby over-estimating the required expenditure"

"In almost all of the projects considered, the actual replacement lives of the assets that were replaced due to condition and/or obsolescence issues were significantly greater than Powerlink's assumed replacement lives in its repex modeling"

"The actual replacement life of the four transmission lines was on average 12 years or 31 per cent longer than the average 40.3 years assumed in Powerlink's repex model for lines in coastal areas"

"The actual average replacement life of the primary plant assets was 7 years or 21 per cent longer than the average of the primary plant replacement lives used by Powerlink in its repex model"

"The actual average replacement life of the secondary systems equipment was 27 years, which is 7 years or 35 per cent longer than the average replacement life used by Powerlink in its repex model"

6.3.5.7 Powerlink Assumed Asset Lives Much Shorter Than The Asset Lives That Other Networks Achieve In Practice

As illustrated in the table below, CCP4's previous submission outlined that Powerlink assumes much shorter asset lives than the other Australian transmission networks.

Estimated service lives of new assets	Transend	ElectraNet	TransGrid	Ausnet	PL
Overhead transmission assets	57	52	50	69	50
Underground transmission assets	46	40	45	60	45
Switchyard, substation and transformer assets	41	48	40	48	35
"Other" assets with long lives	33	24	15	14	29
"Other assets with short lives	4	5	10	5	6

Source: AER RINs Data

[27] Powerlink, *Appendix 5.05 - Non-load driven network capital expenditure forecasting methodology*, January 2016, p. i.

CCP4 also identified that Powerlink's assumed asset lives are shorter than many of the distribution networks' assumed asset lives, especially for substation equipment where expected lives vary between 36 years and 73 years with a median of 45 years.

The AER and EMCa reviews confirmed the CCP4's findings.

As stated by the AER:

"We have a number of concerns with how Powerlink has implemented its approach. In particular, we have concerns with Powerlink's forecast replacement age of assets. In the past, Powerlink replaced assets at an earlier point than other transmission businesses and earlier than we now believe was necessary in some cases"

As outlined in the table below, Powerlink's systemic premature replacement of assets has resulted in Powerlink's average asset ages for all asset types being much younger than the average ages of all other transmission networks.

For example, Powerlink's average asset ages are typically around half of the ages of the privately owned Victorian network (AusNet Services).

Comparison of the TNSPs' weighted average asset ages (years)

Asset type	Powerlink	AusNet Services	Powerlink	ElectraNet	TasNetworks
Towers	**26**	44	37	44	48
Substation power transformers	**17**	30	22	30	22
Substation switchgear	**14**	24	19	21	18
Conductors	**24**	41	37	41	41

Source: AER analysis

6.3.5.8 Powerlink's Residual Asset Lives

CCP4's previous submission also performed an assessment of Powerlink's residual asset lives, which identified that the majority of Powerlink's assets have more that 60% of the lives yet to be used, supporting the view that Powerlink's repex proposal was materially overstated.

6.3.6 Powerlink's Repex Forecast Replicate Powerlink's Inefficient Repex Policies and Practices

The AER and EMCa reviews demonstrated that Powerlink's use of the repex model perpetuated a number of systemic deficiencies in Powerlink's historical asset replacement policies and practices.

As stated by the AER/EMCa:

"Powerlink's model calibration and adjustments, when applied appropriately should produce a predictive replacement schedule that ***reflects historical practice"*** [28]

"The use of historical data to calibrate the repex model means that any lack of prudency or inefficiency in Powerlink's management of its asset replacement program ***will deliver a repex forecast that mirrors this performance"*** [29]

Despite the above qualifications being stated many times throughout the AER's draft decision, the AER did not make any adjustments to Powerlink's proposed repex spend to address the inefficiencies with Powerlink's capex policies and practices identified by various independent reviews.

6.3.6.1 Deficiencies With Powerlink's Proposed Unit Replacement Costs

The EMCa review identified systemic deficiencies with Powerlink's unit replacement cost assumptions, particularly in relation to the inclusion of expenditure that was not driven by asset condition or obsolescence, and was therefore not suitable for application to the repex model (e.g. augmentation capex expenditure).

As stated by the AER:

"There was significant augmentation of the replaced assets, including load driven capacity upgrades and unjustified upgrades to communications capacity"

'Where the timing of actual historical replacements has been driven by other factors, such as augmentation requirements, poor maintenance practices, or imprudent and inefficient asset replacement decisions, trending forward the observed asset replacement lives will perpetuate these issues into the repex forecast"

Again, the AER did **not** make any adjustment to Powerlink's proposed repex to address those systemic deficiencies.

6.3.6.2 The AER's Overall Assessment Of Powerlink's Use Of The Repex Model

In light of the above deficiencies, the AER concluded that Powerlink's repex forecasts derived from its use of the AER repex model were materially overstated.

As stated by the AER:

"We are not satisfied that the inputs and assumptions which underpin Powerlink's use of the repex model are likely to result in a capex forecast which reasonably reflects the efficient costs that a prudent operator would require to achieve the capex objectives"

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28 EMCa, *Review of forecast non-load driven capital expenditure*, July 2016, p. 29.

29 EMCa, *Review of forecast non-load driven capital expenditure*, July 2016, p. 39.

6.3.7 The EMCa Reviews of Powerlink's Repex Forecast

The AER engaged EMCa to review Powerlink's repex proposal and its forecasting methodology, including the underlying inputs and assumptions, capex governance, risk management, asset management policies and practices, and a review of sample of historical and forecast project documentation. [30]

The EMCa reviews identified a number of systemic deficiencies with Powerlink's repex forecasting methodologies, governance arrangements and assumptions, including:

An Over-Reliance on "Top-Down" Forecasting Methodologies

EMCa concurred with CCP4 and the AER's conclusions that Powerlink's repex forecast was overly reliant on top down forecasting methodologies.

As outlined above, the majority of Powerlink's repex forecast was based on a top-down forecasting approach using the AER's repex model.

In relation to Powerlink's use of the repex model, EMCa found that:

"Powerlink's use of the repex model represents a significant departure from the capex forecasting methodology it used for its previous revenue proposal, and is coincident with a significant change in the primary driver of Powerlink's capex from growth to reinvestment;[31]

In essence, EMCa highlighted that Powerlink's repex forecasting was overly dependent upon Powerlink's flawed use of the AER's repex model.

Inadequate and Insufficient Condition Assessments

EMCa identified that Powerlink's repex proposal was based on insufficient and sub-standard condition assessments, e.g.:

"The evidence presented in the Condition Assessment Reports did not in all cases support the condition 'score' (where one of the two scoring approaches was used) nor the assessed remaining life"

"Powerlink's condition assessment reports do not provide sufficient evidence for the need to replace all the towers as proposed"

Excessively Conservative Risk Management And Risk Assessments

EMCa outlined that Powerlink's governance and risk management processes were excessively conservative with a systemic bias to over-estimating risks.

For example, EMCa concluded that the risk costs identified in Powerlink's risk matrix were not credible and that Powerlink's risk assessment methodology could only be used for options analysis (i.e. selecting between identified options) and could not be relied upon for any other purpose.

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30 EMCa, *Review of forecast non-load driven capital expenditure*, July 2016
EMCa, *Review of forecast non-load driven capital expenditure*, Addendum Report, September 2016

31 EMCa, *Review of forecast non-load driven capital expenditure*, July 2016, p. 35.

These deficiencies were also identified in the review of Powerlink's risk framework by Powerlink's consultant (AMCL) [32] which outlined that Powerlink's risk assessment framework was immature and not appropriately integrated within Powerlink's capex governance framework.

Insufficient Options Analysis With A Systemic Bias Towards Asset Replacement

EMCa found that Powerlink demonstrated a systemic bias towards asset replacements and did not appropriately consider alternative or lower cost options to asset replacements (e.g. life extension or re-use opportunities)

As stated by the AER/EMCa:

"In general, for the projects considered, Powerlink has not provided robust options analyses. In many cases it did not consider an adequate range of options, including life extension options, to address the major risks, at a lower cost"

In relation to transmission line assets:

"In each of the four transmission line condition assessment reports, a strategy of replacement rather than life extension has been adopted"

In relation to primary plant

"Powerlink undertakes limited options analysis, both in terms of the range of options considered and the depth of analysis

"Historically, Powerlink has not considered all technically viable options, in particular life extension options targeted at specific assets representing major risks"

"Powerlink appears to have applied asset management strategies biased towards early replacement rather than refurbishment or life extension strategies, such that it is likely that Powerlink could have further extended the actual lives of its assets by adopting earlier, targeted replacement and refurbishment techniques" [33]

In relation to secondary systems, EMCa identified that Powerlink's options analysis:

"Does not consider a broad range of possible options, including life extension or partial refit"

"Does not include risk assessment in accordance with good industry practice"

"Included limited risk-cost assessment to confirm the optimal timing of the selected option"

In relation to transformer repex:

"Limited options analysis is provided in most cases, with typically a discussion of one or two alternatives to the recommended approach"

"In several cases, it appears that transformer refurbishment may be a viable option yet in most cases there is no discussion of the technical viability of life extension rather than asset replacement"

"Little or no economic analysis is presented to support the preferred option"

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32 Powerlink, *Regulatory proposal, Appendix 5.08 - AMCL Review of Powerlink's Risk and Prioritisation Approach*, December 2015.

33 EMCa, *Review of forecast non-load driven capital expenditure - addendum report*, August 2016, p. 34.

Powerlink's Systemic Bias Towards Overestimating the Required Scope Of Works

EMCa identified that Powerlink had a systemic bias towards overestimating the required scope of works of its projects and programs, e.g.:

"From our review of Powerlink's forecasting methods, we consider that an over-forecasting and over-estimating bias is evident"

"Comparison of expenditure in the current RCP with forecast non-load driven capex indicates a bias to over-forecast the prudent and efficient scope, timing and cost of work required"

"From our review of a sample of Powerlink's approved and proposed repex projects and programs for the next RCP, we found evidence that the risk and forecasting biases identified were reflected in the proposed expenditure. We consider these to be systemic in nature"

Inadequate Demonstration Of System Performance Drivers And Outcomes

EMCa identified that Powerlink's repex proposal failed to demonstrate the system performance outcomes of its proposed repex, e.g.:

"There was an absence of evidence to support claims regarding increasing numbers and impacts of defects and threats to reliability"

"There is inadequate linkage of forecast expenditure to asset health and/or network risk, with limited evidence of quantified 'what-if' or sensitivity analyses being undertaken to help demonstrate that its expenditure forecast reflects optimal expenditure programs"

Inappropriate Asset Management Practices With Inadequate Adoption Of Life Extension Strategies

EMCa identified extensive evidence that Powerlink adopts inappropriate asset management practices with inadequate adoption of life extension strategies, resulting in major over-expenditure over the asset lifetime, e.g.:

"If Powerlink had adopted a refurbishment strategy directed to economic life extension (such as bringing forward tower repainting) the replacement lives would be longer still"

"Powerlink appears to have foregone the opportunity to extend the life of its primary assets through better targeted replacement or refurbishment. If asset management practices change to focus more on life extension, this should be taken into account in the repex model"

"We consider that if Powerlink had adopted an asset management strategy directed to economic life extension, the replacement lives would be considerably longer than it has used in its repex model"

Premature Asset Repacements Due To Inappropriate "Bundling Strategies"

EMCa provided extensive evidence that Powerlink is systemically prematurely replacing assets due to inappropriate "bundling strategies".

As stated by EMCa

"Powerlink's selected replacement approach often involved 'bundling' assets that did not require replacement on the basis of condition and/or obsolescence with assets that did require replacement"

In relation to secondary systems:

"There is evidence that Powerlink has historically replaced equipment that was well short of its economic end of life by bundling younger assets with older assets in full replacement options when partial replacement or refurbishment options could have been deployed to address the asset condition/obsolescence issues"

"The bundled replacement of older and younger assets may help explain the relatively low replacement life derived by Powerlink for use in its repex model, and also leads to relatively high asset write-offs"

*"The qualitative condition assessments indicate the need for corrective action on older secondary systems equipment on the grounds of condition and/or obsolescence, but do **not** support replacement of more recently installed systems"*

In relation to transmission line assets, EMCa identified that Powerlink's transmission line replacement programs involve the replacement of all towers on a particular line at the same time even though some towers are in better condition and have much longer remaining useful lives than others.

Unjustified Power Transformer Repex

EMCa performed a review of Powerlink's proposed $43.1 million for seven power transformer replacement projects.

The EMCa review identified that Powerlink's transformer repex proposal exhibited the same systemic deficiencies identified with the other components of Powerlink's repex proposal, e.g.:

***"Limited options analysis** is provided in most cases, with typically a discussion of one or two alternatives to the recommended approach"*

*"In several cases, it appears that transformer refurbishment may be a viable option yet in most cases there is **no discussion of the technical viability of life extension rather than asset replacement**"*

***"Little or no economic analysis** is presented to support the preferred option"*

*"Where Powerlink has proposed the replacement of transformers with larger units or a higher total installed capacity, **Powerlink has not justified this increase in capacity**"*

6.4 The AER's Assessment of Powerlink's Network Health Indicators

The NER requires that the networks' capex allowances be restricted to the amount of capex required to *"maintain the quality, reliability and security of supply of prescribed transmission services"*. [34]

The AER classifies capex as repex where the expenditure decision is primarily based on the existing asset's inability to efficiently maintain its service performance requirement.

It is therefore important for the AER's repex determinations to clearly demonstrate the system performance outcomes that the proposed expenditure will deliver.

The AER's draft decision included some high level observations of the following network health indicators:

- Assessment of trends in Powerlink's level of excess system capacity
- Assessment of Powerlink's "unserved energy" trends
- Assessment of Powerlink's "asset failure" trends
- Assessment of trends in Powerlink's asset outage rates

The AER's key conclusions from those assessments are summarised below.

6.4.1 Trends in Powerlink's Excess Capacity

CCP4's previous submission outlined that Powerlink's network has a very large degree of excess capacity and that the utilisation of Powerlink's network has declined significantly in recent years.[35]

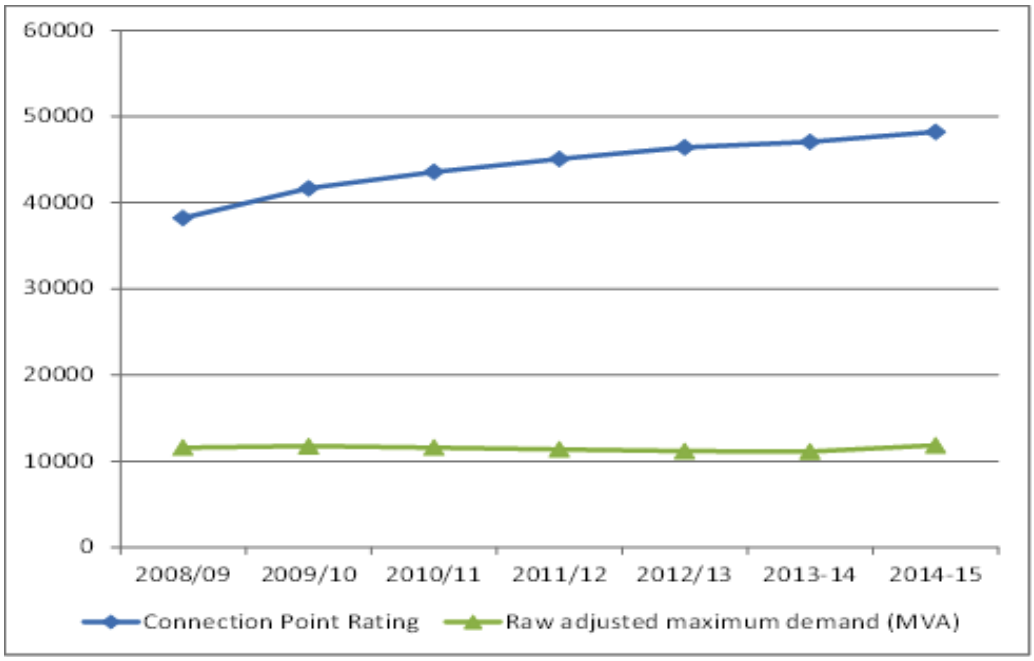
This was confirmed by the AER's review, which concluded that *"there is a significant amount of spare capacity in Powerlink's transmission network".*

As illustrated in the chart below, the AER's review identified that, over the past 6 years Powerlink has increased the margin of spare capacity in the network - increasing connection point capacity by 26 per cent, during a period where demand remained flat.

34 NER, cl. 6A.6.7(3)

35 CCP (Hugh Grant and David Headberry), *Submission to the AER, Powerlink Queensland 2018–22 revenue proposal*, 20 June 2016, pp. 55–56.

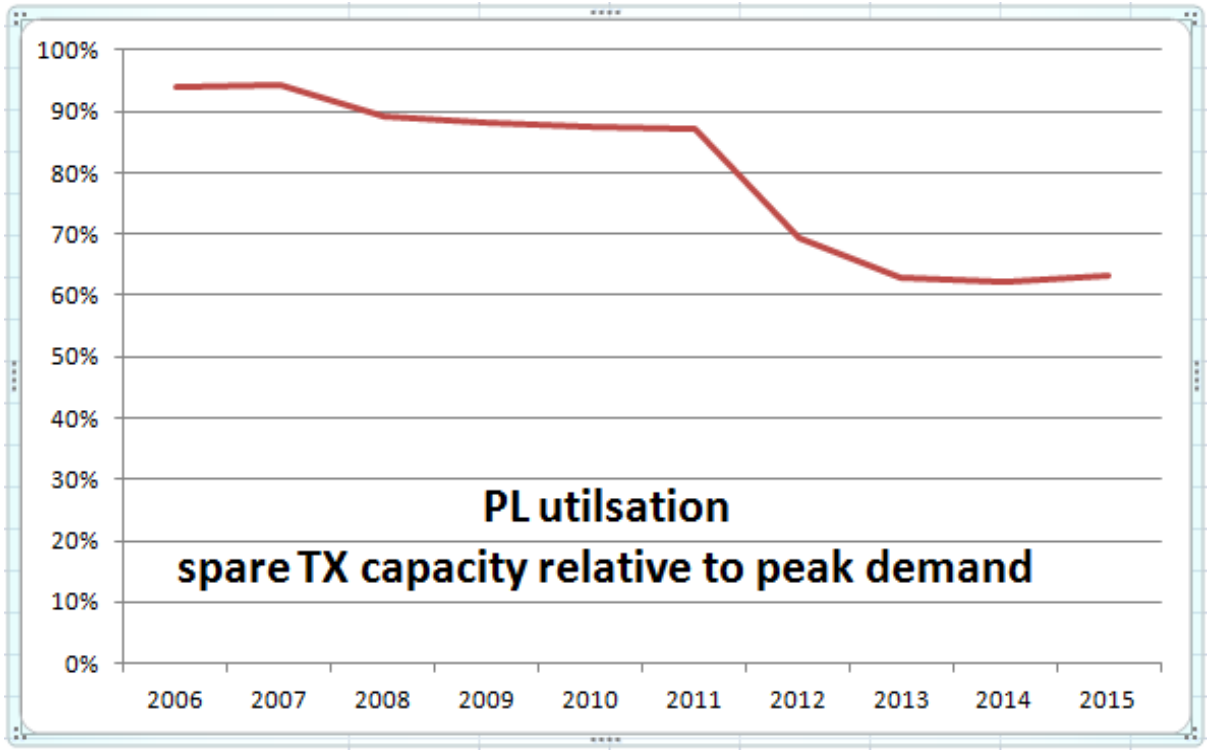
Figure 6.1 Powerlink total connection point rating and maximum demand (MVA)



Source: AER analysis of Powerlink category analysis RINs.

