D-factor Compliance Summary

Bremer Bay Network Control Services

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1. Purpose

This D-factor Compliance Summary has been prepared to support Western Power's proposed D-factor adjustment to target revenue over the fourth Access Arrangement (**AA4**) period. Specifically, this Compliance Summary details the additional non capital costs incurred by Western Power during the third access arrangement (**AA3**) period in relation to demand management initiatives or Network Control Services (**NCS**).

Its primary purpose is to:

1. demonstrate that the NCS relates to demand management or a generation solution that would otherwise require network augmentation
2. demonstrate that the operating expenditure proposed complies with the requirements of Sections 6.40 and 6.41 of the *Electricity Networks Access Code 2004* (**Access Code**).

This document provides a summary of the key information required to demonstrate compliance with the requirements of the access arrangement and the Access Code. This document also provides references to the key documents that support this Compliance Summary and capture the decisions and justifications made throughout the course of the project/program.

Where relevant, this D-factor Compliance Summary supplements key documents by:

- providing references to additional information and documents which assist in demonstrating compliance, created during AA3 but not referenced or included in the key project documentation
- providing supplementary information which supports and/or demonstrates compliance of the project where this was not apparent in any existing documentation
- providing evidence of compliance with the Works Program Governance Framework.

2. D factor Compliance

Project / Program Numbers:	Network Service Agreement (NSA) with [redacted] for Bremer Bay Network Control Service
Strategy/Activity Description:	NCS provision for the Bremer Bay Power Station
Business case(s):	[redacted]
Regulatory Category:	Non-recurring operating expenditure

Project Overview:

NCS enable Western Power to procure generation and demand management in localised areas of network constraint and thereby defer the need for more costly network augmentation. The Bremer Bay Power Station has been providing NCS since 2006. In this case, localised generation can be dispatched in response to network contingencies such as peak lopping and to help mitigate lengthy outages (lasting more than two hours) for the town due to its distance from the Albany substation. The provision of NCS ensures that covered services can be provided to customers in these areas and reliability is not compromised. The proceeding information demonstrates the requirement for investment on the ALB 514 Wilyung feeder and that the Bremer Bay NCS is the most efficient solution which effectively deals with concerns relating to reliability and capacity.

The town of Bremer Bay is supplied by the ALB 514 Wilyung feeder, a long radial distribution feeder. This feeder has seen a total of 276 unplanned distribution faults in the period between July 2015 and June 2016 ranking it one of the worst feeders in terms of reliability in the SWIN. At the end of 2015/16, the Wilyung feeder had a System Average Interruption Duration Index

(**SAIDI**) of 520 minutes and a System Average Interruption Frequency Index **(SAIFI)** of 5.47 outages. The performance during the 15/16 financial year reflects relatively mild weather and it should be noted that previous years of the AA3 period did not fare as well1.

In 2003, the Minister for Energy released EnergySafety's report into an investigation of complaints about the reliability and quality of power supply in regions serviced by Western Power's network. These customer complaints arose at a time when the network was under an immense amount of strain following a series of intense storms and fires in late 2002. The report by EnergySafety confirmed that the network was not operating at the standards set in relevant regulation due to the age of the network and the increasing demands being placed on it. The report identifies priority areas for Western Power to concentrate on and provide options for remedial action to resolve these issues. Bremer Bay was identified as a major concern, with 14 per cent of complaints made to EnergySafety relating to this region of the network.

Western Power undertook a two stage pilot project to address the issues affecting customers in Bremer Bay. This included peak lopping during the Easter Holidays as well as providing support to the Bremer Bay township if the Wilyung feeder were to be affected by a fault.

Stage 1 of the pilot involved disconnecting Bremer Bay from the South West Interconnected System (**SWIS**) and constructing a wind-diesel power station in order to meet the town's power supply needs. While this power station was being constructed, the town was fed from a temporary diesel power station.

Once the wind-diesel power station had been commissioned, Stage 2 was initiated. Stage 2 involved connecting Bremer Bay back to the SWIS with the 600 kW wind-turbine operating in parallel and the power station only operating when the town was isolated from the network.

As of June 2012, Bremer Bay is grid connected and supplied by the SWIS. The diesel power station remains isolated from the grid and in standby mode such that it will be available. They are operated by [redacted] under a NSA and called upon once the town has been islanded, during times of peak demand (peak lopping) primarily during the Easter holiday period and for outages lasting longer than two hours.

