Draft Determination on the New Facilities Investment Test Application for Transmission Works to Supply the Binningup Desalination Plant

Submitted by Western Power

21 December 2010

Economic Regulation Authority
WESTERN AUSTRALIA

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DRAFT DETERMINATION

1. On 12 October 2010, 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 proposed by Western Power, for transmission works to supply electricity to the Binningup Desalination Plant ("**proposed transmission works**"), meets the new facilities investment test. The proposed transmission works are estimated to cost $52.63 million and involve the installation of a second 330/132 kV transformer at Kemerton Terminal and construction of a 132 kV transmission line to connect the desalination plant.

2. The proposed transmission works was the subject of an application made to the Authority in October 2009 for the Authority to waive the requirements for the application of the regulatory test under Chapter 9 of the Access Code.[2] The Authority subsequently waived the requirements for the regulatory test on the basis that the nature of the funding of the proposed transmission works would not cause a net cost to those who generate, transport and consume electricity in Western Power's covered network and any interconnected system.[3] The new facilities investment test is a separate test under the Access Code that requires a separate determination by the Authority.

3. 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 12 November 2010, with a closing date for submissions of 26 November 2010. 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.[4] No submissions were received.

4. For the new facilities investment test to be satisfied, the new facilities investment must not exceed the amount that would be invested by a service provider efficiently minimising costs and must satisfy at least one of the following conditions:

   - the investment generates enough revenue to cover the investment costs (the "incremental revenue" condition); or
   - the investment provides a net benefit to justify higher network tariffs (the "net benefits" condition); or

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[1] Western Power, 1 October 2010, Approval of New Facilities Investment: Installation of a second 330/132kV transformer at Kemerton Terminal and construction of a 132kV transmission line to supply Binningup Desalination Plant (hereafter referred to as "**new facilities investment test application**").

[2] Western Power, 7 October 2009, Request for Wavier of Regulatory Test: Installation of a second 330/132 kV transformer at Kemerton terminal and construction of a 132 kV transmission line to supply Binningup Desalination Plant.

[3] Economic Regulation Authority, 4 January 2010, Determination on an Application from Western Power to Waive the Regulatory Test for New Transmission Works to Supply the Binningup Desalination Plant.

[4] Economic Regulation Authority, 12 November 2010, Issues Paper: New Facilities Investment Test Application for Transmission Works to Supply the Binningup Desalination Plant Submitted by Western Power.

- the investment is necessary to maintain the safety or reliability of the network or its ability to provide network services (the "safety and reliability" condition).

5. After consideration of Western Power's new facilities investment application and independent advice from the Authority's technical advisor,[5] the Authority's draft determination is to not approve Western Power's application for the reason that Western Power's total forecast of new facilities investment (i.e. $52.63 million) exceeds the amount that would be invested by a service provider efficiently minimising costs. The Authority has estimated the efficient amount to be $50.53 million.

6. On the basis of the Authority's estimated efficient cost of $50.53 million, the Authority has determined an amount of up to $29.2 million may satisfy the new facilities investment test for reason of meeting the conditions of incremental revenue and safety and reliability.

REASONS

7. 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 transmission works; and
- the assessment of the proposed transmission 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

8. 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:
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> (a) it satisfies the new facilities investment test; or
>
> (b) the Authority otherwise approves it being adding *[sic]* to the capital base if:
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> (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.

[5] Geoff Brown & Associates Ltd.

9. 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:
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> (a) actual new facilities investment made by the service provider meets the test in section 6.51A; or
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> (b) forecast new facilities investment proposed by the service provider is forecast to meet the test in section 6.51A.
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> 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.[6]

The New Facilities Investment Test

10. 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:
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> (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;
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> 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
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> 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

[6] 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.

(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.

11. 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).

12. 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.

Western Power's Proposed Transmission Works

13. Western Power's proposed transmission works is required to connect the Water Corporation's second desalination plant in Binningup, approximately 50 km north of Bunbury.

