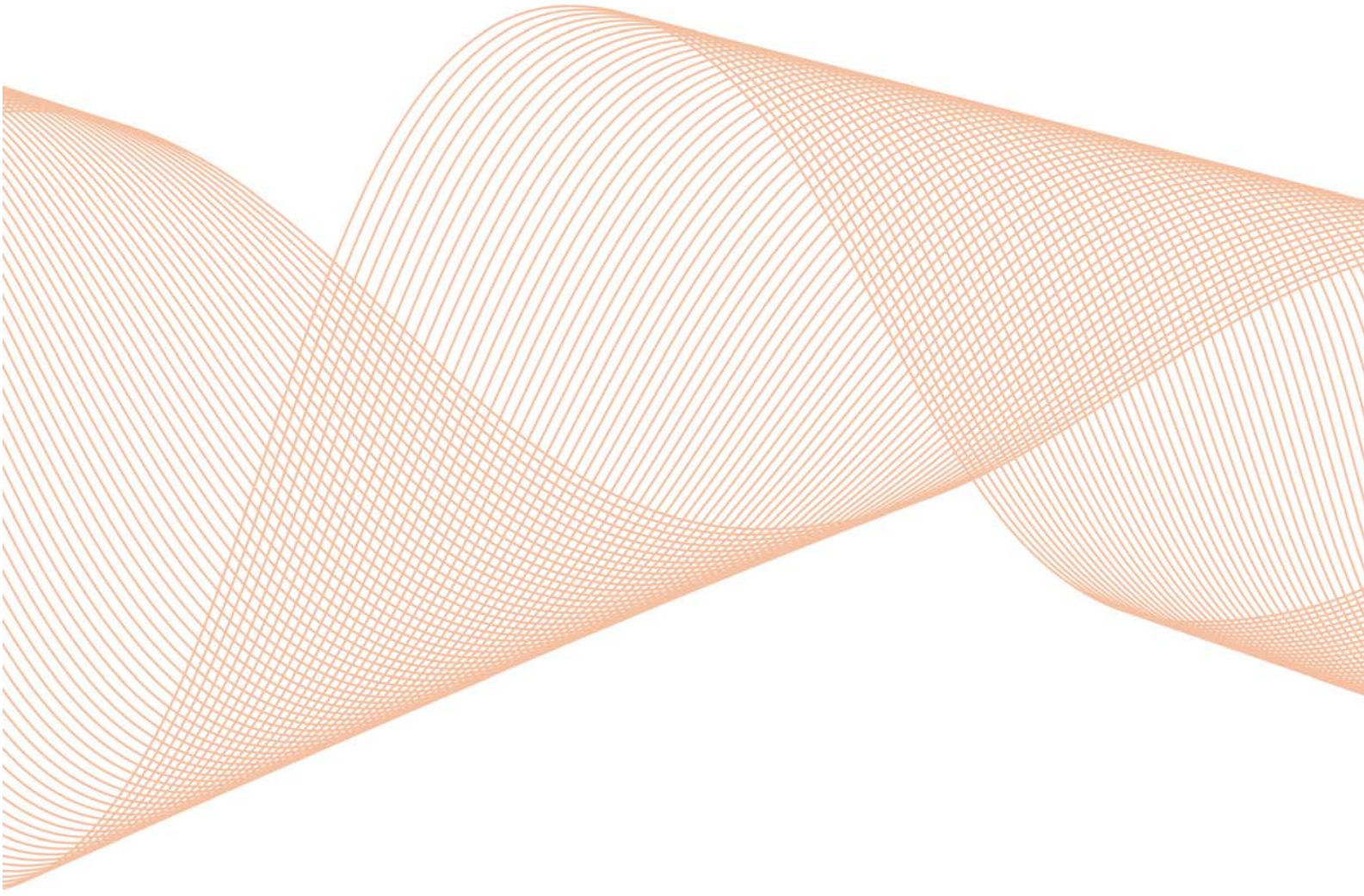
AA2 capital expenditure report

September 2011



DM 8533626

Contents

1 Introduction

This Appendix provides information to support our actual and estimated capital expenditure over the second access arrangement period covering 2009/10 to 2011/12 (AA2) being rolled into the capital base. This is in accordance with the new facilities investment test (NFIT) set out in sections 6.51–6.54 of the Electricity Networks Access Code 2004 (the Access Code). The Appendix includes information about:

- the actual capital expenditure undertaken for the first two years of AA2 (namely 2009/10 and 2010/11) and revised forecasts for 2011/12
- the outcomes associated with these investments over the period
- the reasons for variances between what was assumed in the last review and the actual expenditure
- why we believe the capital expenditure meets the NFIT requirements of the Access Code

1.1 Key messages

- We propose that $1.992 billion of our new facilities investment be added to the capital base for the AA2 period. This reflects:
  - our actual $1.632 billion in new facilities investment in 2009/10 and 2010/11, plus
  - our expected 2011/12 capital expenditure of $931 million, less
  - capital contributions of $569 million and $2.1 million of speculative investment
- In the last review the Economic Regulation Authority (the Authority) accepted a higher level of forecast new facilities investment as being consistent with the Access Code requirements (specifically $2.408 billion for 2009/10 and 2010/11 and a further $1.488 billion in 2011/12)
- The actual expenditure undertaken during AA2 (and forecast to be undertaken in 2011/12) is consistent with the Access Code requirements because:
  - our governance and planning processes supporting the investment decisions and delivery are consistent with good electricity industry practice
  - we have efficiently minimised costs through our approach to cost estimation, our works optimisation process, our procurement practices and competitive tendering of the majority of our expenditure, as well as testing our cost outcomes through benchmarking of building block costs and total capital expenditure
- Our projects and expenditure have also been subject to additional scrutiny as follows:
  - a number of the key capital projects have been reviewed and approved by the Authority consistent with section 6.71(b) of the Access Code
  - it has been subject to additional independent external scrutiny by the Department of Treasury and the Economic and Expenditure Review Committee in the context of considering the need for additional funding

2 AA2 capital expenditure

This section compares the capital expenditure forecasts supported by the Authority in the access arrangement review for the AA2 period with the actual capital expenditure undertaken for the first two years of the AA2 regulatory period (namely 2009/10 and 2010/11) and revised forecasts for 2011/12.

All monetary amounts presented in this Appendix are expressed in real 30 June 2012 dollars and apply to 1 July to 30 June regulatory years unless otherwise stated. Some tables may not add due to rounding.

It is important to recognise the there is substantive scope for subjectivity in investment decision making and the choice, timing, scope and cost of capital expenditure projects will necessarily change from what was assumed at the last review. This was recognised by Professor George Yarrow and Dr Christopher Decker in their review of the Authority's decision on our AA1 investment:

> *Investment decisions are very often subject to considerable uncertainties, and "optimal" courses of action are rarely well defined. There is scope for reasonable, well informed experts to differ on capex questions such as whether, what, on what scale, how, where and when to build new facilities.*[1]

As required by section 4.5.4 of the Authority's Guidelines for Access Arrangement Information, this section explains the key outcomes associated with the AA2 capital expenditure program and the reasons for variances from what was assumed in the last review.

2.1 Background to the AA2 regulatory period

The last access arrangement review process was undertaken against a backdrop of considerable uncertainty. In particular, the impact of the global financial crisis on the local economy caused us to revise our capital expenditure forecasts a number of times during the access arrangement review process. The Authority acknowledged this uncertainty in its final decision. It acknowledged:

> *The economic downturn that has emerged subsequent to Western Power submitting its proposed access arrangement revisions and that may reduce requirements for new facilities investment related to growth in demand for network services.*[2]

Ultimately, the Authority accepted our forecast of the new facilities investment for the AA2 regulatory period of $3.896 billion as being consistent with the Access Code requirements.

After the Authority's final decision, we also faced significant uncertainty in relation to available funding for the forecast work program in 2010/11. The funding provided for in the state budget was less than that required for our investment program as supported by the Authority for the AA2 period. We engaged with the Department of Treasury to obtain the additional funding. This uncertainty resulted in considerable review of the work program and led to delays in many projects and programs.

[1] p.6 Appendix V: AA2 – Report on the ERA's Draft Decision by Professor George Yarrow and Dr Christopher Decker, 1 September 2009.
[2] p210, para 768, *Final Decision on proposed revisions to the Access Arrangement for the South West Interconnected Network,* Authority, 4 December 2009.

Overall our level of capital expenditure during AA2 has been less than assumed by the Authority to set prices. This has reflected:

- the slow down in the approval of major projects due to improvements in our investment decision process and documentation requirements which provided an opportunity to re-visit planned work and efficiently defer several major projects
- a reduction in customer-driven work compared to forecast following the global financial crisis
- a range of efficiency initiatives that have resulted in better value from contractual arrangements, improved delivery mechanisms and market testing to achieve lower input costs
- funding uncertainty which led to additional processes to secure additional funding for some projects
- favourable weather conditions, which contributed to lower levels of failures, overloads and outages, and subsequent remedial activity

Further detail about the actual expenditure undertaken during AA2, the outcomes associated with the AA2 capital expenditure program and the reasons for the variances are provided in the following sections.

2.2 Actual AA2 capital expenditure

In 2009/10 and 2010/11, we invested $1.632 billion in capital expenditure compared to a forecast $2.408 billion (see section 3.7.1 of the AAI for a summary of this expenditure). In 2011/12 we expect to spend an additional $931 million in 2011/12 compared to a forecast $1.488 billion. Figure 1 provides a comparison of our actual expenditure with the forecast for the AA2 period.

