Inquiry Into Funding Arrangements of Horizon Power - Operating and Capital Expenditure Review

27 October 2010

Economic Regulation Authority
Western Australia

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Glossary

Term	Definition
AER	Australian Energy Regulator
BCI	Building Cost Index
CBRM	Condition Based Risk Management
CCGT	combined cycle gas turbine
CPI	Consumer Price Index
CPRS	Carbon Pollution Reduction Scheme
DNSP	Distribution Network Service Provider
DQM tool	Distribution Quotation and Management tool
ENRUP	Esperance Network Rural Upgrade Project
ERA	Economic Regulation Authority
ESO	Essential Services Officer
IPP	Independent Power Producer
IT	Information Technology
KPI	Key Performance Indicator
MRET	Mandatory Renewable Energy Targets
NPV	Net Present Value
NWIS	North West Interconnected System
OCGT	open cycle gas turbine
PAS 55	Publically available specification 55 issued by the Institute of Asset Management
PPA	Power Purchase Agreement
PUPP	Pilbara Underground Power Project
REC	Renewable Energy Certificate
SLA	Service Level Agreement
TAM	Total Asset Management

Executive summary

PB has been engaged by the Economic Regulation Authority to undertake an independent review of Horizon Power's historical and forecast expenditures. This report presents the results of PB's review.

Created from the disaggregation of the former Western Power Corporation in 2006, Horizon Power is a Government owned, vertically integrated energy business responsible for generating or procuring the supply of electricity and for transmitting, distributing and retailing electricity to residential, business and industrial customers living and operating throughout regional Western Australia. The business operates in accordance with its Strategic Development Plan, agreed and approved with the Minister for Energy and concurred with the Treasurer through the State Budget process.

PB has reviewed the appropriateness of historical expenditures, the process, procedures and practices that are used to forecast expenditures, and the appropriateness of proposed expenditures for the forecast period, 2010/11 to 2013/14.

Historical expenditures

PB compared Horizon Power's actual expenditures from 2006 with those proposed in its annual budgets. PB did not identify any systemic bias in the variances of operational expenditure (opex) with budget, finding only small variances. PB concludes that Horizon Power's accuracy in setting opex budgets is reasonable.

Opex increased over the 4-year period to 2009/10 by 64%. PB has identified increases in opex that relate to the start up of the new business, such as internal review of work practices, obtaining needed information about the assets to ensure appropriate management, and development of long term plans. Work to move from age based replacement of assets to include condition information has also occurred. PB has not seen any indication that these expenditures were not needed or appropriate.

With regard to capital expenditures (capex), PB identified a clear trend of underspending against budget. The reasons were found to be due largely to factors outside of the business' direct control. The variances have reduced as a percentage of budgeted expenditure in recent years. PB concludes that Horizon Power's accuracy in setting capex budgets was initially poor (due to external factors) but has improved substantially. There is no indication that variances will continue.

With respect to capex for generation projects, PB notes that Horizon Power has experienced a cost overrun that is estimated at 33% at completion of the Marble Bar/Nullagine power stations. PB has been unable to form a view as to whether the expenditure for the Marble Bar project is prudent and efficient as this would require a detailed examination of the project which is beyond the scope of this review. PB notes that the procedures set down by Horizon Power were not followed and that significant risk exists that other power station projects in the forecast period may also vary against budget.

Process, procedures and practices

PB notes that many of the processes, systems and methodologies had been substantially revised or introduced across the business within the past six to twelve months. Prior to this it is apparent that Horizon Power relied on many legacy Western Power processes and systems. Given the history of disaggregation and the business' desire to reduce its reliance on those legacy systems with limited

support, a widespread assessment, rebranding and improvement in processes and systems over this period is considered to be reasonable.

In most cases the rigour of the processes and quality of the documentation provided by Horizon Power were better than normal industry practice and in PB's opinion represent an evolution of the business rather than a fundamental change in strategic direction. The understanding and acceptance of recent changes across the individuals that PB interviewed appeared to be strong, which Horizon Power attributed to the consultative continuous improvement culture that has been established.

Forecast expenditures

Horizon Power has forecast expenditures for the four-year period 2010/11- 2013/14 for its generation, networks, and retail activities. In nominal terms these are:

- forecast capex $974m
- forecast opex $1,547m.

The annual trend of these expenditures shows a steady increase in opex, and a significant increase and then reduction in proposed capex towards the final years of the outlook period.

Generation capex

For the generation activity, Horizon Power has proposed capex of $503.0m (nominal) over the forecast period. The major capex items that PB examined are for the construction of new generation projects.

PB has concerns that the business case analysis has been made on the basis of budgetary estimates and not on firm contract prices as would normally be expected. The use of budget estimates (+/- 30% accuracy) opens the possibility that a more cost effective solution could be found by using more accurate pricing for the most viable options.

Because of the nature of the business's service area where there are many remote locations, a key issue is the lack of competition for outsourcing of services resulting from the availability of only single suppliers in remote areas. Horizon Power's approach to this issue has been to standardise practices and bring some services in-house.

Despite forecasts that account for higher costs in its regional areas, Horizon Power has experienced a cost overrun that is estimated at 33% at completion of the Marble Bar/Nullagine power stations. Implementing lessons learnt from the post project review should ensure that only efficient expenditures are actually made in the forecast period.

PB concludes that a risk exists that Horizon Power in the past may not have selected the most appropriate generation options due to inaccuracy in forecast expenditure estimates. This is unlikely to occur in future as Horizon Power implements lessons learnt from the Marble Bar power station project. Hence, PB has not recommended a change to the forecast capex for generation.

Table E1 PB recommended capex for generation ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[1]
Horizon Power submission	124.2	199.5	174.5	4.8	503.0
PB recommendation	124.2	199.5	174.5	4.8	503.0
Total adjustment	-	-	-	-	-

Source: PB Analysis

Capex other than for generation

Excluding generation, Horizon Power has proposed a forecast capex of $471.2m (nominal) for the 4-year period from 2010/11 to 2013/14. PB has examined projects totalling 63% of the forecast capex. PB found that reductions were appropriate in 7 of the 9 projects reviewed. A global reduction to account for the use of an incorrect escalation factor and for project contingencies is also recommended.

Specifically, PB found the following:

- Karratha to Roebourne 220kV line project – the likelihood that expenditure will be required in the forecast period is low and therefore that no capex allowance should be included
- Dampier to Karratha Transmission line replacement and transformer augmentation project – the design of the system following the disconnection of the RTIO network is not optimal and if the disconnection is confirmed Horizon Power should re-established the system at 33kV (or 132kV if this is deemed efficient) under distribution planning standards
- Fairway Drive substation – can be deferred by one year
- Pilbara Underground Power Project – the forecast expenditures for the PUPP program should be modified to adjust the escalators applied when forecasting costs
- Pole management strategy – the replacement and reinforcement programs should be reduced by basing the program on condition rather than age
- ENRUP single phase program – the program should be conducted over a 5 to 7 year period to address the defect issues based on a condition and risk approach
- Buildings – the Esperance Depot should be scaled down to better suit the number of staff to be accommodated.

PB has formed the view that the reasons for these reductions – inappropriate scoping of projects, inappropriate timing and the use of aged based replacements for poles rather than condition – are systemic issues that are likely to be found in most major projects in the capex forecast. PB notes that its review focussed on the larger projects in the capex program and it is of the view that the scope/scaling issues found are not likely to extend to smaller projects. Similarly for the timing issues, the impact of delaying a major project by a year is large but the delay of smaller projects, particularly those forming an on-going program of works in accordance with the asset management plan, is unlikely to occur. For these reasons, PB does not recommend a reduction to those projects that it has not specifically reviewed.

PB's recommended reductions for capex other than generation are shown in Table E2.

[1] Total may not add due to rounding

Table E2 PB recommended capex other than generation ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[2]
Horizon Power submission	141.1	140.3	94.1	95.7	471.2
PB recommendation	129.8	114.8	77.7	69.7	392.0
Total adjustment	11.3	25.5	16.4	26.0	79.2

Source: PB Analysis

Opex

For the generation activity, Horizon Power has proposed opex of $959.1m (nominal) over the forecast period. Opex is mostly for the purchase of fuel, which is competitively sourced. PB also examined the opex associated with operating and maintaining generation plant and found no indication that this was not reasonable. PB has not recommended a change to the generation opex forecast by Horizon Power.

Excluding generation, interest, depreciation, income tax, amortisation and finance lease adjustments, Horizon Power has proposed opex of $587.4m (nominal) over the forecast period. Increases in forecast opex are proposed due mainly to material and labour cost escalation, which PB examined in detail.

Total unescalated opex is forecast to grow by an annual average of 3% over the next four years. PB is of the view that many opportunities to reduce opex now exist because of the work undertaken by Horizon Power in refining its policies, standards, and work practices. Hence PB recommends that total allowed controllable opex, which excludes fuel, electricity purchases and financing costs, is reduced by 3% per annum over the next four years to capture efficiency gains which are expected to be made by the business.

PB concludes that a reduction should be applied to the total controllable opex of 3% per annum. PB's recommended reductions for opex are shown in Tables E3 and E4.

Table E3 PB recommended opex for generation ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[3]
Horizon Power submission	216.9	225.9	275.5	240.7	959.1
PB recommendation	216.7	225.6	275.1	240.2	957.8
Total adjustment	(0.2)	(0.3)	(0.4)	(0.5)	(1.3)

Source: PB Analysis

[2] Total may not add due to rounding
[3] Total may not add due to rounding

Table E4 PB recommended opex other than generation ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[4]
Horizon Power submission	130.9	141.2	153.1	162.3	587.4
PB recommendation	127.0	136.9	148.5	157.4	569.8
Total adjustment	(3.9)	(4.2)	(4.6)	(4.9)	(17.6)

Source: PB Analysis

Escalation

Contract labour and material escalation is based on the Perth Building Cost Index (BCI) plus 20%. PB does not consider Horizon Power's use of the long term historical average BCI escalation rate to be an unreasonable proxy for its expenditure program, however, PB notes that Horizon Power did not provide supporting information to justify the use of the BCI in its forecasts. In our experience it is common for CPI to be used where strong evidence to support an alternative escalation forecast is unavailable.

The 20% uplift is applied to adjust the Perth price to regional areas. This uplift is considered appropriate, however, PB is of the view that it has been incorrectly applied. Horizon Power has applied the 20% uplift to the historical annual escalation rate that it has calculated from the Perth BCI. This treatment has the effect of inflating the rate of escalation as well as the base cost estimates and hence significantly overstates the rate of escalation.

PB also notes an analytical discrepancy in the formula that was used to calculate the annual historical BCI escalation rate of 6.85% that was submitted by Horizon Power. We have recalculated the historical escalation rate to be 6.25%.

Labour escalation is based on a three year enterprise agreement, using the agreed wage rates increases in the enterprise agreements to model the wage inflation over the forecast period. This process appears appropriate.

PB concludes that the materials portion of capex and opex should be reduced to account for the incorrect application of the 20% uplift, and an adjusted long term BCI escalation rate of 6.25%. PB has not calculated these adjustments.

[4] Total may not add due to rounding

1. Introduction

The Treasurer of the State of Western Australia has requested that the Economic Regulation Authority (the Authority) undertake an inquiry into the funding requirements and operating and capital expenditure programmes of Horizon Power.

At a high level, the inquiry aims to establish Horizon Power's efficient levels of costs and cost reflective tariffs to supply electricity to regional Western Australia so that the government can determine the appropriate level of subsidy paid by customers in the South West Interconnected System (which is supplied by Western Power) through the Tariff Equalisation Contribution.

In accordance with the inquiry's terms of reference, the Authority will determine the level of tariffs that reflect Horizon Power's efficient costs in supplying electricity to its customers. The Authority must also consider and develop findings on the efficiency of Horizon Power's expenditure programmes and procurement processes, as well as suggest incentives to encourage Horizon Power to operate more efficiently.

Parsons Brinckerhoff (PB) has been appointed by the Authority to provide engineering advice to establish the efficiency of Horizon Power's capital and operating expenditure programmes. PB's review will cover both historical capital and operating expenditure, since Horizon Power was formed in 2006, and projected capital and operating expenditure to 30 June 2014.

1.1 What does Horizon Power do?

Horizon Power is a Government owned, vertically integrated energy business responsible for generating or procuring the supply of electricity and for transmitting, distributing and retailing electricity to residential, business and industrial customers living and operating throughout regional Western Australia. Horizon Power's service area is vast, covering all areas outside the South West Interconnected System, extending from Kununurra in the north to Esperance in the south

The business operates in accordance with its Strategic Development Plan, agreed and approved with the Minister for Energy and concurred with the Treasurer through the State Budget process. The Strategic Development Plan process endorses the mandate and strategic direction for the business and performance targets which underpin Horizon Power's Business Plan.

Given its legislative framework and the external environment, Horizon Power's purpose is to create lasting value from its activities by maximising the social, environmental and economic benefit for the company and the communities which its services, as represented in Figure 1-1.

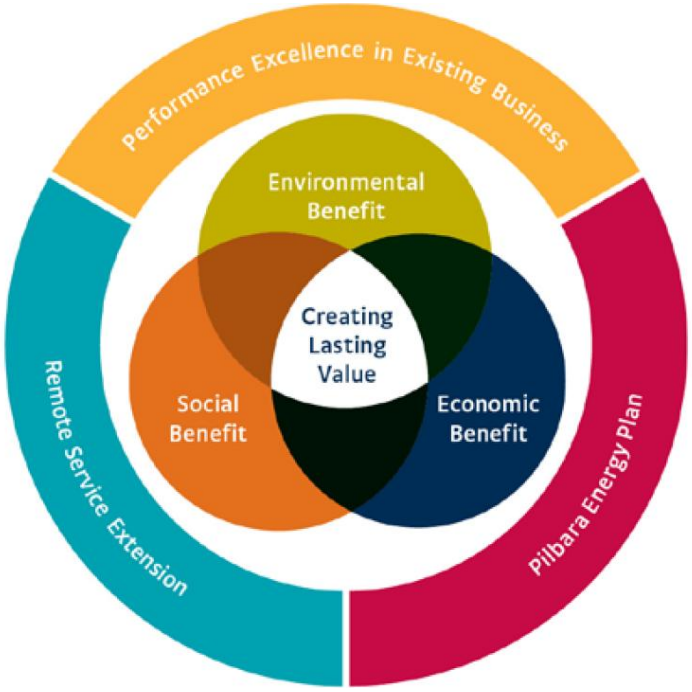


Figure 1-1 Horizon Power's strategic areas of focus and key business objectives

Horizon Power has adopted a decentralised operating model based on six geographic districts which each focus on: asset management (generation, independent power production, retail, transmission and distribution); community and customer relationships; and works delivery. This approach devolves operational accountabilities to those who live in and best understand the communities in which Horizon Power operates.

Originally established in April 2006 following the disaggregation of Western Power Corporation, Horizon Power undertook significant operational realignment in June 2008 across its business to ensure it was best placed to achieve corporate objectives to contribute lasting social, economic and environmental value in the communities it serves. The existing business structure comprises of eight divisions:

- Operations , including six geographically based district business groups
- Islanded systems development
- Strategy and business development
- Governance and company secretariat
- People and corporate services
- Shared services
- Knowledge and technology
- Finance services.

Horizon Power's head office is in Karratha, with regional offices located in Kununurra, Broome, Port Hedland, Carnarvon and Esperance so that it can respond to customer queries and investigate local issues promptly. Coinciding with the realignment of the business was the move of Horizon Power's Perth administration centre to a new premise in Bentley.

1.2 What assets does Horizon Power own?

Horizon Power's customers range from people living in remote, isolated communities with less than 100 people, to residents and small businesses in regional towns, to major mining companies in the Pilbara region. Horizon Power currently delivers electricity to over 43,000 customer connection points, supplying more than 35,000 residential properties and more than 8,000 businesses and organisations, across a service area that covers around 2.3 million square kilometres.

Horizon Power generates around 13 per cent of the electricity supplied to its service area and purchases the remaining energy (87 per cent) from privately-owned generators and a small percentage of renewable energy from Verve. This is then distributed and retailed to customers.

Horizon Power's assets include:

- power systems and stations supplying 41 separate towns, as shown in Figure 1-2
- generating plant at ten separate sites with an aggregate capacity of around 75MW (excluding the two solar plants at Marble Bar and Nullagine which are under construction), with fuel sources including gas, diesel or dual fired
- 17 substations where power is transformed from on voltage to another, voltages used include 220kV, 132kV, 66kV, 33kV, 22kV, 11kV, and 6.6kV
- 19 separate transmission lines covering 445km in length. Transmission voltages include 220kV, 132kV, 66kV, and 33kV, with lengths of 197km, 71km, 151km and 26km, respectively
- approximately 150 distribution feeders, covering a distance of around 5,000km (where 60% of this length is dominated by two long feeders supplying the Esperance district)
- a mobile fleet of equipment (generators, transformers, fuel tanks, fuel pumps, load banks and ring main units) that can be readily located at any location within the service area
- two gas pipelines.

Figure 1-2 Horizon Power's supply areas, as of May 2010

2. Scope of work

PB has been engaged by the Authority to undertake an independent review into the efficiency of the key building blocks of opex and capex submitted by Horizon Power that have, and will, inform its revenue from the organisation's inception in 2006 to 30 June 2014.

Primarily, PB has been engaged to undertake a desk-top review of Horizon Power's historical and forecast expenditures, facilitated by meetings and correspondence with the business to ensure understanding of its approach and operating environment. As part of its independent review, PB is required to form a view on Horizon Power's capex and opex efficiency in the context of relevant forecasts, with a focus on:

- the approach Horizon Power has used to establish its forecasts
- its performance against historical budgets
- the materiality of components of the expenditures by function (generation, transmission, distribution, retail) and by geographic location and customer base
- its policies, strategies, processes and asset management practices.

PB's review is confined to the 4.25-year historical period from 1 April 2006–30 June 2010, and the four-year outlook period from 1 July 2010– 30 June 2014. For simplicity in this report, PB has excluded from figures and tables the historical expenditures occurring in the 3-month period from the businesses inception in April 2006 to the end of the 2005/06 financial year.

2.1 Capital expenditure

In regards to capital expenditures, PB has been required to:

- compare actual capital expenditure over the period since Horizon Power was formed in 2006, to the projected capital expenditure for that period, and
    - investigate the reasons for any substantial differences between projected and actual expenditures
    - identify any capital expenditure that was not appropriate
- examine the processes used by Horizon Power to approve capital expenditure and determine whether, and how, those processes can be improved to ensure efficiency in capital investments
- provide an assessment on the fitness for purpose of engineering solutions, e.g. the selection of renewable generation over thermal
- identify any forecast or planned capital expenditure that is not appropriate
- make use of the independent reviews of Horizon Power's Asset Management Plans, regularly conducted at the request of the Authority, in undertaking the assessment, and
- make recommendations on the efficient level of capital expenditure, historic and proposed.

2.2 Operating and maintenance expenditure

In regards to operating expenditures, PB has been required to:

- compare actual operating expenditure over the period since Horizon Power was formed to the projected operating expenditure for that period, and to investigate the reasons for any substantial differences between projected and actual expenditures
- examine projected operating expenditure, cost drivers and processes and determine the scope for efficiency gains in comparison to past performance and other service providers
- review what allowances Horizon Power has made for anticipated costs resulting from the Carbon Pollution Reduction Scheme (CPRS) and Mandatory Renewable Energy Targets (MRET), including any expanded MRET
- review how Horizon Power allocated overhead costs to other activities and assess the efficiency of the allocation method
- make recommendations on the efficient level of operating costs, historic and proposed, including allocated overhead costs.

2.3 Other areas of investigation

PB's scope of work also includes:

- a review of the efficiency of Horizon Power's procurement process, especially in negotiating Power Purchase Agreements
- provision of advice as requested to assist the Secretariat in its drafting of its draft report
- review of the Authority's draft report, in relation to those sections dealing with PB's technical findings, and facilitation of the finalisation of the Authority's draft decision for publication.

As part of the inquiries Terms of Reference, the Authority is asked to consider and develop findings on opportunities for alternative arrangements for service delivery in remote regions. Consequently, the consultant is also asked to identify any such alternative service delivery arrangements that become apparent whilst conducting the review.

3. Approach to the work

This section outlines the engagement approach and process adopted by PB and the methodology used to undertake our independent review into the efficiency of the key building blocks of opex and capex submitted by Horizon Power.

3.1 Process and key deliverables

PB high level approach to this engagement is highlighted in Figure 3-1.

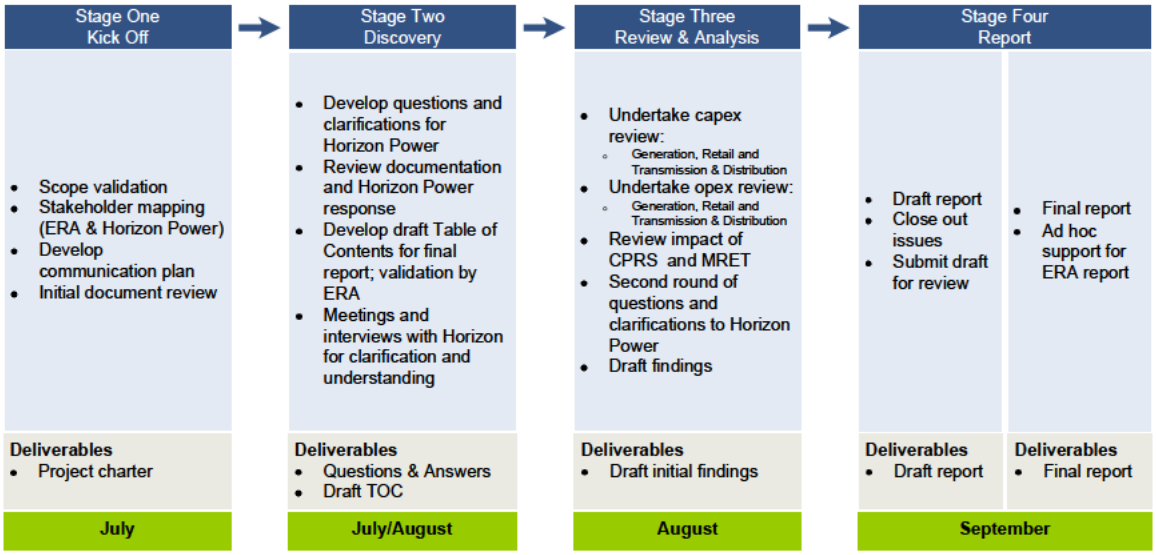


Figure 3-1 PB's staged approach to the engagement

The key aspects of the process adopted by PB when undertaking this review are summarised in the steps below:

- an initial meeting was held, confirming the scope of work, timeframes, communication protocols and key deliverables
- PB and the Authority received the submission (expenditure figures and supporting information), and undertook a check for completeness
- a preliminary PB review was completed, including
  - trend analysis and step changes
  - understanding of drivers and methodology
  - consideration of material projects / programs
- PB then prepared a 1st round of questions for Horizon Power, which formed an indicative agenda for a series of interviews

- a series of interviews with Horizon Power staff in their Bentley offices during the week ending Friday 20 August 2010. The principal objectives of these meetings were:
    - clarification and understanding of the business processes and expenditure forecasts
    - providing the opportunity to Horizon Power to discuss and elaborate on its needs and drivers of expenditures
    - targeted engagement and questioning in regards to key investment strategies and business processes
- PB's desk top analysis of the expenditures, supporting documentation and written responses to preliminary questions
- preparation of a preliminary findings report to the Authority, and a 2nd round of clarification questions pertaining to material items identified
- an information freeze on written responses from Horizon Power dated Friday 17 September 2010 , in order to ensure PB was in a position to prepare its draft report based on a definitive set of information from Horizon Power
- provision of a draft report to the Authority, followed by review and inclusion of comments by the Authority
- provision of a second draft report to the Authority and Horizon Power to comment on errors of fact and confidentiality
- delivery of the final report.

PB's review and the exchange of critical information were facilitated by the use of a regularly updated issues register.

3.2 Assessment methodology

The approach adopted by PB in its review of Horizon Power's expenditures combines an assessment of the businesses internal governance approach, strategies and processes, a high-level review of the trend and drivers of expenditure within various categories, together with a more detailed 'bottom-up' assessment of a number of selected projects and expenditure line items. PB considers its approach has suitably recognised the unique structure, purposes and characteristics of Horizon Power, which includes the transition to cost reflective pricing as sought by the wider inquiry, as it evolves within a more regulated environment.

PB's review has covered all of the company's operating functions, including its key business activities of electricity generation/procurement, transmission, distribution and retail. Specifically, PB's approach has been to understand the expenditures undertaken and proposed by Horizon Power over the review period giving due consideration to the investment decision-making processes, cost drivers of the capex and opex profile, augmentation and replacement modelling and fit for purpose of engineering solutions, actual and forecast expenditures, and the overall procurement processes.

PB has structured its review and findings based on the following sections:

- Section 5: Business process review areas, including policies and strategies, internal processes and the operating environment
- Section 6: Historical versus budgeted expenditures
- Section 7: Generation capex and opex (including electricity purchases from independent power producers)

- Section 8: Operating expenditures, including those associated with key functions such as transmission, distribution, retail, non-network, corporate services, etc
- Section 9: Network and non-network related capex, including transmission and distribution network related projects and programs, as well as investment in IT systems, property and buildings, vehicle fleets, etc.

3.2.1 Business approach, strategy and processes

An important part of the PB review is the evaluation of the governance framework within which Horizon Power makes investment decisions. The culture of the business can have a major impact on the way in which the business invests. PB has examined the structure, strategies, policies, processes and procedures adopted by Horizon Power in the development of its expenditure proposals, and have used the outcome of this review to reach an independent view on the robustness, appropriateness and efficiency of the historical and projected expenditures.
The finer elements of the analysis PB has taken into consideration as part of the business process review have included:

- A view into key policies and strategies, including:
  - Procurement strategies and guidelines
  - Network capacity planning criteria and augmentation
  - Demand management initiatives
  - Inspection, maintenance and operations approach
  - Technical design standards
  - Customer contribution policies
  - IT and non-network strategies
  - Workforce strategy and outsourcing
  - Enterprise and project risk management.
- A view into key internal processes:
  - Annual budgeting and project prioritisation and how the business goes about consolidating expenditure needs across its various divisions and locations, and how it takes a view of project priorities at a portfolio level
  - Gating, approvals and project governance and delivery, economic evaluation guidelines, PIR's covering the necessary internal steps involved in identifying, justifying, approving, and implementing, monitoring and reviewing the outcomes of various projects and programs of work
  - Supply, demand and energy forecasting processes
  - Project cost estimating
  - Business overheads and capitalisation policy
  - Asset management practices and documentation.
- A view into the businesses operational environment and the wider influences on its expenditures:
  - Jurisdictional, license and regulatory obligations and compliance
  - Service standards

- The impact of any Carbon Pollution Reduction Scheme (CPRS) or Mandatory Renewable Energy Targets on the operating expenditures proposed
- The quantity and application of any input cost labour and material cost escalators above and beyond forecast CPI.

In PB's view, each of these process review areas play a role in informing the overall efficiency of proposed expenditures, and the transparency and consistency in approach in each of these areas is key to ensuring that out-turn costs are reasonable, prudent and efficient.

As part of PB's review of historical and proposed expenditures it has also endeavoured to consider a variety of other issues such as:

- changes in out-turn costs compared with original forecasts and the reasonableness of variations
- trend analysis - examination of step changes, categories used and the consistency of definitions
- expenditure drivers and forecasting methodology
- the alignment of investment decisions to service standards and targets
- review of the reasonableness and efficiency of material projects (need, timing, alternatives considered, scope efficiency, cost efficiency, strategy)
- review of asset and supply reliability including performance and condition
- consideration of outages statistics, defect rates, generation/plant failures rates, and asset utilisation levels, etc.

3.2.2 Generation opex and capex

PB examined the capex for generation projects to determine whether the strategy of build own operate is more efficient than the alternative of sourcing from Independent Power Producers (IPPs). PB examined the decision making process and how these decisions are arrived at. PB examined the timing of new capex and what alternatives have been evaluated at both project and program level.

Generation opex is related to purchase of energy from IPPs and operations and maintenance of its own diesel fleet. The opex also includes fuel purchases.

3.2.3 Opex (excluding generation)

In undertaking its review of the company's opex expenditure PB sought to determine whether or not the company's expenditure levels are efficient and appropriate. PB's review includes a comparison of actual opex levels and forecast opex levels, and identification of those areas of expenditure where there is a substantial deviation, upwards or downwards, from projected to actual expenditure.

PB's approach was to consider business policies and procedures, as well as the drivers for variations in historical opex provided by Horizon Power. PB also considered how these variations in historical expenditure compared with budget may impact the accuracy of the forecast opex. The Authority wishes to determine the scope for efficiency gains in opex in comparison to past performance and other service providers, by examining projected opex, cost drivers and processes.

A standard method of forecasting opex is to use an efficient base year opex as a starting point and to escalate the components of this opex according to its most relevant driver, taking into account opportunities for capturing economies of scale or other efficiencies. This approach is also useful in reviewing opex forecasts. However the method will only deliver a satisfactory outcome if the base year

opex is itself efficient, and if non-recurring expenditures are removed. Hence the assessment of the efficiency of Horizon Power's historical opex is an important starting point for the forecast opex review.

To assess the efficiency of the opex forecasting processes adopted, PB considered actual opex outcomes over the period since Horizon Power was formed (including any historical information). Attention is given to trends with the aim of providing an appropriate starting point. As part of this work, PB sought to identify:

- any variations between forecast and actual opex
- mitigating circumstances (if any) causing such variations
- any trends (by category and in total) that will impact opex over the forecast period
- anomalies or one-off expenditures that will not be incurred over the forecast period.

It is expected that operating and maintenance expenditure includes both direct and indirect costs and that the company will have developed some degree of modelling (possibly integrated) in order to project its opex requirements. Hence PB examined how Horizon Power allocates its indirect costs to specific activities.

Direct costs include field maintenance labour and material costs, and associated management costs. Also included in direct costs are the activities required to operate and monitor equipment status and condition on an ongoing basis. Indirect costs include planning, insurance, asset management support, legal, land and property maintenance, public relations, IT, finance, treasury and other corporate services.

Specifically the forecast opex review includes an assessment of the appropriateness of the allocation of opex overhead costs to specific activities, including:

- routine maintenance and refurbishments/renewals
- the definition, treatment and allocation of joint and common costs such as corporate administration expenses, financing charges and depreciation.

PB also reviewed what allowance Horizon Power has made for anticipated costs resulting from the Carbon Pollution Reduction Scheme (CPRS) and mandatory renewable Energy Targets (MRET), including any expanded MRET.

In undertaking this review PB has recommended an efficient opex level (by category and in total) including allocated overhead costs.

PB's review also examined:

- the effectiveness of operating practices, procedures, and asset management systems at ensuring only necessary and efficient opex occurs
- the key internal and external factors that may affect the level of efficient opex required.
- the appropriateness of the opex forecasting methodology, including:
    - assessing the efficiency of the base year selected
    - assessing the appropriateness of escalation factors used to forecast expenditures
    - assessing the appropriateness of efficiency factors used to reflect the impact of economies of scale and scope

- assessing the efficiency of labour and material costs used to forecast expenditures

- the appropriateness of any trade-off between capex and opex.

3.2.4 Capex (excluding generation)

PB tested the expenditure proposals by assessing whether the need for the expenditure has been demonstrated, for example to meet safety or security standards or to augment the electricity network to meet demand growth forecasts and whether the cost for the work is efficient. By doing so we sought to form a view as to whether the capital expenditure (actual and proposed) is appropriate.

For non-demand related expenditure PB reviewed the company's asset replacement policies and assessed whether these are consistent with industry best practice.

In order to assess whether the capex is efficient, including whether it is appropriate and fit for purpose, PB drilled down into particular expenditure proposals and reviewed the application of the company's policies and procedures (and, where relevant, checked for consistency with the demand forecasts) with regard to:

- the major projects and programs identified by cost
- areas of expenditure where there is a substantial deviation, upwards or downwards between projected and actual expenditure.

PB placed particular emphasis on its review of any economic evaluations presented, and the project ranking processes adopted by the business in order to arrive at its selection of the preferred investment.

In undertaking detailed reviews of major proposed capex projects, PB assessed whether:

a) there is a need for the project or program
b) a reasonable range of alternatives have been considered (this may include non-network options for some augmentation projects)
c) the proposed scope of the project or program is reasonable
d) the proposed costs are reasonable
e) the timing of the project or program is reasonable
f) the project or program aligns with the company's policies and procedures
g) the information provided is accurate.

When assessing the need and timing of any augmentation projects, PB took into account any relevant demand forecasts.

Where PB found that proposed capex is not justified, it has proposed an alternative level of capex which it considers efficient.

3.3 Exclusions

In the context that PB has been engaged to provide the Authority with advice to establish the efficiency of Horizon Power's capital and operating expenditure programmes - the following matters have been excluded from the scope of PB's review:

- advice on the tariff-based and other streams of revenue for Horizon Power
- advice on elements of Horizon Power's corporate expenses associated with finance services – specifically: interest, depreciation, income tax, amortisation and finance lease adjustments
- advice on the initial capital and asset base, gifted assets or intangible assets
- advice on WACC formulation and parameters
- inter-business comparative benchmarking of expenditures
- detailed review of public submissions to the inquiry
- third party related capital related activity, for example IT services.