14. The proposed transmission works include the installation of a second 330/132 kV transformer and construction of a 132 kV switchyard at Kemerton Terminal, and construction of a 10 km 132 kV transmission line to connect the Binningup Desalination Plant. The forecast capital cost for the proposed transmission works is $52.63 million; comprising four distinct components of work.

Component of Works	Estimated Cost
(1) Binningup 132kV substation works (with the identified as connection assets)	$3.30 million
(2) Binningup substation to Kemerton Terminal 132kV transmission line (with the assets identified as connection assets)	$16.53 million
(3) Kemerton Terminal connection of the 132kV transmission line (with the assets identified as connection assets)	$1.50 million
(4) Kemerton Terminal works including installation of a second 330/132 kV transformer and construction of a 132 kV switchyard (with the assets identified as shared network assets)	$31.30 million
TOTAL	**$52.63 million**

Assessment against the New Facilities Investment Test

15. Western Power submits that $31.30 million of the total forecast capital cost for the proposed transmission works satisfies the new facilities investment test. In reaching this position, Western Power gave separate consideration to the following three elements of the new facilities investment test, which are addressed in the remaining sections of this determination.

- The "efficiency test" under section 6.52(a) of the Access Code.
- The "safety and reliability test" under section 6.52(b)(iii) of the Access Code.

- The "incremental revenue test" under section 6.52(b)(i)A of the Access Code.

Efficiency Test

Western Power's Assessment

16. Western Power submits that to satisfy the efficiency test of section 6.52(a) of the Access Code it must:

    - ensure that the most appropriate option has been selected to meet the requirements associated with reasonable forecasts of growth of covered services;
    - demonstrate that the design and design standards are appropriate; and
    - demonstrate that the delivery cost of the new facility is efficient.

17. With respect to selecting the most appropriate option, Western Power submits that the choice of network option is analogous to the requirements of the regulatory test under Chapter 9 of the Access Code. The regulatory test is an assessment of whether a proposed major augmentation maximises the net benefit after considering alternative options. Where the regulatory test has been satisfied, then the best option has been determined having regard to all reasonable alternatives.[7]

18. With respect to demonstrating the appropriateness of design and design standards, Western Power relies on two key documents; the first, being a transmission design report for the project, and the second, being Western Power's transmission design standard (functional specifications). Western Power submits that the Kemerton Terminal works have been designed in accordance with Western Power's standard for 330/132 kV terminal stations.[8]

19. With respect to demonstrating efficient cost delivery, Western Power submits that it uses a suite of approaches to deliver projects to ensure an efficient cost is achieved. In particular, Western Power's "delivery portfolio" for the proposed transmission works consists of six delivery mechanisms, with preferred supplier contracts and competitive tenders comprising over half (56%) of the value of the proposed works (as indicated in the table below).[9]

[7] Western Power, New facilities investment test application, pages 9 – 10.

[8] Western Power, New facilities investment test application, pages 10 – 12.

[9] Western Power, New facilities investment test application, page 13.

Delivery Mechanism	Value	Percentage
Preferred supplier	$15.42 million	29%
Competitive tender	$13.96 million	27%
Western Power internal resource	$10.93 million	21%
Alliance delivery	$7.70 million	15%
Offsets and easements	$2.61 million	5%
Re-use of materials	$2.00 million	4%
TOTAL*	**$52.63 million**	**100%**

* totals may not add due to rounding

20. On the basis of the above assessments, Western Power submits that the total forecast cost of the proposed transmission works meets the efficiency test of section 6.52(a) of the Access Code.

Considerations of the Authority

21. In assessing whether the proposed transmission works meets the efficiency test of section 6.52(a) of the Access Code, the Authority has given consideration to the choice of project, identified aspects of the design standard and whether the forecast costs for the project are minimised.

Choice of project

22. On the choice of project, the Authority accepts that satisfaction of the regulatory test (through the Authority's determination to waive the requirements for the application of the regulatory test) is an adequate demonstration that the proposed transmission works represents an efficient choice of project.

