MAJOR AUGMENTATION PROPOSAL

Regulatory Test Submission

Picton South Transmission Reinforcement

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westernpower

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Document Information

Title	MAJOR AUGMENTATION PROPOSAL
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Abbreviations

The following table provides a list of abbreviations and acronyms used throughout this document. Defined terms are identified in this document by capitals.

Term	Definition
CPI	Consumer Price Index
CT	Current Transformer
ERA	Economic Regulation Authority
IEM	Investment Evaluation Model
NCS	Network Control Services
NPC	Net Present Cost
PV	Photo Voltaic
the Code	Electricity Networks Access Code 2004
VT	Voltage Transformer

1. Introduction

This major augmentation proposal is submitted to the Economic Regulation Authority (ERA) under section 9.15 of the Electricity Networks Access Code 2004 (the Code) for assessment against the regulatory test.

The proposed investment was developed to achieve the following objectives:

- Address the existing and emerging asset condition issues;
- Address the existing steady state and dynamic voltage stability non-compliances prescribed under the N-1 design criterion;
- Increase the maximum supportable demand to meet the long term forecast growth in the Picton South subnetwork of the Bunbury load area; and
- Align with Western Power's long term strategies (in particular, the 66 kV Rationalisation strategy) in order to maximise the net benefit for network Users.

The preferred option considered in this investment is a staged 132 kV conversion of the Picton South network, which consists of the following works:

Stage 1 works:

- Uprate of the Picton-Capel/ Westralian Sands 71 line to support future energisation at 132 kV;
- Transfer of Westralian Sands 66 kV tee-line from Picton-Capel/Westralian Sands 71 to Picton-Capel 72 transmission line;
- Installation of a new 100 MVA 132/66/22 kV transformer at Busselton substation; and
- Installation of static and dynamic reactive support at Busselton substation.

Stage 2 works:

- Progressive replacement of the 66/22kV Transformers at Busselton, Capel and Picton substations;
- Decommissioning of the 132/66/22kV Terminal transformers at Picton substation; and
- Rationalisation of transmission lines between Picton, Capel and Busselton substations.

The preferred development strategy (2)has an estimated Net Present Cost (NPC) of $143.6 million for both stages of augmentation works, inclusive of project on costs, risk allowances and escalation.[1]

As per the staged approach, Western Power is planning to proceed with the first series of critical investments under Stage 1 of the recommended development strategy (2), which are the subject of this Regulatory Test. These works will provide a pathway towards mitigating the deteriorated assets in the Picton South region and are estimated at a nominal capital cost of $38.2 million, inclusive of project on costs, risk allowances and escalation.

This major augmentation proposal in conjunction with the enclosed attachments forms Western Power's formal submission for the major augmentation proposal for Picton South Transmission Network reinforcement:

- Attachment 1: Options Paper – Picton South - Staged 132 kV conversion
- Attachment 2: Response to Submissions – Picton South

[1] As of 30 June 2019

1.1 Summary of Investment Drivers

There are two main drivers for the proposed investment in the Picton South network, with the primary relating to deteriorated asset condition, with secondary drivers relating to voltage capacity constraints.

A significant number of the assets in the area are approaching or have already exceeded their expected replacement life, with many assets also in degraded condition, resulting in multiple safety, reliability of supply and security risks in the region.

The Picton South region also has several existing non-compliances relating to voltage capacity within the N-1 design criterion. Under peak condition demands and following the loss of the single 132 kV supply to Busselton, existing voltage capacity issues arise relating to:

- Inadequate steady state voltages;
- Short and long term voltage instability; and
- Maximum supportable demand.

Further details on these drivers can be found in Attachment 1.

1.2 Options Paper and Public Consultation Period

In accordance to the requirements of Chapter 9 of the Code, Western Power released an Options Paper (Attachment 1) for public consultation over the period from 7 February 2020 to 28 February 2020, as part of the regulatory test process for this major augmentation proposal. The objective of the Options Paper was to inform the public in general and interested parties of the major augmentation proposal and to obtain input and feedback with regard to any additional or alternative considerations. Key stakeholders were encouraged to comment on the Options Paper.

