

# Western Power's Regulatory Test Application for the Perth CBD: Hay/Milligan Supply Reinforcement Investment

Final Determination

21 November 2017

Economic Regulation Authority

WESTERN AUSTRALIA

## Economic Regulation Authority

4<sup>th</sup> Floor Albert Facey House  
469 Wellington Street, Perth

**Mail to:**

Perth BC, PO Box 8469  
PERTH WA 6849

**T:** 08 6557 7900

**F:** 08 6557 7999

**E:** [records@erawa.com.au](mailto:records@erawa.com.au)

**W:** [www.erawa.com.au](http://www.erawa.com.au)

National Relay Service TTY: 13 36 77  
(to assist people with hearing and voice impairment)

We can deliver this report in an alternative format for those with a vision impairment.

© 2017 Economic Regulation Authority. All rights reserved. This material may be reproduced in whole or in part provided the source is acknowledged.

## Contents

<b>FINAL DETERMINATION</b>	<b>1</b>
<b>REASONS</b>	<b>3</b>
The Regulatory Test	3
Western Power's Major Augmentation Proposal	5
Public Consultation Undertaken by Western Power	7
Requirements of the Access Code	7
Western Power's Consultation	7
Considerations of the ERA	9
Identification of Options	10
Requirements of the Access Code	10
Options Identified by Western Power	10
Considerations of the ERA	14
Assessment of Net Benefits	15
Requirements of the Access Code	15
Western Power's Assessment of Net Benefits	15
Considerations of the Authority	16

## Tables

<b>Table 1</b>	<b>Reproduction of Western Power's Financial Assessment and Network Capacity Benefit Table</b>	12
<b>Table 2</b>	<b>Reproduction of Western Power's Cost Breakdown for Development Strategy 3</b>	14

## FINAL DETERMINATION

1. On 19 September 2017, the Economic Regulation Authority (ERA) received a major augmentation proposal from Western Power submitted under section 9.15 of the Electricity Networks Access Code 2004. Western Power proposes installing a new 132 kV transmission cable between the Hay Street and Milligan Street substations. The project is the first stage of a development program to upgrade the transmission substation assets serving the Perth CBD.
2. As part of its assessment of the major augmentation proposal, the ERA undertook public consultation as provided for under section 9.19 of the Access Code. The ERA prepared an issues paper on the major augmentation proposal to assist interested parties in understanding Western Power's proposal. The invitation for submissions was published by the ERA on 29 September 2017 with a closing date for submissions of 13 October 2017. No submissions were received.
3. To assist with its assessment of Western Power's major augmentation proposal, the ERA commissioned independent technical advice from Geoff Brown and Associates.
4. Having regard to Western Power's major augmentation proposal and the independent advice from Geoff Brown, the ERA has determined, pursuant to section 9.18 of the Access Code, that the regulatory test as defined in sections 9.3 and 9.4 and applied in accordance with section 9.20 of the Access Code is satisfied, in that:
  - Western Power has made a defensible statement under section 9.16(b) of the Access Code that the proposed transmission line maximises the net benefits after considering alternative options;
  - Western Power has applied the regulatory test properly to the proposed transmission cable –
    - using reasonable market development scenarios which incorporate varying levels of demand growth at relevant places, and
    - using reasonable timings, and testing alternative timings, for project commissioning dates and construction timetables for the major augmentation and for alternative options; and
  - Western Power has conducted a consultation process that meets the requirements of section 9.16(c) of the Access Code.
5. The regulatory test is not a determination of whether the proposed costs for the cable are efficient and can be passed on to customers. It only determines whether Western Power has demonstrated that the cable maximises the net benefit compared with other options and is now able to “commit<sup>1</sup>” to the project.

---

<sup>1</sup> Section 9.5 of the Code defines commit as being, when the service provider begins to put its intention into effect by doing an act that is more than merely preparatory, including making a substantial financial commitment such as a significant obligation that is legally binding or would have significant commercial repercussions if cancelled, discontinued or dishonoured. Section 9.6 states it does not include undertaking preparatory system or other studies, engaging in preparatory planning, design or costing activities or obtaining an approval, unless the approval comes within the description of section 9.5.