Design standards

23. On the matter of design standards the Authority notes that the rating of the transformer to be installed at Kemerton Terminal is 490 MVA and will meet the central load forecast for the Bunbury load area until the year 2058. Western Power indicates in its new facilities investment test application that it has undertaken a specific net present cost analysis for this site, with the results suggesting that costs may be lower in the long run if a 250 MVA or 350 MVA transformer is installed. Western Power submits, however, that the cost difference is less than 10%, which does not provide sufficient justification to introduce a different size transformer from the standard 490 MVA transformers that are in service in all other (330 kV) terminal stations.[10]

24. Technical advice to the Authority[11] indicates that the design of the shared network component (i.e. the Kemerton Terminal works) appears reasonable, except for the capacity rating of the proposed new transformer to be installed, which appears to

[10] Western Power, New facilities investment test application, pages 11 – 12.

[11] Geoff Brown & Associates Ltd, 22 November 2010, Memorandum: Binningup Desalination Plant NFIT Application Review.

be high given Western Power's forecast demand growth. It is acknowledged that the selection of an appropriate power transformer rating is essentially an economic risk management problem with two possible outcomes:

- if the rating is too low and demand growth is higher than forecast, the long term costs of supply will increase due to additional augmentation costs; or
- if the rating is too high, there is a risk that customers will pay for capacity that is not required, particularly if forecast higher demand growth does not materialise.

25. The advice further notes that the New Zealand Commerce Commission does not currently allow power transformer capacity in excess of that required to meet forecast peak demand at the end of a ten year planning horizon, under contingency operating conditions, to be included in disclosed asset valuations of electricity distribution networks.[12]

26. With respect to Western Power's assessment and reasoning for the installation of a 490 MVA rated transformer (as summarised at paragraph 23), the technical advice indicates in principle agreement with Western Power's comments regarding standardisation, although unlike Western Power, the advice considers a 10% cost difference to be material. The advice further notes that while many utilities use a limited number of standard sizes across a range, Western Power appears to take a 'one size fits all' approach for 330/132 kV transformers by only using 490 MVA rated units. Transformers of this size are often greater than required for many situations and hence this 'one size fits all' approach could over time result in significant numbers of excessively sized transformers being installed on different parts of the network. Having regard to this, it may be beneficial for Western Power to consider whether there would be long term economic benefits in adopting a second standard size 330/132 kV transformer with a lower rating than 490 MVA.

27. In additional information to the Authority,[13] Western Power has provided further details of its specific net present cost analysis that was undertaken to assess the cost differences associated with the installation of a 250 MVA or 350 MVA transformer compared with the proposed 490 MVA transformer. The information indicates that the estimated cost of a 250 MVA transformer and 350 MVA transformer are 77% and 88% of the cost of a 490 MVA transformer respectively (excluding associated plant and overhead costs).

28. Taking into account the information provided by Western Power and technical advice obtained, the Authority considers that there may be additional scope for Western Power to improve the cost efficiency of its design standards by reassessing its 'one size fits all' approach to standardisation. In particular, the Authority notes the advice that suggests a more common approach to standardisation appears to involve the availability of a limited number of standard sizes across a particular range of equipment. The Authority believes that such an approach would facilitate network planning activities over a range of planning horizons and mitigate against potential over investment in capacity, which would occur in instances where higher forecast demand growth does not materialise, and would be consistent with a prudent service provider seeking to minimise costs.

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[12] New Zealand Commerce Commission, 31 August 2004, Handbook for Optimised Deprival Value of System Fixed Assets of Electricity Lines Businesses.

[13] Email from Western Power to the ERA of 6 December 2010.