A summary of the outcomes of the public consultation and submissions received has been recorded in a Response to Submissions document (Attachment 2). Following a comprehensive review of the responses received, Western Power does not propose to make any modifications to the original recommendation, development Strategy (2) as outlined in the Options Paper.

1.3 Regulatory Test Requirements

1.3.1 Major Augmentation

Under Chapter 9.2 of the Code a service provider must not commit to a major augmentation before the regulatory test is satisfied. Section 9.2 is reproduced below.

> ***No major augmentation without regulatory test determination***
>
> *9.2 A service provider must not commit to a major augmentation before the Authority determines, or is deemed to determine, under section 9.13 or 9.18, as applicable, that the test in section 9.14 or 9.20, as applicable, is satisfied.*

The Code defines an augmentation to the network to be a major augmentation where the investment exceeds $30 million (consumer price index (CPI) adjusted from 2008) for transmission assets. The definition of a major augmentation is reproduced below.

> ***"major augmentation" means an augmentation for which the new facilities investment for the shared assets:***

a) *exceeds $10 million (CPI adjusted), where the network assets comprising the augmentation are, or are to be, part of a distribution system; and*

b) *exceeds $30 million (CPI adjusted), where the network assets comprising the augmentation are, or are to be, part of:*

   i. *a transmission system; or*

   ii. *both a distribution system and a transmission system.*

The ERA periodically publishes new threshold amounts after adjusting for changes in the CPI. The most recent update in July 2019 indicates that the threshold for transmission assets is $37.9 million.

Following approval of this Regulatory Test Submission, Western Power is planning to proceed with the first series of investments under Stage 1 of the preferred development strategy (2), at an estimated nominal capital cost of $38.2 million.

1.3.2 Regulatory Test Process

Section 9.16 of the Code is reproduced below.

Regulatory test not as part of access arrangement approval process

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.*

Western Power has undertaken a comprehensive and inclusive public consultation process as required under clause 9.16 of the Code.

2. Project Background

2.1 Changes since the AA4 submission

Western Power submitted the initial AA4 submission on the 2nd October 2017, which included the '*Picton-Busselton: Construct New 132kV Transmission Line*' proposal. This proposal involved the conversion of one of the existing 66kV lines to 132kV voltage between Picton and Busselton substations.

The proposal was identified under the Bunbury load area long term strategy and was driven by high growth of forecast peak demand (2016 forecast), resulting in voltage limitations within the Picton South region. The forecast expenditure was proposed under the capacity expansion regulatory category, with no expenditure related to transformer replacements or reactive support equipment.

Subsequent to the initial AA4 submission, peak demand growth forecasts declined however, Western Power engaged consultants to refresh the Bunbury long term strategy and staging of the works as significant transformer asset condition issues had begun to emerge in the Picton South region. The result was used to inform the proposed expenditure in the AA4 revised submission that was later submitted on 14th June 2018.

The solution to address the immediate transformer asset condition issues and the original high growth drivers were coincidently the same, with the conversion of one of the existing 66kV lines to 132kV voltage removing the reliance of the degraded 132/66kV transformers in providing supply and maintaining system security to the region. Subsequently, the project and the forecast expenditure remained the same under the AA4 revised submission.

As the investment was not considered adequately mature at the time of the AA4 determination, it was not included in AA4 revenue. Despite this, Western Power believed it was prudent to progress the project due to the significant asset and system security risks identified in the Picton South network.

Since then, Western Power has progressed the project through multiple project development stages and validated the preferred development strategy (2) against the 2017 peak demand forecasts. Although the latest forecasts were lower than the 2016 forecasts, this does not materially change the preferred development strategy (2), with approximately 85% of the investment being asset driven and therefore not impacted by peak demand. The project is now within advanced stages of the 'Planning' phase, with more accurate cost estimates and refinements to the scope and staging of works.

2.2 Background - Network

The Picton South network is a sub network of the Bunbury load area, spanning from Picton to Augusta. Approximately 46,000 customers are supplied within Picton South, with a mix of residential, commercial, industrial and agricultural electricity consumers. It is one of the few remaining pockets of Western Power's network still operating at a 66kV transmission voltage. A significant number of these assets are approaching or have already exceeded their expected replacement life with many assets also in degraded condition, resulting in multiple safety, reliability of supply and system security risks, that have triggered the need for network development within the Picton South region.

