

Draft Determination on the New Facilities Investment Test Application for a 132-66/11 kV Medical Centre Zone Substation

Submitted by Western Power

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Economic Regulation Authority

WESTERN AUSTRALIA

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Economic Regulation Authority
Perth, Western Australia
Phone: (08) 6557 7900

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Contents

DRAFT DETERMINATION	1
REASONS	3
Test for adding New Facilities Investment to the Capital Base	3
The New Facilities Investment Test	4
Western Power’s Pre-Approval Application	5
Western Power’s Submission	5
Proposed Works	5
Forecast Cost	5
Submissions to the Authority	6
Assessment Against the New Facilities Investment Test	6
Efficiency Test	7
Western Power’s Assessment	7
Considerations of the Authority	8
Safety and Reliability Test	11
Western Power’s Assessment	11
Considerations of the Authority	12
Incremental Revenue Test	13
Western Power’s Assessment	13
Considerations of the Authority	13
Net Benefits Test	14
Western Power’s Assessment	14
Considerations of the Authority	14

DRAFT DETERMINATION

1. On 19 November 2012, the Economic Regulation Authority (**Authority**) received a new facilities investment test application from Western Power submitted under section 6.71(b) of the *Electricity Networks Access Code 2004 (Access Code)*.¹ The application is for the Authority to determine that forecast new facilities investment of \$27.21 million proposed by Western Power, to construct a new 132-66/11 kV Medical Centre zone substation at the Queen Elizabeth II (QEII) Medical Centre in Nedlands, meets the new facilities investment test.
2. In making a determination on a new facilities investment test application, the Authority is required to consult with the public in accordance with the consultation requirements of Appendix 7 of the Access Code. The Authority issued an invitation for submissions on 11 February 2013, with a closing date for submissions of 25 February 2013. As part of this consultation, the Authority prepared an issues paper to assist interested parties in understanding the new facilities investment test and Western Power's new facilities investment test application.² The Authority received one submission during the consultation process which was from Community Electricity.
3. Western Power's pre-approval application relates to \$27.21 million of a total amount of forecast new facilities investment for the proposed works of \$28.84 million. Western Power submits that the amount of \$27.21 million meets the test of section 6.51A of the Access Code, by virtue of satisfying the new facilities investment test of section 6.52 of the Access Code. Western Power considers that the remaining amount, \$1.22 million in relation to dedicated customer connection works and \$0.41 million relating to the financial costs of bringing forward the investment for distribution shared works from the date originally planned by Western Power, will require a capital contribution from the customer (QEII Medical Centre).
4. To assist with its assessment of Western Power's new facilities investment test application, the Authority commissioned independent advice from Geoff Brown and Associates (**GBA**).³
5. After consideration of Western Power's new facilities investment test application and independent advice from the Authority's technical advisor, the Authority's draft determination is to not approve Western Power's application for \$27.21 million. The Authority considers that only \$24.43 million would meet the new facilities investment test. The Authority considers:
 - Costs of \$600,000 in relation to a third transformer bund and switch room should be excluded as they do not directly relate to the requirements necessary for the increased load due to the QEII Medical Centre.
 - Costs of \$2.59 million in relation to a risk allowance should be excluded from this pre-approval decision on the basis that it cannot be determined at this stage

¹ 19 November 2012, Western Power, *Application for Determination that a Forecast New Facilities Investment will Satisfy the New Facilities Investment Test – Establishment of a new 132-66/11 kV Zone Substation at the QEII Medical Centre* (hereafter referred to as the "**new facilities investment test application**").

² 11 February 2013, Economic Regulation Authority, *Issues Paper on the New Facilities Investment Test Application for a 132-66/11 kV Medical Centre Zone Substation – Submitted by Western Power*.

³ 4 April 2013, Geoff Brown & Associates Ltd, *New Facilities Investment Test Medical Centre Substation – Technical Review*.

whether it is efficient expenditure and can be reviewed, if necessary, at the next access arrangement review. The Authority is also concerned about the lack of incentive properties in approving a forecast amount which includes a risk allowance.