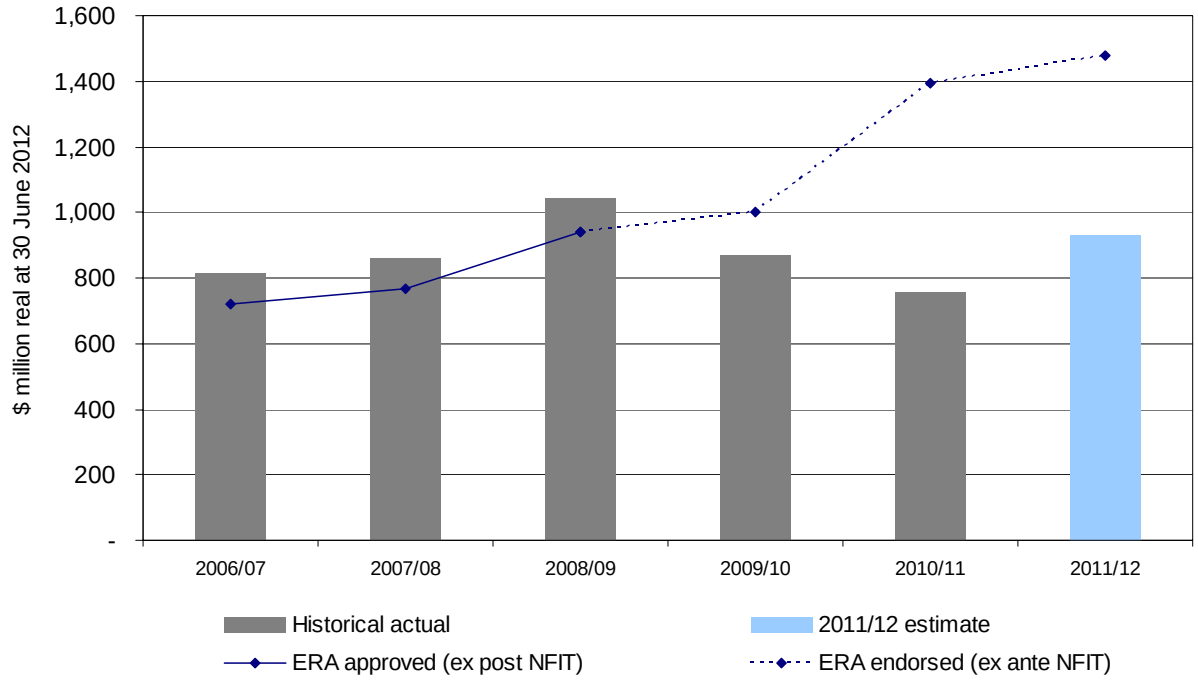


Figure 1: AA2 total capital expenditure – actual compared to forecast

Our capital investment is 34% lower than that supported by the Authority to set prices at the beginning of AA2. The lower level of capital investment in 2009/10 and 2010/11 compared to forecast reflects:

- 63% less transmission capital expenditure than forecast
- 18% less distribution capital expenditure than forecast
- 23% higher corporate capital expenditure than forecast

Importantly, $1.130 billion (or almost 80%) of this reduced investment was in the growth category which is subject to the investment adjustment mechanism. This mechanism ensures that where we do not spend as much as forecast, the revenue associated with this amount is returned to customers in the next access arrangement period. Through this mechanism we will return $41.7 million (in net present value terms as at 30 June 2012) to customers during AA3.[3]

The actual capital investment compared to forecast by regulatory category is provided in Table 1.

Table 1: AA2 total capital expenditure – major capital projects and programs

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Distribution				
Asset replacement and renewal	491.1	467.7	-23.3	-4.8%
Growth	1,260.0	1,020.1	-239.9	-19.0%
Compliance	276.2	217.1	-59.1	-21.4%
Improvement in service	122.8	57.8	-65.0	-53.0%
Distribution total	**2,150.1**	**1,762.7**	**-387.4**	**-18.0%**
Transmission				
Asset replacement and renewal	86.3	60.3	-25.9	-30.1%
Growth	1,332.9	442.5	-890.3	-66.8%
Compliance	102.0	47.9	-54.1	-53.1%
Improvement in service	48.8	33.5	-15.3	-31.4%
Transmission total	**1,570.0**	**584.2**	**-985.8**	**-62.8%**
Corporate total	**176.0**	**216.3**	**40.4**	**22.9%**
AA2 total capital expenditure	**3,896.0**	**2,563.3**	**-1,332.8**	**-34.2%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

In AA2 we will complete over 650 individual capital projects and programs totalling $2.563 billion. These projects covered $1.763 billion of distribution works, $584 million of transmission works and a further $216 million of corporate capital expenditure. The top 30 activities by value are provided at Table 2. These represent 83% of our total investment.

[3] AA3 refers to the access arrangement for the third period, 2012/13 to 2016/17.

Table 2: AA2 total capital expenditure

	Regulatory category	Activity	Actual $ million real at 30 June 2012
Distribution	Customer access	Network extension	326.9
Distribution	Asset replacement	Pole management	247.8
Distribution	Customer access	Customer access	215.2
Transmission	Capacity expansion	Supply	173.6
Transmission	Customer driven	Transmission customer driven	153.0
Distribution	Capacity expansion	HV distribution driven	104.4
Distribution	Regulatory compliance	Bushfire management	100.4
Other	IT	SPOW capex	82.7
Distribution	SUPP	SUPP	81.6
Distribution	Regulatory compliance	Connection management	75.7
Other	Business support	Corporate real estate	68.6
Distribution	Customer access	Subdivision	50.1
Distribution	Metering	Metering	48.3
Distribution	Customer access	Connection	45.4
Distribution	Asset replacement	Conductor management	41.2
Transmission	Capacity expansion	Voltage	37.4
Distribution	Capacity expansion	Overloaded transformers & LV cables - upgrades	29.6
Distribution	Reliability driven	Targeted reliability driven automation	26.6
Other	IT	IT infrastructure	22.3
Distribution	Customer access	Relocation	21.4
Transmission	Customer driven	Transmission line relocations	20.4
Transmission	Capacity expansion	Thermal	20.1
Transmission	Capacity expansion	Midwest project	18.5
Distribution	Smart grid	Smart grid	18.3
Other	Business support	Property, plant & equipment	16.9
Transmission	Asset replacement	Circuit breakers	16.5
Transmission	Regulatory compliance	Pole management	15.6
Distribution	Regulatory compliance	Power quality compliance	15.3
Distribution	Asset replacement	Transmission management	15.1
Other	IT	IT business tactical	13.7
Total			**2,122.6**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

We have confidentially provided the Authority with complete business cases for our largest individual, recurrent programs of work namely pole management and bushfire management. These provide examples of the processes and documentation required to support our investment decisions and how we have demonstrated compliance with NFIT.

The activities in Table 2 that are larger in value (capacity expansion, customer access, customer driven) include a large number of discrete customer or growth driven projects rather than a single program of work. Further information associated with these and other activities can be provided to the Authority on a confidential basis.

2.3 Outcomes from AA2 capital expenditure program

Despite the lower level of capital expenditure, we have delivered a number of significant outcomes during the period. The following sections describe the outcomes that we have achieved over the AA2 access arrangement period as a result of our capital investment in AA2.

Further detail about the major variances for the AA2 access arrangement period by regulatory category for both growth and non-growth related capital investment is provided at Appendix B.2: AA2 project and program list and variance analysis.

2.3.1 Transmission outcomes

In AA2, we invested $443 million in transmission growth projects to expand the capacity of the transmission network to meet growth in demand and connect new customers. This represented 76% of total AA2 transmission capital investment.

In particular, over the AA2 period we:

- connected major customers including the Binningup Desalination Plant, Collgar Wind Farm, the Water Corporation's Ravenswood pumping station and Western Energy's Kwinana Power Station
- completed construction of new substations including Hazelmere, Joondalup, Maddington, Wangara and Willetton
- converted Sawyers Valley and Cottesloe zone substations from 66 kV to 132 kV
- converted the Wembley Downs 6.6 kV distribution network to 11 kV
- completed the cut-in for Southern River on the Southern Terminal – Wagerup / Alcoa-Pinjarra 132 kV line
- installed a 200 MVAR static var compensator at Southern Terminal
- established a new terminal substation at Neerabup
- installed an additional 330/132kV power transformer at Kwinana Switchyard
- installed additional power transformers at Chapman, Kewdale, Kalamunda, Malaga, Meadow Springs, Medina, Muchea, Murdoch, North Perth, O'Connor, Piccadilly, Pinjarra, Rangeway, Rivervale and Waikiki zone substations
- purchased land for Gelorup, Hadfields and Henderson zone substations

The $890 million (67%) lower than forecast transmission growth investment was primarily attributed to uncertainty around funding and the subsequent review that reallocated available capital to areas of highest public safety or network risk. Through this process we also identified projects that could be deferred efficiently, and new opportunities to bundle compliance work at substations and deliver the same work for less.

In AA2, we also invested $142 million in transmission non-growth activities, which represented the remaining 24% of total transmission capital investment. This investment has generally related to maintaining the provision of covered services to existing customers to ensure the ongoing safe and reliable operation of transmission assets. The reductions in this category were due to a combination of efficient deferral opportunities and efficiencies in delivering the work.

Our AA2 transmission non growth capital expenditure delivered the following outcomes:

- replaced 821 and reinforced 1217 transmission poles in accordance with EnergySafety Order (01-2009)
- replaced power transformers at Tate St substation, Collier substation to alleviate capacity constraints, prevent catastrophic failure from poor asset condition and meet noise regulations
- replaced 117 obsolete line protection relays, 73 obsolete feeder (and other) over-current protection relays and 58 poor condition battery banks in zone and terminal substations
- constructed new pole foundations or poles for river crossings to reduce the risk of public safety incidents from low hanging conductors, in accordance with Energy*Safety*'s Code of Practice[4] and Australian Standards[5]
- undertook noise mitigation works at Herdsman Parade, Manning and University substations
- replaced[6] radio equipment on the Dampier to Bunbury Natural Gas pipeline microwave radio system, from Geraldton to East Perth Control Centre
- upgraded the security, performance and capacity of the XA/21 Master Station, which provides mission-critical operation and management of the transmission network, including outage and fault management
- introduced the smart planning program, which has delivered efficiency savings across maintenance and capital replacement programs by coordinating planned outages on primary plant
- undertook expenditure to comply with a number of new environmental obligations including installing substation transformer bunds at a number of substation sites
- undertook expenditure to comply and better manage assets containing potentially toxic substances (such as polychlorinated biphenyl or PCB)

2.3.2 Distribution outcomes

In AA2, we invested $1.020 billion on distribution growth projects to expand the capacity of the distribution network to meet growth in demand and connect new customers. This represented 58% of the total investment in distribution capital activities.

We completed a number of large distribution growth related projects and programs over AA2 including:

- the connection of 76,913 new customers to the distribution network
- installed new capacity and connection points to 549 schools to facilitate the Government driven 'Building the Education Revolution' program
- replaced 412 overloaded distribution transformers

[4] Power Line Crossings of Navigable Waterways in Western Australia Code of Practice
[5] AS 6947 – 2009: Crossing of Waterways by Electricity Infrastructure
[6] Project to be completed December 2011

- constructed 83 new feeders to connect distribution-connected customers and provide sufficient capacity to increase maximum demand
- undertook distribution works to support augmentations on the transmission network including for 6 new substations and installation of 19 power transformers (see section 2.3.1 for major transmission augmentations)
- ongoing conversion of Rivervale and Victoria Park distribution systems from 6.6 kV to 22 kV to address peak loads that were exceeding equipment ratings and insufficient distribution transfer capacity
- installed voltage regulators to mitigate against distribution voltage constraints in Beverly, Boyup, Corrigin, Jurien Bay, Kojonup, Lancelin, Lake Grace, Narembeen and Yanchep

In AA2, we invested the remaining 42% or $743 million on distribution non-growth activities. The reduction in investment comprised a combination of efficiency initiatives including more efficient work bundling practices and revised asset management practices and efficient deferral. Through our AA2 expenditure on distribution non-growth activities we have:

- reduced distribution network related safety, supply and asset risk through significant investment in bushfire mitigation programs
- replaced 116,832 overhead service connections to reduce the safety risk to the public from electric shocks
- completed SUPP projects in:
    - the southern metro locations: Como East, Maddington, Mt Pleasant North, Wilson West, Attadale South, Bentley East
    - rural locations: Palm Beach
- connected 76,913 new customers with 53,839 single phase meters and 23,074 three phase meters
- replaced 373 km of deteriorated overhead lines, reducing the number of unassisted wires down
- commenced smart grid pilot program
- restored reliable supply to Ellenbrook following termite damage to cables
- achieved operational efficiencies that have allowed us to address the backlog of power quality works and reduce times for delivering these projects, leading to a reduction in the number of power quality related complaints

2.3.3 Corporate outcomes

We invested $216 million in AA2 on corporate support activities. This largely comprised two major initiatives that will continue into AA3:

- $119 million for improving the capabilities of our IT network through our enterprise systems transformation initiatives that will:
    - develop and maintain asset & works management systems to meet specific corporate targets such as works program delivery, including automation of the works program governance model
    - develop and maintain metering management systems to enable compliance against the Electricity Industry Metering Code 2005
    - maintain core systems at vendor supported levels and infrastructure within industry accepted tolerances for age and capacity

  - complete initiatives to improve business performance and reduce business risk from legacy or outdated systems
- $98 million to refurbish and upgrade the following buildings, offices and depots:
  - head office levels 3, 4, 5 and 6, including the removal of asbestos and the upgrade of infrastructure and amenities – this has provided upgraded accommodation for around 725 staff and has increased our seating capacity
  - Ewing Street Bentley and Kewdale – providing upgraded office facilities for approximately 500 staff and has increased our seating capacity
  - Narrogin, Bridgetown and Margaret River depots – including the construction of a new workshops, stores areas, a truck port and vehicle washdown facilities (in order to comply with legislative requirements and meet the operational needs of the business)
  - Kalgoorlie and Kondininan employee accommodation

2.3.4 Variances in growth-related capital expenditure

The biggest driver of our lower level of investment during the AA2 access arrangement period was a lower level of expenditure on growth-related projects, particularly capacity expansion projects. Of the growth-related variance, 86% can be attributed to capacity expansion and 7% to customer driven works.

As Table 3 shows, we spent $1.130 billion less than forecast on growth-related capital investments. This accounted for almost 85% of the total variance in total capital expenditure.

Table 3: AA2 growth related capital expenditure – actual compared to forecast

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Distribution				
Capacity expansion	310.6	156.3	-154.3	-49.7%
Customer driven	664.9	659.0	-5.9	-0.9%
Gifted assets	284.5	204.8	-79.7	-28.0%
Distribution total	**1,260.0**	**1,020.1**	**-239.9**	**-19%**
Transmission				
Capacity expansion	1,084.4	266.1	-818.3	-75.5%
Customer driven	248.4	174,830	-73.6	-29.6%
Gifted assets	-	1,578	1,578	100%
Transmission total	**1,332.9**	**442.5**	**-890.3**	**-66.8%**
Growth total	**2,592.9**	**1,462.6**	**-1,130.3**	**-43.6%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

Consequent upon the funding uncertainty, we initiated a review of our transmission network planning processes. Improvements in our investment decision process, documentation requirements and the network planning process contributed to deferral of a number of transmission capacity expansion projects and a slow down in the approval of major projects.

Customer-driven transmission works typically fluctuate with customer needs and timeframes. During AA2, the global financial crisis caused the number of new transmission applications to drop below AA1 levels in 2009/10, before picking up in 2010/11. However, even in 2010/11,

a number of transmission projects have been deferred or cancelled by customers. Despite this, we now have a record number of major load and generator connection applications.

It is important to recognise that under the investment adjustment mechanism the difference in financing costs between forecast and actual growth-related investment for AA2 ($41.7 million in net present value terms as at 30 June 2012) is returned to customers in AA3. This ensures that customers do not pay for growth-related capital expenditure that does not occur. Nevertheless, the major programs contributing to this variance are discussed further in Appendix B.2: AA2 project and program list and variance analysis.

2.3.5 Variances in non-growth-related capital expenditure

Over AA2, we spent $243 million or 22% less than forecast in non-growth capital expenditure (see Table 4).

Table 4: AA2 non-growth-related capital expenditure – actual compared to forecast

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Distribution				
Asset replacement	491.1	467.7	-23.3	-4.8%
Compliance	276.2	217.1	-59.1	-21.4%
Improvement in service	122.8	57.8	-65.0	-53.0%
Distribution total	**890.1**	**742.6**	**-147.5**	**-16.6%**
Transmission				
Asset replacement	86.3	60.3	-25.9	-30.1%
Compliance	102.0	47.9	54.1	-53.1%
Improvement in service	48.8	33.5	-15.3	-31.4%
Transmission total	**237.1**	**141.7**	**-95.4**	**-40.2%**
Non-growth total	**1,127.2**	**884.3**	**-242.9**	**-21.5%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

The major programs contributing to this variance are discussed further below. Additional detail regarding the reasons for variance by each major project or program of capital expenditure in AA2 is provided in Appendix B.2: AA2 project and program list and variance analysis.

Asset replacement and renewal

In AA2 we spent a total of $49 million less than forecast in asset replacement and renewal. This represented less than 5% variance for distribution asset replacement and renewal and 30% variance on transmission asset replacement and renewal (see Table 5).

Table 5: AA2 Asset replacement and renewal – actual compared to forecast

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Distribution				
Asset replacement and renewal	342.4	319.4	-23.0	-6.7%
Metering	39.7	48.3	8.7	21.8%
Smart grid	45.4	18.3	-27.1	-59.6%
SUPP	63.6	81.6	18.0	28.3%
Distribution asset replacement and renewal	**491.1**	**467.7**	**-23.3**	**-4.8%**
Transmission				
Transmission asset replacement and renewal	**86.3**	**60.3**	**-25.9**	**-30.1%**
Total asset replacement and renewal	**577.4**	**528.1**	**-49.3**	**8.5%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

The majority of this variance related to the $27 million lower than forecast expenditure for smart grid. We deferred this project to undertake further investigation of the costs and benefits of committing to this program of work (including consulting with stakeholders), utilise the information from our trial programs and learn from the experiences in other jurisdictions. We did not wish to commit to a solution unless we could be sure that it was robust and would efficiently and effectively deliver benefits and be compatible with future technologies. We now have better information to support decisions for this program without putting at risk our ability to comply with our requirements to replace non-compliant meters. Our smart grid proposal for AA3 is outlined in Appendix R: Smart grid proposal.

We also deferred $12 million of distribution switches-disconnector replacement works and saved $26 million as a result of our improved delivery efficiency through the smart planning initiative, by utilising materials procured in previous periods and as a result of replacing lower voltage units than expected.

Through the AA2 period, we also revised our 'on the ground' asset management approach for a number of assets to efficiently minimise costs:

- changing our maintenance management strategy to a reactive replacement strategy for our surge arrestors
- adopting a more proactive maintenance strategy for ground mounted switchgear to defer costly replacement expenditure

As a result we achieved $5 million in cost savings by minimising the full replacements of our substation equipment.

This was partially offset by:

- an $18 million higher than forecast spend on our State Underground Power Program due to the commencement of round five of the program in 2011/12
- a $9 million higher than forecast spend on metering due to an increased number of requests for new and replacement meters. This resulted in an additional 8,000 meters to be installed in 2010/11

Improvement in service

In AA2, we spent a total of $80 million less than forecast in the improvement in service regulatory category (see Table 6).

Table 6: AA2 Improvement in service – actual compared to forecast

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Distribution				
Reliability driven	95.3	38.6	-56.7	-59.5%
SCADA and communications	18.8	10.8	-8.1	-42.8%
RPIP	8.7	8.4	-0.3	-3.3%
Distribution improvement in service total	**122.8**	**57.8**	**-65.0**	**-53.0%**
Transmission				
Reliability driven	5.8	3.4	-2.3	-40.5%
SCADA and communications	43.0	30.0	-13.0	-30.2%
Transmission improvement in service total	**48.8**	**33.5**	**-15.3**	**-31.4%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

Given the funding uncertainty, we reassessed the need for some of the works and decided not to proceed with $59 million of reliability driven works given we were already expecting to meet the service standard benchmarks.

We also deferred $21 million of SCADA and communications projects due to uncertainty about the future state of the communications infrastructure. We considered it prudent to delay a number of our SCADA and communications asset replacement works while we investigated the likely impact of, and opportunities for, optimisation across the SCADA and communications asset base including ways to efficiently integrate solutions with the smart grid programs and national broadband network. A number of projects, including updating our Master Station, were delayed to reduce the likelihood that the assets would not appropriately support related technology solutions.

In addition, a number of costs from external obligations which were allowed for in the forecast expenditure did not eventuate. For example Verve continued to manage Kwinana and Muja substations on behalf of Western Power and telecommunications assets used by Western Power owned by Telstra were not replaced.

Despite the lower level of expenditure, our customers have received improved service throughout AA2 across a broad range of service standard benchmarks, outperforming our targets for distribution reliability, the number of customer connections, street light repair requirements and call centre performance.

Regulatory compliance

In AA2 we spent $113 million less than forecast on capital works driven by the need to comply with our external obligations with respect to our transmission and distribution networks (see Table 7).

Table 7: AA2 Regulatory compliance – actual compared to forecast

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Distribution	276.2	217.1	-59.1	-21.4%
Transmission	102.0	47.9	-54.1	-53.1%
Total regulatory compliance	**378.2**	**265.0**	**-113.2**	**-29.9%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

The majority of the variance can be explained by more efficient delivery of:

- our bushfire mitigation program, resulting in a $22 million cost reduction due to operational efficiencies from work bundling, lower negotiated prices from our distribution delivery partners and a reduced works program flowing from a revised bushfire mitigation strategy
- our transmission transformer compliance works, resulting in a $38 million reduction due to a delay in the noise mitigation, oil bunding and fire wall programs while we investigated alternative technical solutions to reduce the future cost of delivering these programs
- our power quality works by reducing standard timelines, which enabled us to complete outstanding works from previous periods sooner than expected, resulting in the cancellation of $20 million of works. We have also experienced reduced numbers of power quality related complaints

2.3.6 Variances related to corporate expenditure

We spent $40 million more than forecast on corporate support expenditure due to major IT projects and office refurbishment (see Table 8).

Table 8: AA2 Corporate – actual compared to forecast

$ million real at 30 June 2012	Forecast	Actual	$ variance	% variance
Business support	94.3	97.7	3.4	3.6%
IT	81.7	118.7	37.0	45.3%
Corporate	**176.0**	**216.3**	**40.4**	**22.9%**

Note: Total AA2 actual expenditure includes actual expenditure for 2009/10 and 2010/11 and a revised forecast for 2011/12.

An additional $5 million of capital costs associated with IT projects reflected the need to fast track our meter data management system projects to mitigate the risk of not complying with our metering obligations.

In AA2 we have also been integrating our maintenance and IT systems to create a ‘Mobile Workforce Solution’. This will deliver new electronic scheduling, despatch and close-out systems to support asset and works management processes in the field and enhance the capture of timely and accurate asset information. Under the transformation project, we established our ‘Enhanced Planning and Works Management’ program to progressively automate our works program governance, portfolio and project management. Our AA2

expenditure on these programs was $7 million more than forecast to ensure these projects were fully optimised. These projects drive future cost savings and improvements in our data, scheduling and works management.