29. For the purposes of applying the new facilities investment test, the Authority is of the view that the service provider should seek to achieve the most efficient investment cost that takes into account any benefits and the beneficiary of such benefits. The Authority observes that, from the information at hand, Western Power's preference for installing a 490 MVA transformer is focused around the configuration of other existing 330 kV terminal stations, the circumstances surrounding the existing configuration of the Kemerton Terminal, and its inventory strategy for terminal substations. Specifically, Western Power indicates that:

- All of Western Power's 330 kV terminal stations have 490 MVA transformers, with the exception of Kemerton Terminal.
- The existing Kemerton transformer is some 30 years of age and was sourced second hand from the Muja Power Station and hence was not designed for the long term load requirements of the terminal.
- Western Power's strategy is to rely on the full inter-changeability of transformer units to cover the risk of catastrophic failure, rather than carrying a spare transformer for terminal substations. The carrying cost of a spare 330 kV transformer is in the order of $1.5 million per annum. There is also some commercial advantage in carrying operational spares for only one standard type of transformer.[14]

30. Having regard to the above considerations, the Authority believes that Western Power has not provided sufficient evidence to demonstrate the design and cost efficiencies associated with its approach to using standard 490 MVA rated transformers for 330 kV terminal stations in situations where the load requirements could be met with a lower rated (250MVA or 350 MVA) transformer. Without further substantiation of the efficiency benefits associated with such an approach, the Authority believes it would be premature for it to make an assessment as to the appropriateness of Western Power's design standards for the purposes of the new facilities investment test. The Authority considers that such efficiency benefits could be demonstrated through, for example, a cost benefit analysis that validates the dynamic efficiency of the approach to the particular design and/or design standard.

Minimising project costs

31. On the minimisation of project costs, the Authority considers that this could be demonstrated in various ways, including:

- demonstrating the consistency of unit rates of construction with historical unit rates for the covered network and unit rates of similar works in other networks, taking into account trends in productivity improvements and underlying costs; and/or
- demonstrating that the procedures of construction planning, contracting and cost control are consistent with minimising costs.

32. Technical advice to the Authority[15] indicates that Western Power's new facilities investment test application contains limited information to support the estimated

[14] Western Power, New facilities investment test application, pages 11 – 12.

[15] Geoff Brown & Associates Ltd, 22 November 2010, Memorandum: Binningup Desalination Plant NFIT Application Review.

cost of the investment, making it difficult to properly verify whether or not the cost is reasonable. It is noted, however, that Western Power purchases most major primary substation equipment items through preferred supplier contracts, meaning that the costs of such major items should be accurately known. With respect to Western Power's planned project delivery for the investment, the advice indicates that Western Power has provided sufficient information to be satisfied that the delivered cost, assuming an efficient design, will be efficient.

33. Western Power has provided supplementary information to the Authority with respect to its delivery mechanisms; indicating that all materials and equipment to deliver the (Binningup desalination) project have been sourced in accordance with its corporate and procurement policies.[16] Additional information on each of its delivery mechanisms is also included and is summarised in the table below.

Delivery Mechanism	Summary / Description
Preferred supplier	Preferred supplier contracts cover nine categories of suppliers, with a total of 52 suppliers. Contracts established for procuring all commonly used plant and equipment items; involving service supplier accreditation and 'standing offers' (based on pre-agreed prices and conditions) with identified suppliers.
Competitive tender	Competitive tenders follow Western Power's approved procurement processes. Five contracts have been awarded for the provision of goods/services to complete required works for the desalination project.
Western Power internal resource	Internal labour resources are used wherever it is identified as most appropriate. Predominately this is in the areas of design, drafting, construction and contract management, general project administration for Western Power specific systems and software.
Alliance delivery	Alliance agreement was established in August 2007 (and reviewed in August 2010), with fixed term and extension option. Alliance is managed by Western Power's Strategic Sourcing division/branch and is available to cover whole-of-business procurement needs. Parties to the alliance have agreed to no litigation or arbitration; any disputes are managed internally.
Offsets and easements	All environmental considerations and decisions are auditable by the relevant assessment agency (State and Federal) and Western Power must comply. The decisions, approvals and requirements for the desalination project cover site clearing, re-vegetation and rehabilitation works, fauna (bird) impacts and regulatory processes.
Re-use of materials	Involves the re-use of available equipment and plant that was designed/ procured for other projects that have since been cancelled/ deferred. Pre-ordered steel poles from a cancelled transmission project are being modified for re-use to complete required transmission line work for the desalination project.

