Public Consultation and Submissions

INCLUDES PUBLIC CONSULTATION INVITATION, PUBLIC SUBMISSIONS AND WESTERN POWER'S RESPONSES

PART A: INVITATION FOR SUBMISSIONS

PART B: SUBMISSIONS AND RESPONSES

DATE: 25 MAY 2007

PREPARED BY: WESTERN POWER

GPO BOX L921, PERTH WA 6842

ABN 18 540 492 861

PART A: INVITATION FOR SUBMISSIONS

Notice

Invitation for submissions

Proposed improvements to the Mid West region's transmission network

DATE:

22 March 2007

DOCUMENT PREPARED BY:

Western Power
GPO Box L921, Perth WA 6842
ABN 18 540 492 861

safe reliable efficient

1 Summary

The purpose of this document is to inform the public and interested parties about Western Power's proposed improvements to the transmission network between Pinjar and Geraldton. The public are invited to make submissions to Western Power regarding alternative options or opinions on the proposed transmission line. Western Power also welcomes feedback on the contents of this public notice. In particular, where parties are considering connecting into the network. This project will improve power supply to the Mid West region of Western Australia.

Western Power is considering a number of potential corridors for the transmission line between Eneabba and Moonyoonooka and has conducted a series of workshops with communities in this area.

The existing transmission network in the Mid West region is interconnected to the South West Interconnected System (SWIS) by 132,000 volt (132kV) transmission lines between Pinjar and Muchea. These lines connect Geraldton to Pinjar through Cataby, Eneabba and Three Springs.

A 132 kV transmission line between Pinjar and Eneabba was commissioned in mid-2004 in response to an emerging network constraint. In 2010, this increased capacity will be exceeded due to expected increases in demand and connection of wind farms at Walkaway and Emu Downs. At present there are wind farms and conventional generation proposals that are unable to connect due to a shortfall in transmission capacity. There is also an emerging shortfall of supply capacity by summer 2009/10. Without the proposed improvement, Western Power will be unable to meet the natural load growth and demand for connection of power plants in the Mid West region. There is also a significant risk that some of the development opportunities in the Mid West region may not proceed if the proposed improvement to the transmission line is not delivered by 2010/11.

At present, there are a significant number of connection enquiries from proponents of industrial and mining loads, and new generation. This amounts to about 300 MW of load and about 1,000 MW of new generation. These proposals will create large opportunities for the Mid West region. Without major transmission reinforcement there is no available network capacity to accommodate any of these new connections.

Western Power has identified 12 major options to address the capacity constraints in the Mid West region. These options include transmission, generation and demand load management solutions. An independent consultant, CRA International Pty Ltd (CRA), has evaluated Western Power's improvement options and concluded that a new 330,000 volt (330 kV) line between Pinjar and Geraldton (Option 1) is the best technical and economic solution to meet the forecast load up to 2030[1].

This proposal will be subject to review by the Economic Regulation Authority (ERA) under the New Facilities Investment Test (NFIT) and regulatory test. The regulatory test requires demonstration that other possible options for provision of services *(*such as a demand side management initiative or generation solution*)* have been properly evaluated and that the proposed network investment is the most efficient outcome.

On the basis of the CRA evaluation, Western Power believes the proposed 330 kV transmission line is the best economic solution that will provide transmission capacity required to support natural load growth, connection of new industrial or mining loads, and access connections for wind farms and conventional generation. Stakeholders are encouraged to submit any alternative proposal. Western Power will evaluate all proposals before submission of its final recommendation under the regulatory test.

2 Purpose

This document has been prepared to provide information on:

- network constraints in the Mid West region;
- shortfall of capacity to meet demand;
- options for network improvement considered; and
- the preferred 330 kV transmission powerline option.

The document:

- seeks alternative proposals to alleviate the network constraints as required by the Electricity Networks Access Code 2004; and
- invites stakeholders to make submissions to Western Power regarding alternative options or opinions on the proposed 330 kV transmission line.

3 Background

Western Power's transmission network in the Mid West region extends 400 km from Pinjar and Muchea to Geraldton. It consists of a number of 132 kV transmission lines as shown in Figure 1 below.

The transmission network is significantly constrained in this region. The network was designed to supply relatively small loads distributed over a large geographical area. The network is not capable of transferring large amounts of power due to thermal, voltage and synchronous stability limitations[2]. Heavy reliance is placed on the use of generation at Mungarra and Geraldton to maximise supply capacity.

However, operation of the gas turbines at Mungarra introduces the risk of synchronous instability for faults on the lines in the Mid West region or in the SWIS. For high levels of power transfer, network disturbances can produce voltage depressions sufficient to cause loss of synchronism.

Figure 1: Overview of transmission network in the Mid-West region

The power transfer limits are currently constrained by the potential risk of synchronous instability. Operation with power transfers above the stability limits would expose the regional network to a risk of islanding from the SWIS with significant load shedding in the area north of Three Springs. The existing stability limits are required until new transmission reinforcements can be constructed. System studies have demonstrated that the addition of gas turbine generation in the Mid West region would reduce transmission stability limits resulting in no gain or increase in total power supply capacity to the region.

In 2001, Western Power's Networks Business Unit sought approval to construct a new 330 kV transmission line between Pinjar and Eneabba operated initially at 132 kV. However, Western Power was unable to secure funding for the project and as a result, a 132 kV construction option of a lower initial capital cost was approved. This line was commissioned in 2004. This line increased supply capability to the Mid West region and in particular, increased supply capacity significantly in the area between Pinjar and Eneabba.

Western Power has assessed the adequacy of the existing 132 kV transmission network supplying the Mid West region and has identified an emerging shortfall in capacity.

Existing supply capacity in the region north of Muchea and Eneabba is approximately 155 MW. This consists of:

- transmission capacity of 65 MW in summer conditions;
- local generation capacity of 85 MW – based on Mungarra power station only; and
- wind generation with firm contribution of 5 MW in summer conditions.

The constraints in the Mid West region are:

South to north power transfer: The import capability into the Mid West region is very complex. It depends on a number of factors including local generation, availability of local reactive support, regional load (north of Eneabba and Muchea) and the thermal ratings of the transmission lines.

The thermal ratings of the lines are dependent on ambient weather conditions. System simulation studies show that the power transfer limit can be as low as 43 MW without the Mungarra generators in operation. However, with three gas turbines operating at Mungarra and without the Walkaway wind farm, the power transfer limit increases to 73 MW in summer or 95 MW in winter.

High utilisation of the transmission system results in voltage, thermal and transient stability limits being imposed on the network. Forecast load demand will create a risk of voltage and synchronous instability following a single line trip after summer 2009/10.

This instability could result in widespread load shedding and power supply disruptions particularly following a single line trip during periods of peak summer demand. In addition, system studies show that further gas turbine generation in the region will reduce synchronous stability limits, with no gain in total power supply capacity to the region.

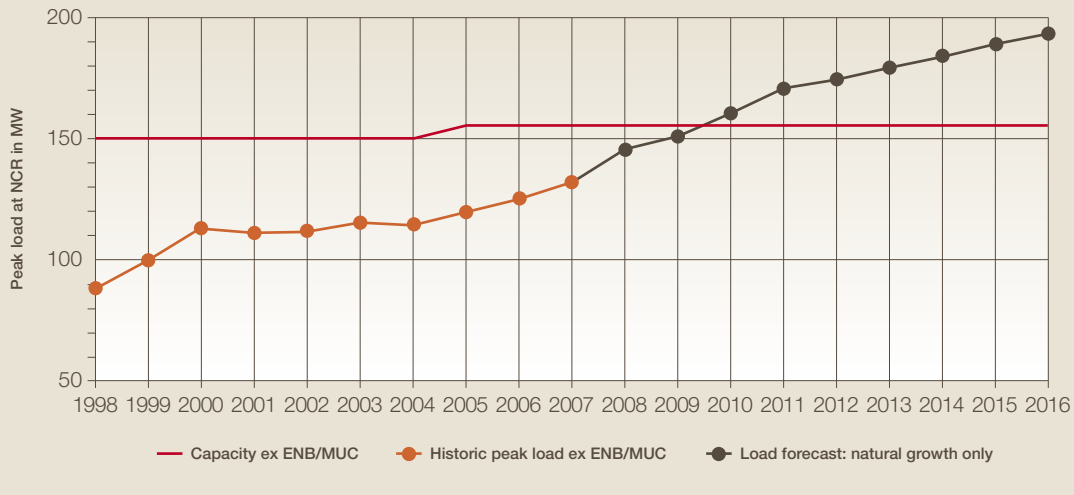
North to south power transfer: The Mid West region network is significantly constrained by existing 132 kV line thermal ratings and synchronous stability. Construction of the 132 kV line between Pinjar and Eneabba in 2004 has temporarily eased some of theses constraints. However, the recent connection of the Emu Downs wind farms has exhausted transmission capacity available to connect new generation between Pinjar and Eneabba. New generation in the Geraldton area cannot be accommodated due to existing thermal limits on the 132 kV network. If the existing lines are run above their thermal limits following a single line trip, conductor sagging could reduce clearances creating a public safety risk.

Constraints in the northern part of the Mid West region are the principal reason that the system requires reinforcement. The following figure shows the expected natural load growth in the region.

Western Power has reviewed the load forecast and adequacy of the existing 132 kV transmission network that supplies the area north of Eneabba and Muchea. Spare firm supply capacity to the area north of Eneabba and Muchea is just above 20 MW. Forecast load is expected to exceed supply capacity by summer 2009/10.

The increase of 5 MW in the firm capacity shown in the Figure 2 graph is due to the contribution from the Walkway wind-farm near Geraldton commissioned in 2005. Although, this wind-farm has an installed capacity of 90 MW, its contribution to the summer peak capacity is significantly lower than its installed nominal capacity. The wind farm power output is a function of prevailing winds, and is not reliable during times of the system peak demand.

Figure 2: Supply and demand based on natural load growth from 1997/98 to 2015/16



3.1 Options considered

Western Power has identified a total of 12 major improvement options to address the emerging shortfall of power supply capacity in the Mid West region. These are:

Transmission solutions:

1. Establish a double circuit 330 kV line (with one side initially energised at 132 kV) between Perth and Geraldton by November 2010.
2. Establish a 132 kV line between Eneabba and Geraldton by November 2010 with the 330 kV line (as in option 1) deferred until Nov 2014.
3. Establish 132 kV lines from Eneabba to Three Springs, and Mungarra to Rangeway with the 330 kV line (as in option 1) deferred until Nov 2014.
4. Reinforce existing network using lines of 132 kV construction only.
5. Establish a single 220 kV line between Perth and Geraldton by November 2010.
6. Build reinforcement with line towers designed for 500 kV initially insulated and operated at 330 kV.
7. Build a DC (direct current) line.
8. Do nothing.

3.1.1 Generation solutions:

9. Add more generation at Mungarra Power Station.
10. Additional private generation at Dongara.
11. Permanently island the Mid West region from the SWIS at Three Springs.

3.1.2 Other solutions:

12. Rely solely on a demand management program to reduce peak demand.

Generation options (9-11) were discounted on the basis of non-compliance with the technical requirements. Due to the high use of the existing transmission network, connection of additional generation in the region is not technically feasible until major transmission reinforcement is commissioned.

Load reductions that can be achieved through demand management (option 12) are unlikely to be sufficient to defer network expansion even under low demand scenarios. Therefore, this option is not considered viable.

System studies have shown that single circuit 132 kV transmission expansion options, or the option of doing nothing, will not meet planning criteria and are therefore not viable. Without network expansion, it will not be possible to meet the system's natural load growth or to accommodate new customers beyond 2010, without compromising system security, reliability and quality of supply.

Transmission options (2-7) are of higher net present costs than option 1 and are therefore less economically attractive.

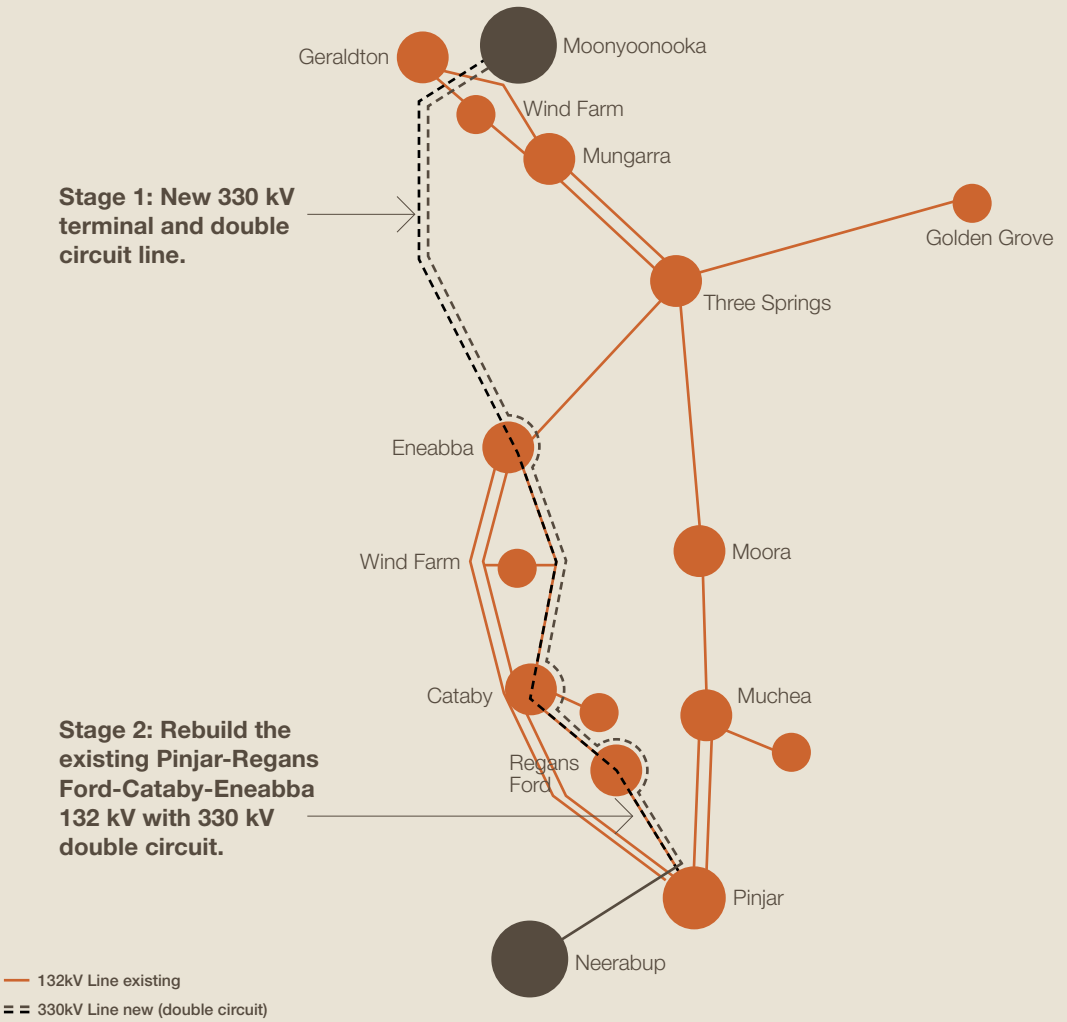
The above options were reviewed by CRA in January 2007[3]. CRA concluded that construction of the new 330 kV line between Pinjar and Geraldton by November 2010 (as per Option 1) is preferable to the other transmission options considered, including doing nothing and load demand management. The generation options considered would fail the feasibility test as new transmission capacity would be needed to connect new generation. Option 1 will facilitate the load forecast and connection of new generation in the Mid West region up to 2030.