6. This determination has also only considered whether the proposed cable meets the regulatory test and is not an “approval” of the other elements of Western Power’s program to upgrade the assets serving the Perth CBD.
7. The ERA will assess the proposed expenditure for the total program, including the transmission cable, during its review of Western Power’s proposed revisions to its access arrangement, which is currently in progress.<sup>2</sup> The ERA will determine whether the proposed expenditure is reasonably expected to satisfy the new facilities investment test<sup>3</sup> and can be included in the forward looking efficient cost of providing covered services.
8. In particular, although the ERA considers the proposed cable satisfies the regulatory test requirement, the size of the cable Western Power has proposed may be larger than is required. If this is the case, it will not meet the efficiency test and some of the expenditure may need to be excluded from the regulated asset base.

---

<sup>2</sup> Details of the ERA’s review of Western Power’s proposed revisions to its access arrangement can be found here <https://www.erawa.com.au/electricity/electricity-access/western-power-network/access-arrangement/access-arrangement-period-2017-2022>

<sup>3</sup> The new facilities investment test is set out in section 6.52 of the Access Code. To satisfy the test, expenditure must not exceed the amount that would be invested by a service provider efficiently minimising costs having regard to:

- whether the expenditure exhibits economies of scale or scope and the increments in which capacity can be added; and
- 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 one or more of the following conditions must be satisfied:

- the anticipated incremental revenue for the new facility is expected to at least recover the new facilities investment; or
- 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
- the new facility is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services.

## REASONS

10. The ERA's determination on the major augmentation proposal is limited to the scope of the regulatory test under Chapter 9 of the Access Code and addresses the question of whether the proposed transmission line maximises the net benefit to generators, transporters and consumers of electricity after consideration of other options for meeting demands for electricity services and addressing constraints in the electricity system.
11. The ERA has considered the following matters to make its determination:
  - the requirements for the regulatory test under Chapter 9 of the Access Code;
  - the need for, and stated objectives of, Western Power's proposed transmission line;
  - the adequacy of consultation undertaken by Western Power;
  - the identification of other options to the proposed 132 kV transmission cable; and
  - the assessment of the relative net benefits of Western Power's proposed 132 kV transmission cable and other options.

## The Regulatory Test

12. Chapter 9 of the Access Code establishes the regulatory test that is applied to proposals for major augmentations<sup>4</sup> of a covered network.
13. The purpose of the regulatory test is to determine whether a proposed major augmentation to an electricity transmission and/or distribution network is the best way of overcoming constraints in the wider electricity system, taking into account alternative means of overcoming the constraints, such as, alternative network investments, investment in generation or the management of electricity demand.
14. A service provider must not commit to a major augmentation before the ERA determines, or is deemed to determine, that the regulatory test is satisfied.

### Regulatory Test Process

15. The process commences with the service provider submitting a "major augmentation proposal" to the ERA. This may occur either:
  - under section 9.10 of the Access Code, with the major augmentation proposal submitted as part of a proposed access arrangement, and the Authority's determination of whether the regulatory test is satisfied forming part of the Authority's decision on the proposed access arrangement; or
  - under section 9.15 of the Access Code, with a major augmentation proposal submitted other than as part of a proposed access arrangement and the Authority's determination on whether the regulatory test is satisfied being a determination separate from the approval proposal for an access arrangement.

---

<sup>4</sup> A major augmentation is defined as an augmentation to the transmission network greater than \$36.7 million or the distribution network greater than \$12.2 million.