3.4 Comments on the review approach

As a general comment, in regards to the discussions and information exchange, PB found that Horizon Power was highly co-operative in regards to access to appropriate staff, information and documents. They presented as a well organised and professional business that appears to have adopted sound practices and processes in a number of the areas tested. Furthermore, their documentation and strategic intent/approach appears well considered, focussed strongly on a culture of continual improvement since its inception in 2006.

Notwithstanding these and other positive observations, some difficulties where encountered with provision of information during the review. Several revisions were made to the expenditure forecasts initially provided during the interviews, this was complicated by the town reporting approach, significant revisions were made to project lists and to the businesses asset management plans and modules during the course of the review.

In particular,

- the town reports were revised several times during the review to include corrections and adjustments to overhead allocations and electricity fuel purchase costs - represented by significant changes and volatile trends in individual line items
- a significant project was added (capex $408m) for Horizon Power to build, own and operate a new generation development in the Pilbara[5]
- a major update to Asset Management Plan's (including development of Modules) resulted in uncertainty as to the asset standards that underpin the forecast expenditures
- the data in the Distribution Asset Management Plan's was found to be not suitable for determining the reasonableness of how key assets are managed[6].

As a result, an issue register capturing some 152 items and 32 clarification questions was developed and completed.

[5] The documentation for the Generation 2013 project was provided as a part of a revised budget submission and developed specifically for this inquiry in advance of usual timeframes.
[6] The Distribution Asset Management Plans were replaced in October 2009 when Horizon Power introduced a new asset management framework. They relate to past practices and underpin the historical expenditures. New Asset Management Plans are being developed.

4. Business expenditures and investment drivers

In this section PB provides a high-level summary of the historical and forecast expenditure proposals submitted by Horizon Power for the 8-year period 2006/07 – 2013/14 in the categories of: generation capex and opex; other opex; and other capex.

4.1 Town based reporting

As part of the review process, Horizon Power has endeavoured to present its expenditures in a number of different ways. Primarily, at the request of the Authority, the form of the expenditures has been organised into templates based on towns supplied ('Town Reports'), which itemise revenues, operating expenses and capital expenditures in a detailed manner based on nominal (dollar of the day) references.

The key expenditure groupings include:

- Generation expenses
- Transmission expenses
- Distribution expenses
- Retail expenses
- Other district expenses
- Property and Fleet expenses
- Other corporate expenses
- Capex

The town based reporting framework has not typically been used by Horizon Power, as historically it has established and presented its expenditures based on organisation structure and functions accounting for its decentralised operating model (refer to section 5.3.1).

The 41 separate town reports are organised by district in the manner outlined by Table 4-1, where it is evident that by customer numbers and energy supplied, the largest towns supplied are: Karratha, Port Hedland, Broome and Esperance.

In addition to each of the individual town report templates provided, Horizon Power also submitted a consolidated town report, which essentially presents each of the line items in aggregate across the entire supply area.

Furthermore, for transparency purposes Horizon Power also:

- provided an adjusted set of the town reports with and without the application of CPI and input labour and material cost escalators applied (i.e. $m real 2009/10) – in order to provide an insight into the financial impacts of these factors

Table 4-1 Town reporting structure

District	Code	Town	% energy supplied in 2009/10	% total customers in 2009/10
East Kimberly	320	Halls Creek	1.1%	1.3%
	321	Kununurra	6.2%	5.3%
	322	Lake Argyle	0.0%	0.0%
	323	Warmun	0.3%	0.3%
	324	Wyndham	0.9%	1.1%
	325	Kalumburu	-	-
	326	Billiluna	-	-
	327	Balgo	-	-
West Kimberly	420	Ardyaloon	0.2%	0.2%
	421	Beagle Bay	0.2%	0.2%
	422	Bidyadanga	0.3%	0.3%
	423	Broome	14.1%	13.0%
	424	Camballin/Looma	0.3%	0.1%
	425	Derby	3.4%	5.3%
	426	Djarindjin	0.2%	0.3%
	427	Fitzroy Crossing	1.3%	0.9%
	428	Yungngora	-	-
East Pilbara	520	Marble Bar	0.3%	0.3%
	521	Jigalong	-	-
	522	Nullagine	0.1%	0.1%
	523	Port Hedland	24.1%	17.0%
West Pilbara	620	Onslow	0.6%	0.9%
	621	Karratha	26.1%	19.0%
Gascoyne / Midwest	720	Carnarvon	4.8%	5.4%
	721	Coral Bay	0.3%	0.0%
	722	Denham	0.6%	1.8%
	723	Exmouth	2.6%	2.9%
	724	Gascoyne Junction	0.1%	0.1%
	750	Cue	0.2%	0.4%
	751	Laverton	0.4%	0.7%
	752	Leonora	1.0%	0.9%
	753	Meekatharra	0.8%	1.1%
	754	Menzies	0.1%	0.2%
	755	Mount Magnet	0.4%	0.6%
	756	Sandstone	0.1%	0.2%
	757	Wiluna	0.3%	0.3%
	758	Yalgoo	0.1%	0.2%
Esperance	820	Esperance	7.5%	16.5%
	821	Hopetoun	0.5%	1.8%
	822	Norseman	0.5%	1.2%
	823	Ravensthorpe	-	-
TOTAL		41	968GWh	44,600

Source: PB using various town reports and the "[ERA REVIEW] DRIVERS FOR OVERHEAD ALLOCATIONS.XLS" spreadsheet.

- provided a detailed spreadsheet[7] outlining its expenditures based on its organisation structure and functions accounting for its decentralised operating model outlines , once again, both with and without the application of CPI and input labour and material cost escalators applied
- provided a detailed spreadsheet[8] outlining its capital expenditure program to 2015/16 at a project and program level, both with and without the application of CPI and its proposed input labour and material cost escalators applied.

Additionally, historic expenditures were provided on an as spent basis. For capex, a breakdown by function (generation, transmission, distribution and other) was not provided, however, the changes made to the capital base by functions are used in this report to approximate the split.

4.2 Forecast expenditures

The consolidated town report expenditures presented by Horizon Power indicate that, based on the summation of annual nominal figures:

- historical total opex over the four-year period 2006/07 - 2009/10 is $1,148m
- forecast total opex over the four-year period 2010/11- 2013/14 is $1,547m
- historical total capex over the four-year period 2006/07 - 2009/10 is $248m
- forecast total capex over the four-year period 2010/11- 2013/14 is $974m.

The annual trend of these expenditures is presented in Figure 4-1, which in nominal terms shows a steady increase in opex, and a significant increase and then reduction in proposed capex towards the final years of the outlook period.

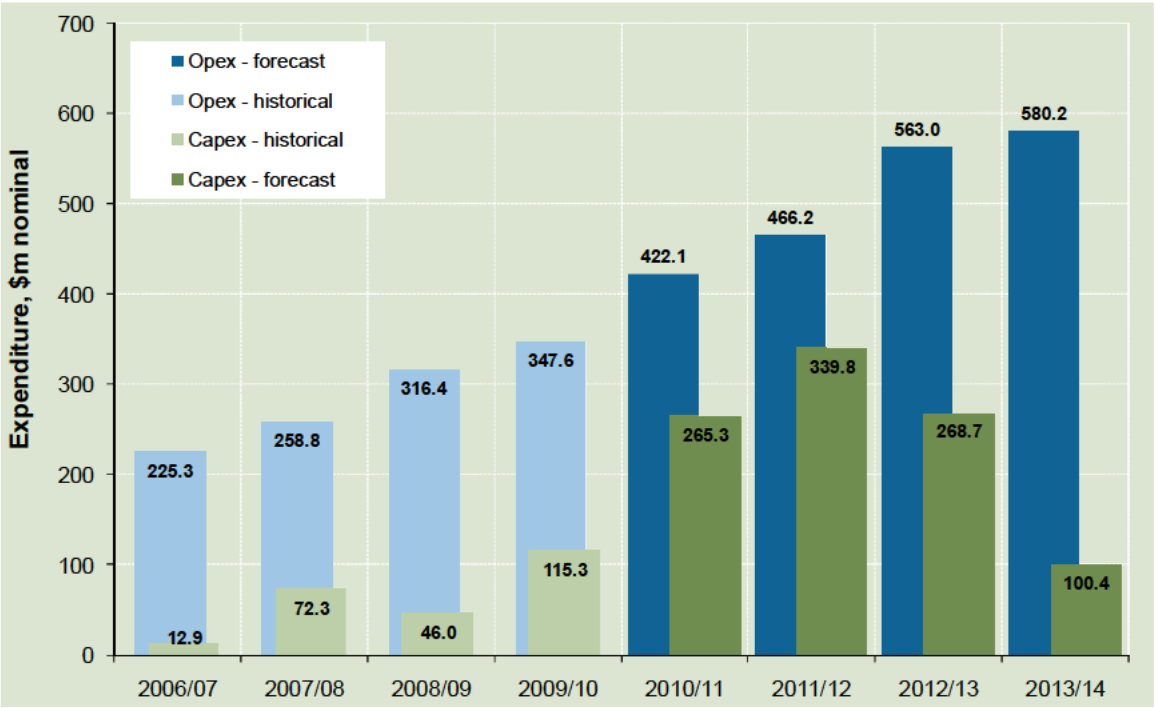


Figure 4-1 Horizon Power's historical and proposed expenditures

[7] Horizon Power, 2010, "54-DMS #3280044 - ERA REVIEW OPERATING EXPENSE BY DIVISION - ERA BUDGET.XLS"
[8] Horizon Power, 2010, "CAPEX BY FUNCTION02092010.XLS"

Table 4-2 Horizon Power's historical and proposed expenditure across key categories

Item ($m, nominal to June)	2007	2008	2009	2010	Total (%)	2011	2012	2013	2014	Total (%)	Growth
	Actual					Budget					
Generation Expenses	129.4	151.9	182.0	179.6	642.8 (56%)	230.8	239.4	287.6	251.8	1,009.6 (50%)	57%
Transmission Expenses	1.3	2.1	1.8	1.9	7.2 (1%)	2.6	2.8	3.3	6.0	14.8 (1%)	107%
Distribution Expenses[9]	13.9	14.8	19.0	24.8	72.4 (6%)	6.8	7.6	8.2	10.9	33.4 (2%)	-54%
Retail Expenses	3.2	13.7	6.4	9.6	32.9 (3%)	11.1	11.7	12.7	13.6	49.2 (3%)	49%
Other District Expenses	2.2	1.0	0.6	4.9	8.6 (1%)	21.4	21.7	23.8	23.8	90.7 (6%)	949%
Property and Fleet Expenses[10]	1.0	2.0	3.9	5.5	12.4 (1%)	-	-	-	-	- (0%)	-100%
Other Corporate Expenses	74.3	73.4	102.7	121.4	371.7 (32%)	149.5	183.0	227.3	274.1	833.9 (41%)	124%
Total opex	225.3	258.8	316.4	347.6	1,148.1 (100%)	422.1	466.2	563.0	580.2	2,031.6 (100%)	77%
Total capex[11]	12.9	72.3	46.0	116.3	247.5	265.3	339.8	268.7	100.4	974.2	294%

Source: Opex and historical capex - 'Consolidated_ERA_Reports.xls'; and forecast capex - 'CAPEX BY FUNCTION02092010.xls'

[9] A new chart of accounts has been implemented. Historical information has been recast into these new accounts, but some items are overrepresented (e.g. Distribution).
[10] Property and Fleet is budgeted at corporate level and included as Other Corporate expenses. Hence, no separate budget expenditures are shown.
[11] In the town reports, the capex shown for 2009/10 excludes work in progress. Forecast capex is shown in the year capitalised, which is assumed to be one year after expenditures are forecast to be made. Hence the correct capex for 2009/10 is reported under the 2010/11 year.

The annual profile of expenditure in the key categories is shown in Table 4-2, which indicates that the two most significant opex items are: generation related expenses at 50% of the total 4-year forecast opex (this includes electricity purchases, and gas transport / purchases); and other corporate expenses at 41% of the total 4-year forecast opex (this includes financial service components such as interest on debts, depreciation, amortisation, plus support the business type overheads including labour, IT services and strategic management).

In order to present a clearer picture of Horizon Power's service provision and to support the business related operating expenditure, a view of the operating expenditure is also shown in Figure 4-2, excluding the following specific opex line items:

- Distillate/Waste Oil
- Gas Transport, Gas Purchases
- Electricity Purchase (Capacity & Energy)
- Renewable Energy (Capacity & Energy)
- Interest[12]
- Depreciation[12]
- Income Tax[12]
- Amortisation[12]
- Finance Lease Adjustment[12].

These items are excluded so that the opex directly controllable by Horizon Power can be identified. It is noted that excluding these material items has the impact of reducing the historical total opex over the four-year period 2006/07 - 2009/10 to $404m, and the forecast total opex over the four-year period 2010/11- 2013/14 is $632m. The reduction in the forecast is shown in Table 4-3.

Figure 4-2 also shows the opex trend in real terms, based on a reference point of 2009/10[13], where the impact of the nominal labour and material input cost escalators (i.e. including CPI) proposed by Horizon Power over the forecast period is seen to be around $94m.

[12] These financial aspects are outside the scope of PB's review
[13] Historical expenditures have been escalated to the 2009/10 reference point using actual growth in CPI. Forecast figures have been deflated using CPI forecasts detailed in Table 5-9.

Table 4-3 Horizon Power controllable opex forecast

Item ($m)	2010/11	2011/12	2012/13	20/1314	TOTAL
Total Opex	**422.1**	**466.2**	**563.0**	**580.2**	**2031.6**
Less Generation opex					
Distillate/Waste Oil	4.8	6.6	7.3	7.9	26.6
Gas Transport, Gas Purchases	37.4	35.8	29.9	41.1	144.2
Electricity Purchase (Lease)	13.9	13.5	12.1	11.0	50.5
Electricity Purchase (Capacity & Energy)	156.7	163.3	214.9	164.2	699.1
Renewable Energy (Capacity & Energy)	9.7	10.9	11.6	12.3	44.4
Less financing costs					
Interest	22.0	35.1	49.5	58.4	164.9
Depreciation	22.0	24.1	26.3	39.8	112.2
Income Tax	13.2	10.6	23.2	25.1	72.1
Amortisation	2.6	2.5	2.1	0.0	7.1
Other Financial Services	0.8	13.5	21.1	42.9	78.2
Controllable Opex	**139.1**	**150.5**	**165.0**	**177.5**	**632.3**

Source: Horizon Power Town Reports

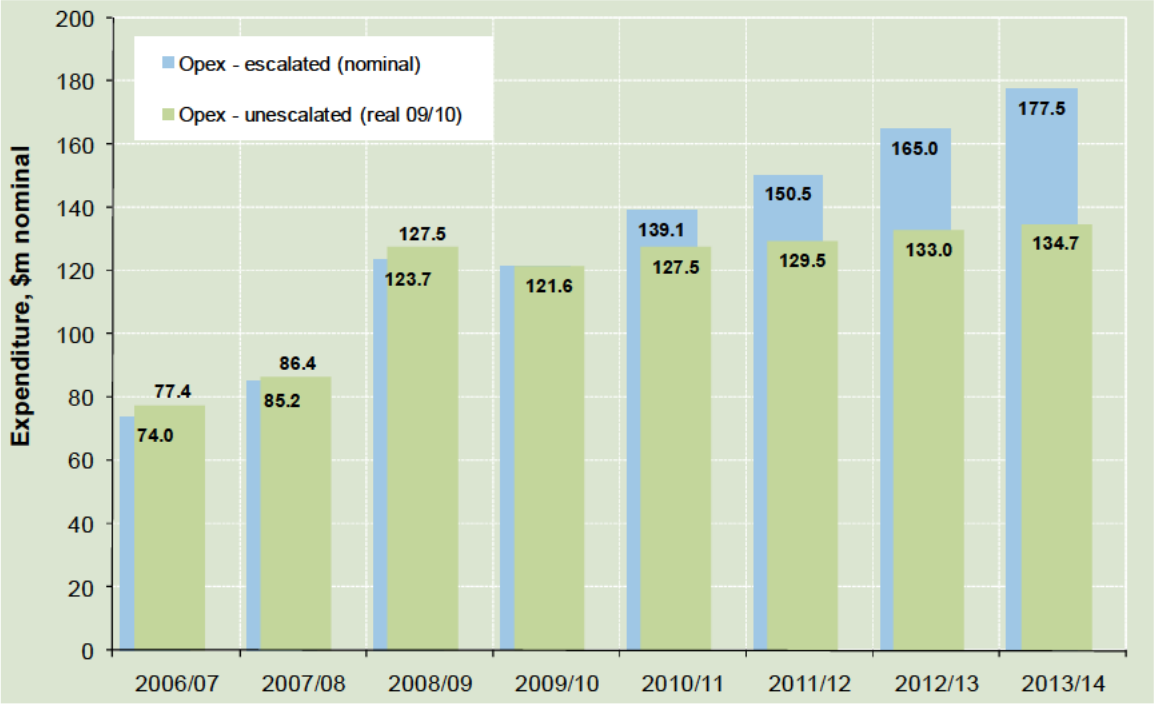


Figure 4-2 Horizon Power's controllable historical and proposed opex – in real and nominal terms

4.3 Expenditures based on division budgets

As part of its supporting information, Horizon Power provided a detailed spreadsheet outlining its forecast operating and maintenance expenditures based on its organisation structure and functions - accounting for its decentralised operating model and excluding costs associated with electricity and gas procurement through its PPA's and other financial costs. The escalated and un-escalated versions of this data are summarised in Table 4-4.

Table 4-4 Divisional budgets

Item ($m)	2010/11	2011/12	2012/13	213/14	Total
Divisional opex (nominal, escalated)	139.1	150.6	165.1	177.6	632.3
Divisional opex (real 2009/10, unescalated)	129.9	131.4	134.5	135.4	531.2
Difference	9.1	19.2	30.6	42.2	101.1

Source: Horizon Power, "54-DMS #3280044 - ERA Review Operating Expense By Division - ERA Budget.XLS"

The disaggregated view of these forecasts is shown in Figure 4-3, indicating the requirements in each of the nine functional divisions across the business. In real terms, the average annual growth in opex is determined to be 1.4%, this is informed by a 35% per annum average increase in the budget for the Strategy and Business Development group, offset by a 15% per annum average reduction in the budget for the Islanded Systems Development group. Notably, the largest component, related to the budget for the "Operations" group (which incorporates works delivery and both recurrent and non-recurrent network maintenance and inspection) remains relatively flat in profile, averaging approximately $52m per annum.

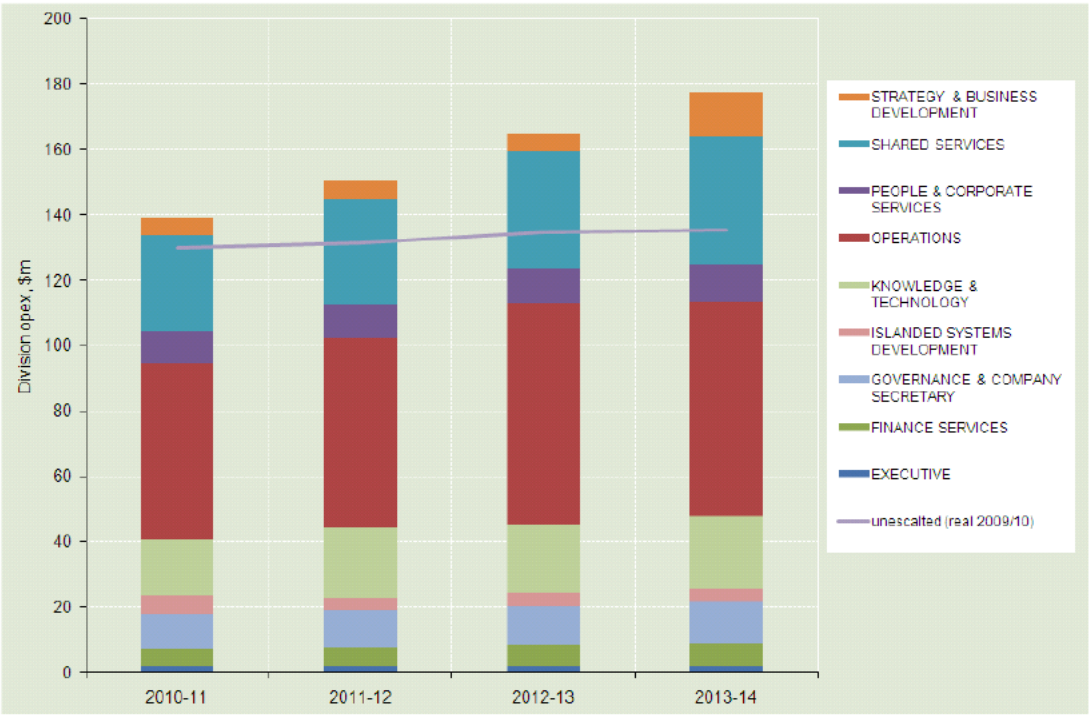


Figure 4-3 Horizon Power's proposed divisional opex – in real and nominal terms

4.4 Key investment drivers

In its Statement of Corporate Intent for 2010, Horizon Power has identified the main drivers of its operating costs as:

- changes to the maintenance costs for generation and network assets
- the increased cost of housing employees
- additional audit and compliance costs
- delivery of a state-wide demand-side management programme.

In regards to Horizon Power's forecast capex investment Table 4-5 outlines Horizon Power's key projects across its various activities and their primary driver.

Table 4-5 Capex requirements and primary drivers

Key project	Activity	Driver	Total 4-year capex ($m, nominal)
Generation 2013	Generation	Securing electricity supply after expiry of key PPA	408.2
Pilbara Underground	Distribution	Improved reliability and opex efficiency	118.5
Carnarvon Power Station Replacement	Generation	Performance and condition of existing plant	68.0
Line upgrade/repl & 2 Tx (DMP-KRT 81)	Transmission	Performance and condition of existing plant	24.4
Reconductor CLB-HDT X1	Transmission	Augmentation to meet growth	22.7
Fairway Drive Sub-Station	Transmission	Augmentation to meet growth	19.3
ENRUP	Distribution	Rural upgrading and safety	15.7
Karratha to Roeburne 220 kV Line	Transmission	Augmentation to meet growth	12.6
ARCPSP - Phase 2.1 - Kalumburu and Yungngora	Generation/ distribution	Remote town regularisation	23.4

5. Business approach, strategy and processes

5.1 Overview

PB recognises sound capital governance as an important cornerstone of prudent and efficient asset management, as it acts to establish and define the business' investment approach. PB has undertaken a high level review of Horizon Power's capital governance framework as an integral element in the assessment of the efficiency of historical and proposed expenditures.

In our view, good practice capital governance in the context of an asset manager, involves both good practice asset management principles as well as good practice investment management principles. In forming a view on the soundness of capital governance practices, PB relies upon our industry experience and our knowledge of the broader principles of sound business management practice. We also draw upon the principles set out in asset management standards such as PAS 55, the International Infrastructure Management Manual, and TAM, as well a range of Australian and International Standards. Broadly, these asset management standards define an approach that starts with the overarching corporate strategy, devolving this through policies, procedures and plans into all aspects of the business' operations. PB anticipates that good asset governance practice, as set out through such standards, would be evidenced by a well developed and integrated framework of documentation that forms part of the business' culture.

Further to this, PB expects sound capital governance to embody the principles of good practice investment management as evidenced through prudent business management practices. Specifically, formal delegations from the Board level through to business' operational levels, supporting policies and procedures to control capital investment (including audit practices), as well as control of capital investment as evidenced through business documentation which establishes the business case for investment throughout the entire asset lifecycle. These practices should be integral with the business' risk management practices, quality practices, compliance practices, OH&S practices, and environmental management practices amongst others.

This section describes PB's consideration of key policies, strategies, processes and wider operational influences that impact on Horizon Power's levels of capital and operating expenditure. The following sections aim to cover:

- what Horizon Power does in each area, and any recent changes in approach
- what relevant documentation is available that was used to inform PB's review
- what our views are in regards to Horizon Power's approach
- how our findings may impact overall expenditure efficiency.

5.2 Policies and strategies

This section focuses on the key policies and strategies that inform Horizon Power's expenditures.

5.2.1 Network capacity planning criteria and augmentation

Horizon Power's capacity planning module adequately describes the process used to develop long tern plans to meet the projected load on the system from fuel input into generation to customers' connections. The forecasting takes into account:

- Generation Capacity, and
- Transmission Planning Criteria[14].

The key document reviewed by PB is the Demand and Energy Forecast[15] to 2019/20. The forecasting system appears to be robust and involves several different steps, including from both a macro and local micro review level. Capacity planning requires forecasts at the P15 and P10 level which have a 15% and 10% chance of exceedence. PB notes that most transmission systems are planned on the basis of forecast demand with a 10% probability of exceedance and that Horizon Power's approach is consistent with this.

In the past, discrete loads – such as mines, resorts and prisons – have been included in the forecasts but Horizon Power has found that including these loads can skew the forecast as many of these developments fail to materialise. Horizon Power has developed a rule whereby these discrete loads are only included where there is greater than 80% chance that they will proceed. In PB's view, this approach is appropriate.

For distribution transformers and low voltage lines, the growth rate is based on the average system growth rate and is obtained from the load forecast for the system as well as allowance for any development identified from other planning sources including Landcorp plans.[16] PB notes that most distribution systems are planned on the basis of forecast demand with a 50% probability of exceedance and that Horizon Power's approach is consistent with this for cases where the load forecast is well within site capacity. For cases where the load forecast is close to the site installed capacity, Horizon Power adopts a more conservative 10% or 15% probability of exceedance forecast for distribution as well as transmission and generation elements[17]. The use of these conservative forecasts when distribution plant is nearing its capacity will result in capacity augmentation being scheduled earlier than would occur under a more typical 50% probability of exceedance scenario.

PB concludes that capacity planning is appropriate at generation and transmission level however capacity planning at distribution level is conservative and is likely to lead to inefficient scheduling of capacity augmentation projects.

5.2.2 Demand management initiatives

Horizon Power has 26 separate power systems, ranging from the large NWIS to many smaller stand alone systems. Matching generation capacity to the demand for electricity, therefore, is made complex by the need to accurately forecast demand in very small community areas. As a result, many agreements with IPPs contain limitations for augmentation.

When demand is forecast to exceed supply, Horizon Power actively pursues demand side initiatives as an alternative to installing more generation and networks. A recent example is the Exmouth supply area, where temporary generation has been proposed – at a slightly reduced cost over the installation

[14] Horizon Power, Planning Policy, DMS 3194808; and Transmission Planning Criteria, DMS#3155037
[15] Horizon Power, 2010, Demand and Energy Forecast FY 2010/11 to 2019/2020, DMS#3238764 Version Final
[16] Horizon Power, 2010, AMP Instruction Module 2010/11 Module 5 – Capacity, p.5
[17] Horizon Power, 2010, Instruction #AS 008/2010 – Demand Forecasting Criteria – 2010/11, DMS#325731, p. 3.

of permanent generation for the 2010/11 year – to allow demand side management initiatives to be fully explored.[18] It is likely that reductions in demand at peak times can be achieved and will result in the deferral of the need to undertake augmentation of the supply system. Horizon Power has also explored and implemented initiatives such as peak load cycling, peak load shifts and buy back from larger users to eliminate the high peaks in demand.

In July 2009 Horizon Power secured funding from the Office of Energy to undertake energy efficiency audits in 16 remote Indigenous communities. The Islanded Systems Development Division (ISD) has developed and delivered a comprehensive energy efficiency program to these communities. Horizon Power estimates that a minimum of 20% reduction in energy costs will be realised as a result of this program. PB confirms that this is in line with industry experience and best practice.

PB is satisfied that Horizon Power has adequate processes in place to identify and implement demand side initiatives in its supply systems.

5.2.3 Inspection, maintenance and operations approach

Horizon Power appears to be developing its routine maintenance forecasts from a detailed bottom-up view, which accounts for an implicit capex/opex trade-off.

The business is moving towards a full life-cycle cost and management strategy in regards to existing and new assets. It is aiming to adopt a condition-based risk management framework. The new approach is expected to deliver the following benefits (as outlined in a strategy paper to the Executive):[19]

- An asset database that reflects the current state of assets
- A justifiable capital budget that reflects the replacement of assets prior to failure
- A maintenance budget that minimises preventative maintenance without increasing reactive maintenance whilst improving performance
- A positive improvement in asset serviceability.

Horizon Power has developed an instruction module with regard to maintenance evaluation.[20] This module sets out Horizon Power's maintenance strategy as follows:

"Each asset or class of asset has a strategy applied to it based on the potential safety impact of the failure, the functional requirement of the asset, its criticality, the probable failure mechanism and Performance to Failure interval. An asset can be assigned a maintenance strategy that is based on one of the following;

- Run to functional failure
- Fixed time maintenance, and
- Condition based maintenance"[21]

Horizon Power uses an enterprise asset management system called Ellipse. Ellipse is used for cost and logistics management within all projects. Horizon Power has developed five new maintenance

[18] Horizon Power, March 2010, Operations Division - Submission To Executive - Exmouth Capacity Issues, DMS #3231832
[19] Horizon Power, June 2010, Submission to the Executive – The future asset management strategy – Asset Lifecycle strategy, DMS#3239307
[20] Horizon Power, 2010, 'Operations Division, AMP Instruction Module 2010/11, Module 10 – Maintenance Evaluation', DMS#3233283
[21] Op cit p.33

codes within Ellipse to be applied across the company with regard to maintenance philosophies. The maintenance philosophies adopted by Horizon Power are commonly used in the electricity industry and are shown in Table 5.1 below.

Table 5.1 Horizon Power maintenance philosophies

Maintenance Philosophy	Description
Reactive	There is no preventative maintenance activity and the equipment is allowed to run until it breaks down and/or when the equipment is malfunctioning. The business reacts to the work.
Corrective	Activities that are usually generated from a planned maintenance activity of a routine inspection, routine operational request or routine service requirement
Preventative	Work such as lubrication, routine inspections and adjustments. This is where action is taken to prevent a problem from occurring
Predictive	This is where a failure mechanism is monitored and forecasted with work being scheduled just before the failure event. This is different from the Preventative maintenance philosophy in that some form of technology is used to determine when the work is to be performed.
Maintenance Prevention	This is where the design of the equipment or a component is changed with the express goal of performing less maintenance. This process uses data gained from the predictive process to design out the issue. This code applies primarily to generation.

Source: Submission to Operations Management Team – maintenance activity codes (DMS#3208878)

Horizon Power states that the generally accepted optimum maintenance split within the utilities industry, based on these philosophies is 75% planned against 25% reactive. Table 5-2 below shows that Horizon Power's ratio of reactive to proactive work is trending towards this goal.

Table 5-2 Horizon Power distribution assets maintenance history

Maintenance Type	2006		2007		2008		2009	
	$	%	$	%	$	%	%	%
Reactive	914,931	66.19	6,070,924	59.76	6,568,082	49.79	4,745,249	40.29
Preventative	97,720	7.07	1,084,514	10.68	2,134,255	16.18	933,167	7.92
Predictive	369,127	26.07	1,633,362	16.08	2,190,049	16.60	2,612,496	22.18
Corrective	606	0.04	1,370,493	13.49	2,300,686	17.44	3,486,456	29.60

Source: Horizon Power AMP instruction module 10

PB has reviewed the table of pre-determined inspection and maintenance standards. PB believes that an appropriate level of inspection and testing frequency has been developed for each of Horizon Power's assets. These routine inspections and testing allow the company to raise defects and prioritise opex on specific assets to improve the overall asset performance.

PB finds that Horizon Power has developed a robust strategy towards maintaining its assets with appropriate emphasis on planning and inspections to maintain assets life and functionality.

Good documentation has been developed to ensure that high level strategic directives are actually carried forward. Manuals and handbooks have been developed so that the individuals doing the inspection and maintenance work follow the company policy.

5.2.4 Technical design standards

Most of Horizon Power's design standards are based on Australian Standards and in-house standards developed by the former Western Power Corporation. A process is continuing of standardising assets, projects and services across its legacy assets to introduce economies of scale (e.g. spares holdings, tendered packages, fleet management, etc).

This refinement of design standards to suit Horizon Power's unique operating environment should lead to efficiencies in the longer term.

5.2.5 Customer contribution policies

Horizon Power (in collaboration with Western Power) has developed a comprehensive Western Australian Distribution Connections Manual. This manual provides guidance on the policies the company adopts with regard to connecting to its network[22].

Horizon Power has developed a list of charging policies applicable to the various customer categories. The charges are applicable for standard connections. Where a different connection is required for example to improve supply security or provision of an alternate supply arrangement in response to a customer's request, costs associated with the alternative additional connection arrangement or network augmentation will be charged at full cost. Customer charging policy categories include:

- Subdivisions
- Individual customer (Standard supply)
- Individual customer (Non standard supply & non primary producer)
- Customer more than 25 km from a zone substation (Headworks charge)
- Non urban resident & primary production customer
- Overhead to underground conversions (Pole to pillar)
- Builder and temporary supplies
- Asset relocations
- Unmetered supplies (Telephone, street lighting, traffic lights etc.)
- Equipment hire
- Equipment sale.

PB is satisfied that Horizon Power's manual is a comprehensive document setting out the company's policies for connecting customers to its distribution network. The manual demonstrates that Horizon Power has developed appropriate policies for charging customers wishing to connect.

5.2.6 IT and non-network strategies

Horizon Power has and continues to undertake major IT business transformation programs, based on bringing major systems in-house rather than procuring services from Western Power. They include major IT platforms for Ellipse, GIS, and Metering. These programs are further discussed in section 9.5.1, where PB concludes that the programs are required and reasonable.