4 Proposed 330 kV transmission line to Geraldton

4.1 The project

To meet the load forecast and alleviate system constraints, Western Power's preferred option is to construct a new 330 kV double-circuit transmission line between Pinjar and Geraldton (with one side initially energised at 132 kV) and a new 330/132 kV Moonyoonooka Terminal east of Geraldton as shown in Figure 4.

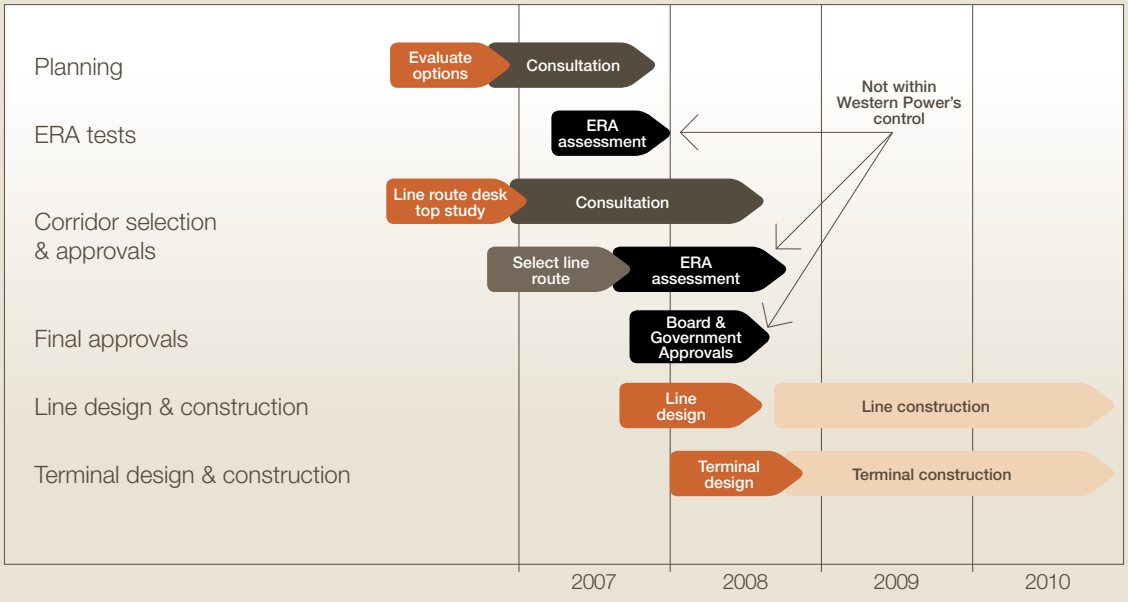
Figure 4: Proposed 330 kV transmission line



4.2 Proposed timeline

NOTE: Subject to ERA and Environmental Protection Authority approvals.

Proposed timeline	
December 2004	**Board approved advancement of funds for line corridor selection**
January 2005 - late 2008	Line route selection and approvals
November 2006 - April 2007	Community consultation on the line route
October 2006 - January 2007	Evaluation of options by consultants
February 2007 - April 2007	**Public consultation**
By May - June 2007	ERA submission
By September - December 2007	ERA approval (expected)
By March 2008	Board and government approvals (including funding)
By May 2008	Line tender for Pinjar - Eneabba line section
By May 2008	Possible tender for terminal works
July 2008 - September 2010	Pinjar - Eneabba line construction
By February 2009	Line tender for Eneabba - Geraldton line section
March 2009 - November 2010	Eneabba - Geraldton line construction
July 2008 - October 2010	Terminal construction
November 2010	**Project target completion date**



4.3 Expected benefits

Expected benefits of the proposed improvements to the transmission network:

- ability to accommodate natural load growth in the region;
- increase in transmission capacity to support forecast load growth in the region;
- increase in transmission capacity to enable connection of customers (new loads and generation);
- improvements in reliability of power supply to all customers in the region;
- ability to connect new wind farms;
- ability to connect new base generation located north of Perth;
- facilitation of entry of lower cost generation in the region;
- opportunity to retire old and inefficient gas turbines at Geraldton and Mungarra; and
- reduction in transmission losses.

4.4 Loss of opportunities

There is a significant risk that if the proposed transmission line is not delivered by 2010/11, some of the development opportunities will be lost. If a number of these projects cannot connect to the transmission network from 2009 to 2014, there is a high possibility that these proposals will not eventuate.

4.5 Other facts at a glance

- Independent evaluation of the reinforcement options for the regulatory test and NFIT has been commissioned. After summarising submissions from public consultation the regulatory test submission will be lodged with the ERA.
- The proposed 330 kV transmission line length is approximately 370 km.
- The total cost of the project is expected to be in excess of $300 million.
- Works on the selection of a transmission line corridor are currently undergoing wide community consultation for the Eneabba to Geraldton section of the proposed transmission line.
- Most of the electricity carried by the proposed 330 kV line will flow from north to south, as the new line will allow connection of a number of new generation sources including wind farms.

4.6 Why public consultation is needed

The Electricity Networks Access Code 2004 requires Western Power to undertake a public consultation process for each major network augmentation.

The objective of the Code is to:

- inform the public, customers and interested parties about the proposed transmission line;
- ensure that all credible alternative options are considered and compared with the proposed improvements; and
- ensure that all opinions and comments are summarised and included in the Regulatory Test Submission as required by the Electricity Industry Act 2004.

It is essential that Western Power has regard to those views and alternative options, and gives reasonable consideration to any information obtained under the consultation process when forming its view and conclusion.

5 Invitation

Western Power encourages submissions from stakeholders. In particular, where parties consider that there may be an alternative option to the proposed transmission line and where parties are considering connecting to the network.

Comments and submissions should be in either printed or electronic form, and should be received by 5 pm Wednesday 18 April 2007[4], addressed to:

Manager
Network Planning and Development
Western Power
GPO Box L921
Perth WA 6842

Telephone: (08) 9326 6293
Facsimile: (08) 9218 5167
Email: laurie.curro@westernpower.com.au

Alternatively, email submissions to:
lia.przymenska@westernpower.com.au

5.1 Confidentiality

In general, all submissions from interested parties will be treated as being in the public domain and placed on either Western Power's or the ERA's website.

If an interested party wants to make a confidential submission, it should clearly indicate the confidential sections of their submission and outline in reasonable detail the request for the confidentiality.

The receipt and publication of any submission on Western Power's or the ERA's website shall not be taken as indicating that Western Power or the ERA have knowledge, either actual or constructive, of the contents of a particular submission. In particular, whether the submission in whole or in part contains information of a confidential nature and no duty of confidence will arise for the Western Power or the ERA in these circumstances.

General inquiries

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Media inquiries

Marisa Chapman
1300 139 240

Appendix A

Definition of terms

ERA Economic Regulation Authority

Natural load growth The forecast load growth based on historical trends.

Power system stability The ability of the power system that enables it to remain in a state of operating equilibrium under normal operating conditions and to regain an acceptable state of equilibrium after being subjected to a disturbance.

Synchronous stability The ability of the power system to remain in synchronism when subjected to a severe transient disturbance.

Thermal limits The operational restriction on the network assets (typically for transformers and transmission lines) due to over heating.

Voltage stability The ability of the power system to maintain steady acceptable voltages at all buses in the system under normal operating conditions and after being subjected to a disturbance.

Footnotes

[1] CRA's option evaluation report is available on Western Power's website (www.westernpower.com.au)

[2] See appendix for definition of terms.

[3] For more details see Section 6 'Conclusion' of CRA's report located on Western Power's website.

[4] 'Electricity Industry Act 2004' requires that for the first round public submissions, the period for the lodging of submissions must be: (a) at least ten business days; and (b) no greater than 20 business days after the invitation is published, and must be at least ten business days after any issues paper was published under clause A7.4.

PART B: SUBMISSIONS AND RESPONSES

List of Received Submissions from Public Consultation

	Received Submission From	Dated
1	Geoff Crothers, **Chairman Mid West Gascoyne ACC**	2/04/07
2	Raoul Abrutat **General Manager Energy Visions**	11/04/07
3	Wayne Trumble **EGM Power Generation – Griffin Energy**	10/04/07
4	Andrew Woodroffe **SkyFarming Pty Ltd**	10/04/07
5	John Hackett **Landcorp**	10/04/07
6	Steve Douglas **Mid West Development Commission**	16/04/07
7	Andrew Everett **Verve Energy**	17/04/07
8	Anne Nolan **IMO**	17/04/07
9	David Jones **Transfield Services**	18/04/07
10	Ray Wills **WASEA**	18/04/07
11	Grant Draper **Synergy**	18/04/07
12	David Lyne **Newmont**	18/04/07
13	Richard Harris **ERM Power**	18/04/07
14	Peter R Oates, Mark Babidge **Eneabba Gas Limited**	18/04/07
15	Lane Crockett **Pacific Hydro**	24/04/07

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Laurie Curro
Manager, Network Planning and Development
Western Power
GPO Box L921
Perth
WA 6842

2 April 2007

Ref: Submission re upgrading to a 330kV line to Geraldton

Dear Mr Curro

Mid West Gascoyne Area Consultative Committee is wholly supportive of the upgrade of the power transmission line to Geraldton.

It is our understanding that this area may even exceed capacity a year before the upgrade takes place so it is imperative that your project moves forward as a matter of some urgency.

Indeed, it would be preferred if the timelines could be shortened as industrial demand is likely to exacerbate problems. That point brings us to the matter of the transmission line's terminus. We feel that the upgraded line should continue to the Oakajee industrial site and not end in Moonyanooka.

The Oakajee site requires some basic transmission line infrastructure to exploit opportunities currently being explored by major industrial interests, not least by an overseas steelmaker.

There is clearly an unmistakable case to provide at least a double circuit 330kV line, and possibly an argument to provide 500kV towers as sound management and preparation for the future. In saying this, we note the 2004 Pinjar-Eneabba upgrade is already constrained.

I wish you well for a speedy resolution to our regional power issues.

Yours sincerely,

Geoff Crothers
Chairman, Mid West Gascoyne ACC

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Our ref: 3623342-1

17 April 2007

Geoff Crothers
Chairman
Mid West Gascoyne ACC
PO Box 1517
Geraldton WA 6530

Dear Geoff

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support in upgrading the transmission network to Geraldton.

Responding to your specific queries I will address each of the following points raised in your letter:

Item 1: The area may exceed capacity up to a year before the completion date. It would be preferred if the timelines could be shortened.

Response*:* Western Power acknowledges that capacity may be exceeded before the project completion date but considers the risk to be quite small. The project timeline is based on a balance between economic and technical factors. Western Power is unable to shorten the project timelines without increases to the overall project cost.

Item 2: Transmission line should continue to the Oakajee industrial site.

Response*:* The Moonyoonka Terminal site has been chosen as the most appropriate location to reinforce the Mid West region. A 330 kV reinforcement to Moonyoonka is necessary to accommodate existing load and potential new customers in the region.

Western Power will consider supply to Oakajee (25 km north of Geraldton) from the proposed Moonyoonka terminal as part of a separate project, with an independent evaluation process. We have started to look at line easements and possible substation locations, although we have not yet received any connection application for power supply for Oakajee area.

Item 3: Construction of a 330 kV transmission line with 500 kV towers.

Response*:* The construction of a 330 kV transmission line with 500 kV towers has been considered and evaluated by Western Power and CRA International (see option 6 of the CRA evaluation report). The CRA report concluded that construction with 500 kV towers could cost up to 21% more than construction with 330 kV towers.

It is important to note that forecasts indicate that a 330 kV line would meet the region's capacity requirements for beyond 20 years.

Western Power believes that the additional 21% increase in capital expenditure cannot be warranted for benefits that will only occur after more than 20 years. For this reason, it is unlikely that the 500 kV option would pass the Regulatory Test and new facilities investment test.

Western Power would like to thank you for your support of this project and if you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

ENERGY VISIONS
Renewable Energy Solutions

Energy Visions Pty Ltd · PO Box 570 · Cottesloe WA 6911 · Australia

Western Power
Manager
Network Planning and Development
ATTN: Mr Laurie Curro
GPO Box L921
Perth WA 6842

11 April 2007

By E-mail: laurie.curro@westernpower.com.au

Proposed improvements to the Mid West region's transmission network
– Invitation for submissions –

Dear Mr Curro,

Energy Visions appreciates the opportunity to enclose our submission to Western Power on the above. Energy Visions fully supports Western Power's proposal to build a new 330 kV line from Pinjar to Geraldton:

1. Need for the Project

This new transmission line is absolutely essential to support the further development of a sustainable energy supply in Western Australia, because it forms the backbone on which planned and proposed wind farms (and other renewables) in the Mid West can be accommodated, ie. on further 132 kV spur lines, such as the proposed 132 kV Chapman to Northampton transmission line that is vital to build our approved 104 MW Geraldton Wind Farm at Coronation Beach Road. The transmission line upgrade is needed to transport the electricity from the wind farms to the metropolitan load centre in Perth.

2. 1 GW Capacity

We strongly recommend that the current proposal be varied by increasing capacity. A backbone power line with at least a 1,000 MW (1 GW) carrying capacity is required to fully unlock the potential of the Mid West as WA's wind energy region.

Such increase in capacity would have several advantages. Firstly, the transmission line losses would be significantly reduced, reducing the greenhouse intensity of the electricity delivered. Secondly, from a long term planning perspective there are both economic and environmental benefits for having a higher capacity transmission line. In an area such as the Mid West with projected rapid growth in electricity demand and generation it could be false economy to install insufficient capacity to meet longer term projected growth in demand and generation. At a minimum we support Option 6 *"330 kV line with 500 kV towers"* considered by Western Power.

From a climate change view, the limits to renewable energy targets will in effect be electricity network infrastructure capacity targets. It is highly likely that renewable energy targets of around 20% will need to be adopted in the near term (Premier's statement 5 Feb 2007, The Greens' Western Australian Renewable Energy Target Bill, Water Corporation's carbon neutrality target, and possible higher internationally - external - binding targets). The limitation will be network capacity. In the longer term it may be necessary to provide 100% of

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our electricity requirement from renewable resources. This is a possibility. WA has the renewable energy resources to achieve this and currently lacks transmission network infrastructure to support investments in renewable energy projects.

Western Power's proposal is an opportunity for the State of Western Australia to be prepared and to demonstrate leadership in sustainability. We strongly recommend that Western Power's proposal be adopted by the State Government.

It is acknowledged that this submission is intended to be a public document.

Trusting this is of assistance we look forward to your response.

Yours faithfully,

Raoul Abrutat
General Manager

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Our ref: 3623342-2

30 April 2007

Raoul Abrutat
General Manager
Energy Visions
PO Box 570
Cottesloe WA 6911

Dear Mr Abrutat

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support in upgrading the transmission network to Geraldton.

Your letter demonstrated an overall support for reinforcement with specific support for the construction of a 330 kV transmission line with 500 kV towers. This option has been considered and evaluated by Western Power and CRA International. The report concluded that construction with 500 kV towers could cost up to 21% more than construction with 330 kV towers. It is important to note that current forecasts indicate that a 330 kV line would meet the region's capacity requirements for beyond 20 years.

Western Power believes that the additional 21% increase in capital expenditure cannot be warranted at this stage for benefits that will only occur after more than 20 years. For this reason, it is unlikely that the 500 kV tower option would pass the Regulatory Test and new facilities investment test. In this case Western Power believe that Option 1 – 330 kV line with 330 kV towers, will have a better chance of gaining the necessary approvals for the reinforcement.

