PRE-APPROVAL OF NEW FACILITIES INVESTMENT

Response to the Issues Paper, published by the ERA dated 26 September 2008, for the 66/11 kV Medical Centre Zone Substation expansion and voltage conversion of distribution network

DATE:

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safe reliable efficient

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1 INTRODUCTION

This submission should be read in conjunction with Western Power's pre-Approval submission dated the 7 August 2008, for the Authority to determine that the forecast new facilities investment proposed by Western Power, for a 66/11 kV substation and associated distribution works at Sir Charles Gairdner Hospital (SCGH), meets the new facilities investment test (NFIT). This submission provides further information in response to the Authority's Issues Paper dated 26 September 2008, to assist the Authority to make an assessment as to whether costs associated with the new facilities investment meet, in part, the NFIT.

2 BACKGROUND

The following information is provided in the body of this submission;

1. Evidence that the forecast cost of $28.4 million is a reasonable forecast of the minimum cost for which the substation can be constructed.

2. Details of the calculation of the $13.55 million of the amount of transmission works that is claimed to satisfy the safety and reliability test.

3. Details of the calculation of the $2.55 million of claimed incremental revenue, in particular evidence to demonstrate that this is actually incremental revenue made possible by construction of the substation and does not include revenue that would otherwise be obtained from SCGH.

4. Information to support the claim that the $2.6 million of distribution works are necessary to maintain safety and reliability for provision of services in the area without regard to the additional load at SCGH.

The capital cost of the project is $28.4M including $25.8M for the new substation and cable works, and $2.6M for the distribution voltage conversion. The customer's allocated contribution is $12.25M including an upfront capital contribution payment of $9.7M. The customer's contribution equates to paying the advancement cost for bringing the project forward to 2010.

3 RESPONSES TO ISSUES

3.1 FORECAST COST

Evidence that the forecast cost of $28.4 million is a reasonable forecast of the minimum cost for which the substation can be constructed

This project requires the establishment of a new 66/11 kV substation prior to decommissioning of the existing 66/6.6 kV substation. The new substation is designed to be located immediately north of the existing substation which results in the lowest cost outcome with respect to costs in relocating assets, and in particular allows for protection and communications cables and conduits to be reused.

The design of the substation is in accordance with Western Power's approved Technical Rules. Western Power normally requires a 1 hectare site to establish a standard outdoor substation. The restriction in land availability at this site has resulted in a decision to use gas insulated switchgear (GIS) which has a reduced land area requirement. This will be the second GIS substation Western Power has constructed, the first being at Cook Street. As such costs were based on the GIS installed in the Cook Street substation.

Western Power submits that its governance and procedures for establishing the requirement for, and the costs of, the new substation ensure that it meets the first part (section 6.52 (a)) of the NFIT. Western Power's governance and procedures are described in its recent Access Arrangement Information submission, Appendix 5 (Assessment of AA1 Capex – NFIT Submission), in particular section 4.

In addition, benchmarking undertaken by SKM, also submitted as part of its recent Access Arrangement Information submission, Appendix 4 (Transmission Asset Cost Benchmarking), indicates that the costs incurred by Western Power in establishing substations is in line with those of other Australian Utilities. This is indicated in the following extract from the report conclusions (page 8).

> The cost estimates for a number of Western Power infrastructure projects were compared to the costs of similar projects in other Australian utilities. After analysis and a subsequent review of Western Power cost estimates, the following conclusions can be drawn:
>
> > After review of items 4 and 5, the cost estimates for Western Power substations are closely aligned with those in other states.

The costs for the Medical Centre substation can be broken down into seven separate components as follows;

1. 66 kV substation work ($16.41M) – majority of the general substation design and construction activities including; two separate buildings to accommodate 132 kV GIS switchgear and secondary equipment, 3 x 66kV line circuits, 66kV bus section circuit breaker, earth grid, lighting and lightning protection, protection SCADA and other secondary equipment.

2. WP 11 kV substation work ($2.39M) – Building and switchgear for the non-SCGH 11 kV circuits, supply and installation of two capacitor banks and housing, and an automatic transfer switching scheme.