6.4.2 Trends in Asset Utilisation

As illustrated in the chart below, CCP4's previous submission outlined that Powerlink's excessive investments over the previous regulatory periods have resulted in major declines in its asset utilisation levels.



Source: CCP4 analysis

6.4.3 Trends In Powerlink's "Unserved Energy"

The AER performed a high level review of Powerlink's unserved energy trends.

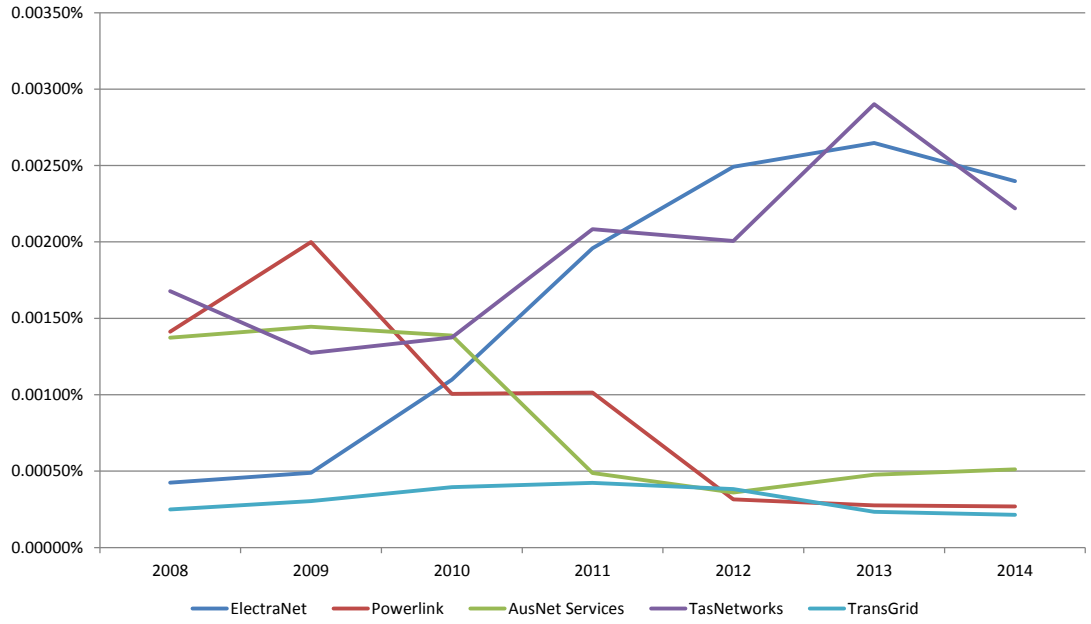
That review identified that Powerlink's excess capacity and growing levels of system redundancy are resulting in major reductions in Powerlink's unserved energy.

As stated by the AER:

"The increased margin in Powerlink's network capacity over recent years has provided more redundancy in Powerlink's network. Unplanned asset outages are therefore less likely to lead to customer interruptions. This is evident in the trend of network reliability as measured by the amount of unserved energy experienced by Powerlink's customers, which has consistently improved over this same period as shown in Figure 6.2. ***Unserved energy for Powerlink's customers has reduced (that is, reliability has improved) by around 22 per cent since 2007–08"*** [36]

As illustrated in the chart below, Powerlink's reliability performance has improved to a much higher degree than all other transmission networks.

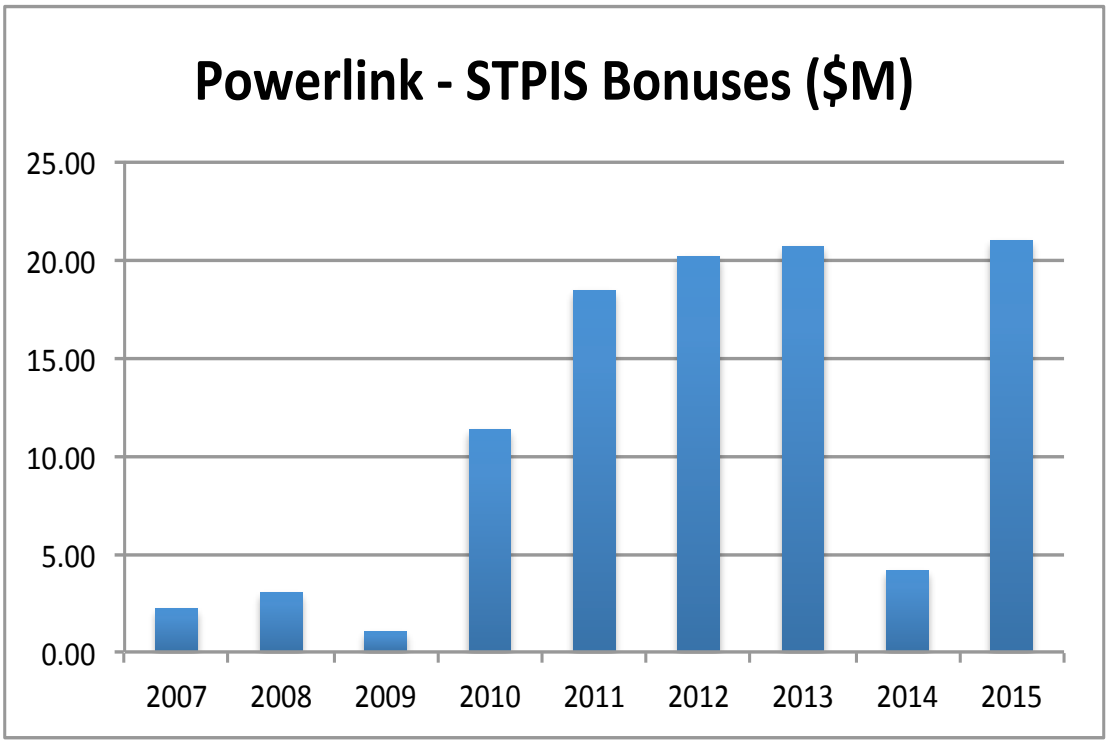
Figure 6.2 TNSP unserved energy 2006 - 2014 (three year moving average)



Source: AER, *AER Transmission network service providers partial performance indicators 2010 - 2014 - Physical data worksheet*, 30 November 2015.

36 AER analysis of category analysis RIN data.

Importantly, as outlined in the chart below, Powerlink has consistently achieved extraordinary bonuses from the *Service Target Performance Incentive Scheme (STPIS*), exceeding its performance targets in every year.



6.4.4 Trends In Powerlink's Asset Failures

The AER performed a high level review of Powerlink's asset failure trend.

That review concluded that:

- Asset failures by major asset group have been relatively steady over time
- For non-transmission assets, the spread of failure rates between asset groups has reduced and are at their lowest levels over the period based on significant declines in 2014–15; and
- Substation switch-bays exhibited the largest decline in 2014–15

As stated by the AER:

"In circumstances where the historical trend exhibits a decrease (increase) in asset failures, this may suggest that past expenditure may have been higher (lower) than necessary to achieve the capex objectives, respectively"

6.4.5 Trends in Powerlink's Asset Outage Rates

The AER performed a high level review of Powerlink's asset outage rates, concluding that:

- asset outages by major asset group have been reasonably steady over time
- the dispersion of outages between asset groups has reduced

6.4.6 Summary Of The AER's Network Health Indicator Assessments

All of the AER's analysis of Powerlink's network health indicators clearly identified that Powerlink's past expenditure **has been much higher than the efficient level required to maintain the quality, reliability and security of supply of its prescribed transmission services**.

The AER concluded that, taking into account Powerlink's existing asset age profile, level of spare capacity, network redundancy and network reliability.

"Powerlink's network is more than capable of accommodating a significant increase in its average asset age in future regulatory periods"

However, the AER has demonstrably failed to reflect those critical findings in its draft repex decision.

6.4.7 Replacement Capex - Key Findings

In essence, the AER, EMCa and CCP4 reviews outlined that Powerlink had materially overstated its repex needs, due to:

- An over-reliance on trending forward Powerlink's inefficient repex policies and practices
- An over reliance on top-down forecasting and, including an inappropriate reliance on the outputs of the AER's repex model
- Powerlink assumed asset lives much shorter than the lives that Powerlink and other networks actually achieve in practice
- Inadequate and non-credible asset condition assessments
- Excessively conservative and non credible risk assessments
- Premature asset replacements due to inappropriate "bundling strategies"
- Inappropriate asset management practices with inadequate adoption of life extension strategies
- Insufficient options analysis with a systemic bias towards asset replacements
- A systemic bias towards over-estimating the required scope of work
- Inadequate consideration of Powerlink's very high excess capacity and very low asset utilisation levels
- Unjustified power transformer repex
- The overestimation of Powerlink's proposed unit replacement costs
- Inadequate demonstration of the system performance outcomes that the proposed repex programs and projects will deliver

6.4.8 The AER's Proposed Repex Allowances

The AER's draft decision proposes to apply two adjustments to Powerlink's proposed repex:

1. Adjustments to the asset lives used by Powerlink in the AER repex model
2. Increasing Powerlink's proposed repex allowance by 15% for *"preventative and corrective asset reinvestment capex"*

The net effect of these adjustments results in a reduction in Powerlink's proposed repex from $794.3 million to $609.8 million ($2015/16).

6.4.9 The AER's Proposed Asset Live Adjustments

The AER's draft decision has adjusted the asset replacement lives in the AER repex model for towers, primary substation assets and secondary systems, by extending them by an average of one standard deviation

The differences between the AER's substitute asset replacement lives and Powerlink's proposed replacement lives are outlined in the table below.

Powerlink and the AER's forecast average asset replacement lives (years)

Primary asset category	Sub-category	Powerlink forecast asset replacement life	AER forecast asset replacement life	Difference between AER and Powerlink replacement lives
Towers	Corrosion zone DEF	40.3	46.6	6.3
	Corrosion zone C	57.9	65.5	7.6
	Corrosion zone B	71.4	79.9	8.5
Primary substation equipment	Circuit breakers	34.2	40.2	6.0
	Isolators/earth switches	39.8	45.8	6.0
	Voltage transformers	34.6	40.6	6.0
	Current transformers	33.2	39.2	6.0
Secondary systems and telecommunications	Secondary systems (bay and non-bay)	20.2	24.7	4.5
	Telecommunications	10.7	10.7	-
Buildings and infrastructure	Substation buildings	34.3	34.3	-
	Communications buildings	42.3	42.3	-
	Site infrastructure	50.6	50.6	-

Importantly, the AER did not perform any assessments of Powerlink's proposed asset lives for the other asset categories (i.e. telecommunications, substation buildings, communications buildings and site infrastructure assets) and has not applied any adjustments to Powerlink's proposed asset lives for those assets.

6.4.10 The AER's Proposed 15% Increase For Preventative And Corrective Asset Reinvestment Capex

As an offset to the above reductions, the AER is proposing to increase Powerlink's proposed repex by 15% to provide additional funds for "*preventative and corrective asset reinvestment capex".*

The AER's rationale for this proposed increased expenditure is based on EMCA's estimate of the costs that Transpower (new Zealand) expended for mid life extensions (painting) of its transmission towers.

As stated by the AER:

"This would include asset life extension expenditure, such as the early painting of transmission towers to prevent corrosion. EMCa has estimated ***an offsetting allowance*** *equivalent to 15 per cent of Powerlink's initial modeled repex as a reasonable estimate of the additional life extension capex likely to be required in the 2017–22 regulatory control period to achieve the extended mean asset replacement lives set out in this draft decision.*[37]

"This is based on the experience of Transpower New Zealand, which has adopted an 'early' tower painting program in which it repaints towers before signs of significant corrosion appear. Transpower has demonstrated that this is a lower cost strategy than line replacement. EMCa advised that, based on Transpower's reported criteria for tower painting and the average cost per tower, Powerlink would need to spend the equivalent of 15 per cent of its forecast tower replacement expenditure to adopt an early tower painting program" [38]

6.5 CCP4's Key Concerns with the AER's Repex Determination

CCP4 (HG) considers that there are a number of major deficiencies with the AER's draft repex determination.

Those concerns can be categorised as:

- Inadequate adjustments to Powerlink's assumed asset lives
- The AER's failure to adjust Powerlink's proposed repex to address the systemic deficiencies with Powerlink's forecasting methodology identified by the AER and the EMCA reviews
- The AER's inappropriate provision of 15% increased allowances for *"corrective and preventative asset reinvestment capex*"

Those concerns are outlined in detail in the following sections of this submission.

37 EMCa, *Review of forecast non-load driven capital expenditure - addendum report*, August 2016, p. 37.

38 EMCa, *Review of forecast non-load driven capital expenditure - addendum report*, August 2016, p. 13.

6.5.1 The AER's Inadequate Adjustment to Powerlink's Assumed Asset Lives

As outlined above, the AER's draft decision proposes to apply an adjustment of one standard deviation to the asset lives assumed by Powerlink for four asset categories.

CCP4 considers that the AER's minor adjustments to Powerlink's proposed asset lives are insufficient for the following reasons:

6.5.1.1 The AER's Proposed Adjustments Are Aimed At Replicating Powerlink's Historical Practices, Rather Than Industry Best Practice

The AER's proposed asset live adjustments are aimed at replicating Powerlink's historical practices, rather than industry best practice.

As stated by the AER:

"The revisions we have made to the asset replacement lives used in Powerlink's repex model attempt to capture Powerlink's more recent practice"

The AER is required to identify efficient capex allowances.

It is therefore inappropriate for the AER to set its repex allowances by attempting to replicate Powerlink's recent repex policies and practices, particularly as those practices have been demonstrated to be materially inefficient by various independent studies and reviews.

6.5.1.2 The AER's Proposed Asset Lives Are Shorter Than Powerlink Achieves In Practice

As acknowledged by the AER, the AER's proposed adjustments to Powerlink's assumed asset lives are still shorter than those achieved by Powerlink in practice.

As stated by the AER:

*"We consider that our reduction in forecast repex is realistic **yet conservative** in the circumstances, noting that **our extended asset replacement lives remain shorter than those actually achieved by Powerlink** for relevant asset classes in the sample of historical projects reviewed"*

6.5.1.3 The AER's Proposed Asset Lives Are Much Shorter Than Other Networks Achieve In Practice

The AER's proposed adjustments to Powerlink's assumed asset lives are much shorter than the asset lives being achieved by all of the other transmission networks.

The AER's draft decision acknowledged that, even after applying its proposed changes to the replacement lives in the repex model, it will take a very long time to close the gap between Powerlink's average asset ages and the average ages of the other networks.

As stated by the AER:

"We consider this to be reasonable, noting that, on average, Powerlink's existing assets are significantly younger than those of other Australian transmission network service providers"

As outlined above, the average asset ages of the other transmission networks are typically twice the age of Powerlink's average asset ages.

CCP4 (HG) considers that the AER should have revised the asset lives to the actual asset lives being achieved by networks that implement best practice asset management strategies.

6.5.1.4 The AER's Failure To Adjust Powerlink's Assumed Asset Lives For The Unmodeled Asset Categories

As outlined above, the AER did not perform any assessments of Powerlink's proposed asset lives for the unmodeled asset categories – i.e. telecommunications, substation buildings, communications buildings and site infrastructure assets; and has not applied any adjustments to Powerlink's proposed asset lives for those assets.

In light of Powerlink's systemic material underestimation of the asset lives for all of the asset categories reviewed, CCP4 (HG) considers that it is very reasonable to assume that those systemic deficiencies will apply to all asset categories.

Consequently, CCP4 (HG) considers that the AER should have made adjustments to Powerlink's proposed asset lives for **all** asset categories.

6.5.2 The AER's Failure To Address The Major Systemic Deficiencies Identified By The AER And EMCa Reviews

The AER's draft repex determination has not made any adjustments to Powerlink's proposed repex to address the major systemic deficiencies with Powerlink's repex forecasting approach identified by the AER and the EMCa reviews, including:

The AER's Failure To Apply Adjustments To Address Powerlink's Inadequate Asset Condition Assessments

As outlined above, EMCa's assessment of Powerlink's repex proposal identified major deficiencies with Powerlink's condition assessment processes.

The AER's draft repex determination has not made any adjustments to Powerlink's proposed repex to address those deficiencies.

It is well understood that asset age is a very simplistic indicator and not a credible determinant of "asset health". Credible asset replacement justifications need to be based on robust assessments of asset condition, together with risk assessments that transparently identify the risks of replacement versus alternative options (e.g. revised maintenance strategies, asset refurbishments and other risk mitigation options).

Such assessments have not been performed in Powerlink's repex proposal or in the AER's repex determination.

Over-Reliance On The Outputs Of The AER Repex Model

As outlined throughout this submission, the AER's repex model replicates Powerlink's historical repex practices and costs – i.e. it does **not** develop efficient repex forecasts

In essence, the outputs of the AER repex model replicate Powerlink's inefficient repex policies and practices.

CCP4 asserts that the AER's repex model was never intended to be a deterministic model, and it is therefore inappropriate for the AER to have placed such a heavy reliance on its results in the setting of Powerlnk's repex allowance.

The AER's Failure To Determine Its Repex Allowances On The Basis Of Efficient Costs

The AER has failed to meet the NER requirements to set its repex allowance on the basis of efficient costs.

Rather, the AER's proposed repex allowances are predominantly based on trending forward Powerlink's recent repex spend.

The AER is required to develop efficient repex forecasts, rather than trending forward Powerlink's recent repex spend, which have been demonstrated to be materially inefficient by various independent reviews and studies.

Consequently, the AER has **not** demonstrated that its proposed repex allowances meet the capex criteria.

The AER's Insufficient Consideration of Powerlink's Excess System Capacity

The AER's consideration of "network health" indicators clearly identified that Powerlink's past repex was well in excess of the efficient level and has resulted in Powerlink's network having the highest level is excess capacity and the highest levels of reliability in the NEM.

In essence, it outlined that Powerlink' repex programs over the past decade have effectively "pre-installed" a large proportion of its repex needs for the next period.

However, the AER has failed to reflect those critical findings in its draft repex decision.

The AER's Failure To Consider Powerlink's Declining Asset Utilisation Levels

The AER did not perform an assessment of Powerlink's declining asset utilisation levels.

CCP4 (HG) considers this to be a very critical omission as asset utilisation is much more material to the determination of efficient repex than the AER's repex assessment has considered.

The AER's Failure To Demonstrate The System Performance Outcomes That Its Proposed Repex Will Deliver

The AER has not demonstrated the system performance outcomes that it expects its major repex allowances will deliver. This is major deficiency in the AER's draft determination

The AER's Failure To Adjust Powerlink's Proposed Repex To Address Powerlink's Inadequate Options Analysis

The AER's has not applied any adjustments to address Powerlink's lack of options analysis and its systemic bias towards asset replacements.