Western Power would like to thank you for your support of this project and if you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

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10 April 2007

Manager
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Email: laurie.curro@westernpower.com.au

Dear Laurie,

RE: Submission on Western Power's 'Proposed improvements to the Mid West region's transmission networks'

Griffin Energy welcomes the opportunity to provide comment on the proposed improvement to the Mid West bulk transmission system.

The SWIS transmission network is experiencing system-wide constraints. Western Australia's commodity led growth is placing further pressure on an already stretched network. While the new electricity market encourages private investment in generation to meet this load growth, inadequate and short-sighted network investment in the past has led to insufficient capacity for much of this generation to connect to the network. Upgrading transmission capacity, both north and south of Perth[1], is vital to enable the investment required to sustain WA's economic growth.

Griffin agrees with the CRA analysis that option 1 represents the most appropriate upgrade solution. Double circuit 330kVA transmission lines should overcome the stability limits and significantly reduce loss factors. It also represents an appropriate balance of increasing capacity for the region (weighted against the probabilistic load and new entrant generation) and the cost of augmenting the bulk transmission system, to be spread over existing users. Most importantly, option 1 brings forward the proposed transmission upgrade to the earliest possible completion date.

[1] The SWIS is an isolated electrical system. With the advent of the new market, it is important to ensure that the whole system is sufficiently interconnected to facilitate generation flow, and hence opportunities to service load, throughout the system. Otherwise, the SWIS risks becoming a collection of isolated 'islands' with price separation between nodes. While this may be appropriate for the NEM, where electricity is traded across regions, the sparsely populated SWIS (outside of the Perth metro area) would make this impractical.

Expediting transmission upgrades is essential. Investment is being curtailed as a result of the present constraints. Renewable energy projects that take advantage of the excellent wind resource in the Mid West region cannot progress due to a lack of capacity. Large new mining projects in the region are facing uncertainty, risking the suppression of much needed regional investment and development.

Griffin holds some concerns that, given the new regulatory regime governing the approval of investment decisions, option 1 will not progress to the tight timeframes described by Western Power. Griffin believes that Western Power will not have difficulty in demonstrating that option 1 meets the Regulatory Test (i.e. that option 1 maximises the net benefit of all users above other transmission options, local generation or demand side management solutions). We also believe that, consistent with recent determinations in the NEM, the majority of the bulk transmission upgrade cost will meet the New Facilities Investment Test and be added to Western Power's capital base. However the regulatory process surrounding these rulings is not yet tested. The current deliberation on Western Power's access regime has proved lengthy and to date, a final determination has not been reached. Regulatory processes in other jurisdictions often suffer from similar delays. Finally, Griffin is aware that Western Power has yet to receive Treasury approval to meet the cost of option 1. There is an acknowledged precedent for under-funding this type of investment by the State.

Griffin has been advocating investment in the transmission network for some time. We encourage Western Power's efforts to progress option 1 for the upgrade of the Mid West bulk transmission system. Coupled with new investment to the similarly constrained South West region, such upgrades will greatly enhance the likelihood of continued economic growth within the SWIS region.

Should you have any questions regarding our comments, please contact:
Shane Cremin, Market Development Manager, Griffin Energy, 9261 2908.

Yours Sincerely,

Wayne Trumble
EGM Power Generation

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Our ref: 3623342-3

30 April 2007

Wayne Trumble
EGM Power Generation
Griffin Energy Pty Ltd
15th Floor
28 The Esplanade
Perth, Western Australia, 6000

Dear Wayne

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

In response to Griffin Energy's concern that the project may be delayed due to the regulatory process, Western Power acknowledge that delays may occur in obtaining project approval. We have included the approval process into the overall project timeframe, but some delays may be beyond Western Power's control. It is also important to note that this is the first project Western Power will submit under the Regulatory Test and the new facilities investment test.

Western Power would like to thank you for your support of this project and if you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

SkyFarming Pty Ltd

developing community windfarms

ABN 46 008 799 077

7 Samson St | Fremantle WA | 6160 | ph/fax 08 9430 7371

Manager
Network Planning and Development
Western Power
GPO Box L921
Perth WA 6842
10/04/2007

To the Manager

RE: Submission on proposed improvements to the Mid West region's transmission network

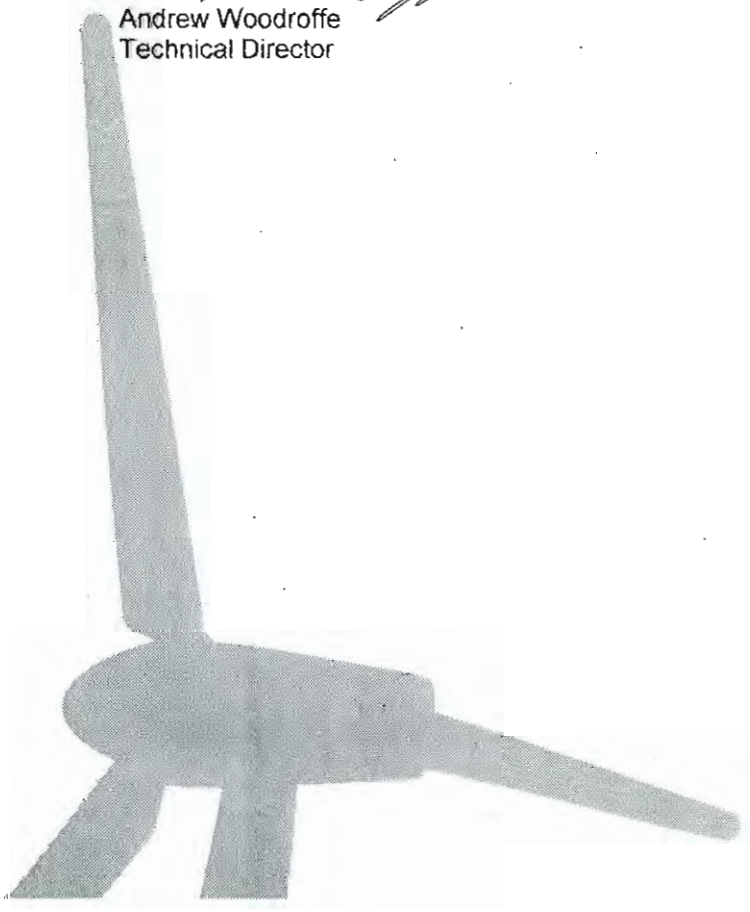
SkyFarming Pty Ltd supports the 330KV proposal as it will allow the mid west to host a large amount of wind plant and export green electricity to Perth - not unlike the situation on the Eyre peninsula in South Australia, which has similar wind and geographical conditions. The transmission ought to be sized to allow for 1000MW, with 500MW for the top half and 500MW for the bottom to allow geographical dispersion to even out the output. As the current network has about 2000MW of load following generation capability, the intermittancy of so much wind is not seen as an issue for the grid overall.

The benefits of wind energy include;

- most cost effective way of generating electricity without polluting (greenhouse gas emissions, NOx, SOx, particulates etc)
- most cost effective way of generating electricity without consuming non renewable resources
- regional jobs
- regional income from rent for landowners from windfarms

Yours faithfully

Andrew Woodroffe
Technical Director



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Our ref: 3623342-4

30 April 2007

Andrew Woodroffe
Technical Director
SkyFarming Pty Ltd
7 Samson St
Fremantle WA 6160

Dear Mr Woodroffe

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

As you are aware, the construction of a double circuit 330 kV line to Geraldton will facilitate the connection of wind farms in the Mid West. Western Power strongly supports renewable energy proposals and will welcome any formal application for connection into the network. Once a connection application is lodged, Western Power will assess the proposal based on network studies and technical requirements.

Western Power would like to thank you for your support of this project and if you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

Our Ref: 00P597
Enquiries: Travis McNaught 9482 7505

Mr Mark de Laeter
General Manager Asset Management
Western Power Corporation
GPO Box L921
PERTH WA 6842

Dear Mark

PROPOSED MID WEST TRANSMISSION REINFORCEMENT

LandCorp is responsible for the planning and management of the Oakajee Industrial Estate 20 kms north of Geraldton. In this capacity it has, over the past ten years, completed environmental and planning investigations of the site, secured rezoning and, in principle, achieved environmental approval for industrial development within the estate. LandCorp also acquired 6,000ha of land for a 1,100ha heavy industry core, a 250ha support industry precinct, as well as a surrounding buffer of about 4,500ha.

Emergence of the mid west as the State's second major iron ore province sees investigations currently in progress by two iron ore mining proponents, Murchison Metals and Mid-West Corporation into development of a deep water port at Oakajee to export ore brought to the site by rail from mines 400km to the north east. At the same time, two major industry prospects are in discussions with the Department of Industry and Resources and LandCorp about development of iron pellet and fertiliser plants at Oakajee.

Bankable feasibility studies for the above prospects are in progress and should be completed over the coming 12 to 18 months. Allowing the buoyant Chinese and emerging Indian markets for Western Australia's resources, particularly iron ore, the likelihood of some – and possibly all – of the present development proposals being realized is encouraging. Beyond these, iron ore prospects being pursued by other proponents in the mid west, with possibilities for downstream processing of this and other minerals sourced in the region, suggest growing demand for land at Oakajee to accommodate processing industry and for use of its port to export product.

Against this background, LandCorp is most supportive of Western Power's proposal to construct a 330kV transmission line linking Geraldton to the south

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west electricity grid. The reinforcement this will afford mid west power supplies can only be beneficial to the development of Oakajee, with a 20 km extension of the transmission line beyond Geraldton all that is then required to bring power to the estate to meet the substantial power needs of the port and of industry which locates within the estate. Any industry which chooses to generate its own power, the proposed line will also afford the opportunity to sell any surplus back into the south west grid.

Availability of a 330kV line linking Oakajee to the south west grid will add substantially to the attractiveness of the estate to industry, and should thereby hasten its development to the social and economic benefit of the region.

Yours sincerely

John Hackett
BUSINESS MANAGER

10 April 2007

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Our ref: 3623342-5

30 April 2007

John Hacket
Business Manager
Western Australian Land Authority
Level 3 Wesfarmers House
40 The Esplanade
Perth WA 6000

Dear John

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

As mentioned in your letter, the construction of the proposed transmission line will be greatly beneficial to the development of Oakajee. We have started to look at line easements and possible substation locations, although we have not yet received any application for power supply connection to the Oakajee area. Western Power will consider supply to Oakajee as part of a separate project, after receiving a formal application.

Western Power would like to thank you for your support of this project and if you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

Mid West Development Commission
Government of Western Australia

Manager Network Planning & Development
Western Power Corporation
GPO Box L921
Perth WA 6842

Dear Sir

REINFORCEMENT OPTIONS FOR THE NORTH COUNTRY REGION

The Mid West Development Commission (MWDC) is pleased to provide its comment on the above on behalf of the Mid West Strategic Infrastructure Group (MWSIG).

The MWSIG comprises representation from:

- The Mid West Development Commission
- Department for Planning and Infrastructure
- Department of Industry and Resources
- Geraldton Port Authority
- Landcorp
- Mid West Chamber of Commerce and Industry
- Mid West Regional Council of the Chamber of Minerals and Energy WA
- City of Geraldton
- Shire of Greenough
- Shire of Chapman Valley
- Batavia Coast Regional Council
- Murchison Zone of WALGA
- Wildflower Country Regional Council
- WestNet Rail

The MWSIG was established by the MWDC to support planning and coordination in response to major resources and other developments proposed for the Mid West region.

The MWSIG focussed much of its early work on transport issues but is now very keen to address power and water issues. In response, Western Power was invited to make presentations to both the MWSIG and the Board of the MWDC. These were undertaken in January and February 2007.

The MWDC is of the understanding that power supplies to the Mid West are both limited in capacity and reliability. The expected growth of the region will put significant strain on an ageing network already struggling to cope with existing demand. It is essential therefore that Western Power's (WP) proposed

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330 kV line from Pinjar to Geraldton is completed as planned by 2010. In addition WP should also be planning how best to upgrade its distribution network off this main arterial to feeder lines which will support resources projects and community development.

Future Demand

Based on proposals by eight proponents covering twelve projects, the Mid West Development Commission calculates that around 80 mtpa of iron ore could be exported from the Mid West by 2013. The attached Major Projects Update prepared by the MWDC outlines the status of these and other major developments proposed for Geraldton and the broader Mid West region.

However, it is evident from information provided to both the MWDC and the MWSIG by WP that on a natural load growth basis, power to the Northern Country region will be severely constrained by around 2010. More importantly, bulk load forecasts indicate that over 300 MW of power could be required by 2012, a significant premium to the current and fully utilised supply of 155MW.

The above does not take into account the establishment of other major industry at Oakajee, 20 kms north of Geraldton. The State Government has stated that Oakajee is its preferred site in the Mid West for a deep water port, adjacent to an industrial estate. Apart from the deepwater port, the private sector is also planning a 400 km heavy gauge rail link to iron ore and other resources within the Mid West's hinterland. The development of this strategic infrastructure is already generating considerable interest from potential industrial estate users, not all directly involved with the Mid West's mineral resources. Clearly the development of both resource projects and industry development at Oakajee will create a significant future demand for power.

Supply

The South West Interconnected System (SWIS) is ageing and coming under increasing pressure. Under current arrangements, WP is significantly constrained in its ability to provide an adequate supply and reliability of electricity to the Northern Country Region (NCR). This has the potential to be an impediment to the development of the region and the sustainability of many of its communities.

The MWDC believes that demand will outstrip available supply before 2010. The significance of this situation will be compounded if new capacity is not planned for and delivered as soon as possible.

Current power supply to the area north of Eneabba is around 155MW, including approximately 85MW of generational capacity at Mungarra, south east of Geraldton. The Walkaway wind farm has a specified capacity of 90MW but only 5MW can be relied on in summer months when power needs peak. The Geraldton power station has a 20MW capacity which is rarely used due to a number of constraints.

There is significant concern at that both the Mungarra plant (using gas as a fuel) and the Geraldton plant (distillate) are both high cost generating plants, being asked to punch above their weight. For example the current capacity constraints on the SWIS are forcing the Mungarra plant to produce power at far higher levels than originally proposed.
The Geraldton plant is now over 30 years old and its distillate based technology is outdated and environmentally questionable; power costs are high, and its use is severely restricted due to its close proximity to residential areas.

It would appear socially, environmentally and economically inappropriate to undertake the expensive and significant maintenance of these facilities in preference to the enhancement of the main transmission line from Pinjar to Geraldton.

Generational capacity

The long distance between the northern extremity of the SWIS (Kalbarri) and the major source of generation results in considerable loss of voltage and power due to friction. The Commission understands transmission losses of power to Geraldton from Muja is around 21%. This loss could be 'saved' and utilised closer to the generating source, should a 330 kV line be built to Geraldton, thus facilitating the establishment of cost competitive, third party power generation by proponents such as Aviva, Eneabba Gas and windfarm proponents.

The 330 kV line would not only allow regional base load power generation to be established, but it would also facilitate 'export' of power to other parts of the SWIS and enhance the stability of the electricity network.

Lastly, advice from prospective third party power providers indicates that the existing network does not support new generational capacity.

Sustainability

Additional regional power generation reduces greenhouse gas emissions through reducing transmission losses as well as utilising relatively 'clean' energy sources such as coal seam methane and wind. There is therefore likely to be a significant net environmental benefit from the construction of a 330 kV line.

There are also significant social dividends to be gained from this project, most notably in the thousands of jobs that would be created in and around the Mid West's struggling hinterland communities, which once again have been tested by another drought.