[22] Horizon Power & Western Power, Western Australian Electricity Distr bution Connection Manual, DMS#7159802

5.2.7 Workforce strategy and outsourcing

In discussions with PB, Horizon Power indicated that it has “no major headaches at present” with regard to staffing levels and retention. Staff turnover is around 5%, which is reported to be actively managed.

Horizon Power is aware that there are supply side constraints with regard to skilled employees in remote areas of Western Australia and has to compete particularly against the mining industry to retain staff. Horizon Power has established recruitment, induction, training and development, and performance management processes with the aim of retaining staff.

The business’s remuneration packages include retention packages, training and career development programs and considerable cost of living / locational allowances to manage remote resourcing issues.

Workforce planning

Horizon Power’s workforce strategy is outlined in Fact Sheet No. 32 which has been submitted for this review and is summarised here.

The business develops a workforce gap analysis based on current need and forecast work built up from the individual projects in the asset management plan.

Horizon Power undertakes scenario planning to build up a view of future labour requirements, internal capacity and external labour conditions. It has identified a four step process to workforce planning:

1. Scenario development workshop to consider internal and external workforce drivers – including effect of the Global Financial Crisis
2. Identification of critical roles through interviews with staff to determine necessity for new staff
3. Supply forecasting (including natural attrition)
4. Workforce analysis to develop strategies for workforce gaps.

By following these steps the company develops a workforce plan as part of the annual budgeting process.

Outsourcing

If there is a shortfall in workforce resources identified in the annual asset management planning cycle Horizon Power management will outsource work if the number of budgeted employees is not enough to undertake minimum levels of planned capital works, major design and engineering functions or complex project management. Horizon Power considers outsourcing staff where outsourcing provides:

- The capacity required to overcome spikes and peaks in the workload
- A more favourable commercial outcome
- Required skill sets that are specialised and not available within the existing workforce.

Where spikes and peaks become constrained, or required skill sets gained through outsourcing becomes an ongoing need, the opportunity to bring this work in-house is reviewed.

Service level agreements

Service Level Agreements (SLAs) were drafted by the State Government's Electricity Reform Implementation Unit prior to disaggregation of the Western Australian electricity industry. Under these arrangements Horizon Power received discounted services from Western Power, Verve and/or Synergy for a wide range of services including IT, Network planning, Networks support, metering and call centre handling[23].

For various reasons some of these SLAs have been terminated and new arrangements have been established, for example, the other party has decided to outsource the service themselves. In other instances the scale and price of new arrangements were deemed unsuitable for Horizon Power and it has initiated its own processes or outsourced the service from a third party.

Examples of how SLAs have evolved include the following: IT services were initially provided by Western Power but this reliance has now been reduced as Horizon Power has developed its own IT strategy. Metering services are now also only partially provided by Western Power – the data management side while AMRS Pty Ltd provides the meter reading service. Call centre and billing were originally provided by Synergy / Western Power but are now provided by an external provider - Serviceworks.

As the nature of the SLAs has evolved so has Horizon Power's methodology of recording the SLA costs. For this reason it is not possible to separately identify individual SLA costs from the Towns reports. However PB notes that where Horizon Power has established a new SLA with an external supplier, it has done so through a competitive tender process. PB believes that this indicates that the new SLAs should be efficient as they will be priced by the market. Examples of new SLAs which were contracted following competitive tenders include the provision of a new Customer Information System and a new Customer Care and Billing Services system.[24]

Essential service officer program

One of Horizon Power's key workforce policies relates to servicing remote communities. Instead of using contractors to service these communities Horizon Power has initiated the recruitment of local indigenous staff within the communities and has developed a training program for indigenous managers to national accreditation level[25]. In terms of providing community benefits, the training of district Essential Services Officer's (ESO's) is seen as a more expensive option in the short term but it is also viewed as a strategy to accrue greater benefits over time - a research study by WorleyParsons[26] indicated that a utility providing essential services with local engagement and new service standards can achieve substantial benefits in social, environment and financial values above a business as usual case. Horizon Power has decided to implement this option to capture these benefits.

PB remarks

PB is satisfied that the workforce planning processes are appropriate for a company undertaking Horizon Power's activities and appropriate consideration is given to outsourcing work. Horizon Power operates in a very tight labour market and can be commended on low staff turnover rates. Horizon

[23] Horizon Power, 2010: Fact Sheet 32: Workforce Strategy, DMS#3279323
[24] Horizon Power, DMS#3111549 and DMS#3116424
[25] Horizon Power, 2010, Fact Sheet 34: Cost Consideration of ESO Program, DMS#3279336
[26] WorleyParsons, Horizon Power External Engagement Presentation – Remote Communities Essential Services provision, DMS#3240064

Power's remote communities essential services provision training of indigenous workers appears to be leading to extra social benefits.

PB has some concerns that the rapid increase in staff within Horizon Power has not been justified fully with analysis to show the effects of the renegotiation / cancellation of Service Level Agreements, or the growth in customer numbers which would warrant a larger workforce. This issue is discussed further in Section 8.8.

5.2.8 Enterprise and project risk management

After a review in October 2009, Horizon Power adopted the use of CURA software to manage enterprise risk through Corporate Strategy themed risk registers. This approach introduced consistency and transparency across the business and supports a risk-focused operating culture. The risk framework is aligned to the project management framework and functional design of the business.

Horizon Power also adopts a semi-quantified risk and project ranking and prioritisation process as part of annual budgeting, using pre-defined business drivers as inputs. Horizon Power recognises limitations in its approach, including that it takes a project view rather than a portfolio view, that NPV of costs and risk overrides are necessary for projects greater than $30m and projects that are implemented on other 'strategic' projects where timing is discretionary.

Whilst risk mitigation is considered within Horizon Power's Asset Management framework, PB considers that risk management is not well integrated into the expenditure forecasting process in a manner that fully optimises business expenditure. The use of contingencies to cover capital project risk is discussed further in section 7.2.

5.3 Processes

This section focuses on the key processes used to inform Horizon Power's expenditures.

Internal systems (asset management planning, project management and governance, audit/ compliance monitoring and reporting, cost estimating, power purchase agreement strategy, etc) are impressive, in particular the intent to capture economies of scale, transparency and consistency across the business. However, there is some concern that the structure, processes and procedures may be adding a top heavy cost disproportionate to the size of the business.

5.3.1 Annual budgeting and project prioritisation

Horizon Power actively monitors its expenditures and tracks closely against budgets. This is demonstrated by the production of monthly reports to the Managing Director. These monthly reports contain financial metrics including changes in business value (as measured by profit and loss account), capex expenditure to date and average unit costs (actual vs budget). The reports also contain analysis on social, environmental and human resources KPIs.

Annual Budgeting

While monthly monitoring of financial performance is well developed with an appropriate suite of indicators taken into consideration, Horizon Power's also undertakes an annual budgeting process to

enable forecasts of future expenditure to be made. This annual budgeting process has three key deliverables[27]:

- a mid-year review for the current planning period
- an asset investment plan for the next planning period (Capital Program)
- a State Budget Forecast for the next planning period (Operating Expenses).

The currently approved budgets are treated as a 'base' year level of expenditure. Any proposed modification to the base budgets must be done through Horizon Power's internal systems. These are designed to ensure that asset management plans and budgets are aligned.

Each division prepares cases for changes supporting any requested changes to the budget to align with strategy. For any changes to the budget to be approved an appropriate level of analysis and justification must be undertaken.

Horizon Power's policy is that any revisions to the approved list of projects in the capital budget are first addressed in the asset management plans. Only when a project is approved will the budget be revised. To become approved the capital project must pass business case and other requirements contained in the AMP.

Any increase in the labour budget must be certified and be in line with the strategic development plans, and must relate to approved capital and business development initiatives. Any new labour to cater for 'growth' must be in line with the demand and energy forecasts.

To assist with budgeting and to ensure appropriate prices are being paid Horizon Power has referenced a survey of prices undertaken by SKM[28]. This survey looks at a range of capex and opex costs for distribution equipment & materials and work activities.

PB has undertaken a high level review of the budgeting process. The budgeting process appears to undergo an appropriate level of scrutiny and is designed to meet the company's needs and to meet the needs of reporting to the government. However, PB has not been able to fully see how individual project and expenditure items build up into the total budget figures. This is because the Town reports have been created by an allocation process and it is not possible to identify specific generic projects on this basis.[29]

It is not clear how all costs have been captured in the town reports worksheets. PB also notes that many of the business's functions (e.g. majority of retail costs) are not separately accounted for, and are placed within corporate 'buckets'. This makes the analysis of the appropriateness of expenditure in categories such as retail difficult.

Project prioritisation

Horizon Power has adopted a semi-quantified risk and project ranking and prioritisation process as part of annual budgeting, using pre-defined business drivers as inputs.

Horizon Power's first stage in prioritising projects is to test whether the project reduces the risk to the company. If the project does not reduce risk it is not deemed appropriate and will not be approved for

[27] Horizon Power, 2010, Fact Sheet No.5: The Budget Process, DMS#3240064
[28] SKM, 2010, Draft SKM Market price survey #4, DMS#3279776
[29] The town Reports have been specifically developed for this inquiry at the request of the Authority and are not the current approach to managing and reporting performance.

funding. Projects are assessed against a risk matrix.[30] Projects are next ranked according to the type of risk reduction which they engender. Those projects which move a situation from high to low risk will receive more priority than those which move from high to medium or medium to low. Horizon Power demonstrated to PB that it is developing project prioritisation processes.

PB concludes that Horizon Power actively tracks its budgets and is developing systems to better manage its prioritisation processes. PB is of the view that the company will strengthen its processes as it captures learning's in the form of database of variances from budget.

5.3.2 Gating, approvals and project governance and delivery, economic evaluation guidelines, PIR's

Horizon Power has adopted a 'Gating' process as its instrument to make formal decisions on project expenditure approval. The expenditure approval framework has six phases and five 'gates' or formal decision points.

Horizon Power has produced a high level overview document which outlines how the business uses the gating framework to make decisions on project investment[31]. This document explains that whilst only a few major decisions require the full business case development, due diligence and approvals the methodology and considerations apply regardless of project value. Each expenditure decision should have its rationale, recommendation and approval appropriately recorded, be that in an email for those of a smaller value or a full business case and accompanying Board and/or Ministerial Submission(s).

Not all project approval decisions require Executive endorsement as Horizon Power has an approved governance structure with defined Delegated Financial Authorities (DFA's). The gating framework does not replace these, but ensures they are applied so that smaller projects can be appropriately approved and Horizon Power can remain agile and engaged. For larger Opportunity/Projects where Executive endorsement is required the Gating Framework focuses effort on those projects and their strategic management.

The framework acts as a filtering mechanism and not all Opportunity/Projects entering the process will be implemented.

The phases and gates of the gating framework are summarised in Table 5-3.

[30] Horizon Power advises (email 14 Oct 2010, HP Response to Draft PB Report) that it also uses the Materiality of Change matrix to assess growth projects, but PB was not provided information on this process.
[31] Horizon Power, 2010, Gating framework High- level Overview "creating Lasting Value", DMS#3261374

Table 5-3 Horizon Power Gating Framework

Phase	Description	Gate number and Decision criteria
Engage	A case for change document is developed for consideration. If the project is significant it may be presented to the Executive.	**1** Should the Opportunity/Project proceed to the Explore Phase and be investigated further?
Explore	A business case is developed. The areas to be covered and the degree of detail required in the business case depend on estimated budget. Full business cases include probabilistic sensitivity analysis of key risk variables and options-based discounted cash flow modelling.	**2** Whether to internally approve the preliminary Business Case and whether or not it should proceed to the Explain/Elect Phase.
Explain / Elect	More commercial negotiations are required to enable Horizon Power to commit resources. Commercial, contractual and design specifications are developed. Business case may need to be updated if economics have changed since project approval	**3** Formal and final approval of the Financial Investment Decision of the Opportunity/Project, supported by key arrangements and documentation.
Execute	Project is implemented to agreed plan / schedule. Implementation report is formulated	**4** Whether or not the Opportunity/Project has reached operational condition and is ready to "hand-over" to Operational resources
Operate	Project is operating and is part of Horizon Power 'Business as usual'	
Evaluate	Evaluation of project delivery on time and budget, whether business case objectives met or not, other projects identified as a result of this one	**5** Post-Implementation Review of the project and its development

PB has reviewed Horizon Power's project management framework. While the previous gating process utilised by the company was mature and consistent with industry practice Horizon Power has decided to develop its project management practices. The E^5 process is relatively new but it represents the leading practice in the industry in terms of network infrastructure expenditure and project management. It incorporates appropriate options appraisal and evaluation criteria in the development of business cases and investment decisions.

5.3.3 Supply, demand and energy forecasting processes

Each year Horizon Power develops long-term forecasts of energy demand and supply. These forecasts are used to underpin network augmentation investment and to understand the need for new generation requirements.

Horizon Power has identified five key stages to its demand and energy forecasting methodology[32]:

- Sales data (segmented by business/residential) is projected by applying estimated growth rates (based on external research and local knowledge on usage and premise growth)
- Sent-out forecasts are weather corrected, a growth rate is determined and aligned with sales
- Load factors are generated and projected using growth rate previous estimated
- Discrete loads are applied where appropriate (i.e. where load is truly discrete of base growth rate; load is known and likelihood is high)

[32] Horizon Power, 2010, Fact Sheet No 1: The demand and energy forecasting process, DMS#3261364

- Statistical uplifts are then applied to the base forecast results to produce a range of probabilistic results.

Horizon Power uses a wide variety of inputs into its demand and energy forecasting process. The expenditure forecasting process uses the internal district and business unit budgeting processes to build up a 10 year outlook.

Horizon Power holds a forecasting workshop each year to include consultation with the key business stakeholders within the company. The workshop reviews all the individual demand forecasts. Individual projects are subject to challenge within the workshop until a robust forecast is made. This leads to a single set of reliable, relevant and well understood long-term forecasts for demand and energy consumption within Horizon Power's current customer markets. District managers are used as a valuable source of information in the forecasting process. They are able to build up information bases relating to future discreet loads. Any discrete loads are only included if they are satisfied there is an 80% chance of these loads actually being built. They also retain information relating to segments, organic growth, residential growth and consumption per residence.

External data sources are also used including studies by development bodies and external reports into government services commissions. Historic growth rate by district is another input into the forecasting process.

Once the forecast is made, a sensitivity for weather correction is also built in. High and medium growth scenarios are developed, 10% and 50% probability of exceedence scenarios are also developed.

The forecasts feed into operations and asset management planning and help to decide the matrix of capital planning in each system.

Demand management considerations will be integrated into the process once they have been established.

PB concludes that Horizon Power approaches its annual demand and energy forecasting using an informed and detailed bottom-up build.

PB has a concern that, while in principle the process of demand and energy forecasting may be appropriate, the business does not place much emphasis on incorporating independent (top down view) analysis as part of the demand and energy forecasting processes. It is PB's experience that other companies routinely commission independent research to better understand wider economic influences and other factors that may influence future demand and energy requirements. A risk with a bottom-up only forecasting approach is that it may not fully capture the effects of economy wide impacts.

5.3.4 Project cost estimating

The approach to costing major power station and transmission projects is based on independent cost estimates from vendor quotes/offers and on previous project experience. There is no evidence that forecast costs are not appropriate.

For distribution, the majority of the capex is forecast through the Distribution Quotation and Management (DQM) tool which ensures consistency in the pricing of compatible units across Horizon Power.

DQM is a well documented project cost estimating package for all distribution related expenditure. Its use ensures consistency and transparency, based on a single controlled database where historical costs are used to regularly update unit costs for the purposes of forecasts. The DQM tool is provided by Western Power through an SLA. Materials prices in the DQM system are maintained by Horizon Power by using monthly price reports provided by Western Power[33].

Horizon Power notes a lack of control of 'compatible unit' costs and has indicated there is evidence of on-costs, plus on-costs, etc. Horizon Power has provided an independent comparative assessment of selected unit costs against other distribution businesses[34] that shows the costs reported by Horizon Power for a range of capital and operational and maintenance activities are higher than those experienced by other distribution companies in Australia. This is further discussed in section 5.4.4.

5.3.5 Business overheads and capitalisation policy

Horizon Power's operating expenditure can be split into direct opex and overheads. In addition Horizon Power's unique decentralised model means that it has an additional layer of 'District' costs.

Its costs are therefore made up of (i) direct operational expenditure which can be assigned to specific operational and maintenance practices, (ii) centralised overheads which exist regardless of the level of opex activity undertaken and (iii) another cost category which relate to operations at a district level. These costs are a mixture between direct and indirect costs.

Centralised overheads include corporate services such as 'People', 'Shared Services', 'Knowledge and Technology' and financial services. These are managed centrally from Karratha and Bentley. District costs include district management and work delivery and are separately accounted for in each of the six districts.

Horizon Power contends that the adoption of its decentralised operating model was "a clear acknowledgement that the previous centralised management model, employed by Western Power, failed to deliver services to remote and regional areas to the satisfaction of communities and Government"[35].

Horizon Power has established the decentralised operating model as a method of capturing economies of scale. Under this model, towns are clustered into district level as this provides a critical mass of functions. As a result many costs which would normally be accounted for as direct – in that they relate to core service provision – are considered as indirect in Horizon Power's system.

PB Comments

PB believes that the internal systems (asset management planning, project management and governance, audit/compliance monitoring and reporting, cost estimating, power purchase agreement strategies strategy, etc) are impressive, in particular the intent to capture economies of scale, transparency and consistency across the business. However, there is some concern that the structure, processes and procedures maybe adding a top heavy cost disproportionate to the size of the business.

PB understands that the rationale for establishing a decentralised model with overheads structured on a district operating level is to capture cost efficiencies and improve management of the company.

[33] Horizon Power, 2010, Fact Sheet 28: DQM Update, DMS#3281091
[34] SKM, 2010, Draft SKM Market Price survey #4, DMS#3279776
[35] Horizon Power, July 2010, Submission to the ERA Issues Paper, section A3.9

However, it was not immediately clear that it was appropriate that a considerable amount of management presence should be deployed in six separate districts. The basis of having six (rather than five, or seven) districts appears to stem from the historical number of works depots.

PB is also concerned that Horizon Power's corporate structure developed from a model that was part of a larger legacy business, may have incurred significant overhead and asset management costs which are no longer appropriate for a company of Horizon Power's size.

PB asked whether Horizon Power had reviewed the number of districts to see if it may be more efficient to have more or fewer district offices. Horizon Power responded that as part of the Pilbara Underground Power Project (PUPP) it had identified that at the project's conclusion there would be an expected reduction in district workload and that the company had decided to rationalise the West and East Pilbara District business manager roles into a single Pilbara role[36]. This will lead to cost savings through the amalgamation of senior management roles, however these saving have yet to be identified and the restructure will not take place until after the completion of the PUPP in 2012. Opex efficiencies arising from PUPP are further discussed in section 9.4.1.

PB believes this review demonstrates that the company undertakes good practice in monitoring the appropriate level of management structure required in its districts, which should lead to reduced opex in the longer term. PB makes recommendations about these opportunities for efficiency improvements in section 8.8.

However PB is concerned that a considerable amount of opex overheads are contained in large 'buckets' as this can present problems of transparency. For this review there is a particular problem in attempting to identify the efficient retail costs. This is because some of the retail functions are accounted for under district costs. For example, a person undertaking both retail and other functions does not allocate time in their timesheets for the retail functions. This is further complicated by the fact that some retail functions are not done at the district level but at the corporate level, for example call centre costs. PB notes that while a new Chart of Accounts has been implemented as of February 2010 in order to track financial performance more robustly based on activities, the business is not implementing full timesheet accounting across the board.

Overhead allocation

Horizon Power has allocated corporate overheads to towns and districts based on the energy supplied within those areas. PB believes that this is a reasonable approach given lack of any other means of identifying individual town's costs.

Additionally labour overheads have been allocated to towns and districts based on the number of man hours worked. In practice costs are recorded by the works delivery sections within Operations Division who consist of trade personnel who provide labour for maintenance, external works, plant operations and capital projects. Overheads such as training, accommodation and protective equipment are recorded by Works delivery staff and are charged based on the number of hours charged directly to jobs. PB again believes that this is a reasonable approach.

Efficiency of Overheads

Horizon Power's integrated value chain leverages off a combined service delivery model at the district and corporate levels. As such, many costs that would normally be seen as direct costs in larger

[36] Horizon Power, 2010, Fact Sheet No 46: Decentralised Operating Model, DMS#3284993

organisations with distinct generation, retail, transmission and distribution businesses are collectively accounted for and costed out through an allocation process. Those traditional 'corporate' overhead functions were identified. As shown in Table 5-4, PB found that these corporate overheads as a percentage of total expenditure have varied from a low of 13% (2007/08) to a high of 22% (2005/06) and represented 21% of total expenditure in 2008/09.

Table 5-4 Overheads $m

Item	2009/10	2008/09	2007/08	2006/07
Traditional corporate costs	99.4	69.1	44.6	51.3
Corporate costs as percentage of total expenditure	21%	19%	13%	22%
Other overheads	27.2	48.6	24.2	23.0
Tariff equalisation fund	-	(72.0)	(71.6)	(69.7)

Source: Horizon Power, 2010, 'HP#3294509V2 Overheads.xls'

In PB's view, this level of traditional corporate overhead is not unusual. In respect of capex, some businesses do not assign any corporate overheads to individual projects, direct charging all costs, while some do allocate overhead costs. The recent draft decision by AER[37] examined overhead allocations to capex and found one business allocated nothing (United Energy Distribution) and the highest allocation was 22% (CitiPower). PB has examined a number of electricity, gas and water businesses and found overhead allocations to capex are typically applied at rates between 5% and 20%. In respect of opex, overhead rates of between 15% and 25% are typical. Given that Horizon Power allocates a high proportion of its expenses as overheads, PB would expect that the ratio of corporate overheads to total expenditure should be at the higher end of the observed range.

In respect of those overhead costs that are not traditional 'corporate' overhead functions, the major items relate to energy sales, metering operations, plant/system operations and SCADA costs. In PB's experience, most electricity businesses would direct charge these 'other' overheads to opex line items or to the appropriate work activities.

The large increase in other overheads expenditures in 2008/09 when compared to other years is due to a variation in energy sales caused by Customer Service Obligation payments received from government that was accounted for at the corporate level and sales not recorded at the Town level. The majority of the $27.1m expenditure in 2009/10 is due to financial services ($7.1m made up of lease interest, lease adjustment and amortisation), customer and stakeholder management ($3.4m), asset management ($3.2m) and technical support for SCADA etc. ($3.2m), with the remainder spread across a further 11 categories. Increases in 2009/10 over other years are related to a $1.5m increase in CIS management, $1.9m of consultancies for asset management, and a $2.5m capital construction costs with reductions occurring in energy purchases and sales. Overall, PB is of the view that the increases over the 4-year period are consistent with Horizon Power's strategy to in-source some activities and to focus on good management of its assets following the businesses start in 2006.

Capitalisation Policy – capex/opex trade off

The level of capex undertaken by a business will have an effect on its future operating costs. Replacement capex will usually focus on assets that are in poor condition and therefore are likely to have correspondingly high inherent maintenance costs. Capital expenditure on replacement of assets

[37] AER, 2010, Victorian draft distribution determination, p.xxxii

can therefore be expected to engender a corresponding reduction in the level of maintenance expenditure required. This should be reflected in a reduced opex budget.

Horizon Power has provided evidence that it considers the opex reductions when examining the business case for capital expenditure. The business case for the hardening (undergrounding) of the network[38] outlines certain management assumptions about the level of opex expenditure reductions due to the hardening of the network. The report states that as a result of the extra capex, routine and preventative based maintenance will be reduced by 80%, corrective maintenance will reduce by 60% (40% at Esperance) and emergency maintenance will reduce by 70%. PB notes that the report stresses that these figures have not been tested and are assumptions provided by management.

Furthermore Horizon Power has provided evidence that capex/opex trade-off considerations are actively modelled as part of the budgeting process[39]. In the Pilbara undergrounding scheme Operations division reviewed staffing requirements and reduced forecast FTE requirements by 13 from 2013/14. Table 5-5 sets out the reduction in the opex budget for the Pilbara region as a result of the PUPP project.

Table 5-5 Opex budget reductions resulting from Pilbara capex spend

Unescalated $m	Opex budget for 2013/14 before PUPP	Opex budget for 2014/15 including PUPP	PUPP savings factored into current budget
East Pilbara Total Opex	3.909	2.422	1.487
West Pilbara Total opex	2.751	1.308	1.443
Pilbara total opex	6.660	3.730	2.930

Source: Horizon Power Fact Sheet 56: Capex – Opex trade Off, DMS#3285508

While PB recognises that the affect on opex is introduced into the company's budgets as uncertainty around commissioning of projects is reduced, PB believes that it would be good practice to ensure that an estimate of opex savings is explicitly incorporated as part of any business cases for new capital projects. This would increase the robustness of the analysis. Inclusion of specific capex/opex trade-off data would eliminate PB's concern with the current Deloitte report into the impacts of undergrounding, which does not contain an npv assessment of the cash flow of future capital and operating costs and savings associated with the project.

Notwithstanding PB's concerns regarding business cases, PB believes this review demonstrates that the company does take capex / opex trade-offs into consideration when developing its budgets.

5.3.6 Asset management practices and documentation and register

Horizon Power has a well developed asset management system that has been independently audited in 2008 and in 2009. Evidence exists that recommendations from these audits have been adopted. PB confirms that Horizon Power maintains appropriate asset management data systems, asset management strategy documents that are refreshed annually, and has documented its asset management practices.

At its inception in 2006, Horizon Power used a 'fit for purpose' asset management strategy. Under this strategy most assets were replaced on age, with some condition assessments made on high value assets. Since that time, a new strategy – the asset lifecycle strategy – has been progressively

[38] Deloitte Touch Tomatsu, 2008, Drivers and Impacts of the Proposed Networks Hardening Strategy
[39] Horizon Power, 2010, Fact Sheet 56: Capex – Opex trade Off, DMS#3285508

implemented. Under this new strategy, Horizon Power seeks to minimise costs over the life of the asset. Central to this strategy is information about the current and likely future condition of the assets.

Moving to a condition based 'Asset lifecycle strategy' is consistent with good industry practice. PB notes that most electricity network business have or are moving to a condition based asset management approach.

The pole replacement program was cited by Horizon Power as an example where this is being implemented with tangible benefits. It is also moving towards a full life-cycle cost and management strategy in regards to existing and new assets. Horizon Power recently completed a business wide maintenance review process and is aiming to adopt a Condition Based Risk Management (CBRM) framework to its approach – evidenced by a strategy paper to the Executive[40].

PB notes that Horizon Power has implemented programs to capture the age and condition of its network assets (poles and related hardware) and has reviewed the network asset management practices that were inherited from the previous Western Power Corporation. Horizon Power found many network assets that do not meet the appropriate current standards and have implemented rectification programs. It has also reviewed its inspection and testing practices and has plans to significantly improve these.

In PB's view, Horizon Power has embarked on a program that when complete will place them at 'best practice'. This will require a greater understanding of the operating environment in which individual assets are located in order to fully apply its asset life-cycle strategy and the completion of the move to condition based management practices.

5.4 Operational environment

This section focuses on wider business and operational influences that inform Horizon Power's expenditures.

5.4.1 Jurisdictional, license and regulatory obligations and compliance manuals

A strong program of internal auditing, monitoring and reporting has been established to support the improvement of business practices. Evidence exists that recommendations from independent reviews of Asset Management Plans by GHD and Qualeng have been adopted.

A compliance policy, framework and program have been established that are available to all employees via an internet link. Data from the Online Compliance Register is imported into Risk and Compliance Management software (Cura) and each obligation allocated to an accountable officer (typically Manager and above). The obligation owner is responsible for identifying existing or required controls to ensure the management of the obligation. Once a control has been identified or developed this is placed into a Control Register and reviewed on a recurring basis – review cycles are at the discretion of the control owner. A number of reports can be generated by Cura and are used to monitor compliance with obligations, control review status and progress against audit recommendations.

PB examined the compliance program, which covers legislative, regulatory, environmental and safety obligations, and notes that it appears to be comprehensive.

[40] Horizon Power, 2010, The Future Asset Management Strategy – Asset Lifecycle Strategy, DMS#3239307

5.4.2 Service standards – performance and targets

The Electricity Industry (Network Quality and Reliability of Supply) Code 2005 specifies that, as far as is reasonably practicable, Horizon Power is to ensure that the reliability performance to individual customers should not exceed:

- on average a SAIDI of 290 minutes per year
- 16 interruptions per year
- should not be interrupted for more than 12 hours continuously.

Horizon Power has established duration targets of 160 and 290 minutes respectively, for its urban and rural areas and either 350 or 500 minutes (depending on the characteristics of the supplying network) for its remote rural areas. On average, these targets should result in an overall SAIDI of 260 minutes[41].

As at May 2010, the targeted levels of performance were not being achieved in 5 of the 36 non-interconnected power systems. All power systems are forecast to meet the required standards by July 2011[42], with expenditure of $3.7m included in the forecast period for improvements in the Wyndham area.

In addition, Horizon Power undertakes reliability improvement projects where the economic benefit – based on the Value of Consumer Reliability established by VENCorp – exceeds the cost. This approach is consistent with other electricity industry participants, as evidenced by the AER's Service Target Performance Incentive Scheme that provides funding for reliability improvement works to DNSPs in the NEM states on a similar basis. PB identified only one project in the forecast period – $76,000 to address reliability issues at Lake McLeod near Carnarvon.

5.4.3 Impact of CPRS and MRET

Horizon Power has dedicated staff responsible for analysing the impact on the business of Renewable Energy Certificates obligations and any potential Carbon Pollution Reduction Scheme.

In relation to the CPRS, Horizon Power has modelled the impact of a carbon cost which it anticipates would be passed on to Horizon Power through the PPAs[43]. In order to minimise the potential costs on its bottom-line or on customers Horizon Power also instigated a review to see if there was any way it could legally prevent a cost increase. However, following direction from the Department of Treasury and Finance to remove the cost of carbon from its budgets and the announcement that the Federal government would not be introducing the CPRS in 2011; Horizon Power no longer estimates the carbon costs in its budgets.

PB agrees that budget forecasts should exclude consideration of a carbon price until greater certainty is available regarding the introduction of legislation around such a scheme.

With regard to renewable energy targets Horizon Power has modelled the effect of its certificate liability into its budgets and has made forecasts on future liabilities with regard to government policy announcements.

[41] Horizon Power, undated circ 2010, Differential Electricity Reliability Measure For Certain Remote Areas, DMS#3237619
[42] Horizon Power, 2010, Performance report May 2010, p.4, DMS#3195883
[43] 'Horizon Power, 2010, Fact Sheet No.13: CPRS & RET Liabilities – Forecasting, considerations and allowances, DMS# 3274924; and interview with Brenna Pavey 17 August 2010.

Horizon Power's current annual Renewable Energy Certificate (REC) liability is about 30,000 certificates which will rise with energy sales growth and the increasing renewable energy target. Horizon Power has a contract in place which will cover around half the current requirement through to 2012. Horizon Power will need to purchase more RECs on the market with increasing volumes, year on year or install renewable generation capacity and produce them.

Horizon Power has established a Key Performance Indicator (KPI) to meet all of its legislative requirements with regard to REC obligations. The business has undertaken a modelling exercise to account for the new REC obligations and has set up a trading group to purchase the required certificates.

With a market price of $40 per REC Horizon Power's REC related expenditure would be around $1.2m per annum. Horizon Power has stated that "all RECs being purchased are for the NWIS and are shown in the Port Hedland town report as renewable energy purchases. We have no other liabilities as the other systems are too small (below 100MW)"[44]. Forecasts for renewable energy purchases at Port Hedland are given in Table 5-6. This shows REC expenditure reaching this level by 2013/14.

Table 5-6 REC purchase forecasts $m

	2010/11	2011/12	2012/13	2013/14
Port Hedland Renewables	0.71	0.96	1.04	1.12

Horizon Power's REC liability flows from the NWIS (as it is a system over 100MW) however, any eligible renewable generation projects will facilitate the production of RECs. Both Marble Bar and Nullagine solar power stations will create RECs that Horizon Power may use to satisfy its REC obligations.

Horizon Power has stated that its current strategy favours purchases of renewables rather than installing its own renewable generation[45] and that the trading group within the Strategy and Business Development unit keeps 'a watchful eye' on the REC price.

PB has reviewed Horizon Power's purchasing strategy with regard to RECs. PB is satisfied that the business is operating efficiently with regard to the level of certificate purchases required and adequately considers the value of generating electricity from renewables instead of buying certificates.

5.4.4 Application of cost escalators

Horizon Power has applied escalations to two of its cost inputs in order to derive its budget forecasts. The escalators apply to most materials and labour costs. Some costs such as Telecommunications and Commercial Property Maintenance are escalated by CPI as these Expense Elements don't typically increase at the higher rates. In Generation, Power Purchase Agreements typically have their own individually specified escalators and Horizon Power uses rates outlined in the contract terms to forecast future generation materials and labour increases.

Materials

Horizon Power does not believe that the Consumer Price Index (CPI) accurately reflects the underlying cost inflation which it faces. The CPI is too wide a basket to capture accurately the

[44] Horizon Power, 2010, Question #86, DMS#3281874
[45] Horizon Power, 2010, Fact Sheet 13: CPRS & RET liabilities – Forecasting, considerations and allowances, DMS#3274924

increases in Horizon Power's costs of specific materials in its projects. Horizon Power believes that the Building Cost Index (BCI) from the Department of Housing and Works is more representative of the cost-pressures it faces in its operations and capital projects.