16. Western Power's proposal has been submitted under the second of these two processes.
17. Section 9.16 of the Access Code establishes the requirements for a major augmentation proposal submitted to the ERA other than as part of a proposed access arrangement:
- 9.16 A major augmentation proposal submitted under section 9.15:
- (a) must describe in detail each major augmentation to which the major augmentation proposal relates; and
  - (b) must state that, in the service provider's view, each proposed major augmentation maximises the net benefit after considering alternative options; and
  - (c) must demonstrate that the service provider has conducted a consultation process in respect of each proposed major augmentation which:
    - (i) included public consultation under Appendix 7; and
    - (ii) gave all interested persons a reasonable opportunity to state their views and to propose alternative options to the proposed major augmentations, and that the service provider had regard to those views and alternative options; and
    - (iii) involved the service provider giving reasonable consideration to any information obtained under sections 9.16(c)(i) and 9.16(c)(ii) when forming its view under section 9.16(b);
 and
  - (d) must comply with the current requirements published under section 9.17.
  - (e) may include a request that the Authority give prior approval under section 6.72 in respect of the new facilities investment for one or more proposed major augmentations.
18. "Alternative options" and "net benefit", referred to in section 9.16(b), are defined under Chapter 1 of the Code:
- 1.3 "alternative options", in relation to a major augmentation, means alternatives to part or all of the major augmentation, including demand-side management and generation solutions (such as distributed generation), either instead of or in combination with network augmentation.
- ...
- "net benefit" means a net benefit (measured in present value terms to the extent possible) to those who generate, transport and consume electricity in (as the case may be):
- (a) the covered network; or
  - (b) the covered network and any interconnected system.

### Satisfying the Regulatory Test

19. For a major augmentation proposal submitted to the ERA other than as part of a proposed access arrangement, the requirements for satisfying the regulatory test are set out in section 9.20 of the Access Code.
- 9.20 The test in this section 9.20 is satisfied if the Authority is satisfied that:
- (a) the service provider's statement under section 9.16(b) is defensible; and
  - (b) the service provider has applied the regulatory test properly to each proposed major augmentation:

- (i) using reasonable market development scenarios which incorporate varying levels of demand growth at relevant places; and
  - (ii) using reasonable timings, and testing alternative timings, for project commissioning dates and construction timetables for the major augmentation and for alternative options;
- and
- (c) the consultation process conducted by the service provider meets the criteria in section 9.16(c).

### Regulatory Test Assessment

20. Section 9.18 of the Access Code establishes the timeframes for a determination by the ERA on whether the regulatory test is satisfied or not satisfied:
- 9.18 The Authority must in respect of a major augmentation proposal submitted under section 9.15 make and publish a determination whether the test in section 9.20 is satisfied or not satisfied, and must do so:
- (a) if the Authority has consulted the public under section 9.19 – within 45 business days; and
  - (b) otherwise – within 25 business days, after receiving the augmentation proposal.
21. If the ERA has not made a determination within the time limits under section 9.18 of the Access Code, the ERA is deemed, under section 9.22 of the Access Code, to have determined that the regulatory test is satisfied.
22. The role of the ERA is to consider the information provided by a service provider in the major augmentation proposal and to determine whether the regulatory test set out in section 9.20 of the Access Code is satisfied. Section 9.21 of the Access Code places the onus on the service provider to demonstrate that the regulatory test is satisfied.
- 9.21 If the Authority is unable to determine whether the test set out in section 9.20 is satisfied or is not satisfied because the service provider has not provided adequate information (despite the Authority having notified the service provider of this fact and given the service provider a reasonable opportunity, having regard to the time periods specified in section 9.18, to provide adequate information), then the Authority may determine that the test in section 9.20 is not satisfied.
23. The ERA's role ends with the determination of whether the regulatory test is satisfied or not satisfied. If the latter determination is made, the ERA does not have a role to amend the major augmentation proposal or to make any determination on the alternative option that may maximise net benefits.

### Western Power's Major Augmentation Proposal

24. Western Power is proposing to install a new 132 kV transmission cable between the Hay Street (HAY) and Milligan Street (MIL) substations which are located within the Perth CBD boundary as defined in the Western Power Technical Rules.
25. The installation of the transmission cable forms part of Western Power's broader East Perth and Perth CBD load area strategy over the next 25 years. Western Power states its strategy addresses:

“... the deteriorated condition of assets in the EP and CBD load area requiring mitigation as soon as practicable, but at least within the next 5 years. This will be staged and driven by the severity of the asset conditions. Some of the other critical assets that are required to be addressed within the 10 year planning horizon are the:

- Switchboards at HAY, F and MIL substations
- Transformers at F and W substations
- Transmission cables between EP and W substations.