In addition, significant growth within the last 25 years has led to the 66 kV network exceeding its intended design capability, resulting in existing voltage related N-1 non compliances that limit further growth opportunities in the area.

2.3 Peak Demand Forecast

The 25 year peak forecast demand for the substations within the Bunbury load area are forecast to experience a slight increase in demand. While historical peak demand forecasts have followed similar growth profiles, the higher growth trajectories in the past have been heavily revised down over several years due to external influencing factors, including, but not limited to declining economic conditions; increased penetration of photovoltaic (PV) installations; and increased appliance efficiencies.

During the development of the Options Paper (Attachment 1), Western Power used the 2017 25 year peak demand forecasts being the latest approved forecasts. This has been validated against the latest long-term forecasts for the "Whole of System Plan" developed by Western Power's Forecasting team and has been found to effectively align with the sensitivity analysis, wherein the preferred option remains the recommended pathway.

While the forecast increased peak demand in the region will not trigger new constraints without a significant block customer load connection, the existing voltage capacity limitations are expected to increase further due to growth forecast in the area over the long term.

2.4 Asset Condition and Planning Drivers

2.4.1 Asset Condition in the Picton South load area

The overall asset condition in the Picton South subnetwork of the Bunbury load area relating to the zone substations provides very strong support for the need to undertake a significant volume of asset replacement and retirement within the 10 year planning horizon, with issues needing to be addressed at Busselton, Picton and Capel zone substations. This will be staged and driven by the severity of the asset conditions.

The assets at these substations, that are the most material in terms of investment options and financial impact include:

- Power transformers – terminal and zone substation transformers;
- Primary Plant – circuit breakers, disconnectors, Current (CT) and Voltage (VT) Transformers;
- Transmission Lines – conductors; and
- Transmission Lines – structures.

Western Power's 66 kV Rationalisation strategy underpins the development of an optimised network plan to address the safety and reliability of supply risks, maximise the net benefit for network Users, while securing the long term system security in the Picton South region.

2.4.2 Planning Criteria for Network Development

In keeping with Western Power's obligations in relation to security, reliability and quality of supply as defined in the Technical Rules (December 2016 – Rev 3) the Western Power owned substations in the Picton South region are planned under the N-1 criterion.

System studies, as documented in Attachment 1, have revealed that in the Picton South network under peak condition demands and following the loss of the single 132kV supply to Busselton, voltage capacity issues arise relating to:

- Inadequate steady state voltages – Picton South's 66kV network is susceptible to low voltages, excessive voltage step, and in the worst case, a complete loss of supply, or 'blackout', to the region;

- Short and long term voltage instability – The short term (dynamic) response of the Picton South network is insufficient in recovering voltages to acceptable levels following a contingency event.; and
- Maximum supportable demand has been historically, and forecast to be, exceeded at Busselton and Margaret River, requiring network augmentation to meet the forecast peak demand.

Refer Attachment 1 for further details.

2.5 Risk Assessment

Most of the assets within the Picton South region are supplied by 66 kV rated equipment. A significant portion of these assets are approaching or have already exceeded their expected replacement life, with many assets also in degraded condition, requiring them to either be replaced, maintained, upgraded or decommissioned, as they present a risk to safety, reliability and system security.

Under high demand conditions, the Picton South's 66 kV network is susceptible to voltage capacity constraints that can lead to sustained low voltages, excessive voltage step, and in the worst case, a complete loss of supply, or 'blackout' to the region, following the loss of the single 132 kV supply into Busselton. These voltage capacity constraints limit the ability to meet the forecast peak demand and connect additional load in the area.

3. Options Analysis

3.1 Investment Objectives

The assessment of potential long term development strategies for the Picton South subnetwork of the Bunbury load area across the next 10 year period specifically focused on the following key network investment drivers:

- Address the existing and emerging asset condition risks;
- Address existing steady state and dynamic voltage stability non-compliances prescribed under the N-1 design criterion;
- Increase the maximum supportable demand to meet the long term forecast growth; and
- Align with Western Power's long term strategies (in particular, the 66kV Rationalisation strategy) in order to maximise the net benefit for network Users.