It is important to note that Powerlink's lack of consideration of low cost options or alternatives has serious implications for the application of the new Capital Expenditure Sharing Scheme (CESS).

In effect, it provides Powerlink with extensive opportunities to identify lower cost options than those proposed over the next regulatory period, thereby obtaining unwarranted bonuses.

The AER will need to be extremely diligent in its future assessment of Powerlink's performance under the CESS scheme, taking into account Powerlink's systemic over-estimation of project costs

The AER's Approval Of Unjustified Transformer Repex

As outlined above, the AER's proposed repex allowances include Powerlink's proposed repex for unjustified transformer repex.

As stated by the AER:

"Based on this advice and our own assessment of Powerlink's transformer replacement project documentation, we are not yet satisfied that Powerlink has clearly demonstrated that the forecast power transformer capex reasonably reflects the efficient costs that a prudent operator would require in the 2017–22 regulatory control period"

"In our view, on the information available it is not clear that Powerlink has sufficiently considered an appropriate range of options for these projects. Powerlink's condition assessment reports appear to show that, similar to the other asset categories discussed above, there may be scope for Powerlink to prudently reduce the proposed replacement expenditure through the deferral of projects and the application of life extension techniques in some cases. This could include limited component replacement rather than full transformer replacement in some cases"

Despite these damning findings, the AER did **not** make any adjustments to Powerlink's proposed transformer repex in its draft determination.

Rather, the AER has included Powerlink's proposed transformer repex spend in full.

The AER's review has clearly identified that Powerlink's proposed transformer repex does **not** meet the capex criteria.

It is therefore not acceptable for the AER to include Powerlink's proposed transformer repex in full in its draft decision without applying an appropriate adjustment to reflect the AER's findings.

The AER's Failure To Address The Deficiencies With Powerlink's Proposed Unit Replacement Costs

Despite identifying systemic flaws in Powerlink's unit replacement cost assumptions, the AER's draft decision has not applied any adjustments to Powerlink's proposed unit replacement costs.

6.5.3 The AER's Inappropriate Provision Of 15% Additional Allowances For Preventative And Corrective Asset Reinvestment Capex

The AER has not justified its decision to provide an additional 15% for *"preventative and corrective asset reinvestment capex".*

As stated in Powerlink's revised revenue proposal, this is clearly an "arbitrary adjustment".

CCP4 (HG) has two main concerns with this proposed additional repex allowance:

The AER's Repex Allowances Already Include Funding For Such Activities

The networks' repex allowances are intended to fund best practice whole of life asset management practices. If, as identified by EMCa, mid-life tower repainting reflects best practice asset management, then that is not an additional activity.

As stated by Powerlink in its revised revenue proposal:

"Powerlink is already planning to undertake life extension activities for the majority of transmission tower reinvestments".

It appears that the AER has assumed that Powerlink does not undertake such activities. That assumption may have been influenced by EMCa's damning critique of Powerlink's asset management practices.

As outlined within this submission, the EMCa reviews outlined extensive evidence that Powerlink adopts inappropriate asset management practices with inadequate adoption of life extension strategies, resulting in major over-expenditure over the asset lifetime.

This has resulted in Powerlink's assets being in much poorer condition than they would be had Powerlink adopted best practice asset management practices.

It is therefore inappropriate for the AER to further compensate Powerlink for the consequences of its poor asset management practices.

The AER Has Not Justified The Provision Of 15% Additional Expenditure For Other Asset Categories

The AER has not justified the provision of 15% additional funds for the other asset categories.

As stated by Powerlink:

"The AER has extrapolated this example from transmission towers across all of the other asset categories where the mean replacement lives have been adjusted"

"It is not clear to Powerlink what activities this 15% offset could be usefully directed towards that would make any meaningful difference to those assets already approaching their end-of-life within the next regulatory period"

"Powerlink already uses operating expenditure to conduct preventative and corrective maintenance of equipment, where it is economic to do so, in order to achieve its actual asset lives. Powerlink is not satisfied that there are other, additional, capital expenditure options to achieve the extended replacement lives put forward by the AER"

6.5.4 Replacement Capex – CCP4 Recommendations

In summary, CCP4 considers that the AER has not applied the adjustments necessary to address the major systemic deficiencies with Powerlink's' repex forecasts identified by the AER and EMCa reviews.

CCP4 requests the AER to revise its draft repex allowances by applying appropriate adjustments to address:

- The AER's inadequate adjustment to Powerlink's assumed asset lives
- The AER's failure to adjust Powerlink's assumed asset lives for the unmodeled asset categories – i.e. telecommunications, substation buildings, communications buildings and site infrastructure assets
- The AER's failure to apply adjustments to address Powerlink's inadequate asset condition assessments
- The AER's failure to determine its repex allowances on the basis of efficient costs
- The AER's failure to apply adjustments to address Powerlink's inadequate options analysis
- The AER's insufficient consideration of Powerlink's excess system capacity and declining asset utilisation levels
- The AER's failure to apply adjustments to remove the unnecessary repex arising from Powerlink's inappropriate "bundling strategies"
- The AER's failure to apply adjustments to address Powerlink's systemic overestimation of project scopes
- The AER's failure to apply adjustments to address Powerlink's over-estimated unit replacement costs
- The AER's approval of unjustified transformer repex
- The AER's inappropriate provision of 15% additional allowances for preventative and corrective asset reinvestment capex
- The AER's failure to demonstrate the system performance outcomes that its proposed repex will deliver

6.6 Security and Compliance Capex

6.6.1 Powerlink's Proposal

Powerlink proposed $18.8 million ($2016/17) for security and compliance capex for the 2018-22 regulatory period - slightly lower than its actual/forecast expenditure in the current (2012–17) regulatory control period.

Powerlink forecasted its security and compliance capex by trending forward its most recent five years of actual capex spend in this category and adding some *"new non-recurrent or abnormal projects planned for the forecast period*."

Importantly, similar to Powerlink's repex, Powerlink's security and compliance forecast assumed a 60% step increase in Powerlink's spend during the current year (2016/17) and that this step increase will be maintained in each year for the next 5 years.

The EMCa review identified a number of concerns with Powerlink's security and compliance capex forecast.For example, as stated by EMCa:

"Powerlink's application of trending analysis leads to potential over-forecasting of the efficient level of required expenditure in the security, compliance, and 'other' capex categories"

6.6.2 The AER's Draft Decision

The AER has accepted Powerlink's proposed security and compliance capex in full, stating that it *"is likely to be reasonable having regard to past expenditure".*

6.6.3 CCP4's Concerns With The AER's Draft Decision

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past 'security and compliance' expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so the AER has failed to meet its NER obligation to determine efficient capex allowances.

6.7 Other Non-Load Driven Capex

6.7.1 Powerllnk's Proposal

Powerlink proposed $30.1 million ($2016/17) for 'other non-load driven capex' for the 2018–22 regulatory control period - 4 per cent below its actual/forecast expenditure for the current (2013–17) regulatory control period.

Similar to its approach for 'security and compliance' capex, Powerlink's 'other non load driven capex' forecast was based on trending forward its most recent five years of spend and adding "*new, non-recurrent and abnormal projects planned for the forecast period"*

6.7.2 The AER's Draft Decision

The AER has fully accepted Powerlink's proposed 'other non-load driven capex', despite the AER and EMCa identifying major shortcomings with Powerlink's proposal.

For example, the AER outlined that the limited project documentation provided by Powerlink for its proposed *Wide Area Network (WAN) Stage Two* project:

*"Did **not** address key factors which we consider would typically be evident in documentation used to justify the prudence and efficiency of a proposed capex project. While the project proposal provided a high level description of proposed works, costs and delivery timeframes, it did not provide:*

- *a detailed description of the need for investment, with supporting evidence as to the nature of asset obsolescence, or other specific site condition or capacity issues driving the project scope;*

- *evidence that a suitable range of alternative options, including a 'do nothing' option, has been considered;*
- *evidence of a formal risk assessment as part of the need identification or options analysis process;*
- *evidence that expected benefits have been identified and quantified for all options considered;*
- *a comparison of costs and benefits for each option considered; and*
- *evidence that the preferred option is economically justified.*

"In our view, the absence of detail evaluating the costs, benefits and risks of alternative options for this project is concerning. We would expect that more comprehensive supporting documentation should be available as evidence of Powerlink's capital approvals process, particularly given Powerlink expects to incur significant expenditure in relation to this project in the first year of the 2017–22 regulatory control period"

"Based on the information available, ***we are not yet satisfied that the forecast capex for the WAN stage two deployment is prudent and efficient or is required to achieve the capex objectives"***

6.7.3 CCP4's Concerns With The AER's Draft Decision

CCP4 is concerned that, despite the AER and EMCa identifying major deficiencies with Powerlink's proposal, the AER has fully accepted Powerlink's proposed 'other non load capex 'in full.

The NER requires the AER to determine efficient capex allowances.

If the networks' do not provide sufficient information to demonstrate the efficiency of their proposed capex, then it is inappropriate for the AER to include that expenditure in its capex allowances.

By doing so, the AER is proposing to provide capex allowances that do not meet the capex objectives.

CCP4 considers that the AER should have excluded Powerlink's proposed expenditure for the *Wide Area Network (WAN) Stage Two* from its draft capex allowances.

The AER's decision to approve such poorly justified expenditure is symptomatic of the AER's systemic bias towards the networks' interests at the expense of consumers' interests.

CCP4 (HG) notes that Powerlink's revised revenue proposal has provided further information regarding its proposed *Wide Area Network (WAN) Stage Two* project.

Based on a review of that information, CCP4 considers that Powerlink has still not demonstrated the need, prudency or efficiency of the proposed project.

CCP4 (HG) therefore recommends that the AER does not include the proposed expenditure for that project in its final capex determination.

6.8 Information And Communications Technology (ICT) Capex

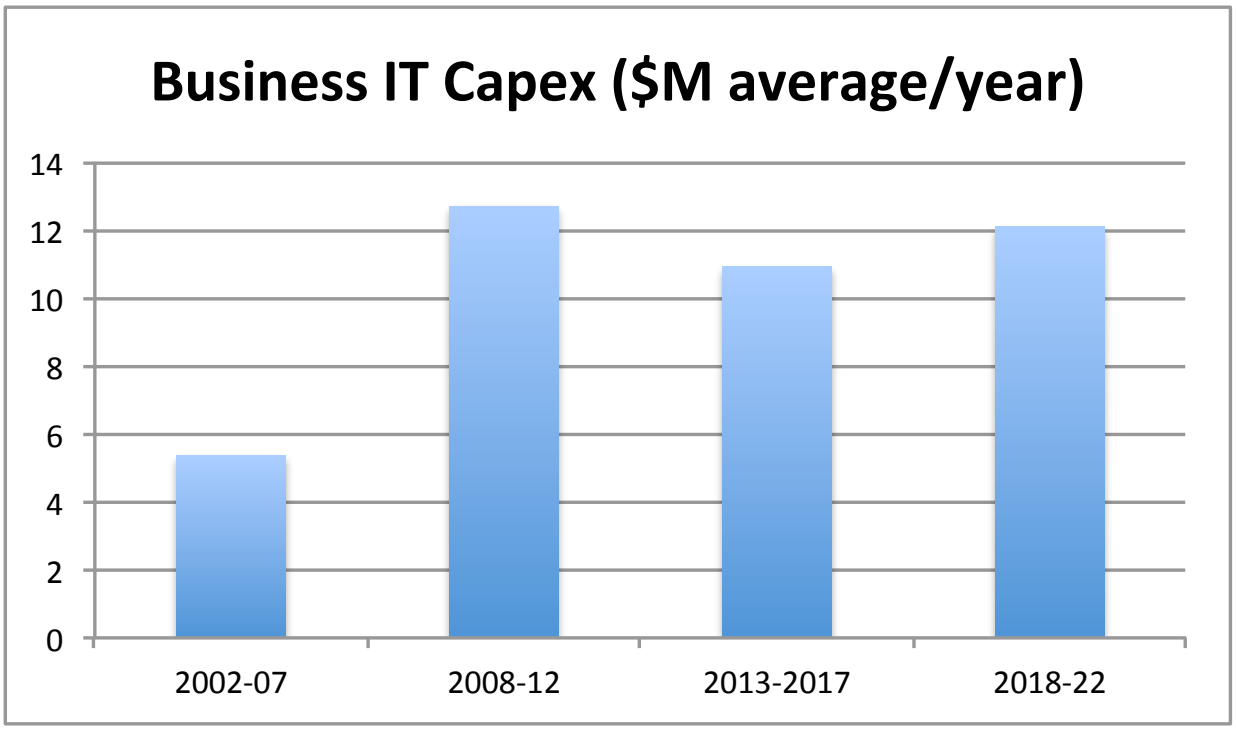
6.8.1 Powerlink's Proposal

Powerlink proposed $56.1 million ($2016/17, excluding overheads) for information and communications technology (ICT) capex for the 2018–22 regulatory period – a similar spend to its actual/forecast spend during the current (2013-17) regulatory period.

6.8.2 CCP4's Previous Submission

6.8.2.1 Powerlink's Historical Business IT Capex Spend

CCP4's previous submission performed an analysis of Powerlink's proposed ICT capex and its actual ICT spend over the previous three regulatory periods.



CCP4's analysis identified that:

- Powerlink proposed an average IT capex spend of around 2.5 times its actual spend during the 2002-07 regulatory period – a spend level that the regulator (the ACCC) considered to be reflective of Powerlink's efficient long-term needs
- Powerlink has not demonstrated the business benefits it has realised from its major IT expenditure over the previous decade
- Powerlink's proposed business IT capex projects were very poorly justified

6.8.3 CCP4's Concerns With Powerlink's Proposed ICT Projects And Programs

CCP4's previous submission outlined a number of concerns with Powerlink's proposed ICT projects and programs, including:

Software/Hardware Refresh Program ($22M)

Powerlink's justification for this major expenditure program was limited to two sentences:

"The Software / Hardware Refresh program aims to maintain Powerlink's existing Business IT hardware and software assets to ensure they are reliable and fit for purpose.

The program seeks to replace and refresh existing hardware as it reaches end of life and manage the software upgrades required, to ensure consistent delivery and conformance to Enterprise Architecture and industry standard standards"

In light of the Powerlink's major IT expenditure over previous regulatory periods, CCP4 considered that Powerlink needed to provide much more detail on the business case for such a major expenditure program.

Spatial Business Intelligence and Analytics ($7.5M)

Powerlink already has a number of business intelligence (BI) applications.

Powerlink's proposal did not demonstrate how a further business intelligence tool would deliver business benefits or improve Powerlink's efficiency.

CCP4 outlined its expectation that the AER should assess the outcomes of Powerlink's previous business intelligence expenditure before considering further expenditure.

ERP Modernisation Expenditure ($4.1 M)

In light of Powerlink's major levels of ERP spend over the past two regulatory periods, it is not clear why there is a need for ERP modernisation.

Powercor and Energy Australia both have significant investments in SAP applications, but have not proposed such "modernisation" expenditure.

CCP4 asserted that that such expenditure is already included in Powerlink's proposed software/ hardware refresh program.

Enterprise Integration ($3.2M)

Powerlink has previously received significant funding for enterprise integration.

CCP4 considered that this expenditure is already included in Powerlink's proposed software/ hardware refresh program.

Insufficient Demonstration of Business Benefits

CCP4's previous submission outlined that Powerlink's IT Capex proposal did not demonstrate the business benefits it expects to realised from its major proposed IT expenditure.

Furthermore, it identified significant duplication of expenditure for Powerlink's proposed IT programs and its proposed recurrent software/ hardware refresh program.

6.8.4 The AER's Draft Decision

The AERs did not subject Powerlink's ICT proposal to any scrutiny.

Rather, the AER has accepted Powerlink's proposed $56.1 million in ICT capex in full, simply on the basis that it represents a similar spend to Powerlink's spend during the current regulatory period.

6.8.5 CCP4's Concerns With The AER's Draft ICT Repex Determination

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past ICT expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so, the AER has failed to meet its NER obligation to determine efficient capex allowances.

6.9 Motor Vehicles Capex

6.9.1 Powerlink's Proposal

Powerlink proposed motor vehicle capex of $12.3 million ($2016/17) for the 2018–22 regulatory control period– slightly lower than its actual/forecast spend for the current (2013-17) regulatory period.

Powerlink claims that its fleet decreased from 453 units in 2010 to 402 units in 2015, and it will reduce further to 324 units at the commencement of the 2018-22 next regulatory period – i.e. a 29% reduction.

6.9.2 The AER's Draft Decision

The AER has accepted Powerlink's proposed $12.3 million capex in full, on the basis that it is approximately 16 per cent less than Powerlink's actual/forecast motor vehicle capex for the current regulatory control period.

6.9.3 CCP4's Concerns With The AER's Draft Decision

The AER has not explained why it considers a reduction of 16% in Powerlink's motor vehicle capex to be appropriate, when Powerlink claims that its vehicle fleet has reduced by 29%.

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

The AER has not performed any assessment of the efficiency of Powerlink's past motor vehicle expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so the AER has failed to meet its NER obligation to determine efficient capex allowances.

6.10 Buildings and Property Capex

6.10.1 Powerlink's Proposal

Powerlink proposed $23.5 million ($2016/17) for buildings and property capex for the 2017–22 regulatory control period – similar to its actual/forecast spend in the current (2013-17) period.

A key component of Powerlink's proposed buildings and property capex is its proposed $16.1 million *"office fitout replacement project"* for three buildings at its Virginia head office. Powerlink claims that its existing office fitouts have reached the end of their life and that its *"office redevelopment project is expected to promote efficient and flexible work practices, while supporting technological change, staff safety and culture"* [39]

6.10.2 The AER's Draft Decision

The AER accepted Powerlink's proposed $23.5 million in full, on the basis that it is similar to Powerlink's recent expenditure.

In relation to Powerlink's proposed office fitout project, the AER stated that:

"The scope and timing of Powerlink's proposed office fitout redevelopment project appears reasonable given the age of the existing office fitouts and the prospect of future efficiencies in office design and workplace practices"

6.10.3 CCP4's Concerns With The AER's Draft Decision

CCP4 (HG) has a number of concerns with the AER's draft decision.

For example, it is clear that the AER has not performed any actual assessment of the prudency or efficiency of Powerlink's proposed *office fitout project* – an expenditure that amounts to around $30,000 per staff member.

As the AER would be aware, Powerlink's Virginia office accommodation is commonly referred to as Australia's "*Trump Tower",* as it is one of Australia's most opulent and luxurious office environments.

Very few businesses would be able to justify the construction of Powerlink's Virginia offices or the ongoing replacement and refurbishment costs that Powerlink has expended on the Virginia facility since its construction.

As any visitor to Powerlink's Virginia facility would attest to, Powerlink's existing office fitouts are in very good condition. Powerlink's proposal to replace them clearly represents premature asset replacement.

Furthermore, Powerlink's Virginia facility was designed to accommodate a much larger workforce and (similar to Powerlink's network assets) now has a very large degree of excess capacity.