However since the BCI is constructed based on the Perth Metropolitan non-residential construction, Horizon Power applies an adjustment (uplift) to the BCI to more accurately reflect the higher costs of materials in rural Western Australia.

Since 1975, the BCI has increased on average by 6.85% per annum. Horizon Power has applied a 20% regional loading to the BCI to account for increased rural costs and calculated the annual average cost inflation in its materials to be 8.22%. Table 5-7 shows how this escalator has been applied in the 2008/09 budget process.

Table 5-7 Materials escalators

Materials	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Escalated Building Cost Index	8.22%	8.22%	8.22%	8.22%	8.22%	8.22%
Compounding Escalator	1.082	1.171	1.267	1.371	1.484	1.606

Source: Horizon Power, August 2009, Submission to the Executive – Cost Escalations for use in the 2010/11 Budget Round and Business Case Assessments, p.1. DMS#3192516

Fact sheet 31 outlines Horizon Power's rational for uplifting the BCI index:

> "The former Department of Local Government and Regional Development published a "Regional Prices Index", which "compares a unique basket of goods and services using a unique set of commodity weightings". As outlined in that report the Pilbara region had an index approximately 20% higher than Perth. With a high proportion of Horizon Power's expenditure in the Pilbara region this 20% regional loading was selected. A single loading rather than multiple region specific loadings was applied to simplify the budget process and reduce complexity"[46].

Labour

Horizon Power has a three year enterprise agreement negotiated with staff. It also has individual agreements which use the enterprise agreement rates as a minimum threshold for wage increases. Horizon Power has used the agreed wage rates increases in the enterprise agreements to model the wage inflation it will face over its planning period. Horizon Power escalates contract labour by the materials escalator on the basis that contract labour is included in the total construction costs used to compile the Perth BCI.

By applying a weighted average of wage rates and incorporating a performance premium, the year on year increases in Table 5-8 have been derived and are used as labour escalators in the company's budgeting processes.

[46] Horizon Power, 2010, Fact sheet 31: Rational for escalators and regional uplifts, (DMS#3279317)

Table 5-8 Labour escalators

Labour	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
HP labour cost escalators	7.7%	6.4%	6.5%	6.4%	6.5%	6.5%
Compounding Escalator	1.077	1.146	1.220	1.299	1.383	1.473

The compounding escalators outlined in Table 5-7 and Table 5-8 are significant. A small variation in the escalators will have a large impact on projected costs.

In order to see the impact of the cost escalation on the projected costs Horizon Power provided capex and opex cost forecasts in both escalated and unescalated formats. The materiality of the escalators was highlighted in section 4.

PB comments

PB's experience is that other regulated utilities commission independent analysis of escalators or have an independent assessment of their formulated in-house escalators undertaken to support any forecast cost increases above CPI. In recent Australian regulatory determinations these forecasts have been based on a breakdown of the capital program into its constituent elements and third party forecasts for key input commodities and labour.

Horizon Power has not had an independent assessment of its escalators undertaken and has proposed the extrapolation of a single historical construction index (the BCI) for contract labour and materials. Whilst PB is concerned that the relatively simple application of a retrospective cost index may not fully reflect the complexities of Horizon Power's expenditure program, the use of the escalators is subject to internal scrutiny, and approval for the escalators is undertaken at Executive level. Furthermore the escalators are provided to the Department of Treasury and Finance (DTF) as part of the State Government's mid-year review (MYR) budgetary process. In the past three years the government has accepted Horizon's Power's formulated escalators without revision.

Notwithstanding the above, PB is concerned with how the 20% regional uplift factor has been applied in determining Horizon Power's materials escalation forecast. We understand that the intent of the regional factor is to adjust Perth base prices to reflect the higher prices experienced in regional areas. Therefore the uplift should simply be applied as a multiplier on the base cost, i.e. 120% of the Perth cost in any year.

In contrast, Horizon Power has applied the 20% uplift to the historical annual escalation rate that it has calculated from the Perth BCI. This treatment has the effect of significantly overstating the rate of materials escalation in Horizon Power's forecast as it assumes that both the rate of escalation as well as the base cost estimates will be 20% higher than experienced in the broader WA market. This has the effect of increasing the difference between the forecast Perth and regional costs each year such that the regional prices will increase above 120% of the Perth prices in each subsequent year.

Given Horizon Power's existing high unit costs discussed below, PB is of the view that the impacts of regional factors are already incorporated into Horizon Power's base costs at rates that are typically around 20%. Therefore a higher allowance for escalation (in dollar terms) is inherent in the high regional costs underpinning Horizon Power's expenditure forecasts and a further uplift to the annual rate of escalation is not supported.

PB also notes an analytical discrepancy in the formula that was used to calculate the annual historical escalation rate of 6.85% that was submitted by Horizon Power. We have recalculated the historical escalation rate to be 6.25%[47].

In the absence of a detailed independent review to establish the expected rate of materials escalation over the forecast period, PB does not consider Horizon Power's use of the long term historical average BCI escalation rate to be an unreasonable proxy for its expenditure program. However, in our experience it is common for CPI to be used where strong evidence to support an alternative escalation forecast is unavailable.

Noting the historical acceptance of the BCI by the Department of Treasury and Finance, should the long term trend in BCI be adopted for forward escalation, we would recommend that the annual nominal materials escalator is revised from Horizon Power's proposed 8.22% to 6.25% as shown in Table 5-9.

Table 5-9 PB adjusted BCI escalators

Materials	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Escalated Building Cost Index	6.25%	6.25%	6.25%	6.25%	6.25%	6.25%
Compounding Escalator	1.063	1.129	1.199	1.274	1.354	1.439
Consumer Price Index[48]	1.90%	2.90%	3.00%	2.50%	2.00%	2.00%
Compounding Escalator	1.019	1.049	1.080	1.107	1.129	1.152

Source: PB Analysis

The impact of the adjustment in the context of the historical BCI and national CPI figures (taken at 5 year intervals) is illustrated in Figure 5-1, below.

[47] Based on the 38 year period used by Horizon Power from March 1975 (BCI = 25.3) to March 2009 (BCI =198.5) i.e. 25.3 x (1 + 6.25%)[38] = 198.5 (From rec_69696 escalators and BCI.xls sheet: 'BCI – 2010-11')
[48] ABS actuals (6401.0) and RBA forecasts from its Statement on Monetary Policy Aug10 Table 14: output growth and inflation forecasts

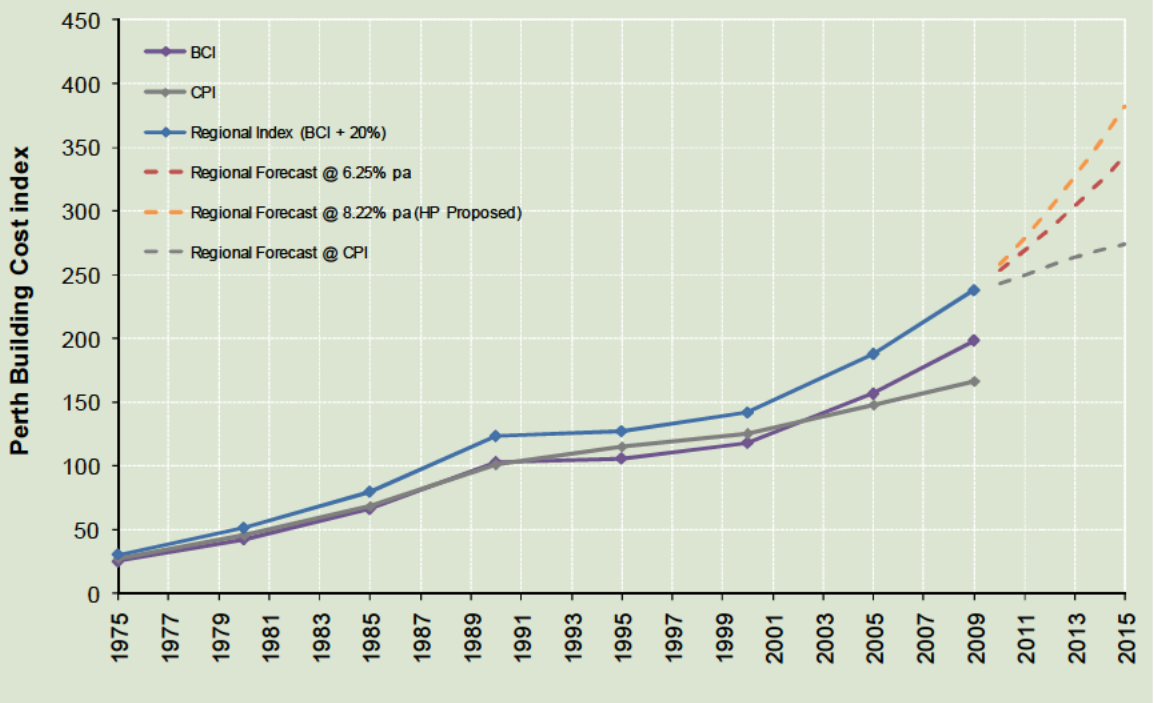


Figure 5-1 Effect of forecast escalation against historical Perth Building Cost Index

Source: Department of Treasury and Finance Building Cost Index - Perth

In order to test whether the regional uplift factors used by Horizon Power are appropriate PB compared Horizon Power's unit costs against an independent cost index - Rawlinson's Construction Handbook[49].

Rawlinson's Construction Handbook[50] provides regional indices to enable a high level adjustment for total construction costs throughout WA. These indices suggest an uplift of between 45% and 65% for towns north of Carnarvon and between 30% and 40% for southern parts of the state.

PB has calculated that around two thirds of Horizon Power's forecast capex is to be expended in the Carnarvon and Pilbara regions where the Rawlinson data suggests prices are expected to be between 45% and 65% higher than Perth metropolitan prices. SKM's analysis of Horizon Power's unit costs confirms that they are in line with the Rawlinson indices. PB therefore concludes that Horizon Power's regional uplift factors are appropriate.

This conclusion is further borne out when capex expenditure is compared to budgets. When the effect of delays is removed Horizon Power's capex closely aligns with budgets – this would indicate that costs are being estimated with a good degree of accuracy. Performance against budgets is further discussed in chapter 6.

As mentioned in section 5.3.4 Horizon Power provided an independent comparative assessment of selected unit costs against other distribution businesses throughout Australia[51]. This report highlights the very high prices for capital works and operational & maintenance activities faced by Horizon Power. The report demonstrates that in all six cases where data was provided by Horizon Power for typical capex activities, the costs reported by Horizon Power exceeded the average Australian

[49] Rawlinsons Construction Handbook 2010, 28th edition, p.30
[50] Rawlinsons Construction Handbook 2010, 28th edition, p.30
[51] SKM, 2010, Draft SKM Market price Survey #4, DMS#3279776

estimated market price by between 54% and 235% as well as exceeding the 'upper credible market price'.

The report concludes that "it [is] highly likely that the final price for typical items of plant and equipment procured for use in opex and capex projects within the Australian electricity industry can be expected to continue to present real increases for some time to come"[52] Horizon Power's use of material escalators is in line with this conclusion.

With regard to labour price trends, the report concludes that "electricity utility project costs relating to the price of specialised labour can be expected to grow in real terms for the foreseeable future by at least 1.3%p.a. above national CPI"[53]. PB concludes that the labour cost escalators used by Horizon Power are in line with the SKM conclusion.

PB concludes that Horizon Power's use of regional uplift factors is appropriate and this is backed up by two independent surveys and analysis of electricity industry materials and labour costs in Western Australia and Australia as a whole.

5.5 PB key findings (Process review)

PB notes that many of the processes, systems and methodologies had been substantially revised or introduced across the business within the past six to twelve months. Prior to this it is apparent that Horizon Power relied on many legacy Western Power processes and systems. Given the history of disaggregation and the business' desire to reduce its reliance on legacy systems with limited support, a widespread assessment, rebranding and improvement in processes and systems over this period is considered to be reasonable.

In most cases the rigour of the processes and quality of the documentation provided by Horizon Power were better than normal industry practice and in PB's opinion represent an evolution of the business rather than a fundamental change in strategic direction. The understanding and acceptance of recent changes across the individuals that PB interviewed appeared to be strong, which Horizon Power attributed to the consultative continuous improvement culture that has been established.

The following points summarise PB's findings with regard to policy and strategy documentation:

- Process, policy, strategy documentation appears excellent, however the level of implementation varies from fully implemented to early stages of roll out. PB has not conducted formal audits of the processes and policies reviewed and cannot confirm the level of implementation and compliance with these.
- Capacity planning processes are appropriate
- Horizon Power has adequate processes in place to identify and implement demand side initiatives in its supply systems
- Horizon Power has developed a robust strategy towards maintaining its assets with appropriate emphasis on planning and inspections to maintain assets life and functionality
- Ongoing refinement of technical design standards to suit Horizon Power's unique operating environment should lead to efficiencies in the longer term
- Horizon Power has developed appropriate policies for charging customers wishing to connect

[52] Ibid p15
[53] Ibid p xi

- IT and non-network strategies have resulted in programs of work that appear reasonable
- Workforce planning processes are appropriate for a company undertaking Horizon Power's activities and appropriate consideration is given to outsourcing work. PB has some concerns regarding the justification for the rapid increase in staff numbers combined with the increase in operating expenditure.
- risk management is not well integrated into the expenditure forecasting process.

The following points summarise PB's findings with regard to processes:

- The budgeting process appears to undergo an appropriate level of scrutiny and is designed to meet the company's needs and to meet the needs of reporting to the government. However, PB has not been able to fully see how individual project and expenditure items build up into the total budget figures
- Horizon Power actively tracks its budgets and is developing systems to better manage its prioritisation processes
- Horizon Power has recently updated it project management framework to include an E^5 gating process for project approvals which represents leading industry practice
- Horizon Power approaches its annual demand and energy forecasting using an informed and detailed bottom-up build, however PB has a concern that the business does not place much emphasis on incorporating independent (top down view) analysis as part of the demand and energy forecasting processes
- Project cost estimating is achieved through a well documented project cost estimating package
- PB believes that the internal systems (asset management planning, project management and governance, audit/compliance monitoring and reporting, cost estimating, power purchase agreement strategies strategy, etc) are impressive, in particular the intent to capture economies of scale, transparency and consistency across the business. However, there is some concern that the structure, processes and procedures maybe adding a top heavy cost disproportionate to the size of the business
- The approach to overhead allocations is reasonable
- Horizon Power demonstrated that capex / opex trade-offs are taken into consideration when developing budgets
- Horizon Power has embarked on a program to update and improve its asset management practices and documentation, that when complete will place them at 'best practice'

The following points summarise PB's findings with regard to the operating environment:

- the compliance program, which covers legislative, regulatory, environmental and safety obligations, and notes that it appears to be comprehensive
- Horizon Power has established service performance targets and has plans in place to meet the targets by July 2011
- budget forecasts currently exclude consideration of a carbon price and PB agrees this is appropriate until greater certainty of the CPRS (or similar) scheme is known

- Horizon Power is operating efficiently with regard to the level of renewable energy certificate purchases required and adequately considers the value of generating electricity from renewables instead of buying certificates
- Horizon Power's use of escalators is appropriate and this is backed up by two independent surveys and analysis of electricity industry materials and labour costs in Western Australia and Australia as a whole.

PB is of the view that many opportunities for opex reduction arise from the work being undertaken by Horizon Power in refining its policies, standards, and work practices. PB makes recommendations about these opportunities for efficiency improvements in section 8.8.

6. Historical expenditures

This section examines Horizon Power's opex and capex budgets and the historical expenditure against these budgets. The analysis includes generation opex but examines this expenditure both including and excluding costs which are directly controllable by the company.

To assess the historical expenditure against the budgeted expenditure, PB has considered the Managing Director's reports provided by Horizon Power for the period March 2006 to May 2010 and the Profit and Loss accounts provided for year end June 2008 to June 2010.

6.1 Historical opex

Horizon Power tracks budgets closely and reports on actual expenditure variation with budget in regular reporting to the managing director.

Figure 6-1 shows historical annual actual opex compared to budgeted opex. It includes labour and materials but excludes expenditure on fuel, interest, tax, depreciation and amortisation.

Figure 6-1 Horizon Power opex actual expenditure vs. budget

Source: Horizon Power Spreadsheet Actuals vs budgets

Horizon Power's financial year ends on 30 June. For two of the four operating years, actual opex expenditure has been above budget while for the other two actual expenditure has been below budget.

At financial year end the maximum variance of actual expenditure to budget was 12% in 2006/07 – Horizon Power's first full year of operation. In 2007/08 and 2008/09 year end actual expenditures were very close to budgeted figures – both within 2% variance. The actual underspend in 2009/10 was 5% below budget.

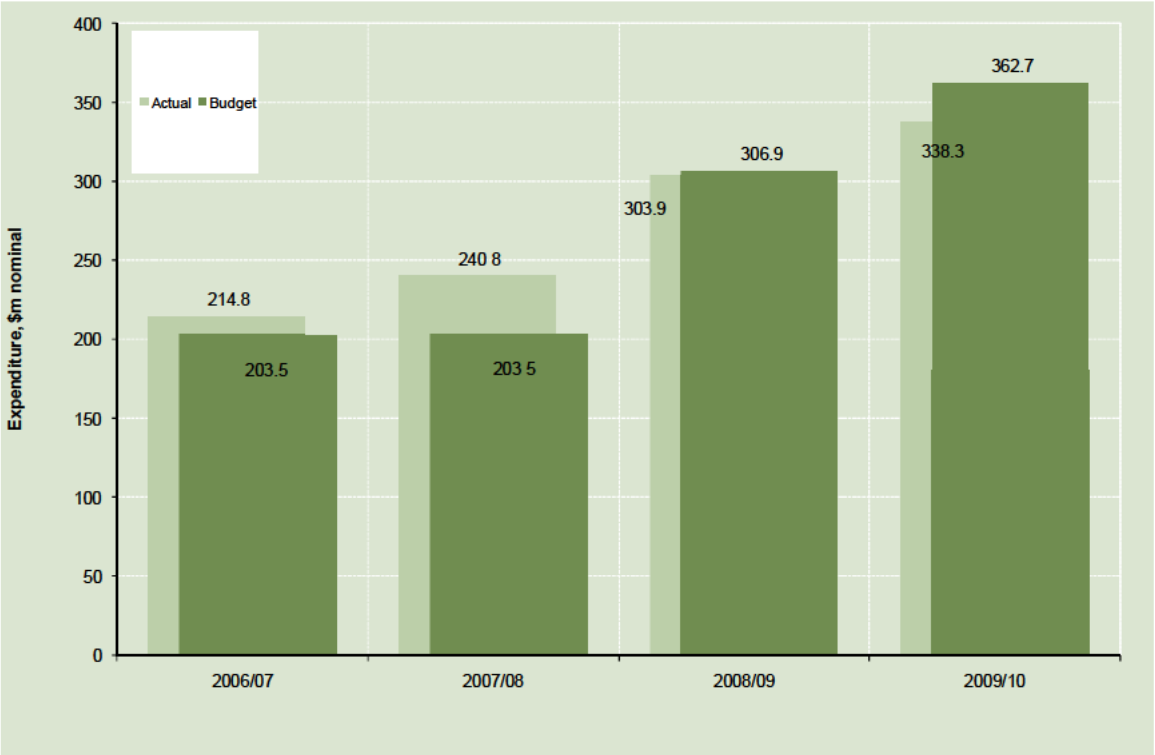


Figure 6-2 Horizon Power total expenses actual vs budgets

Source: Horizon Power Profit and Loss accounts

Figure 6-2 shows the variation in Horizon Power's budgeted and actual total expenses. As well as labour and materials opex these figures include expenditure on fuel, interest, tax, depreciation and amortisation. The majority of these costs are not controllable by the company and the larger variation in actual to budget here compared to Horizon Power's controllable opex indicates that the company's budgeting process for its controllable costs has been relatively accurate.

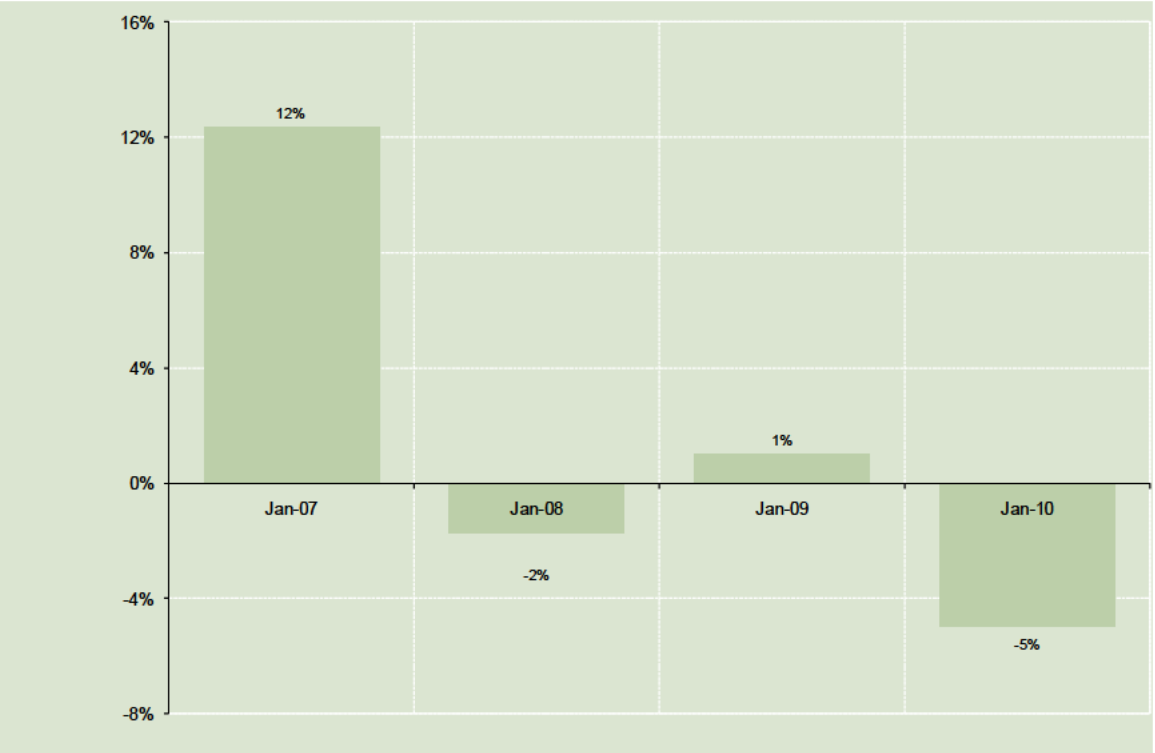


Figure 6-3 Historical opex variance with budget

Source: Horizon Power Managing, P&L accounts and PB Analysis.

Figure 6-3 shows the cumulative effect of variances of actual opex with budget.

At financial year end the maximum variance of actual expenditure to budget was 12% in 2006/07 – Horizon Power's first full year of operation. In 2007/08 and 2008/09 year end actual expenditures were very close to budgeted figures – both within 2% variance. The actual underspend in 2009/10 was 5% below budget.

With regard to opex PB has not established any systemic or significant variances between actual and budgeted expenditures and believes that the company has historically budgeted well for its controllable opex.

6.2 Historical capex

Information for capex expenditure against budget is only available for three years. Figure 6-4 shows the budget for capex between 2007/08 and 2009/10 and the actual capex expenditure for these three years.

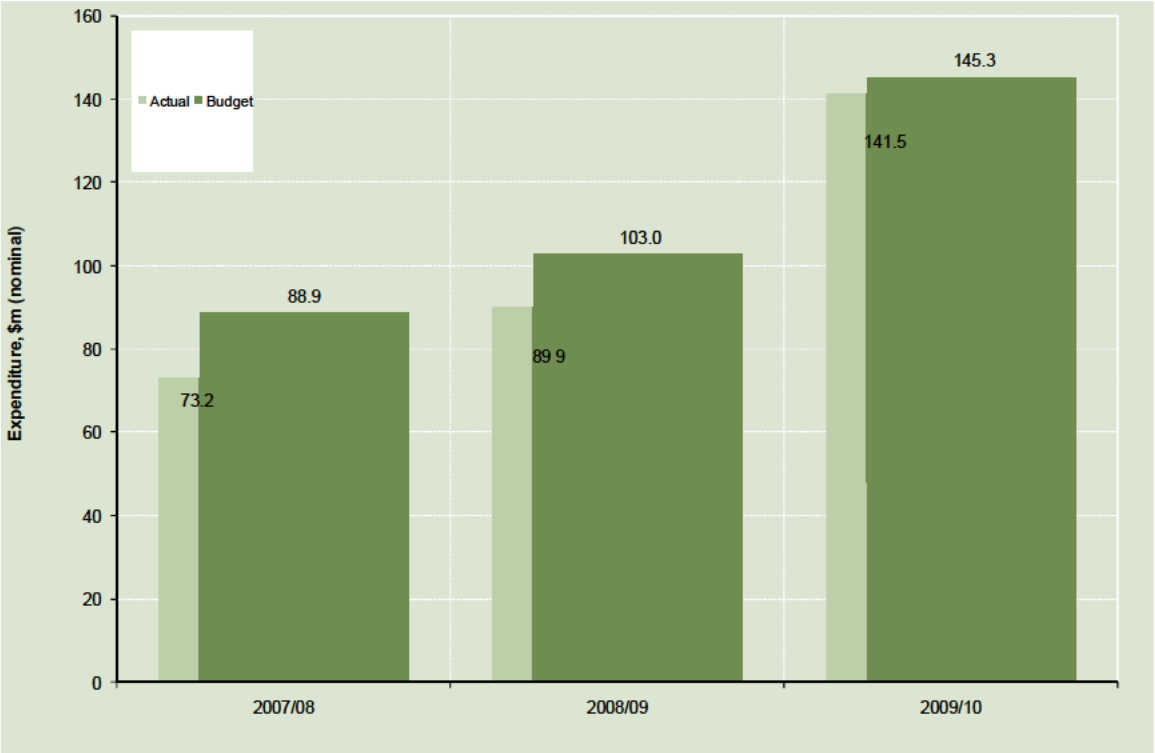


Figure 6-4 Horizon Power capex actual expenditure vs budgets

Source: Horizon Power Managing Directors Reports, Actual vs budgets spreadsheet and PB Analysis

The variance in the capex expenditure as a percentage of the budgeted expenditure is shown in Figure 6-5 for the end of the respective financial years.

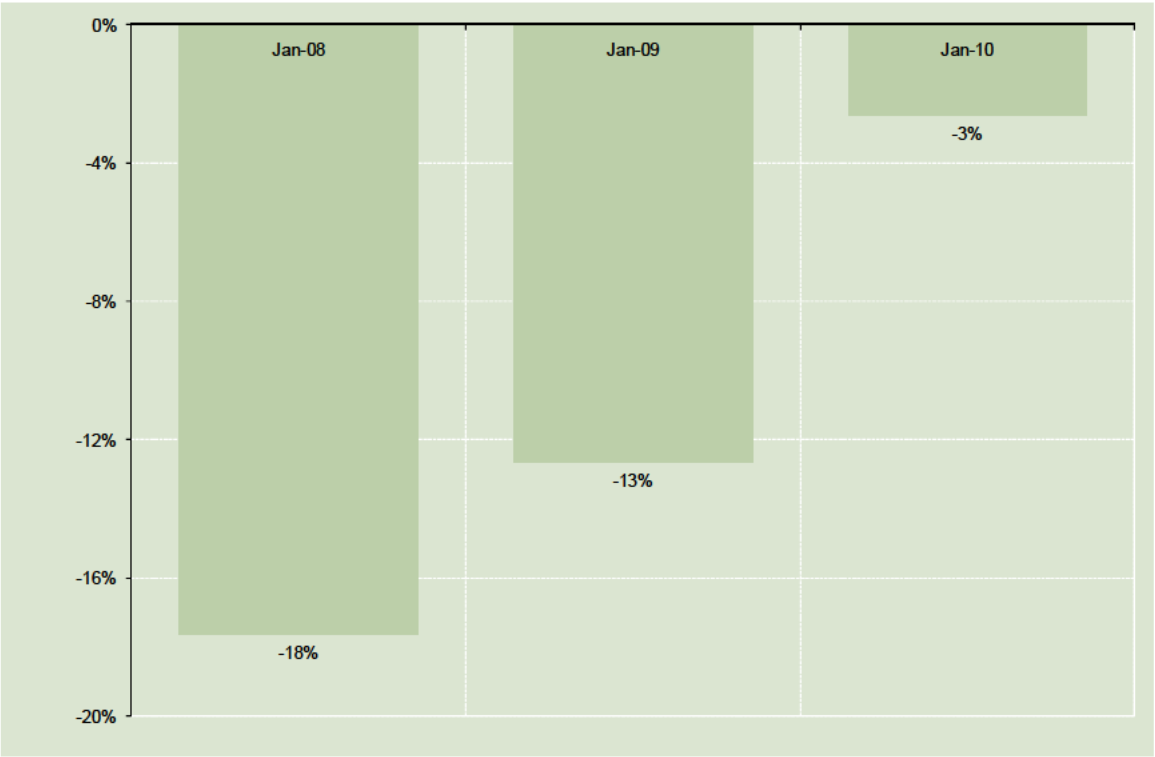


Figure 6-5 Historical capex variance with budget

Source: Horizon Power Managing Directors Reports, Actual vs budgets spreadsheet and PB Analysis

At financial year end the maximum variance of actual expenditure to budget was 18% in 2006/07 – Horizon Power's first full year of operation. In 2007/08 and 2008/09 year end actual expenditures fell to 13% and 3% respectively.

There are a range of factors which influence the variance of actual capex and budgeted capex. The most important issues are timing, technical design reviews and resource constraints.

Approval delays resulted in capital costs being deferred in 2007/08 for the ARC2, SCADA updates and the Carnarvon noise mitigation projects. Also in 2007/08 the Marble Bar and Nullagine power station redevelopments were delayed due to technical issues. Expenditure in 2007/08 was $16m less than budget because of these delays.

In 2008/09 the Marble Bar and Nullagine power stations were further delayed. This delay together with timing issues related to IT separation from Western Power and agreement delays for the second phase of the Town reserves regularisation program resulted in expenditure being $13.5m below budget for the year.

In 2009/10 changing load shape led to a technical design review of the Carnarvon power station redevelopment. This delay meant that expenditure was [redacted] below budget.

PB has examined the reason for the deferred capital expenditure. With the exception of the SCADA upgrades, Carnarvon noise mitigation and the Town reserves programs the delays were due to one off factors which were outside the company's control. For example at Marble Bar, cost overruns were identified due to increases in civil works to support the photovoltaic arrays and some contractor issues attributable to the remoteness of the site.[54] Horizon Power estimates that of the $33.9m budgeted capex which was not delivered, $27.6m (81%) was due to circumstances outside the company's direct control and some of the remaining variance may also have been due to external factors.

With regard to capex budgeting PB has not identified any significant systemic errors in the budgeting process. An inability to deliver projects on time has led to an under spend against budgeted expenditures; however, Horizon Power has shown a significant improvement over the previous three year period and PB did not see evidence that would suggest that the same issues would continue into the forecast period.

6.3 PB key findings (Historical expenditures)

PB has not identified any systemic bias in the variances of opex expenditure with budget. Although a large time series of data cannot be utilised to make firm conclusions, PB believes that it is significant that in two of the four years, variances with the opex budgets were extremely small and indicates that Horizon Power's accuracy in setting opex budgets is reasonable.

With regard to capex, PB has identified a clear trend of underspending against budget. However, as noted above, this has largely been due to factors which were outside the company's control and the underspend is reducing as a percentage of budgeted expenditure.

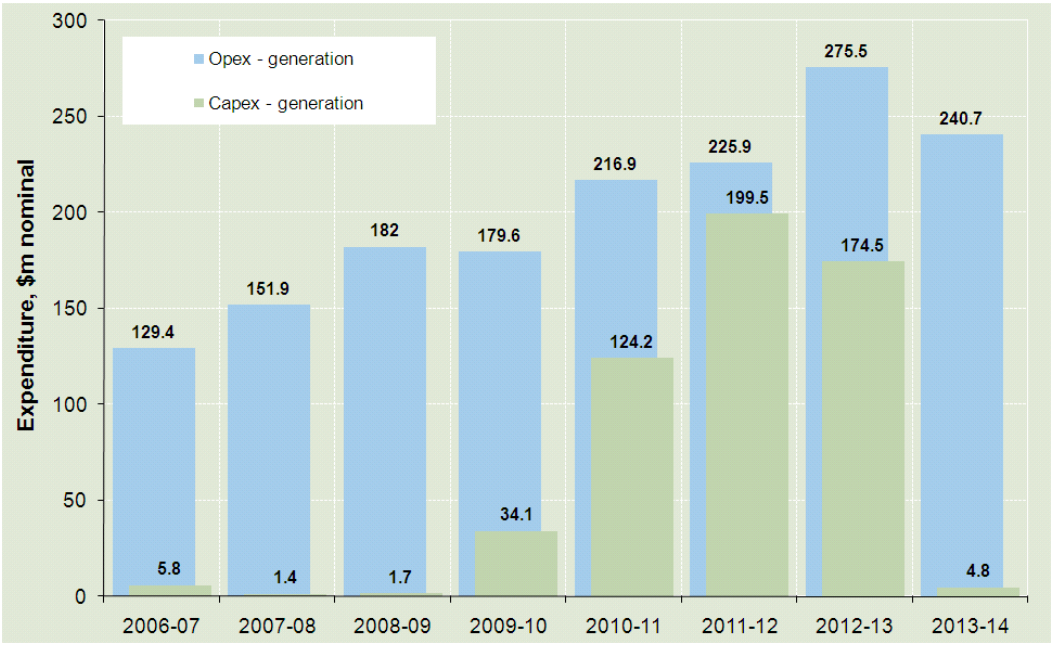
[54] Horizon Power, 2010, Fact Sheet 39: Marble Bar Power Station Project Scope, DMS#3285069

7. Generation expenditure

This section examines Horizon Power's actual and forecast levels of expenditure for generation activities.