34. Having regard to technical advice and additional information provided by Western Power on its delivery mechanisms, the Authority considers that Western Power has adequate delivery processes and procedures in place, which should facilitate an investment that does not exceed an amount that would be invested by a service provider efficiently minimising costs. In particular, the Authority notes that Western Power will use preferred supplier contract and competitive tender mechanisms to deliver over half the total value of the investment (i.e. $29.38 million or approximately 56%, as indicated at paragraph 19). The Authority accepts that such delivery mechanisms, if periodically reviewed and maintained to reflect current

[16] Email from Western Power to the ERA of 13 December 2010.

market conditions, are consistent with minimising costs and are likely to result in efficient investment costs.

Amount satisfying the efficiency test

35. Taking the above considerations into account, and in particular the considerations with regard to design standards, the Authority believes that there are potential cost efficiencies of up to $2.1 million to be achieved for the proposed transmission works. The Authority therefore considers that Western Power's total forecast cost of $52.63 million exceeds the amount that would be invested by a service provider efficiently minimising costs and hence does not meet the requirement of the efficiency test of section 6.52(a) of the Access Code.

36. On the basis of information provided by Western Power and technical advice, the Authority considers that a cost that would be consistent with the requirement of the efficiency test would be in the order of $50.53 million as indicated in the table below.

Amount invested by a service provider efficiently minimising costs ($ million)	Western Power's Assessment	Authority's Draft Decision
(1) Binningup 132kV substation works	3.30	3.30
(2) Binningup 132kV transmission line	16.53	16.53
(3) Kemerton Terminal connection	1.50	1.50
(4) Kemerton Terminal works	31.30	29.20
TOTAL	**52.63**	**50.53**

Safety and Reliability Test

Western Power's Assessment

37. Western Power relies on the safety and reliability test (as well as the incremental revenue test) to demonstrate that an amount of the total forecast cost of the proposed transmission works satisfies section 6.52(b) of the new facilities investment test.

38. Western Power submits that, with natural load growth, an upgrade of the Kemerton Terminal would be required by the year 2013. Western Power is of the view that at this time the upgrade works would meet the requirements of the safety and reliability test, as the upgrade would be necessary to maintain the safety and reliability of supply for customers supplied by the Kemerton Terminal.[17]

39. In order to connect the desalination plant and to meet the customer's (i.e. the Water Corporation) timing requirements, however, the Kemerton Terminal upgrade must be brought forward from 2013 to 2011. Western Power has established that the net present cost incurred of bringing the works forward from 2013 to 2011 to be

[17] Western Power, New facilities investment test application, page 14.

$6 million. Hence, the cost of advancing the Kemerton Terminal upgrade is estimated to be in the order of $6 million.

40. Western Power indicates that the option of advancing (or "bringing forward") the Kemerton Terminal upgrade is a direct result of the load requirements of the Binningup Desalination Plant and as such the brought forward costs (i.e. $6 million) should be allocated to and recovered from the customer (Water Corporation). Western Power submits that the remaining cost associated with the upgrade works of $25.3 million (i.e. $31.3 million minus $6 million) satisfies the requirements of the safety and reliability test.

Considerations of the Authority

41. The Authority notes the load forecasts provided by Western Power in its new facilities investment test application, which indicate that the capacity of the existing network, in the Bunbury load area, will be exceeded with natural load growth by the summer period in 2013/14.[18] Western Power contends that network upgrades to the Kemerton Terminal at this time would meet the safety and reliability test because the upgrades would be necessary to maintain the safety and reliability of supply. The requirement to upgrade the Kemerton Terminal is brought forward to 2011, however, as a result of the load and timing requirements of the customer (Water Corporation).