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[39] Powerlink, *Revenue Proposal Supporting Document: Non-Network Plan*, January 2016, p. 48.

Any other business faced with such excess capacity would sell or sub-let the excess space to reduce their accommodation costs. However, Powerlink clearly has not even contemplated such a strategy, as it knows that the AER will "rubber stamp" whatever building expenses it proposes.

CCP4 (HG) asserts that if the AER was to calculate the whole of life costs of Powerlink's accommodation it would identify that Powerlink's *accommodation cost per staff member is* many multiples of the costs incurred by any other Australian business of its size.

CCP4 (HG) considers that it is insulting to consumers for Powerlink to continue to claim the need for such opulent expenditure and for the AER to continue to approve it.

CCP4 (HG) also questions the rationale for Powerlink's office buildings to be included in Powerlink's regulated asset base, thereby requiring consumers to provide guaranteed returns on such extravagance.

6.11 Tools and Equipment Capex

6.11.1 Powerlink's Proposal

Powerlink proposed $5.0 million ($2016/17) for tools and equipment capex for the 2018–22 regulatory control period - approximately 3 per cent less in real terms than its actual and estimated tools and equipment capex for the current (2013–17) regulatory control period.

6.11.2 The AER's Draft Decision

The AER has fully accepted Powerlink's proposed tools and equipment capex of $5.0 million; on the basis that it is similar to Powerlink's spend during the current regulatory period.

6.11.3 CCP4 Concerns With The AER's Draft Decision

The AER is required to determine efficient capex allowances, rather than accepting forecasts based on trending forward the networks' past expenditure.

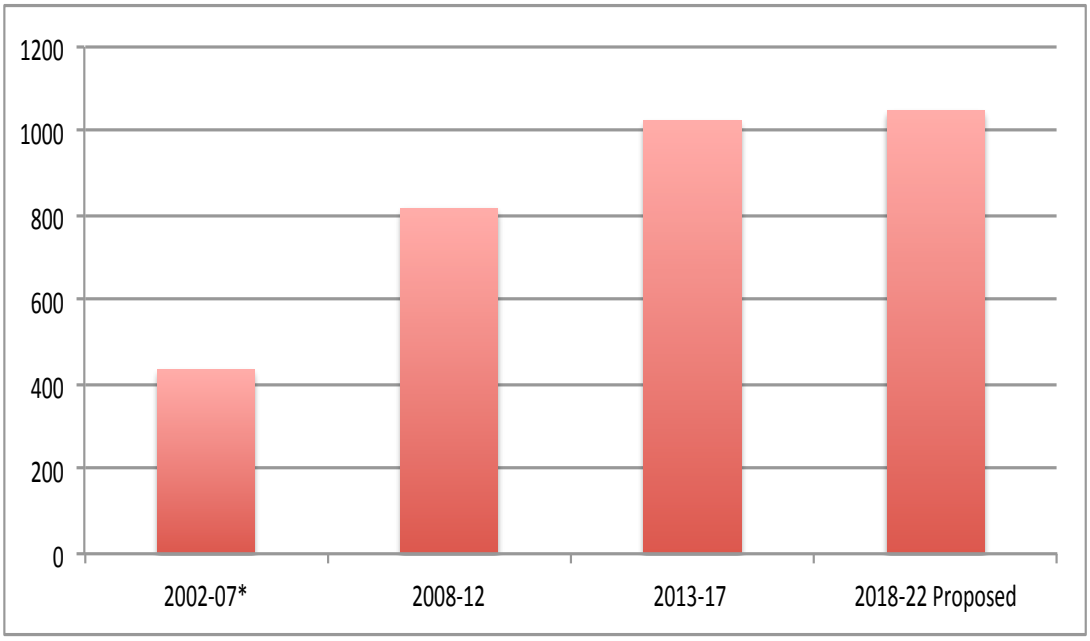
The AER has not performed any assessment of the efficiency of Powerlink's past 'tools and equipment' expenditure and has effectively ignored the extensive evidence that Powerlink's historical capex spend has been materially inefficient.

In doing so the AER has failed to meet its NER obligation to determine efficient capex allowances.

7 Operating Expenditure

7.1 Powerlink's Opex Proposal

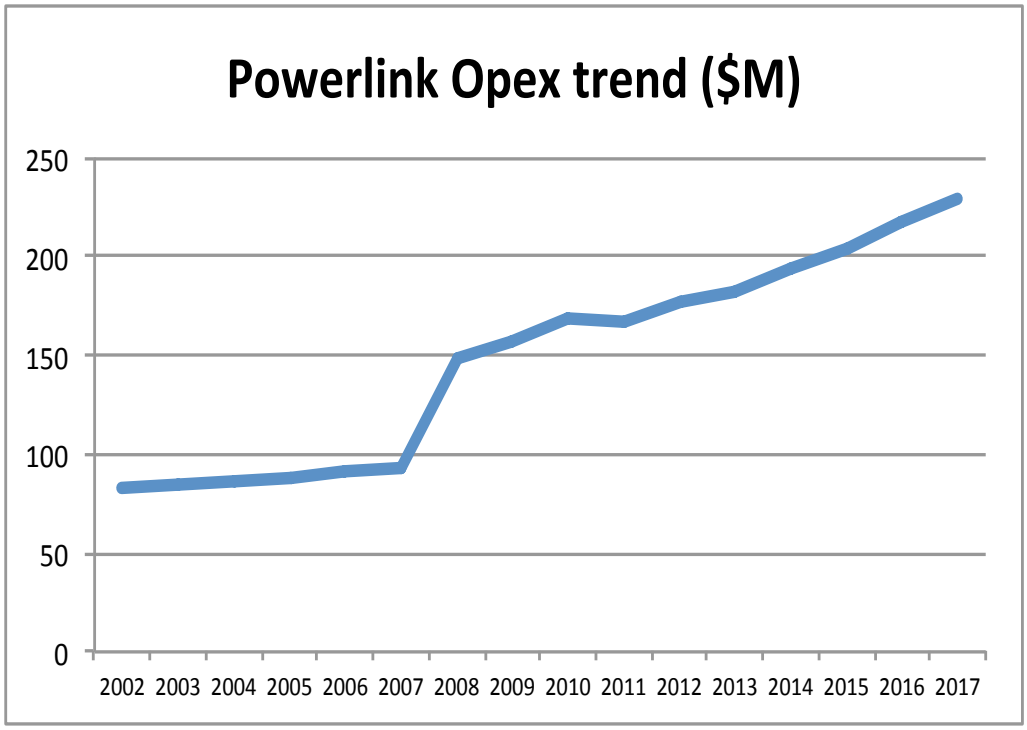
As outlined in the chart below, Powerlink proposed a record-high opex for the next regulatory period.



* 2002-07 figures pro-rated to 5 years (rather than 6 years) for comparison purposes

7.2 Powerlink's Historical Opex Trend

The chart below outlines that Powerlink's operating expenditure increased sharply since 2007, with its 2016 opex spend being over 230% of its 2007 opex spend.



CCP4's assessment of Powerlink's opex spend over the previous regulatory periods identified that:

- Powerlink's opex increased sharply since 2007, increasing by an average of around 11% per annum, during which Powerlink's key system outputs reduced
- Powerlink's opex growth over the past decade has been much higher than the opex growth of the other transmission networks, both in absolute terms and when normalised for changes in system outputs
- Powerlink's 2016 opex spend is over 230% of its 2007 opex spend
- Powerlink proposed a record-high opex spend for the next regulatory period
- Powerlink's proposed opex is around three times its opex spend over the 2002-07 regulatory period – a spend level that was above the level that the ACCC considered to be reflective of Powerlink's efficient long-term opex needs

7.3 The AER's Draft Opex Determination

The AER has accepted Powerlink's opex forecast of $976.7 million ($2016/17) in full.

The AER developed an alternative estimate of Powerlink's opex requirement using its standard 'base-step-trend' opex forecasting approach. [40]

The AER's alternative forecast estimated a total opex of $994.7 million ($201617) – i.e. 1.8 per cent higher than Powerlink's proposed opex.[41]

7.4 The AER's Opex Forecasting Approach

Both Powerlink and the AER used the AER's *base-step-trend* opex forecasting approach, i.e.:

- **Determination of the efficient base year opex**
- **Application of step changes** – adjusting the base year expenditure to account for forecast cost changes over the regulatory period due to new regulatory obligations
- **Determination of rate-of-change factors** - determination of escalation factors to take account of changes to efficient opex over the regulatory period due to price, output and productivity changes

CCP4's previous submission provided detailed critiques of deficiencies with Powerlink's opex proposal and with the AER's *base-step-trend* opex forecasting approach.

CCP4 (HG) considers that the AER's draft opex determination has had insufficient regard to those critiques.

CCP4's (HG) perspectives on the AER's opex assessment approach and the AER's proposed opex allowances are outlined in the following sections of this submission.

40 AER, *Better Regulation—Expenditure Forecast Assessment Guideline for Electricity Distribution*, November 2013.

41 Including debt raising costs.

7.5 The Determination Of Efficient Base Year Opex

The most critical element of the AER's opex assessment is the determination of efficient base year opex.

7.5.1 CCP4's Previous Submission - The Need To Apply Benchmarking To The Determination Of Efficient Base Year Opex

CCP4's previous submission outlined that the AER's *base-step-trend* approach is overly dependent upon trending forward the networks' recent opex - i.e. it does not demonstrate the efficiency of the networks' base year opex.

The Rules formally require the AER to undertake benchmarking to assess the networks' relative efficiencies and to have regard to the outcomes of its benchmarking in its determination of efficient opex allowances. [42]

In its recent revenue determinations, the AER applied benchmarking to determine efficient base year opex for the distribution networks, but not for the transmission networks.

CCP4's previous submission outlined that the AER has not justified its reasons for not applying benchmarking to the determination of efficient base year opex costs for the transmission networks.

7.5.1.1 The Information is Available

7.5.1.1.1 The AER has Comprehensive Opex Benchmarking Information

The AER develops its Transmission Benchmarking Reports using data collected from its regulatory information notices (RINs). This data has been compiled in accordance with the AER's consistent information requirements and it includes data that has been verified by the TNSP's chief executive officers and is independently audited. The data has also been subject to rigorous testing and validation by the AER and Economic Insights.

As stated by the AER: [43]

"We consider that the benchmarking analysis presented in this report is reasoned and comprehensive. We have collected data on all major inputs and outputs for transmission businesses, and we consider the dataset used is robust"

As outlined by Economic Insights: [44]

"This data is the most consistent and thoroughly examined dataset of the transmission networks yet assembled in Australia"

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[42] NER Clause 6A.6.6 (e) (4)

[43] AER Annual Transmission Benchmarking Report 2016

[44] Economic Insights, Economic benchmarking assessment of operating expenditure for NSW and Tasmanian electricity TNSPs, November 2014, p. 3.

7.5.1.1.2 The TNSPs' have Comprehensive Opex Benchmarking Information

CCP4's previous submission outlined that for many years the Australian TNSPs have selectively used the outcomes of a broad range of benchmarking reports to support their opex proposals and their opex efficiency claims.

For example, TransGrid's and TasNetworks' recent revenue proposals selectively referred to the outcomes of the following benchmarking reports:

- International Transmission Operations and Maintenance Study (ITOMS)
- International Transmission Asset Management Study (ITAMS)
- Mercer Human Resource Effectiveness Monitor 2012
- UMS Corporate Overheads High Level Comparative Assessment
- The Huegin Transmission Benchmarking Study 2013 Report

A review of the TNSPs' previous regulatory submissions identifies that they have selectively referred to over 40 benchmarking studies in support of their opex efficiency claims.

Powerlink's previous regulatory proposals consistently made highly selective use of the ITOMS benchmarking results to demonstrate its opex efficiency.

For example, as stated by Powerlink in support of the use of benchmarking for its 2013-17 revenue proposal: [45]

"International Transmission Operations and Maintenance Study (ITOMS) is a widely accepted (both nationally and internationally) measure for transmission network cost and performance which benchmarks of the order of 30 businesses across the Asia Pacific, Europe, North America and Scandinavian regions"

"Over a number of years, Powerlink has consistently benchmarked as providing high levels of network performance at low cost"

The AER's previous regulatory decisions have acknowledged that the opex benchmarking results presented by the TNSPs have informed its opex determinations to some extent.

The ACCC's regulatory determinations also acknowledged that its opex allowances were informed by benchmarking information provided by the TNSPs.

CCP4's previous submission outlined that the required data and information for benchmarking the TNSPs' opex is readily available and the AER has the information gathering powers to obtain whatever information it requires.

[45] Powerlink's "Response to Submissions" on its 2013-17 revenue proposal, 30 August 2011

7.5.1.1.3 AusNet Services Is Asserting That The AER's Benchmarking Results Prove That It Is Much More Efficient Than Powerlink

CCP4's previous submission outlined that all of the transmission networks have engaged *Huegin Consulting* during the current round of resets to assess their opex efficiency.

AusNet Services' current revenue proposal claims that Huegin's analysis of the AER's benchmarking results validate the efficiency of its proposed opex and proves that it is much more efficient than the other transmission networks, stating that: [46]

"Huegin's analysis of OPFP demonstrates that AusNet Services has delivered higher rates of opex productivity growth than its peers and ***well above the industry average****"*

"Economic Insights explains that an adjustment for step changes further improves historic performance, with AusNet Services ***achieving substantially better rates of improvement than the industry average****"*

"AusNet Services' ***strong track record of outperforming the industry average*** *with respect to productivity gains is prima facie evidence that its base year opex is efficient"*

By contrast, Powerlink has used the same consultant (Huegin) to attempt to argue why the AER should not apply benchmarking to its assessment of Powerlink's opex efficiency.

In doing so, Powerlink is directly contradicting its consistent claims over previous regulatory periods that the benchmarking results demonstrate its operational efficiency. By contradicting those claims and attempting to refute the value of benchmarking, Powerlink is in effect stating that the extensive costs that consumers have funded for its participation in numerous benchmarking studies (including the extremely expensive international ITOMS benchmarking study) has been wasteful expenditure. Consequently, those costs must not be included in Powerlink's efficient base year opex.

The TNSPs' sharply conflicting claims regarding the conclusions of benchmarking, and their sharply conflicting conclusions from the use of the same consultant, demonstrates why the AER needs to take control of the TNSP benchmarking agenda and ensure the consistent use of benchmarking in its determination of efficient opex costs for Powerlink.

7.5.1.1.4 Various Studies Have Demonstrated Material Inefficiencies in Powerlink's Opex

CCP4's previous submission outlined that various studies and analyses have demonstrated material inefficiencies in Powerlink's opex.

All of those studies have demonstrated that over the past 2 regulatory periods, Powerlink's opex has grown at a much higher rate than the other transmission networks, during a period when Powerlink's system outputs have remained flat or declined.

For example, In October 2012 the EUAA undertook a TNSP benchmarking analysis, which identified that Powerlink, demonstrated the lowest level of opex efficiency of the five NEM transmission networks. [47]

[46] AusNet Services' 2017-22 Revenue Proposal

[47] A comparison of outcomes delivered by electricity transmission network service providers in the National Electricity Market, EUAA 2012

Some key relevant findings of that study included:

"In Queensland operating expenditure increased significantly, whereas the operating expenditure of the TNSPs in other states remained reasonably constant. *Per MWh delivered, there is a significant difference between the lowest and the highest"*

"Even for TNSPs with comparable levels of delivered energy, operating expenditure per MWh differs significantly. ***For example in Queensland twice as much operating expenditure per MWh delivered is recovered than in Victoria"***

"The provision of transmission network services in Victoria has been consistently better than in other states *in respect of regulated revenues, the size of the regulated asset base, and the level of operating expenditure and capital expenditure"*

7.5.1.1.5 The AER's Benchmarking Results Identify Material Inefficiencies in Powerlink's Opex

CCP4's previous submission outlined that the AER's previous benchmarking results identified material inefficiencies with Powerlink's opex, demonstrating that Powerlink is the least efficient of the five NEM transmission networks on a number of measures.

Note – subsequent to that submission, the AER published its 2016 benchmarking report, which identified that Powerlink's opex efficiency has continued to decline.

7.5.1.1.6 The AER Has Not Justified Its Decision to Not Use Benchmarking

CCP4's previous submission asserted that the AER has not justified its decision to not apply benchmarking in its determinations of efficient base year opex costs for the TNSPs in the current round of revenue determinations.

The AER has indicated that its key reason for not having regard to its transmission benchmarking results is due to the relatively small number of Australian transmission networks.

CCP4 does not find this convincing. Other international regulators have used benchmarking results much more deterministically with similar or smaller numbers of benchmark comparisons.

Furthermore, CCP4's previous submission outlined that, due to similarities in transmission and distribution assets, there is an extended data set that can be reasonably applied to all networks.

Importantly, the AER's rationale for not applying benchmarking contradicts the AER's previously stated positions on the purpose of collecting RINs data and its intended application of benchmarking. The AER has always known the number of transmission entities, yet it proceeded with the TNSP benchmarking studies on the understanding that benchmarking would be applied. To now place unnecessary restrictions on the application of benchmarking is unacceptable.

In addition, the AER's reluctance to apply benchmarking to its assessment of the TNSPs' opex has not prevented the TNSPs from participating in numerous benchmarking studies (including extremely expensive international benchmarking studies) and using the results of those studies to support their opex efficiency claims.

CCP4 (HG) considers that the AER's real reason for not applying benchmarking to the TNSPs' opex determinations is due to resource constraints. This suggests that the AER should focus its scarce resources on identifying the most material opex inefficiencies.

CCP4 (HG) accepts that there may be some instances where the data is inconclusive on certain aspects of opex performance for some networks. However, that does not apply in the case of Powerlink, as there is extensive evidence that Powerlink demonstrates the lowest operational efficiency of the five NEM transmission networks.

Consequently, CCP4 (HG) strongly asserts that the AER should focus its scarce resources on applying benchmarking to the determination of Powerlink's efficient base year opex.

7.5.1.2 Benchmarking Can Be Supplemented By Other Techniques

Benchmarking is a proven and essential technique in regulatory practice. Ofgem (UK) has applied it extensively for over 20 years, and implemented it much more deterministically with a data set that was nowhere near as developed as the AER's current benchmarking data.

CCP4's previous submission outlined that the AER does not need to be totally reliant on benchmarking in its determination of efficient base year opex costs, but it is obliged to apply it.

In its recent opex determinations for the distribution networks, the AER supplemented its benchmarking with other assessment techniques. CCP4's previous submission asserted that the AER should apply a similar approach to the Powerlink opex determination.

7.5.2 The AER's Responses To CCP4's Critiques

The AER had minimal regard to CCP4's critiques and has used its standard "revealed cost" approach to determine Powerlink's base year opex.

The AER's draft decision did acknowledge Powerlink's poor opex efficiency.

As stated by the AER:

"Our benchmarking indicates Powerlink has not been operating as efficiently as other transmission businesses in the National Electricity Market (NEM)"

"Our benchmarking results suggest Powerlink has been operating at relatively lower levels of productivity when compared to other transmission businesses in the NEM"

However, despite those acknowledgments, the AER is attempting to create the impression that it is powerless to address Powerlink's inefficiencies in its opex determination.