3.2 Options Considered

Aligned with the long term strategy in the Bunbury load area, the identified development strategies to address the range of network issues are based on the following two broad investment themes:

1. Conversion of the Picton South network to operate at 132 kV; and
2. Retention of the existing 66 kV network topology and asset base.

The development strategies proposed for the Picton South network have been developed with consideration of Western Power's 25-year 'Central' peak demand forecasts (2017-2042). Assessment of a range of network drivers and Western Power's 25-year peak demand forecasts within the Picton South sub-network over a 50-year evaluation period has led to the development of five discrete development strategies based on the broad themes that include both network and non-network solutions:

1. Picton South 132 kV conversion

a. Accelerated 132 kV conversion

b. Staged 132 kV conversion - Busselton terminal transformer

c. Staged 132 kV conversion - Picton terminal transformer

2. Retain 66 kV network

a. Procure Network Control Services (NCS)

b. Install additional reactive power support

The five capital investment development strategies shown in Table 3.1 were evaluated against a range of financial and technical performance metrics. The development strategies consider asset rationalisation, alignment to Western Power's 66kV rationalisation strategy and increases to Picton South maximum supportable demand.

Table 3.1: Financial Assessment and Network Benefits

Dev. Strategy	Description	Total NPC ($M)	Asset Rationalisation – Relative to Picton South 66kV asset base (+/)							Max Supp. Demand	Strategic Alignment (Yes/No)
			STATCOM	Capbanks	Reactor	Terminal Tx	Substation Tx	Primary Plant	Transmission Lines		
1	Accelerated 132 kV conversion	156.1	↑ 1	↑ 2	- 0	↓ 1	↓ 5	↓ 75	↓ 91 km	84 MW	Yes
2	Staged 132 kV conversion - Busselton terminal transformer	143.6	↑ 1	↑ 2	- 0	↓ 1	↓ 5	↓ 75	↓ 51 km	84 MW	Yes
3	Staged 132 kV conversion - Picton terminal transformer	148.9	↑ 1	↑ 2	- 0	↓ 1	↓ 5	↓ 75	↓ 51 km	84 MW	Yes
4	Retain 66 kV network – Procure NCS	174.1[2]	- 0	- 0	↑ 1	- 0	↓ 3	↓ 11	- 0	76 MW[3]	No
5	Retain 66 kV network – Install additional reactive support	161.5	↑ 1	↑ 2	- 0	- 0	↓ 3	↓ 11	- 0	73 MW	No

The results of the options analysis identified development strategy (2) as the most efficient long term solution for the Picton South region. Western Power's three key objectives of safe, reliable and efficient are also met under the development strategy (2) investment pathway.

This development strategy (2) represents an optimised network plan that is lower in cost than a like for like replacement solution, providing additional benefits including asset rationalisation and increases to

[2] Total costs are expected to be higher as connection costs were not included. For more detail on the assumptions used, refer to Attachment 1.

[3] The maximum supportable demand is determined by the summation of the capacity of the procured NCS (30MW) and the existing maximum supportable demand (46MW)

maximum supportable demand to support the forecast peak demand, while providing additional spare capacity to accommodate future growth opportunities in the region.

Furthermore, a sensitivity analysis[4] was carried out to determine the impact of variations in cost (+/- 20%) and the 'Central' 25-year peak demand forecast (+46%/-37%) to test the robustness of the recommended pathway. The output of the sensitivity analysis has demonstrated an outcome consistent with the base case economic analysis, in that development strategy (2) is still seen to have the lowest NPC compared to the alternative development strategies presented.

3.3 Recommended Option

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;
- Asset rationalisation aligned with Western Power's 66 kV rationalisation strategy;
- Maximise the net benefit for network Users;
- Provides maximum additional capacity benefit to the Picton South subnetwork of the Bunbury load area;
- Robust against future variations in:
  - Electricity demand;
  - Estimated cost based on building blocks; and
  - Financial parameters used in Western Power's Investment Evaluation Model (IEM).