42. Technical advice to the Authority indicates that the information provided by Western Power is insufficient to accurately verify whether the timing of this investment is reasonable.[19] However, the advice concludes that there is no reason to assume that the timing is unreasonable, noting that planning studies are complex as the timing of new projects is often determined by the dynamic behaviour of the network under different generation dispatch scenarios, rather than the thermal capacity of the network under steady state operation.

43. In a confidential spreadsheet provided to the Authority,[20] the Authority observes that Western Power's forecast natural load growth over the 20 year period from 2009 to 2028 for the Bunbury load area averages three per cent per annum. This compares with an average five per cent actual load growth over the ten year period from 1999 to 2008. Furthermore, it is observed that the time at which Western Power determines the capacity of the network to be exceeded, with and without the desalination plant, is based on various load flow simulations.

44. Taking the above matters into account, the Authority accepts that there are complexities involved when undertaking electricity network planning studies, due to the dynamic nature of the electricity system, and that the timing of projects (investments) is likely to be affected by the nature of the particular studies undertaken. Given this, and based on technical advice, the Authority is broadly satisfied that Western Power has undertaken reasonable steps to determine that an investment to upgrade the Kemerton Terminal is required in 2013/14, by using realistic natural load growth assumptions and various load flow simulations that

[18] Western Power, New facilities investment test application, Attachment 1: pages 5 – 7.

[19] Geoff Brown & Associates Ltd, 22 November 2010, Memorandum: Binningup Desalination Plant NFIT Application Review.

[20] Western Power, "WE_n7618748_v1_Binningup load forecast data".

include and exclude the desalination plant load requirements. The Authority therefore accepts Western Power's assessment that network upgrades to the Kemerton Terminal would be required in 2013/14 (in the absence of the desalination plant) and would at this time meet the safety and reliability test as the upgrades would be necessary to maintain the safety and reliability of supply to the Bunbury load area.

45. The Authority has examined Western Power's assessment of the cost incurred in bringing the forward the upgrades to Kemerton Terminal from 2013 to 2011 (i.e. $6 million), and hence the amount of new facilities investment to satisfy the safety and reliability test (i.e. the remaining cost of $25.3 million). On basis of information provided by Western Power, in a confidential spreadsheet,[21] the Authority is satisfied that Western Power's calculation of the "brought forward costs" is reasonable.

46. Consistent with the Authority's decision regarding an amount that would be invested by a service provider efficiently minimising costs (refer paragraph 35 and following), the Authority has recalculated the cost incurred in bringing forward the Kemerton Terminal upgrade from 2013 to 2011, and hence the amount of new facilities investment that may satisfy the safety and reliability test. On the basis of an estimated efficient cost of $29.2 million for the Kemerton Terminal works and using Western Power's calculation method, the Authority has determined the brought forward cost to be $5.6 million and hence has determined the amount that may satisfy the safety and reliability test to be $23.6 million.

Incremental Revenue Test

Western Power's Assessment

47. As mentioned above, Western Power relies on the incremental revenue test (as well as the safety and reliability test) to demonstrate that an amount of the total forecast cost of the proposed transmission works satisfies section 6.52(b) of the new facilities investment test.

48. Western Power has calculated the net present value of the incremental revenue that will arise from the connection of the Binningup Desalination Plant over a 15 year period. In its calculation Western Power has estimated tariff revenue to be $890,000 per annum and has assumed flat real network access prices from the date of commissioning and a real discount rate of 7.98%.[22]

49. Western Power submits that the incremental revenue will be sufficient to cover the $6 million expenditure to upgrade the Kemerton Terminal, which does not meet the safety and reliability test. The $6 million associated with bringing forward the Kemerton Terminal upgrade is therefore assessed by Western Power to meet the requirements of the incremental revenue test.