Economically it would appear that the need to meet expected bulk load demand would make the establishment of the 330 kV line viable, though the Commission does not have the expertise to comment further on this matter.

It is the Government's and region's desire to maximise the use of "clean green" energy.

Options

The MWSIG and MWDC Board strongly support Option 1, the construction of 330 kV line by 2010, as proposed by WP. This option will ensure the NCR will have sufficient power to handle natural growth as well as cater for new bulk loads by 2010. Other options, including the staged completion of the 330 kV line run a high risk of not being able to meet demand when industry demands it, thereby risking missing the 'China Window of Opportunity' and the resultant flow on benefits to Mid West communities.

The strength of feeling on this issue is best illustrated by the call from a number of MWSIG members for the establishment of 500 kV line towers, energised initially at 330 kV, but offering the ability to be quickly upgraded should industry and development justify and demand it.

Regional Development

Failure to construct a 330 kV line by 2010 runs the real risk of not meeting major industry plans, threatening both their viability along with that of numerous hinterland communities (eg Mullewa, Morawa, Perenjori) which are now starting to realise benefits from recently established resource operations. The 330 kV line therefore is a key piece of strategic infrastructure on which much of the future development of the Mid West region relies. Failure to provide the capacity and reliability of power required for both natural growth and bulk load by 2010 will significantly compromise regional development in the NCR.

Planning

Western Power has a requirement to make growth projections for future connections. In particular, there is a requirement to assess natural load growth. Under the Department for Planning and Infrastructure's (DPI) annual review of its Country Land Development Program (CLDP) information is collected on intended development activity in the regions for the next five years. DPI is keen to see the CLDP program used as a source for the forecasting of natural growth loads to reinforce planning Western Power is undertaking for the Mid West.

Where possible planning should seek to accommodate future high tension power lines (and other services) within major transport and infrastructure corridors. This will help to minimise severance impacts on affected communities.

Summary

In summary, there is a clear and demonstrable need for a major enhancement of the SWIS to cater for the future demands of the Northern Country Region. Failure to do so in a timely way threatens the viability of numerous projects

proposed for the Mid West, and the loss of employment and other benefits they will deliver including royalties and export earnings. Importantly a major risk is to the sustainability of many Mid West hinterland communities.

The Mid West Development Commission, on behalf of its Board of Management and the Mid West Strategic Infrastructure Group supports the construction of a 330 kV line from Pinjar to Geraldton on the basis that:

- It provides a pro-active and planned response to the Northern Country Region's power needs into the foreseeable future;
- It will meet the region's power needs within an appropriate timeframe (2010);
- Whilst overall reliability will be enhanced, additional work is required to enhance reliability to outlying communities eg Morawa, Perenjori and Kalbarri;
- It will facilitate new, cost competitive power generation within the region, thereby maintaining the stability of the grid, reducing power losses through transmission and reducing greenhouse gas emissions;
- It is a sustainable option when tested against the triple bottom line; and
- It demonstrates a commitment to regional development and the Mid West.

I trust these comments are constructive. Should there be a need for clarification or additional information, please contact me directly on (08) 99210701 or email steve@mwdc.wa.gov.au.

Yours sincerely

STEVE DOUGLAS
CHIEF EXECUTIVE OFFICER

16 April 2007

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Our ref: 3623342-6

30 April 2007

Steve Douglas
Chief Executive Officer
Mid West Development Commission
PO Box 238
Geraldton WA 6531

Dear Mr Douglas

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

As mentioned in the planning section of your letter, Western Power acknowledges the need for co-operation between our planning departments. Western Power has recently created a dedicated forecasting section, with Mr Peter Ang as the System Forecasting Manager. Peter is very interested in developing a strong relationship with the Mid West Development Commission.

Western Power would like to thank you for your constructive comments regarding this reinforcement. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au. Peter Ang can also be contacted on (08) 9326 6172 or via email to peter.ang@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

verve ENERGY

Our Ref: CR/82/2(57)V1:#3055141
Enquiries: Andrew Everett
Telephone: (08) 9424 1836
Facsimile: (08) 9424 1818

17 April 2007

Manager
Network Planning and Development
Western Power
GPO Box L921
PERTH WA 6842

VIA EMAIL: lia.przymenska@westernpower.com.au

Dear Sir

CALL FOR SUBMISSIONS ON PROPOSED IMPROVEMENTS TO THE MID WEST REGION'S TRANSMISSION NETWORK

Thank you for the opportunity to comment on the proposal, specifically in relation to:

- potential alternative options; and
- opinion on the proposed 330kV transmission line.

Verve Energy supports prudent investment in the transmission network and particularly encourages the employment of generation solutions that enhance economically efficient investment by delaying network augmentation expenditure.

It is well recognised that the transmission network in the mid west region has, over the years, been developed in a piecemeal way and, more recently, has increasingly employed generation solutions to support the network and delay augmentation.

It is now clear however that the potential level of new network connections demands significant network development if industrial growth in the region is not to be hampered. Verve Energy agrees with the findings of Western Power and its consultant, CRA international Pty Ltd, that neither generation nor demand-side solutions will suitably accommodate those new connections and projected load growth. Further, it appears proven that continued bolstering of the 132 kV network in the region is not cost effective.

Accordingly, Verve Energy supports Western Power's proposal to proceed forthwith with the construction of a new double circuit 330 kV line between Pinjar and Geraldton. It trusts that the conduct by the Economic Regulation Authority of the New Facilities Investment Test will ensure that the proposed expenditure is prudent and appropriately incorporated into the capital base on which network tariffs are founded.

Thank you again for the opportunity to comment on the proposal.

Yours sincerely

ANDREW EVERETT
MANAGER REGULATION

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Our ref: 3623342-7

30 April 2007

Andre Everett
Manager Regulation
Verve Energy
GPO Box F366
Perth WA 6841

Dear Mr Everett

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

Western Power agrees with your conclusion that continued bolstering of the 132 kV network is not the most cost effective solution. We would like to thank you for your comments regarding this reinforcement. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

Independent Market Operator
ABN: 95221850093

Our ref: RSC 076
Enquiries: Patrick Peake

Mr Laurie Curro
Manager, Network Planning and Development
Western Power
GPO Box L921
Perth WA 6842

Dear Mr Curro

Proposed Improvements to the Mid West Region's Transmission System

Thank you for the opportunity to make a submission in respect to the proposed development of additional transmission facilities to serve the Mid West Region.

The Independent Market Operator (IMO) has the responsibility of ensuring that the Wholesale Electricity Market within the South West Interconnected System can operate in accordance with the objectives set out in the Market Rules. Key elements within the objectives are:

- The promotion of economically efficient and reliable electricity production.
- The encouragement of competition in both generation and supply.
- Minimisation of long term costs to customers.

These objectives can only be achieved if appropriate transmission infrastructure is developed in a timely manner to support both new generation and new loads.

The IMO is aware that developers are evaluating significant potential generation capacity within the Mid West Region. Developers have indicated that these will be unable to proceed in the absence of appropriate transmission facilities.

The IMO is also aware that there are a number of entities seeking to develop large mining projects in the Mid West and that these will have considerable power demands. Adequate transmission facilities will be required if these potential developments are to be able to exercise genuine choice in the provision of power supplies.

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The IMO considers that the provision of adequate transmission capacity is one of the cornerstones for the ongoing successful operation of the Market. If new generators are unable to be connected, and if new loads cannot select their supplier because of power transfer limitations, key market objectives will be unattainable.

While the IMO has not analysed the various system upgrade options that may be available, the IMO wishes to express its strong support for the timely development of the appropriate transmission enhancements that will be necessary to meet the future requirements of potential generators and loads in the Mid West Region.

Yours sincerely

ANNE NOLAN
CHIEF EXECUTIVE

17 April 2007

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Our ref: 3623342-8

30 April 2007

Anne Nolan
Chief Executive
Independent Market Operator
PO Box 7096
Cloisters Square Perth WA 6850

Dear Ms Nolan

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support in upgrading the transmission network to Geraldton.

Western Power recognise that there are considerable power demands forecasted in the region and that the transmission infrastructure needs to be reinforced. This proposal will alleviate many of the power transfer limitations allowing a more successful operation of the market.

If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
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18 April 2007

Manager
Network Planning and Development
Western Power
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Mid West Region Transmission Network

Transfield Services has conducted a review of the material provided by Western Power in relation to transmission reinforcement options proposed in the North Country region of Western Australia.

Our initial review suggests:

- The preferred option selected by Western Power – the construction of a 330kV line from Pinjar to Geraldton, will not meet the long term needs of all customers, particularly those to the east of Three Springs without significant additional augmentation.
- An option that would see Three Springs emerge as the regional electricity hub (in preference to Geraldton) should be considered.
- The discount rates used in the analysis are significantly below those generally considered appropriate to provide competitive neutrality and typically used by other TNSP's, and tend to favour high early capital cost options over commercial generation or non network solutions.
- More accuracy is required in the analysis of transmission development options, particularly those options that enable a more staged development approach (a "no regrets" strategy).
- It is not apparent that a prudent range of non network solutions, such as explicit network support payments to maintain generation at Mungarra, have been investigated to enable the deferment of the full 330kV line construction.
- Other generation solutions, particularly gas fired stations based on reciprocating engine modules (up to 15MW per unit), have not been considered in drawing the broad conclusions on the potential impact of new generation on system stability.
- An independent network for part of the region around Three Springs should be considered.
- Western Power should establish a mechanism that allows consideration of all proposed projects by market participants with regard to viable options to provide power supply solutions in the region. Transfield Services has proposals which could have a major impact on the planning and timing of the 330kV transmission augmentation.

- The difference in net costs of many of the options is within a 10% tolerance range and coupled with all of the above issues this does not provide sufficient evidence that the lowest cost and most effective solution has been identified and recommended by Western Power.

Our review of the consultants report and any high level review of major transmission augmentation proposals in such a short time frame is difficult, particularly in the absence of detailed information regarding technical issues with the existing system, detailed costing information on each of the options, the probability of connection of new loads and the probability of connection of new generation.

This particular network region is complicated by:

Extreme uncertainty about the size and timing of new loads, which could result in regional load ranging from as low as 190MW in 2015, to 580 MW (CRA Fig 7 P31)

- Uncertainty in relation to the connection of new generation, which could be as high as 940 MW (CRA Table 4 P16)
- The nature of the generation which has a significant component of wind generation, which Western Power "discounts" by almost 95% in terms of the ability of the installed capacity's contribution at times of system peak.
- The possible closure, or at least lack of access to for transmission operation, of existing generation at Mungarra and Geraldton.

In completing this response, Transfield Services reviewed the following questions:

- Does the solution offered optimally meet the need of potential new customers?
- Does the solution offered optimally meet the need of potential new generators?
- Given the high levels of uncertainty, has a "no regrets" strategy involving phased construction or explicit payments to generators for network support been considered which would maintain greater long term flexibility?
- Are the underlying parameters used in the financial analysis commensurate with the risk profile of new loads and generation?

Specific responses to these questions are attached. In conclusion, Transfield Services is continuing to develop options for power supply to large users to the east of Three Springs. We would welcome discussion with Western Power about these proposals in relation to options for power supply to the Mid West region.

Yours faithfully

David Jones
Executive General Manager
Infrastructure Assets
Transfield Services Limited

SPECIFIC COMMENTS - MID WEST REGION TRANSMISSION NETWORK

- **Meeting the needs of customers**

The preferred solution centres on a 330kV line from Pinjar all the way to Geraldton. In effect, the 330kv will provide a major supply and receipt hub at Geraldton. It is not clear to us why the 330kV needs to extend all the way to Geraldton. There appears to be a "hub" in the existing 132kV network at Three Springs. Both the lines (i.e. through Eneabba and Moora) converge at this point, as do both lines going north to Mungarra / Geraldton, and the line to Golden Grove. Based on the information in the publications outlined above, we have identified 3 load centres in relation to Three Springs:

- Loads to the South (Cataby, Moora, Regans, Eneabba)
- Loads to the North (Chapman, Geraldton, Durlacher)
- Loads to the East (Golden Grove, Three Springs)

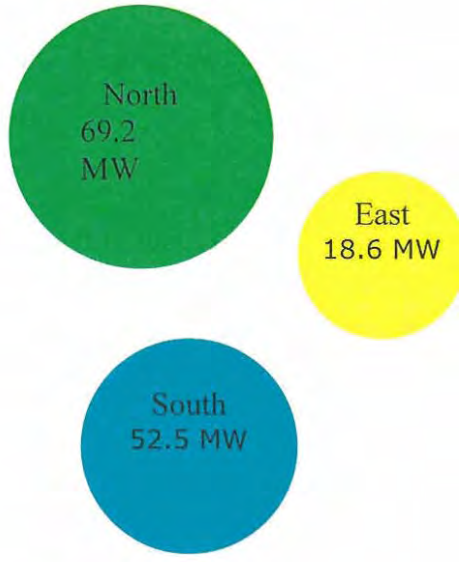

Figure 1 – Distribution of Existing Loads

We note from Western Power's documentation that transmission capacity north of Eneabba and Muchea can be as low as 65MW in summer conditions, with a further 85MW of capacity available from Mungarra Power Station and 5MW firm from wind. On this basis, the key load would appear to be that in the North.

We believe the situation is quite different when potential new loads are considered. Our current understanding is that the more likely new loads include:

- 90 MW at Karara (East)
- 55 MW at Extension Hill (East)
- 7 MW at Dandaragan Pumps (linked to Karrara) (North)
- 20MW at Oakajee Port (North)
- 60 MW for Midwest Pig Iron Plant (which could be North or East).

We have not included additional load at Eneabba, as this would be associated with a major power station.

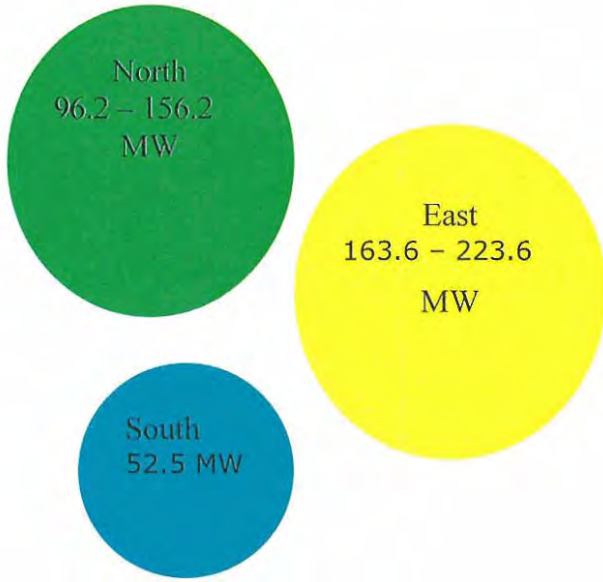

Figure 2 – Distribution of Possible Loads

Under these circumstances, the major load centre potentially becomes the East, exceeding the load in the North. Under the current preferred option, power would flow north on the 330kV system to Geraldton where it would be transformed in a terminal station to 132kV, then transmitted south to Three Springs. The 132kV network would appear to have inadequate rating to meet these requirements, potentially necessitating another 330kV terminal station at Eneabba, and an upgrade of the line from Eneabba to Three Springs. It is not clear from the information published how Western Power has taken into account the distribution of future loads, and the long term cost impact of future augmentations.

Given the hub nature of the existing 132KV network at Three Springs, we query why the option of building 330kV from Pinjar to Three Springs, and the establishment of a 330kV / 132kV terminal station at Three Springs was not included in the evaluation. Based on the limited information available, this would seem to offer a lower cost solution (less 330kV construction); better meet the long-term needs of the region, and limit or avoid the need for additional terminal stations in the future.