An additional $22 million in this category was related to our IT infrastructure investment now being recorded as regulated IT capital expenditure and no longer separate and ring fenced from our regulated expenditure. Prior to 2010/11, IT infrastructure costs relating to the disaggregated entities were recovered from those entities and Western Power's costs were charged back to the regulated business through business unit charges. However, we no longer provide IT infrastructure to the disaggregated entities and instead must incur the full amount of these costs.

We incurred an additional $3.4 million on business support costs to bring forward planned works relating to the refurbishment of our head office and depot buildings from AA3 into 2011/12. This will ensure we realise the benefits of improving our staff accommodation sooner and therefore to better position the business to support our planned works in AA3.

3 Consistency with Access Code requirements

As outlined in section 2, the Authority has previously accepted forecasts of new facilities investment of $3.896 billion as being consistent with the new facilities investment test (NFIT) set out in sections 6.51–6.54 of the Access Code.

In making its final decision, the Authority commented that:

> *The Authority accepts that the planning and procurement processes applied by Western Power in development of the forecast of new facilities investment for the second access arrangement period support a view that this forecast is consistent with the requirements of the efficiency test of section 6.52(a) of the Access Code.*[7]

We note that the actual expenditure incurred in AA2 was less than that accepted by the Authority as being consistent with the requirements of the Access Code at the time of its last review.

While the Authority formed this view on an ex-ante basis, we are required to demonstrate that the new facilities investment undertaken in AA2 satisfies the NFIT at the time the expenditure was incurred.

This section sets out how our actual capital expenditure over the AA2 period is consistent with the Access Code.

3.1 Access Code requirements

We are required to include information in our AAI to support our proposal to add new facilities investment undertaken during the current regulatory period to the capital base.

Section 6.51A of the Access Code provides that new facilities investment may be added to the capital base if it passes certain tests namely:

> *6.51A New facilities investment may be added to the capital base if:*
>
> *a) it satisfies the new facilities investment test; or*
>
> *b) the Authority otherwise approves it being added to the capital base if:*
>
> *i. it has been, or is expected to be, the subject of a contribution; and*
>
> *ii. it meets the requirements of section 6.52(a); and*
>
> *iii. the access arrangement contains a mechanism designed to ensure that there is no double recovery of costs as a result of the addition.*

Section 6.52 of the Access Code sets out the new facilities investment test (NFIT), which essentially has two parts which must be met. The first part as follows emphasises the need to efficiently minimise costs:

> *6.52 New facilities investment satisfies the new facilities investment test if:*
>
> *a) the new facilities investment does not exceed the amount that would be invested by a service provider efficiently minimising costs, having regard, without limitation, to:*
>
> *i. whether the new facility exhibits economies of scale or scope and the increments in which capacity can be added; and*
>
> *ii. whether the lowest sustainable cost of providing the covered services forecast to be sold over a reasonable period may require the installation of a new facility with capacity sufficient to meet the forecast sales;*

[7] Economic Regulatory Authority, *Final Decision on Western Power's Proposed Access Arrangement Revisions,* 4 December 2009, p.210.

Section 6.52(b) of the Access Code sets out a number of tests so that new facilities investment may only be added to the capital base if:

> *b) one or more of the following conditions is satisfied:*
>
> *i. either:*
>
> *A. the anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment; or*
>
> *B. if a modified test has been approved under section 6.53 and the new facilities investment is below the test application threshold – the modified test is satisfied;*
>
> *or*
>
> *ii. the new facility provides a net benefit in the covered network over a reasonable period of time that justifies the approval of higher reference tariffs; or*
>
> *iii. the new facility is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services.*

The concepts of 'efficiently minimising costs' and 'good electricity industry practice' are also defined under the Access Code. Efficiently minimising cost is defined as:

> *the service provider incurring no more costs than would be incurred by a prudent service provider, acting efficiently, in accordance with good electricity industry practice, seeking to achieve the lowest sustainable cost of delivering covered services and without reducing service standards below the service standards benchmarks set for each covered service in the access arrangement contract for services.*

Good electricity industry practice is defined as:

> *the exercise of that degree of skill, diligence, prudence and foresight that a skilled and experienced person would reasonably and ordinarily exercise under comparable conditions and circumstances consistent with applicable written laws and statutory instruments and applicable recognised codes, standards and guidelines.*

Taken together these clauses emphasise the need to assess objectively that the capital expenditure undertaken is 'reasonable' and consistent with 'good practice' rather than 'best practice'. This is consistent with the views of Yarrow and Decker, who provided an independent expert opinion on the Authority's ex-post application of NFIT for AA1 capital expenditure. Yarrow and Decker noted that:

> *The wording in the Code in relation to the NFIT at [section] 6.52(a) appears to us to be consistent with the 'reasonableness' standard. Whilst it specifies that investment should not exceed a certain 'amount', the relevant amount is not explicitly defined as, say, the lowest possible cost of providing the new facilities – which might be referred to as 'frontier' cost efficiency, and which is an outcome whose measurement is inherently uncertain, even ex post (….). Rather the 'amount' is defined in terms of what 'would be invested by a service provider efficiently minimising costs'.*[8]

Yarrow and Decker also noted that:

> *The references to a prudent service provider, acting efficiently, in accordance with good (not best possible) practice, seeking to achieve the lowest sustainable cost of delivering covered services individually and collectively point to the assessment of an investment process in the round, based on normal standards of reasonableness and competence.*[9]

[8] p.8 Appendix V: AA2 – Report on the ERA's Draft Decision by Professor George Yarrow and Dr Christopher Decker, 1 September 2009.
[9] Ibid.

Yarrow and Decker's notes on the practices of other comparable regulatory regimes provide an indication as to how an ex-post review of capital expenditure is generally applied:

1. *the normal standard against which actual performance is compared is based on notions of reasonableness rather than best possible practice*
2. *where disallowances (asset write-downs) have been made in other jurisdictions, these tend to be based on findings of substantial failures relating to specific projects*
3. *it is generally recognised that ex post disallowances made in regulatory contexts where there is no source of compensatory payments in the regulatory system (such as a higher allowable return on capital, or capex incentive schemes that provide for the possibility of supernormal returns) are liable to lead to deficient investment incentives and hence to inefficiently low levels of investment*

In demonstrating how our AA2 capital expenditure is consistent with the requirements of section 6.52(a) we have set out in the following sections those aspects of our processes that we have relied upon to make decisions about the capital expenditure undertaken.

We have also set out the relevant tests under section 6.52(b) of the Access Code.

Our assessment is that our AA2 capital expenditure program is consistent with the NFIT requirements and has been added to the capital base. Our assessment is supported by practices elsewhere noted by Yarrow and Decker.

We further note that section 6.54 of the Access Code requires that in applying the NFIT the Authority:

> *Must have regard to whether the new facilities investment was required by a written law or a statutory instrument.*

Section 2.3 of the AAI provides the relevant obligations established through written laws and statutory instruments that activities funded through each regulatory category must comply with. Each business case considers the obligations relevant to the particular project when assessing the need and cost of the work.

3.2 Good electricity industry practice

In Chapter 4, we have outlined in detail some of the key aspects of our governance and planning processes. These include our Network Investment Strategy, load area reports, asset management plans for both transmission and distribution, Works program governance process, Approved Works Program (AWP) and Works Delivery Strategy. Together these key documents frame the processes for the entire planning and delivery of network investment.

In the AA2 Decision, the Authority identified potential inefficiencies resulting from our governance and design processes at that time:

> *…on the basis of available information, the Authority considered that there was evidence to support the view that there were systematic inefficiencies in the design and governance of capital projects in the first access arrangement period and that the entire amount of new facilities investment does not satisfy the efficiency test of section 6.52(a) of the Access Code.*[10]

[10] para 688, *Final Decision on Proposed Revisions to the Access Arrangement for the South West Interconnected Network*, the Authority, 4 December 2009.

We have reviewed our governance and planning processes and have not identified any systemic issues in the investment processes. We did, however, identify opportunities for continuous business improvement, and capitalised on these:

- **refreshed network investment strategy** – we revised the network investment strategy and associated documentation, which provides an overarching strategy for investment in the distribution and transmission network
- **improving the NFIT and regulatory test processes** – we amended our planning processes to document and demonstrate compliance with NFIT
- **enhanced business case program** – we revised the process for developing and approving business cases to require greater documentation of how NFIT compliance is achieved and to ensure more thorough analysis of business expenditure and customer impact
- **development of an options analysis framework** – we created a framework to formalise the methodology for developing, analysing and selecting the most efficient and appropriate options to address network challenges, which includes the revised investment evaluation tool[11]
- **embedding the works program governance model** – we reviewed the process that governs the way the business plans and executes capital projects, capital programs and maintenance programs and reinforced the need to follow a rigorous and documented process for initiating, developing and executing works
- **refreshed asset strategies and asset missions** – we revised the network asset management strategy, incorporating updated plans for asset maintenance and new asset construction. These plans cover the distribution and transmission network, are consistent with the network investment strategy and are complemented by asset strategies that define the capabilities of specific network assets
- **removal of restrictive equipment specifications and development of standard design and guidelines** – we revised a number of standards and guidelines that promote the lowest sustainable cost option. New or revised standards or technical requirements are assessed for efficiency, cost, risk, customer impact and compliance requirement before they are adopted

Evidence of these improvement initiatives is provided in the asset management system discussed in chapter 4 of the AAI, as well as in individual business cases.

The improvements made to our governance and planning processes mean that:

- our capital expenditure for AA2 has been subject to rigorous and robust governance and control processes that ensure compliance with NFIT
- the business has implemented further improvements over the AA2 period to further enhance our ability to efficiently minimise costs, consistent with good electricity industry practice

Key elements of our AA2 planning and governance processes that reflect good electricity industry practice and support NFIT compliant investments are discussed further below and are our:

- strategic direction and asset management decisions
- business case process

[11] The 'Investment Evaluation Tool' supersedes the 'Financial Evaluation Model' as a mandatory accompaniment to all capital project and program business cases. The improved tool allows for modelling and financial analysis of multiple options at a time – a deficiency in the evaluation model that existed in AA1.

- gated works program governance process

Strategic direction and asset management decisions

The strategic plan for 2008–2010 was called *Open.* This plan informed investment decisions made as part of the 2009/10 works program in accordance with four strategic themes:

- operational excellence
- transform the customer experience
- engage with our community
- the green edge

Open was driven by a focus on safety, better reliability and greater efficiency.

After two years of operation, we reviewed this strategic plan to ensure it remained aligned with the objectives of the organisation and any changes to the market and external environment. Subsequently, in February 2010 we launched the *Transform the Core* strategic direction for 2010–2013.