The installation of the 132 kV transmission cable between HAY and MIL substations is the first critical investment as part of the recommended development strategy that provides the pathway towards mitigating the deteriorated assets in the EP and CBD load area.”<sup>5</sup>

26. Western Power describes the main elements for its proposed 132kV transmission cable as being:

- “The installation of a new 132 kV transmission cable between Hay Street (HAY) and Milligan Street (MIL) substations.
- The installation of associated equipment at HAY and MIL substations to enable the connection of the new cable.
- The upgrade of assets at HAY, MIL and neighbouring substations to withstand the increased fault levels (that result following the installation of the proposed 132 kV transmission cable).
- Facilitating the future decommissioning of Forrest Avenue [F], Wellington Street [W] and East Perth 66 kV substations.”<sup>6</sup>

27. Western Power considers the proposed 132 kV cable:

“... addresses the deteriorated condition of assets in the East Perth (EP) and Central Business District (CBD) load areas, the treatment of which will also achieve compliance with the Perth CBD Criterion of the Technical Rules and provide a capacity benefit to the Perth CBD boundary (predominantly supplied by Hay Street (HAY) and Milligan Street (MIL) substations.”<sup>7</sup>

28. The forecast cost of the proposed 132 kV transmission cable is \$38.5 million in nominal dollars, which Western Power states includes project on costs and risk allowances. As noted above, the cable is the first part of Western Power’s development strategy for the East Perth and Perth CBD load area. Western Power has forecast a total cost, in net present value terms, of \$128.2 million for the development strategy. A breakdown of the costs is included in **Table 2** below.

29. Although Western Power considers the cable is required to address the deteriorated condition of assets, it also increases the capacity of the network and as the forecast cost is greater than \$36.7 million, it meets the definition of a major augmentation. Consequently, Western Power has submitted a regulatory test application.

---

<sup>5</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 3.

<sup>6</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 3.

<sup>7</sup> Major Augmentation Proposal – Options Paper - Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 4 August 2017, p. 6.

## Public Consultation Undertaken by Western Power

### *Requirements of the Access Code*

30. The requirements for Western Power to undertake public consultation on the major augmentation proposal are set out in section 9.16(c) of the Access Code:
- 9.16 A major augmentation proposal submitted under section 9.15:
- ...
- (c) must demonstrate that the service provider has conducted a consultation process in respect of each proposed major augmentation which:
- (i) included public consultation under Appendix 7; and
  - (ii) gave all interested persons a reasonable opportunity to state their views and to propose alternative options to the proposed major augmentations, and that the service provider had regard to those views and alternative options; and
  - (iii) involved the service provider giving reasonable consideration to any information obtained under sections 9.16(c)(i) and 9.16(c)(ii) when forming its view under section 9.16(b);
- ...
31. Appendix 7 of the Access Code imposes the following requirements on Western Power in undertaking consultation on a major augmentation proposal:
- publication of an invitation for submissions (section A7.6);
  - specification of the length of time allowed for the making of submissions that must be at least 10 business days and no greater than 20 business days (sections A7.7 and A7.9); and
  - publication of submissions (section A7.20).
32. Appendix 7 would also allow, but not require, Western Power to:
- produce and publish an issues paper examining the issues relating to the major augmentation proposal (section A7.4);
  - consider any submissions made after the time for making submissions has expired (section A7.21).

### *Western Power's Consultation*

33. Western Power prepared an options paper on the proposed major augmentation proposal. The options paper was released for public consultation on Western Power's website on 17 July 2017 with the submission period closing on 7 August 2017.
34. Western Power notes:
- "The consultation process included direct invitations to submit comments through forums, email or by mail. The stakeholders invited included key industry representatives, major customers, State Government agencies and the broader community. In total, 53 people were directly invited. Advertising in The West

Australian and Perth Voice, social media including Facebook posts (targeted those who live and work in the Perth CBD), a Twitter post and a LinkedIn post, as well as information on the Western Power website and notices and information published by the ERA encouraged the broader community to make submissions.”<sup>8</sup>

35. Western Power held two community forums on 1 August:

“The morning session catered to the key stakeholders (such as CoP [City of Perth], Metropolitan Redevelopment Authority, Public Transport Authority, Main Roads and Venues West) with whom Western Power had already commenced preliminary engagement for pre-approvals and endorsements for the recommended 132 kV transmission cable route. The afternoon session catered to the general public and other stakeholders (such as Royal Perth Hospital) with whom Western Power has not previously engaged on this investment proposal.”<sup>9</sup>

36. Fifteen people attended the forums (11 in the morning and four in the afternoon). Staff from the ERA also attended as observers. Western Power notes the feedback and comments provided at these sessions were treated as submissions at the attendees’ request. Western Power also received two email submissions from the general public.