3. Decommission and remove old Medical Centre substation ($0.93M)

4. Lines stage 1 & 2 ($4.47M) – rearrangement of existing lines (WT-MC 71 and MC-U 71) to establish tee-off connection using 132 kV underground cable. Removal of overhead lines from tee-off poles to existing substation, as part of decommissioning.

5. Environment and Land Management ($1.29M) – Site investigation and rehabilitation.

6. Project Management ($0.29M).

7. Distribution conversion works ($2.60M).

3.2 BROUGHT FORWARD COST

Details of the calculation of the $13.55 million of the amount of transmission works that is claimed to satisfy the safety and reliability test

The substation is required to meet the load growth for SCGH because the existing 6.6 kV supply is unable to provide their new capacity requirement. Western Power has also determined that it cannot meet the load in the surrounding area at the current supply voltage of 6.6 kV and has determined a programme to convert the substations to 11 kV over the next 12 years. The current programme to carry out these conversions is as follows:

Substation	Date for Voltage Conversion
Cottesloe	2008
Wembley Downs	2009
Nedlands	2014
University of WA	2015
Shenton Park	2015
Herdsman Parade	2017
Medical Centre (substation in question)	2020

This plan was based upon general load growth in the area, and life of assets at the existing substations. It is Western Power's assessment of the most efficient and cost effective approach to meeting emerging load growth in this area. The programme requires particular coordination because conversion of the distribution network to 11 kV is required to coincide with the voltage conversion of the substations.

Western Power submits that the work covered in this programme meets the NFIT, and in particular section 6.52 (b)(iii) of the Code.

SCGH have requested the work to be completed now in order to meet expected load growth as part of the redevelopment of the Hospital and additional buildings. To determine what part of the cost does not meet the safety and reliability test a 'brought forward' cost is calculated and attributed to SCGH. The 'brought forward' cost attributes the additional expense of commencing the work now rather than some time in the future, and allocates this component to the customer. This calculation is seen in the *Capital Contribution Calculator* - brought forward costs' attachment.

3.3 INCREMENTAL REVENUE

Details of the calculation of the $2.55 million of claimed incremental revenue

The $2.55M incremental revenue is additional revenue made possible by construction of the substation and does not include revenue that would otherwise be obtained from SCGH.

In consultation with SCGH and referencing the projected load forecast supplied by Kellog, Brown and Root acting for SCGH, an annual load increase of 1,000 kVA until 2020 was assumed for the purposes of calculating the incremental tariff revenue. A period of 15 years of incremental revenue was considered in accordance with the Capital Contributions Policy.

The 2007/08 Price List was used to determine the incremental tariff revenue. From Table 5.5 of that document, the Medical Centre substation 'demand price' (for the transmission component only), is determined to be $46.16/ kVA /annum. No other components of the tariff are included, as these components would continue to be paid whether or not the replacement of the substation proceeded. The individual incremental tariff per year, for a period of 15 years, is shown along with the net present value in the attached *Calculation of Incremental Revenue* document.

See attachments;
(i) "Calculation of Incremental Revenue"; and
(ii) "Capital Contribution Calculator".

3.4 DISTRIBUTION WORK

Information to support the claim that the $2.6 million of distribution works are immediately necessary to maintain safety and reliability for provision of services in the area without regard to the additional load at SCGH

As indicated in section 3.2 of this submission, Western Power is undertaking a coordinated programme to convert 7 substations, and the associated distribution networks in the area around the Medical Centre substation from 6.6 kV to 11 kV. In undertaking this work as part of a coordinated programme, Western Power submits that the work will meet the requirements of the NFIT, in particular sections 6.52 (a) and 6.52 (b)(iii) of the Code.

The conversion of the distribution network adjacent the Medical Centre substation has been brought forward by this customer request and it could be considered that the SCGH should fund the brought forward cost of this work. However other benefits arise from carrying out this work at this time including a potential to delay the voltage conversion of the University substation by up to five years. Western Power is currently negotiating with the University with respect to their forecast load increases. However there is potential for that project to be delayed by up to 5 years with potential savings in the order of $1.3M per annum. This work also assists in the conversion of the Nedlands and Shenton Park substations.

Consequently Western Power submits that this work meets the NFIT.

4 CONCLUSION

This submission to the Authority is being made under section A7.21 of the Code to assist the Authority to make a determination regarding the *new facilities investment test* as set out in section 6.52 of the Code when applied to the proposed *major augmentation* being a 66/11 kV 'Medical Centre' zone substation at Sir Charles Gairdner Hospital ("SCGH") and associated works to upgrade the distribution system.