The Bremer Bay diesel power station has also been required during bushfire season when Western Power has been directed by the Department of Fire and Emergency Services to place the Wilyung feeder out of service. The NCS has ensured that the township has a safe, reliable and efficient supply of electricity during such events.

1 In annualised average terms, over the AA3 period the Wilyung feeder experienced 230 unplanned distribution interruptions, 603 SAIDI minutes and 5.26 SAIFI interruptions.

[redacted]

Network service agreement:

In 2006, Western Power and [redacted] executed a service contract wherein [redacted] would build and operate a generation facility in Bremer Bay to provide Western Power with network support to cover potential outages.

The Bremer Bay Power Station NSA is documented in the transfer orders gazetted upon the disaggregation of Western Power in 2006. Due to the circumstances surrounding its inception in 2003 and the disaggregation of Western Power in 2006, there are no available records detailing the business case supporting the development of Stage 1 or Stage 2 of the Bremer Bay power station contractual arrangements.

The NSA with [redacted] commenced in April 2006 for a ten year term and expired 31 March 2016. The term of the contract was dictated by the network control procurement requirements in the Wholesale Electricity Market Rules[3]. The contract stipulated that the fixed cost component was [redacted] annually charged monthly at [redacted] Monthly fixed costs include amortisation of capital costs, maintenance and operator on-call costs. The capital cost component is not present in the 2016 renegotiated contract as by this point the capital cost for the facility has been fully amortised.

There is documentation, including a business case, supporting the renegotiation of the Bremer Bay power station contract. The new contract negotiated with [redacted] will benefit from reduced costs and will apply for a two year term, with an option to extend by one year if necessary.

The contracted operational expenditure for the renewal period is [redacted] for fixed costs. Variable costs are incurred if Western Power requests [redacted] to energise the facility to operate during outages. By way of an example, Western Power requested that the Bremer bay facility be energised twice in 2015 at a variable cost of less than [redacted] in total.

Table 1: Investment reconciliation overview ($M, nominal):

		$M, nominal
Internal approvals	AA3 submission	[redacted]
	Business case**	
	Business case + change control	[redacted]
AA3	AA3 Actual	[redacted]
Variances	To AA3 submission	[redacted]
	To internal approvals	

* Note there was no approved expenditure associated with this project in AA3 as the Economic Regulation Authority advised that all NCS expenditure was to be recovered through the D-factor mechanism if it could be demonstrated that the expenditure met the requirements of sections 6.40 and 6.41 of the Access Code.

The business case for the re-negotiated contract incorrectly states that there were funds allocated to the Bremer Bay NCS in the AA3 Final Decision. The AA3 submission forecasts in this investment reconciliation represent the expenditure proposed by Western Power in its initial submission on the Proposed Revisions to the Access Arrangement for the Western Power Network.

** As the Bremer Bay NCS was established prior to the disaggregation of Western Power in 2006, a business case substantiating the original 10 year contract for the Bremer Bay power station is not available.

Investment (nominal):	[redacted]

[3] In 2006, Clause 5.2.2 of the Wholesale Electricity Market Rules stated that the minimum period over which a network control service is required is ten years form the in-service date. This requirement was removed in December 2007 in accordance with the rule change decision RC_2007_22