- Costs of \$0.41 million should be added as the proposed investment addresses current risks to safety and reliability arising from poor asset condition and capacity issues at the existing University and Medical Centre zone substations and, therefore, will fully meet the safety and reliability test as soon as the works are completed and, therefore, the contribution of \$0.41 million proposed by Western Power for shared works is not required.

REASONS

6. The reasons for this draft determination address the following matters:
- the test of section 6.51A of the Access Code for adding new facilities investment to the capital base;
 - the structure and elements of the new facilities investment test under section 6.52 of the Access Code;
 - details of Western Power’s proposed works; and
 - the assessment of the proposed transmission and distribution works against the requirements of the test of section 6.51A of the Access Code, including the new facilities investment test under section 6.52 of the Access Code.

Test for adding New Facilities Investment to the Capital Base

7. Section 6.51A of the Access Code establishes a test that must be satisfied for an amount of new facilities investment to be added to the capital base.

6.51A New facilities investment may be added to the capital base if:

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

8. Sections 6.71 and 6.72 of the Access Code allow a service provider to seek a determination that either an actual amount, or forecast amount, of new facilities investment meets the test of section 6.51A.

6.71 A service provider may at any time apply to the Authority for the Authority to determine whether:

- (a) actual new facilities investment made by the service provider meets the test in section 6.51A; or
- (b) forecast new facilities investment proposed by the service provider is forecast to meet the test in section 6.51A.

6.72 If an application is made to the Authority under section 6.71, then subject to section 6.75 the Authority must make and publish a determination (subject to conditions as the Authority may consider appropriate) within a reasonable time.⁴

⁴ Section 6.75 of the Access Code indicates that the Authority must make a determination if the actual or forecast amount of new facilities investment is equal to or greater than \$15 million (CPI adjusted); otherwise the Authority may make a determination. The 2012 CPI adjusted threshold is \$18.7 million as stated in the Economic Regulation Authority’s Notice on 2012 Consumer Price Index Adjustments, 30 May 2012.

The New Facilities Investment Test

9. Section 6.52 of the Access Code sets out the new facilities investment test.
- 6.52 New facilities investment satisfies the new facilities investment test if:
- (a) the new facilities investment does not exceed the amount that would be invested by a service provider efficiently minimising costs, having regard, without limitation, to:
 - (i) whether the new facility exhibits economies of scale or scope and the increments in which capacity can be added; and
 - (ii) whether the lowest sustainable cost of providing the covered services forecast to be sold over a reasonable period may require the installation of a new facility with capacity sufficient to meet the forecast sales;
- and
- (b) one or more of the following conditions is satisfied:
 - (i) either:
 - A. the anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment; or
 - B. if a modified test has been approved under section 6.53 and the new facilities investment is below the test application threshold - the modified test is satisfied;
 - or
 - (ii) the new facility provides a net benefit in the covered network over a reasonable period of time that justifies the approval of higher reference tariffs; or
 - (iii) the new facility is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services.
10. For convenience, the elements of the new facilities investment test are referred to below as the “efficiency test” (section 6.52(a) of the Access Code), “incremental revenue test” (section 6.52(b)(i)A of the Access Code), “net benefits test” (section 6.52(b)(ii) of the Access Code) and “safety and reliability test” (section 6.52(b)(iii) of the Access Code).
11. For the new facilities investment test to be satisfied, the new facilities investment must satisfy the efficiency test and ‘one or more’ of the incremental revenue test, net benefits test, or safety and reliability test. The practical interpretation of ‘one or more’ is taken to be that the sum of the benefit values from the incremental revenue test, the net benefits test or the safety and reliability test needs to exceed the efficient cost of the new asset.⁵

⁵ For a detailed explanation of the Authority’s interpretation of the new facilities investment test, see 11 February 2013, Economic Regulation Authority, *Issues Paper on the New Facilities Investment Test Application for a 132-66/11 kV Medical Centre Zone Substation – Submitted by Western Power*, Appendix A.