Transform the Core (which supports investment decisions from 2010/11 onwards) introduced the refreshed corporate vision: *by 2020, Western Power is recognised as a world class commercial enterprise, providing sustainable energy connections/transfers and related services*. Importantly, it added a renewed customer focus, challenging the business to improve core activities and customer service to ensure the provision of services was not put at risk in efforts to efficiently minimising costs.

During AA2 we maintained separate asset management plans for the transmission and distribution networks. These described the planned ten-year investment in routine maintenance, condition monitoring and asset replacement, focussing on the performance, condition and future requirements of network assets. They were also informed by our load area reports, which projected the medium-term capacity requirements of network segments. These enable us to undertake capacity planning and help to efficiently minimise costs by coordinating asset augmentation works with other asset management activities for asset renewals and replacements.

Business case process and documentation

The business case process provides a consistent and robust approach to ensure investment is required, efficient and complies with the NFIT.

In December 2009, we reviewed our business case program to strengthen the requirement for, and documentation of, the evidence supporting the compliance with NFIT. Our ‘business as usual’ business case development and approval processes were updated to provide additional guidance on these matters.

We also undertook a desk top review of sample business cases to assist us to identify perceived information gaps and develop templates and prompts to ensure the necessary documentation and evidence is incorporated in our business cases to sufficiently demonstrate NFIT compliance.

The resulting changes to the business case program have increased the rigour of the capital investment decision-making process by standardising the approach to developing business cases and formally building the NFIT evidence into the business case requirement. The program also includes a strict internal approval process; with various levels of delegated financial authority culminating in Board approval for projects valued greater than $15 million.

We have attached a set of documentation associated with two of the largest AA2 capital activities as an example of the new form and content of our business cases.

The business case process as applied during AA2 ensures that, prior to commencement of the execution phase:

- project need and objectives are identified
- options are identified and addressed
- the appropriate option is selected considering:
  - risks
  - economic assessment
  - impact on customers
  - financial impact on Western Power
  - relationships between investment trade-offs
- the selected option efficiently minimises costs

For projects and programs the business case considers the full life-cycle cost. This is converted in to an in-year budget through the annual AWP refresh process.

The business case process ensures that costs are managed as closely as possible to the estimates and varied only through strict change controls. The change control process requires that any change to key assumptions included in the business case during the life of the project (whether due to internal or external factors) are tracked, explained and the impacts assessed. This ensures changes also remain NFIT compliant.

Gated works program governance

Our gated works program governance process has guided capital and operating decisions for capital projects and maintenance programs during AA2. This process follows good electricity industry practice and ensures projects identified through the planning process are managed effectively and efficiently from inception to delivery and post project review.

The works program model is based on the works program life cycle. It includes a collection of sequential project phases common to all projects and programs. The model sets out the steps required to develop, design and deliver projects or programs and is characterised by a six- gate process as shown in Figure 2.

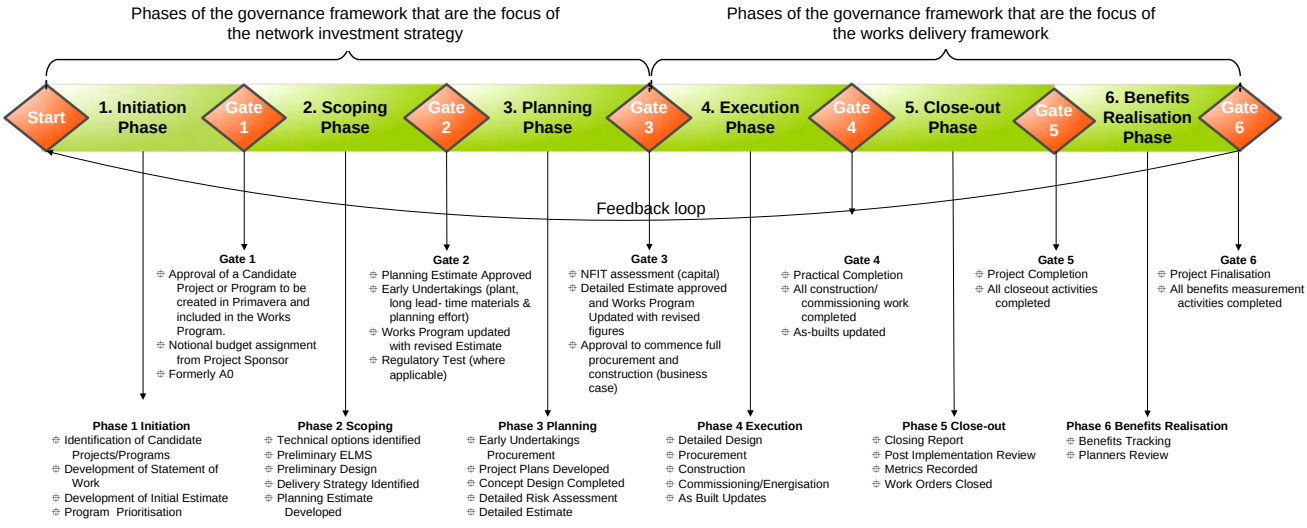


Figure 2: Works program model

The control gates ensure investment options and assessments are undertaken at the appropriate time and that they support the requirements of the Access Code in relation to new facilities investment. This includes requirements to comply with the NFIT at various stages of the works planning process, not just at the early planning stage.

Importantly, the model also requires review and assessment at project completion to capture lessons, confirm objectives have been met, and ensure the contemporary information is fed back into the planning and estimation cycle.

Table 7 in section 4.5.1 of the AAI shows how our various processes and documents link to the works program model phases.

3.3 Efficiently minimising cost

In addition to having robust governance and planning processes that are consistent with good electricity industry practice, we have efficiently minimised costs through our practices of:

- Estimating costs based on most recent information and experience
- Optimising our works program by activity type, geography, and operating and capital expenditure
- Employing prudent procurement practices and competitively tendering the majority of our capital program

We have also tested the outcomes of these processed by benchmarking our total capital expenditure and building block unit rates against our network peers.

3.3.1 Approach to estimating costs

We have adopted a robust approach to estimating costs associated with our capital expenditure program, which includes internal assessment against outcomes and has been reviewed independently and regarded as consistent with good (even best) electricity industry practice.

Western Power's estimating function was significantly improved following an independent review by Tellis Chase in 2007/08.[12] Tellis Chase made a number of recommendations that have been integrated into our approach and supporting our Estimating Centre.

In its final decision for AA2, the Authority noted advice that it had received from Geoff Brown & Associates that indicated:

> *…. that Western Power had implemented substantial improvements to its processes of cost estimation and applied these improved processes to the determination of cost forecasts for the second access arrangement period. The improvements include establishing an estimating centre within Western Power, with an initial focus on expenditure forecasts for the second access arrangement period.*[13]

In 2009 Geoff Brown & Associates conducted a governance review for the Authority and concluded:

> *on the basis of the information provided for this review and our discussions with Western Power staff in April 2009, we are satisfied that Western Power has accepted most, if not all, of the Tellis Chase recommendations and is currently in the process of developing and bedding in estimating procedures based on this report. Should this change process be successful, and we have seen no evidence to indicate that it won't be, we are*

[12] This report has previously been provided to the Authority.
[13] Ibid.

confident that Western Power's cost estimating processes will be commensurate with industry best practice and will lead to significant improvements in expenditure management and control. [14]

Our Estimating Centre is an integral element of our business costing process. The Centre maintains a library database of cost items that are can be customised to be used as individual project details or grouped to reflect larger works. Rather than specifically scoped estimates, the building block estimates provide a standard estimate of costs for common activities that can be used at any time. The Centre undertakes post project reviews and actual cost cross-checks to ensure that our cost estimation remains as accurate as possible.

In August 2011, we engaged SKM to independently benchmark our transmission building blocks. SKM's analysis found that the current building block unit costs – which have been informed by our actual costs incurred for these items during AA2 – are within SKM's view of the reasonable variance band. Figure 3 provides the outcomes of SKM's analysis.

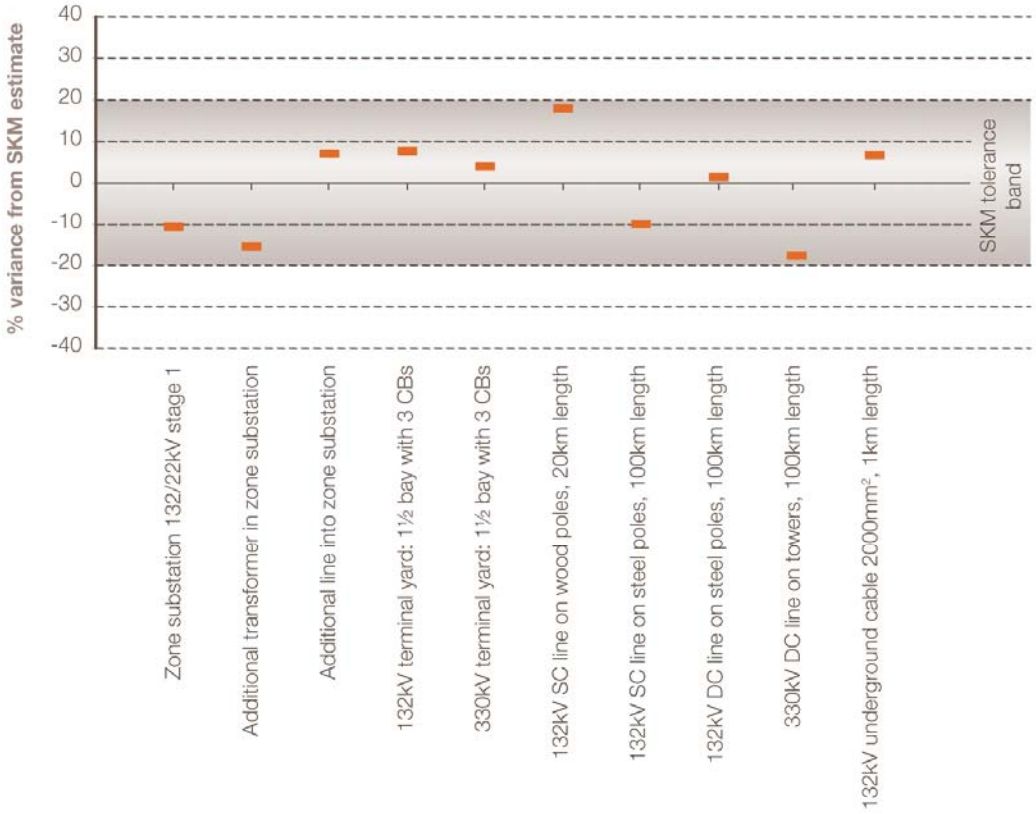


Figure 3: SKM benchmarking outcomes

The Estimating Centre also prepares a model of growth related distribution building block costs which distribution network planners maintain with current actual cost data and use for their project estimating.

Cost estimates of non-growth distribution cost items are available through our distribution delivery partner (DDP) pricing lists. These provide market tested prices for the many high-volume lower cost items that comprise non-growth distribution expenditure. By virtue of

[14] p.8, *Review of Expenditure Governance Western Power*, Geoff Brown & Associated Ltd, prepared for the Authority, 23 June 2009.

being a competitively contracted pricing schedule, these cost estimates provide a high degree of actual cost accuracy and are consistent with efficiently minimising costs.