Basis & Refinement of Cost Estimates over time (including explanation of variances if applicable):	The cost of NCS can vary considerably depending on a number of factors including the running time, cost of fuel, power station configuration and contractual arrangements. In 2013 the operational procedures for running the Bremer Bay power station were modified. This reflected the changing seasonal demand and shifting peak. When the NSA with [redacted] was established it was agreed that the power station (diesel generators) would be run throughout the Easter holidays. This period typically saw an influx of tourists to Bremer Bay, resulting in high levels of demand. However, after more than a decade of operation, it became evident that this peak does not always warrant the use of the power station. Further, the peak does not always occur around Easter. Therefore, Western Power implemented new operational procedures under which the power station is only energised when sufficient supply cannot be provided by the wind farm and the Wilyung feeder as well as those times where an outage exceeds more than two hours. This revised operational procedure allows Western Power to reduce the run times of the facility, resulting in lower fuel costs. The original contract with [redacted] was for a term of 10 years and was due to expire in March 2016. The original contract incurred costs around [redacted] annually, charged monthly at [redacted]. This fixed component covers amortisation of capital costs, maintenance and operator on-call costs. Variable charges are incurred where Western Power requests [redacted] to energise the facility. Under this arrangement the facility was called twice in 2015 at a variable cost of less than [redacted] in total. The original contract was extended for a number of months to allow for the time necessary to negotiate improved commercial terms with [redacted]. To support this negotiation process and the development of the 2016 business case, invoices received from [redacted] were used to understand generation patterns as well as estimate the annual opex requirement to run the power station. This information in conjunction with the removal of amortisation costs has resulted in a better contractual outcome for Western Power. The new contract with [redacted] is for a term of two years, with an option to extend by up to one year if deemed necessary. The shorter term of the contract reflects the changing energy market and provides Western Power with sufficient flexibility to avoid long term contractual obligations during a time that has a large degree of uncertainty with regards to jurisdictional boundaries, technological changes and commitment periods. We expect that the NCS will remain throughout the AA4 period and have forecast its cost based on the recently contracted fixed cost component and an average of historical actual expenditure.
S. 6.40 – *the non-capital cost component of approved total costs for a covered network must include only those capital costs which would be incurred by a service provider efficiently minimising costs*	

Identified Need & Timing:	As previously discussed, in 2003 the Minister for Energy released EnergySafety's report into an investigation of complaints regarding the reliability and quality of power supply in regions serviced by Western Power's network. The report confirmed that the network was not operating at the standards set in relevant regulation due to the age of the network and the increasing demands being placed on it. As a result, Western Power identified priority areas for remedial action, of which Bremer Bay was identified as a major concern. Western Power proposed a two stage pilot project to address the issues affecting customers in Bremer Bay. This included peak lopping during the Easter Holidays as well as providing support to the township if the Wilyung feeder were to be affected by a fault. Stage 1 of the pilot involved disconnecting Bremer Bay from the SWIS and the constructing a wind-diesel power station in order to meet the town's power supply needs. While this power station was being constructed, the town was fed from a temporary diesel power station. Without the introduction of generator support the frequency and duration of extended outages in Bremer Bay would be significant. It is estimated that if NCS were not provided and a fault was to occur on the Wilyung feeder, Bremer Bay could be without power for more than four hours. At the time of the contract re-negotiation in 2016, the feeder had experienced a total of 276 unplanned distribution faults resulting in it being one of the worst performing feeders in the SWIN. At the end of 2015/16 the Wilyung feeder had a SAIDI of 520 minutes and a SAIFI of 5.47 outages. The performance during the 15/16 financial year reflects relatively mild weather and it should be noted that previous years of the AA3 period did not fare as well. It is important to note that the Bremer Bay power station is not fully automated and although controlled remotely, requires a manual transfer of load from the SWIS to the power station. As a result, the township experiences short duration outages due to the switching between power station support and SWIS. That is, there is currently no bumpless transfer capability in Bremer Bay.
Options Analysis:	As the Bremer Bay NCS was established prior to the disaggregation of Western Power in 2006, a business case substantiating Stage 1 and Stage 2 of the Bremer Bay power station has not been located. As mentioned previously, the Bremer Bay Power Station NSA is documented in the transfer orders gazetted upon the disaggregation of Western Power in 2006. The NSA with [redacted] commenced in April 2006 for a term of ten years. In 2016 Western Power prepared a business case to evaluate the costs and benefits of renegotiating the NCS contract with [redacted] The following information presents the options considered in the Bremer Bay Power Station Contractual Renegotiation Business Case, approved in June 2016. This information is presented here to demonstrate that the Bremer Bay NCS is the best option to overcome the reliability issues experienced on the Wilyung feeder. Two options[4] were considered to address the power quality and supply reliability issues in Bremer Bay: • Do nothing • Finalise a new NSA & run diesel generators as required Each option was considered against evaluation criteria: • Customer impact • Power supply and reliability • Cost. **Option 1 Do nothing** If Western Power were to let the existing contract with [redacted] expire and not renegotiate the NSA the Bremer Bay Power Station would no longer be operational. It is expected that this would result in a range of power quality and supply reliability issues in Bremer Bay. Specifically, if no generation support is provided, the system wide SAIDI for rural long feeders in March 2016 was expected to increase from 547.5 minutes to 551.7 minutes, resulting in [redacted] per annum in foregone rewards/penalties under the service standards adjustment mechanism.