7.1 Description

Operational and capital expenditure associated with Horizon Power's activities in procuring and operating electricity generation for subsequent transmission, distribution and sale forms the vast majority of its ongoing costs. These historic and forecast expenditures are summarised in Table 7-1. Figure 7-1 illustrates the significant capex strategy proposed by Horizon Power to build, own and operate power stations in future as an alternative to purchasing generation from third parties.



Note: Historic capex is based on the year the expenditure was capitalised.

Figure 7-1 Horizon Power's proposed capex and opex – generation activities

Table 7-1 Horizon Power's historical and proposed expenditure associated with generation

Item ($m, nominal to June)	2007	2008	2009	2010	Total	2011	2012	2013	2014	Total	Growth
	Actual					Budget					
Electricity Purchase (Capacity & Energy)	58.4	92.4	127.1	139.0	416.9	156.7	163.3	214.9	164.2	699.1	68%
Gas transport & gas purchases	15.8	23.9	40.0	29.5	109.2	37.4	35.8	29.9	41.1	144.2	32%
Other	55.1	35.6	14.9	11.1	116.7	22.7	26.9	30.8	35.4	115.8	-1%
Total opex	129.4	151.9	182.0	179.6	642.8	216.9	225.9	275.5	240.7	959.1	49%
Marble Bar/Nullagine	5.8	1.4	1.7	34.1	42.9	-	-	-	-	-	
Port Hedland PS (Gen2013)	-	-	-	-	-	76.8	161.6	169.8	-	408.2	
Carnarvon replacement	-	-	-	-	-	34.1	26.6	4.4	3.0	68.0	
Other	-	-	-	-	-	13.3	11.3	0.4	1.8	27.0	
Total capex	5.8	1.4	1.7	34.1	42.9	124.2	199.5	174.5	4.8	503.0	

Source: opex - 'Consolidated_ERA_Reports – escalated – 8 Sept.xls'; and capex - 'CAPEX BY FUNCTION02092010.xls'

Note: Historic capex is based on the year the expenditure was capitalised.

7.2 Forecasting methodologies

The forecasting methodology for supply, demand and energy is discussed in 5.3.3 and provides the basis for triggering new capex investment in either generation or transmission. Once the need has been identified the new development stages are scoped and timed to manage the demand forecast and compliance risk, extract the maximum value from existing plant, and achieve efficient operations through the mix of gas and diesel generation plant. Wherever possible, the new generation plant should be renewable ready.

Horizon Power's Asset Management Plan 'Instruction Module 2010/11 Module 5 Capacity' details the process in line with Horizon Power's "Fit For Purpose" criteria to ensure that there is sufficient capacity to meet the forecast load and to meet Horizon Power's reliability and security requirements.

The generation strategy requires that business cases are prepared which provide an assessment of all available options to determine the best value and the most suitable generation solution. A part of the decision making process is to allow Horizon Power to build capability within the business. PB has been provided with a number of business cases to show how the process works in practice.

Horizon Power routinely uses the input from external consultants to support decision making process.

An example of where efficiencies have been achieved in negotiation of capacity expansions is at [redacted], which currently has a PPA with [redacted]. Five options were examined to add capacity including Horizon Power adding its own generation capacity.[55] By negotiating an outcome with [redacted] Horizon Power was able to reduce generation costs by $200,000 annually and a further saving of $200,000 per annum was realised by removing the need for a temporary diesel unit for summer peak capacity.

PB's view is that the expenditure forecasting methodology and subsequent decision making process is robust and appropriate.

7.3 Capex

The major historic and forecast capex items relate to new generation projects: Port Hedland Power Station and Carnarvon Power Station (forecast capex); and Marble Bar and Nullagine generation (historic capex).

Horizon Power supplies electricity to 26 groups of customers and electricity is sourced either from PPA's with IPP's or self generated. Horizon Power also has a fleet of mobile generation which can be deployed to any area requiring backup.

Historically Horizon Power (as the former Western Power Corporation) had been faced with replacement of a large number of non compliant generation stations at a time when funding for these replacements was problematic due to shortage of funds. The Independent Power Procurement Policy was introduced to outsource these new stations through a competitive procurement process. In 2006 the Horizon Power Board requested a review of this generation strategy and resolved to suspend outsourcing of generation at Carnarvon, Marble Bar and Nullagine. This was based on the premise that a Horizon Power solution would be more cost effective and would facilitate the development of organisational capability.

[55] Horizon Power, 2010, Fact Sheet 39: Example of where efficiencies have been achieved in negotiation of capacity expansions, DMS# 3279200V4

Horizon Power's modelling has also determined that renewable generation could be cost competitive with IPP diesel generation. Horizon Power had developed skills in the field of wind/diesel and had created a unique capability. The company saw an opportunity to leverage off this capability to develop a solar/diesel hybrid. The new model was named MARS – Modular, Automated, Renewable and Scalable.

It is planned that the new power stations will be automated to reduce opex and the renewable components will reduce the amount of diesel used. The renewable component is assessed against options for conventional generation. In the case of Marble Bar and Nullagine Federal Government assistance from the RRPGP Funding of $4.9m was received.

The current generation strategy is to source the best value solution after consideration of all the options available at the time.[56]

7.3.1 Generation Cost Methodology and Project Approval

Capital expenditure estimates for generation projects appear to have been based on prefeasibility cost estimates from a proprietary cost estimating database, PEACE, produced by GHD. Budget pricing was received and the cost escalated to produce the best estimates for costs for the Pilbara region.

Following standard business practices, PB would expect a company to request final approval from the Board once an Engineer, Procure, Construct (EPC) cost has been established. This does not appear to have been the case for either the Marble Bar/Nullagine or the Pilbara Power projects. The figures in the business case seem to have been derived from the GHD November 2008 report 'Report for Pilbara Power Procurement 2012 Study – Power Generation Options and updated in July 2010 performance and Cost Update'.

PB's review of the projects undertaken at Marble Bar and Nullagine indicates that Horizon Power's approval process went from prefeasibility (Gate 2) to implementation, missing out the Gate 3 (bankable feasibility). The Marble Bar project experienced a cost overrun of 33%, the Nullagine project is still under construction.

PB has a concern over the governance aspects of this process. It appears that the Board and Minister have approved projects on the basis of prefeasibility costs. In PB's experience, approval at feasibility cost stage is highly unusual and would only happen if it were expressed as approval in principle subject to firm costs being received.

Standard industry practice would require the Board to approve funding based on a full bankable feasibility report. The bankable feasibility report, which typically costs $1m – $2m, would include approvals and firm tender costs. Final costs are approved prior to giving approval to proceed to contract signing.

The Horizon Power procedure 'Gating Framework High – Level Overview and Gating Framework – Detailed Methodology' (DMS # 3034541), requires a "cost estimate" and does not further define how accurate this estimate is expected to be. The procedure mentions an opportunity to review various aspects of the business case in section 3.4 but does not specifically require approval of any revisions in costs. It is noted in the Business case for the South Hedland Power Station that if the CAPEX exceeds the estimate the business case will be revisited; however this could cause even further delays and possible additional cost imposition.

[56] Horizon Power, 2010, Answer to PB Question #118. PB asked whether there was a strategic move towards self generation.

The Carnarvon Power Station Business Case also uses indicative costs, although Horizon Power has confirmed that the cost estimate will be refined to +/- 10% prior to construction. It is unclear what the process is for approval of the project if the refined costs exceeds the business case costs and potentially changes the options analysis and preferred option.

With reference to the comparative IPP bids, if these bids were also based on pre feasibility / budgetary costs, then they should be tagged as such. If the firm capital cost for the IPP increases compared with budget costs then the cost of energy produced and sold to Horizon Power would also increase. Both the budget costs for Horizon Power and the IPP options must be firmed up before selection of the best option can occur and provide increased certainty in energy pricing.

PB has serious concerns that funding approval for projects appears to be presented to Government based on costings that have been estimated within +/- 30% accuracy. PB does not view this as a prudent way to select and present preferred options for funding approval. Based on the information provided to PB it is unclear whether funding approvals being sought by Horizon Power are preliminary approvals with later approval based on firm costs being required.

7.3.2 Historic Capex - Marble Bar and Nullagine Power Stations

Marble Bar power station was operational in May 2010 and Nullagine power station is planned to commence operations in August 2010. The two power stations replace the 30 year old diesel sets with hybrid diesel / solar photovoltaic technology. The solar technology employs a tracking system to increase the efficiency of the arrays and a flywheel storage facility.

PB has reviewed the Project Post Implementation Interim Review Report. Key findings from the report indicate:

- the project will deliver the level of service described in the business case
- the project went from preliminary business case directly to execution resulting in scope creep
- reduction in diesel fuel consumption will be realised
- solar penetration of 65% has been exceeded
- the project did not meet the approved budget (as varied) and the actual cost at completion of Nullagine power station is estimated at +33%
- the project delivery overran by 6 months.

The cost overruns appear to have been caused by a failure to follow procedures, in particular the gating process. The nature of the open ended contractual arrangements with the [redacted] also contributed to the poor project execution.

Horizon Power reports that a costing of +/- 30% is normal at the gate 2 phase of a project and while this is correct, these cost variations are usually refined during gate 3 (final investment decision). PB's view is that approval of project funding based on budget cost estimates does not align with good business practice, and introduces a high risk that the selected option is not the most cost effective long term solution for the business once actual costs are confirmed.

It is recognised that these are new types of projects for Horizon Power, and as such, close attention should be paid to scoping the project and firming up the associated costs. PB's review of the Submission to the Board of Directors (DMS #3068159v5 October 2007) found no mention of an

accuracy level with reference to the costs included so it may be that the approval was given without an understanding of the accuracy of the cost estimates.

The scope of PB's review includes investigating any substantial differences between projected and actual costs. In the case of the Marble Bar generation project there was a 33% cost overrun compared with budgeted cost. PB has been unable to form a view as to whether the expenditure for the Marble Bar project is prudent and efficient as this would require a detailed examination of the project which is beyond the scope of this review. PB notes that the procedures set down by Horizon Power were not followed and that significant risk exists that other power station projects in the forecast period may also vary against budget. Horizon Power conducted a lessons learned exercise and documented the issues for future reference.[57]

When considering the options for replacement of the generation at Marble Bar, Horizon Power included an assessment of diesel only options. Estimates prepared by PowerCorp showed a similar cost per kWh as for the solar/diesel option. The decision to proceed with the solar/diesel option was made on the basis that this option aligned with Horizon Power's strategic direction and provided additional benefits:

> "…the Net Present Cost and average supply costs are similar… but without the benefits of greenhouse gas abatement, diesel price risk management, capability development, positive publicity and customer satisfaction." [58]

PB notes that the assessment does not appear to include the future benefits associated with RECs. The inclusion of these benefits would further support the solar/diesel option.

PB also notes that the cost over-run (+33%) for the Marble Bar power station would make the diesel only option preferred, assuming that the diesel only option had been accurately costed. Hence, with the actual cost of the selected option now known, it is not clear that the most appropriate option has been selected. The lessons learned show that cost over-runs due to scoping and contract management issues appear to relate to the solar arrays and the flywheel storage system used to integrate the solar and diesel generation. As such, PB believes it unlikely that similar cost over-run issues would have occurred if the traditional diesel only option had been selected. It is also unlikely that significant changes in costs and scope would have occurred if Horizon Power had followed its normal internal processes of undertaking detailed scoping and cost estimating (Gate 3) prior to letting contracts.

On the basis of capital cost, the diesel/solar option was estimated at $12.6m and the diesel only option at $8.3m. Horizon Power has calculated the net present costs over 20 years including fuel at $19.5m and $19m respectively.[59] Based on these cost estimates, PB calculates that adopting the diesel only option (assuming that the estimated costs would not have been exceeded) would have resulted in a potential saving of approximately $8.5m capex ($2007/08) and increase in opex (i.e. for fuel) of about $0.2m p.a.

A similar situation exists for the Nullagine power station. Horizon Power will need to control costs to the estimated value used in the business case in order to ensure that the solar/diesel option remains the most appropriate.

[57] Logicamms, undated, Marble Bar Power Station Project Post-Implementation Interim Review Report, DMS#3263111
[58] Horizon Power, 2007, Submission to the Board of Directors, Marble Bar & Nullagine Power Station replacement (DMS#3068159v5), p.7
[59] Ibid, p.6

PB concludes that it is not clear whether the most appropriate generation option has been selected for Marble Bar due to the cost over-run and the lack of detailed cost estimating prior to letting contracts. Horizon Power has, however, correctly indentified the areas for improvement and this should ensure that future project expenditure forecasts and approvals adhere to best practice project management as documented by the company procedures. The project gating process should ensure that only efficient expenditures are actually made in the forecast period.

7.3.3 Forecast Capex - Port Hedland Power Station (Gen2013)

This project is considered by Horizon Power to be commercial in confidence. PB's review is contained in confidential appendix A. PB concludes that the forecast expenditures appear justified.

7.3.4 Forecast Capex -Carnarvon Power Station Development

The Carnarvon Power Station development represents the second largest item of forecast capital expenditure. The project involves building a new power station to replace an existing power station that has aging plant. Horizon Power's intention is to purchase the required generation equipment for the new power station in 2010 and commence the site infrastructure. Forecast expenditure is shown in Table 7-2. Commissioning is due in 2013/14.

Table 7-2 Forecast capex for Carnarvon power station ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[60]
Carnarvon	35.4	22.7	3.5	2.2	63.7

PB has reviewed the Carnarvon Power Station Business Case dated 20/5/2009. The existing power station has 3 Mirrlees diesel engines and 3 gas engines and temporary plant providing peak load capacity (a total of 15MW). The intention is to replace the plant nearing the end of its economic life by developing the new power station in a new location, in stages to replace the existing Iles Rd power station. The station will comprise a mix of diesel and gas generation.

The forecast capex for the project is a total of $63.7m (nominal) as shown in Table 7-2[61]. The business case analysis shows that the NPC (Net Present Cost) for the Horizon Power development at the site represented better value than two IPP offers. The Horizon Power model compared all capital in the first year which provided direct comparison with the IPP offers. The staggered development approach by Horizon Power showed a better outcome. This approach comprised a short term noise compliance program followed by the staged transition to a new power station at an alternative site.

The business case was reviewed by the Department of Treasury and Finance gateway Unit as part of a self nominated peer review.

The new power station will be commissioned in stages, the first being the installation of the diesel peaking sets in 2010 - 2011. The second phase will be the installation of new gas plant, and after commissioning of new plant, Stages A and B of the existing power station will be decommissioned. Decommissioning is expected during the 2012/13 financial year. Stage C of the existing station will continue in operation until after 2014.

[60] Total may not add due to rounding
[61] Horizon Power, 2010, Carnarvon Power Station Development Business case, DMS #3169162v5

PB's view is that the business case for the Carnarvon power station development demonstrates this forecast expenditure to be both prudent and efficient.

7.3.5 Forecast Capex – Other

Forecast Capex – Other is made up of 2 key items, Regularising Communities power supplies and the Kalumburu and Yungngora generation projects. The expenditure forecast for each of these items is shown in Table 7-3 and discussed in the sections following.

Table 7-3 Forecast capex for Other items ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[62]
Regularising Communities and other minor expenditure	4.6	1.1	0.4	1.8	7.9
Kalumburu & Yungngora	8.6	10.2	-	-	18.8
TOTAL Other	13.3	11.3	0.4	1.8	27.0

Regularising of Communities Power Supplies

In 2006, of the 322 discrete Indigenous communities with reported population of 50 or more 76.4% had experienced an interruption in the previous 12 months.[63]

The Department of Housing and Works (DHW) established the Town Reserves Regularisation Project in consultation with the Aboriginal and Torres Strait Islander Commission (ATSIC) and the Department of Indigenous Affairs (DIA). The Town Reserve Regularisation Project aims to improve access by town based Aboriginal communities to equitable water, sewer and power services provided by State utilities.

Horizon Power's role in the project is to:

- upgrade power generation to include a renewable component
- upgrade the existing distribution network in communities
- upgrade the internal house wiring of all residential dwellings on behalf of the Department of Housing and Works
- establish a direct retail arrangement with customers instead of the existing master meter arrangement, and
- provide an education program that informs all community members and stakeholders on work site safety, pre payment meter usage, energy efficiency, rebates and charges, reporting faults and project schedule.

The objective of the project is to identify the most environmentally, socially and economically sustainable essential services delivery models for remote communities in WA, recognising their unique characteristics.

[62] Total may not add due to rounding
[63] Source: Overcoming Indigenous Disadvantage, 2009

Supply to these areas is problematic because of isolation, cost in servicing, and lack of accountability. Horizon Power's role is to approach the project by taking a community-focussed approach and demonstrating the value of a sustainable approach to maximise return on investment.

A number of communities have been regularised including Ardyaloon, Beagle Bay, Djirindjin, Warmun and Bidyadanga. Lombadina may also be regularised.

Kalumburu and Yungngora

Generation projects using diesel /hybrid solar technology for the smaller communities of Kalumburu and Yungngora are planned within the forecast period. The larger project can be scaled from the Marble Bar / Nullagine design with the exception of the Fly-wheel power store. Being based on recent experience, the cost estimates appear reasonable.

PB has confirmed that associated opex costs have been allocated for electricity purchases at Kalumburu in 2011 and 2012 and for Yungngora in 2011.

7.4 Opex

Horizon Power currently owns and operates 10 sites providing power generation.

- Wyndum
- Kununurra
- Carnarvon
- Marble Bar
- Nullagine
- Coral Bay
- Denham
- Esperance
- Hopetoun
- Onslow.

Appendix B provides details of the type and capacity of the generation. Of these ten sites, three are currently in the process of being replaced. Horizon Power also own a mobile fleet of diesel generation sets which are available for deployment as required to support demand.

Table 7-4 provides a comparison of the actual expenditure for power station operations, fuel and maintenance costs for 2009/10 compared to budget and the budget for 2011/12.

Table 7-4 Power Station Operations – Fuel and Maintenance Costs ($'000, nominal)

Station	Item	2009/10 Actual	2009/10 Budget	2010/11 Budget
Wyndham				
	[redacted]	[redacted]	[redacted]	[redacted]
	Corrective/preventative Maintenance	59	2	2
	Emergency Maintenance	0	0	
	Inspections	0	0	
	Other Maintenance	7	0	
	Total Maintenance	***66***	***2***	***2***
Kununurra				
	[redacted]	[redacted]	[redacted]	[redacted]
	Corrective /preventative Maintenance	177.3	379.6	405
	Emergency Maintenance	9.6	0	
	Inspections	8.3	0	
	Other Maintenance	3.4	0	
	Total Maintenance	***198.6***	***379.6***	***405***
Carnarvon				
	[redacted]	[redacted]	[redacted]	[redacted]
	Corrective /preventative Maintenance	1102.5	2385.3	1414.0
	Emergency Maintenance	3.3	-	250.0
	Inspections	1.7	-	
	Other Maintenance	178.7	-	
	Total Maintenance	***1,286.2***	***2,385.3***	***1,664.0***
Marble Bar				
	[redacted]	[redacted]	[redacted]	[redacted]
	Corrective /preventative Maintenance	90.1	350.2	452.0
	Preventative Maintenance	50.4	350.2	298.0
	Emergency Maintenance	20.1	0	
	Inspections	0	0	
	Other Maintenance	29.4	0	
	Total Maintenance	***139.6***	***350.2***	***452***
Nullagine				
	[redacted]	[redacted]	[redacted]	[redacted]
	Corrective/preventative Maintenance	38.0	387.0	406.0
	Emergency Maintenance	2.7	0	
	Inspections	0	0	
	Other Maintenance	2	0	
	Total Maintenance	***42.7***	***387***	***406***

Horizon Power notes that:

- Marble Bar and Nullagine opex was underspent in 2009/10 due to a decision to stop planned maintenance due to impending decommissioning
- actual 2009/10 opex for Carnarvon was under budget, due to a decision to defer an overhaul in favour of prioritised distribution maintenance.

PB's view is that the opex expenditure appears to be appropriate given the remoteness of the locations. Where diesel fuel is used, fuel cost is directly linked to generation output. PB has compared these costs with similar power systems at mining locations, although Horizon Power does not have the same economies of scale in terms of diesel delivery and access to engineering facilities as the mine sites.

Table 7-4 also shows significant increases in corrective/preventative maintenance. Preventative maintenance is the normal scheduled maintenance and corrective maintenance occurs where plant either fails or has impending problems requiring repairs. PB notes that some of the diesel sets are very old and where replacements are planned the maintenance is not undertaken unless urgently required. Where there are delays or rapid load increases there may be a need for some additional corrective maintenance.

Specific issues noted are:

Kununurra - The hydro plant has a capacity of 30 MW (2x15 MW units). Horizon Power has diesel back up of 10.5 MW. If the hydro loses a unit the back up diesel is required. The diesel set is not capable of meeting the town load in the case of a hydro transmission or generation failure and a business case has been prepared for additional mobile units to be deployed.

Wyndum - Has a single transmission line from the Pacific Hydro plant and standby plant of 1.9MW. This station is not capable of meeting the load at peak times. The installed plant requires major works for it to be used safely as standby in the future.

Electricity Purchases

One of the largest items for generation opex is the purchase of electricity from external power producers. Figure 7-2 shows that for all towns with the exception of Port Hedland and Karratha the growth in power purchase cost is incremental and steady. Port Hedland and Karratha will require purchase of electricity to cover demand while the new Port Hedland power station is being built; this is the cause of the spike in costs in 2012/13.

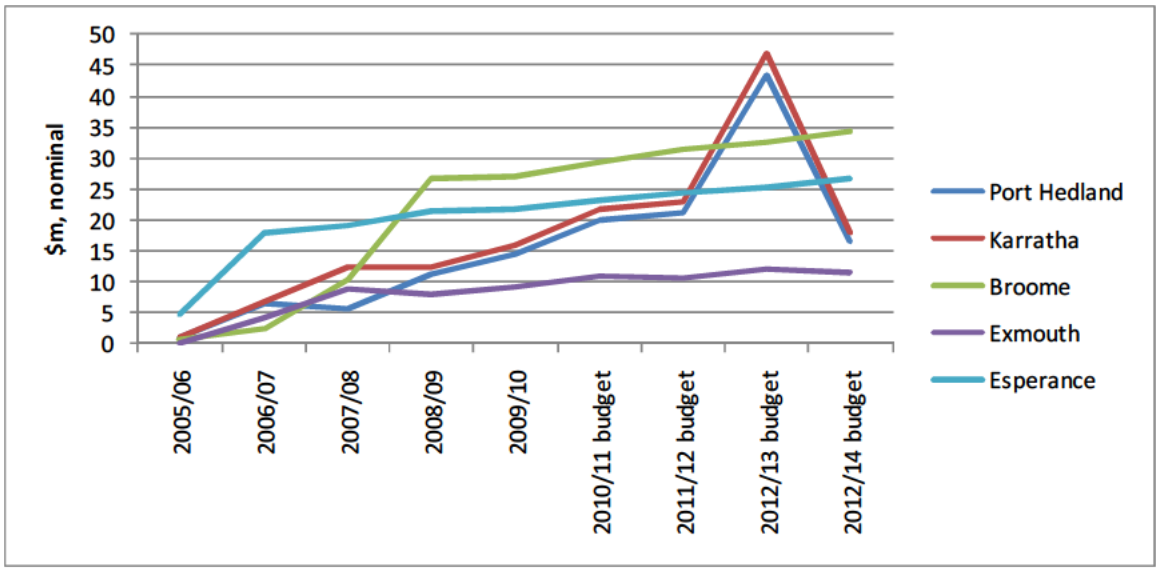


Figure 7-2 Horizon Power historical and forecast electricity purchases

Horizon Power has outsourced the majority of its power generation on the non-interconnected systems to IPPs. There are currently 14 Power Purchase Agreements (PPA's) for 33 non-interconnected systems. These PPA's involve an annual expenditure of $130m. The fixed costs vary significantly from system to system depending upon fuel sourcing, plant contracted, terms of contract and relative customer base. PB has not received any copies of the PPA documents due to commercial considerations [redacted].

Horizon Power has a strategy that not all generation is outsourced through PPA's. This strategy allows Horizon Power to be an informed customer as it has direct access to the costs of running remote generation and is therefore in a better position to negotiate with the IPP's. Horizon Power owns 3 (out of 30) power stations.

The PPA's incorporate performance monitoring clauses, outage management, financial incentive/penalty based reliability targets, investigations, rectification planning, ongoing review of capacity requirements, liquidated damage's, provision for step-in rights after 20 days and critical step-in rights after 5 days, etc. The newer PPA's have been considerably streamlined and a detailed register of lessons learned (document sighted) is maintained to ensure each new agreement reflects past issues and captures learning's.

A tolling basis for gas supplies in PPA's is accepted, [redacted]

Horizon Power has developed the Independent Power Producer Management Plan (IPPMP), which interfaces with the Demand and Energy forecasting, Asset Management Planning and annual budgeting processes. One of the key aspects of the IPPMP and is reflected in the PPA process is the collaborative approach between Horizon Power and the IPP's.

The PPA's have incentives and penalties in place and the PPA's are being progressively improved and upgraded to reflect the IPPMP.

Horizon Power keeps a register of lessons learned and an example was given in the case of the Leonora PPA. In this case the PPA expired on 14 April 2010 after 10 years of operation. The IPP

asked for the same pricing for the next 10 years however Horizon Power successfully argued that the capital had been paid for and the new pricing should reflect this.

The new PPA's are negotiated agreements following a competitive tendering process. Escalators are typically proposed by the counterparties as their best estimate of how their future costs are likely to vary. At the time of assessment of a tender Horizon Power examines the price and escalation factors to determine the best outcome. This means that there is no consistent application of escalators across all PPA's. PB considers this methodology to be acceptable and in line with best industry practice, and therefore concludes that electricity pricing resulting from PPAs should be reasonable.

New noise abatement regulations introduced in the late 1990's meant that a number of the existing power stations were non compliant. At the same time the former Western Power Corporation was faced with a scarcity of capital to fund new investments. A Public Power Procurement process was introduced to source the lowest cost of generation. This process was a joint initiative between Western Power Corporation and the State Government.

In aggregate IPP's spent some $500m to replace the ageing power stations with modern, environmentally compliant power stations. Table 7-5 shows the opex associated with these continuing PPA's.

Table 7-5 PPA Historical Operating Costs ($m, nominal)

Item	April-June 2006	2006/07	2007/08	2008/09	2009/10
NWIS	10.03	13.18	17.85	23.49	30.24
NIS	1.72	45.26	76.43	105.62	110.25
Total	11.75	58.44	94.28	129.11	140.49

7.5 PB key findings (Generation)

PB has examined Horizon Power's approach to sourcing new generation capacity and its forecast capex and opex for generation in the period 2010/11 to 2013/14.

A strategy to build own and operate where economic has been introduced and this approach has resulted in Horizon Power undertaking generation projects at Marble Bar, Nullagine and Carnarvon. Projects and estimated costs are developed by aligning with a partner company. In PB's view, this has resulted in cost estimates that are similar to that provided by IPPs, with small changes in scope and contract terms determining option rankings. It is not clear, however, whether Horizon Power can deliver projects to budget given the cost over-runs experienced on the Marble Bar/Nullagine power station projects and hence whether the most appropriate options have been selected.

The major capex items examined in this section are for the construction of new generation projects. PB has concerns that the business case analysis has been made on the basis of budgetary estimates and not on firm contract prices as would normally be expected.

The use of budget estimates opens the possibility that if firm pricing for Horizon Power's power station construction was fed back into the business case analysis the IPP solution could prove to be more cost effective. As the IPP's costs used in the business case are also uncertain, PB has been unable to

form a view as to the likely outcome of such a review, however, we believe that IPP's may currently be more experienced in delivering (and cost estimating for) larger projects.

Because of the nature of the business's service area where there are many remote locations, a key issue is the lack of competition for outsourcing of services resulting from the availability of only single suppliers in remote areas. Horizon Power's approach to this issue has been to standardise practices, bring services in-house (ESO principle, vehicle fleet, generation). This approach extends to the Pilbara, where contractor prices for capital projects can also be higher in comparison. For example, this applies to the capex of the Port Hedland Power Station at over $3m per MW compared to a significantly lower cost in the eastern states. The Pilbara region is remote and contractor prices are higher as a result.

Despite forecasts that account for these higher costs, Horizon Power has experienced a cost overrun that is estimated at 33% at completion of the Marble Bar/Nullagine power stations. Implementing lessons learnt from the post project review should ensure that only efficient expenditures are actually made in the forecast period. For example, a final cost check will be made for the Port Hedland power station prior to construction.

PB concludes that a risk exists that Horizon Power in the past may not have select the most appropriate generation options due to inaccuracy in forecast expenditure estimates. This is unlikely to occur in future as Horizon Power implements lessons learnt from the Marble Bar power station project.

Opex is mostly for the purchase of fuel, which is competitively sourced. PB also examined the opex associated with operating and maintaining generation plant and found no indication that this was not reasonable.

PB is of the view that many opportunities to reduce opex now exist because of the work undertaken by Horizon Power in refining its policies, standards, and work practices. PB discusses this in section 8.8 and recommends that allowed controllable opex, which excludes fuel, electricity purchases and financing costs, is reduced by 3% per annum over the next four years to capture efficiency gains which are expected to be made by the business.

Table 7-6 Adjustment for generation opex ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total
Horizon Power submission	216.9	225.9	275.5	240.7	959.1
Efficiency gains	(0.2)	(0.3)	(0.4)	(0.5)	(1.3)
Total adjustment	(0.2)	(0.3)	(0.4)	(0.5)	(1.3)
PB recommendation	216.7	225.6	275.1	240.2	957.8

Source: PB Analysis

Table 7-7 Adjustment for generation capex ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total
Horizon Power submission	124.2	199.5	174.5	4.8	503.0
Marble Bar/Nullagine PS (section 7.3.2)	-	-	-	-	-
Port Hedland PS (7.3.3)	-	-	-	-	-
Carnarvon PS (7.3.4)	-	-	-	-	-
Other	-	-	-	-	-
Total adjustment	-	-	-	-	-
PB recommendation	124.2	199.5	174.5	4.8	503.0

Source: PB Analysis

8. Operating Expenditure

This section examines Horizon Power's actual and forecast levels of operating expenditure (opex). PB's review of generation opex was examined in section 7. The data used in this section has been sourced from the Town reports provided by Horizon Power (as adjusted to remove interest, depreciation, income tax, amortisation and finance lease adjustments).[64]

8.1 Description

Figure 8-1 shows the major drivers of the opex since the company was founded in 2006. The total opex amounts correspond to those in Figure 4-2.

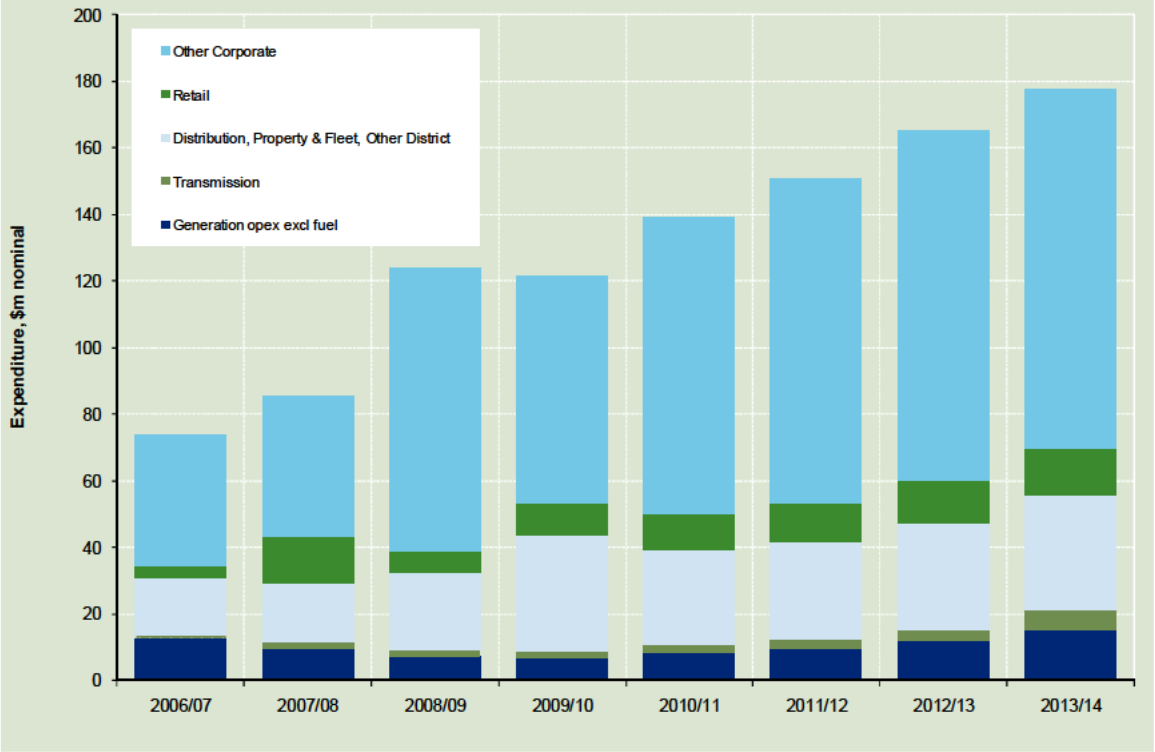


Figure 8-1 Horizon Power historical and forecast operating expenditure

The major opex cost category is "Other Corporate" expenditure. This reflects the fact that the majority of the business's operating costs are treated as overheads in the Town Reports and are not assigned to transmission, distribution and retail directly.