We acknowledge that there will be a need to significantly enhance the supply capability in the North Country Region to facilitate the minerals and generation projects being considered. However, we are concerned that the option proposed may require significant further expenditure at a future time to meet customer needs, and therefore does not represent the complete solution. We would like to see an increased level of analysis of load and generation development scenarios that may enable a more staged development approach to a "no regrets" strategy.

FUTURE GENERATION

There are a number of potential power generation projects listed (CRA P16), including:

- 168 MW (Centauri 1) at Dongarra
- 80MW Gas Turbines at Dongarra
- 90 MW Wind at Walkaway 2
- 400MW Coal at Eneabba

There are also a number of proposed smaller plants, and proposed plants south of Eneabba. As a general rule, it will be uneconomic for smaller plants to connect at 330KV, and they will be dependent on the development of the 132kV system in their locality.

Clearly, the proposed construction of 330kV directly to Geraldton provides significant opportunity to the plants listed above in terms of their ability to export generation to southern markets. The proposed coal plant at Eneabba should be neutral between a 330kV line to Three Springs and Geraldton. The plants at Dongarra and Walkaway 2 are closer to Geraldton than Three Springs and we would therefore expect the 330kV line directly to Geraldton to be their preferred option. What is not clear however, is how much additional risk is being taken by Western Power (and their existing customers) in building a 330kV backbone to Geraldton to meet the possible needs of these generators, versus the additional direct costs that the generators may incur if they had to connect back to Three Springs. As a potential competitor, Transfield Services should seek greater transparency in the determination of the actual drivers for the extension of the backbone to Geraldton.

• PHASED DEVELOPMENT and NETWORK SUPPORT

It has been common in some states to defer development of major lines through the use of network support contracts with generators. Western Power has raised concerns that Verve Energy is not obligated to maintain capacity at the Mungarra and Geraldton Power stations beyond October 2009, and the obligation to provide synchronous compensator capability beyond June 2011 (CRA p3 footnote). What is not clear is whether these stations will continue to operate, or would continue to operate if network support agreements were put in place. In the time available, we have not determined if scope exists for Western Power to pass such network support charges through to customers, if they represent the least cost option.

We note that the generation options considered included relative large (for this network) gas turbines. A recent trend in gas fired power station development has been toward high efficiency reciprocating gas engines up to 15MW modules. It is not clear that a multiple unit station based on this technology would have the same transient stability issues as larger gas turbines. The analysis does not appear to countenance such arrangements that may enable a lower risk approach to be taken to the eventual construction of the 330KV line, particularly if facilitated through network support payments.

Western Power discounts the firm capacity that can be relied upon from the wind farms yet it is the full capacity of the wind farms that would restrict the ability of additional generation to be connected to the existing network due to system stability reasons. Consideration does not appear to be given by Western Power for gas fired generation to compliment the capacity from wind farms under low wind conditions (hence providing larger firm capacity for the network).

Western Power has also not considered an option of an interim independent network providing supply to the region designated as "East" in Figure 2. Such an option would likely enable a phased development of the 330kV network.

- **Financial Analysis**

We are concerned that the financial analysis performed by Western Power/CRA has utilised only two discount rates:

- A 6.6% pre – tax real rate based on Western Power's cost of capital.
- A "social' discount rate of 2.5%

We are puzzled as to why a sensitivity analysis has not been published based on a higher discount rate commensurate with the uncertainty associated with individual loads and generation outcomes. We would expect the 6.6% rate to derive from, and relate to relatively "business as usual" activities stemming largely from organic growth in the South West Interconnected System. Given that the preferred option involves no staging, we would expect it to be at the higher end of the capital cost of the options put forward, and therefore derive benefit from a lower discount rate over phased alternatives, or other non network alternatives. Given the nature of the development projects that this augmentation is designed to serve, we believe the sensitivity analysis should be centred on higher discount rates.

This view was supported by the ACCC (now AER) review of Regulatory Test in 2004 (ACCC – Review of the Regulatory Test for Network Augmentations – 11 August 2004 - http://www.aer.gov.au):

> *The ACCC considers that the discount rate adopted for the purpose of the regulatory test evaluation should be a commercial discount rate in order to ensure network and non – network investments are compared on a competitively neutral basis. The discount rate used in an assessment should be consistent with the opportunity cost of capital of an investment in electricity infrastructure. The ACCC believes that the regulatory WACC might reasonably be considered the lower boundary of the discount rate but not the mean value around which sensitivity testing is being conducted. The ACCC has amended the regulatory test to ensure that in the regulatory WACC can only be considered a lower boundary in a regulatory test assessment.*

The range of discount rates used in the sensitivity analysis is low in comparison to those used by other network providers. By comparison, Transgrid and Country Energy have recently published their final report relating to transmission options for supply to Wagga (Final Report – Proposed Large Transmission Network Asset – Development of Electricity Supply to Wagga – Nemmco). They have performed their analysis at a real discount rate of 9%, with sensitivity analysis at 6% and 12%. The social discount rate approach used in the sensitivity analysis seems completely out of place.

Whilst we do not have access to the project cost data used by Western Power, or the basis of calculation of operating costs (for example, how have losses, unserved energy and generation been valued), we are concerned that sensitivity analysis in its own right does not provide a balanced view of the relative merits of the options, nor provide adequate comparison of non – network options such as generation based on small module sizes.

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Our ref: 3623342-9

11 May 2007

David Jones
Executive General Manager
Transfield Services
Level 13, 80 Albert St
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Dear Mr Jones

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power appreciates and values Transfield Services comments on the network reinforcement options.

Western Power understands that Transfield Services and other stakeholders may experience difficulties in reviewing the technical and financial aspects of the options listed in the "call for submissions" and the CRA report. We agree that the Mid West network is complicated and as such a public forum was held on the 4th of April to help clarify any issues.

The proposed option to construct a 330 kV line from Pinjar to Geraldton will provide transmission capacity to accommodate the majority of known customer connections, natural load growth in the region and will create an equitable market for all users in the Mid West region. Selection of the line route is undergoing the final stages of public consultation, where a number of routes are being evaluated, including an option in close proximity to Three Springs.

Western Power acknowledges that the proposed reinforcement is not a complete network solution. Additional infrastructure to connect all individual customer load or generation to the network will be addressed separately when individual access applications are lodged.

A detailed response to the issues raised in the Transfield Services submission is attached.

Thank you for your comments regarding this reinforcement. Western Power welcomes communication with Transfield Services to discuss connection options for any new commercial developments, as referred to in your submission. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

Attached responses to issues raised in Transfield Service's submission:

Background

Western Power and CRA International (CRA) have developed twelve network augmentation options assessed under the requirements of the Regulatory Test detailed in Section 9 of the Electricity Networks Access Code. Section 9.1(a) emphasises the objective of the Regulatory Test is *to ensure that any major augmentation will maximise the net benefit after considering alternative options*. Section 9.4 defines this as *a net benefit to those who generate, transport and consume electricity in the covered network and any interconnected system, having regard to all reasonable alternative options, including the likelihood of each alternative option proceeding*.

In determining the net benefit of each reinforcement option, Western Power has performed the Regulatory Test using a probability weighted assessment for each new load or generation connection. The proposal to construct a 330 kV transmission reinforcement to Geraldton was determined to provide the greatest net benefit when considering a probability weighted assessment for each new load or generation connection. This analysis ensures that connections with low certainty have less impact on the final determination.

Re: 1: Termination at Three Springs

Western Power did not present an option for a terminal station at Three Springs due to low existing load and probability weighted forecasts indicating lower load growth in the area. On the basis of expected load growth, the benefits associated with deviating the proposed transmission line to Three Springs would be outweighed by the increase in project cost and would therefore not provide a net benefit. Furthermore, major potential customers over 100 kms east of Three Springs would still experience significant cost in connecting to the network.

Western Power understands that privately commissioned studies have developed an optimised cost solution for loads east of Three Springs. These studies propose construction of a transmission line from Eneabba to a location east of Three Springs, dedicated to the mining loads. This type of development would better support the needs of these customers.

The proposed reinforcement to Geraldton has been based on the requirement of the Regulatory Test to provide maximum net benefit to those who generate, transport and consume electricity in the covered network. Western Power has received a significant number of demand enquiries and generation connection enquiries in the Geraldton area. There appears to be much less demand in the area surrounding Three Springs. Our probability weighted forecasting has determined that reinforcement to Geraldton will provide the best economic and technically feasible solution to constraints in supplying power to the Mid West region.

Re. 2: Financial analysis

The weighted average cost of capital (WACC) pre-tax real discount rate used in the analysis was similar to the ERA approved WACC used in the Access Arrangement with Western Power. Western Power acknowledges the comments made by the ACCC (now AER) in regard to commercial discount rates used for the Regulatory Test applicable in the Eastern seaboard.

Although not published in the CRA report, Western Power's analysis shows that using a pre-tax real discount rate of 6.6% with sensitivity studies of 4% and 9% will not impact on the overall ranking of the preferred reinforcement option. These results will be made available to the ERA.

Re: 3: Staged Developments

Western Power has already considered staged development, having constructed a 132 kV line from Pinjar to Eneabba in 2004. Further staged options for increasing the 132 kV network or staging of the 330 kV reinforcement are discussed in the CRA report. Although the proposed option is to construct the 330 kV line from Pinjar to Geraldton, other staging options were considered, but are less attractive.

Presently, Western Power has received a number of connection applications that can only be accommodated if a 330 kV line to Geraldton is constructed.

Re: 4: Non network solutions

The IMO has an agreement with Verve Energy to operate the Mungarra and Geraldton gas turbines until October 2009. In the Western Power and CRA analysis, it is assumed that this generation will remain in service until the reinforcement is established. This generation has also been included in the capacity forecasts detailed in the CRA report. In Summer 2010/11, the natural load growth in the region will exceed system capacity even with this generation in service.

Western Power has considered the addition of gas turbines to the existing network as per Option 9 and Option 10 of the CRA report. System simulation studies have shown that connection of additional turbines would reduce transfer limits on the two existing 132 kV lines into Geraldton. The increased capacity from generation would be offset by the decrease in capacity of the 132 kV transmission network. The result has shown that no additional capacity would be achieved and that major transmission reinforcement would still be required.

The use of small gas fired reciprocating turbines or network support contracts will not result in an increase to overall network capacity. Therefore these options cannot be used to defer network reinforcement.

Re: 5: Islanded network

A permanent islanded network north and east of Three Springs was considered as Option 11 in the CRA report. Operation of an independent islanded system has been discounted on basis of following implications:

- Economic: Customer choices will be limited to the islanded system and may disadvantage customers in comparison to those connected to the SWIS. It is generally understood that larger interconnected power systems are more efficient than small islanded systems. A small islanded Mid West system will limit customer and generator access to wide markets and low cost base generation.

- Technical: An islanded system will limit/restrict access for wind farms. The existing wind generation may no longer be able to operate as designed due to low system “fault levels” and lack of demand during times of low power usage. Western Power may be liable to compensate these proponents and this may breach sections of the Trade Practices Act. Furthermore, small islanded systems with dominant industrial & mining loads may have detrimental impact on quality of supply to residential customers. To maintain a high level of quality consistent with the technical rules, the islanded network would require considerable reinforcement.

- Partitioning of the existing transmission network: The Electricity Industry Act clearly supports the integrity of the existing systems. Partitioning of the Mid West network into a separate small islanded system from the SWIS will result in a reduction of reliability, with

Western Power being unable to maintain operation within the technical requirements. This option is unlikely to be supported by the existing customers, by the ERA or the IMO.

Re: 6: Consideration to proposed projects

Western Power's planning section considers all proposed projects that are submitted in customer access applications. If Transfield Services has proposals that could have a major impact on the planning and timing of the 330 kV reinforcement, these should be submitted to the Network Access Services branch of Western Power.

Re: 7: Cost differences

CRA International was commissioned to evaluate twelve major options and their variations. Western Power believes that CRA had sufficient information for a diligent evaluation to identify the lowest cost and the most effective solution to provide new transmission capacity for accommodation of load growth and connection of new customers in the Mid West region. The report includes "variations" on the proposed reinforcement (Options 1A, 1B, 1C) where costs were within 10% of the proposed option. The proposed option, although marginally more expensive than option 1A, was chosen as it provided much greater benefit allowing for an earlier increase in network capacity, accommodating connection of new customer loads and generation.

Option 1 was considered the best technical and economic solution that maximises the net benefit after consideration of the alternative options.

Re: 8: Load and Generation uncertainty

Western Power acknowledges that stakeholders may have experienced difficulties in assessing the technical and economic details of the CRA's evaluation and therefore a public forum was held to enable clarification of the proposed reinforcement.

To address the issues involved in predicting future load demand, Western Power presented its analysis using low, central and high demand and generation forecasts.

- The low forecast assumed natural load growth plus approved new customer connections.
- The high forecast assumed natural load growth plus 100% of load demand from all prospective customer connections.
- The central forecast assumed natural load growth plus a probability weighted assessment of load demand from all prospective customer connections.

These load forecasts are used to determine which reinforcement option maximises the net benefit to those who generate, transport and consume electricity in the covered network.

Please also note that Transfield have indicated that the high load forecast for 2015 is 580 MW however, the CRA report actually forecasted the high load forecast for 2015 is 460 MW.

Re: 9: (refer to point 1)

Re: 10: Potential new loads

The central forecast assumed natural load growth plus a probability weighted assessment of load demand from all prospective customer connections. The load evaluation by Transfield Services does not appear to use accurate existing load data or a probability weighted assessment for new

load connections. Without including a probability weighted assessment the results may tend to inappropriately favour network reinforcement in areas with potential for high demand, but a low probability of connection.

It should be noted that some of the loads listed by Transfield Services differ significantly to data provided by project proponents to Western Power. We are unable to comment on why these differences have occurred. Please note that potential load connections listed in the CRA report were also evaluated differently by Transfield Services.

Re: 11: (refer to 1)

Re: 12: Further development

Western Power's proposed solution is only one part of the overall project. Additional augmentations to connect all individual customer load or generation to the network will be addressed separately when access applications are lodged. Further stages of the proposed strategy include (after Pinjar – Geraldton reinforcement is constructed):

- Stage 2: Conversion of 2nd circuit to operation at 330 kV
- Stage 3: Construction of 330 kV terminal at Badgingarra to accommodate numerous wind farms.

It is expected that construction of a 330 kV terminal at Eneabba will be associated with the construction of a 400 MW power station. A privately constructed transmission line to the east of Three Springs could then be terminated into Eneabba. Numerous 132 kV connections are also envisaged in the Geraldton area.

Re: 13: Small plant connection

Wind farms in the area north of Cataby and power supply to Jurien Bay will be accommodated by a future 330/132 kV terminal at Badgingarra or by connection into the 132 kV, benefiting from available capacity created by the transmission reinforcement.

Re: 14: Project drivers

Western Power has proposed the 330 kV reinforcement to Geraldton as the option that maximises the net benefit to those whose generate, transport and consume electricity in the covered network, as required by Section 9 of the electricity networks access code. Western Power has been as transparent as possible in indicating the drivers for this project. Geraldton is the most logical site for a terminal station given its close proximity to the greatest power demand in the region.

Re: 15: Reinforcement deferral

Western Power acknowledges that the deferment of major transmission lines through the use of network support contracts is an appropriate option for many network reinforcements. In the 1980's Mungarra power station was commissioned to provide generation support for the network and to defer transmission network reinforcement. The system continues to benefit from the operation of this power station. However, the Mid West region now experiences stability issues limiting transfer capacity that cannot be addressed by the use of further generation or network support contracts. (Refer to point 4).