Western Power's Pre-Approval Application

Western Power's Submission

12. Western Power submitted a new facilities investment test application on 19 November 2012, under section 6.71(b) of the Access Code, for the Authority to determine that forecast new facilities investment to construct a new 132-66/11 kV Medical Centre zone substation meets the new facilities investment test. The proposed investment is estimated to cost \$28.84 million, of which Western Power considers that \$27.21 million meets the new facilities investment test.
13. Western Power indicates that the primary driver for the proposed investment is due to the increased electrical requirements of the QEII Medical Centre. However, Western Power notes that the existing Medical Centre zone substation is forecast to be non-compliant with the N-1 reliability requirement within the Technical Rules by 2016⁶ and that, under its long term strategic plan for the Western Terminal development area, this project was scheduled for completion in 2016.
14. The QEII Medical Centre is undertaking a major redevelopment and expansion programme and requires this investment to be undertaken two years earlier than planned by Western Power (by June 2014). The QEII Medical Centre load is expected to rise from 12.5 MVA to 27.5 MVA by 2020 and its high voltage distribution network will need to be upgraded from 6.6 kV to 11 kV by June 2014.⁷

Proposed Works

15. The components of its preferred development option which are driven by the QEII Medical Centre and included in Western Power's new facilities investment test application are:
 - establishing a new 132-66/11 kV Medical Centre zone substation with two 33 MVA 132-66/11 kV transformers;
 - transfer of load from the existing 66/6.6 kV Medical Centre zone substation to the new 132-66/11 kV Medical Centre zone substation and upgrade the operating voltage from 6.6 kV to 11 kV;
 - decommissioning the existing Medical Centre zone substation.⁸

Forecast Cost

16. Western Power has forecast capital costs of \$28.84 million to establish a new zone substation and upgrade the associated distribution infrastructure to meet the requirements of the QEII Medical Centre (Table 1).

⁶ N-1 is commonly used for describing the level of security where one element on the network fails.

⁷ 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 6.

⁸ 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 6.

Table 1 Western Power’s forecast new facilities investment driven by customer (\$ million)

Component of Works	Estimated Cost
1) Establish a new 132-66/11 kV Medical Centre zone substation with two 33 MVA 132-66/11/11 kV transformers	19.96
2) Transfer the load from the existing 66/6.6 kV Medical Centre zone substation to the new 132-66/11 kV Medical Centre zone substation and upgrade the operating voltage from 6.6 kV to 11 kV	5.40
3) Decommission the existing Medical Centre zone substation	3.48
Total cost of customer-driven work	28.84

Submissions to the Authority

17. The Authority received one submission during the consultation process which was from Community Electricity.⁹ The views expressed in this submission are summarised below under “Considerations of the Authority”.

Assessment Against the New Facilities Investment Test

18. Western Power submits that all of the investment meets the efficiency test of the new facilities investment test under section 6.52(a) of the Access Code. However, Western Power submits that only \$27.21 million satisfies the second limb of the new facilities investment test, which consists of:
- \$25.48 million that satisfies the “safety and reliability test” under section 6.52(b)(iii) of the Access Code; and
 - \$1.73 million that satisfies the “incremental revenue test” under section 6.52(b)(i)A of the Access Code.
19. Western Power considers that the remaining amount (\$1.63 million), comprising \$1.22 million relating to customer connection works at the zone substation and \$0.41 million relating to the financial costs of bringing forward the investment relating to distribution shared works, meets the efficiency test but does not meet the other requirements of the new facilities investment test and will require a contribution from the QEII Medical Centre.
20. Western Power’s assessments against the efficiency, incremental revenue and safety and reliability tests are outlined in the remaining sections of this draft determination and in Table 2. In summary, Western Power:
- Considered a range of investment options, with the proposed (recommended) option being the option that is least cost and which addresses all network constraint and customer requirements without introducing any additional technical risk.¹⁰ In addition to its option selection process, Western Power

⁹ This submission is available on the ERA’s website: <http://www.erawa.com.au/access/electricity-access/network-augmentations/132-6611-kv-qeii-medical-centre-zone-substation-augmentation-nfit/>

¹⁰ 19 November 2012, Western Power, *Project Planning Report – Establishment of a New Zone Substation at the QEII Medical Centre*, p. 12.

considers that its design and delivery mechanisms are efficient and comply with section 6.52(a) of the Access Code.