[4] Traditional solutions were considered prior to establishing the NCS, however these were not pursued due to their prohibitive cost and significant implementation time.

	This option is also expected to generate a significant amount of community backlash due to the reduction in the level of service delivered to the township. It is expected that this would reflect negatively on Western Power's corporate profile and reputation. **Option 2 - Finalise a new contract for network control services** This option involves the negotiation of a new NSA, for the provision of NCS over a period of two years, with the option to extend by one year if necessary. This contracted term was chosen as it presented a good balance between the administrative burden and costs associated with frequent contract re-negotiation and delivering flexibility to all parties. This arrangement will facilitate the running of diesel generators when required. This provides Western Power with sufficient flexibility to operate the network in response to constraints as they arise. This includes outages due to faults, bushfire hazards, and peak lopping when demand in the township is high. In addition, this Option ensures that customer satisfaction is maintained and regulatory requirements are met whilst operating expenditure is minimised. Renegotiating the NSA with [redacted] resulted in significant cost savings to the business. Based on the historical operating expenditure for diesel generators, the 2016/17 nominal operating cost for this option is estimated to be [redacted] per annum. This represents a cost reduction of [redacted] in 2016/17. No impact on rural long SAIDI or SAIFI is expected under this option as it maintains the current operation of the Bremer Bay power station. Without the provision of network control services there would be a deterioration in the level of service and reliability performance. The recommended Option was to finalise a new NSA with [redacted] and run the power station when required. This option was assessed to be superior in terms of customer satisfaction and reliability, as well as representing better value for money than the NSA established in 2006.
Scope of Works:	The recommended Option in the 2016 business case consisted of the following key activities: • Negotiate a new NSA with [redacted] for the provision of network control services during times of peak demand and during outages lasting longer than two hours • Proposed length of NSA should be two years with the option to extend out by a further year if required.
Implementation Timing:	The Bremer Bay NCS solution was implemented following an investigation in 2003 by the Office of Energy and Director of EnergySafety relating to customer complaints about electricity supply and network reliability in the SWIS. In response to the investigation the Minister for Energy announced Western Power's intention to spend [redacted] over a four year period on the transmission and distribution system as well as immediate steps to improve supply and reliability in communities such as Bremer Bay. Stage 1 was completed prior to 2006 Stage 2 was completed in 2006 The NSA with [redacted] was re-negotiated in 2016 following the expiry of the original contract.
Engineering Design	This project was designed in accordance with Western Power's suite of standards, guidelines and manuals relating to planning and technical design at the time. All documentation was developed in line with good electricity industry practice and met the relevant external standards requirements at the time.
Procurement	As the 2016 Business Case recommended the negotiation of a contract to continue the provision of network control service in Bremer Bay it did not require the sourcing of any materials and equipment.

[5] Comprised of both forecast fixed and variable cost components

Project/Program Governance:	This program was governed by Western Power's Works Program Governance Framework. The 2016 Business Case was approved in accordance with Western Power's procedures. The NCS contract between Western Power and [redacted] was required to have the necessary approvals associated with a commercial contract.
Project/Program Management:	The 2016 re-negotiation project was delivered under Western Power's standard project management practices which impose specific controls in relation to: • project change/scope management • project time management • project cost management • project risk management • project performance monitoring • project closure.
Complies with S6.40	• ☒ Yes – necessary efficient minimum cost investment • ☐ No
S. 6.41 – *Where in order to maximise the net benefit after considering alternative options, a service provider pursues an alternative option in order to provide covered services, the non-capital cost component of approved total costs for a covered network may include non-capital costs incurred in relation to the alternative option if:* *(a) the alternative option non-capital costs do not exceed the amount of alternative option non-capital costs that would be incurred by a service provider efficiently minimising costs; and* *(b) at least one of the following conditions is satisfied:* *(i) the additional revenue for the alternative option is expected to at least recover the alternative option non-capital cost* *(ii) the alternative option provides a net benefit in the covered network over a reasonable period of time that justifies higher reference tariffs; or* *(iii) the alternative option is necessary to maintain the safety or reliability of the covered network or its ability to provide contracted covered services*	
S. 6.41(b) Justification Applied & Recoverable Portion (nominal):	☐ Incremental revenue $ ☐ Net benefit $ ☒ Providing covered services (safety and reliability) [redacted]