[21] Western Power, "WE-6368552v5 Binningup capcon calculator".

[22] Western Power, New facilities investment test application, page 14.

Considerations of the Authority

50. The Authority has considered Western Power's claim the incremental revenue that will arise from the connection of the desalination plant will be sufficient to cover the $6 million expenditure to upgrade the Kemerton Terminal, which does not meet the safety and reliability test.

51. Advice from the Authority's technical advisor notes that Western Power has used a discounted cash flow model to determine whether the incremental revenue test is satisfied, and that this model relies on the following parameters:

- an estimated capital cost for the Kemerton Terminal upgrade works of $31.3 million;
- a discount rate of 7.98%, which is the real pre-tax weighted average cost of capital used in Western Power's access arrangement for the second access arrangement period;
- an annual maintenance cost of 2.46% of the incremental capital cost of advancing the upgrade works (i.e. the brought forward costs) to Kemerton Terminal;
- a 15 year analysis timeframe; and
- annual revenue from the customer (Water Corporation) of $890,454.

52. The technical advice indicates that:[23]

- There is insufficient information to assess whether the estimated capital cost of $31.3 million is reasonable, noting that a lower capital cost will increase the margin by which the investment passes the test. It is estimated that the capital cost would need to exceed $33 million for the investment to not meet the requirements of the incremental revenue test.
- The annual maintenance cost of 2.46% of the incremental capital cost of advancing the upgrade works to Kemerton Terminal appears reasonable.
- There may be slight timing issues as the model assumes that the investment will be advanced by three years, whereas Western Power's new facilities investment test application indicates a two-year advancement period. It is noted that if the model is amended to be consistent with the application this will increase the margin by which with investment satisfies the incremental revenue test.
- The model does not take into account the maintenance cost of the connection asset components of investment (i.e. those assets to be used only by the customer), which are real costs and, if included in the model, could result in the investment not satisfying the incremental revenue test. It is noted that Western Power has indicated, in additional information,[24] that these operation and maintenance costs will be recovered through a 'customer specific charge'.

[23] Geoff Brown & Associates Ltd, 22 November 2010, Memorandum: Binningup Desalination Plant NFIT Application Review.

[24] Email from Western Power to the ERA of 29 November 2010.

53. Having regard to the above matters, the technical advice concludes that the shared network component (i.e. the Kemerton Terminal works) of the investment would appear to meet the requirements of the incremental revenue test, provided there is a provision for the recovery of costs for maintaining the connection assets that will be constructed.

54. With regards to the estimated capital cost of $31.3 million, the Authority has given consideration to the reasonableness of costs in assessing Western Power's proposed investment against the requirements of the efficiency test at paragraph 21 and following of this decision.

55. With regards to the annual maintenance cost of 2.46%, the Authority notes the technical advice which indicates that this appears reasonable. In further information provided to the Authority,[25] Western Power indicates that the annual maintenance cost percentage is stated in Appendix A of the *Price List Information* that forms part of Western Power's access arrangement. As noted by Western Power, the current percentage applicable to its approved access arrangement for the second access arrangement period (2009/10 to 2011/12) is 2.1%, with the 2.46% being the percentage that applied for the first access arrangement period (2006/07 to 2008/09) and the time at which negotiations with the Water Corporation commenced. Western Power acknowledges that it may be more appropriate to use the current 2.1%, but believes that the impact of this is not material. The Authority observes that a lower percentage charge would decrease the annual maintenance cost and result in additional incremental revenue to Western Power, and hence concurs with Western Power's assessment.

56. With regards to the timing assumptions used in Western Power's discounted cash flow model, the Authority notes the possible timing issues as indicated in the technical advice. Having regard to this advice, the Authority does not consider this to be a significant issue and observes that the different timing assumptions could arise from different interpretations concerning the summer peak load for 2013/14. That is, the summer peak load in 2013/14 could be assumed to occur in either 2013 (December) or 2014 (January or February), which would result in an advancement period to 2011 of either two or three years respectively.