- Submits that the investment is necessary by 2016 in order to ensure compliance with its Technical Rules and to maintain network safety and reliability. Therefore this investment, excluding the financial costs of constructing the works earlier than otherwise would be required, should satisfy section 6.52(b)(iii) of the Access Code.
- Submits that some of the financial costs of constructing the works earlier than otherwise would be required will be met through incremental revenue of the customer and therefore satisfy section 6.52(b)(i)A of the Access Code.

Table 2 Western Power's assessment of new facilities investment satisfying the new facilities investment test (\$ million)

	Amount that meets the NFIT
Section 6.52(a) – efficiency test	28.84
Section 6.52(b) – ‘other tests’	
Safety and reliability test (transmission and distribution shared works excluding brought-forward costs)	25.48
Incremental revenue test	1.73
Net benefits test	0
Sub total of Section 6.52(b)	27.21
Total satisfying the new facilities investment test	27.21
Total not satisfying the new facilities investment test	1.63

Efficiency Test

Western Power's Assessment

21. In its new facilities investment test application, Western Power submits that the total cost of the proposed investment meets the efficiency test of section 6.52(a) of the Access Code on the basis that:
 - the most appropriate development option was selected to meet reasonable forecasts of growth; and
 - the selected investment has been designed appropriately and will be delivered in an efficient manner.
22. Western Power considered five investment options:
 - Option 1 – Establish a new 132-66/11 kV zone substation with two 66 MVA transformers.
 - Option 2 – Establish a new 66/11 kV zone substation with three 33 MVA transformers.
 - Option 3 – Establish a new 132-66/11 kV zone substation with three 33 MVA transformers.

- Option 4 – Demand side management.
 - Option 5 – Transfer load to surrounding zone substations.
23. Further details of each option are provided in Attachment 2 of Western Power's new facilities investment test application.¹¹ Western Power submits that option 3 is the preferred option in terms of total cost as it addresses all network constraints and customer requirements without introducing any additional technical risk. Options 4 and 5 were not considered feasible by Western Power, due to the aged and poor condition of the existing assets and the capacity constraint issues on the surrounding distribution feeder network. Western Power considered that, whilst Option 1 had a similar net present cost as its preferred option, it would increase technical risk through the use of non-standard transformers. Western Power noted that Option 2 was more expensive than its preferred option and it would involve suboptimal asset utilisation as the three 66/11 kV transformers would need to be replaced before the substation can be energised to 132 kV.
24. With respect to program delivery, Western Power submits that it uses a suite of approaches in its project delivery portfolio to ensure on an ongoing basis that an efficient cost is achieved. Western Power has provided a breakdown of the cost by delivery mechanisms (internal labour, competitive tender, preferred supplier etc) for both the transmission works and distribution works (see Table 3 and Table 4). Western Power has also included a specific allowance for risk.

Table 3 Western Power's delivery mechanisms for transmission works¹²

Delivery Mechanism	Estimated Cost (\$ million)	Percentage
Competitive tender	8.95	38.2
Western Power internal resource	6.39	27.3
Preferred supplier	5.79	24.7
Risk allowance	2.31	9.8
Total	23.44	100

Table 4 Western Power's delivery mechanisms for distribution works¹³

Delivery Mechanism	Estimated Cost (\$ million)	Percentage
Preferred vendor contracts	1.91	35.37
Western Power internal resource	1.58	29.26
On-costs and risk allowance	1.16	21.48
Materials	0.76	14.07
Total	5.40	100

Considerations of the Authority

25. In assessing whether the proposed transmission and distribution works meet the efficiency test of section 6.52(a) of the Access Code, the Authority has given

¹¹ 19 November 2012, Western Power, *New Facilities Investment Test Application*, Attachment 2.

¹² 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 15.

¹³ 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 15.

consideration to the choice of project, the design standard and whether the forecast costs for the project are minimised.