37. Western Power notes all submissions received and Western Power’s responses to those submissions is summarised in Attachment 2, *Response to Submissions*, of its application.

38. Western Power described the methodology it used to deal with the information obtained and how regard was given to any alternative options proposed and issues raised during the consultation process as follows:

... the methodology adopted was to:

- Accept all information received
- Review the validity and relevance of the information in relation to the proposal
- Identify opportunities to incorporate the new information and issues in the proposal
- Examine the alternative options with the original proposal against the key criteria/requirements for the augmentation.

Based on this analysis, Western Power determined how the information/issues/options would be incorporated and considered as part of the overall EP and CBD investment pathway.

Where information/issues/options were not considered appropriate, justification was provided.”<sup>10</sup>

39. Western Power concludes:

“Having considered all the submissions and comments received during the consultation phase, Western Power does not propose to make any modifications to

<sup>8</sup> Major Augmentation Proposal –Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 10.

<sup>9</sup> Major Augmentation Proposal –Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 4 August 2017, p. 11.

<sup>10</sup> Major Augmentation Proposal – Response to Submissions – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 15 August 2017, p. 6.

the original recommendation (development Strategy 3). Accordingly, Western Power submits Strategy 3 as the preferred option to the ERA for regulatory test approval.”<sup>11</sup>

### **Considerations of the ERA**

40. The ERA is required to determine whether it is satisfied that Western Power has undertaken consultation in accordance with the requirements of section 9.16(c) of the Access Code; in particular:
  - whether Western Power undertook consultation in accordance with the generic guidelines for consultation under Appendix 7 of the Access Code;
  - whether Western Power gave all interested parties a reasonable opportunity to state their views and to propose options to the proposed major augmentation;
  - whether Western Power has had regard to the views and options put forward by interested parties; and
  - whether Western Power has given reasonable consideration to information obtained from interested parties through the consultation process.
41. The ERA has reviewed the approach adopted by Western Power for its consultation process and the submissions it received. As noted above, staff from the ERA attended the community forums as observers.
42. Options suggested by stakeholders during Western Power’s consultation included:
  - incorporating distributed grid storage; and
  - integrating work with other utilities such as Water Corporation, Main Roads or the NBN.
43. The ERA has reviewed the responses provided by Western Power and any further correspondence it had with stakeholders.<sup>12</sup> The ERA considers Western Power’s responses were satisfactory and that stakeholders acknowledged their issues were properly considered.
44. The ERA also undertook its own consultation process, which provides further evidence of the effectiveness of Western Power’s consultation. The fact that no submissions were received indicates stakeholders were satisfied with the consultation undertaken by Western Power and that any issues raised with Western Power had been dealt with satisfactorily.
45. Taking into account the information and submissions on the consultation program undertaken by Western Power, the ERA is satisfied that Western Power has complied with the general requirements for consultation under Appendix 7 of the Access Code, and the specific requirements of section 9.16(c)(ii) of the Access Code, to give all interested persons a reasonable opportunity to state their views and to propose alternative options to the proposed transmission line.
46. The ERA is satisfied that Western Power has given reasonable consideration to information obtained through its consultation process and accordingly, the ERA is

---

<sup>11</sup> Major Augmentation Proposal –Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 12.

<sup>12</sup> As set out in Attachment 2 of Western Power’s application.

satisfied that Western Power has conducted a consultation process in accordance with the requirements of section 9.16(c) of the Access Code.

## Identification of Options

### *Requirements of the Access Code*

47. Under section 9.16(b) of the Access Code, Western Power is required to have considered “alternative options” to the proposed transmission line.
48. “Alternative options” is defined under Chapter 1 of the Access Code:
- “alternative options”, in relation to a major augmentation, means alternatives to part or all of the major augmentation, including demand-side management and generation solutions (such as distributed generation), either instead of or in combination with network augmentation.