Re: 16: Smaller generation modules

The analysis of small gas fired reciprocating turbines is not expected to differ substantially from the studies performed using Frame 6 and Frame 9 gas turbines. The use of small gas fired reciprocating turbines will result in the same problems as detailed in Option 9 and Option 10 of the CRA report and will not result in a net increase to system capacity. (Refer to point 4)

Re: 17: Gas turbines complimenting wind generation

Although connection of gas-fired generation in compliment to the wind farm may be acceptable this proposal will result in the same problems as detailed in Option 9 and Option 10 of the CRA report and will not result in a net increase to system capacity. (Refer to point 4)

Re: 18: (refer to point 2)

18 April 2007

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Laurie Curro
Manager
Network Planning and Development
Western Power
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PERTH WA 6842

Dear Laurie

On behalf of the Western Australian Sustainable Energy Association Inc (WA SEA), I would like to thank you for the opportunity to comment on Western Power's proposed improvements to the Mid West region's transmission network.

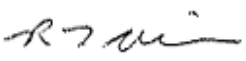
WA SEA was incorporated in July 2002 and is the peak body for sustainable energy in Western Australia. The Association promotes the adoption of sustainable energy technologies and services. WA SEA works on behalf of all members to ensure that the State and Federal Governments adheres to sustainability principles, and is committed to mitigating greenhouse gas emissions and adopting practical measures to adapt to climate change.

WA must have access to a plentiful supply of low cost sustainable energy so that it can meet growing sustainable energy and greenhouse goals at the lowest possible cost. With this growing demand and the fact that the Mid West region's transmission network has no capacity to support new projects, WA SEA fully supports the construction of a new 330 kV line from Pinjar to Geraldton as outlined in Option 1. However, we recognise that Option 6 *330kV line with 500 kV towers* offers the best solution for both now and the future.

In closing, the agricultural region north of Perth holds the potential for a large number of low-cost sustainable energy opportunities. For example, the area has a world class wind resource and available land and is ideally suited to low cost wind farming. The area also has a concentration of agricultural activities that offers the opportunity to develop cost effective biomass projects that utilise existing agricultural wastes or energy crops. Furthermore, the area also links Perth with the fast developing Mid West Region and its numerous mineral resource projects. Iron ore proposals alone look to position the area as WA's second iron ore province, and married to renewable energy projects could ensure iron ore production with a low carbon footprint.

If you have any queries about this submission, please contact Johanna Gastevich on (08) 9328 8411.

Yours sincerely



Dr Ray Wills
Chair, Western Australian Sustainable Energy Association Inc (WA SEA).

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30 April 2007

Ray Wills
Chair
WASEA
PO Box 8078
Perth BC 6849

Dear Ray

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

Western Power recognise that construction of this transmission line with 500 kV towers would provide a more flexible solution, however the increase in cost would not be justifiable using current demand forecasts. Western Power believes that its proposed option has the best chance of passing the Regulatory Test and the new facilities investment test.

Western Power would like to thank you for your comments regarding this reinforcement. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

Our Reference: DMS #3051391V1
Enquiries: Jenni Conroy
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18 April 2007

Manager Network Planning & Development
Western Power Corporation
GPO Box L921
PERTH WA 6842

Dear Sir

SUBMISSION ON MATTERS RELATING TO WESTERN POWER'S PROPOSED 330KV MID WEST TRANSMISSION REINFORCEMENT

Thank you for the opportunity to comment on matters relating to the proposed 330kV Mid West Transmission Reinforcement.

Synergy supports the position put forward by Western Power that a 330kV transmission line is the most economically efficient solution to provide the transmission capacity required to support natural load growth, connection of new industrial or mining loads, and access connections for wind farms and conventional generation. We provide the following comments for the consideration of Western Power in the preparation of its formal network augmentation proposal.

Underpinning Regional Development

Synergy has for some time called for specific attention to be focused on encouraging infrastructure development in the Mid West. This region, with its sound deposits of mineral sands, coal, lead, gold, coal seam methane, vanadium, manganese and tungsten, has in recent years been the subject of increased industrial activity. Adequate infrastructure in electricity, gas, water, transportation and port services are necessary to ensure the viability of these industries.

While Synergy is appreciative of both Western Power and the State Government's commitment of significant capital to maintain and upgrade the State's electricity network over the next few years, there remain specific areas within the SWIS that are constrained by the current transmission infrastructure – the Mid West is one such region.

Growth in Energy Demand

Energy demand within the SWIS is projected to increase by some 3.2% annually, up to 2015/2016[1]. In order to satisfy this demand, sufficient new investment in power generation and electricity transmission and distribution networks will be required.

This growth is unlikely to occur on an even basis across the entire network, but instead is likely to focus on demand centres – including industry and mining demands and areas of rapid urban growth, such as coastal regions and outer metropolitan suburbs. Synergy supports the efforts of Western Power with its Mid West proposal to address these future growth trends. The Western Power proposal provides for both the specific growth forecasts within the Mid West and also that of other regions within the SWIS, which may be serviced by generators located in the Mid West region.

Development of New Generation Opportunities

Synergy notes that electricity transmission costs represent a significant portion of the delivered cost of electricity, particularly toward the extremities of the transmission network. The inter-location of power stations close to electricity demand centres reduces these transmission costs. For these, as well as specific cogeneration opportunities, Synergy sees a significant likelihood for the continued growth in electricity generation in the Mid-West region. While some generator proponents have dismissed the need for Mid West transmission augmentation based on this opportunity to co-locate generation with industry, Synergy believes that any such developments will also require back-up electricity supplies. Synergy believes that these are most economically delivered via the interconnected electricity network.

Having reviewed Western Power's proposal, Synergy believes that Western Power's preferred option – the construction of a new 330 kV double-circuit transmission line between Pinjar and Geraldton, in conjunction with a new 330/132kV Moonyoonooka Terminal east of Geraldton – will best address the current infrastructure constraints and accommodate future generation and demand centre growth.

Increased Permeation of Renewable Generation

Synergy notes the current and proposed increase in the number of renewable generation projects in the Mid West region. With the current array of environmental policies being considered by Government (such as increased Mandatory Renewable Energy Targets (MRET)), Synergy is concerned that the increased demand for additional windfarms in the Mid West region may, at some future point, be curtailed by capacity constraints within the transmission line. A step change in the number of renewable power generation projects needs to be factored into the planning of investment in transmission infrastructure. As such the augmentation plan for the

[1] Independent Market Operator – Statement of Opportunities Report, The South West Interconnected System, 2006.

Mid West must take into consideration the future implications of both Federal and State environmental policy, including potential increases to MRET and the flow through effects of emissions trading on the take-up of renewable generation in the region.

Timeframe for Augmentation

While supportive of Western Power's proposal, Synergy is disappointed that the intended completion of the augmentation (November 2010) is too late for the Wholesale Electricity Market's 2010/2011 Capacity Year[2]. By the time any intending new power station formalises its network access and is then able to complete its commissioning, the 2010/2011 Summer will have passed. As you are no doubt aware, Synergy is currently undertaking a major power procurement program and we remain concerned that the significant risks to generators facing Capacity Refunds under the Wholesale Electricity Market Rules will deter those generators who are located in the Mid-West from participating in this program in a manner which sees a commitment for energy to be available for the Summer of 2010.

Synergy sees a need for the proposed augmentation to be in-service much earlier than currently proposed by Western Power. We note that to date Western Power's public consultation process has focused on the line routes and environmental approval associated with Stage 1: Eneabba to Geraldton - not Stage 2: Pinjar to Eneabba[3]. Synergy advocates for early attention to be given to Stage 2 (using an existing line route) with the expectation that Western Power could achieve a somewhat earlier completion of this stage. This would likely enable generation projects in the Eneabba region to commit to be in-service for the 2010/2011 Capacity Year.

Managing Impacts on Network Tariff

Synergy notes that this project will come at significant cost to the State. This cost must be recovered through the network access tariffs applied by Western Power. It is critical that the cost recovery method be structured to ensure that a price shock is not experienced by network users in the region. Synergy looks to Western Power and the Economic Regulation Authority to ensure that the commercial interests of users are protected.

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2 A 12-month period commencing 1 October.

3 See Western Power website, 8 phases of community consultation work which commenced in November 2006 and which culminates in an environmental approval process commencing in June 2007 - apparently just for the Eneabba to Geraldton stage.

Other Network Concerns

Synergy also wishes to take the opportunity to draw to Western Power's attention the urgent need to address other network constraints within the SWIS. While Western Power's augmentation proposal addresses the location needs within the Mid West, Synergy notes that the electricity which is currently provided to the Mid West region is also subject to other significant transmission constraints – it is Synergy's understanding that the existing dual 132kV lines via the interconnected grid from Bunbury, Muja and Kwinana power stations are proving insufficient to meet the increasing load. This is further exacerbated by significant transmission losses associated with power generation south of Perth.

Synergy also notes that electricity generated in the SWIS is transmitted to Kalgoorlie by a 220kV line. This line is also proving insufficient to meet the growing demand of the mining operations within the area. An upgrade to a 330kV link or a second line will alleviate this problem. Additionally, the distribution network within the region has reached full capacity and requires upgrades to meet the increasing demand.

Synergy requests Western Power's urgent consideration of these issues.

Conclusion

Synergy appreciates this opportunity to comment on Western Power's network augmentation proposal for the Mid West. Synergy is firmly of the belief that network infrastructure augmentation in the Mid West is critical for ensuring optimal investment in power generation and promotion of State Growth, whilst meeting the needs of industry and population centres. In this regard, Synergy supports the position put forward by Western Power that the construction of a new 330kV double-circuit transmission line between Pinjar and Geraldton, in conjunction with a new 330/132 kV Moonyoonooka Terminal east of Geraldton will best address the current infrastructure constraints and accommodate future generation and demand centre growth. We would be pleased to discuss any issues raised in this letter and look forward to future opportunities to work with Western Power on the augmentation of network capability in the SWIS.

Yours sincerely

GRANT DRAPER
HEAD OF STRATEGIC BUSINESS

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Our ref: 3623342-11

30 April 2007

Grant Draper
Head of Strategic Business
Synergy
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Perth WA 6842

Dear Mr Draper

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

Western Power acknowledges your concern regarding the project timeline. Please note that this timeline is based on preliminary information. The design of this line has not yet advanced and it is difficult for Western Power to commit to any specific dates. At this stage we are keen to ensure the project is completed in the shortest feasible timeframe.

Western Power would like to thank you for your constructive comments. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
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18 April 2007

Manager
Network Planning and Development
Western Power
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By: Email: laurie.curro@westernpower.com.au
Fax: (08) 9218 5167

Dear Sir

RE: Submission re Mid West transmission network improvements in response to Western Power's *Notice* of 22 March 2007

Newmont welcomes Western Power's proposal to undertake a substantial upgrade to the transmission network to the north of Perth. Such an upgrade will provide significant opportunities for new loads and generation to connect in the Geraldton region. Our view is that transmission enhancements of this nature must be undertaken by Western Power to achieve the objectives of the Access Code so as to facilitate state development, and should rightly be funded by the state (via general network user access payments).

However we note that the proposal to invest in such a development highlights the issues we raised in our submission to the ERA on 8 February 2007 regarding *Western Power's Revised Proposed Access Arrangement Treatment Of Capital Contributions*. In that submission we commented that there is some difficulty in drawing the line between "normal" load growth in the network which requires capital expenditure, and individual users needs. In section 4.3 of Western Power's *Notice* regarding this proposed upgrade, six of the nine benefits listed relate to benefits for specific users; viz the new mine proponents, the new generation proponents and the owners of the gas turbines at Geraldton and Mungarra. Only three of the benefits listed relate to "normal" load growth issues.

We note in particular that most (if not all) of the load and generation options canvassed in the *Notice* are "announced" projects rather than "committed" projects, and they may not necessarily proceed. Whilst the NFIT analysis may have taken this into account – which is difficult to determine given the lack of detail and the withholding of certain financial information in the CRA evaluation – we express some concern as to the basis of the evaluation which appears to be relying on speculative data.

We are further concerned at the apparent lack of evenness in Western Power's treatment of the new load and generation developments elsewhere. Newmont is aware from various sources of other situations within the SWIS where new developments are not being afforded the luxury of having system upgrades funded by general network users. Whilst we acknowledge we are likely not in possession of the full facts regarding each case, and that the situation surrounding each one is subject to change, we draw your attention to three particular cases as examples of the situation the state finds itself in:

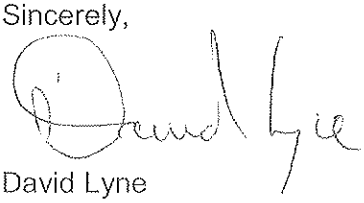
- In the south (near Albany), we believe one mining company has had to significantly modify its development plans due to the inability of the transmission system to provide adequate capacity to the region.
- We understand that Western power expects a proponent of new generation in the south-west to fund an upgrade to the "backbone" transmission system up the coast between Collie and Perth due to inadequate capacity being available.
- In the east, the transmission system to the Goldfields has inadequate capacity to optimise generation and load requirements despite a significant injection of private capital in the form of the Goldfields Gas Pipeline obviating the need for a transmission system upgrade.

Each of these examples has parallels within the justification of the mid west transmission upgrade proposal, and there is no apparent reason why individual proponents in these examples should fund the required upgrades (particularly given the inequities apparent within the capital contributions regime which we commented on in our previously cited 8 February submission to the ERA).

Whilst we acknowledge that specific project proponents (whether load or generation) should fund their direct connection to the transmission network (so called "shallow" transmission assets) we believe Western Power has an obligation to provide (funded by network users in general) an adequate transmission network (the "deep" transmission assets) to facilitate the achievement of the objectives of the Access Code in order to promote competition in markets upstream and downstream of the networks.

We trust Western Power and the ERA will note our comments in applying these principles to this proposed upgrade and the balance of the network. Should you require further information or wish to discuss this submission please contact the undersigned.

Sincerely,



David Lyne
Manager - Energy Services
Newmont Mining Corporation - Asia Pacific

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Our ref: 3623342-12

30 April 2007

David Lyne
Manager - Energy Services
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100 Hutt St
Adelaide SA 5000

Dear Mr Lyne

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support in upgrading the transmission network to Geraldton.

Newmont's view that Western Power should (be obliged to) invest in "deep" transmission assets, funded by all network users is noted. However, the effective funding of investments is ultimately an outworking of the requirements of the Networks Access Code, which is strongly founded on principles of economic efficiency.

The related outworking of these principles is largely spelt out in the Code and includes:

- a "beneficiary pays" approach to achieving customer equity;
- a "new facilities investment test" which provides a pass/fail on the prudency of an investment and, in particular, requires the determination of what proportions of an investment are of benefit to general and specific users. It is acknowledged that the latter assessment will often rely on some degree of subjective judgement, however well informed.

Western Power has a clear responsibility to invest in the expansion of the network in a way that meets the requirements and objectives of the Networks Access Code. The ERA will ultimately adjudicate on the prudency of these investments based on those same principles. Any change to this approach would require fundamental change to the Networks Access Code.

Western Power would like to thank you for your comments. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

energy solutions

erm power

Sent by email to: laurie.curro@westernpower.com.au

Mr Laurie Curro
Manager
Network Planning and Development
Western Power
GPO Box L921
Perth WA 6842

Dear Laurie

Invitation for Submissions:
Proposed Improvements to the Mid West Region's Transmission Network

I refer to Western Power's Notice issued on 22 March 2007 in which submissions were invited in relation to "Proposed improvements to the Mid West region's transmission network".