Justification Description:	The Bremer Bay Station has the functionality to perform peak lopping. This enables the power station to operate continuously, 24 hours per day as a local network island. This function will only be activated when certain criteria are met and is overseen by Western Power's network operators. This network support is required to satisfy the key drivers of this project, that is, customer satisfaction and power quality and reliability. If the decision was made not to run the diesel generators, in times of need, then Western Power may fail to meet its customer and regulatory requirements for both planned and unplanned outages. Peak lopping is complemented by standby availability to improve the reliability performance for Bremer Bay customers. This ensures that the power station is available (if not in use for peak lopping) to supply Bremer Bay if a fault occurs for more than two hours on the Wilyung feeder. The ALB 514 Wilyung feeder which supplies Bremer Bay experienced a total of 276 unplanned distribution faults within the twelve months to June 2016. Over the same period the reliability performance for the feeder was SAIDI of 520 minutes and SAIFI of 5.47 outages. SAIFI figures were not considered as it was assumed that there is marginal impact on outage frequency due to the operational nature of the Bremer Bay Power Station. That is, as the power station does not operate under bumpless transfer there are likely to be a higher frequency of outages. This is due to the requirement for power disruption before every connection and disconnection of the power station to and from the network. Fault history for the period between 2011/12 – 2014/15 financial years at Bremer Bay shows that the town was islanded for a total of 4,570 minutes over the four year period. If the town of Bremer Bay was no longer supported by diesel generation it is possible that the SAIDI figures for the ALB 514 feeder could rise to approximately 176 minutes. This would raise the rural long SAIDI figure from 547.5 minutes to 551.7 minutes for the year resulting in approximately [redacted] pa in foregone rewards/penalties. Further, an increase in the expected rural long SAIDI to 551.7 minutes would increase the probability of Western Power not meeting the SSB compliance targets in AA3. Failure to meet SSBs would result in non-compliance. The Electricity Industry (Network Quality and Reliability of Supply) Code 2005 **(NQRS Code)** sets out supply reliability and quality standards for electricity network operators in relation to voltage fluctuations, harmonics, unplanned or planned interruptions and complaints. In terms of performance against the NQRS Code in Bremer Bay[6]: • the number of customers in the locality of Bremer Bay that have been interrupted more than 16 times over a ten year period is 128 • the number of customers in the locality of Bremer Bay that has been interrupted for more than 12 hours more than once over a ten year period is 423[7] • the average total length of interruptions for customers in the locality of Bremer Bay is 1,076 minutes. It would be expected that without the Bremer Bay power station, performance against the NQRS Code would deteriorate further and would result in significant non-compliances relating to reliability. As detailed in the above discussion, the NCS solution has ensured that the network can provide a more reliable, better quality supply for the Bremer Bay township.
Complies with S. 6.41(b)?	☒ Yes fully ☐ In part ☐ No

[6] The performance reported here against the NQRS Code represents the cumulative performance for ten years as at 30 June 2017.

[7] To put this put this in perspective, there are 502 customers in Bremer Bay as at 30 June 2017.

3. Compliance with works program governance framework

The following table provides key documentation references as evidence that the program has been managed in compliance with Western Power's Work Program Governance Framework. The primary evidence is the existence of mandatory phase record documents prepared prior to the project/program progressing to the next phase.

Phase	Mandatory Phase Record Document/s	DM Reference
1 - Initiation Phase	Initiation Estimate	
2 - Scoping Phase	Work Planning Report Scoping Estimate	
3 - Planning Phase	Business Case (2016) Investment Evaluation Model Planning Estimate Project Management Plan	[redacted]
4 - Execution Phase		
5 - Closeout Phase		
6 - Benefits Realisation Phase	A formal benefits realisation will be undertaken post project execution and closeout	

4. Endorsements

All information presented in this document is considered accurate and is intended for use in supporting Western Power's AA3 submission.

Endorsed by:

Name	Position	Signature	Date