### *Options Identified by Western Power*

49. As noted in paragraph 29, Western Power considers its proposal addresses the deteriorated condition of assets in the CBD. However, as its proposed option results in an increase in transmission capacity it has sought to demonstrate that it meets the regulatory test requirements for identifying options.
50. Western Power states it considered the use of both network and non-network options, but did not include any non-network solutions in its proposal as:
- “Non-network solutions, in general, can be effective in reducing electricity demand, and are particularly effective (and financially viable) when utilised to reduce/eliminate a marginal exceedance of capacity limits during (relatively) short peak periods. Western Power fully supports the deployment of non-network solution as a means of deferring significant capital expenditure, and assesses the viability of these types of solutions as part of routine planning studies.
- However, the main issues to be resolved are the deteriorated condition of a number of assets (as summarised in Table 1 and Figure 1). Therefore, non-network solutions are unable to resolve the underlying asset condition issues as they are both practically and technically infeasible to be deployed in the Perth CBD area.
- Thus, non-network solutions have been discounted as feasible solutions for this project.”<sup>13</sup>
51. Western Power has considered five different network options. It states:
- “From the planning studies, network options were developed to address the key network investment drivers for all distinct assets in the EP and CBD load area. These options were then grouped to form five development strategies that demonstrate the various investment pathways of overcoming the network limitations in the EP and CBD load area.”<sup>14</sup>

---

<sup>13</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 8.

<sup>14</sup> Major Augmentation Proposal –Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 8.

52. A summary of the five strategies it considered, together with the costs and benefits arising, is set out in the table below.

**Table 1      Reproduction of Western Power's Financial Assessment and Network Capacity Benefit Table<sup>15</sup>**

Strategy	Description	Primary benefit – mitigate deteriorated assets, resulting in assets rationalised within load area as listed below	Cost of Hay-MIL Cable (\$M) Nominal	Cost of total strategy NPC (\$M)	Additional benefit <i>Approximate additional available capacity from 2023 onwards</i>	
					Distribution Feeder Capacity	Transmission Substation Capacity <sup>16</sup>
1	Like for Like Replacement	No change to the number of assets	N/A	\$172.2	Nil	Nil
2	CBD Substation	Net reduction of one zone substation, and: <ul style="list-style-type: none"> <li>• 4 x transformers;</li> <li>• 2 x switchboards; and</li> <li>• 2 x transmission lines.</li> </ul>	N/A	\$244.6	70 MVA (shared across EP and CBD load area)	CBD:70 MVA
3	HAY-MIL Cable	Net reduction of terminal and two zone substations, and: <ul style="list-style-type: none"> <li>• 6 x transformers;</li> <li>• 4 x switchboards; and</li> <li>• 3 x transmission lines.</li> </ul>	\$38.5 In 2019	\$128.2	81 MVA (shared across EP and CBD load area)	MIL: 70 MVA HAY: 35 MVA
4	Minor Distribution Upgrades and defer HAY-MIL Cable by two years	Net reduction of terminal and two zone substations, and: <ul style="list-style-type: none"> <li>• 6 x transformers;</li> <li>• 4 x switchboards; and</li> <li>• 3 x transmission lines.</li> </ul>	\$46.5 In 2022	\$134.4	81 MVA (shared across EP and CBD load area)	MIL: 70 MVA HAY: 35 MVA
5	Major Distribution Upgrades	Net reduction of terminal and two zone substations, and: <ul style="list-style-type: none"> <li>• 6 x transformers;</li> <li>• 4 x switchboards; and</li> <li>• 4 x transmission lines.</li> </ul>	N/A	\$144.0	31 MVA (shared across EP and CBD load area)	Nil

<sup>15</sup> Major Augmentation Proposal – Options Paper – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 4 August 2017, p. 8. A breakdown of the costs of each strategy is included on pages 22 to 25 of the Options Paper.