Development strategy (2) is the recommended investment pathway that meets all the required performance standards and satisfies the selection criteria and investment drivers. The investments within this development strategy (2) are illustrated in Figure 3.1 with the proposed timing for the respective works and Figure 3.2 illustrates the final configuration of the Picton South transmission Network following the completion of the works under this development strategy (2).

[4] See Options Paper Appendix E – Demand Growth Sensitivity Analysis for further detail

Figure 3.1: Development strategy (2) – stage 1 scope overview

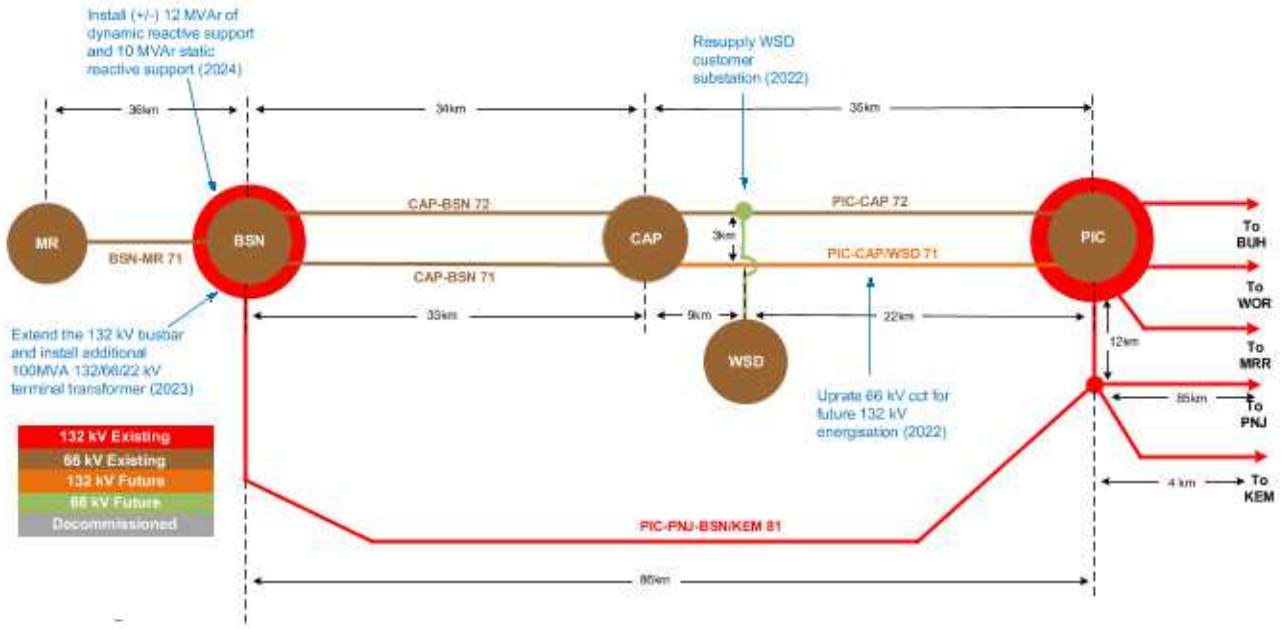
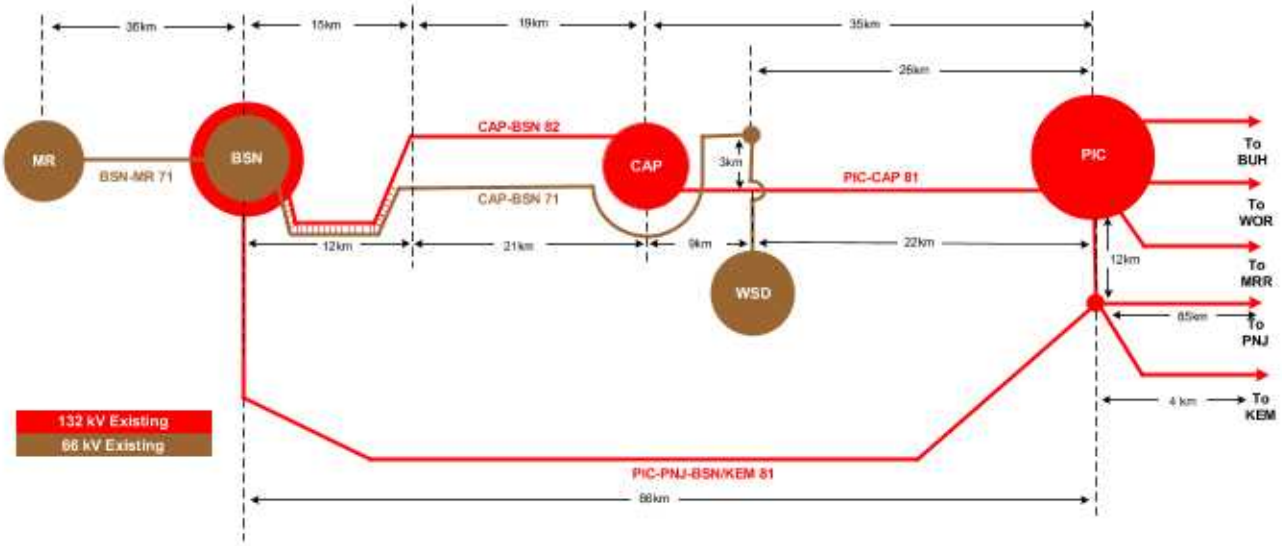