57. With regards to the maintenance cost of the connection asset components, and as noted in the technical advice, Western Power indicates that these maintenance costs will be recovered through a 'customer specific charge'. In additional information to the Authority,[26] Western Power submits that the calculation of the customer specific charge is done in accordance with Appendix A of the *Price List Information* in Western Power's access arrangement. The Authority observes that this process is the same process used by Western Power to determine the annual maintenance cost for the shared asset components (as discussed at paragraph 55 above).

58. Further to the matters identified by the Authority's technical advisor, the Authority observes that Western Power has, in its incremental revenue calculation, only given consideration to the incremental revenue to be recovered over a 15 year period. Having regard to the expected life of network transmission assets and expected operating life of a desalination plant, the Authority considers that it would be

[25] Email from Western Power to the ERA of 2 December 2010.

[26] Email from Western Power to the ERA of 1 December 2010.

reasonable to consider the incremental revenue over a longer period than 15 years. The Authority notes, however, in this instance that there is sufficient incremental revenue over a 15 year period to cover the $6 million expenditure to upgrade the Kemerton Terminal, which does not meet the safety and reliability test (i.e. the "brought forward cost"). Increasing the period over which the incremental revenue is calculated would, in this instance, have no impact on the outcome of the incremental revenue test. In noting this, the Authority has examined Western Power's incremental revenue calculation by reviewing confidential spreadsheets that were provided.[27] The Authority is satisfied that Western Power's calculation of incremental revenue (as summarised in Appendix 2 of Western Power's new facilities investment test application) is reasonable.

59. As indicated at paragraph 46 of this draft decision, the Authority has recalculated the brought forward costs for the Kemerton Terminal upgrade to be $5.6 million, which is lower than the brought forward costs contained in Western Power's new facilities investment test application. Reducing the brought forward costs would, in this instance, increase the margin by which the incremental revenue test satisfied (i.e. a shorter period of time is needed to recover the brought forward costs).

Net Benefits Test

Western Power's Assessment

60. Western Power does not rely on the net benefits test in its assessment of whether the proposed transmission works satisfies the new facilities investment test. In particular, Western Power considers that the proposed investment does not provide any quantifiable net benefit to network users at this point in time as the investment is to provide for the connection of a single customer and would not be required otherwise.[28]

Considerations of the Authority

61. As Western Power does not rely on the net benefits test to demonstrate that an amount of the total forecast cost of the proposed transmission works satisfies section 6.52(b) of the new facilities investment test, and in light of no public submissions, the Authority has not given consideration to this matter.

Total satisfying the New Facilities Investment Test

62. For the new facilities investment test to be satisfied, the new facilities investment must satisfy the efficiency test (section 6.52(a) of the Access Code) and one or more of the other tests specified in section 6.52(b) of the Access Code (i.e. the incremental revenue test, net benefits test or safety and reliability test).

63. On the basis of the above considerations, the Authority has determined that an amount of up to $29.2 million may satisfy the new facilities investment test, as indicated in the table below.

[27] Western Power, "WE-6368552v5 Binningup capcon calculator" and "WE-7040460v1 Binningup tariff calculator".

[28] Western Power, New facilities investment test application, page 13.

Amount Satisfying the New Facilities Investment Test	Western Power's Assessment	Authority's Draft Decision
Section 6.52(a) – *"Efficiency Test"*	**$52.63 million**	**$50.53 million**
Section 6.52(b) – Other Tests		
"Incremental Revenue Test" (section 6.52(b)(i)A)	$6 million	$5.6 million
"Net Benefits Test" (section 6.52(b)(ii))	Not relied on in assessment	Not assessed
"Safety and Reliability Test" (section 6.52(b)(iii))	$25.3 million	$23.6 million
Sub-total of Other Tests	**$31.3 million**	**$29.2 million**
TOTAL	**$31.3 million**	**$29.2 million**