<sup>16</sup> Whilst the HAY-MIL transmission cable creates 70 MVA of capacity at each of HAY and MIL substations, a portion of the HAY capacity is utilised by the 35 MVA load transfer from F and W; the remaining 19 MVA load transfer from F to JTE [Joel Terrace] has been excluded from these calculations, as the focus is capacity created within the Perth CBD and JTE is outside of that area. The transmission cable creates this capacity from the existing transformers at HAY and MIL by ensuring that the 132 kV transmission supply is maintained to both substations in the event of losing two transmission elements at either substation.

53. **Table 1** above shows the proposed transmission cable forms part of strategy 3 and strategy 4, with the difference being the timing of the installation of the cable.
54. Western Power has proposed strategy 3 as it has the lowest net present cost of the five proposed options while also having the equal greatest additional benefits by increasing both distribution and transmission capacity.
55. Western Power notes that while the preferred option provides increases to distribution and transmission capacity, load growth was not a driver in selecting the preferred option. The main driver for the project is to ensure a secure and reliable electricity supply and to achieve this goal deteriorated substation assets that are nearing their end of life require replacing.
56. Western Power describes the proposed transmission cable as the “first critical investment as part of the recommended development strategy that provides the pathway towards mitigating the deteriorated assets in the EP and CBD load area”.<sup>17</sup> It states:
- “Development strategy 3 is designed to build a new 132 kV transmission cable between HAY and MIL substations to cater for the offloading and decommissioning of F and W substations. The new 132 kV cable is required to meet Perth CBD Criterion compliance requirements after the offloading of F and W substations. This option also includes the decommissioning of any other redundant 66 kV assets (such as EP terminal) to mitigate the deteriorated condition of these assets.”
57. A breakdown of the costs for development strategy 3 is set out in the table below.

---

<sup>17</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 3.

**Table 2      Reproduction of Western Power's Cost Breakdown for Development Strategy 3<sup>18</sup>**

Year Required	Substation	Proposed Augmentation	Nominal Cost (\$M)
2019	Hay Street (HAY)	Replacement of HAY substation switchboards	\$31.2
2019	HAY and Milligan Street (MIL)	Install new 132 kV transmission cable between HAY and MIL substations (2000mm <sup>2</sup> copper XLPE)	\$38.5
2020	Forrest Street (F)	Offload F to HAY and adjacent substations	\$17.0
2021	MIL	Replacement of MIL substation switchboards	\$32.6
2021	F	Decommission F substation	\$1.3
2022	Wellington Street (W)	Offload W to HAY and adjacent substations	11.9
2023	W	Decommission W substation	1.4
2027	East Perth (EP)	Decommission EP 66kV Terminal	4.4
Total Capital Cost			\$138.3
Total Net Present Cost			\$128.2

### *Considerations of the ERA*

58. The ERA sought advice from its technical consultant to evaluate whether Western Power had adequately identified and considered other options.

<sup>18</sup> Major Augmentation Proposal – Options Paper – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 4 August 2017, p. 23.

59. Geoff Brown undertook an assessment of Western Power’s process. As set out in the conclusion to the report:

“We consider the alternatives considered by Western Power are reasonable and have not identified any additional alternatives that should have been included in the regulatory test assessment. We agree with Western Power that, as the main driver for the project is a need to replace existing network assets that have reached the end of their economic life, consideration of non-network alternatives would not be appropriate.”<sup>19</sup>

60. Having considered the advice of its technical consultant, the ERA is satisfied that Western Power has adequately identified and considered options to the proposed 132 kV transmission cable.

## Assessment of Net Benefits

### Requirements of the Access Code

61. Under section 9.20(a) of the Access Code, the ERA must determine whether it is satisfied that Western Power has made a defensible statement that, under section 9.16(b), the proposed major augmentation maximises the net benefit after considering “alternative options”.

### Western Power’s Assessment of Net Benefits

62. Western Power describes its process for assessing the net benefits as follows:
- “The five development strategies identified were evaluated based on the following selection criteria in addition to satisfying the network investment drivers:
- Lowest net present cost
  - Provides maximum additional capacity benefit to the EP and CBD load area
  - Robust against future variations in:
    - Electricity demand
    - Estimated cost based on building blocks
    - Financial parameters used in Western Power’s Investment Evaluation Model (IEM)”<sup>20</sup>
63. Western Power selected Development Strategy 3 as its recommended investment pathway on the basis that it:
- “...meets all the required performance standards and satisfies the selection criteria and investment drivers.”<sup>21</sup>

<sup>19</sup> Geoff Brown and Associates, *Technical Review of Hay St – Milligan St Cable Regulatory Test Application*, 17 November 2017, p. 10.