Choice of project

26. Technical advice to the Authority notes that in 2012, Western Power engaged Sinclair Knight Merz (**SKM**) to prepare a redevelopment plan for the Western Terminal load area taking account of the forecast growth in demand and the condition of the existing zone substation assets. The Authority's technical advisor previously reviewed this plan when providing advice to the Authority on Western Power's regulatory test application for the Shenton Park zone substation proposal.¹⁴ The Authority's technical advisor supported the upgrade of the 6.6 kV distribution network to 11 kV and the construction of the new 132/11 kV substation at the Medical Centre and Shenton Park. For the purposes of the current review, the Authority's technical advisor reconfirmed that the construction of the proposed Medical Centre zone substation is consistent with the least cost development strategy.¹⁵
27. The SKM report identified and recommended options for the whole of the Western Terminal area. Taking account of SKM's recommended options Western Power separately considered investment options specific to the Medical Centre project. As noted above, Western Power identified five investment options, with the recommended option being to establish a new 132-66/11 kV zone substation with three 33 MVA transformers (Option 3). The Authority notes that Option 3 had the lowest net present cost of the feasible options, and while the cost of Option 1 was similar, Option 3 used Western Power's standard transformer size instead. The Authority's technical advisor noted that 'the 33 MVA transformer size is Western Power's standard transformer size for zone substations in non-CBD urban areas and [saw] no reason to deviate from this standard design.'¹⁶
28. Taking account of Western Power's submission and advice from the Authority's technical advisor, the Authority is satisfied that the proposed transmission and distribution works (Option 3) represent an efficient choice of project.

Design standard

29. The Authority's technical advisor considers that the proposed design of the new substation would meet the requirements of the efficiency test. In reaching this conclusion, the Authority's technical advisor noted:
 - redevelopment of the network in the Western Terminal load area is required to meet the emerging condition and capacity constraints of the existing network assets;
 - the substation will be built to Western Power's standard substation design and use the standard transformer capacity for zone substations in non-CBD urban areas; and
 - as the substation is intended to replace both the existing Medical Centre and University zone substations which each have a current load in excess of 20 MVA

¹⁴ 10 September 2012, Geoff Brown & Associates Ltd, *Technical Review of Western Power's Shenton Park Zone Substation Regulatory Test Application*.

¹⁵ 4 April 2013, Geoff Brown & Associates Ltd, *New Facilities Investment Test Medical Centre Substation – Technical Review*, p. 6.

¹⁶ 4 April 2013, Geoff Brown & Associates Ltd, *New Facilities Investment Test Medical Centre Substation – Technical Review*, p. 6.

and the requirement for N-1 security, the proposed transformer capacity is not excessive.

30. Taking account of Western Power's submission and advice from the Authority's technical advisor, the Authority considers that the design of the project appears to be reasonable and efficient.

Minimising project costs

31. The Authority's technical advisor concluded that it considered 'the estimated costs in Western Power's application provide a reasonable basis for specifying the NFIT [new facilities investment test] amount'.¹⁷ However, it made a number of observations with respect to Western Power's risk provision and analysis with respect to similar past projects.
32. The Authority's technical advisor also noted that Western Power's estimated Medical Centre zone substation costs included the cost of the third transformer bund and switch rooms which are not required to supply the QEII Medical Centre. The Authority's technical advisor estimates these costs to be about \$600,000 and considered that these should be allocated to the costs of installing the third transformer. Western Power has not included costs related to the third transformer in its application because these costs are not driven by the requirements of the QEII Medical Centre. On this basis, the Authority considers that the costs related to the third transformer bund and switch rooms should also be excluded.
33. Western Power's risk allowance is determined by identifying a range of possible risks and the potential impact of these risks on the cost of the project and then applying a Monte Carlo analysis.¹⁸ The derived risk allowance from this analysis is based on a 20 per cent probability of exceedence of the total forecast cost (inclusive of risk provision). That is, there is an 80 per cent probability that Western Power can deliver the project at a cost lower than its forecast (inclusive of the risk provision).
34. Based on this methodology for calculating risk, the Authority's technical advisor was surprised at the magnitudes of some of the risk allowance, particularly with distribution works, which it considered was relatively low and for decommissioning works which it considered was relatively high. The Authority's technical advisor noted that it would be open to the Authority to reduce the risk allowance. This would increase the probability of Western Power having to provide further justification of the actual projects costs if these costs exceeded the forecast expenditure without a risk allowance and would increase incentives to minimise implementation costs.
35. Although the Authority's technical advisor questioned the validity of Western Power's analysis of the estimated costs of the Medical Centre zone substation with the actual costs of recent substations, it concluded that Western Power's application provides a reasonable basis for specifying the amount that meets the efficiency test. The technical advisor also noted that Western Power's planned delivery approach, which uses a mixture of preferred vendors or contractors and internal resources, is consistent with Western Power's standard project

¹⁷ 4 April 2013, Geoff Brown & Associates Ltd, *New Facilities Investment Test Medical Centre Substation – Technical Review*, p. 13.