Figure 3.2: Development strategy (2) – final configuration



The first set of critical investments (Stage 1 works), as part of the recommended development strategy (2), addresses the system security and supply risk to the Picton South region due to a single Picton terminal transformer contingency. The network will also achieve N-1 network compliance and the maximum supportable demand at Busselton and Margaret River will increase from 46 MW to 73 MW (and 84 MW after Stage 2 works) to ensure the forecast demand is met over the long term.

Stage 1 works consists of:

- Uprate of the Picton-Capel/ Westralian Sands 71 line to support future energisation at 132kV;
- Transfer of Westralian Sands 66 kV tee-line from Picton-Capel/Westralian Sands 71 to Picton-Capel 72 transmission line;
- Installation of a new 100 MVA 132/66/22 kV transformer at Busselton substation; and
- Installation of static and dynamic reactive support at Busselton substation.

3.4 Business and Stakeholder Benefits

The recommended option provides benefits to Western Power and its external stakeholders through:

- Addressing the safety, reliability and security and supply risks associated with deteriorated asset condition issues;
- Increases the maximum supportable demand beyond the forecast peak demand and facilitates to accommodate future growth opportunities in the area. The maximum supportable demand increases from 46 MW, through 73 MW (Stage 1) to 84 MW (Stage 2) under the full implementation of the investment;
- Rationalisation of assets in the Picton South sub-network of the Bunbury load area with associated operating cost and network benefit;
- Alignment with Western Power's strategy of migrating transmission voltage from 66 kV to 132 kV being a more efficient transfer of power across the network;
- Improvement to security of supply to Busselton and Margaret River substations in the event of a contingency with the terminal transformers at Picton that supplies the 66 kV network to the south.

4. Public Consultation

4.1 Overview

In accordance with the public consultation requirements of clause 9.15 of the Electricity Networks Access Code 2004, Western Power prepared an Options Paper as part of the regulatory test process for a major augmentation proposal.

The Options Paper was released for public consultation on the 7th of February 2020 and submissions closed on the 28th of February 2020. Western Power encouraged interested stakeholders to provide comments on the Picton South Transmission Reinforcement Options Paper and to propose reasonable alternatives.

The consultation process used a number of methods to invite comments on the Options Paper and advise of the opportunity to attend a stakeholder or public forum including:

- direct invitations (via email) were sent to 61 stakeholders in the Perth CBD and across the South West region including key industry representatives, State Government Agencies, Local Government and major customers[5];
- two advertisements appeared in The West Australian newspaper;
- two advertisements appeared in the South West Times newspaper;
- targeted Facebook advertising to those who live or work in Bunbury through to Capel and onto Busselton;
- a Twitter post;
- a LinkedIn post;
- information on the Western Power website, with a total of 301-page views; and
- notice published by the ERA.