Distribution, Property & Fleet and Other District opex have been grouped together by PB to facilitate the analysis of historic and forecast opex on the same basis.

[64] To obtain nominal dollars, the historical opex is taken from the unescalated Town Reports while forecast opex is taken from the escalated Town Reports.

Total opex (excluding generation fuel and corporate financing costs) has risen from $74.0m in 2006/07 to $121.6m in 2009/10 and is forecast to grow to $177.5m by 2013/14.

As discussed in Section 4, Horizon Power's forecasts for opex include materials and labour cost escalators. When these escalators are removed from the forecasts then opex is increasing by 3% per annum over the forecast period to $137.4m in 2013/14.

Unlike capital expenditure which can vary from year to year by extreme amounts due to individual projects, opex is usually characterised by fairly steady ongoing expenditure increasing in line with sales and network size. From this perspective it appears that the unescalated opex growth forecast is in line with PB's expectations for a company like Horizon Power.

This chapter examines each of the opex categories in turn in order to make an informed decision as to whether the historical and proposed expenditure is appropriate.

8.2 Forecasting methodologies

In response to a request from the ERA, Horizon Power has developed a series of Town Reports The reports show historical and forecast levels of opex for each individual town with costs broken down by cost function under the following categories: generation, transmission, distribution, retail, other district expenses, property and fleet expenses and other corporate expenses.

While Horizon Power was able to provide specific budget estimates for some costs at a town level, many costs are captured only at a district level and need to be allocated to the towns in the district. Some district based costs are managed centrally within the business, including property and fleet. These are currently captured at a corporate level only and are allocated to towns for the purposes of the town reporting. Distribution and generation maintenance costs are budgeted at an asset level (e.g. pole, feeder, engine etc), which are then aggregated to towns according to the location of the asset.

For these reasons, Horizon Power has indicated that while it has been possible to use cost codes to allocate historical expenditure on a town basis, it was not able to allocate all forecast expenditures into the required line items in the Town Reporting format in time for this inquiry. In order to make some meaningful comparison of historical and forecast expenditures, PB has taken the information in the consolidated Town Reports and merged distribution, property & fleet and other district expenses. This results in four categories which are now examined in the following sections. They are:

- Transmission expenses
- Retail expenses
- Distribution, property & fleet and other district expenses
- Other corporate expenses.

8.3 Transmission

Transmission opex includes maintenance, asset management implementation, overhead recovery and other.

Actual transmission operating expenditure has risen from $1.3m in 2006/07 to $1.90m in 2009/10 in nominal terms. The company forecasts transmission opex to rise to $6.0m by 2013/14. The forecast

total expenditure over the next four years is $14.8m – an annual average growth rate of 36%. These forecasts are shown in Figure 8-2.

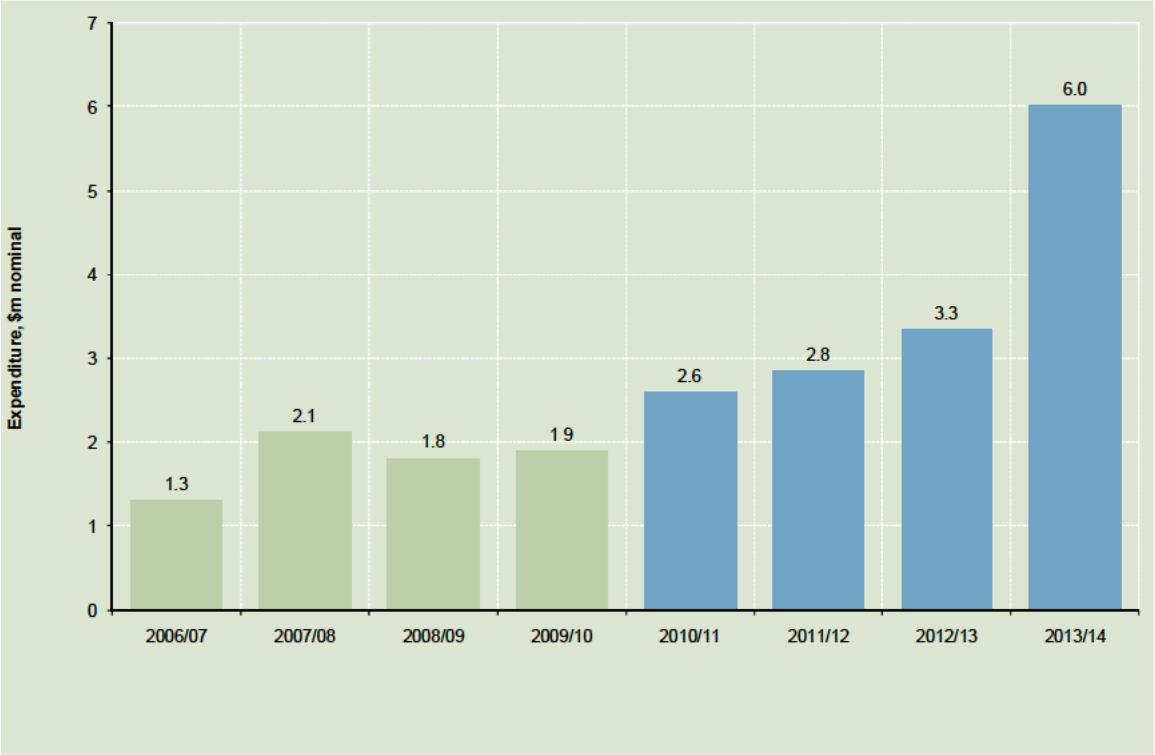


Figure 8-2 Horizon Power actual and forecast transmission opex

With labour and materials cost escalators removed, transmission opex follows the same general forecast profile as illustrated in Figure 8-2– growing steadily to $2.7m in 2012/13 with a sharp rise to $4.5m in 2013/14.

The two major expenditure categories forecast over the next four years are Asset Management Implementation and 'Other'. Asset management implementation is forecast to grow from around $200,000 in 2009/10 to $2.3m in 2013/14. 'Other' transmission expenditure is forecast at around $500,000 for the next three years with a significant increase to $3.2m in 2013/14 associated with the commissioning of new generation at Port Hedland and works in the Karratha area. Horizon Power notes that it currently has no generation cost codes for the Pilbara, and therefore has placed the Operations and Maintenance costs related to the Port Hedland power station project in this Transmission cost code.

8.4 Retail

Retail opex expenses encompass metering and billing services, marketing and product development.

Actual retail operating expenditure has risen from $3.2m in 2006/07 to $9.6m in 2009/10 in nominal terms. The company forecasts retail opex to rise to $13.6m by 2013/14. The forecast total expenditure over the next four years is $49.1m – an annual average growth rate of 7%. These forecasts are shown in Figure 8-3.

Figure 8-3 Horizon Power actual and forecast retail opex

In real terms (removing the effect of labour and materials escalators) retail opex is forecast to be fairly flat rising marginally to $10.2m by 2013/14. Retail opex is therefore forecast to remain very much 'business as usual' with current expenditure levels.

There are two main costs driving the total forecast expenditure growth in this category. These are subsets of the metering and billing services and comprise expenditure on contractors and consultants and 'other' metering and billing expenditure. Expenditure on contractors and consultants has risen from around $200k per annum since 2006/07 to $1.6m in 2009/10 and is forecast to grow to $3.0m in 2013/14. Other expenditure in metering and billing services has fluctuated historically with a very large expenditure of $11.7m in 2007/08. In 2009/10 other expenditure was $4.3m. This "'other" expenditure stream is forecast to grow steadily over the next four years to $5.8m and therefore comprises over 40% of total retail opex.

8.5 Distribution, Property & Fleet and other district expenses

Distribution opex includes maintenance, asset management implementation, Customer Service Obligation (CSO) expense[65], overhead recovery and other. Other district expenses includes district management, works delivery and district customer and stakeholder management.

As discussed earlier Horizon Power's forecasts for other district expenses include Property & Fleet and distribution maintenance. To gain some sense in trends in expenditure PB has combined Distribution, Property & Fleet and other district expenses – this is shown in Figure 8-4.

Combined expenditure in these three categories has risen from $17.1m in 2006/07 to $35.2m in 2009/10. For reasons explained below 2009/10 is an outlier year. Opex in this category is forecast to grow from $28.2m in 2010/11 to $34.7m in 2013/14. Expenditure is forecast to grow at an average rate of 7% per annum from 2010/11 to 2013/14.

Figure 8-4 Horizon Power actual and forecast Distribution, Property & Fleet and other district expenses opex

In real terms (removing the effect of labour and materials escalators) opex in this category is forecast to fall to $27.2m by 2013/14. This represents an annual average growth of 1% per annum in real terms between 2010/11 and 2013/14.

The increase in expenditure between 2008/09 and 2010/11 is due primarily to three individual elements of distribution expenses. These are highlighted in Table 8-1.

[65] Horizon Power receives subsidies from the Government in relation to CSO payments for specific decisions which the Government has made and therefore funded, including subsidies for caravan park customers and air conditioner rebates for seniors. (ref. Horizon Power Operations Commercial Management Reference Guide, p. 37)

Table 8-1 Major expenditure changes within Distribution, Property & Fleet and other district expenses ($m, nominal)

	2006/07	2007/08	2008/09	2009/10
Maintenance - Contractors & Consultants	3.0	3.8	4.6	6.4
Overhead Recovery	2.7	3.2	4.9	6.0
CSO Expense	0.0	0.0	0.0	6.2

Source: Horizon Power Towns Sheets

There has been a major one-off expenditure of $6.3m in 2009/10 on CSO expense while both overhead recovery and contractors & consultants also show considerable increases.

Apart from these three elements it is difficult to identify any individual step changes in opex in this category or any items for which expenditure is growing more than the average. The budgeting process and the allocation of the information into the town reports means that it is not appropriate to undertake an analysis on a line by line basis.

However, because opex in this category overall is forecast to remain fairly flat in real terms, PB has no concerns with this expenditure group.

8.6 Other (corporate) expenses

Other corporate expenses opex includes finance services, Customer / stakeholder management, IT services, strategic management, SCADA, Gentrack and other expenses.

Actual other corporate expenses opex has fluctuated from $39.9m in 2006/07 to $68.3m in 2009/10 in nominal terms. The company forecasts other corporate expenses opex to rise to $108.0m by 2013/14. The forecast total expenditure over the next four years is $399.4m – an annual average growth rate of 7%. These forecasts are shown in Figure 8-5.

Figure 8-5 Horizon Power Other corporate opex actual and forecast

In real terms (removing the effect of labour and materials escalators) other corporate expenditure is forecast to be $83.1m in 2010/11 and remain fairly level over the forecast period.

Four cost categories today account for almost 70% of the other corporate expenditure category. By 2013/14 the proportion of these four will have risen to over 80% of total other corporate expenditure. The four categories are:

- Strategic management
- IT services
- Other Labour
- Other, Other (this category encompasses a myriad of small expenditure items ranging from tuition fees to travel and training).

Figure 8-6 shows the breakdown of other corporate expenditure into its main cost categories.

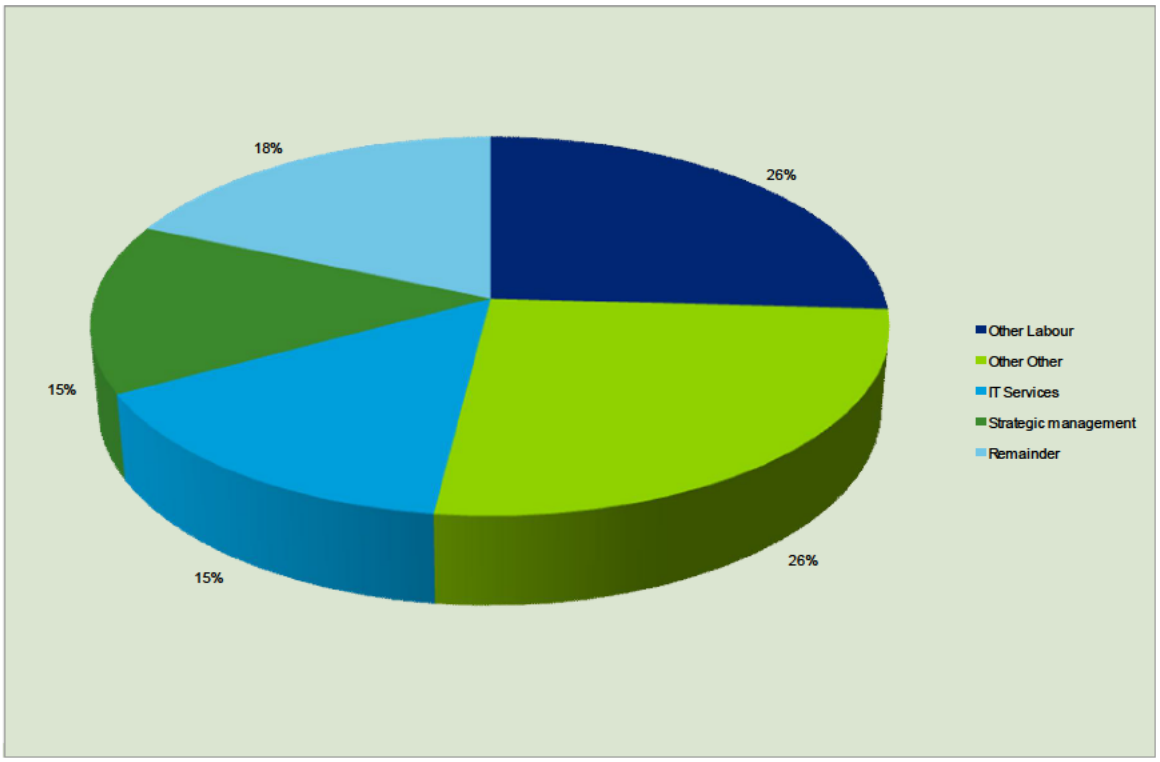


Figure 8-6 Break-up of other Corporate opex

Strategic management expenditure has increased from $4.6m in 2007/08 to $6.7m in 2009/10. It is forecast to further increase by 135% over the forecast period reaching $15.7m by 2013/14. PB would expect to see expenditures stabilise over the forecast period as Horizon Power completes its program of review that it began at the inception of the business and is concerned that this is not evident in the forecast expenditures. This aspect is further discussed in section 8.8.

IT Services expenditure has increased from $4.6m in 2007/08 to current levels of $6.0m. It is expected to further increase by 172% over the next four years to reach $16.3m in 2013/14. The main area of increase has been Western Power SLA charges for Desktop Support and DFIS Support.

Other labour expenditure has increased from $11.8m in 2007/08 to $17.9m in 2009/10; again this is forecast to further increase by 56 % to reach $28m by 2013/14.

Expenditure on Other-other items has fluctuated historically but like the other three major corporation opex categories is forecast for considerable growth over the next four years – increasing from $15.5m in 2009/10 to $28.1m in 2013/14.

These increases are further discussed in the next section at a divisional level.

8.7 Divisional Analysis of Opex

It is clear from the preceding analysis that the Towns Reports are not very useful in identifying the drivers of operational expenditure as the high level categories do not allow for analysis of specific changes. Horizon Power has also provided a breakdown of its opex forecasts in terms of its nine operating divisions. This information has only been provided as a forecast from 2010/11 to 2011/12. The headline figures by division were discussed in Section 4 above. To recap, un-escalated opex is forecast to grow by 3% per annum to reach $137.4m by 2013/14.

PB has reviewed un-escalated divisional opex forecasts and identified four step changes. Horizon Power has given the following explanations for these changes in opex[66]:

a) Islanded Systems Development: Materials expenditure is forecast to drop from $2.2m in 2010/11 to $206k in 2011/12 and remain constant thereafter.

   The reason for the significant reduction in materials expenditure from 2011/12 onwards is due the completion of house wiring work as part of the ARC 2 program.

b) Knowledge & Technology: Other Operating expenditure jumps from $9.4m in 2010/11 to $11.7m in 2011/12 and remains constant thereafter.

   The increase in "other" expenditure from 2008/09 to 2009/10 is predominately related to IT charges, which have increased by over $1m in 2009/10 compared to 2008/09. The main area of increase has been Western Power SLA charges for Desktop Support and DFIS Support. Actions to address these increases by in-sourcing are discussed in section 9.5.1.

c) Operations: Materials expenditure constant except for a one off increase in 2012/13 to $24.1m.

   The major driver of the increase in Operations Materials in 2012/13 is a major generation overhaul in Carnarvon. A number of overhauls are now scheduled to be undertaken in the same financial year, changing the spending profile from that experienced in previous years[67].

d) Strategy & Business Development: Operating materials expenditure step increase from $389k in 2012/13 to $6.1m in 2013/14.

   Materials expenditure has been budgeted to increase to just under $6m per annum from 2013/14 as a result of the Gen 2013 expansion strategy.

PB concludes that forecast opex is very much 'business as usual'. Where significant changes in opex have been identified, the company has provided valid reasons for the changes in the opex profiles.

8.8 Global Efficiency and opex savings

PB has been asked to examine Horizon Power's projected operating expenditure, cost drivers and processes and determine the scope for efficiency gains in comparison to past performance and other service providers.

One methodology for assessing efficiency is to benchmark the company with other service providers. Because of the unique functions that Horizon Power undertakes as a vertically integrated electricity utility operating in a very diverse and region it has not been possible to find a directly comparable company.

Another way of assessing efficiency is to establish an efficient base year of operating expenditure and determine whether increases in opex from this base year are appropriate.

It has not been possible to establish a base year for Horizon Power as the period since inception has been an establishment phase involving significant restructuring to deliver its services. The Service

[66] Horizon Power, 2010, Actual Vs Budget comparisons as part of 10, DMS#3284631
[67] Horizon Power, 2010, Fact Sheet No. 64, DMS#3287960

Level Agreements (SLAs) with the other WA electricity companies company have been amended, in some cases Horizon Power has developed an in-house capability to undertake these functions, in other cases it has outsourced to independent providers. In some instances this has lead to upward pressure on opex as the favourable terms of the initial SLAs are difficult to replicate under market conditions.

Horizon Power has rapidly increased its staffing levels since it was established. Staff levels are given in Table 8-2. Staff numbers have increased to undertake functions which were previously undertaken by Western Power, Verve or Synergy.

Table 8-2 Horizon Power staffing levels

Date	Full time equivalents (FTEs)
June 2006	193
June 2007	209
June 2008	253
June 2009	342
June 2010	388

Source: Horizon Power Fact sheet 32

PB notes also that staffing levels have risen at a substantially higher growth rate than the company's electricity sales which indicates that new staff are not employed primarily to carry out duties associated with sales growth such as increased maintenance. Instead it can be inferred that staff increases have been mainly in centralised functions.

The doubling of staff over the period and the increased functions of the company make an assessment of past efficiency difficult.

In section 5 PB noted that the company has adopted processes and procedures which when fully operational should enable the company to operate efficiently. PB expects that after the initial establishment phase and as the company's policies become embedded then efficiencies in operating expenditure should be realised.

PB concludes that historical opex levels are in line with expectations of a company undergoing the establishment and restructuring phase that Horizon Power has undergone within the past four years. However PB would expect that eventually increases in opex should cease and then start to decrease as the company realises efficiencies. A company operating in a competitive environment would be expected to achieve reductions in opex. PB is therefore concerned that in real terms the company is still forecasting an average 3% increase in opex per annum over the next four years. The profile of Horizon Power's real opex growth is shown in Table 8-3.

Table 8-3 Unescalated opex forecast growth

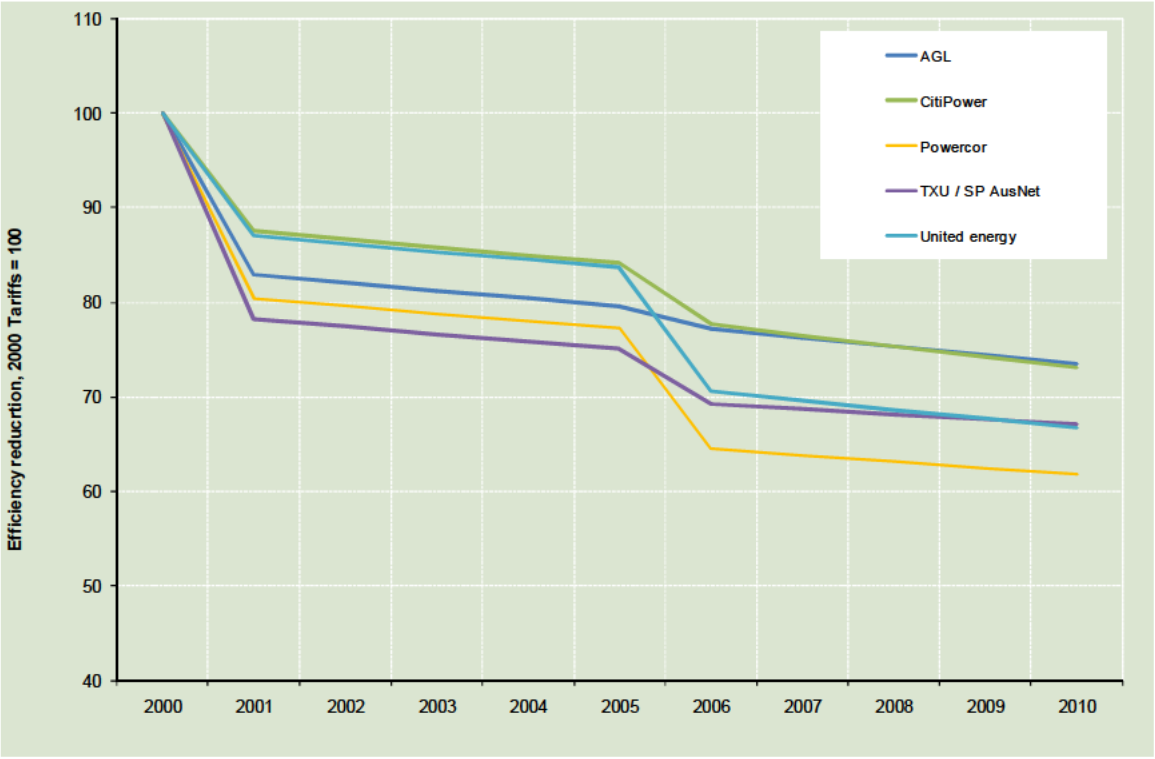
	2009/10	2010/11	2011/12	2012/13	2013/14
Unescalated total opex	121.60	131.20	133.40	136.30	137.40
Annual Growth		8%	2%	2%	1%

Source: Horizon Power Consolidated Towns reports: Note total opex excludes fuel, electricity purchases and financing costs.

As a case study PB has examined the experience of the Victorian electricity distribution businesses since they were privatised and established under a new regulatory regime.

The regulation of network electricity companies in Victoria is an example of how efficiency savings were expected to continue through both the first and second regulatory review periods for the Victorian distribution companies. In the first regulatory review period the companies were allowed to earn CPI minus x, where x was 1% for the first period. For the second period since establishment x was increased to between 0.8% and 3% reflecting the increase in efficiency savings which the regulator assessed that the companies could make in the second regulatory period since the companies were then well established. The regulators also imposed a range of one-off efficiency savings for the first year of both of the price review periods.

Figure 8-7 outlines the efficiency savings imposed on the Victorian electricity distribution companies during their first two regulatory review periods. Similar savings were also imposed on distribution companies in other states by their respective regulators.



Source: Office of Regulator General Victoria, September 2000, Electricity Distribution Price Determination 2001-2005 Volume I Statement Of Purpose And Reasons p181 and Essential Services Commission Victoria, Oct 06, Electricity Distribution Price Review 2006-10 October 2005 Price Determination as amended in accordance with a decision of the Appeal Panel dated 17 February 2006 Final Decision Volume 1 Statement of Purpose and Reasons, p11

Figure 8-7 Victorian Electricity Distribution companies required efficiency savings

The average efficiency savings for customers were a one-off drop of between 3.1% and 16.4% for the first year of the second price review period followed by an average drop of 1.2% in each subsequent year. Overall this represents an annual average drop of 3%.

If the ERA were to follow the Victorian precedent then allowed opex should be reduced by 3% per annum over the forecast period.

8.9 PB key findings (Opex)

The major increase in forecast opex over the next four years is due to material and labour costs escalation. As noted in Section 6 these escalators appear to be reasonable.

Unescalated opex is forecast to grow by an annual average of 3% over the next four years.

PB recommends that allowed controllable opex is reduced by 3% per annum over the next four years as shown in Table 8-5 to capture efficiency gains which are expected to be made by the business. Controllable opex excludes fuel and electricity purchase costs and financing costs.

Table 8-4 PB recommended non-generation opex ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total
Horizon Power submission	130.9	141.2	153.1	162.3	587.4
Efficiency gains	(3.9)	(4.2)	(4.6)	(4.9)	(17.6)
Total adjustment	(3.9)	(4.2)	(4.6)	(4.9)	(17.6)
PB Recommendation	127.0	136.9	148.5	157.4	569.8

Source: PB Analysis

9. Capex review

This section presents PB's review of Horizon Power's capital expenditure as submitted to the ERA in the Town Reports and supported by the additional information provided in response to PB's enquiries. It excludes generation capex which is discussed in section 7.

To provide a recommendation of the efficient level of historical and forecast capex, the PB review has:

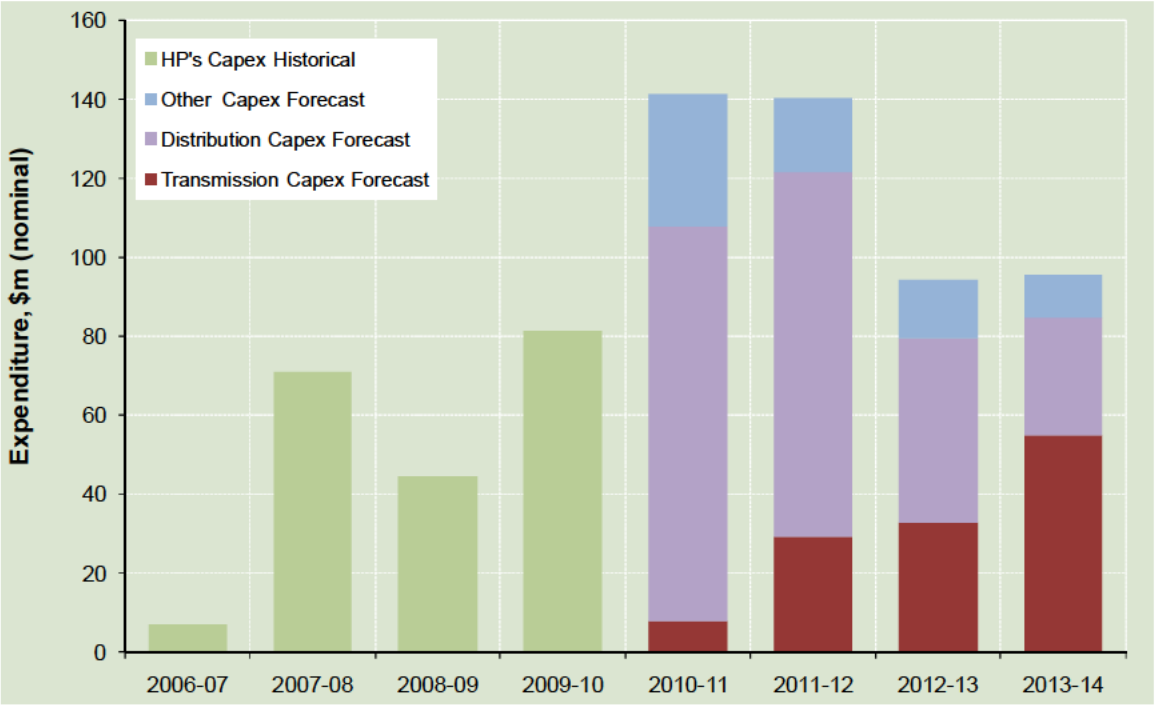
- compared Horizon Power's actual capital expenditure with the projected capital expenditure for the period from 2006/07 to 2009/10, including the investigation of the reasons for material variations from the budget and identification of material capex items that are not considered to be appropriate
- considered the processes used by Horizon Power to approve capex including how those processes can be improved to ensure efficiency in capital investments
- provided an assessment on the fitness for purpose of engineering solutions for the major items reviewed in detail
- identified forecast capital expenditure that is not considered to be both prudent and efficient.

In undertaking the review, PB has referred to the independent reviews of Horizon Power's Asset Management Plans previously conducted[68].

9.1 Description

Horizon Power has reported total historical capex of $203.5m (nominal) for the 4-year period 2006/07 to 2009/10 and proposed a total forecast capex of $471.2m (nominal) for the 4-year period from 2010/11 to 2013/14. The proposed total historical and forecast capex is shown in Figure 9-1 below.

[68] GHD, 2008, *Asset Management Systems Review Audit Report* ,Rev 2; and Qualeng, 2010, *Horizon Power Electricity Licence Asset Management Review*



Source Source: Consolidated Town Reports, Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…'[69] *and PB Analysis*

Figure 9-1 Historical and forecast capex ($m nominal)

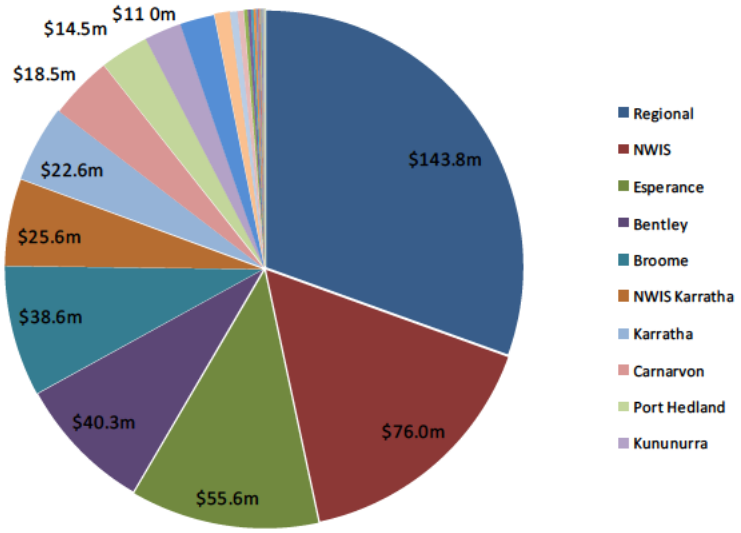
The significant increase in forecast capex between the two 4-year periods is due to both an increase in the volume of work performed and the escalation factors applied by Horizon Power to its capex forecasts.

The forecast expenditure is comprised of transmission $124.6m (13%), distribution $268.7m (28%) and other non system categories $87m (8%). This expenditure is assessed in sections 9.3 to 9.5. Figure 9-2 below identifies a breakdown of the forecast capex between Horizon Power's ten most material location categories.

The following drivers have a material effect on the forecast value of the capital works program:

- the escalation assumptions
- the application of cost estimating contingencies
- the WA government undergrounding and regional investment policies (PUPP)
- the interpretation of safety risks (ENRUP, twisties and buildings)
- the separation of Horizon Power from Western Power (IT & Fleet)
- the forecast changes in power procurement arrangements (Transmission projects)
- the forecast energy demand growth
- the scale of end of life asset replacement.

[69] Horizon Power, 2010, 'Data Cube CXMD:HBM Capital Projects' extract contained in 'CAPEX BY FUNCTION02092010.XLS' as sheet 'CAPEX – All Projects by Divi…'



Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' and PB Analysis

Figure 9-2 Forecast capex by location ($m nominal)

The majority of the forecast capex has been assigned to 'Regional', 'NWIS' and 'Esperance' locations which reflects the undergrounding program, forecast major transmission projects within the NWIS, performance issues on the single phase Esperance rural network and the increases in property and fleet capex. The significant capex assigned to Bentley reflects the major IT projects forecast for the period to 2014/15. Table 9-1 identifies the projects in each location with more than $5m expenditure forecast over the period.