¹⁸ Monte Carlo analysis is a mathematical based method to calculate probabilities of different outcomes occurring by running simulations of possible outcomes many times over.

implementation procedures. The Authority's technical advisor concluded that Western Power has acceptable procedures in place to minimise the actual costs of implementing the project.

36. The Authority notes that Western Power has included a \$2.59 million risk allowance (or around 10 per cent of the forecast base cost) in its application. This allowance represents Western Power's estimation of additional costs which may arise if possible risks eventuate. The Authority considers approving a forecast amount which includes a risk allowance has the wrong incentive properties in relation to ensuring only efficient expenditure is incurred.
37. For the purposes of this decision the Authority can only approve amounts which meet the new facilities investment test. It is not possible to determine ex ante whether costs which may be incurred if certain risks eventuate, are efficient as this could only be determined in an ex-post review. As a result, the Authority is not satisfied that the \$2.59 million risk allowance meets the requirements of section 6.52(a) of the Access Code.
38. An ex-post review of all capital expenditure will be undertaken by the Authority at the next access arrangement review. Any additional expenditure Western Power may incur as a result of a risk imposing an additional cost can be considered at that time. Alternatively, the Access Code provides for applications for pre-approval of expenditure to be submitted to the Authority at any time.

Amount satisfying the efficiency test

39. Taking the above into consideration, the Authority considers that an amount of \$25.65 million meets the efficiency test compared with Western Power's application of \$28.84 million. The Authority's estimate of efficient costs differs from Western Power's estimate for the following reasons:
 - Costs of \$600,000 in relation to a third transformer bund and switch room should be excluded as they do not directly relate to the requirements necessary for the increased load due to the QEII Medical Centre.
 - Costs of \$2.59 million in relation to a risk allowance should be excluded from this pre-approval decision on the basis that it cannot be determined, at this stage, whether it is efficient expenditure but can be reviewed, if necessary, at the next access arrangement review.

Safety and Reliability Test

Western Power's Assessment

40. If normal load growth continued (not including major increases in customer load, such as the QEII Medical Centre load increase request), Western Power considers that the proposed investment would need to be completed by 2016. This is because two of the existing feeders at the Medical Centre zone substation are at 100 per cent or exceeding rated capacity; there is insufficient distribution feeder back-up capability to satisfy clause 2.5.5.3(b)2(A) of the Technical Rules¹⁹; and

¹⁹ Clause 2.5.5.3(b)2(A) of Western Power's Technical Rules requires Western Power to design urban distribution feeders (constructed following commencement of the Rules) so that no other feeder will pick up more than 50 per cent of the peak load from a faulted distribution feeder unless capacity has been specifically reserved to provide back-up, following an unplanned single feeder outage in certain circumstances.

compliance with clause 2.5.2.2(b) in relation to the N-1 criterion will not be met by 2016.²⁰

41. In order to meet the QEII Medical Centre load increase, Western Power considers that its proposed investment needs to be brought forward by two years. Western Power has calculated the financial costs of undertaking the proposed investment two years earlier than planned on a net present value basis. Western Power has separately assessed the amounts relating to transmission and distribution.
42. Western Power considers that an amount of \$25.48 million meets the safety and reliability test.²¹ Western Power has calculated this amount by excluding from the cost of undertaking the transmission and distribution works (\$28.84 million), dedicated customer connection costs (\$1.22 million) and the financial costs of bringing forward the investment by two years (\$2.14 million).