As stated by the AER:

'Consumer Challenge Panel (CCP) members made a submission stating we should apply benchmarking to determine Powerlink's efficient base year opex. However, our benchmarking of transmission businesses is not sufficiently robust to support an alternative forecast of base opex at this stage of its development. Our benchmarking is limited by the small sample size of transmission businesses in the NEM—among other things"

To support that position, the AER referred to a report from *Ecomomic Insights* that highlighted the reasons for the very slow development of the AER's transmission benchmarking. [48]

It is clear from that report that the TNSPs are stalling the development of the AER's transmission benchmarking by failing to agree on standard definitions and failing to provide consistent data.

7.5.3 CCP4's Perspectives On The AER's Base Year Opex Determination

In the absence of applying benchmarking, the AER's base year opex determination has **not** determined an efficient base year opex allowance for Powerlink.

Rather, the AER's base year opex determination has effectively trended forward Powerlink's historical opex, which as outlined above has been demonstrated to be materially inefficient.

7.6 Rate of Change

7.6.1 Labour Price Change

7.6.1.1 Powerlink's Labour Price Forecasts

As outlined in the table below, Powerlink proposed annual real labour price growth factors of between 0.6-1.5% with an average factor of 1.12%.

Powerlink Proposed Real Labour Price Change Factors (Per Cent, Real)

	2017/18	2018/19	2019/20	2020/21	2021/22	Average
Labour Price Change	0.6	0.9	1.2	1.4	1.5	1.12

Powerlink's labour price change factors were based on:

- Powerlink's existing enterprise agreement
- A report that Powerlink commissioned from BIS Shrapnel on Wage Price Index (WPI) forecasts for the Electricity, Gas, Water and Waste Services (EGWWS) and the Queensland construction sector
- Labour cost forecasts published by Deloitte Access Economics (DAE)

It is important to note that Powerlink's opex allowances for the current regulatory period incorporated labour price change factors that were much higher than the actual labour price cost increases incurred by Powerlink – i.e. Powerlink's opex allowances for the current regulatory period were based on labour cost increases that Powerlink did not incur. [49]

[48] Economic Insights – review of submissions on Powerlink's base year opex, 14 July 2016

[49] Powerlink 2018-22 Revenue Proposal, Table 6.6, Page 72

7.6.1.2 The AER's Labour Price Forecasts

The AER forecasted labour price growth based on forecast growth of the utilities WPI. [50]

The AER used an average of Deloitte Access Economics' (DAE) and the Centre for International Economics' (CIE) utilities WPI growth forecasts.

This resulted in the AER applying a real annual labour price escalation factor of 0.9% for the next regulatory period.

7.6.2 CCP4's Perspectives On The AER's Labour Price Determination

7.6.2.1 The AER Has Ignored The Fact That The Electricity Network Sector Is In Contraction

Neither Powerlink's nor the AER's labour price forecasting approaches reflect the specific drivers of the electricity network sector.

The electricity network sector is currently in a major contraction phase due to declining demand for its services, whereas the other sectors covered by the above forecasts are not.

Industries in contraction do not face real labour price increasing drivers

There is currently minimal wage pressure within the Australian economy. The mining boom has passed and skilled labour is readily available.

Deloitte Access Economics (DAE) expects utility sector wages growth to fall in the near term. DAE also notes that the skill shortages that underpinned strong wage growth in utilities in the past decade have diminished.[51]

Similarly, the RBA recently produced a report – *"Why is Wage Growth So Low*", which outlines that: [52]

"Wage growth has declined markedly in Australia over the past few years"; and

"At the same time, stronger growth in labour productivity has worked to contain growth in labour costs"

CCP4 (HG) asserts that the AER needs to use labour price forecasts that are specific to the electricity network sector. Such forecasts will confirm that Powerlink's labour costs should be reducing, rather than increasing.

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50 Deloitte Access Economics, *Forecast growth in labour costs in Australia, Victoria, South Australia, Northern Territory and the Australian Capital Territory, prepared for the AER*, 5 February 2016.

51 Deloitte Access Economics, *Forecast growth in labour costs in NEM regions of Australia*, 23 February 2015, p. 44.

52 Jacobs, David, and Alexandra Rush. "Why Is Wage Growth So Low?" *RBA Bulletin, June* (2015): 9-18.

7.6.2.2 The AER Has Ignored Powerlink's Inefficient Labour Costs and Workforce Practices

CCP4's previous submission urged the AER to perform a review Powerlink's labour and workforce practices.

CCP4 suggested that the review should consider the findings of the *Queensland Government Independent Review Panel (IRP) on Network Costs,* [53] which identified that Powerlink's inflexible enterprise agreement is driving excessive labour costs and inefficient workforce practices, e.g.:

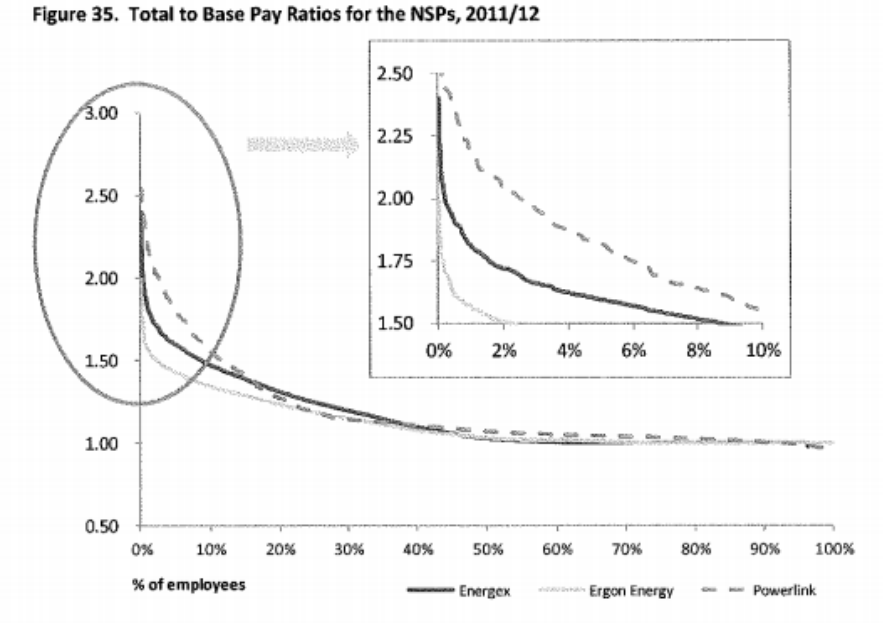
- *"The capital programs and operating costs of the GOCs have **increased sharply and unsustainably**"*
- *"The three NSPs have all commenced programs to improve the efficiency of their operations and reduce both indirect and direct costs. The Panel acknowledges that these programs will yield results but believes that **additional impetus is needed to produce the level of savings required to restore affordability for customers"***
- ***"The need for cultural change as a driver for operational improvement** and refocus on cost effective outcomes that meet customer expectations"*
- *"Across the three companies, **647 employees earned in excess of 1.5 times their base pay….27 employees earned twice their base pay in 2011/12.** The Panel considers that such high ratios are likely to result in lower levels of productivity"*
- *"Contract resources are used inefficiently……**internal resources are being under-utilised**"*
- *"The start times of work crews are often not matched to the requirements of particular projects. **A rigid adherence to these start times means that there is a mismatch, leading to reduced productivity** and possibly longer outage durations"*
- *"Each of the three network businesses has autonomous fatigue management policies with different rules governing the timing and duration of rest periods……**the differences in fatigue management policies** complicate crew scheduling and joint workforce management **leading to response delays, inefficiencies and potential safety issues**"*

CCP4 outlined that the IRP review was particularly critical of Powerlink's poor management of its labour costs.

For example, in relation to the management of overtime costs, the chart below outlines the Queensland networks' excessive *total to base pay* ratios, and that Powerlink's ratio was the highest of the three Queensland networks.

[53] Queensland Government Independent Review Panel on Network Costs Final Report

Figure 35. Total to Base Pay Ratios for the NSPs, 2011/12



CCP4 urged the AER not to allow Powerlink to continue to treat inefficient enterprise agreement outcomes as a "pass through".

Disappointingly, contrary to all of its other recent opex determinations, the AER did <u>not</u> perform a review Powerlink's labour and workforce practices.

The AER has not explained why it decided not to perform that review.

7.6.3 Output Change

The table below outlines Powerlink's proposed average annual output escalation factors over the next regulatory period.

Average Annual Output Change Escalation Factors

	2017/18	2018/19	2019/20	2020/21	2021/22	Average
Total Output Growth	0.3 %	0.1 %	- 0.1 %	- 0.1 %	0.2 %	**0.1 %**

The AER has accepted Powerlink's forecast growth in outputs, resulting in increasing Powerlink's opex by $2.7 million ($2016/17).

7.6.4 Productivity

The AER forecasted Powerlink's productivity to grow at 0.2 per cent, by simply trending forward the transmission industry's poor productivity performance (using the industry average opex partial productivity growth rate from 2006 to 2015).

The AER applied this very low productivity factor despite Powerlink's very poor historical productivity performance.

For example, as stated by the AER:

"We note that Powerlink was a significant contributor to the fall in opex productivity in 2015, with its productivity falling 10 per cent.

Importantly, the AER's proposed productivity factor of 0.2% is much lower than the 0.86% factor that it applied to its recent opex determinations for TransGrid and Transend.

CCP4's previous submission outlined that all of Powerlink's directly connected customers operate within capital intensive industry sectors that have consistently delivered much more significant productivity growth during the past decade.

CCP4 asserts that that there is no justification for the electricity transmission sector to continue to deliver lower productivity outcomes than other comparable capital-intensive industry sectors.

In essence, the AER's opex determination would ensure that Powerllnk's poor productivity performance over recent years will continue over the next 5 years.

CCP4 asserts that that there are a number of reasons for Powerlink's very poor productivity performance over the past decade - particularly the AER's provision of excessive opex allowances, which has been a strong driver of Powerlink's inefficient labour practices and poor productivity outcomes.

It is inappropriate for the AER to use Powerlink's poor historical productivity performance to justify further poor productivity outcomes in future years.

7.6.4.1 The Interaction Between Labour Prices and Productivity

Two of the rate of change factors – *labour price change* and *productivity* are inextricably linked.

It is well understood that, over the long term, labour price growth adjusted for labour productivity closely tracks the Consumer Price Index (CPI). For example, Professor Borland demonstrated that, on average from 1997–98 to 2009–10, CPI plus labour productivity matched the average weekly ordinary time earnings (AWOTE).[54]

In general, employers only allow labour costs to rise above CPI if they are accompanied by offsetting productivity improvements. The AER's labour price forecasts therefore need to be assessed in conjunction with its productivity forecasts.

Clearly, the AER needs to apply a higher productivity factor than its proposed factor to avoid further ongoing declines in Powerlink's productivity over the next 5 years.

CCP4 therefore urges the AER to determine an appropriate combination of labour price and productivity change factors aimed at driving Powerlink's productivity back into line with the levels being achieved by other capital intensive industry sectors.

[54] Labour Cost Escalation: Choosing between AWOTE and LPI, Professor Jeff Borland, March 2012

7.6.5 CCP4's Key Concerns with the AER's Draft Opex Determination

In summary, CCP4 considers that the AER's draft opex allowances are well in excess of the efficient level.

CCP4 (HG's) key concerns with the AER's draft opex determination, and recommendations for the required improvements are as follows:

The AER's Base Year Opex Determination

- The AER's application of the "revealed cost" method to the determination of base year opex has not addressed the material inefficiencies embedded in Powerlink's proposed base year opex.
- Powerlink's base year opex should be set on the basis of benchmark efficient costs, not on the basis of Powerlink's historical costs, which have been demonstrated to be materially inefficient
- The AER's base year opex determination has also failed to have regard to:
  - Powerlink's poor productivity performance over the previous two regulatory periods
  - Powerlink's opex growth over the past 10 years has been much higher than the opex growth of the other TNSPs, both in absolute terms and when normalised for changes in system outputs
  - The opex reductions that Powerlink should be realising from its major capex programs over previous regulatory period (e.g. opex reductions that Powerlink should be realising from its very young asset ages and its very low asset utilisation levels)

Labour Price Change

- The AER needs to determine efficient labour price forecasts that consider the specific drivers of labour prices in the Australian electricity network sector
- Those forecasts need to take into account:
  - The electricity network sector is currently in a major contraction phase - industries in contraction do not face real labour price increasing drivers
  - The evidence that demonstrates that Powerlink's current labour costs are excessive
  - The evidence that demonstrates that Powerlink's labour and workforce practices are highly inefficient
  - The interaction between labour price change and productivity change – i.e. real labour price increases need to be compensated by offsetting productivity improvements

An appropriate consideration of the above issues will confirm that Powerlink's labour prices should be reducing rather than increasing.

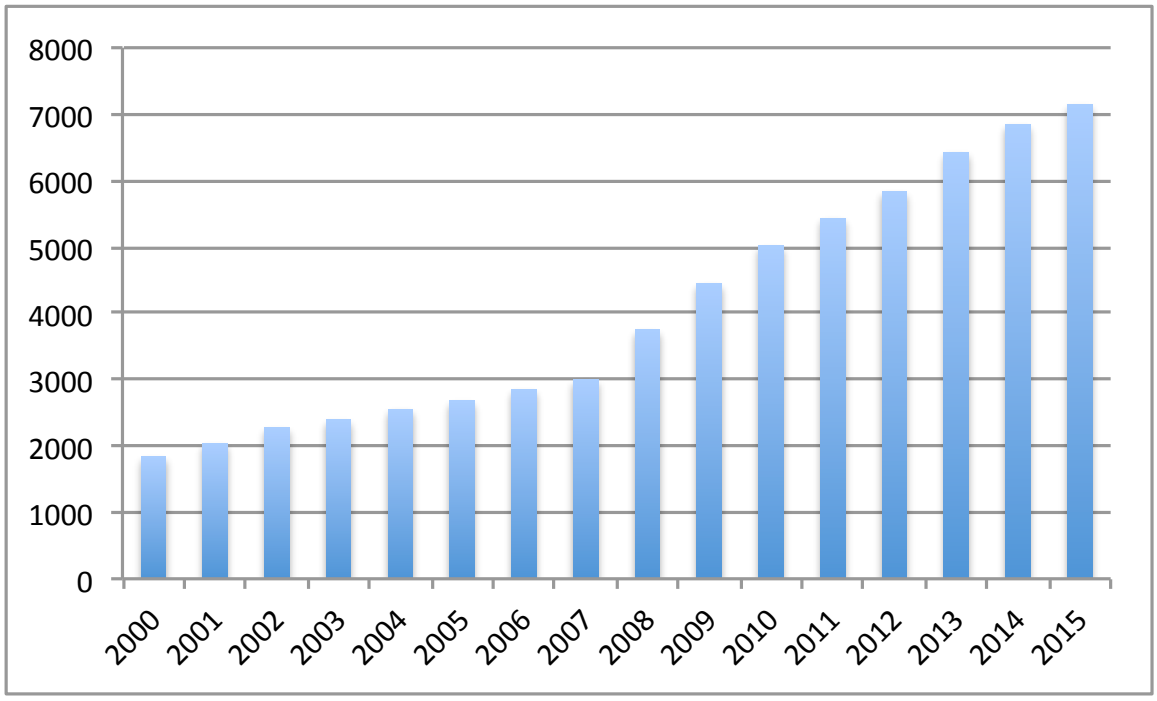
Productivity

- The AER's draft opex determination has assumed that Powerlink's poor productivity performance over recent years will continue over the next 5 years
- The AER needs to apply an appropriate combination of labour price and productivity change factors to drive Powerlink's productivity back into line with the levels being achieved by other asset intensive industry sectors

Appendix 1: Powerlink's Capital Efficiency

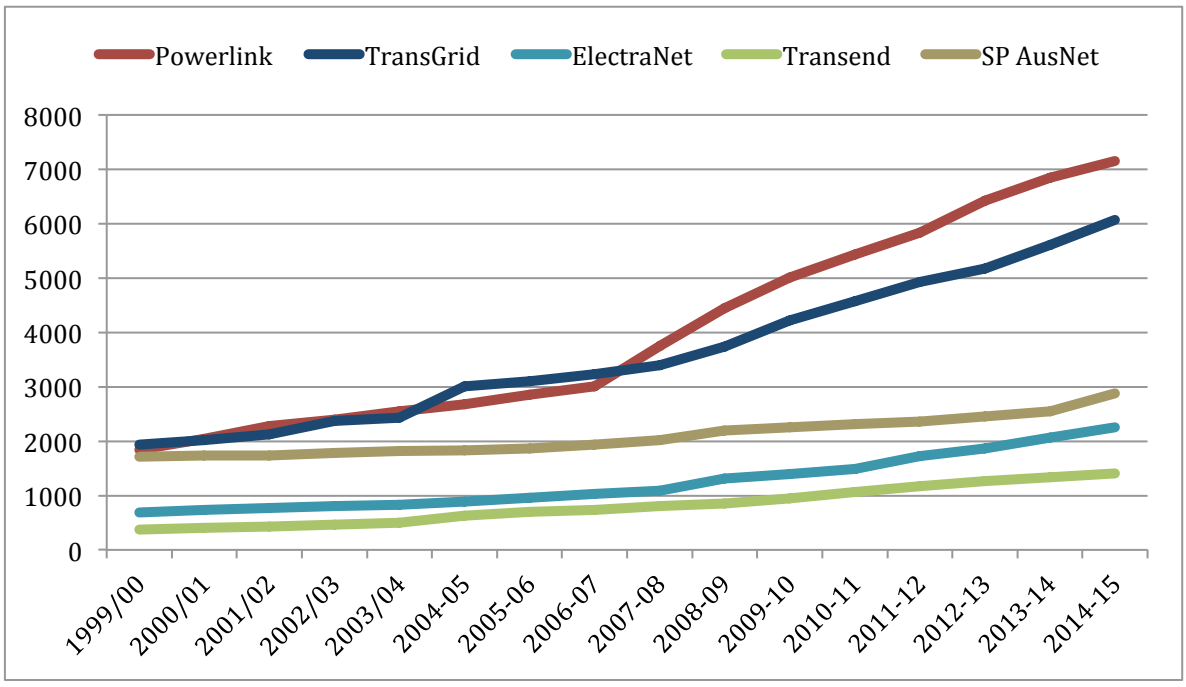
Powerlink's Extraordinary RAB Growth

The chart below illustrates the extraordinary growth in Powerllnk's RAB over the past 15 years. It illustrates that Powerlink's RAB has grown sharply, particularly since 2007.