The changes made over AA2 to our estimating processes have significantly improved our estimating accuracy. Figure 4 shows the variation of actual costs compared to the estimated cost from 2000 to 2010.

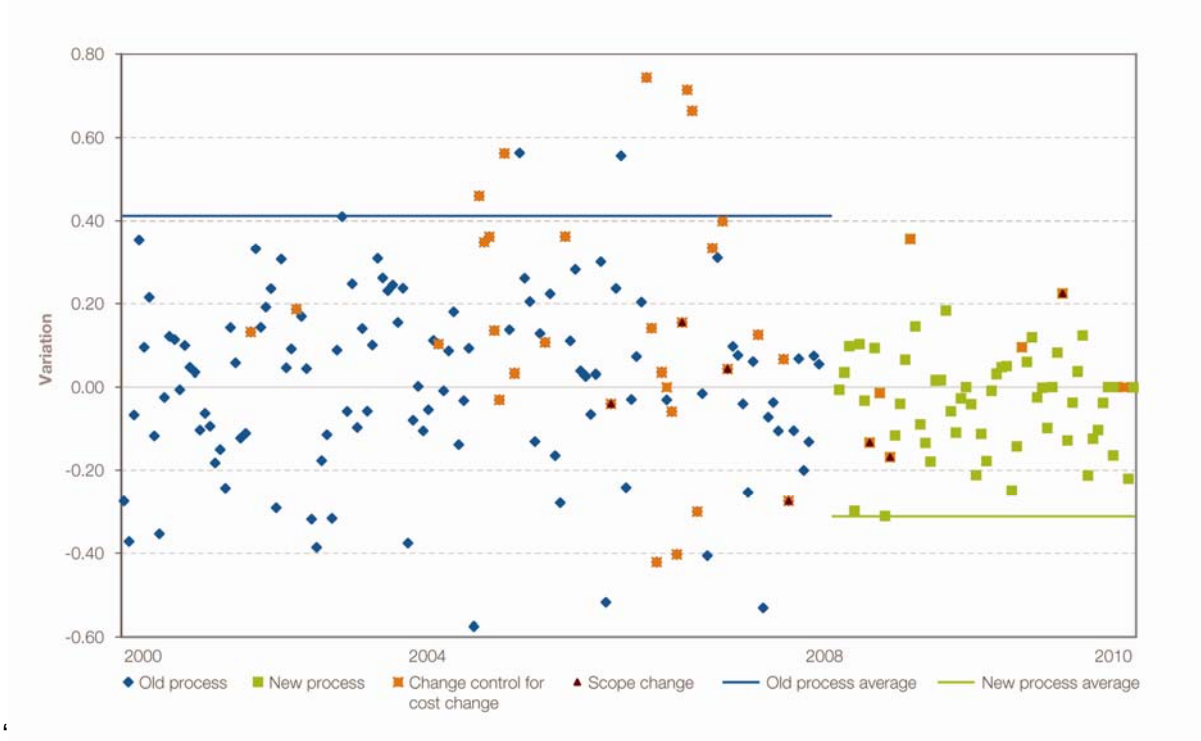


Figure 4: Comparison of actual cost versus estimated cost using old (pre-2008) and revised (2008 – 2010) estimation process

3.3.2 Prudent procurement practices

Our approach to procurement has been an important factor influencing our ability to efficiently minimise costs. Our procurement function has promoted value for money; fair competition; accountability; efficient risk management; and probity and transparency in procurement activities. This reflects an industry-standard approach and has equipped the business to procure required external supplies in an efficient manner reflective of market tested costs.

We have progressively recontested more than 200 standing contracts on a rolling three year cycle. For example, during AA2 we reduced our inventory expenses and working capital requirements by approximately $17 million by improving our inventory practices. In addition, a review of transmission primary plant vendors resulted in a new preferred vendor arrangement for power transformers that will deliver better value for money for the business and is expected to result in significant savings over the AA3 period.

Some key improvements in our procurement practices during AA2 were:

- consolidating the number of authorised procurement officers down from 2,000 to 180
- providing training on the procurement policy to the 180 authorised procurement officers
- reduced supplier administration costs by consolidating our list of suppliers down from 3,800 to around 1,500
- retendering standing contracts and reviewing uncontracted expenditure (such as hardware, padlocks and electricity) to consolidate this into standard contracts where possible and thereby access procurement economies

During October and November 2010 the Office of the Auditor General reviewed the procurement practices of nine state government organisations, including Western Power. The review examined our documentation, records and compliance with our procurement policies. The findings formed the basis of the *Public Sector Performance Report 2011 – Agency compliance with procurement requirements; Managing the Priority Start – building policy (5/2011).*[15] The report noted that:

- no significant issues were identified
- we have similar processes to State Supply, but use tougher thresholds
- we managed procurement strategically to identify all opportunities to get best value for money
- we maintained reasonable probity controls
- we maintained reasonable accountability controls

The report also noted that:

> [Western Power] *recognises the value of such audits and has already implemented operational improvements including changes to its Waiver of Competition process and supplier feedback to improve governance and reduce conflict of interest risk. With regards to Open and Effective Competition* [Western Power] *is pleased that 64 of the 65 procurements audited were examples of good practice and acknowledge the single event was previously raised and responded to in the Office of the Auditor General Management letter 2010. Combining the outcome of the audit findings and these improvements* [Western Power] *is confident that it now would achieve a 'Good' rating across all four relevant lines of inquiry.*[16]

The proportion of our AA2 capital expenditure by procurement method is shown in Figure 5. In AA2, 84% of procurement was contested externally. The distribution delivery partner, preferred vendor, standard contracts and materials were awarded through contestable tenders. Alliance costs are benchmarked against other external and internal projects, and specific key performance indicators drive quality and efficiency. For alliance contracts, the initial tender ensures value for money at the time of tender, and regular price reviews within contract periods maintain competitive tension. Further, remedies for poor performance include work reallocation to more efficient delivery channels or penalties in the contractual incentive mechanism for alliance, where the vendor's profits and overhead costs are at risk. These various delivery channels are detailed at Appendix M: Works Delivery Strategy.

[15] Available at: http://www.audit.wa.gov.au/reports/pdfreports/report2011_05.pdf
[16] page 8, *Public Sector Performance Report 2011, Report 5,* Office of the Auditor General, June 2011

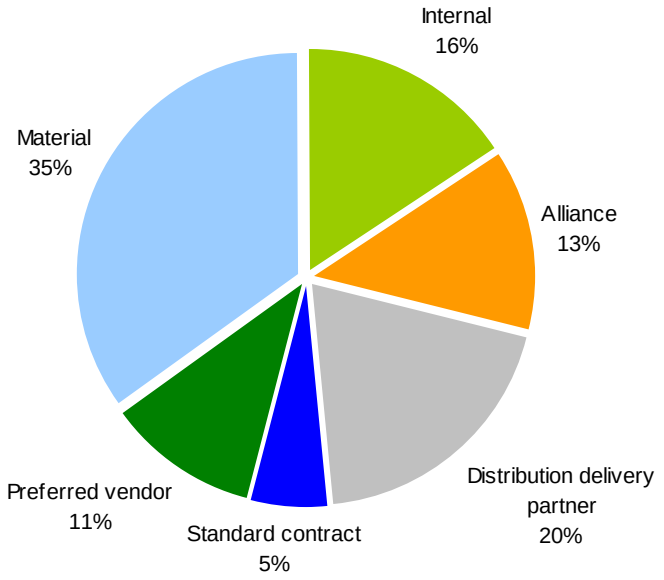


Figure 5: Relative shares of AA2 capital expenditure by procurement method

3.3.3 Works optimisation

Throughout AA2 we applied a number of tools to test for overlaps and dependencies in identified work programs and to efficiently package or schedule the works. These have enabled us to realise economies of scale and scope in our works program in order to efficiently minimise costs. They include the:

- **smart planning tool** – provides transparency of transmission works by individual primary asset or substation location to minimise transmission network outages and consolidate maintenance, growth and non-growth capital works
- **overlaps and dependencies model** – maps required work by asset class or geographic region under both the growth and non-growth (asset replacement and compliance) works programs. This allows the overall program to be optimised (for example, a transformer may be scheduled for replacement under the asset replacement program as well as scheduled to be upgraded under the capacity expansion program. The model allows this duplication to be identified and ensures that the transformer is upgraded at the same time that it is replaced)
- **deliverability assessment models** – determines total labour and material requirements underpinning the AA3 forecasts to then test against the capacity of each of our delivery channels and procurement options
- **investigation of non-network alternatives** – analyses the ability for non-network alternatives to support cost efficient deferral of capital expenditure for major augmentations (for example, we have used network control services to delay major augmentations in Ravensthorpe)

3.3.4 Benchmarking

To confirm that our capital expenditure is consistent with efficiently minimising costs and reflective of good industry practice, we have:

- benchmarked our capital expenditure to our peers to indicate how it compares with other Australian network businesses on a range of metrics, as discussed below

- obtained benchmarking of our building block unit rates and also compared our estimated against actual costs to validate their accuracy, as discussed in section 3.3.1 above

We have benchmarked our AA2 capital expenditure to our peers to test whether our expenditure outcomes reflect good industry practice and are therefore consistent with efficiently minimising costs.[17] To do so, we have used 2009/10 which is the most recent year of AA2 for which we could obtain comparative data for a material set of our peers.

In benchmarking the capital expenditure for AA2, we have:

- compared our capital expenditure for the transmission and distribution networks against other Australian network businesses on the basis of key network cost metrics for each network:
  - for transmission – peak demand and line length
  - for distribution – peak demand, line length and customer numbers
- compared our historical capital expenditure against that which has been recently approved for other Australian network business in recent regulatory decisions

Transmission capital investment

Our 2009/10 transmission net capital expenditure compares favourably with other transmission businesses on the basis of peak demand and line length, as shown in Figure 6 and Figure 7 respectively.

Figure 6 illustrates that our 2009/10 transmission capital expenditure as a function of peak demand is below all bar one of our transmission network peers.