Table 9-1 Major projects >$5m expenditure by location ($m nominal)

Project	Location	Total[70]
PUPP	Regional	118.5
Fleet	Regional	13.5
Commercial Property Management	Regional	5.8
Residential Property Management	Regional	5.2
CLB-HDT Line Reconductor	NWIS	22.7
Customer Funded Work	NWIS	15.4
Pole Replacement	Esperance & Others	29.0
ENRUP 1 Phase	Esperance	15.7
Esperance Depot Redevelopment	Esperance	7.8
Technology Transition	Bentley	6.6
Ellipse Optimise	Bentley	5.3
Fairway Drive Substation	Broome	19.3

[70] Total may not add due to rounding

Project	Location	Total[70]
DMP-KRT Line Upgrade and Replacement of 2 Transformers	NWIS Karratha	24.4
Karratha to Roebourne 220kV Line	Karratha	12.6
Karratha Industrial Estate (Gap Ridge)	Karratha	9.3
New Line WFD-SWC 72	Port Hedland	7.5
Wedgefield Third Tx	Port Hedland	7.0
Total		325.6

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' and PB Analysis

9.2 Forecasting methodologies

The method used by Horizon Power to forecast its capex investment varies according to the type of activity being forecast. For large projects, specific estimates are developed. For most other programs of work, unit costs for estimated volumes of work are used. This approach is discussed in section 5.3.4 and is considered by PB to be likely to lead to efficient forecasts.

In reviewing the application of this forecasting methodology, PB examined:

- the basis of work volumes
- the unit costs applied
- whether the appropriate escalation factors were applied
- the use of contingencies.

Unit costs are discussed in section 5.3.4, while the other matters are discussed below.

9.2.1 Work volumes based on age

PB found that some estimates of work volumes for replacement capex were based on the age of the asset. In PB's experience, when condition is considered in conjunction with age information the overall capex forecast is generally lower than a purely age based forecast. In Horizon Power's case this applies primarily for pole replacement and is discussed in section 9.4.2.

For other asset classes, PB notes that Horizon Power has completed a program to identify its assets and therefore has good information about work volumes.

9.2.2 Escalation factors

As set out in section 5.4.4, Horizon Power applies escalation factors for material and labour, which PB considers reasonable. PB found, however, that the entire forecast capex has been escalated by the materials escalator (which is higher than the proposed labour escalator) and concludes that this overstates the capex required.

PB recommends that the correct escalators are applied. Recommended adjustments are applied to the capex forecasts after the adjustments recommended by PB, as set out in Table 9-16.

9.2.3 Contingencies

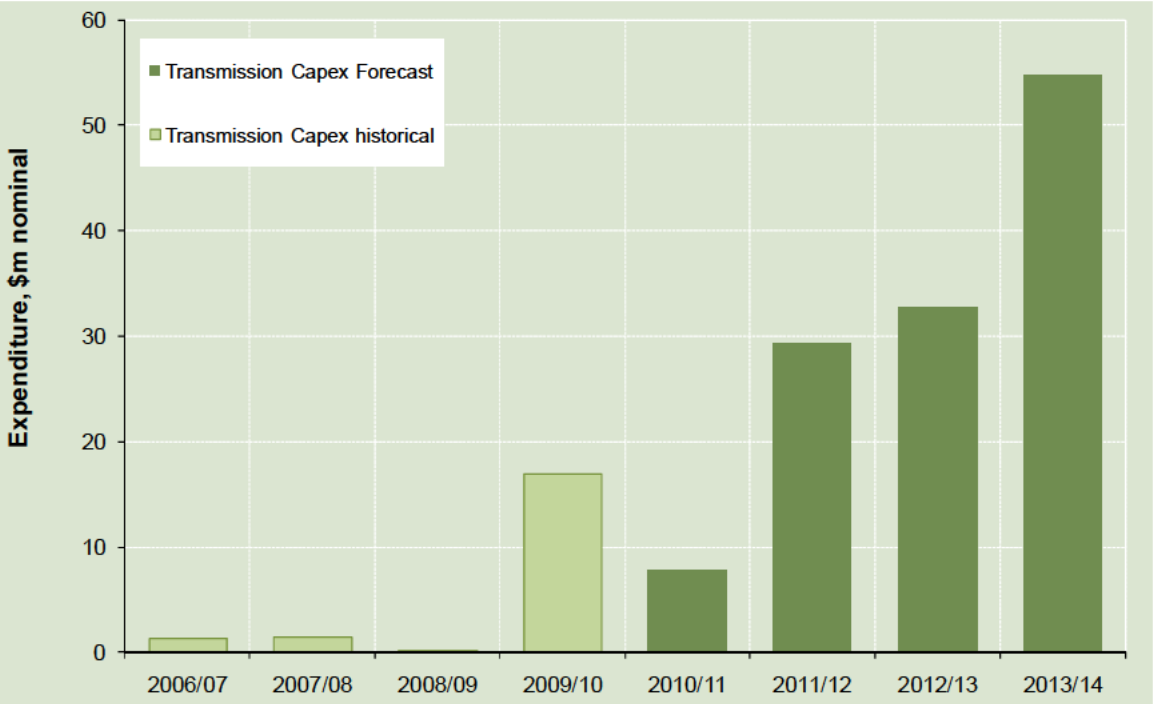
PB found the addition of a 10-30%[71] contingency in project estimates and is concerned that this may overstate the level of risk contingency at a portfolio level as it introduces an asymmetry to the accuracy of the estimation process. The Project Evaluation module in the Strategic Asset Management Plan also indicates that the contingency makes allowance for 'cost growth during construction' and 'contractor availability'[72]. PB considers that these factors double count the escalation applied in both the materials and labour escalators used in the budget process and the relatively high unit costs used by Horizon Power (see section 5.3.4). In PB's view the contingency should be removed to allow the integrity of the material and labour escalation process to be retained.

The additional scope related risks identified in the SAMP module relate to unforseen project risks that should be separately considered at a portfolio level to ensure that the smoothing effects provided by diversifying risks (and upside benefits[73]) across a larger project portfolio are appropriately captured. As this has not been undertaken by Horizon Power, PB has referred to recent regulatory decisions. Based on the information contained in the AER's determination for ElectraNet, the application of a diversified risk contingency across a project portfolio typically ranges from 2.6% for large portfolios to 4.6% for smaller portfolios where risk is diversified across fewer projects[74]. This range is confirmed in the TransGrid determination where the approved risk allowance was 2.8%[75] and in the Powerlink determination where the approved risk factor was 2.6%[76]. Therefore PB recommends that the 10% contingency on the base capex is removed and replaced with a 4.6% portfolio level risk contingency to account for the probability of cost underruns when risk is priced into cost estimates. This allowance represents a conservative estimate consistent with the upper end of the AER's expected range. Recommended adjustments are set out in Table 9-16.

9.3 Transmission

Horizon Power has reported total historical transmission capex of $20.1m (nominal)[77] for the period 2006/07 to 2009/10 and proposed a total forecast transmission capex of $124.6m (nominal) for the period from 2010/11 to 2013/14. The proposed total historical and forecast capex is shown in Figure 9-3 below.

[71] Horizon Power, undated, Business Case – Underground Mungan St, DMS#3241728, p.4
[72] Horizon Power, 2010, AMP Instruction Module 2010/11 - Module 2 – Project Evaluation, DMS#3224871, p.8
[73] Such as the $2m benefit realised in cable procurement efficiencies (DMS#3250971 p.3) and $600k benefit in avoided land acquisition costs (DMS#3250971 p.3 & DMS#3104240v02 p.21) for the Fairway Drive Substation project.
[74] AER, 2008, ElectraNet Transmission Determination 2008-09 to 2012-13, p.133
[75] AER, 2009, TransGrid Transmission Determination 2009-10 to 2013-14, p.35
[76] AER, 2009, Powerlink Queensland transmission network revenue cap 2007-08 to 2011-12, p. 43
[77] PB notes that the historical figures are based on changes to the Fixed Asset Register. Despite indicating a similar scale of expenditure over the period, these figures do not reconcile with the historical capex and timing reported in the consolidated town reports sheet. PB has not investigated the reasons for the discrepancy.



Source: Horizon Power Fixed Asset Register (historical) and Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

Note: Historic capex is based on the year the expenditure was capitalised.

Figure 9-3 Transmission capex – historical and forecast ($m nominal)

Since disaggregation in 2006 there has been limited capital expenditure on transmission assets with only one major transmission project, the Stovehill Substation ($11.8m)[78], recorded in the fixed asset register[79]. The remainder of the historical expenditure in the fixed asset register is associated with minor asset replacements.

The forecast includes a significant increase in Transmission capex over the period to 2013/14. Approximately 63% of the forecast expenditure over the period from 2010/11 to 2013/14 is associated with the following four major transmission projects:

- Karratha to Roebourne 220 kV Line[80] - $103.8m commencing 2013/14 ($12.3m prior to end 2013/14)
- Line upgrade/replacement & 2 Transformers (DMP-KRT 81)[81] - $24.4m commencing 2011/12
- Reconductor CLB-HDT X1[82] - $22.7m commencing 2012/13
- Fairway Drive Sub-Station[83] - $19.7m commencing 2010/11.

To form a view about the efficiency of the forecast expenditures, PB has reviewed a sample of the projects. It reviewed the Karratha to Roebourne and Dampier to Karratha line projects which are both associated with the potential disconnection of the Rio Tinto Iron Ore (RTIO) network from the NWIS. PB has also reviewed the Fairway Drive substation project. Together these projects account for 45% of the proposed transmission capex to 2013/14.

[78] Asset & Sub Number # 000000010289002
[79] Horizon Power info - 8 3262769 - ERA REVIEW FIXED ASSET REGISTERS 2006 2010_JVP.XLS
[80] Horizon Power Data Cube CXMD:HBM Capital Projects ID: 8, Horizon Power QuickBase ID: 2602
[81] Horizon Power Data Cube CXMD:HBM Capital Projects ID: 11, Horizon Power QuickBase ID: 2612
[82] Horizon Power Data Cube CXMD:HBM Capital Projects ID: 7, Horizon Power QuickBase ID: 2596
[83] Horizon Power Data Cube CXMD:HBM Capital Projects ID: 100, Horizon Power QuickBase ID: 1619

9.3.1 Rio Tinto Iron Ore Disconnection

This project is considered by Horizon Power to be commercial in confidence. PB's review is contained in confidential appendix A. PB concludes that the forecast expenditures should be reduced as shown in Table 9-2.

Table 9-2 Adjustment for KRT-RBT line project ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[84]
Adjustment	(14.0)	(10.2)	0.2	(36.6)	(60.6)

Source: PB Analysis

9.3.2 Fairway Drive substation

The Fairway Drive substation is proposed to augment the existing distribution system in Broome by providing a new zone substation to serve new development in the north of Broome. The project will install a new 33kV bus at the existing Frederick St substation to facilitate the installation of two new 33kV feeders to the new Fairway Drive substation.

PB notes that despite being part of a 33/11kV system, the Fairway Drive substation has been categorised as a transmission project within Horizon Power's capital project list. While it may be appropriate to re-categorise this project as distribution for consistency with its licence and typical industry definitions, the current categorisation is consistent with the treatment of the Stove Hill substation in 2009/10, and Horizon Power's categorisation of zone substations as transmission assets. Table 9-3 summarises the capex forecast for the Fairway Drive substation.

Table 9-3 Forecast capex for major substation projects ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[85]
Fairway Drive Substation	2.4	1.9	1.5	13.4	19.3

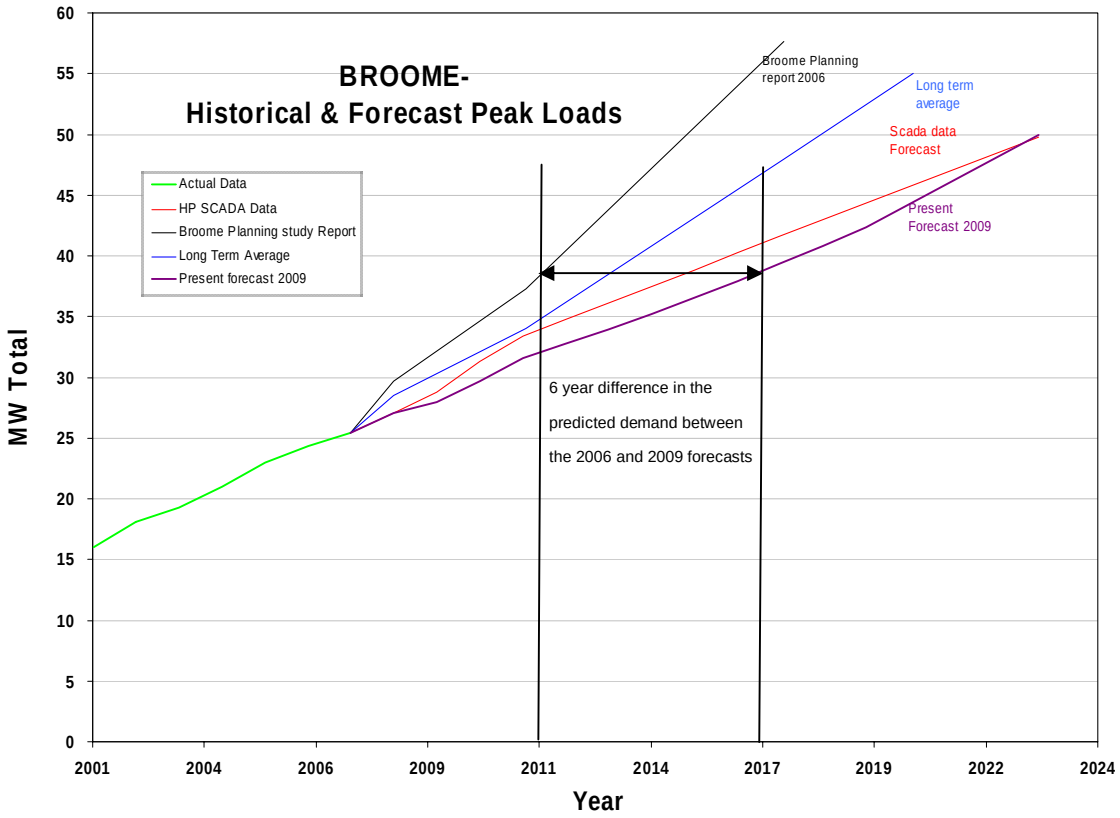
Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

PB has reviewed the information package provided by Horizon Power relating to this project and notes that the timing is contingent on specific residential developments driving significant load growth in North Broome. The 'official' demand forecast for Broome indicates that the load growth will not exceed the system's capacity limits until well beyond 2015[86] whilst the early installation of new 33kV feeders and Frederick St 33kV Bus (scheduled for 2009/10 to 2011/12) will facilitate load transfers on heavily loaded feeders in the medium term.

The timing of the project is scheduled based on Horizon Power's much higher 'realistic' forecast which incorporates speculative new loads on top of the confirmed customer and organic growth[87]. Historically, the load forecasts for the Broome system have been aggressive and found to significantly overstate the rate of demand growth[88]. For example, Figure 9-4 demonstrates that Horizon Power's 2006 demand forecast for Broome overstated the rate of demand growth by approximately 6 years

[84] Total may not add due to rounding
[85] Total may not add due to rounding
[86] Horizon Power, 2010, West Kimberley Region Report – System Protection Equipment and Asset Study, DMS#3239973, p. 81
[87] Ibid
[88] Horizon Power, 2009, Broome – 2009 Planning Review of Fairway Drive Substation, DMS#3158162v01, p.17

over the period from 2007 to 2011 when compared to the current 2009 forecast. The 5 year planning horizon in this example is comparable to the forecasting horizon used to support the timing of the Fairway Drive substation in 2013/14.



Source: Horizon Power Broome – 2009 Planning Review of Fairway Drive Substation

Figure 9-4 Broome planning forecast comparison 2006 to 2009

While land clearing and a call for interest in providing display homes has commenced, it is not clear that this will result in an increased demand for electricity within the forecast period. To test the accuracy of the forecast over the short term, PB compared the forecast underpinning the timing of the Fairway Drive substation augmentation to the most recent demand forecast for Broome[89].

In the case of Fairway Drive, the demand forecast that has been used to determine the required augmentation timing is based on a starting point associated with an unusual network event in 2007/08 (load switching following an outage) and comparatively high (5.5% p.a.) growth figures in the early years of the forecast to 2010/11[90]. Furthermore, PB notes that the most recent 2010/11 forecast for Broome has revised the demand downward "…by 800 kW in order to reflect the lower than expected actual maximum demand of 28.6 MW (March 2010)"[91]. Additionally, information provided by LandCorp about the proposed development of the Broome Road Industrial area[92] states that LandCorp is in the process of seeking planning and environmental approvals and requests Horizon Power to commence forward planning, indicating that significant industrial loads in the area are not likely in the near future. On this basis, PB considers that the 2008/09 forecast used to support the timing of the Fairway Drive Substation overstates the expected load growth.

[89] Horizon Power, 2010, Demand and Energy Forecast FY2010/11 to FY2019/20, DMS#3238764, p.30
[90] Horizon Power , March 2009, Broome – 2009 Planning Review of Fairway Drive Substation, DMS#3158162v01, p.17
[91] Horizon Power, June 2010, Demand and Energy Forecast FY2010/11 to FY2019/20, DMS#3238764, p.30
[92] LandCorp, Aug 2010, Broome Road Industrial Area, Letter to Horizon Power

Similarly, the overloading of the feeders serving the north of Broome has been forecast on the basis of a comparatively low power factor[93] of 0.8[94]. Given the annual deferral benefit of $1.2m for the major substation work in 2012/13 and 2013/14[95], PB is concerned that Horizon Power has not considered power factor improvements that could be economically implemented. Based on the capacity constraints on the feeders serving north Broome, an improvement in power factor from the assumed 0.8 to 0.9 would be expected to allow the deferral of the substation augmentation required to serve the proposed 16 MW load by between 2 and 3 years assuming a 5.0% annual load growth rate.

Options to supply the new developments via one of the proposed 33kV lines operating initially at 11kV were mentioned in correspondence with LandCorp[96]. This option would alleviate loading problems on the existing network allowing for a deferral of the substation.

On the basis of the scale of the historical forecasting error, the uncertain nature of the residential developments driving the augmentation, significant downward revision in the 2010/11 demand forecast and the limited consideration of power factor improvement and other options, PB is of the view that the construction of the Fairway Drive substation itself can be deferred by at least one year.

Table 9-4 summarises PB's recommendations for the Fairway Drive substation project to 2013/14. Expenditures for 2010/11 and 2011/12 have been retained to reflect the probable need to build the 33kV lines to provide additional feeder capacity in the short term.

Table 9-4 Adjustment for Fairway Drive substation project ($m, nominal)

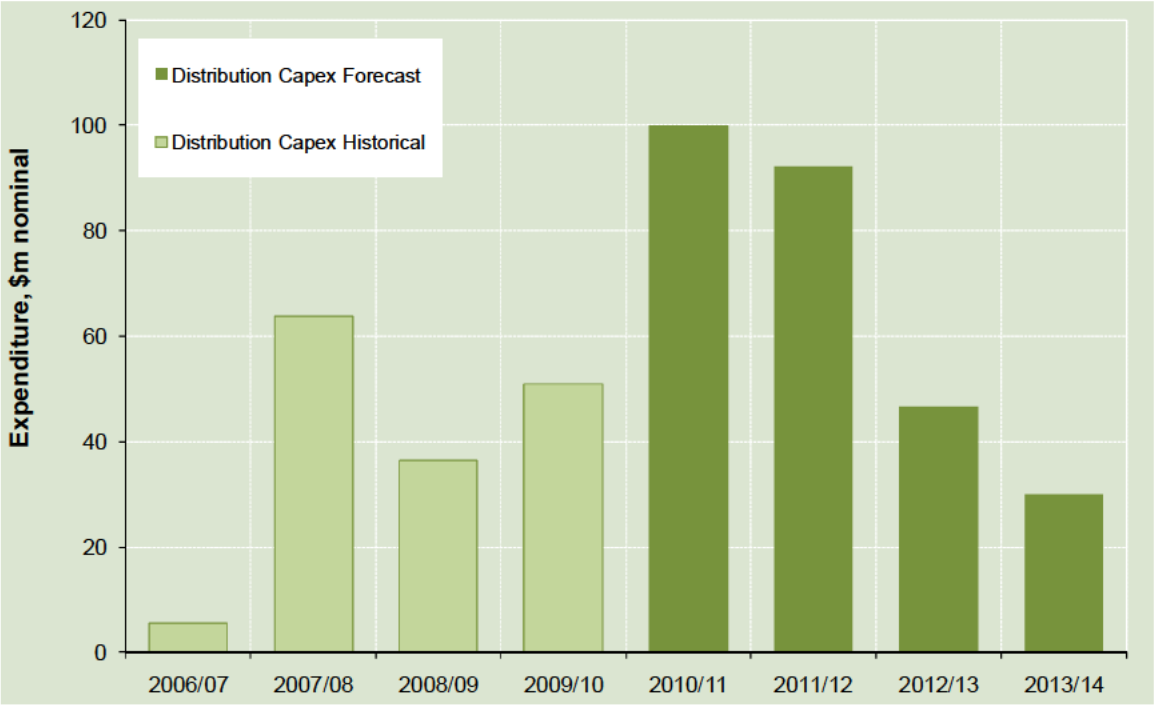
Item	2010/11	2011/12	2012/13	2013/14	Total[97]
Horizon Power Proposed	2.4	1.9	1.5	13.4	19.3
PB Recommended	2.4	1.9	-	1.6	5.9
Adjustment	-	-	(1.5)	(11.9)	(13.4)

Source: PB Analysis

9.4 Distribution

Horizon Power has reported total historical distribution capex of $156.8m (nominal)[98] for the period 2006/07 to 2009/10 and proposed a total forecast distribution capex of $270.1m (nominal) for the period from 2010/11 to 2013/14. The proposed total historical and forecast capex is shown in Figure 9-5 below.

[93] Power factor is the ratio of the power that the network needs to accommodate (measured in kVA) to the power that actually does useful work for the end user (measured in kW). Under ideal conditions, these would be the same so that there would be no difference between kVA and kW measurements.
Where the power factor is low, more network capacity (kVA) is required to serve a given load (kW) meaning that improving the power factor can often avoid or defer augmentation.
[94] Horizon Power, June 2010, Demand and Energy Forecast FY2010/11 to FY2019/20, DMS#3238764, p.9
[95] Based on $14.9m cost for the substation construction in 2012/13 and 2013/14 and Horizon Power's proposed nominal WACC of 8.0%
[96] Cossill & Webley, 2009, Broome Road Industrial Area Pre Feasibility Engineering Report, p.8
[97] Total may not add due to rounding
[98] PB notes that the historical figures are based on changes to the Fixed Asset Register. Despite indicating a similar scale of expenditure over the period, these figures do not reconcile with the historical capex and timing reported in the consolidated town reports sheet. PB has not investigated the reasons for the discrepancy.



Source: Horizon Power Fixed Asset Register (historical) and Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

Note: Historic capex is based on the year the expenditure was capitalised.

Figure 9-5 Distribution capex – historical and forecast ($m nominal)

Since disaggregation in 2006 the majority of distribution projects have been associated with undergrounding and safety/reliability improvements. Approximately 77% ($208.3m) of the forecast expenditure over the period from 2010/11 to 2013/14 is associated with the following four distribution programs.

- Pilbara Underground Power Project[99] ($118.5m)
- Customer Funded Works[100] ($45.1m)
- Pole Replacement Projects[101] ($29.1m)
- ENRUP 1 Phase Projects[102] ($15.7m).

The undergrounding project and customer funded works are funded through non-tariff revenues and are discussed in the next section. The pole replacement and ENRUP single phase projects are discussed in sections 9.4.2 and 9.4.3. The unit costs used in forecasting distribution expenditures is discussed in section 5.3.4.

9.4.1 Separately funded work

PB's review included expenditures that are funded through non-tariff revenue but only to the extent that these impact on the overall work undertaken by Horizon Power. PB reviewed the customer funded work program and the Pilbara Underground Power Project.

[99] Horizon Power Data Cube CXMD:HBM Capital Projects, ID 59 & 58, QuickBase ID: N/A
[100] Horizon Power Data Cube CXMD:HBM Capital Projects, 19 Projects
[101] Horizon Power Data Cube CXMD:HBM Capital Projects, 14 Projects (ID: 24, 32, 133, 134, 135, 285, 286, 328, 329, 390, 394, 438, 450, 457)
[102] Horizon Power Data Cube CXMD:HBM Capital Projects, 118 Projects

While Horizon Power does not fully control the scope of these works, PB considers that Horizon Power as a good asset manager should seek where practicable to align the proposed works with other works in order to minimise overall costs. It should also ensure that each part of the program is accurately scoped, costed and efficiently implemented and that any trade offs between capex and opex are recognised and taken into account when forecasting expenditures.

Customer funded works

The customer funded works comprises new customer connections, network augmentation to serve major customers, and pole to pillar projects and are fully funded by the customer. Forecast capex is based on estimates of demand for electricity and new customer connections.

PB examined the processes and governance arrangements for customer funded work. The supply, demand and energy forecasting process is discussed in section 5.3.3 and the governance and approvals process in section 5.3.2. PB is satisfied that Horizon Power has made appropriate plans and expenditure forecasts for customer funded works.

Pilbara Underground Power Project

The Pilbara Underground Power Project (PUPP) is a large scale undergrounding project currently being undertaken in cyclone affected towns in the North West of WA. Between 2010 and 2012 the project is proposed to cover approximately 6,800 properties in Karratha, South Hedland, Onslow and Roebourne.

At $118.5m, this program comprises approximately 44% of the distribution capex and represents the largest non-generation project in Horizon Power's expenditure forecast. Table 9-5 summarises the proposed capital expenditure for the PUPP project.

Table 9-5 Forecast capex for undergrounding projects ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[103]
PUPP program	42.5	58.0	18.0	-	118.5

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

The project arose when Horizon Power commissioned a report looking at the long-term cost benefit analysis of 'hardening' its network in towns in cyclone-prone areas. The Deloitte report [104] compared two approaches to asset management – the proposed Networks Hardening approach through undergrounding of key assets and the Age Replacement approach. Deloitte identified the drivers and impacts for the undergrounding project, summarised the expected benefit from the undergrounding strategy and provided an indicative financial analysis of the program.

Despite the conclusions by Deloitte that the undergrounding program was efficient, Horizon Power did not implement the strategy due to the significant upfront cost. Subsequently, funding was obtained from a 25% contribution from local government authorities with the remainder of the funding from the Department of Regional Development through the Royalties for Regions Program[105].

[103] Total may not add due to rounding
[104] Deloitte, 2008, Drivers and Impacts of the Proposed Networks Hardening Strategy
[105] Horizon Power, 2009, Project Management Plan – Pi bara Underground Power Project, DMS#3212046, p. 4

The scope and timing of the PUPP program was influenced by the Department of Regional Development, Horizon Power's existing program of capacity upgrade and network extension and the broader policy direction of the State Government – the Pilbara Cities of the North Policy. PB notes that the scope of the project examined by Deloitte was restricted to residential areas, whereas the PUPP includes light industry, voltage upgrades and transmission capacity upgrades.

PB has reviewed the Deloitte report and the Project Management Plan which was provided by Horizon Power in response to PB's request for the Business Case for the project[106].

Opex benefits - PB notes that the total opex benefit for the network hardening program estimated by Deloitte is approximately $4.5m p.a. (real 2007/08) for a program covering 13 towns[107] and the full scale of these benefits would not be realised until 2021 following the completion of the entire program. The primary benefit, however, of network hardening included in the Deloitte report is a $2m per annum saving in emergency and adverse events[108] that occurs in each year from 2013/14 to 2036/37. Deloitte notes that this assumption has been compared to historical costs experienced by Horizon Power[109] but, as with the other management assumptions regarding opex benefits, should be tested further[110]. PB has tested this assumption against the distribution expenditure forecast contained in the Karratha town report and found that annual benefits in the order of $1-2m (nominal) appear to have been incorporated into the forecast. PB was concerned about the unverified nature of the opex benefits associated with the full scope of the PUPP and requested further evidence that the expected opex reduction had been factored into expenditure forecasts. The impact on labour in the Pilbara area was provided and showed an opex saving of $1.5m from 2012/13.[111] PB is satisfied that opex savings due to the PUPP have been included in the forecast period.

Cost forecast - PB notes that the Deloitte report identifies the costs as 2007/08 dollars[112], however Horizon Power have applied an escalator of 12.1% to the costs to escalate the costs to a 2008 calendar year basis and a further 8.9% to escalate the costs to a 2009[113] calendar year basis, a total composite escalation of 22.1%. Taking the midpoint of the periods, the WA Department of Treasury and Works Building Cost Index (BCI)[114] indicates a 4.3% escalation from December 2007 to June 2008 followed by a 6.9% decrease in prices to March 2009 (the latest date where data is available) resulting in a 2.9% decrease from December 2007 to June 2009. This is consistent with SKM's observation regarding copper, aluminium, oil and steel prices that:

"…having fallen so dramatically in the latter half of 2008 and first two quarters of 2009, market prices for these commodities are now generally being forecast to recover in the short term."[115]

Similarly, over the period to June 2010 Horizon Power noted that it was able to achieve 31% savings in cable procurement for another project[116] which supports the view that the escalation factors that have been applied in the budget process are higher than those experienced in practice. Therefore, due to the volatility in escalation of commodity prices over the period, PB recommends the use of BCI to escalate the Deloitte estimates from December 2007 to June 2009 on the basis that the BCI is cited

[106] PB question 25
[107] Deloitte, 2008, Drivers and Impacts of the Proposed Networks Hardening Strategy, p.42
[108] Deloitte, 2008, Drivers and Impacts of the Proposed Networks Hardening Strategy, p.42
[109] Ibid, p.36
[110] Ibid, p.47
[111] Horizon Power, 2010, Fact Sheet No 32, Horizon Power's Workforce Strategy, DMS#3279323, p.6
[112] Deloitte, 2008, Drivers and Impacts of the Proposed Networks Hardening Strategy, p.8
[113] Horizon Power, 2009, Project management Plan – Pi bara Underground Power Project, Appendix B
[114] Provided as DMS#3281351
[115] SKM, 2010, SKM Market price Survey #4 – Results for Horizon Power, Draft, p.viii.
[116] The $2m benefit against a budgeted $6.5m feeder cable costs through procurement efficiencies for Fairway Drive Substation (DMS#3250971 p.3)

as the source of the forecast escalation rates applied by Horizon Power. The reduction to be applied is the difference between the escalation applied (22.1%) and the BCI (-2.9%), a total of -25%.

Recommendation

PB is of the view that the forecast expenditures for the PUPP program should be modified to adjust the escalators applied when forecasting costs. The adjustment is shown in Table 9-6.

Table 9-6 Adjustment for PUPP ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[117]
Horizon Power Proposed	42.5	58	18	-	118.5
PB Recommended	31.9	43.5	13.5	-	88.9
Adjustment	(10.6)	(14.5)	(4.5)	-	(29.6)

Source: PB Analysis

9.4.2 Pole management strategy

Horizon Power has a pole population of 55,118, with approximately 21,100 predominately wood poles located in the Esperance District[118]. Horizon Power has proposed 14 programs aimed at replacing or reinforcing both wood and metal poles due to age and condition. During interviews, Horizon Power identified that it has adopted a policy of replacing wood poles with steel poles due to the longer life and greater predictability of structural integrity for steel, particularly as assets age and in termite prone areas. Approximately 50% of all poles are steel.

At $29.1m, this program comprises approximately 11% of the forecast distribution capex and represents the largest asset replacement activity in Horizon Power's expenditure forecast.

Table 9-7 Forecast capex for pole management program ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[119]
Pole management program	12.8	4.8	4.5	6.9	29.1

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

Table 9-8 summarises the proposed capital expenditure for dedicated pole replacement projects between 2010/11 and 2013/14. Condition based programs refer to the replacement of poles identified as unserviceable through condition assessment inspections. The age based programs aim to replace poles at the end of a poles technical life, which is 40 years for a wood pole and 50 years for a steel pole.

Together these programs will replace 2675 wood poles over the period. PB notes that this review does not cover the ENRUP program, pole replacements for clearance issues, pole replacements associated with small copper conductor replacement or the removal of poles (approximately 9000) during the

[117] Total may not add due to rounding
[118] WA Parliament, 2010, Estimates and Financial Operations Committee – Questions on Notice Supplementary Information, Horizon Power, p.8
[119] Total may not add due to rounding

significant undergrounding programs scheduled for the period. PB examined these programs and is satisfied that they do not overlap with the pole management program.

The total capex associated with pole replacement is $22.7m over the period to 2013/14[120] whilst the total capex associated with wood pole reinforcement is $7.7m[121]. Horizon Power has identified a significant efficiency associated with a new condition monitoring program for wood poles equating to a $1.4m reduction in capex over the period, with additional benefits occurring in the years after 2014.

Table 9-8 Elements of the pole management program ($m, nominal)

ID	Description	Location	Total
Pole Replacement and Monitoring			
135	Pole Replacement (Condition Based) unserviceable poles	Esperance	5.7
450	Wood Pole replacement (Aged) West Kimberley	Broome	5.0
438	Network Hardening Broome CBD (Unserviceable poles)	Broome	3.7
329	Non-Wood Pole Replacement (Aged) Gascoyne / MidWest	Carnarvon	2.7
32	Pole Replacement Program	Kununurra	1.8
286	Wood Pole Replacement (Aged) Gascoyne / MidWest	Carnarvon	1.4
394	Tubular Pole Corrosion	NWIS	1.0
457	replace poles crossing salt marsh in Derby	Derby	0.8
328	Pole Replacement (Condition Based) unserviceable poles	Carnarvon	0.5
390	Replacement of unserviceable tripod poles	NWIS	0.1
23	Inspection Equipment For Network Poles	Regional	0.1
24	Additional Funding for Wood Pole to comply with Energy Safety Order	Regional	-1.4
	Total		**21.4**
Pole Reinforcement			
133	Wood Pole Base Reinforcement	Esperance	7.0
285	Wood Pole Reinforcement Gascoyne / MidWest	Carnarvon	0.7
	Total		**7.7**
ENRUP programs (see section 9.4.3)			
	Three Phase Program to 2010 (Historical)	Esperance	12.0
	Single Phase Program to 2013 (Forecast)	Esperance	15.7
	Total		**27.7**

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

[120] ID 135, 450, 438, 329. 32, 286, 394, 457, 328, 390.
[121] ID 133, 285

The forecast expenditure is based on a unit cost of $6,200 to replace an intermediate pole and $23,700 to replace a corner pole. Given a forecast expenditure of $18.6m to replace 2675 wood poles the implied average unit cost is $6,960 per pole. The unit costs were independently compiled by Deloitte[122].