In summary the proposed *new facility* meets the requirements of section 6.52 (a) and 6.52 (b)(iii) of the Code in respect of the forecast cost for the project if it had been completed by 2020. Western Power respectfully requests that the Authority determine that the *new facilities investment test* is satisfied for the distribution component of works amounting to $2.6M as per clause 6.52 (b)(iii), and also for the new substation works components to the value of $16.1M of which $13.55M is justified under clause 6.52 (b)(iii) and $2.55M under clause 6.52 (b)(i)(A). The remaining cost of the project does not meet the NFIT, and as such a capital contribution of $9.7M will be sought from the customer.

MEDICAL CENTRE NEW 66/11KV ZONE SUBSTATION
ESTIMATE OF LOAD FORECAST FOR DETERMINING CUSTOMER'S UPFRONT CONTRIBUTION Reviewed 11/06/2007 DMS#3217310

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Load kVA	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000	12000	12250	12250	12250
Power Factor	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Transmission Only															
Standard Prices	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16	$ 46.16
Network Charge	$ 46,160	$ 92,320	$ 138,480	$ 184,640	$ 230,800	$ 276,960	$ 323,120	$ 369,280	$ 415,440	$ 461,600	$ 507,760	$ 553,920	$ 565,460	$ 565,460	$ 565,460
2007/08	$ 41,963.64	$ 83,927.27	$ 125,890.91	$ 167,854.55	$ 209,818.18	$ 251,781.82	$ 293,745.45	$ 335,709.09	$ 377,672.73	$ 419,636.36	$ 461,600.00	$ 503,563.64	$ 514,055	$ 514,055	$ 514,055

NPV of Charges: $2,552,032.20

Western Power Revised Access Arrangement Capital Contribution Model

Ref	2	3	6	8	9	10	11	12	13	14	15		
Model Inputs													
Applicant Details													
5	**Applicant Details**												
6		Applicant Name				**SCGH**							
7													
Economic Parameters													
9	**Regulated WACC**												
10		WACC (real pre-tax)				6.76%							
11		WACC (nominal pre-tax)				10.07%							
12		RBA Indicator Rate				11.80%	RBA Large Business Indicator Rate						
13													
Asset Parameters													
15	**Capital Costs for Project under consideration**												
16		Construction Commences in Year Ending 30 June				**2008**							
17				**Year Ending 30 June**		**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**TOTAL**	
18		Capital Cost of Shared Assets [$ of today]				3,300,000	7,550,000	12,500,000	1,350,000	-	1,100,000	25,800,000	external cost, exclude GST
19													
20	**Original Planned Capital Costs**												
21		Original Construction Commencement forecasrt (in Year Ending 30 June)				**2019**							
22				**Year Ending 30 June**		**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**TOTAL**	
23		Capital Cost of Shared Assets [$ of today]				3,300,000	7,550,000	12,500,000	1,350,000	1,100,000		25,800,000	external cost, exclude GST
24													
Model Outputs													
Bought Forward Cost					**Bought Forward Cost (ex-GST)**								
27	**Calculated Capital Contribution**												
28		Bought Forward Cost for Shared Assets				12,250,580							
29													
30													

Discounted Cash Flows																				
Year Ending 30 June				**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Project Year				**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Nominal to Real Conversion [real $]																				
35	**WPC Inflation**																			
36		Inflation Forecast			2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
37		Inflation Factor		1.000	1.020	1.040	1.061	1.082	1.104	1.126	1.149	1.172	1.195	1.219	1.243	1.268	1.294	1.319	1.346	
38																				
39	**Capital Costs**		**PV**																	
40		Original Capital Cost of Shared Assets [$ Re	**8,519,519**	0	0	0	0	0	0	0	0	0	0	3,300,000	7,550,000	12,500,000	1,350,000	1,100,000	0	
41		Capital Cost for project of Shared Assets [$ F	**20,770,099**	7,550,000	12,500,000	1,350,000	0	1,100,000	0	0	0	0	0	0	0	0	0	0	0	
42		Bought Forward Costs [$Real]	**12,250,580**																	
43																				