ERM Power strongly supports the 330kV transmission solution being pursued and offers the following comments and views.

General

ERM Power Pty Ltd (ERM) is an energy solution specialist, electricity generation developer and wholesale electricity supplier with a proven track record in the deregulated electricity industry in Australia.

ERM is a joint owner of NewGen Power with global investment and advisory bank Babcock & Brown.

NewGen Power operates a portfolio of power stations under the "NewGen" banner and trades electricity in both the National Electricity Market (NEM) and Western Electricity Market (WEM).

Apart from the 320MW Kwinana Power Station currently under construction, ERM is involved in bringing to fruition a number of other major power generation projects in Western Australia, and in particular has progressed plans for the development of coal-fired and gas-fired plants in the Mid West which would complement the proposed transmission up-grade being proposed by Western Power (WPN).

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Western Power's 330 kV Transmission Line Solution

ERM supports Western Power's preferred solution of reinforcing the transmission line capacity between Perth and Geraldton. Such reinforcement should not only increase the capability of supplying additional load north from Perth to the Mid West but should also provide the capability of new base load plant in the Mid West, such as that proposed by ERM /Aviva, to supply power southwards into the general electricity market.

The reinforcement will also assist in the development of the Mid West region and the state generally by providing industry in that area with access to the high voltage South West Interconnected Network (SWIN). The linkages to the network will give mining companies and other industries a high level of confidence in being able to access power, which is vital for economic development. It also gives companies such as ERM confidence to build new generation capacity for the region, providing connection to the network can be facilitated and streamlined.

An added benefit is that the reinforcement will enable greater potential use of the wind resource in that region, particularly in the coastal areas, providing added power diversity and environmental benefits.

In determining the preferred solution, including the voltage levels and carrying capacity to be adopted, Western Power should plan for the long term to try and ensure that there will be no constraints on users wishing to access the system in the foreseeable future. In this respect, it is important to maximise the use of existing and potential easements as new easements will become increasingly more difficult to obtain in the future. The 330 kV solution should be considered in relation to these comments.

Mid West Power Station Projects

ERM is conducting a joint study with Aviva Corporation, the owner of a coal deposit at Eneabba, to examine the commercial and technical feasibility of a large coal-fired base load power station supplying power to the Mid West Region and to the SWIN. This power station would deliver the following benefits to the State:

- A billion dollar investment in the Mid West;
- 400 construction jobs;
- 100 permanent jobs locally housed;

- Reliable and competitive power supply for the Mid West and the SWIN;

- Unlock the potential of the Mid West Region, particularly through development of its mineral resources; and

- Provide a large and stable source of power at the northern part of the SWIN with obvious network benefits.

ERM considers that Eneabba is an ideal location for power generation, not only in terms of providing power to the Mid West, but in terms of providing generation balance to SWIN generally, as most of the SWIN's generation is located to the south of Perth, whereas a large part of the load growth is to the north of Perth. In fact, the vicinity around Eneabba has the potential to become an energy hub for the Mid West, with both coal-fired and gas-fired generation, and indeed wind power too.

An essential ingredient of these power station developments is a solid transmission connection to the SWIN. This requires an upgrade of the existing 132kV transmission system from Perth to the Mid West to at least 330kV.

The time frame in which additional power transmission capacity to the Mid West is needed, particularly to supply a number of iron ore projects, is from 2009 onwards.

Line Route

ERM supports the line routes being considered in the preferred solution. These will assist the development of a base load power station at Eneabba, as being considered by ERM, as well as potential gas-fired plant in that vicinity, in accessing markets both to the south and north of Eneabba.

The reinforcement should also free up capacity on some of the existing 132kV lines in the Mid West region, which is essential in order to get power from both the SWIN and our proposed power station projects to potential industrial/mining customers in the Mid West region.

Timing

We understand that WPN is targeting the end of 2010 for the completion of this proposed project. Given the potential loads, particularly iron ore prospects in the Mid West, with a window of opportunity in 2009/2010, we would urge that you do all in your power to ensure

that this project is completed in the shortest time frame possible. In particular, it would seem to make sense to focus on progressing the reinforcement from Pinjar to Eneabba (Stage 1) as a priority rather than on the leg from Eneabba to Geraldton. This would enable a number of large magnetite iron ore processing projects to proceed to schedule, aiming for commissioning at the end of 2009.

ERM is also developing a gas-fired power station at Neerabup in the northern suburbs of Perth for 2009 which will connect directly into the new Neerabup 330kV Terminal. As the Terminal is in effect the beginning of the reinforcement of the transmission line to Pinjar and then Eneabba, this will provide further generation support to the SWIN and back-up support to the Mid West projects.

Benefits Associated with the Preferred Solution

In the Notice of 22 March 2007 and the Public Presentation of 4 April 2007, the options considered and presented were “Transmission solutions”, “Generation solutions”, and “Other solutions”. Of these, Option 1, the 330 kV transmission line solution is the one being pursued. We support this solution, but we also consider that there are significant extra benefits to be brought to this option from our proposed generation projects.

We propose to continue to discuss our proposed Mid West generation projects and their additional system benefits with Western Power.

ERM is keen to work cooperatively with Western Power on the 330kV project. ERM can assist by offering its power expertise and by working with large customers and Western Power to help ensure that at least the Stage 1 reinforcement to Eneabba is done in a time frame that meets the development needs of these important Mid West projects.

Thank you for the opportunity to comment on this important development proposal. I am available to discuss any of these issues further should you require

Yours faithfully

Richard Harris
WA Director
ERM Power
18 April 2007

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30 April 2007

Richard Harris
WA Director
ERM Power
GPO Box 2742
Cloisters Square WA 6850

Dear Richard

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton (Option 1).

Western Power acknowledges your concern regarding the project timeline. Please note that this timeline is based on preliminary information. The design of this line has not yet advanced and it is difficult for Western Power to commit to any specific dates. At this stage we are keen to ensure the project is completed in the shortest feasible timeframe.

Western Power would like to thank you for your comments. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
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Manager
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17 April 2007

Dear Sir

SUBMISSION
Proposed improvements to the Mid West region's transmission network

1. INTRODUCTION

Eneabba Gas Limited (EGL) would like to respond to Western Power's (WPC) "Proposed improvements to the Mid West region's transmission network" document (Report) dated 22 March 2007.

As outlined in the document and emphasised at the public forum (4 April 2007) the investment of over $300M in the network is a very significant spend. The impact of making an inferior investment decision on a project of this magnitude is that Western Power's financial performance will be adversely affected **forever** or Western Power will be forced to recover the under recovery of revenue from this project from other parts of the network. This amounts to a cross subsidy from network users (and if this is to occur, it needs to be clearly stated by WPC in an appropriate public statement.) This will be both unfair on the users and increases the cost base for industry making Western Australia uncompetitive. The imperative is to ensure the correct investment decision is made.

EGL is particularly concerned at the comments made by WPC Peter Mattner-Manager Regulation, Pricing and Access Development, in response to a question at the above forum, about the impact on access charges if the project proceeded and growth of bulk loads did not materialise. He stated to the effect that this project had the potential to increase tariffs and the increases would need to be spread across the entire network.

EGL has read the Report and attended the Public Forum, it needs to be noted that a detailed informed response is not possible simply because EGL has not had access to the financial modelling. EGL is not questioning the accuracy of the modelling but unless access to all of the key assumptions are known, a detailed response is not possible. EGL notes that the Economic Regulation Authority (ERA) will review the proposed investment and we strongly recommend that an independent consultant be engaged to review in detail this project, who has full access to the modelling data.

Finally, EGL refutes the proposed investment, it as sub-optimal.

An alternative strategy is however outlined in this submission which better accounts for addressing the network constraints in the Mid West.

2. NORTH COUNTRY REGION (NCR) NETWORK

As outlined in the WPC report, the two drivers for the project are the:

2.1 the current state of the system in the Mid West region, in particular the risk of synchronous instability.

2.2 the inability to meet proposed large increases in "block loads" anticipated in the future mainly driven from proposed iron ore mining projects.

Of these two drivers the first is a reality and the second is prospective.

EGL notes that WPC augmented the NCR system by installing a 132kV line from Pinjar to Eneabba in 2004. This line provides for sufficient transfer capacity under existing and proposed loads (but not block loads) up until 2014. The transfer capacity north of Eneabba however is constrained under certain weather conditions, requiring utilisation of generation capacity at Mungarra.

The report also states that the current system will have reached its capacity by 2009/10 however capital will need to be spent on static var compensation equipment to maintain the integrity of the system.

3. ECONOMIC ASSUMPTIONS

As stated above, EGL has not had access to all of the assumptions used in the analysis or the rationale used for some of the key assumptions. What can be said is that any analysis on major capital expenditure similar to that proposed is affected by the following key components:

3.1 the weighted average cost of capital (WACC). Typically the higher the WACC, the argument to defer the capital spend or stage the capital spend to better match revenue growth emerges. It is noted in this analysis a WACC of 6.6% has been assumed. No explanation to the derivation of this figure is given. It is noted that in their report "Weighted Cost of Capital: Further Report" prepared by KPMG, May 2006 stated that a WACC of 7.3% should be used. In the intervening period since May 2006 official interest rates have increased by 50 basis points suggesting the WACC should be higher than 7.3% not lower.

3.2 the term of the analysis. Analyses over long terms favour large capital projects particularly if they are coupled with low WACC's. Growing revenue (notwithstanding it is discounted) over time will continue to offset the up front capital spend. It is interesting to note that the NEM which operates in the eastern states has chosen 10 years. The logic being that over this time period there is greater accuracy with the forecast growth and a termination value is used after 10 years. In the WPC analysis an arbitrary term of 24 years has been used with no explanation as to why this term has been used.

The Electricity Networks Access Code, regulations that define the operation and requirements of how WPC is to operate (as per section A 4.10) have clearly stated that the project evaluation should be "a maximum of 15 years". WPC in this proposal is not operating within the Access Code regulations and as such the ERA analysis is required to ensure the Access Code is not breached.

3.3 growth forecasts. The justification of the capital spend on this project is linked to large increases in block loads in the Mid West. Without these prospective loads a 132kV solution is likely to be the only alternative that could be justified. The issue then becomes how firm are these loads? It is interesting to note that for the Dampier to Perth pipeline to expand its capacity, ERA requirements are that companies have to sign and commit to increases in the capacity for the expansion to occur.

In the Report, WPC are anticipating increases in demand in the Mid West but how much of the new block loads are firm and committed capacity? (We were advised at the forum that these loads are based on "expressions of interest", and are not committed.). Committed to the point where the customer is prepared to sign and commit for transmission charges associated with the project. EGL believes at the time of writing the answer to that question is none.

These projects could be deferred for a number of reasons, there are other infrastructure matters and environmental clearances alone which are two issues which could cause further delays in bringing these projects to fruition. Constructing the preferred 330kV option ahead of firm commitments from these major projects represents a significant risk.

3.4 future electricity environment The Report makes a silent assumption that as growth in electricity demand increases in the Mid West there is only one way to provide the electricity capacity, that is demand will be satisfied by transmitting electricity from the south west generation assets of the SWIS. The Report gives no consideration to alternative supply of electricity demand to these major loads. There are alternatives that could emerge in the future that satisfy the demands of the major projects. Alternative supply of electricity to major projects may be provided by:

- self generation- there maybe some companies because of location, may opt to link their mine site to the gas pipeline and install their own generation capacity. There are plenty of examples where companies have installed their own generation capacity both in the south west and the Pilbara.
- direct purchases- companies may elect to purchase electricity from Mid West based generators direct rather than from south west based generators. It is possible that Mid West generators can generate the electricity and sell direct to the mine sites with a dedicated transmission line, without using the SWIS transmission system.
- islanded grid- as part of resolving the broader infrastructure issue it maybe that a single electrified rail system linking all mines provides the opportunity to build an island grid (outside of the electricity grid) for all of the mines. In this case the major loads could be provided by a single / multiple generator(s) in the Mid West with transmission provided by a separate Mid West transmission entity.

If competitive priced gas enters the market in the future, then the options outlined above become a reality. Electricity generation in the Mid West will have lower gas transport charges compared to the south west and lower transmission charges as a result of not having to meet **all** of the cost of the 330kV transmission project.

If WPC commits to this 330 kV project and the mid west projects choose to use Mid West generation as their preferred electricity generation source WPC will have a stranded asset on their hands.

4. WESTERN POWER'S ALTERNATIVES

In the CRA justification paper two of the lower cost options involving reinforcing the existing 132kV system (options 2 and 3 of the CRA report) are dismissed off hand, as not providing adequate back up (N-1 redundancy). This statement is incorrect. The requisite N-1 redundancy is already provided in the existing network. The improvements from both of these options would improve the reliability beyond what already exists. Options 2 and 3 will also meet the expected natural growth and also allow access or augmentation should significant new projects actually come to fruition.

Option 2 and 3 need to be reviewed in more detail but without the model data EGL is unable to comment on this detail. In EGL's opinion, both of these options provide a more cost effective solution to the preferred option of a new grossly oversized system.

The WPC preferred option only partly meets the stated N-1 criteria. While two 330 kV circuits are being offered they will both hang from the same towers and therefore both circuits are subject to damage by a single event. The criteria was shown as inadequate with the recent Victorian bush fires, with such a system N-1 criteria, some 40% of power was cut to customers, such an option has significant risks which have not been highlighted by the Report. The NCR is particularly prone to lightning strikes and bush fires, thus this matter is extremely important.

This option is likely to be the lowest capital spend option although no details are provided in the Report. It provides an immediate solution and it allows for a review of the new loads if and when they emerge. This option certainly manages the risks as outlined at 3.3 and 3.4 above far better than the recommended option.

6. CONCLUSION

EGL does not support the WPC recommended option of constructing a 330kV line to the Mid West to resolve the current instability issues and meet the anticipated load. The cost and risks are such that WPC could have a significant stranded asset on its hands if in fact anticipated future loads do not emerge.

EGL acknowledges that some augmentation of the NCR network is warranted. Careful consideration should be given to a staged approach to this augmentation that is capable of further expansion should "block loads" or new generation be realised. Such options should include the re-stringing of the existing 132 kV lines with higher capacity conductors.

This low cost alternative would increase line capacity at the least cost and without creating the need for new easements. EGL also believe option 2 presented in the paper has higher merit and lower cost than other options presented.

These benefits of this option are:

- provide a low cost affirmative solution
- are technically compliant, providing N-1 reliability
- still meet the expected natural growth in the region
- better manage the risks associated with proposed load and generation development.

The prospective new "block loads" are located over a wide range within and outside the existing NCR. There is currently no requirement to move bulk power between Perth and Geraldton but rather to distribute power within the NCR network and to extend the NCR if the new mining "block" loads eventuate.

The possibility that some of the prospective new generation may directly connect some of the major new "block loads" and bypass the NCR network, which needs to be considered as a risk in the NCR augmentation. Due to the location of the new mining "block" loads, dedicated transmission assets will need to be developed regardless of the source of the generation.

Contrary to what WPC have concluded, EGL believes that alternative options do exist that meet the investment test, are more cost effective and risk averse, better utilise existing infrastructure, and are technically acceptable. Considering this is the largest project WPC has undertaken in the last 20 years and under the current regulations, EGL would expect a more robust justification of such a major network augmentation and greater attention to managing the market risk inherent in their recommendation.