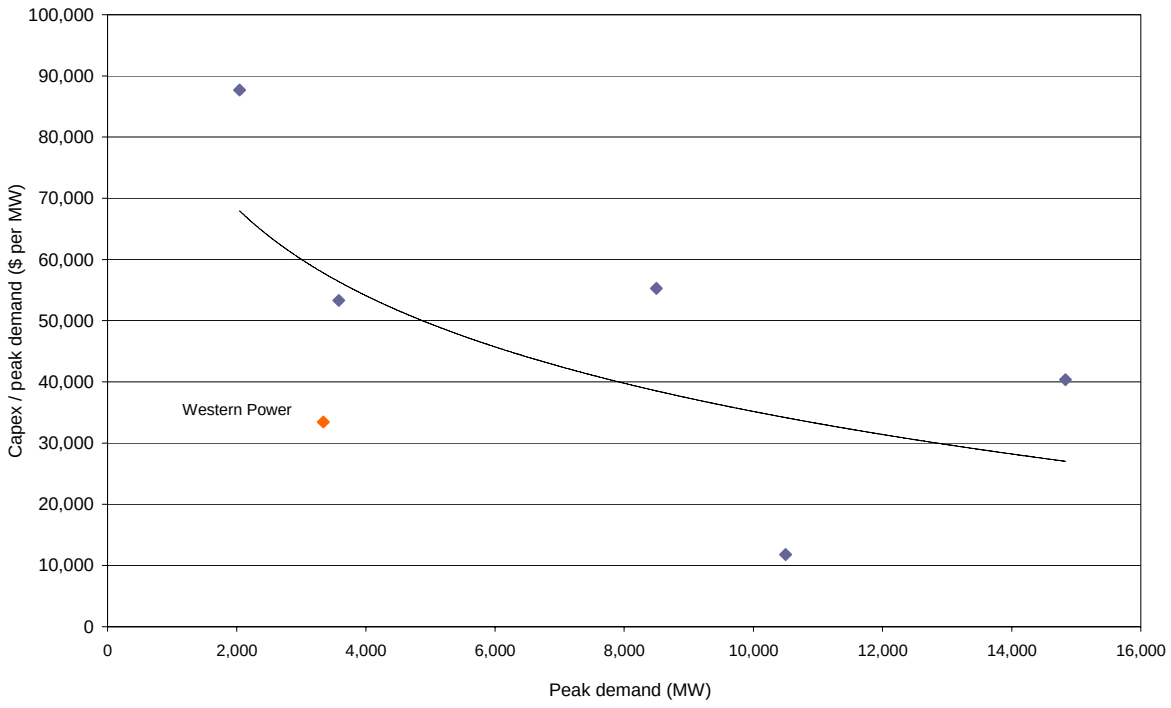


Figure 6: Comparison of our transmission capital expenditure as a function of peak demand against peers, 2009/10

[17] Section 8.9 of the AAI further explains the benchmarking process and qualifications.

Figure 7 illustrates that our 2009/10 transmission net capital expenditure as a function of line length is the lowest of the benchmarked transmission businesses.

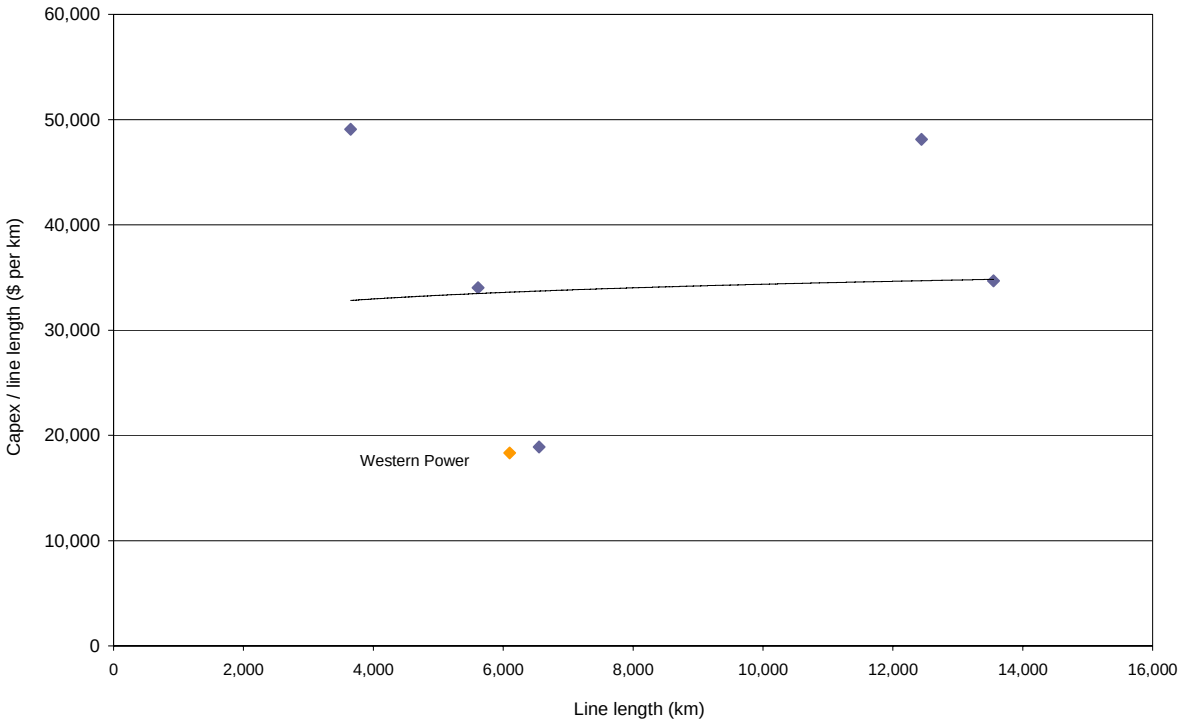


Figure 7: Comparison of our transmission capital expenditure as a function of line length against peers, 2009/10

Distribution capital investment

Our 2009/10 distribution net capital investment compares favourably with the other distribution businesses, on the basis of the key drivers of capital investment: peak demand, line length and number of customers as shown in Figure 8, Figure 9 and Figure 10 respectively.

Figure 8 illustrates that the distribution net capital expenditure as a function of peak demand is reasonably consistent across all distribution businesses except two. These businesses have a higher capital expenditure to peak demand ratio than the other businesses as they both have large rural-based networks.[18]

[18] Western Power has a large rural-based network as well as an urban network and can therefore be expected to have a higher ratio than most Australian network businesses, but not quite as high as completely rural-based networks.

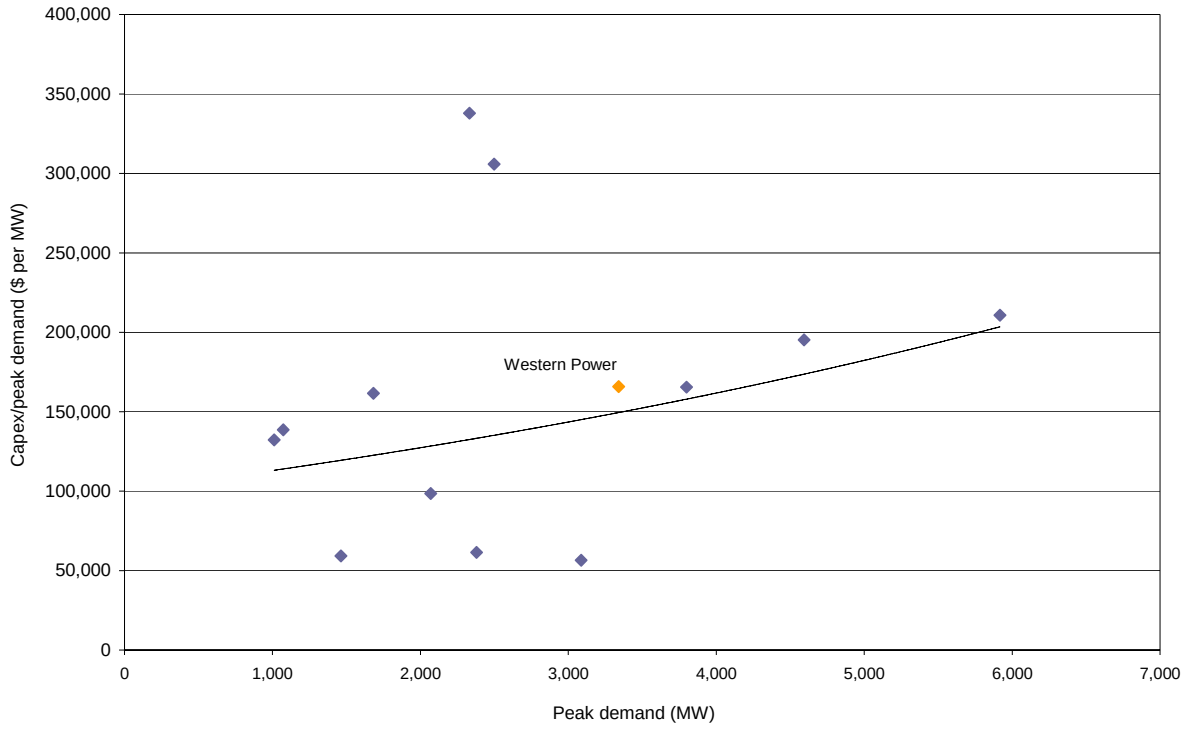


Figure 8: Comparison of our distribution capital expenditure as a function of peak demand against peers, 2009/10

Figure 9 shows that the distribution capital expenditure as a function of line length decreases as line length increases. Our 2009/10 net capital expenditure as a function of line length is well aligned to the trend for our peers having regard to the large size of our distribution network in terms of line length.

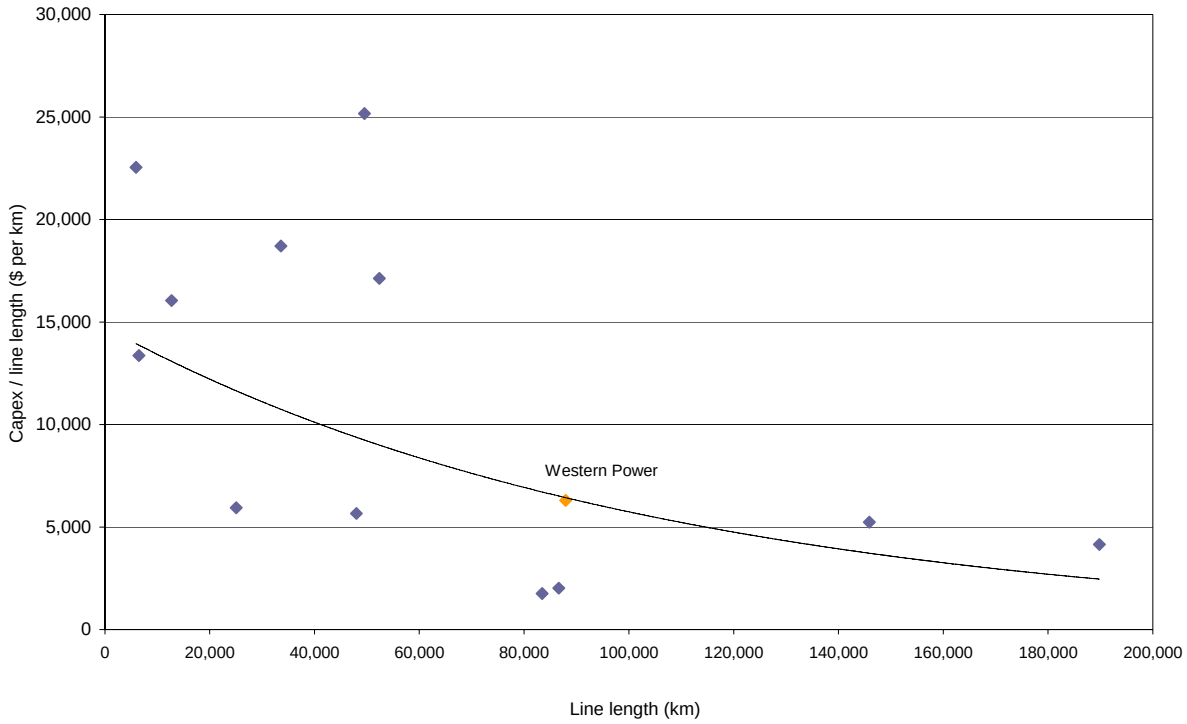


Figure 9: Comparison of our distribution capital expenditure as a function of line length against peers, 2009/10

Figure 10 shows that the net capital expenditure as a function of customer numbers for Australian distribution businesses lies broadly within a band between $200 per customer and $1,000 per customer. We compare favourably with the other distribution businesses in 2009/10 at $578 per customer.