The two largest pole replacement programs at $7.0m and $5.7m over the forecast period are located in the Esperance district where the recently completed $12m ENRUP 3 phase program was intended to address bushfire risks associated with undersized poles, long bays, clashing conductors and aging wood poles. In addition to this program, Horizon Power has forecast a further $15.7m in expenditure in the ENRUP program to address similar issues on the single phase rural network and a number of smaller undergrounding projects have also been forecast on the basis of the undersize conductor and pole age. In total $40.9m has been, or will be, invested in the Esperance network over the period from 2006/07 to 2013/14 which would be sufficient to replace approximately 20% of the poles in the Esperance network.

Given the scale of these programs and the focus of the previous ENRUP program on high risk conditions on the three phase network, PB is of the view that the scale of the investment forecast by Horizon Power is overstated. To evaluate the level of pole management capex forecast by Horizon Power, PB has considered:

- the level of pole replacement capex
- the level of pole reinforcement capex.

Under the 'fit for purpose' asset management strategy, Horizon Power currently adopts an age based approach to wood pole management where poles are scheduled to be reinforced at 25 years of age and replaced at 40 years of age[123]. Horizon Power has recognised the inefficiency of this age based approach and proposes to undertake a new condition monitoring approach to manage the remaining life of both wood and steel pole assets. In the business case outlining this strategy[124], Horizon Power identifies that there are a large number of wood poles that exceed 25 years but have not been reinforced. In addition, 2,675 wood poles are expected to fall due for replacement as they exceed 40 years over the period to 2013/14, resulting in capex of $18.6m.

To account for the new condition monitoring program, Horizon Power has reduced its forecast expenditures on wood poles by between 48% and 63%[125] in the years from 2011/12 to 2013/14 arising from approximately $8.5m expenditure in 2010/11. This figure appears to include the $1.0m expenditure forecast for 2010/11 to develop a best practice pole management program[126].

PB accepts that a change of this scale is within the expected reduction in volume that is typically achievable through adopting condition based asset replacement programs. For instance, in the case of ETSA Utilities recent regulatory proposal, two independent age based replacement modelling approaches indicated that between $420m and $6b in deferred replacement was providing the business with an annual benefit of between $40m and $540m[127] through operating assets that remain in an acceptable condition past their nominal replacement dates. PB notes that the wide variation between the two estimates demonstrates the acute sensitivity of age based forecasts to asset life assumptions.

[122] Deloitte, 2008, Drivers and Impacts of the Proposed Networks Hardening Strategy
[123] Ibid
[124] bid
[125] Horizon Power Data Cube CXMD:HBM Capital Projects (forecast) – pole replacement programs excluding pole base reinforcing expenditure
[126] Horizon Power, 2010, Business Case – Pole Management, DMS#3247856, p.17
[127] PB, 2009, Review of ETSA Utilities Regulatory Proposal of the Period July 2010 to June 2015, p.52

Hence PB is satisfied that the forecasts appropriately consider the impact of replacing wood poles on condition rather than on age.

Steel poles are forecast to be replaced on age in 2013/14 at a cost of $2.7m. Given that new steel pole inspection criteria have been introduced in 2010[128] and a four year inspection cycle applies, the condition of most steel poles will have been assessed before this program commences. PB is of the view that the new condition assessment will significantly reduce the number of steel poles requiring replacement. Accordingly, PB recommends a 48% reduction in steel pole replacement, which represents the lower end of Horizon Power's predicted reduction in pole replacement expenditure arising from the new asset management strategy for wood poles.

Due to the significant number of wood poles between 25 years and 40 years that have not been reinforced and have not failed, PB also considers that Horizon Power's age based staking criterion is conservative and it is clear that the reinforcing of poles has not been consistently implemented in the past. There also appears to be uncertainty in the Horizon Power documentation regarding whether poles should be reinforced at 25 years[129] or 35 years[130] which has a significant effect on the expected volume of pole reinforcement. On this basis PB recommends that the allowance for an age based reinforcement program is reduced to reflect reduced volumes in response to identified condition issues rather than attempting to 'catch up' the age based backlog of pole reinforcement.

Therefore PB considers that a reduction in pole reinforcement activities should be expected where reinforcement is undertaken on the basis of condition rather than age. PB recommends a 48% reduction in staking expenditure over the period, which represents the lower end of Horizon Power's predicted reduction in pole replacement expenditure arising from the new asset management strategy.

Table 9-9 summarises PB's recommendations for the pole management program.

Table 9-9 Adjustment for pole management program ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[131]
Wood pole replacement					
Horizon Power proposed	11.3	2.9	2.4	2.1	18.6
PB recommended	11.3	2.9	2.4	2.1	17.8
Steel pole replacement					
Horizon Power proposed	-	-	-	2.7	2.7
PB recommended	-	-	-	1.4	1.4
Wood pole reinforcement					
Horizon Power proposed	1.5	1.9	2.1	2.1	7.7
PB recommended	1.5	1.0	1.1	1.1	4.7
Total adjustment	-	(0.9)	(1.0)	(2.3)	(4.3)

Source: PB Analysis

[128] Horizon Power, 2010, Steel Pole Inspection Interim Instruction, DMS#3260197
[129] Horizon Power, 2010, Business Case – Pole Management, DMS#3247856, p.13
[130] Horizon Power, 2009, Submission to the Executive – Fit for Purpose Objectives, DMS#3200933, p.6
[131] Total may not add due to rounding

9.4.3 ENRUP - Single Phase

The Esperance Network Rural Upgrade Project (ENRUP) single phase program comprises 118 projects with a total value of $15.7m to address long conductor spans, undersize poles and clearance issues on the single phase Esperance rural network. The program follows the $12m program to address similar issues on the three phase portion of the network. Table 9-10 summarises the proposed capital expenditure for the ENRUP single phase program between 2010/11 and 2013/14.

Table 9-10 Forecast capex for ENRUP project ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[132]
ENRUP Single Phase	5.5	7.3	2.8	-	15.7

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

The historical three phase ENRUP program was undertaken to address specific issues on the Esperance rural network and was completed in March 2010. The single phase portion of the program is forecast to continue to 2012 and will address approximately 800 long bays on the single phase network to reduce the risk of fires and faults arising from conductor clashing[133], replacing poles that have failed an inspection, are 'skinny' and no longer have sufficient strength, and poles with raiser brackets fitted.

The outcome of the three phase program has been a significant reduction in conductor clashing and unassisted pole failures. Horizon Power has outlined its risk management approach in a board submission which indicates that the risk of conductor clashing and pole failure has been effectively managed[134]. The management measures identified by Horizon Power include revised inspection methods, adopting a more conservative replacement criterion, increased inspection of compromised poles until they are replaced and significant replacement of wood poles with steel poles (9% of the wood pole population was replaced between 2006 and 2010).

Regarding the effectiveness of this approach PB notes the statements that:

- as most unassisted pole failures occur in remote locations on the Esperance rural network during extreme weather conditions (severe storms), the likelihood of the public being directly impacted is considered low[135]
- unassisted pole failure although above target is trending down from 3.5 to 2.9 poles per 10,000 poles[136]
- significantly reduced insurance claims from over $215,000 in 2007/08 to $64,000 in 2008/09[137]
- a significant reduction in clashing conductor incidents with the last reported incident in March 2008[138].

Therefore PB considers that the risk of pole failure and conductor clashing is comparatively low, with the likelihood and consequence effectively mitigated. Noting that Horizon Power consider that the

[132] Total may not add due to rounding
[133] WA Parliament, July 2010, Estimates and Financial Operations Committee – Questions on Notice Supplementary Information, Horizon Power , p.8
[134] Horizon Power, June 2010, Submission to the Board of Directors – Pole Management New Business Approach, DMS#3250160
[135] Ibid, p.2
[136] Ibid
[137] Ibid
[138] Ibid, p.3

current safety risk associated with pole failures is low due to the targeting of assets in higher risk areas, and that no conductor clashing incidents have been reported since 2008, PB is of the view that the ENRUP single phase program is poorly supported by the identified risks. Furthermore, the small value of the insurance claims at $64k p.a. relative to the $15.7m program cost does not provide a strong financial justification for the program.

Whilst the likelihood of a single pole failure is approximately 300% in any single year, however the consequence of failure is typically small as reflected in the historical cost of insurance claims. Similarly, PB recognises that there remains a risk of extreme failure, however the likelihood of an extreme consequence event is well mitigated by Horizon Power's pole management approach. Horizon Power consider the likelihood of pole failure affecting the public to be low. The risks associated with the single phase ENRUP program are intended to mitigate the likelihood of a failure as the possibility of a high or catastrophic consequence of failure will remain even after pole replacement. Therefore the maximum probability weighted benefit of the program under the Horizon Power materiality of change matrix[139] for a reduction in likelihood of a catastrophic event from 'unlikely' (25%) to 'rare' (10%) is $3.5m. In practice, catastrophic events are highly infrequent resulting in significantly lower than implied by the likelihood descriptors (i.e. 10% relates to a 1 in 10 year event) which would further reduce the actual risk benefit provided by the program.

Given the considerable pole management expenditure forecast for Esperance outside of the ENRUP program, the historical replacement of approximately 9% of Horizon Power's wood pole population and the successful three phase program to address the highest risk portion of the network, the continued investment in the Esperance network to reduce risks that have already been well mitigated is not supported on the basis of risk, economic or reliability benefits. PB is of the view that the ENRUP single phase program is poorly supported and rectification of the network should occur during the replacement of assets due to condition. On this basis PB recommends the removal of the ENRUP single phase program from the forecast capex.

PB notes that the ENRUP program also includes the replacement of poles that have failed a condition inspection. As such, these poles should be replaced. Opportunities to remedy other defects should also be taken where it is efficient to do so. Hence, not all of the expenditure associated with the ENRUP single phase program should be removed from the forecast period. PB estimates that addressing all defects over a 5 to 7 year period should provide sufficient funds to Horizon Power to address the defect issues based on a condition and risk approach.

Table 9-9 summarises PB's recommendations for the ENRUP single phase program.

Table 9-11 Adjustment for ENRUP program ($m, nominal)

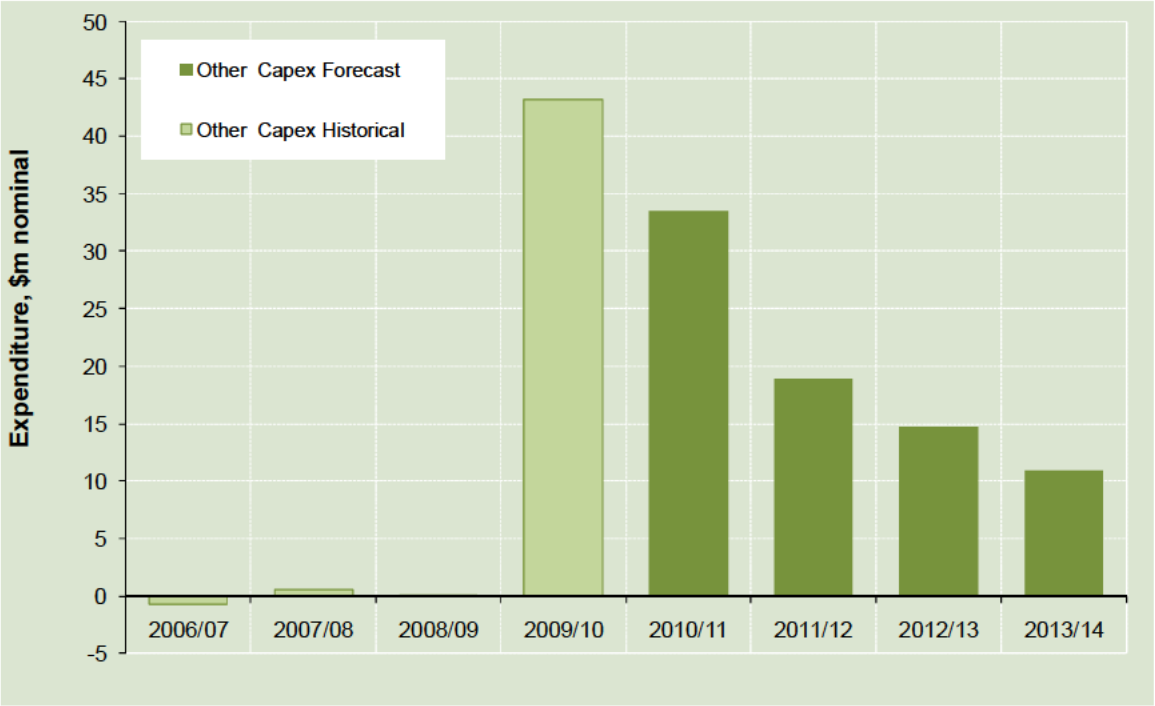
Item	2010/11	2011/12	2012/13	2013/14	Total[140]
Horizon Power Proposed	5.5	7.3	2.8	-	15.7
PB Recommended	3.1	3.1	3.1	3.1	12.4
Adjustment	(2.4)	(4.2)	0.3	3.1	(3.3)

Source: PB Analysis

[139] Horizon Power, June 2010, The Decision Making Process, rec_69738, p.14
[140] Total may not add due to rounding

9.5 Non-system

Horizon Power has reported total historic non-network capex of $43.2m (nominal)[141] for the period 2006/07 to 2009/10 and proposed a total forecast capex of $86.5m (nominal) for the period from 2010/11 to 2014/15. The proposed total historic and forecast capex is shown in Figure 9-6 below.



Source: Horizon Power Fixed Asset Register (historical) and Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

Figure 9-6 Non system capex – historical and forecast ($m nominal)

Since disaggregation of Western Power Corporation in 2006 many of Horizon Power's non-network functions were delivered through service level agreements with Western Power using the systems in place prior to disaggregation. In recent years, Horizon Power has identified a need to separate IT and fleet functions from Western Power due to Western Power's retirement of some platforms, limited control of processes and perceived service performance issues. A significant program was also undertaken to refurbish the district depots and increase the regional presence of Horizon Power. With the exception of approximately $1.1m in minor non-network capex projects, the forecast expenditure over the period from 2010/11 to 2014/15 is divided between the following three non-network categories:

- IT Expenditure ($43.3m)[142]
- Building Expenditure ($24.1m)[143]
- Fleet Expenditure ($13.5m)[144]

Each of these categories is discussed in the following sections.

[141] PB notes that the historical figures are based on changes to the Fixed Asset Register. Despite indicating a similar scale of expenditure over the period, these figures do not reconcile with the historical capex and timing reported in the consolidated town reports sheet. PB has not investigated the reasons for the discrepancy.
[142] Horizon Power Data Cube CXMD:HBM Capital Projects, 37 Projects
[143] Horizon Power Data Cube CXMD:HBM Capital Projects, 6 Projects (ID: 21, 99, 103, 104, 105, 320)
[144] Horizon Power Data Cube CXMD:HBM Capital Projects, 5 Projects (ID: 66, 67, 68, 69, 70, 102)

9.5.1 IT Expenditure

Horizon Power has forecast expenditure on IT programs of $39.4m over the next four years. Table 9-12 shows the proposed IT expenditures for the six largest items. Together these IT systems account for approximately 75% of the total forecast IT expenditure. The remainder is made up of around 15 smaller projects and is listed as other in the summary table.

Table 9-12 Forecast capex for IT ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total
Technology Transition	1.5	3.5	1.8	1.3	8.0
Ellipse	5.3	1.1	-	-	6.3
GIS	3.0	1.3	0.2	0.2	4.8
Metering (MDMS)	3.9	-	-	-	3.9
Workforce Mobility	0.5	1.3	1.9		3.7
SCADA Maintenance	0.5	0.6	0.6	0.6	2.2
Other	3.9	5.8	4.7	1.9	10.3
Total	17.6	11.7	6.7	3.4	39.4

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

PB has examined a sample of business cases for these IT systems and another IT business case for the Customer Information System recently established. PB has reviewed the justification for the major business transformation IT programs.

The following business cases were reviewed:

- Meter Data Management System (MDMS) replacement
- Ellipse Optimise Project
- Customer information system.

The MDMS business case clearly identified the need for the investment to overcome significant operational problems which have developed under the current arrangements where Horizon Power's metering business systems are supported by Western Power's systems. Horizon Power required greater control and flexibility over its metering and to resolve issues associated with the interface between its metering system and its customer information system.

Horizon Power identified options to overcome the current problems including remaining with Western Power or implementing its own MDMS. Several options to do this including partial separation were examined and costed and a risk analysis was undertaken. The preferred option was identified as full separation of the systems from Western Power as this option had more benefits than the partial separation option and produced the highest NPV from the investment. The business case made a recommendation for investment in Horizon Power's own IT platforms.

The Ellipse Optimise outline business case also identified drawbacks of continuing to use Western Power's systems for asset management and resource planning. The need for investment was established because the current arrangements with Western Power rely on complex, expensive and

outmoded associated systems which do not meet Horizon Power's business needs. Continuing with the existing arrangements was not an option because Western Power had planned to move itself to a replacement solution. Horizon Power also dismissed the option of deferring the expenditure because other projects such as GIS and DQM replacement systems relied on this expenditure. A recommendation was made to proceed with the IT project.

The customer information system expenditure was similar to the MDMS and Ellipse investments in that retaining the existing service level agreement with a different company (Synergy) was no longer a viable option. In this case Synergy contracted for a new system to meet Synergy's customer information needs and Horizon Power needed to find a new solution to manage its own customer information needs. The business case looked at several options for outsourcing service and IT and scored each option against strategic impact criteria to identify the preferred option for investment.

In its review PB found that the business cases consider an appropriate range of options and that the selected project's scopes appear reasonable. The timings of the expenditures driven by the separation from Western Power Corporation and Synergy also appear reasonable.

PB concludes that the capex associated with the IT expenditure is appropriate.

9.5.2 Building Expenditure

Table 9-13 shows the proposed building expenditures. PB has reviewed the documentation for the following key projects:

- Esperance depot refurbishment project
- residential property management strategy.

Table 9-13 Forecast capex for buildings ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[145]
Commercial Property Management	1.9	1.1	1.3	1.6	5.9
Esperance Redevelopment	7.8	-	-	-	7.8
Residential Property Management	0.7	1.1	1.3	2.2	5.3
Other	2.2	1.9	1.1	0	5.2
Total	12.6	4.1	3.7	3.7	24.1

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

Esperance depot

The proposed new Esperance Depot consists of an administration building, depot buildings and hard standing areas. The administration building will provide 33 workstations for a permanent staff of 21,

[145] Total may not add due to rounding

which is expected to rise to 23 by 2013. The remaining 10 workstations are provided for transient staff. The estimated cost for the depot is $9.9m with about $4.2m required for the administration building.

The financial analysis demonstrates that the proposed redevelopment option is less efficient than the refurbishment of the existing facility (noted to be $1m-$3m in DMS#3226754). However, Horizon Power has determined that undertaking a minimal refit of an old building that is nearing the end of its life is inconsistent with its long term needs and hence is not an appropriate option. PB concurs with this view.

The concept drawing for the new administration building is based on an expected capacity estimated in 2008 to include an additional 15 distribution workers and 4 office staff for the Transfield alliance undertaking the ENRUP project. At that time, a provision of 6 hot desks for transient staff was also included. Horizon Power now advises that due to growth in the number of Horizon Power staff, it no longer proposes to accommodate the Transfield Alliance.

The concept plan shows capacity for up to 47 workstations in a large open plan area, with an additional 5 small meeting rooms and 4 large rooms to accommodate field worker briefings. Given a permanent staff of 23 and 6 hot desks, the number of workstations required to 2013 is 29. The disparity between the capacity of the building and the required number of workstations is therefore 18 workstations or 38%.

The design of the building is in the form of a 'C' shape under a rectangular roof-line that provides a large under-roof open area. While the building seems aesthetically pleasing, the inclusion of this large under roof area further adds to the cost of the building.

In PB's view, the proposed administration building is no longer optimal in terms of its design and capacity. PB estimates that suitable accommodation should be able to be provided for 33 workstations, with the same large meeting room arrangement for field staff briefings, for approximately $3.5m, a saving of $0.7m (based on a reduction in floor area of approximately 16%).

Table 9-14 summarises PB's recommendations for the Esperance Depot.

Table 9-14 Adjustment for Esperance depot ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[146]
Horizon Power Proposed	7.8	-	-	-	7.8
PB Recommended	7.1	-	-	-	7.1
Adjustment	(0.7)	-	-	-	(0.7)

Source: PB Analysis

Proposed residential property management strategy

A key objective of Horizon Power is to attract and retain quality staff in its regional areas. It was previously determined that high staff turnover was directly attributable to the provision of housing. Hence, Horizon Power now provides free housing to key staff, as an alternative to the standard regional housing allowance. Approximately 40 properties are owned and 49 leased.

[146] While the overall cost of the Esperance depot is $9.9m, only $7.8m has been included in the budget for the forecast period

A 10 year rolling maintenance schedule has been developed. Planned residential maintenance works include the residential property asbestos identification and removal program and cyclone readiness upgrade program.

PB notes that the asset strategy plan for housing[147] does not provide a complete assessment of the different costs between purchasing and leasing and providing an allowance. For instance, the cost to maintain and upgrade housing is not included in the assessment of whether to purchase or lease.

Given the current strategy to provide housing, PB is of the view that the forecast expenditures are required. They are based on condition assessments and take into account the need to maintain the assets given restricted access to replacement capital in recent years. PB is concerned, however, that the efficiency of the residential housing arrangement has not been appropriately tested. In particular, the option of providing free housing against an alternative housing allowance has not been considered. In PB's view, providing the optimal type of housing for individuals rather than a four bedroom house for all is likely to result in reduced expenditures.

PB does not consider that the current housing strategy can be maintained into the longer term, as this requires staff to be encouraged to integrate into the local community. In this respect, providing encouragements through individual remuneration packages would seem to be a more viable arrangement.

PB concludes that the forecast expenditures are required, however, the strategy of providing free housing is likely to result in excessive expenditures being incurred in the longer term and should be reviewed.

9.5.3 Fleet Expenditure

Table 9-15 shows the proposed fleet expenditures. Horizon Power currently leases fleet from Western Power under a Service Level Agreement but intends to move to an ownership model in the forecast period.

Table 9-15 Forecast capex for fleet ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[148]
Fleet	2.5	2.8	4.3	3.9	13.5

Source: Horizon Power CAPEX BY FUNCTION02092010.XLS sheet: CAPEX – All Projects by Divi…' (forecast)

PB examined the business case[149] and notes:

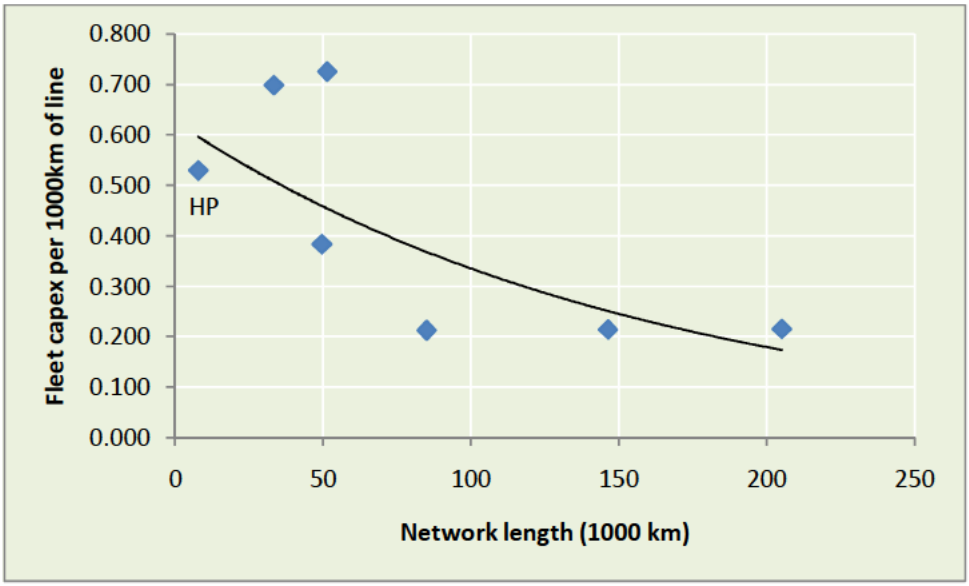
- The current Service Level Agreement contains a 5% margin, whereas, Western Power has proposed the application of a 15% margin on all fleet costs, including capital servicing, in future.
- Two viable options are considered; 1) the transfer of capital to Horizon Power from Western Power (and a corresponding transfer of debt from Western Power to Horizon Power to offset the capital purchase); and 2) continue the lease from Western Power, paying higher lease charges and a 10% increase in margin.

[147] Horizon Power, undated, Property and Facilities Asset Management Strategy and Plan, DMS#3237308, p.35
[148] Total may not add due to rounding
[149] Horizon Power, 2010, Fleet Asset Transfer Business Case, DMS#3279317

- Utilising Horizon Power's Weighted Average Cost of Capital (WACC) of 8% as the discount rate, ownership of the fleet assets has a net present cost benefit of $4.7m over a ten year period in comparison to remaining with Western Power.

PB is satisfied that the business case is sound.

PB also looked at the forecast fleet capex in comparison to typical Australian DNSPs. Figure 9-7 shows a four year average capex for each business normalised by the length of the network. A two year average (2012/13-20013/14) has been used for Horizon Power as earlier years are low due to the transition from Western Power Corporation. The length of the network is used to normalise the data because other potential normalisers such as customer density cannot be applied to Horizon Power due to the number of separate power systems making the calculation of densities uncertain. The figure shows that Horizon has a lower comparable fleet capex than other businesses for the forecast period.



Source: PB Analysis

Figure 9-7 Fleet expenditure per 1000km of network

Based on its assessment of the business case for bringing the fleet in-house and the comparison with other businesses, PB concludes that the forecast fleet capex is reasonable.

9.6 PB key findings (Capex)

Horizon Power has proposed a total forecast capex (excluding generation) of $471.2m (nominal) for the 4-year period from 2010/11 to 2013/14. PB has examined projects totalling $296.6, which is 63% of the total forecast capex. PB found that reductions were appropriate in 7 of the 9 categories reviewed. A global reduction to account for the use of an incorrect escalation factor and for project contingencies is also recommended.

Specifically, PB found the following:

- Karratha to Roebourne 220kV line project – the likelihood that expenditure will be required in the forecast period is low and therefore that no allowance should be made

- Dampier to Karratha Transmission line replacement and transformer augmentation project – the design of the system following the disconnection of the RTIO network is not optimal and if the disconnection is confirmed Horizon Power should re-established the system at 33kV (or 132kV if this is deemed efficient) under distribution planning standards
- Fairway Drive substation – can be deferred by one year
- Pilbara Underground Power Project – the forecast expenditures for the PUPP program should be modified to adjust the escalators applied when forecasting costs
- Pole management strategy – the replacement and reinforcement programs should be reduced by basing the program on condition rather than age
- ENRUP single phase program – the program should be conducted over a 5 to 7 year period to address the defect issues based on a condition and risk approach
- Buildings – the Esperance Depot should be scaled down to better suit the number of staff to be accommodated.

The need for the adjustments is due to:

- inappropriate scoping of projects (Dampier to Karratha Transmission line replacement and the Esperance Depot),
- inappropriate timing (Karratha to Roebourne 220kV line, Fairway Drive substation and ENRUP single phase program) and
- the use of aged based replacements.

PB has formed the view that these are systemic issues that are likely to be found in most major projects in the capex forecast. PB notes that its review focussed on the larger projects in the capex program and it is of the view that the scope/scaling issues found are not likely to extend to smaller projects. Similarly for the timing issues, the impact of delaying a major project by a year is large but the delay of smaller projects, particularly those forming an on-going program of works in accordance with the asset management plan, is unlikely to occur. For these reasons, PB does not recommend a reduction to those projects that it has not specifically reviewed.

Table 9-16 PB recommended adjustments for non-generation capex ($m, nominal)

Item	2010/11	2011/12	2012/13	2013/14	Total[150]
Horizon Power submission	**141.1**	**140.3**	**94.1**	**95.7**	**471.2**
Karratha to Roebourne 22kV line (Table 9-3)	-	-	-	(12.6)	**(12.6)**
Dampier to Karratha line (Table 9-4)		(14.0)	(10.2)	0.2	**(24.0)**
Fairway Drive substation (Table 9.6)	-	-	(1.5)	(11.9)	**(13.4)**
Pole Management program (Table 9-11)	-	(0.9)	(1.0)	(2.3)	**(4.3)**
ENRUP (Table 9-13)	(2.4)	(4.2)	0.3	3.1	**(3.2)**
IT	-	-	-	-	-
Buildings - Esperance Depot (Table 9-15)	(0.7)	-	-	-	**(0.7)**
Fleet	-	-	-	-	-
Total adjustment	(3.1)	(19.1)	(12.4)	(23.5)	(58.1)
Capex less adjustments	**138.0**	**121.2**	**81.7**	**72.2**	**413.1**
Adjustment for contingencies	(6.8)	(5.9)	(4.0)	(3.5)	(20.3)
Adjustment for estimating factors	(0.1)	(0.1)	(0.2)	(0.5)	(0.8)
PB recommended Capex	**131.1**	**115.1**	**77.5**	**68.2**	**392.0**

Source: PB Analysis

Note: excludes recommendation for non-tariff revenue funded changes

[150] Total may not add due to rounding

10. Other matters

This section provides information on other aspects of the review not covered elsewhere.

10.1 Alternative service arrangements

As part of the inquiry's Terms of Reference, the Authority is asked to consider and develop findings on opportunities for alternative arrangements for service delivery in remote regions. In conducting its review, PB was asked to identify any such alternative service delivery arrangements that become apparent.

PB noted the following possible alternatives to service delivery in generation, network service provision and retail.

Generation can by sourced from external providers or by plant owned by Horizon Power. Currently, most generation is provided by IPPs. A policy of building and owning generation plant has been implemented for new solar/diesel plants at Marble Bar/Nullagine power stations. PB notes that alternative fuels, providers and commercial arrangements are considered in selecting generation and that interconnection with third party networks exists. PB did not identify any other viable alternatives.

Network can be sourced from independent providers or by Horizon Power. Currently, all shared network assets are owned by Horizon Power. PB notes that independent providers are rare in large networks and considers them unviable in the small networks that comprise Horizon Power.

Network expenditure can also be avoided by demand side initiatives, such as solar within a customer's electrical installation, or demand reduction particularly at times of peak demand, or load curtailment. Horizon Power actively seeks demand side initiatives before implementing augmentation of its generation and networks assets. PB did not identify any other viable alternatives.

PB did not examine the retail activity in sufficient detail to form a view about alternative service delivery arrangements. PB notes that some advanced metering will provide opportunities for both network and retail improvements. Some advanced metering has been installed and more is under review.

At the corporate level, alternative service delivery models might involve more or less centralisation. PB notes that two districts currently exist in the Pilbara and Horizon Power is investigating consolidation to one only. This seems prudent. PB did not see evidence to suggest that the corporate arrangements were not appropriate at this time.

Appendix A

Confidential project reviews

Appendix B

Details of generation in Horizon Power service area

Appendix C

Interview schedule

ERA ENQUIRY ATTENDEES FOR INTERVIEWS WITH PB (16-18 AUGUST 2010)	
Interviewee	**Position**
16th August, 2010	
Amelia Yam	General Manager Finance
Brett Hovingh	Manager Asset Strategy & Capability
Bryan Stephenson	Manager Financial Planning
Darren Hill	Manager Pilbara
David Martin	General Manager People & Corporate Services
Geoff White	Manager Business Transformation
Gordon Rule	Manager Trading
Graham Home	Manager Business Services
Jason Cruickshank	Manager Operations North
John Kitis	Manager Property & Facilities
Marie Van Wyk	Senior Business Analyst
Sue Deering	Divisional Accountant
Terry Absolon	Metering Services Analyst
17th August, 2010	
Brenna Pavey	Strategy Coordinator
Bryan Stephenson	Manager Financial Planning
Craig Young	Manager Risk & Audit
Darren Hill	Manager Pilbara
David Martin	General Manager People and Corporate Services
Jason Cruickshank	Manager Operations North
Mike Laughton-Smith	General Manager Islanded Systems Development
Thom Fox	Manager Sustainable Energy Solutions
18th August 2010	
Andrew Christopher	Manager Commercial & Contracts
Atul Garg	Energy Contracts Manager
Brenna Pavey	Strategy Coordinator
Bryan Stephenson	Manager Financial Planning
Craig Young	Manager Risk & Audit
Darren Hill	Manager Pilbara
David Martin	General Manager People & Corporate Services
Kate Walker	Team Leader Billing Services
Mike Houlahan	Commercial Manager
Nyssa Saxby-Walsh	Team Leader Metering Services
Phoebe Colman	Management Systems & Business Efficiency Manager
Scott Davis	Acting General Manager People & Corporate Services