[5] Refer Attachment 2

4.2 Methodology & Stakeholder Engagement

The Code requires Western Power to detail the methodology adopted in dealing with the information obtained and how regard was given to any alternative options proposed and issues raised during the consultation process.

For the Picton South Transmission Reinforcement investment, the methodology adopted was to:

- ensure community and key stakeholders are well informed of the scope, impacts and benefits of the project;
- 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; and
- 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 Picton South Transmission Reinforcement investment pathway.

Where information/issues/options were not considered appropriate, justification was provided.

4.3 Forum Sessions

Two stakeholder and public forums were held. One was held on 17 February 2020 at Western Power's Head Office (363 Wellington Street, Perth) at 9.30 - 11.00am and the other on the 19 February 2020 at the Quality Hotel Lighthouse (2 Marlston Drive, Bunbury) at 11.00 - 12.30pm. In total, 17 external individuals attended, 7 at the Perth forum and 10 at the Bunbury forum. Western Power had already commenced preliminary engagement for pre-approvals and endorsements for the recommended 66 kV transmission line route to reconnect Westralian Sands customer substation.

Western Power was represented by professionals from the Grid Transformation, Economic Regulation and Community Engagement Functions of Western Power. Information provided at the forum was:

- MS PowerPoint presentation; and
- Project handout A4 sheet.

Refer Attachment 2 for the MS PowerPoint Presentation and the Project Handout.

4.4 Submissions and Western Power Response

Western Power invited submissions by email or post, while also taking comments and questions at the public forums.

Five email submissions were received, with one late submission, from interested stakeholders in relation to the Picton South transmission reinforcement. All the submissions have been published in Attachment 2 and no confidential submissions were received.

The late submission was received 9 days past the submission due date and was not pertinent to the Picton South investment, as such a response was not provided. It is included in Attachment 2 for reference.

One suggested the use of alternative materials for the construction of new transmission lines, the second welcomed the investment into the network while looking forward to opportunities to provide their services. The third suggested the use of alternative power supplies for growth areas such as Wanju and Waterloo Industrial Park and the South west region in general. The fourth sought information on the financial benefits of the proposed augmentation.

There was also a telephone query related to any impacts on the distribution network in the region. Having conveyed the summary of the transmission network investment, the query was deemed suitably satisfied by the caller.

The attendees at both of the forum sessions engaged with Western Power on various aspects relating to the development of options and the associated community impacts through the recommended investment. The feedback and comments provided at these sessions were treated as submissions at the attendee's request.

All submissions and the responses provided by Western Power have been summarised in Table 4.1 and incorporated in Attachment 2 Response to Submissions document.

Having considered all the submissions and comments received during the consultation phase, Western Power does not propose to make any modifications to the original recommendation, development strategy (2).

Table 4.1: Responses to submissions and queries received during formal consultation process

Submission received	Issue raised	Current proposal	Suggested amendment	Justification and rationale
Community resident	*Asset replacement* Stobie poles be used to replace all timber poles to provide a safer more permanent electrical distribution system.	Use of wood poles in the Western Power Transmission Network	No change to current proposal	A comprehensive study on pole materials conducted by Parsons Brinckerhoff in 2015 concluded that Stobie poles are not available in the size and strength required for transmission lines, so they are not an option for the Picton South Transmission Reinforcement
Geographe Underground	*Commercial opportunity* Job opportunities for local contractors to complete works.	Transmission reinforcement works to the south of Picton	No change to current proposal	Western Power will be approaching its panel of vendors for various services in due course.
Shire of Dardanup	*Non-network option* Western Power should consider alternative power supply for growth areas such as for Wanju and Waterloo Industrial Park and the South West region in general.	Transmission reinforcement works to the south of Picton	No change to current proposal	The Picton South works are primarily driven by deteriorating asset condition. The proposed works focus on reinforcement south of Bunbury, through to Busselton. Wanju and the Waterloo Industrial Park are located north of Picton substation, and therefore fall outside of the Picton South reinforcement.