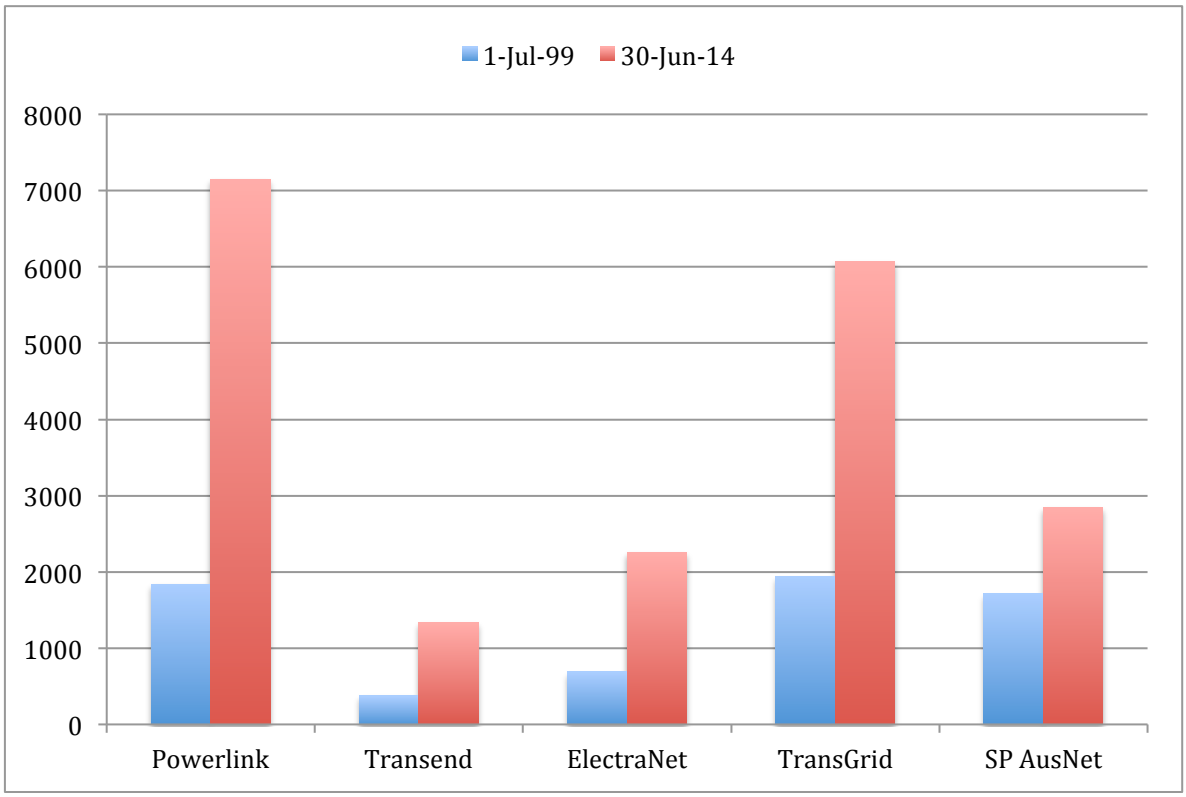


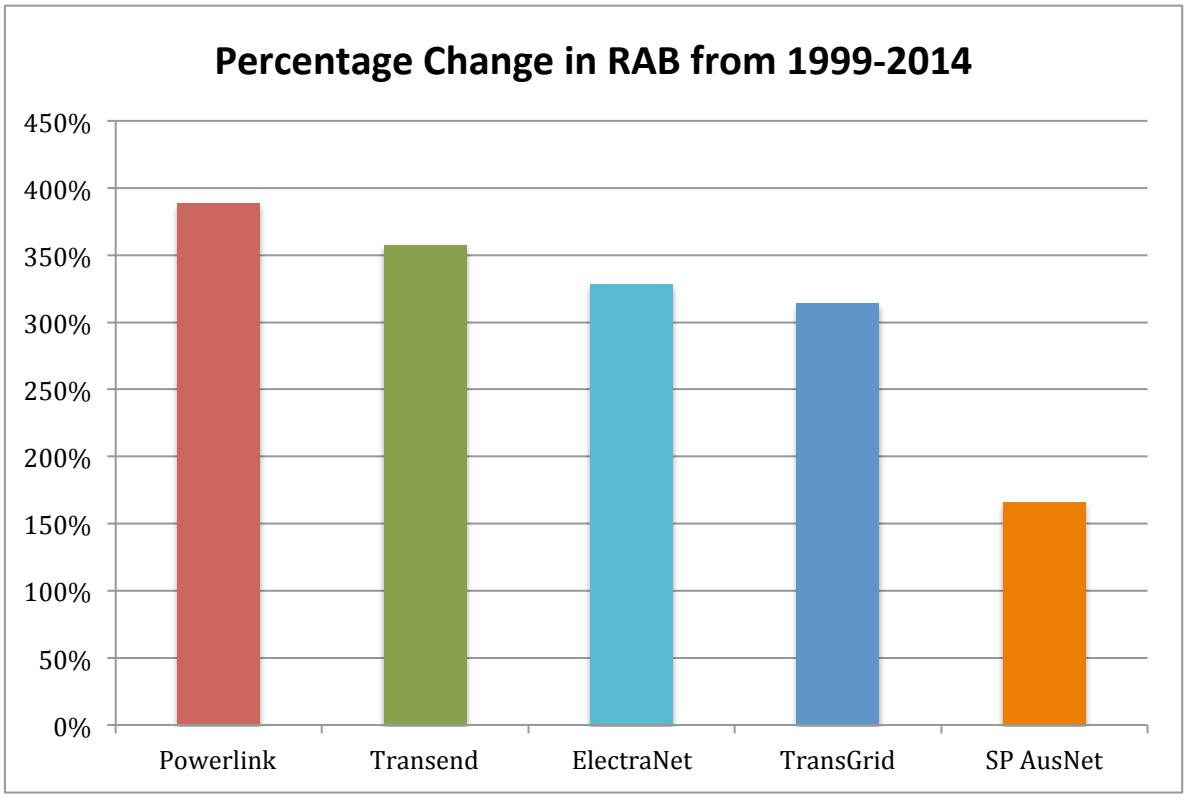
The chart below outlines the growth in the RABs of the 5 NEM transmission networks from 1999-2015.

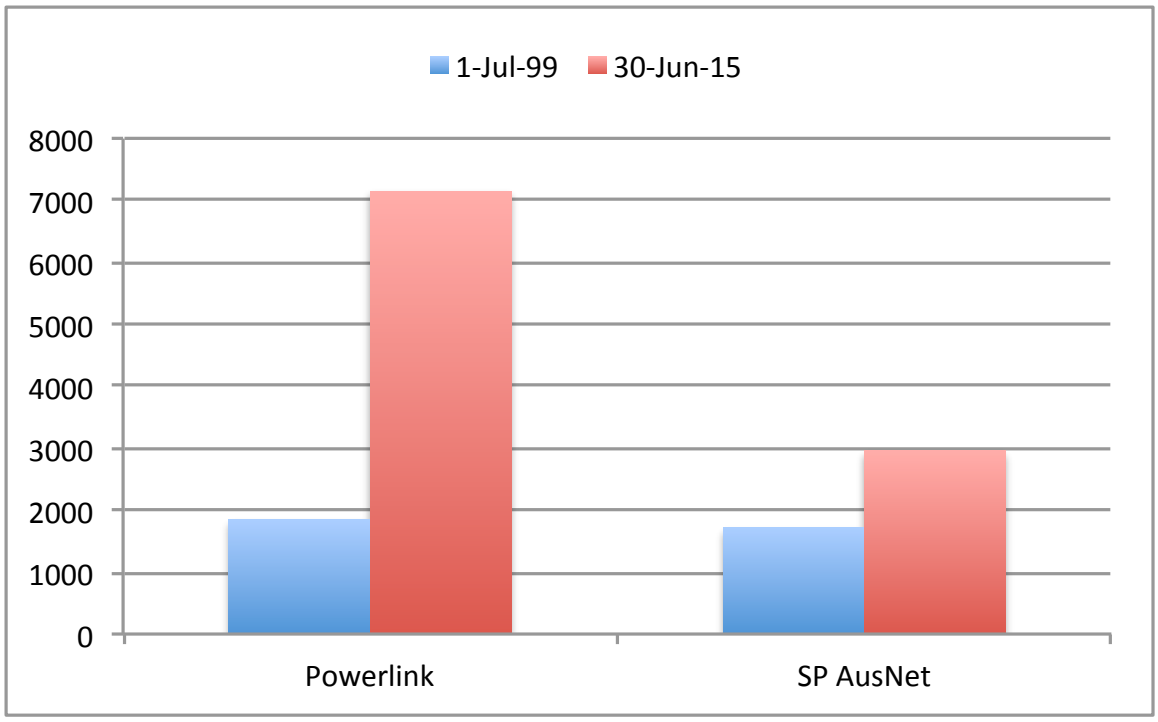
It highlights that Powerlink's RAB grew at the highest rate of all of the transmission networks.



The charts below illustrate the overall changes in the RAB valuations of each transmission network from 1999-2014. They highlights that Powerlink exhibited the highest RAB growth, both in absolute terms and also in percentage terms.







The above chart illustrates the dramatic difference between Powerlink and SP AusNet's RAB growth over the past 16 years:

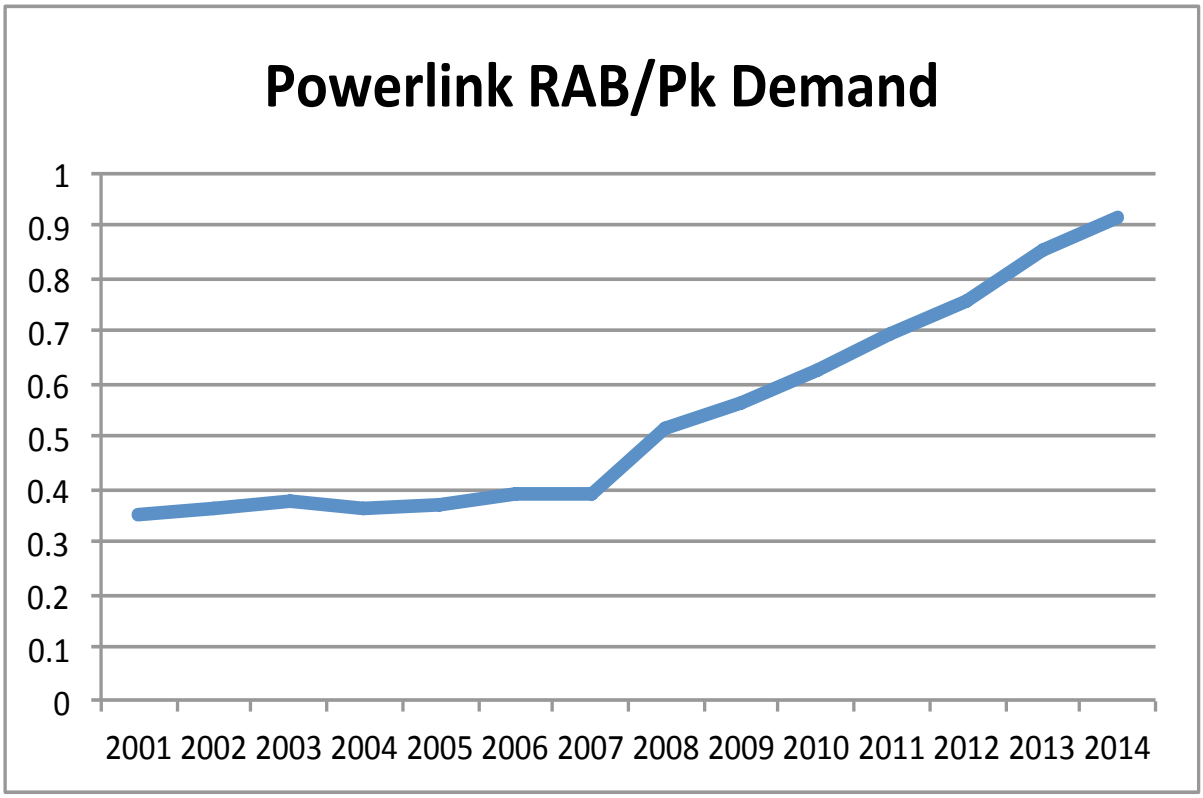
It illustrates that:

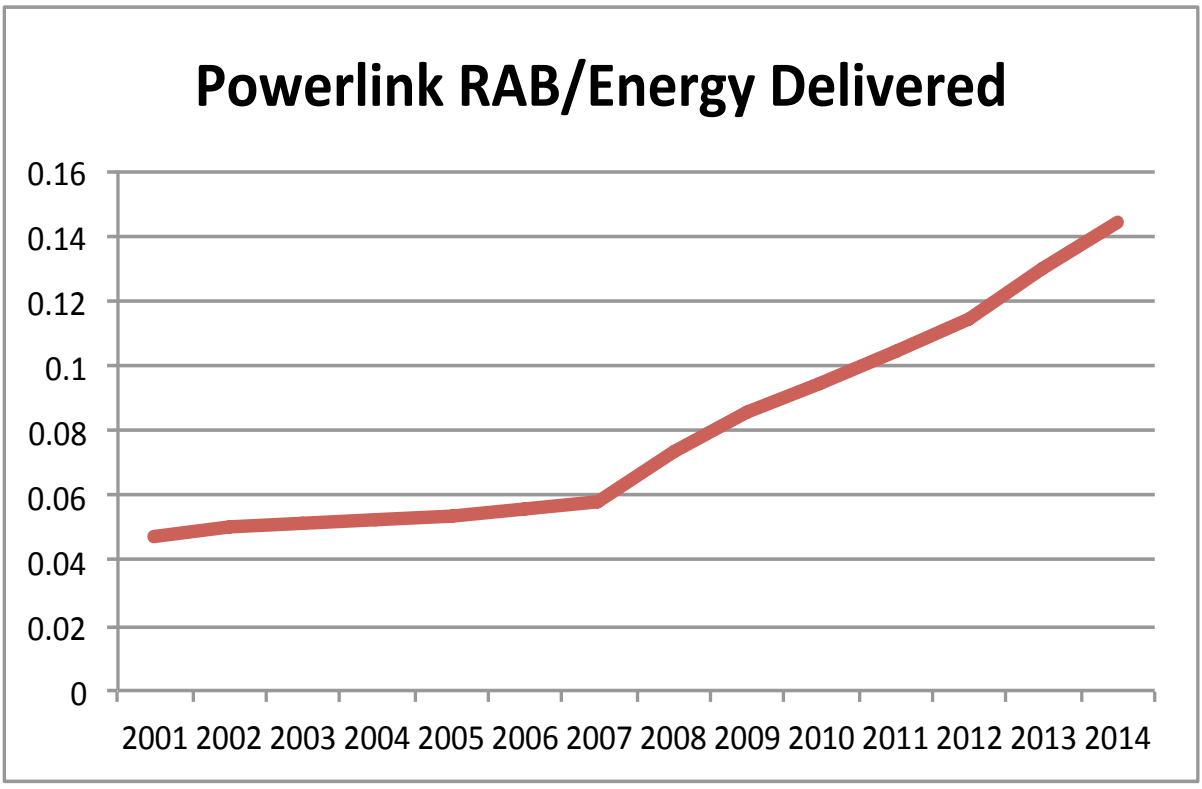
- In 1999, Powerlink's RAB value was similar to SP AusNet's
- Powerlink's RAB has subsequently grown to around 4 times its 1999 value
- By comparison, SP AusNet's RAB has grown to around 1.7 times its 1999 value

Various studies have identified that Powerlink's RAB value has grown much more significantly than all of the other transmission networks - both in absolute terms, and after normalisation for system outputs.

The charts overleaf illustrate the trends in Powerlink's RAB when normalised for two key system outputs - peak demand and energy delivered. They illustrate that Powerlink's RAB/Peak Demand and RAB/Energy Delivered ratios more than doubled over 2007-14 period.

This emphasises the importance of the AER's capex determination for Powerlink incorporating an appropriate consideration of Powerlink's capital efficiency.


Powerlink RAB/Pk Demand
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014


Powerlink RAB/Energy Delivered
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

The AER's Capital Efficiency Benchmarking Results

The National Electricity Rules (NER) require the AER to have regard to benchmarking results when setting the capex allowances for Australia's transmission networks. [55]

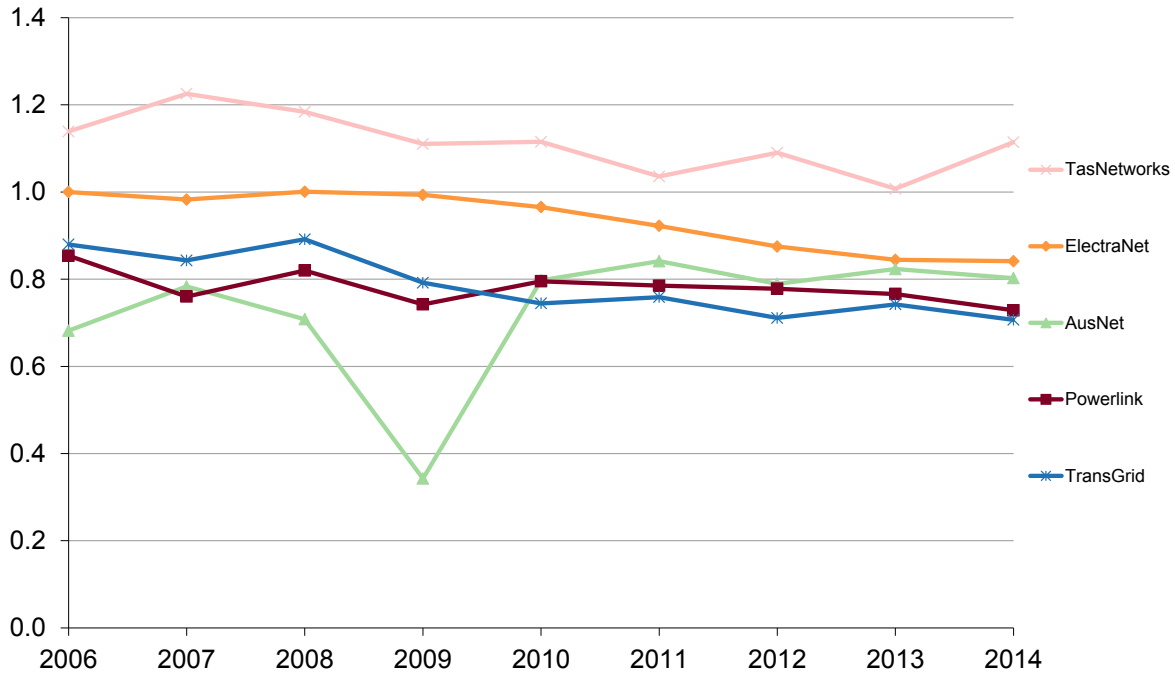
Multilateral Total Factor Productivity (MTFP) Results

The chart below outlines the MTFP score for each transmission network over the 2006-14 period.