Considerations of the Authority

43. In its submission, Community Electricity supports Western Power's view that the proposed investment has merely been brought forward.
44. Technical advice to the Authority suggests that construction of the Medical Centre project should be undertaken now rather than deferred. The Authority's technical advisor noted concerns with Western Power's analysis that the proposed works could be deferred to 2016 without the increase in load from the QEII Medical Centre.
45. The Authority's technical advisor considered a hypothetical case based on the immediate construction of a new Medical Centre zone substation without any requirement for increased load at the QEII Medical Centre. In this case, the technical advisor noted the following:²²
 - the load at the University substation is at or approaching the full rating of the transformers and action is necessary to address this situation, irrespective of the condition of the assets;
 - that assets at both the University and existing Medical Centre zone substations (and other 6.6 kV substations in the Western Terminal load area) are in poor condition, with some considered by Western Power to be in need of immediate replacement. The probability of a failure of one of these assets is significant;
 - the available distribution transfer capacity is small, which makes it more difficult to manage the consequences of a contingency event;
 - the proposal to construct the new Medical Centre zone substation to replace the existing Medical Centre zone substation and University substation would still be the most cost effective option; and
 - the proposed strategic distribution network upgrades and load transfers, while low cost, only defer the replacement requirement at the University substation by a maximum of two years and the risk to Western Power over that period would be

²⁰ Clause 2.5.2.2(b) of Western Power's Technical Rules requires Western Power to maintain the transmission network designed to meet the N-1 criterion to ensure supply is maintained and load shedding avoided at any load level or for any generation schedule following an outage of any single transmission element.

²¹ 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 16.

²² 4 April 2013, Geoff Brown & Associates Ltd, *New Facilities Investment Test Medical Centre Substation – Technical Review*, p. 9.

significant. A single transformer failure at the University substation could mean a loss of supply of more than 4 MW of load for a period of approximately 12 hours.

46. Given the above circumstances, the Authority's technical advisor did not see any point in deferring the construction of the works, which it believes already meets the requirements of the safety and reliability test.
47. Taking account of Western Power's submission and the advice from the Authority's technical advisor, the Authority considers that Western Power's proposed transmission and distribution works (excluding customer connection costs) addresses current risks to safety and reliability arising from poor asset condition and capacity issues at the existing University and Medical Centre zone substations and, therefore, will fully meet the safety and reliability test as soon as the works are completed. As the total expenditure in relation to shared assets meets the new facilities investment test, it can all be rolled into the regulatory capital base and does not require the contribution from the customer of \$0.41 million proposed by Western Power.

Incremental Revenue Test

Western Power's Assessment

48. Western Power has assessed the financial costs of bringing the investment forward by two years against the incremental revenue test.
49. Western Power considers there is sufficient incremental transmission revenue to fully offset the remaining cost of the transmission works (i.e. \$1.73 million). However, Western Power considers that the incremental revenue associated with the distribution works is not sufficient to cover the remaining cost of the distribution works costs (i.e. \$0.41 million).²³ Details of Western Power's assessment of incremental revenue are included in Appendix 4 of Western Power's application.

Considerations of the Authority

50. In its submission, Community Electricity supports Western Power's calculation of the incremental revenue on the basis that it has used its standard capital contributions spreadsheet and a 15 year term.
51. As noted above in relation to the safety and reliability test, the Authority has determined that all of Western Power's proposed transmission and distribution works (excluding customer connection costs) meet the safety and reliability test. As noted above, Western Power considered there was an amount that did not meet the safety and reliability test and as a result applied the incremental revenue test to the remaining costs. As the Authority has determined that all of the expenditure in relation to shared assets meets the safety and reliability test, the incremental revenue test is no longer relevant and, for that reason, the Authority has not given further consideration to it.

²³ 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 16.

Net Benefits Test

Western Power's Assessment

52. Western Power does not rely on the net benefits test in its assessment of whether the proposed works satisfies the new facilities investment test. Western Power considers that the forecast new facilities investment does not provide any quantifiable net benefit to network users. As a result, Western Power has not taken the net benefits test into consideration for this application.²⁴

Considerations of the Authority

53. As Western Power does not rely on the net benefits test to demonstrate that an amount of the total forecast costs of the proposed works satisfies section 6.52(b) of the new facilities investment test, and in light of the only submission received (Community Electricity) which supported Western Power's assessment, the Authority has not given further consideration to this matter.

²⁴ 19 November 2012, Western Power, *New Facilities Investment Test Application*, p. 16.