<sup>20</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 9.

<sup>21</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, p. 9.

## Considerations of the Authority

64. The ERA has considered Western Power’s assessment of net benefits in accordance with the requirements of the Access Code. The relevant criteria under the Access Code are whether the ERA is satisfied that Western Power has appropriately determined the net benefits of the options and, whether the ERA considers that Western Power has made a defensible statement that the proposed major augmentation maximises the net benefit after considering other options.
65. The ERA sought advice from its technical consultant to evaluate the robustness of Western Power’s assessment of net benefits and whether the option chosen had the maximum net benefit.
66. Geoff Brown reviewed the methodology and costings provided by Western Power and advised:
- “We concur with the ... analysis and did not identify anything to suggest that Option 3 is not the most cost-effective option and the one that delivers the most benefits to those who generate, transport and consume electricity.”<sup>22</sup>
67. Geoff Brown raised concerns that the size of the cable may be greater than required but noted:
- “... this would not change our assessment of Western Power’s ranking of the regulatory test alternatives.”<sup>23</sup>
68. Geoff Brown notes this matter may need to be considered further when determining whether the project design meets the requirements of the new facilities investment test.
69. Option 4 would allow the installation of the cable to be deferred. Geoff Brown advises:
- “However this deferral would only be for three years as the new cable would still be required to allow the Wellington St substation to be decommissioned after its assets reached the end of their economic life. Hence the deferral of the 132 kV cable installation is at the expense of a distribution network augmentation that would not be required if the cable installation was advanced.”<sup>24</sup>
70. As set out in the conclusion to Geoff Brown’s report:
- “We agree with Western Power that, of the alternatives considered, Option 3 is the one that maximises the net benefits to those who generate, transport and consume electricity, after considering alternative options. It is also the option that maximises the quantified benefits to consumers when benchmarked against the base case alternative. Furthermore, we consider that the benefits that have not been quantified are likely to be higher for this option than for any of the other alternatives considered.”<sup>25</sup>

---

<sup>22</sup> Geoff Brown and Associates, *Technical Review of Hay St – Milligan St Cable Regulatory Test Application*, 17 November 2017, p. 7.

<sup>23</sup> Geoff Brown and Associates, *Technical Review of Hay St – Milligan St Cable Regulatory Test Application*, 17 November 2017, p. 9.

<sup>24</sup> Geoff Brown and Associates, *Technical Review of Hay St – Milligan St Cable Regulatory Test Application*, 17 November 2017, p. 7.

<sup>25</sup> Geoff Brown and Associates, *Technical Review of Hay St – Milligan St Cable Regulatory Test Application*, 17 November 2017, p. 10.

71. Generally the regulatory test is applied where there is an increase in demand requiring an augmentation of the network. In this case the reasons for Western Power's proposal to install the new transmission cable are to address asset deterioration rather than an increase in demand.
72. As the option proposed results in an increase in transmission capacity, the ERA considers it appropriate to assess it against the regulatory test requirements. Based on the material provided by Western Power and the technical advice from Geoff Brown, the ERA is satisfied Western Power's proposed transmission cable maximises the net benefit to consumers after considering other options.
73. However, the regulatory test is not a determination of whether the proposed costs for the cable are efficient. It only determines that Western Power has demonstrated the cable maximises the net benefit compared with other options and is now able to commit to the project. This determination has also only considered whether the proposed cable meets the regulatory test and is not an approval of the other elements of the strategy.
74. The ERA will assess the proposed expenditure for the overall strategy, including the transmission cable, during its review of Western Power's proposed revised access arrangement. The size of the cable is a matter that will need to be considered when determining the value of the expenditure that can be added to the regulated asset base. If it is determined that the cable is larger than required, it will not meet the efficiency test and some of the expenditure may need to be excluded from the regulated asset base.