

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

Issues Paper

29 September 2017

Economic Regulation Authority

WESTERN AUSTRALIA

## Economic Regulation Authority

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## Invitation to make submissions

Interested parties are invited to make submissions on the ERA's consultation paper by **4:00 pm (WST) Friday, 13 October 2017**.

Submissions are preferred as documents uploaded to the ERA's website, in electronic form, via: [www.erawa.com.au/consultation](http://www.erawa.com.au/consultation)

Alternatively, submissions can be lodged via:

Email address: [publicsubmissions@erawa.com.au](mailto:publicsubmissions@erawa.com.au)

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Office address: Level 4, Albert Facey House, 469 Wellington Street, Perth WA 6000

### CONFIDENTIALITY

In general, all submissions from interested parties will be treated as being in the public domain and placed on the Authority's website. Where an interested party wishes to make a submission in confidence, it should clearly indicate the parts of the submission for which confidentiality is claimed, and specify in reasonable detail the basis for the claim. Any claim of confidentiality will be considered in accordance with the provisions of *Electricity Networks Access Code 2004*, sections 14.12 to 14.15.

The publication of a submission on the Authority's website shall not be taken as indicating that the Authority has knowledge either actual or constructive of the contents of a particular submission and, in particular, whether the submission in whole or part contains information of a confidential nature and no duty of confidence will arise for the Authority.

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# 1 Introduction

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 (Access Code)*. Western Power proposes installing a new 132 kV transmission cable between the Hay Street and Milligan Street substations.

Before committing to this investment, Western Power must satisfy the “regulatory test”. This means Western Power must demonstrate it has considered all reasonable alternative options, including non-network solutions such as demand-side management or generation, and that its proposed option maximises the net benefit to those who generate, transport and consume energy in Western Power’s network.

As part of its assessment of Western Power’s proposal, the ERA is undertaking consultation with interested parties. The ERA has prepared this issues paper to help interested parties make submissions. In particular, the issues paper covers some of the significant issues to be addressed by the ERA in determining whether the regulatory test is satisfied, including:

- the requirements of the regulatory test under Chapter 9 of the Access Code;
- key aspects of the proposed major augmentation;
- Western Power’s public consultation process;
- the identification of alternative options; and
- the assessment of net benefits of the proposed major augmentation and alternative options.

Western Power’s proposal and associated documents are available on the ERA’s website together with this issues paper.

## 2 The Regulatory Test

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.

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

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 a proposed access arrangement.

Western Power's proposal has been submitted under the second of these two processes.

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 [and]
  - (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.

"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**

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

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.

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.

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.

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.

## 3 Western Power's Proposed Major Augmentation

Western Power proposes installing a new 132 kV transmission cable between the Hay Street and Milligan Street substations. The total cost of the proposed augmentation is \$38.5 million in nominal dollars.

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. As stated in its proposal, Western Power's proposed augmentation:

"... 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).

Western Power describes the main elements for its proposed augmentation 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, Wellington Street and East Perth 66 kV substations."<sup>1</sup>

Western Power states the key driver for its proposal as being:

"... 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>2</sup>

## 4 Public Consultation undertaken by Western Power

### 4.1 Requirements of the Access Code

The requirements for Western Power to undertake public consultation on the major augmentation proposal are set out in section 9.16(c) of the Code:

9.16 A major augmentation proposal submitted under section 9.15:

<sup>1</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, page 3.

<sup>2</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, page 3.

- ...
- (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);
- ...

Appendix 7 of the Access Code establishes the following requirements on Western Power in undertaking consultation on the major augmentation proposal:

- publication of an invitation for submissions (section A7.6 of the Access Code);
- 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 of the Access Code); and
- publication of submissions received (section A7.20 of the Access Code).

Appendix 7 also allows, but does not require, Western Power to:

- produce and publish an issues paper examining the issues relating to the major augmentation proposal (section A7.4 of the Access Code); and
- consider any submissions made after the time for making that submission has expired (section A7.21 of the Access Code).

## 4.2 Consultation undertaken by Western Power

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.

During the public consultation period, Western Power held two community forums at its head office in the Perth CBD on 1 August 2017. The first session was via invitation and catered to key industry stakeholders while the second session catered to the general public and all other stakeholders with whom Western Power had not previously engaged with on this investment proposal.

Western Power has included a summary of the outcomes of the public consultation and submissions received in its proposal.<sup>3</sup> Western Power states:

“Following a comprehensive review of the responses received, Western Power does not propose to make any modifications to the original recommendation (development strategy 3) as outlined in the Options Paper.”<sup>4</sup>

<sup>3</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, Attachment 2.

<sup>4</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, page 4.

Submissions are invited from interested parties on whether Western Power:

- gave all interested parties a reasonable opportunity to state their views on the major augmentation proposal and to propose alternative options; and
- had adequate regard to the views and alternative options that were submitted.

## 5 Identification of Alternative Options

### 5.1 Requirements of the Access Code

Under Section 9.16(b) of the Access Code, Western Power is required to have considered alternative options to the proposed transmission line. “Alternative Options” is defined under Chapter 1 of the Access 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.

### 5.2 Alternative options identified by Western Power

Western Power states it considered the use of both network and non-network alternatives, 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.”

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.”

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>5</sup>**

Strategy	Description	Primary benefit – mitigate deteriorated assets, resulting in assets rationalised within load area as listed below	NPC (\$M)	Additional benefit <i>Approximate additional available capacity from 2023 onwards</i>	
				Distribution Feeder Capacity	Transmission Substation Capacity <sup>6</sup>
1	Like for Like Replacement	No change to the number of assets	\$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>	\$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>	\$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>	\$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>	\$144.0	31 MVA (shared across EP and CBD load area)	Nil

The proposed transmission cable 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>7</sup> Western Power notes the remaining investment required

<sup>5</sup> Major Augmentation Proposal – Options Paper – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 4 August 2017, page 8.

<sup>6</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 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.

<sup>7</sup> Major Augmentation Proposal – Perth CBD: Hay/Milligan Supply Reinforcement Investment, Western Power, 19 September 2017, page 3.

for the development strategy will be undertaken at a future date and some of these investments may be the subject of future regulatory tests.

Detailed information on the works to be undertaken and indicative timings for each of the alternative options can be found in Western Power’s proposal.

Submissions are invited from interested parties on whether Western Power:

- identified a relevant set of alternative options on the proposed augmentation; and
- gave reasonable consideration to the alternative options proposed by interested parties in submissions made as part of Western Power’s consultation process.

## 6 Assessment of Net Benefits

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)”

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.

A summary of the investments within Development Strategy 3 is set out in Figure 2 of Western Power’s proposal.

Submissions are invited from interested parties on:

- the reasonableness of the assumptions and approach applied by Western Power in the assessment of net benefits; and
- whether the preferred option selected by Western Power maximises the net benefit after considering alternative options.