It highlights that:

- ElectraNet's productivity declined by around 15%
- The productivity levels of Powerlink and TransGrid declined by around 10%
- TasNetworks' productivity declined slightly
- The above declines contrast with the productivity of the SP AusNet which improved by around 15% over the period

Figure 3 Multilateral total factor productivity by TNSP for 2006–14

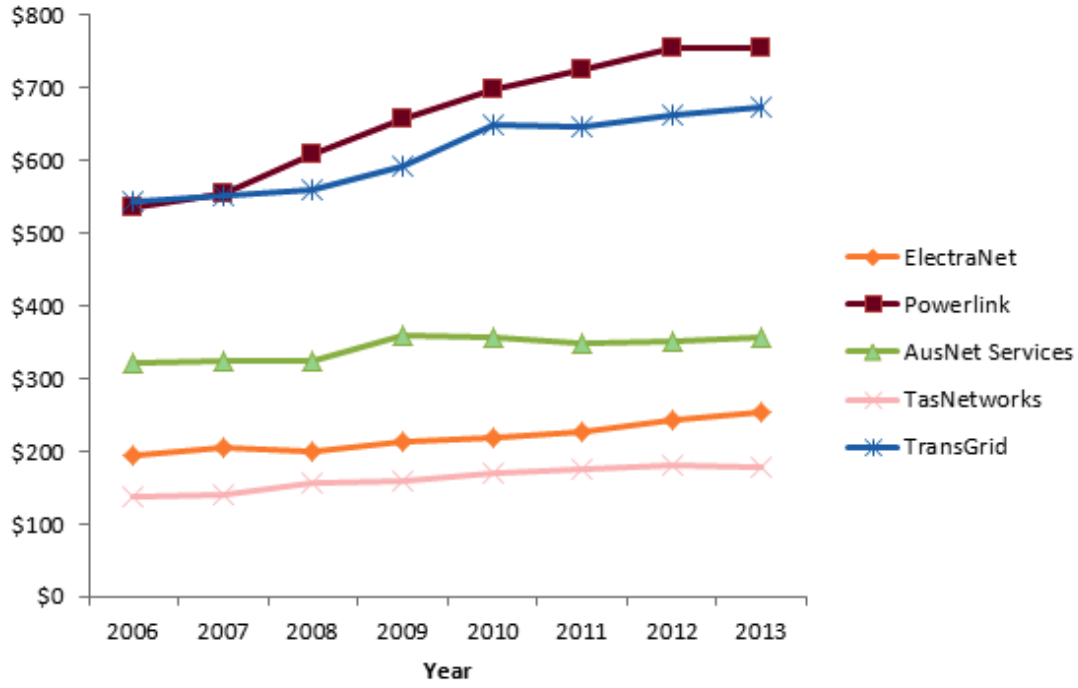


Note: In 2009 AusNet Services had large customer interruptions

[55] NER Clause 6.5.7 (e) (4)

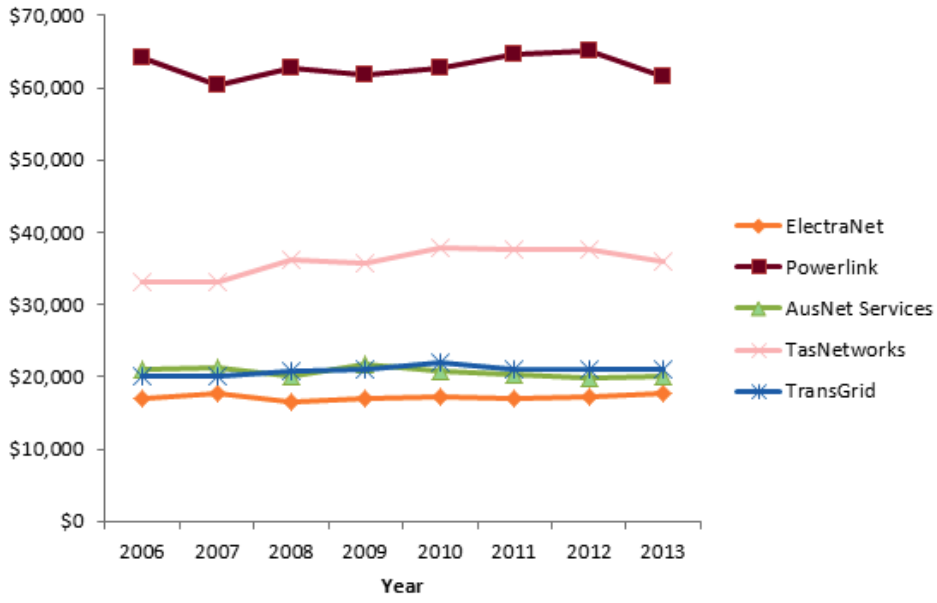
The chart below illustrates how the total costs of the transmission networks changed over the 2006-13 period. It illustrates that Powerlink has the highest costs and that the differences between Powerlink's costs and the costs of the other transmission networks grew significantly over the period.

Total costs of the transmission networks ($million 2013)



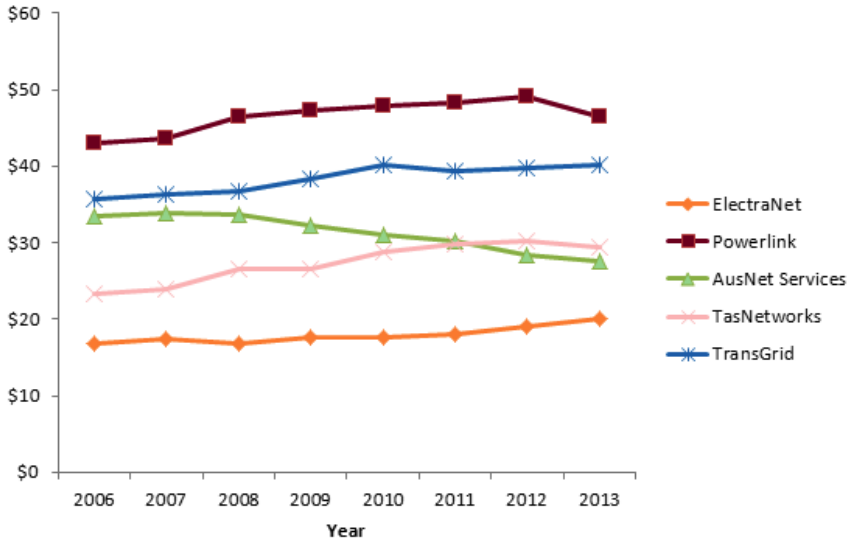
The chart below illustrates the transmission networks' total cost per MVA of downstream connection point of transmission capacity. As outlined by the AER - *"Powerlink performs poorly under this measure with a very high total cost per MVA of connection point capacity"*

Figure 4 Total cost per MVA of connection point capacity ($2013)



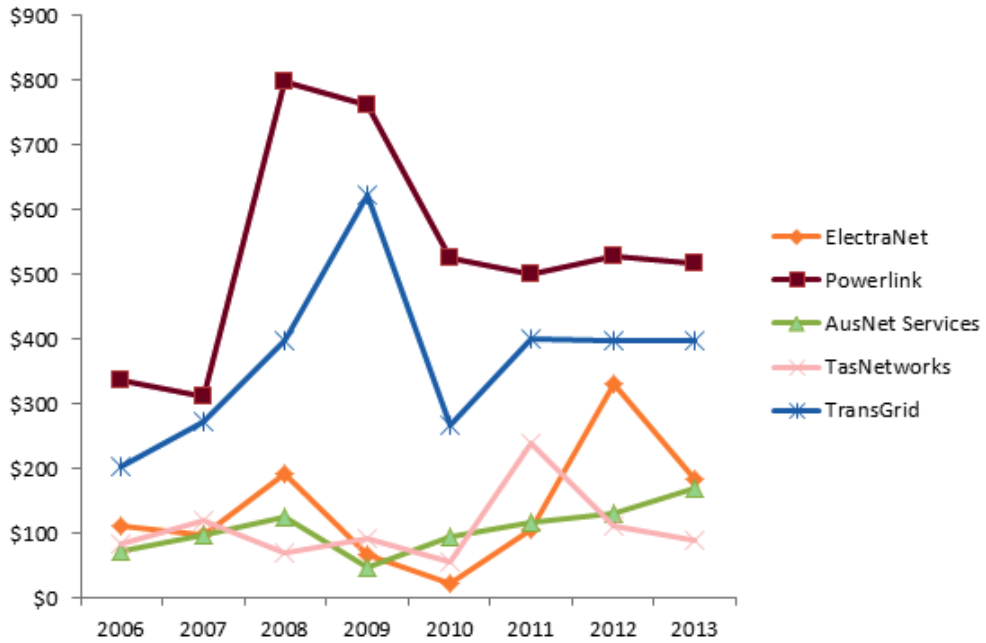
The chart below illustrates the total cost per kilovolt (kV) of entry and exit points. Under this measure, Powerlink has the highest costs of all the transmission networks.

Total cost per total kV of entry/exit points ($2013)



The chart below illustrates that Powerlink's capex spend was significantly higher than the capex spend of all of the other transmission networks in every year over the 2006-13 period.

Figure 5 Capex over time ($million 2013)



Conclusions from the AER's Capital Efficiency Benchmarking Results

The AER's capital efficiency benchmarking results reinforce the conclusions of all of the other studies into the electricity transmission networks' different investment rates – that exogenous factors do not explain Powerlink's dramatically higher investment levels.

EUAA Study Into The Transmission Networks' Different Capex Levels

In October 2012, the EUAA performed a research study into the Australian transmission networks' different investment levels. [56]

The key relevant findings and conclusions of that study included:

- Powerlink demonstrated the lowest capital efficiency level of the five transmission networks
- Powerlink's investment level was much higher than the other transmission networks, both in absolute terms and after normalisation for changes in system outputs
- The privately owned Victorian transmission network (SP AusNet) is much more efficient than the other transmission networks, spending substantially less capital and operating expenditure both in absolute terms and after normalisation for changes in system outputs

Demand Growth

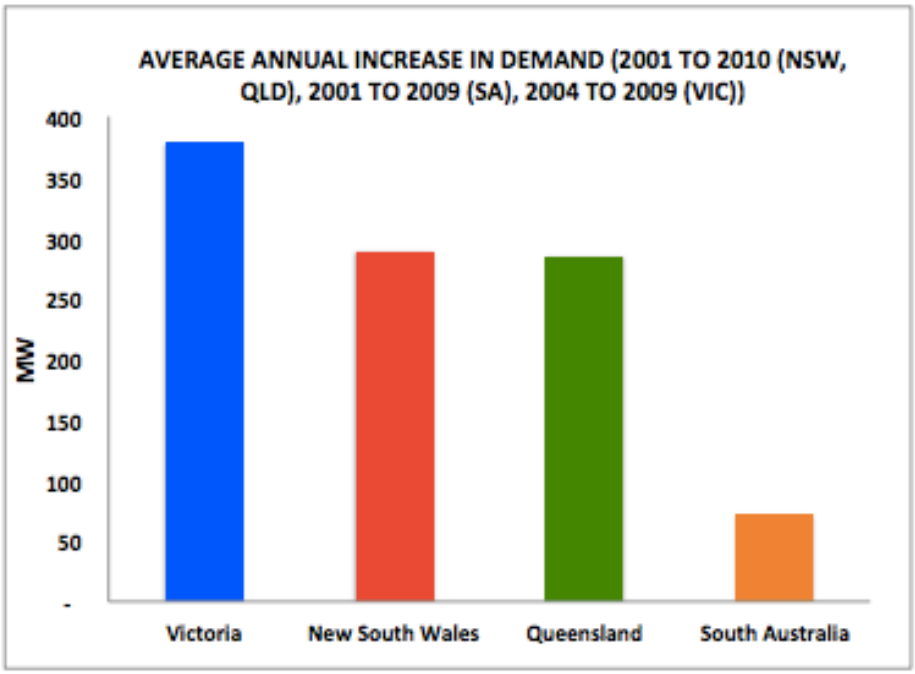
Growth in peak demand is one of the most common reasons that the networks provide to explain their RAB growth levels.

The chart overleaf (derived from the EUAA study) outlines the average annual increase in demand for four Australian states over the 2001-2010 period.

It illustrates that demand growth was highest in Victoria, followed by NSW, Queensland and South Australia.

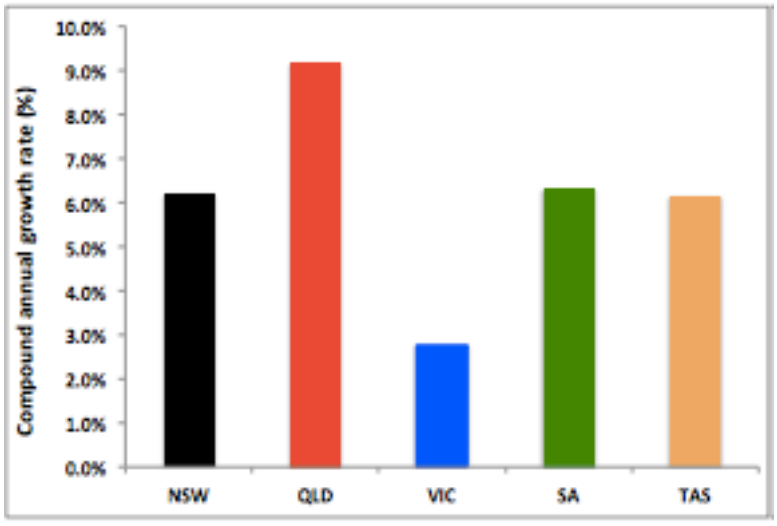
[56] A comparison of outcomes delivered by electricity transmission network service providers in the National Electricity Market, EUAA, October 2012

Figure 15. Demand growth MW per annum average over the measured periods



RAB/Peak Demand Trends

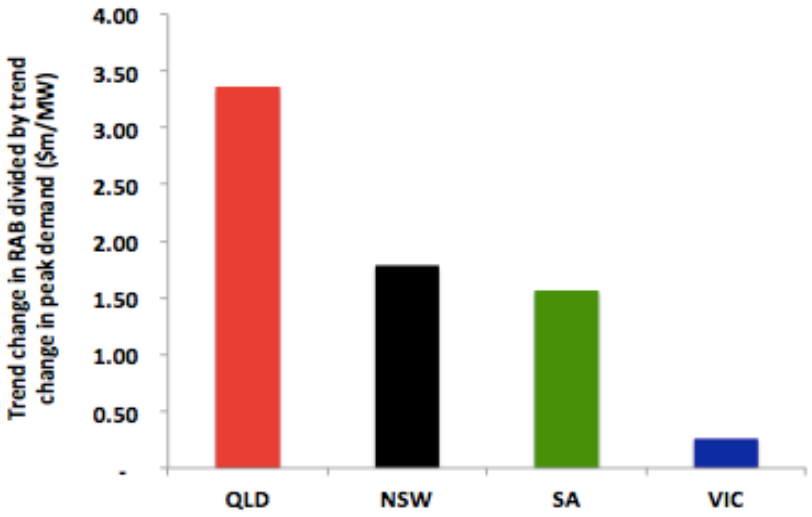
The chart below illustrates the compound annual growth rate of the Australian transmission networks' regulatory asset bases (RABs) over the 2005 to 2013 period. [57]



[57] A comparison of outcomes delivered by electricity transmission network service providers in the NEM, EUAA, 2012

The chart below illustrates the differences in the trend change in RAB normalised for the change in peak demand for Australia's transmission networks over the 2005-12 period. [58]

It highlights that Powerlink's RAB grew at a much higher rate than the other transmission networks, at around 14 times the growth rate of the Victorian transmission network (SP AusNet)



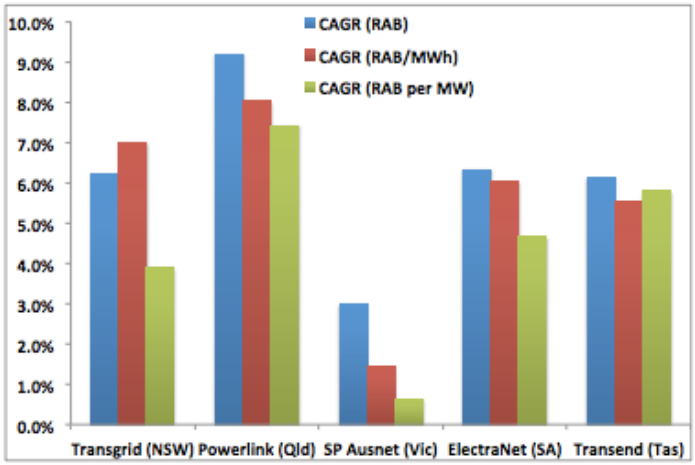
The chart below illustrates the compound annual growth rates of the transmission networks' RABs normalised for growth in peak demand and energy delivered for the period from 2005 to 2013.

As outlined by the EUAA report:

"It is clear from this that the RAB for Powerlink has grown more strongly than for any of the other TNSPs in absolute terms, and after normalisation for energy delivered or annual peak demands"

"At the other end of the spectrum, the growth in the RAB for SP AusNet has been the lowest in absolute terms and particularly after normalisation for growth in demand"

Figure 10. Compound Annual Growth Rate of the RAB, and normalised for growth in energy delivered and peak demand, from 2005 to 2013[xiii]



[58] A comparison of outcomes delivered by electricity transmission network service providers in the National Electricity Market, EUAA 2012

Load Capex/Load Growth

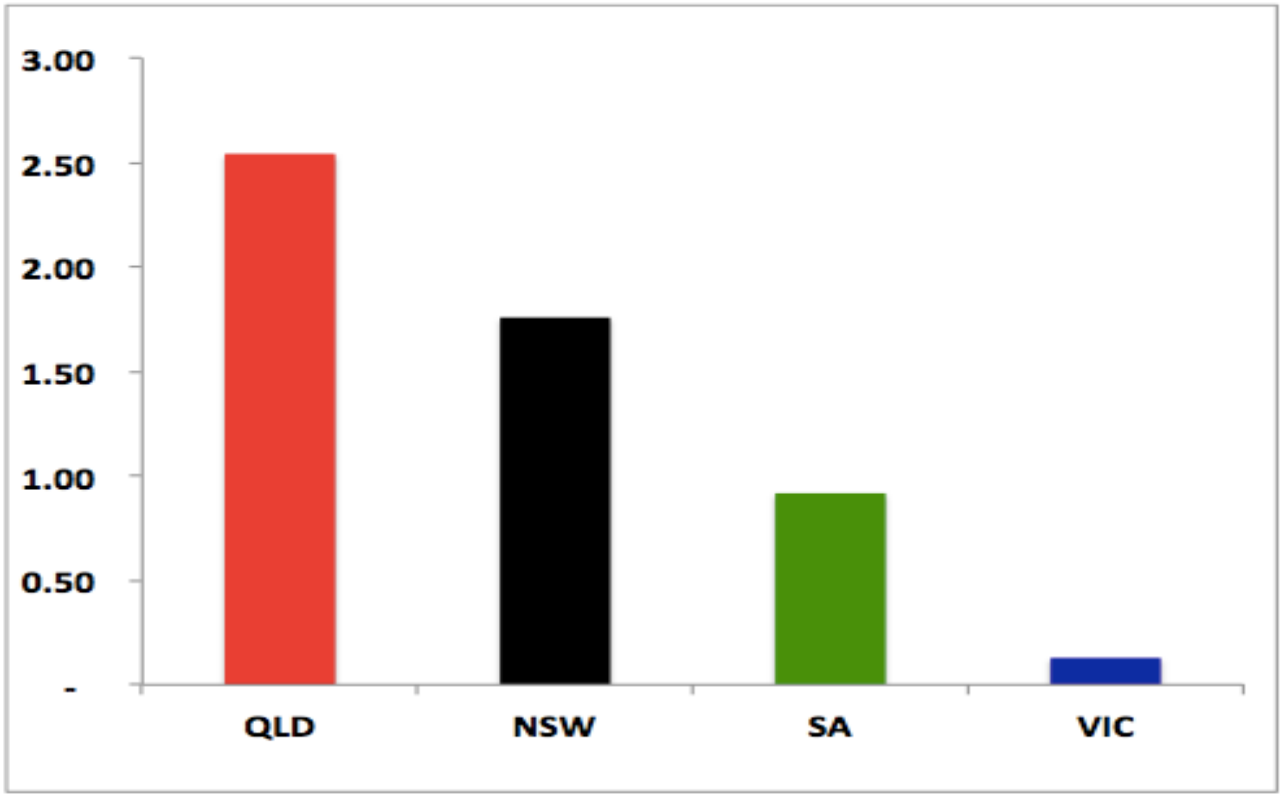
As not all RAB growth is directly related to demand, comparing the ratio of the networks' demand-related capex to their growth in peak demand represents a more accurate analysis of the efficiency of the networks' load driven capex.