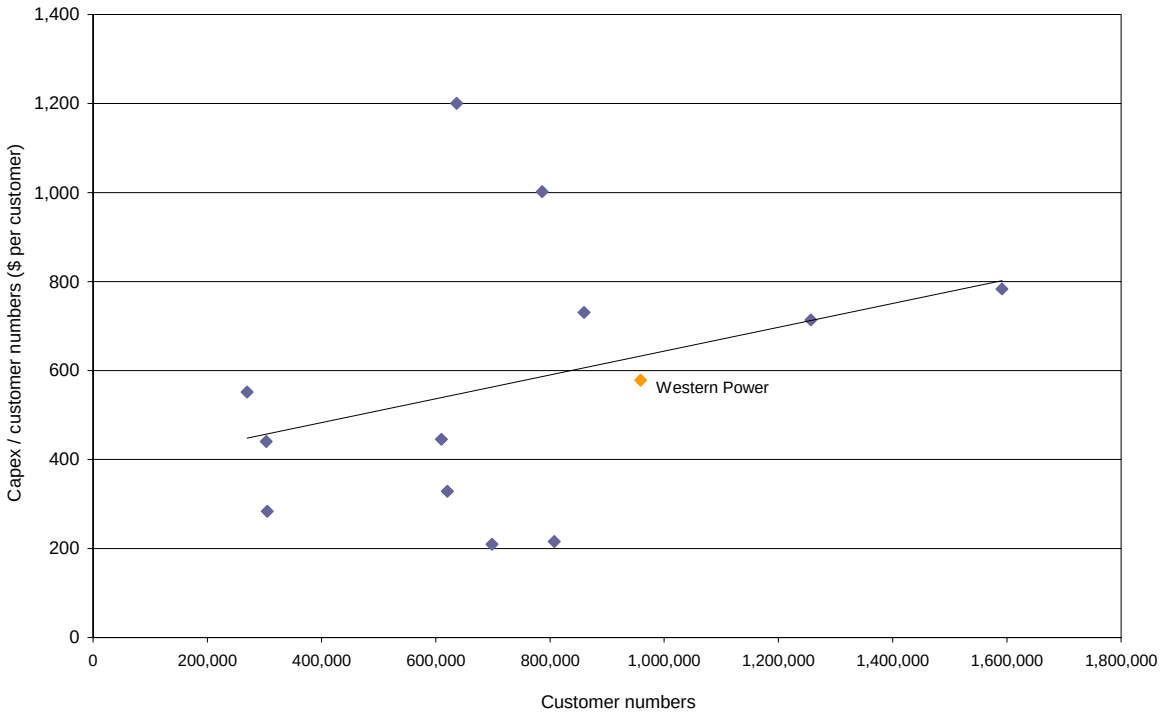


Figure 10: Comparison of our distribution capital expenditure as a function of customer numbers against peers, 2009/10

3.4 New facilities investment – part 6.52(b)

Table 9 provides an indication of the test under section 6.52(b) of the Access Code that usually applies for each regulatory category. This can vary for specific projects and programs. Appendix G: Proforma forecast statements provides information on how individual projects and programs undertaken during the period have met section 6.52(b) of the Access Code.

Table 9: The NFIT part (b) test that applies in the majority of circumstances to each regulatory category of capital expenditure

AAI Guidelines category	Western Power's regulatory category	Most applicable NFIT part (b) test	AA2 expenditure $ million
Transmission			
Growth	Capacity expansion	Providing covered services	258.0
	Customer driven	Incremental revenue	87.9
Asset replacement and renewal	Asset replacement	Providing covered services	60.3
Improvement in service	SCADA and communications	Providing covered services	30.0
	Reliability driven	Providing covered services	3.4
Compliance	Regulatory compliance	Providing covered services	47.9
Distribution			
Growth	Capacity expansion	Providing covered services	156.3
	Customer access	Incremental revenue	425.6
Asset replacement and renewal	Asset replacement	Providing covered services	319.3
	SUPP	Providing covered services[19]	48.0
	Metering	Providing covered services	48.2
	Smart grid	Net benefit	18.3
Improvement in service	SCADA and communications	Providing covered services	10.8
	RPIP	Providing covered services	8.4
	Reliability driven	Providing covered services	38.6
Compliance	Regulatory compliance	Providing covered services	216.8
Corporate	IT	Providing covered services	118.7
	Business support	Providing covered services	97.7

[19] Only the portion funded by Western Power is assessed against the new facilities investment test.

4 External review

Much of our AA2 capital expenditure program has been subject to additional review throughout the AA2 period. This has included reviews undertaken by:

- the Authority to gain regulatory test approval for major augmentations and NFIT pre-approval for a select number of projects and programs
- both the Department of Treasury and the Economic Expenditure Review Committee of Cabinet in relation to requests for further capital funding over the AA2 period

These reviews included further consideration of the justification, assessment and evaluation of cost of various projects. The extent of these further reviews is discussed in the following sections.

4.1 Reviews by the Authority

Network investment is subject to two tests under the Access Code on an ex-ante basis, namely the regulatory test in Chapter 9 and the NFIT under clauses 6.52 to 6.55 of the Access Code. During AA2 we have:

- submitted one regulatory test application
- submitted three NFIT pre-approval applications
- received approval to waive the regulatory test for two projects

4.1.1 Regulatory test

Under chapter 9 of the Access Code, it is mandatory to submit a regulatory test, seeking approval from the Authority for major augmentations on an ex-ante basis. The focus of the regulatory test is on determining whether the chosen option maximises the net benefits of the project to the network. The Authority "is of the opinion that the purpose of the regulatory test is to determine whether a proposed augmentation to an electricity transmission and/or distribution network is the best way of developing the wider electricity system".[20]

The regulatory test is designed to apply specifically to 'major augmentations' where the value of the project exceeds the nominated threshold ($10.9 million for wholly distribution projects or $32.7 million if the project includes any transmission assets [CPI adjusted as at 2011]). The regulatory test application is completed for major augmentations as part of phase 2 (scoping) of our works program model.

During the AA2 period, Western Power obtained approval from the Authority to waive the regulatory test for the following projects:

- **Binningup desalination plant augmentation** ($51.7 million) – this application to waive the regulatory test was approved by the Authority in January 2010 on the basis that the expenditure would not cause a net cost to those who generate, transport and consume electricity. Consequently, in accordance with the provisions of section 9.23 of the Access Code, *"the Authority has formed the view that the application of the regulatory test in respect of the proposed major augmentation would be contrary to the objectives of Chapter 9 of the Access Code"*

[20] p3, *Final Determination on the Regulatory Test for the Mid West Energy Project (Southern Section)*, the Authority, February 2011.

- **Grange Resources' Southdown mining operations augmentation** ($397.2 million) – the Authority approved this application to waive the regulatory test in August 2011 on the basis that the application of the regulatory test would be contrary to the objectives of Chapter 9 of the Access Code, as there is only one viable option that can be delivered within the timescale required to deliver electricity supply to the Southdown Mine in the required timeframe

In November 2010, we also lodged a regulatory test application related to the $440.8 million Mid West Energy Project (Southern Section). In February 2011, the Authority determined that the proposed augmentation satisfied the regulatory test. Only some of the costs of this project will be incurred in AA2. The majority of the capital costs associated with this project relates to AA3.

4.1.2 NFIT pre-approval submissions

Section 6.71 (b) of the Access Code provides for Western Power to apply at any time to the Authority to determine whether forecast new facilities investment proposed by the service provider is forecast to meet the test in section 6.51A.

During the AA2 period, we sought pre-approval from the Authority for four projects:

- **Binningup desalination plant augmentation** (Total project value $53.9 million[21], NFIT value $29.9 million) – for works to install a second 330/132 kV transformer at Kemerton terminal and to construct a 132 kV transmission line to connect the Binningup desalination plant. In March 2011 the Authority decided to not approve the application as it believed the efficient cost was $2.1 million lower than our $53.9 million forecast
- **Collgar wind farm augmentation** (Total project value $20.2 million, NFIT value $12.5 million) – for transmission works to construct the Collgar terminal substation to connect the Collgar wind farm. The remaining $7.7 million of the project was funded by a customer contribution. The Authority approved the full NFIT value for the works in May 2011
- **Replacement of overhead customer service connections** (Total project value $72.9 million, NFIT value $72.9 million) – to replace the remaining population of potentially un-safe overhead customer service connections to reduce the risk of electric shock to customers. The Authority approved the full NFIT value for the works in May 2011
- **Mid West Energy Project - Southern Section** (proposed NFIT value $383.4 million) – to provide additional transmission capacity to the Geraldton area by replacing the current transmission line with a 330 kV double circuit transmission line from Neerabup to the Karara mine site and a 330/132 kV transformer at Three Springs to interconnect the existing 132 kV network with the new 330 kV transmission line. We lodged the application in August and the Authority is yet to make a decision (although the majority of the expenditure under this project relates to AA3)

In total, the Authority has reviewed AA2 projects totalling $147 million (7.4%) of AA2 capital expenditure, with an NFIT value of $85.4 million. The Authority approved $85.4 million as prudent and efficient.

We are not seeking to add $2.1 million that the Authority identified as not meeting the requirements of the new facilities investment test for the Binningup desalination plant augmentation.

[21] Less $2.1 million for the 490 MVA transformer

4.2 Funding assessment by Government

The level of investment supported by the Authority for the AA2 period required a much greater level of funding than the amount included in the forward estimates of the State Budget.

We worked with the Department of Treasury and the Office of Energy to establish a process by which we could obtain additional funding through requests to the Economic and Expenditure Review Committee (EERC) supported by our project and program business cases. In response to the additional process requirements and uncertainty about funding we revised our expenditure forecasts, preserving necessary expenditure on public safety and choosing to defer network augmentations and some planned improvements in reliability. To ensure that we were able to balance our expenditure priorities and consequential risks, we sought Government approval for additional funding for our critical capital expenditure program.

By December 2010, business cases for 13 of our projects had been submitted for review and recommendation. These were subsequently presented to the EERC for approval. $312 million of the requested additional funds for AA2 capital works were provided in addition to our 2010/11 strategic development plan, increasing our budget by 12.8%.