Alinta Energy	*Financial assumptions* Who benefits and who pays for the proposed augmentation? At a high level how will the costs be distributed amongst transmission entry and exit customers; and distribution customers? At a high level how will the costs be distributed amongst future access arrangements?	Mechanism of revenue recovery pertaining to the expenditure related to the Picton South Transmission Network Reinforcement	No change to current proposal	The ERA approves the "revenue requirement" as part of the regulatory determination process, or the Access Arrangement (AA). The revenue required to recover the total cost of these works will be added to the total revenue requirement that Western Power as a transmission and distribution network businesses can recover from customers for the use of these networks. Transmission customers pay for the portion of the transmission network they use, and distribution customers pay for the transmission network they use as well as for the distribution network costs.
Community resident **Late submission**	*Electricity costs & Generation* Improving systems by maintaining best value options to reduce the costs of electricity, while favouring reduced emissions for the ozone layer including the choice of embracing nuclear energy as a source of power.	Transmission reinforcement works to the south of Picton	No change to current proposal	The Picton South works are primarily driven by deteriorating asset condition. The proposed works focus on reinforcement south of Bunbury, through to Busselton. Choice of generation falls outside of the Picton South reinforcement.

5. Conclusion

Western Power submits that a major augmentation is required to address the deteriorated asset condition in the Picton South sub-network of the Bunbury load area whilst adhering to the compliance obligations in the region (in particular, Technical Rules clause 2.5.2).

The total estimated Net Present Cost (NPC) of the preferred development strategy (2) is $143.6 million, inclusive of project on costs, risk allowances and escalation, determined as part of the cost estimate process through Western Power's Estimation and Value Assurance Section.

The main elements of this proposal are:

- Uprate of the Picton-Capel/ Westralian Sands 71 line to support future energisation at 132 kV;
- Transfer Westralian Sands 66 kV tee-line from Picton-Capel/Westralian Sands 71 to Picton-Capel 72 transmission line;
- Installation of a new 100 MVA 132/66/22 kV transformer at Busselton substation;

- Installation of static and dynamic reactive support at Busselton substation;
- Progressive replacement of the 66/22 kV Transformers at Busselton, Capel and Picton substations;
- Decommissioning of the 132/66 kV Transformers at Picton substation; and
- Rationalising the Transmission lines between Picton, Capel and Busselton substations.

As per the staged approach, and following approval of this Regulatory Test Submission, Western Power is planning to proceed with the first series of critical investments (collectively referred to as Stage 1) of the recommended development strategy (2) as follows:

By 2022:

- Uprate of the Picton-Capel 71 line to support future energisation at 132 kV including:
  - Upgrade electrical fittings and post insulators to 132 kV specification
  - Uprate 2.5 km earthwire along the Picton-Capel 71 and 72 line circuits
- Transfer Westralian Sands 66 kV tee-line from Picton-Capel/Westralian Sands 71 to Picton-Capel 72 transmission line via the construction of a new 3km 132 kV rated (energised at 66kV) wood pole single circuit with 'Lemon' conductors.

By 2023:

- Extension of the existing 132 kV busbar at Busselton substation, including a new 132kV disconnector
- Installation of a new 132 kV Tx bay and 100 MVA 132/66/22 kV transformer at Busselton substation

By 2024:

- Installation of a static and dynamic reactive support devices at Busselton substation including:
  - Install (+/-) 12 MVAr of dynamic reactive support devices (i.e. STATCOM) and associated step-up transformer equipment
  - Install 10 MVAr capacitors and associated plant on tertiary winding of new Busselton 132/66 kV transformer

The nominal capital cost of this first stage of investment is $38.2 million (including project on costs and risk allowance).

It should be noted that the recommended investment pathway for the Picton South load area is development strategy (2) and that the remaining identified investments will be taken forward in due course. In Western Power's view development strategy 2 maximises the net benefit after considering alternative options and thereby satisfies section 9.16(b) of the Code.

6. Recommendation

Western Power requests that the ERA determines that the proposed major augmentation under Stage 1 works of the recommended development strategy (2), at a total estimated nominal cost of $38.2 million, satisfies the regulatory test as set out in Section 9.20 of the Code.[1]