The diagram below illustrates the average annual growth-related capex of Australia's transmission networks divided by the average demand growth over the 2005 – 2011 period.

It illustrates that Powerlink incurred significantly higher capex to meet demand growth than the other transmission networks, i.e.:

- Powerlink invested in load capex at over 20 times the rate of SP AusNet
- TransGrid invested in load capex at over 15 times the rate of the SP AusNet
- ElectraNet invested in load capex at 7 times the rate of SP AusNet

Average Annual Load-Driven Capex Divided by Average Annual Demand Growth for Australia's Transmission Networks [59]



[59] A comparison of outcomes delivered by electricity transmission network service providers in the National Electricity Market, EUAA 2012

Powerlink's Systemic Over-Estimation of Demand

A significant part of the explanation of Powerlink's inefficient capex spend is that Powerlink's demand forecasts have been consistently significantly overstated. This has been demonstrated by numerous studies and analyses.

AER Analyses

The AER's Analysis of Powerlink's Over-Forecasting Record

As part of its assessment of Powerlink's 2013-17 revenue proposal, the AER and its consultant (EMCa) performed an analysis that compared Powerlink's previous demand forecasts with its actual demand.

The key findings of that analysis included:

- Powerlink had consistently and systemically materially over-forecasted demand
- Powerlink's actual demand was significantly below its demand forecasts for each year of the previous regulatory period
- Powerlink's previous demand forecasts all commenced with significant first-year step increases followed by high growth paths, each of which had considerably over-estimated the peak demands that actually eventuated
- Powerlink could have deferred at least $700 million of capex over the 2007-12 regulatory period (25 per cent of its total capital expenditure allowances) if it had forecast demand more accurately
- Powerlink could still have met demand in the 2007-12 regulatory period even if its actual demand exceeded its forecasts by up to 450MW, as Powerlink used the 10 per cent PoE forecast for planning purposes
- Despite Powerlink's systemic over-forecasting pattern, the EMCa found no evidence that Powerlink reviewed the accuracy of its past demand forecasts

Powerlink's 2013-17 Demand Forecast

The AER considered that Powerlink's 2013-17 forecasting followed this same pattern of its previous forecasting and that Powerlink had materially overstated its demand forecasts.

Powerlink forecasted an average annual increase in peak demand of 5.1%/annum and an annual growth in energy delivered of 6%/annum over the 2013-17 regulatory period, which it attributed to:

- The resource industry boom (particularly in the Surat Basin);
- Strong population growth;
- Return to pre-GFC economic growth trends; and
- Increased penetration of domestic air conditioning

The AER's consultant (EMCa) identified a number of major deficiencies with Powerlink's demand forecasts, including:

Major Inconsistencies With Demand Trends And The Projections Of Credible Forecasters

Despite all credible forecasters projecting that Queensland's electricity demand and consumption would continue to decline, Powerlink's forecasts assumed a dramatic reversal of the declining demand trend, forecasting a growth in energy consumption of 30 times the trend growth rate of the previous five years.

Non-Credible Population Forecasts

Powerlink's population forecasts were materially higher than all of the other forecasters (including KPMG, the Queensland Treasury, the ABS and EMCa).

Non-Credible Electricity Price Assumptions

Powerlink's demand forecasts assumed significantly lower electricity prices than the forecasts from other sources

Non-Credible Assumptions and Inputs to Powerlink's Demand Forecasting Models

Powerlink's demand forecasts incorporated many non-credible assumptions that "consistently led to an upward bias in Powerlink's demand", e.g.:

- Non credible and unsubstantiated claims regarding future air conditioning load growth
- Major flaws in Powerlink's temperature correction method assumptions
- The use of macroeconomic variables that were consistently "on the upper end of accepted forecast ranges"

Non-Credible Sectoral Growth Assumptions

Powerlink's forecasts incorporated excessive sectoral growth assumptions (e.g. for the commercial sector) that did not reflect the flat economic activity outside of the mining sector

Stakeholders' Reponses To Powerlink's 2013-17 Demand Forecasts

The AER received detailed submissions from a number of stakeholders that outlined that Powerlink's demand growth projections were not credible and completely at odds with recent trends and the forecasts of all credible forecasters. [60]

The Australian Energy Market Operator (AEMO) stated that Powerlink's energy and demand projections had been consistently high and that Queensland's demand could be 620MW lower than Powerlink's 2011 demand forecast.

[60] See for example:
EUAA Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
Wesfarmers' Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
The Energy Consumers Group (the Group) Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision
TEC Submissions to Powerlink's Revenue Proposal, the AER's Draft Decision and Powerlink's Revised Revenue Proposal
PAGE Submissions to Powerlink's Revenue Proposal and the AER's Draft Decision

It is important to note that Powerlink's 2013-17 revenue proposal was submitted at a time when all credible independent forecasters had firmly concluded that the recent flat/declining load trends would continue.

For example, the Ross Garnaut report published 14 months before Powerlink's 2012-17 revenue determination outlined why the flat/declining load trends would continue in future, including: [61]

- Consumers moderating their electricity usage due to higher prices
- The impacts of energy efficiency measures
- The increasing penetration of solar PV

Powerlink's Response To Stakeholders' Critiques

Powerlink responded aggressively to the above critiques.

Powerlink's Revised Revenue Proposal included a 30-page challenge supplemented with an 85-page consultant report (from ACIL Tasman) that attempted to refute the stakeholders' critiques.

Powerlink's responses included many unsubstantiated claims and assertions, including:

Claims That Past Trends Were Not Reflective Of Powerlink's Future Load Expectations

The thrust of Powerlink's argument was that the recent demand decline was due to the GFC and the Queensland floods; and that demand would dramatically reverse to record high growth levels over the next regulatory period.

However, as noted by the AER, Powerlink had consistently over-forecast demand for several years prior to the GFC.

Non-Credible Claims Regarding The Impact Of Energy Efficiency Measures

Powerlink made a number of non-credible claims that attempted to downplay the impact of energy efficiency measures – e.g. claiming that energy efficiency responses "will have a negligible impact on peak electricity demand". As outlined by various stakeholders' submissions, such claims were contrary to proven research and to simple logic. [62]

Unsubstantiated Claims Regarding The Price Elasticity Of Demand

Powerlink's response included non-credible and unsubstantiated claims that attempted to refute EMCa's analysis regarding the price elasticity of demand

Criticisms of EMCa's Forecasting Methodology

Powerlink provided an extremely critical assessment of EMCa's forecasting methodology providing a "scorecard table" that essentially asserted that EMCa's forecasting methodology was negligent and did not meet the basic expectations of credible forecasting practices.

[61] The Garnaut Review Update Paper 8: Transforming the Electricity Sector. Garnaut R. (2011)

[62] See for example the submissions by the Total Environment Centre (TEC)

Non-Credible Claims Regarding An Anticipated Booming Queensland Economy

In response to the AER's draft decision, Powerlink's CEO stated: [63]

"Powerlink has significant concerns with the AER's draft determination"

"The AER's consultants had failed to factor in readily available economic growth indicators into their forecasts, including the flow-on effects of the booming resources sector in Queensland".

"Powerlink will be urging the AER to recognise that Queensland is on the edge of unprecedented expansion in this state."

Powerlink's Actual 2013-17 Demand

The AER made some adjustments to Powerlink's 2013-17 demand forecasts.

The table below outlines the differences between Powerlink and the AER's 2013/14 peak demand forecasts and the actual peak demand that eventuated - i.e. the differences that eventuated just two years into the current regulatory period.

	2013/14 Medium Forecast (MW)	**2013/14 Actual Peak Demand (MW)**	**Difference**
Revenue Proposal			
10% POE	10,907	7,500	45% over estimate
50% POE	10,500	7,500	40% over estimate
Draft Decision			
10% POE	10,090	7,500	35% over estimate
50% POE	-	7,500	-
Revised Revenue Proposal			
10% POE	10,443	7,500	39% over estimate
50% POE	9,962	7,500	33% over estimate
Final Decision			
10% POE	9,871	7,500	32% over estimate
50% POE	9,500	7,500	27% over estimate

The above table highlights that:

- Powerlink's original (50% POE) demand forecast was 40% higher than its actual peak demand
- The AER's final decision capex allowances were based on an assumed (50% POE) demand forecast that was 27% above Powerlink's actual peak demand

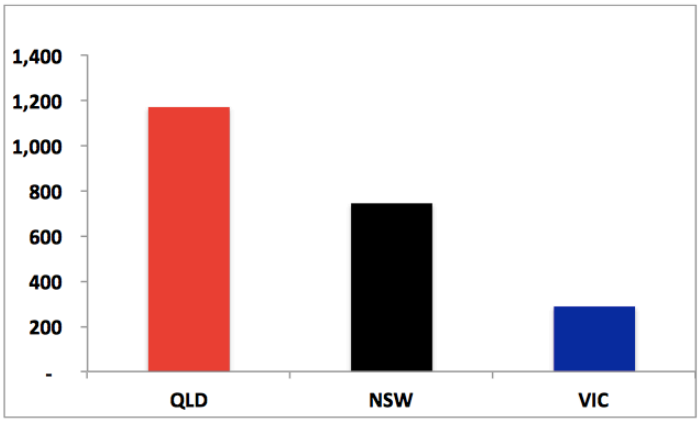
[63] "Electricity bills up in Queensland because of Powerlink overspend", Courier Mail Article, 5th Dec, 20111

It is very important to note that Powerlink was **rewarded** with 'windfall profits' of around $300 million for those "forecasting errors", as its revenue allowances included returns on capital for forecast capex that it did not incur.

EUAA Study into Powerlink's Demand Forecasting Record

The above findings were reinforced by the EUAA study into the demand forecasting records of Australia's transmission networks. As highlighted in the chart below (from that report), the EUAA study identified that over the 2006-2012 period, Powerlink's level of over-forecasting was four times higher than the Victorian over-forecasting level.

Figure 17. Average annual difference between projected and actual peak demand (MW) over the period from 2006/2007 to 2011/2012



IRP Review Findings Regarding Powerlink's Demand Forecasting Record

Powerlink's track record of consistently over-estimating its demand forecasts was also identified by the Queensland Government Independent Review Panel on Network Costs, which stated that: [64]

"Another factor contributing to the escalation in capital programs has been the ***consistent over-estimation of demand by the NSPs***

"*The Panel also notes that the current* ***revenue cap control mechanism places volume risk on customers****"*

"Where demand is over-estimated, capital programs will be excess to requirements and ***network tariffs to customers will increase during the regulatory control period to ensure the NSPs are able to recover the allowable revenue"***

It is clear from Powerlink's $175 million load capex spend in the first year of the current regulatory period (2012/13) and from its public statements at that time, that Powerlink was intending to fully spend its load capex allowance for the period, until it was directed by the Queensland government not to do so following the release of the highly scathing IRP review report in May 2013

It is also important to note that Powerlink had proposed a total load capex allowance of over 7 times its actual spend during the period

[64] Queensland Government Independent Review Panel (IRP) on Network Costs, Final Report

Powerlink's Influence Over ElectraNet's Efficiency

Whilst the EUAA's previous study into the relative efficiencies of the NEM distributors [65] concluded that the privately owned distribution networks in Victoria and South Australia were much more efficient than the government owned distributors in the other states, the EUAA's equivalent study into the transmission networks' relative efficiencies did not reach the same conclusion.

Rather, the transmission study concluded that the privately owned South Australian transmission network (ElectraNet) incurred capital additions at rates closer to the government owned transmission networks.

The EUAA study concluded that this was due to Powerlink's controlling influence over ElectraNet, as ElectraNet's largest shareholder, asserting that ElectraNet was not subjected to the incentives and disciplines associated with a privately owned utility. [66]

Consequently, it appears that Powerlink's influence and control over ElectraNet resulted in a reduction in the benchmark efficient level of the transmission network sector.

Queensland Government Independent Review Panel On Network Costs

The *Queensland Government Independent Review Panel (IRP) on Network Costs* [67] outlined major issues with the very poor capital and operational productivity of the Queensland electricity networks (Powerlink Queensland, Energex and Ergon Energy).

The IRP's key findings in relation to Powerlink's capital productivity included:

- *"An industry engineering **culture biased toward expanding the network infrastructure and enlarging the capital base** of the NSPs - **driving inefficient expenditure**"*
- *"A **deficient commercial model** in that there was **no rigorous capital rationing** by the Government, as shareholder and provider of capital, to guide investment decisions"*
- *"A **regulatory model that does not allow** the Australian Energy Regulator (AER) to drive **the networks to deliver efficient capital** and operating programs"*

[65] Australia's rising prices and declining productivity: the contribution of its electricity distributors, EUAA, 2011

[66] A comparison of outcomes delivered by electricity transmission network service providers in the National Electricity Market, EUAA 2012

[67] Queensland Government Independent Review Panel (IRP) on Network Costs, Final Report

Exogenous Factors Do Not Explain The Networks' Different Investment Levels

Numerous studies have been performed into the different capital investment levels of Australia's electricity networks. [68]

All of those studies have firmly concluded that exogenous factors do not explain the dramatic differences in the networks' investment levels.

Rather, they identified that the networks' ownership structure (i.e. whether the network is controlled by public or private owners) is the most significant driver of the networks' investment levels. [69]

SP AusNet's Perspectives

The above conclusions are strongly supported by the Victorian privately-owned transmission business - SP AusNet, and by the joint submission by the six Victorian transmission and distribution networks to the *Senate inquiry Into The Performance and Management of Electricity Network Companies.* [70]

In his presentation of evidence to the Senate Inquiry, AusNet's General Manager, Asset Management, asserted that:

We have controlled our costs much more effectively than the government owned networks

"When you compare us to New South Wales and Queensland, in particular, you just do not see the same increases in price that we have seen there"

"Here, our share of the electricity bill is about 23 per cent. In New South Wales and Queensland, it is between 40 and 50 per cent. It is materially different. I heard some commentary from one of your previous witnesses that there is no point just looking at network prices; you have to look at the overall retail price. But I think that dodges the key issue, which is that we have done a better job of low network prices."

"If we then look at some work that Ernst & Young did, our average residential customer costs went down by 18 per cent between 1996 and 2013—so down by 18 per cent. In Queensland they went up by 140 per cent and in New South Wales they went up by 122 per cent, so it is materially different"

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[68] For example:
Senate Inquiry Into The Performance and Management of Electricity Network Companies, June 2015
Electricity Network Regulatory Frameworks: Productivity Commission Inquiry Report, 9 April 2013
Senate Select Committee on Electricity Prices: Reducing Energy Bills and Improving Efficiency, Independent Review Panel, Electricity Network Costs, Final Report, November 2012
Queensland Government Independent Review Panel (IRP) on Network Costs, Final Report, 2013
A comparison of outcomes delivered by electricity transmission network service providers in the NEM, EUAA, 2012
Australia's rising prices and declining productivity: the contribution of its electricity distributors, EUAA, 2011
Shock to the system: Dealing with falling electricity demand, Grattan Institute, December 2013
Putting the customer back in front: How to make electricity cheaper. Grattan Institute, December 2012
The Garnaut Climate Change Review Update, Paper 8: Transforming the Electricity Sector, 2011
PIAC: Privatisation and the regulatory valuation of electricity distribution network service providers in New South Wales: Evidence and Issues - a report for the Public Interest Advocacy Centre, CME, October 2014
Write-downs to address the stranded assets of electricity networks in the National Electricity Market: evidence and issues, CME, April 2015

[69] As outlined in section 6.3.4, the issue of "control" is important as the EUAA 2012 study considered that Powerlink Queensland's "control" over ElectraNet resulted in ElectraNet not being subjected to the incentives and disciplines associated with a privately owned utility

[70] Submission to the Senate Select Committee Inquiry into the performance and management of electricity network companies: Victorian Electricity Distribution Businesses, 18th December 2014

We invest less and later than the government owned networks

"So why can we do this? Why are we doing more with less? I think it is just fundamentally because of the ownership structure"

"We aim to spend less to get the same outcomes. We have investors, and I use that term very carefully. We do not have owners; we have investors, and we have investors like superannuation funds and so on, who demand a return from us"

"Our commercial view is that, while there is potentially an incentive to increase your RAB—to increase your asset base—we make more money by responding to the AER's efficiency incentive schemes"

"So we do better by spending less. We do better over the long run by spending less, by finding cheaper alternatives to deliver good outcomes"

"We only invest if there is not an alternative solution like demand management and if the economic value of the loss of supply outweighs the cost of doing something about it. This means, in practical terms, we invest later than somebody in New South Wales will"

"We are currently doing, as a transmission company, a huge redevelopment of the CBD supply in Melbourne. My guess—it is not accurate—is that we are doing that four or five years later than somebody in New South Wales would do it, and we look at that all the time to check: if we can avoid the investment, we will avoid the investment. It means we have to do some things in terms of contingency plans, but if we can avoid an investment we will"

Our efficiency has been independently verified

"I feel very awkward saying these great things about ourselves. The point here is that this is not our view: it is the Australian Competition and Consumer Commission's view, it is the AER's view, it is the Productivity Commission's view, it is the Energy Users Association of Australia's view, it is the view of Bruce Mountain.

"Person after person looks at this objectively and looks at the data that is before them and finds we are cheaper and more reliable. I put that down to our ownership structure—I am sure there are other aspects, but it is primarily driven by who we are run by and the drive they bring to this"

Conclusions Regarding Powerlink's Capital Efficiency

The key conclusions from the various studies and analyses into the transmission networks' different capital efficiency levels are as follows:

- Powerlink is the most inefficient transmission network in the NEM, by far
- Powerlink is much less efficient than the other transmission networks, demonstrating significantly higher growth in revenues, regulatory asset base, capital and operational expenditure, both in absolute terms and after normalisation for changes in network outputs
- SP AusNet has invested much less and later than Powerlink to achieve the same outcomes
- SP AusNet's efficiency has not been at the expense of safety or reliability