Yours faithfully

Peter R Oates
Director

Mark Babidge
Managing Director

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15 May 2007

Mr Mark Babidge
Managing Director
Eneabba Gas Limited
P.O. Box 772 West Perth
WA, 6872

Dear Mr Babidge

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power appreciates and values Eneabba Gas Limited's (EGL) comments on the network reinforcement options.

Your submission indicates that EGL supports only minimal reinforcement to the existing 132 kV network and in particular Option 2 as detailed in the CRA International (CRA) report.

Western Power is aware that EGL would prefer to supply electricity to major customers in the region independent of the existing network, however, the proposed 330 kV reinforcement should not preclude EGL from suppling power directly to customers and may help facilitate the trade of surplus energy.

Western Power has assessed the reinforcement options for the Mid West region based on the requirements of the Regulatory Test. It requires us *to ensure that any major augmentation will maximise the net benefit after considering alternative options.* We believe that maximum benefit will be achieved by providing a competitive market to network participants in the Mid West region.

A response to the specific issues raised in EGL's submission is attached.

Western Power would like to thank you for your comments. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power

Attached responses to issues raised in EGL's submission:

Background

Western Power and CRA International (CRA) have developed twelve network augmentation options assessed under the requirements of the Regulatory Test detailed in Section 9 of the Electricity Networks Access Code. Section 9.1(a) emphasises the objective of the Regulatory Test is *to ensure that any major augmentation will maximise the net benefit after considering alternative options*. Section 9.4 defines this as *a net benefit to those who generate, transport and consume electricity in the covered network and any interconnected system, having regard to all reasonable alternative options, including the likelihood of each alternative option proceeding*.

In determining the net benefit of each reinforcement option, Western Power has performed the Regulatory Test using a probability weighted assessment for each new load or generation connection. The proposal to construct a 330 kV transmission reinforcement to Geraldton was determined to provide the greatest net benefit.

RE: Section 1 - Introduction

Transmission pricing is cost reflective and dynamic in nature, being highly dependent on the utilization level of assets. Nodal prices in the Mid West transmission network will ultimately depend on, and be significantly influenced by, the actual utilization of the proposed 330 kV network over time. While a major capital investment has the potential to introduce some short-term volatility in access prices, the economic analysis is based on the existing nodal prices and probability weighted connection of new prospective customers demonstrates compliance with the New Facilities Investment Test (NFIT) and an overall efficient outcome.

Economic analysis of the proposed 330 kV line reinforcement using the existing nodal charges for probability weighted connections indicate a positive financial return. Western Power's independent consultant (CRA) has evaluated this as part of their economic analysis.

Western Power acknowledges that EGL and other stakeholders may experience difficulties in reviewing the technical and financial aspects of the evaluated options. We agree that the Mid West network is complicated and as such a public forum was held on the 4 April to help clarify any issues. In the regulatory submission of this project Western Power will provide the ERA with full access to all information, and modelling data.

RE: Section 2 – North Country Region

In Section 2.1 and 2.2 of their submission, EGL has listed Western Power's two major drivers for the transmission reinforcement. Please note that the listed drivers in EGL's submission do not adequately recognize the need for capacity expansion due to natural load growth.

Western Power's invitation for public submission stated: "*At present there are wind farms and conventional generation proposals that are unable to connect due to a shortfall in transmission capacity. There is also an emerging shortfall of supply capacity by summer 2009/10. Without the proposed improvement, Western Power will be unable to meet the natural load growth and demand for connection of power plants in the Mid West region. There is also a significant risk that some of the development opportunities in the Mid-West region may not proceed if the proposed improvement to the transmission line is not delivered by 2010/11*"

In other words, Western Power's stated drivers are:

1) Connection of Wind farms and conventional generation into the Mid West region.

2) Increase supply capacity to meet natural load growth in the Mid West region.

3) Increase supply capacity to accommodate development opportunities in the Mid West region.

Western Power also disagrees with EGL's statement that the 132 kV line from Pinjar to Eneabba commissioned in 2004 "…*provides for sufficient transfer capacity under existing and proposed loads (but not block loads) up until 2014*." Western Power understands that this will only be possible if another 132 kV double circuit line from Eneabba to Geraldton as per Option 2A is constructed with extended operation of the existing generation at Mungarra and Geraldton (or alternatively with an additional SVC at Geraldton area if the local generation is not available).

In clarification to the last paragraph of Section 2, the installation of an SVC in the Geraldton area has been studied and is considered necessary only if the local generation is not available beyond October 2009, when the existing agreement between the IMO and Verve Energy expires.

RE: Section 3.1 – Weighted Average Cost of Capital (WACC)

The weighted average cost of capital (WACC) pre-tax real discount rate used in the analysis was similar to the ERA approved WACC used in the Access Arrangement with Western Power. Although not published in the CRA report, Western Power's analysis shows that using a pre-tax real discount rate of 6.6% with sensitivity studies of 4% and 9% will not impact on the overall ranking of the preferred reinforcement option. These results will be made available to the ERA.

RE: Section 3.2 – Term of the analysis

EGL have noted that Section A4.10 of the Networks Access Code, refers to the determination of capital contributions and defines a *reasonable time* "up to a maximum of 15 years" to be considered for the calculation of a contribution. However, this definition is not applicable for the New Facilities Investment Test (NFIT) under section 6.52 of the Networks Access Code.

The Networks Access Code states that the *new facilities investment* must be recovered by the *anticipated incremental revenue* over a reasonable period which is not defined. Western Power believes that for this project, being a major infrastructure development with an expected life of 60 years, an economic analysis over a period up to the year 2030 is appropriate. It should be noted that the economic analysis over this period, assuming access prices are similar to the present prices, demonstrates the project meets the requirements of the NFIT even under the low demand scenario.

RE: Section 3.3 – Growth forecasts

Western Power acknowledges EGL's claim that, "constructing the preferred 330 kV option ahead of firm commitments from major projects represents a significant risk". To address this issue Western Power presented its analysis using low, central and high demand and generation forecasts.

- The low forecast assumed natural load growth plus approved new customer connections.

- The high forecast assumed natural load growth plus 100% of load demand from all prospective customer connections.

- The central forecast assumed natural load growth plus a probability weighted assessment of load demand from all prospective customer connections.

These forecasts are used to determine which reinforcement option maximises the net benefit to those who generate, transport and consume electricity in the covered network. Western Power has received a significant number of connection enquiries and applications from proponents of industrial and mining loads, and new generation. This amounts to about 300 MW of load and about 1,000 MW of new generation. Western Power agrees that not all of these connections may eventuate and therefore a probability-weighted analysis as per the central load forecast has been applied in the economic evaluation.

The evaluation also looked at a range of forecasts from low to high demand and concluded in each case that the proposed 330 kV option would provide the best investment and maximise net benefit to those who generate, transport and consume electricity in the covered network.

RE: Section 3.4 – Future electricity environment

Western Power disagrees with the EGL statements that:

- "The Report makes a silent assumption that as growth in electricity demand increases in the Mid West there is only one way to provide the electricity capacity, that demand will be satisfied by transmitting electricity from the south west generation assets of the SWIS."

- "The Report gives no consideration to alternative supply of electricity demand to these major loads. "

Western Power and CRA have developed twelve major network augmentation options to address the emerging shortfall of transmission capacity in the Mid West region. Generation Options 9-11 as detailed in the CRA report have been considered and evaluated.

EGL has recommended alternatives to provide power to major projects in the region based on: "Self generation", "Direct purchases" and "Islanded grid". As a result, EGL supports only minimal reinforcement to the existing 132 kV network and in particular Option 2 as detailed in the CRA report.

EGL's proposed alternatives of "Self generation" or "Direct purchases" are available to prospective major customers in the region, however Western Power believes that these options are less competitive and provide less equitable access. The possibility of major potential customers relying on "self generation" or "direct purchases" is taken into account using a probability-weighted analysis and by considering a range of load forecasts.

In response to the "Islanded grid" alternative, please note that a permanent islanded network has been considered as Option 11 of the CRA report. Creation and operation of an independent islanded system has been discounted on the basis the of following implications:

- Economic: Customer choices will be limited to the islanded system and may disadvantage customers in comparison to those connected to the SWIS. It is generally understood that larger interconnected power systems are more efficient than small islanded systems. A small islanded Mid West system will exclude customer and generator access to a wide market and low cost base generation.

- Technical: An islanded system will limit/restrict access for wind farms. The existing wind generation may no longer be able to operate as designed due to low system "fault levels" and lack of demand during times of low power usage. Western Power may be liable to compensate these proponents as this may breach sections of the Trade Practices Act. Furthermore, small islanded systems with dominant industrial & mining loads may have detrimental impact on quality of supply to residential customers. To maintain a high level of quality consistent with the technical rules, the islanded network would require considerable reinforcement.

- Partitioning of the existing transmission network: The Electricity Industry Act clearly supports the integrity of the existing systems. Partitioning of the Mid West network into a separate small islanded system from the SWIS will result in a reduction of reliability, with Western Power being unable to maintain operation within the technical requirements. This option is unlikely to be supported by the existing customers, by the ERA or the IMO.

Western Power has assessed the proposed reinforcement options for the Mid West region based on the requirements of the Regulatory Test. It requires Western Power *to ensure that any major augmentation will maximise the net benefit after considering alternative options.* Western Power believes that maximum benefit will be achieved by providing a competitive market to network participants in the Mid West region. The options presented by EGL will not create a strong backbone to the network allowing for wide equitable access for generation and consumers of electricity in the region.

EGL has stated that "if Western Power commits to the 330 kV project..." it may have a "stranded asset". To address this issue Western Power presented its analysis using low, central and high demand and generation forecasts. These forecasts are used to determine which reinforcement option maximises the net benefit to those who generate, transport and consume electricity in the covered network. The evaluation concluded in each case that the proposed 330 kV option would provide the best investment.

RE: Section 4 – Western Power's alternatives

The analysis by Western Power doesn't support EGL's preferred solution of reinforcing the existing 132 kV network as per Option 2 and Option 3 (of the CRA report). These options would restrict access for new connections and not maximise net benefit to the region.

CRA concluded "Options 2 and 3 are not viable as they involve single circuit augmentation. As a result these do not satisfy the technical requirement to maintain service on the network during N-1 contingencies". Western Power's system study results have also shown that a single circuit 132 kV line augmentation will be sufficient only until about 2012, assuming that Mungarra power station is no longer available. For this reason Option 2A was created to investigate a double circuit 132 kV line reinforcement. This option was fully evaluated (including cost analysis) by CRA.

Western Power acknowledges EGL's concern about the reliability of a 330 kV double-circuit line on single lattice tower constructions. However, this type of construction is common practice in Western Australia and internationally. Western Power's historical data demonstrates that applied standard designs for 330 kV double circuit lines meet the reliability performance criteria.

RE: Section 5

Section 5 of the EGL submission does not exist.

RE: Section 6 – Conclusion

Western Power acknowledges that EGL does not support the recommended option for construction of a 330 kV line in the Mid West region. Western Power believes that EGL supports only minimal reinforcement in the Mid West region to create a particular environment that would benefit new local generation but detriment regional consumers. Please note that Western Power's proposed 330 kV reinforcement would create a more equitable market that allows system-wide generation to supply customers in the region.

Western Power is required by the Networks Access Code to maximise net benefit to those who generate, transport and consume electricity in the covered network. We believe that Option 1 best meets this requirement.

EGL have suggested that "re-stringing of the 132 kV lines with higher capacity conductors" should have been considered. Please note that this is not a technically viable solution, as the lattice structures of the existing lines cannot support heavier conductors. In any case, this would have a very minor impact on the overall transfer capacity.

In summary, Western Power has recommended the option that maximises net benefit. The proposed 330 kV reinforcement will provide adequate network support for the entire region and also meets the requirements of the Regulatory Test and the New Facilities Investment Test. This proposal will provide transmission capacity to accommodate the majority of known customer connections and natural load growth whilst creating an equitable market for all users in the Mid West region.

24 April 2007

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Via email – laurie.curro@westernpower.com.au

Dear Laurie

Proposed Improvements to the Mid West Region's Transmission Network

Pacific Hydro welcomes the opportunity to comment on the proposed improvements to the Mid West region's transmission network.

Pacific Hydro is an Australian developer of large scale wind and hydro projects. We currently own and operate one of Western Australia's most significant renewable energy power stations located on the Ord in the Kimberley and are keen to develop additional projects to meet the state's need for low cost renewable energy.

The high economic growth rates achieved in Western Australia has lead to a forecast increase in maximum electricity demand from 3,541 MW to 4,858 MW by 2015[1]. This annual growth rate for electricity demand of 3.7% will seriously challenge existing network capacity[2].

Western Australia currently makes limited use of renewable energy, with only around 6% of the SWIS being generated from sustainable energy sources. Federal targets for renewable energy already exist, requiring an additional annual 9,500 GWh to come from renewable energy by 2010[3]. Victoria and New South Wales have recently announced legislated schemes which are expected to result in at least double the renewable energy capacity provided for under the Federal Scheme. So far, the Western Australian State Government has committed to a government renewable energy purchase scheme but has not sought to increase the share of renewables[4].

The region north of Perth contains an excellent wind resource that can generate low cost renewable energy. However, network constraints in the region make the development of wind energy projects impossible without infrastructure enhancements.

[1] The Independent Market Operator (IMO) Statement of Opportunities 2006/2007
[2] WA Renewable Energy Targets (WARET) October 2006
[3] Federal Renewable Energy (Electricity) Act 2000
[4] Premier's statement Feb 2007 - 20% of the State Government's electricity from renewable energy sources by 2010

With the above in mind, we fully support the construction of a new 330 kV line from Pinjar and Geraldton as detailed under Option 1 and as recommended by CRA International Pty Ltd (CRA). We suggest that the demand for renewable energy will increase considerably in coming years and, with that high growth level in mind, we consider that Option 6 – 330 kV line with 500 kV towers – offers a solution that will address current and future needs.

Yours faithfully

Lane Crockett
General Manager, Development, Australia/Pacific

For further information please contact: Andrew Richards, Executive Manager, Government and Corporate Affairs
Pacific Hydro on (03) 9615 6424.

Pacific Hydro is an Australian company with a global view. We have the vision, expertise and dedication to develop renewable energy projects around the globe.

We currently boast more than 1,800 MW of hydroelectric and wind farm projects at varying stages of development, construction and operation across Australia, the Asia-Pacific, North America and Latin America including Chile.

Pacific Hydro is committed to innovative renewable energy projects that not only respect the environment and benefit our communities, but sustain profit growth and reward investors and financial partners.

Wind and water turbines may drive our power stations, but it's the vision of a cleaner, greener world that drives us.

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30 April 2007

Lane Crockett
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Pacific Hydro
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Melbourne, Victoria, 3000

Dear Lane

Re: Mid West reinforcement submission

Thank you for your response to Western Power's call for submissions on the proposed Mid West reinforcement. Western Power greatly appreciates your support for a double circuit 330 kV transmission line to Geraldton.

As noted in your letter, the region north of Perth has great potential for renewable energy. The proposed transmission reinforcement should greatly enhance connection of generation developments in this region. Please note that Western Power strongly supports renewable energy proposals and will welcome any formal application for connection into the network.

Western Power recognise that construction of this transmission line with 500 kV towers would provide a more flexible solution, however the increase in cost would not be justifiable using current demand forecasts. Western Power believes that its proposed option has the best chance of passing the Regulatory Test and the new facilities investment test.

Thank you for your comments regarding this reinforcement. If you have any queries please do not hesitate to contact me on (08) 9326 6293 or via email to laurie.curro@westernpower.com.au.

Yours sincerely

Laurie Curro
Branch Manager
Network Planning and Development
Western Power