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**REVIEW OF WESTERN POWER'S APPLICATION
FOR TECHNICAL RULES AMENDMENTS**

Prepared for

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TABLE OF CONTENTS

SECTIONS

1.	INTRODUCTION.....	1
2.	APPROVAL CRITERIA	2
3.	PROPOSED AMENDMENTS	4
3.1	DC INJECTION AMENDMENT.....	4
3.1.1	Description of Proposed Amendment.....	4
3.1.2	Current Situation	4
3.1.3	Public Submissions	5
3.1.4	Comment	5
3.1.5	Conclusion.....	7
3.2	AS 4777 DATE AMENDMENTS.....	7
3.3	CLARIFYING DEFINITIONS.....	8
3.3.1	Connection Point	8
3.3.2	Connection Assets.....	9
3.3.3	Point of Common Coupling.....	10
3.4	COMMENTS ON 2011 PUBLIC SUBMISSIONS	11
3.5	TYPOGRAPHICAL CORRECTIONS.....	11

DISCLAIMER

This report has been prepared for the Economic Regulation Authority to assist it in its review of Western Power's application for amendments to its Technical Rules, which was submitted to the Authority in November 2015. Geoff Brown and Associates Ltd accepts no responsibility to any party other than the Authority for the accuracy or completeness of the information or advice provided in this report and does not accept liability to any party if this report is used for other than its stated purpose.

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1. INTRODUCTION

Western Power's Technical Rules (Rules) specify technical requirements for the design and operation of its South West Interconnected Network (SWIN) and the minimum technical standards that a network user's plant and equipment must meet before it can be connected to the network. The Rules are necessary to ensure that the power system (which comprises the dynamic system that generates electricity and delivers it to connected loads) remains in a secure state at all times and also that the connection of a user to the network does not have a detrimental effect on the level of service provided to other network users.

Western Power has prepared the Rules in accordance with Chapter 12 of the Electricity Networks Access Code (Code). Clauses 12.50-12.54 specify the process for amending the Rules and, in essence, require that any amendments to the Rules must be approved by the Economic Regulation Authority (Authority) before they can take effect. Clause 12.54 requires that, if the Authority considers a proposed amendment to be substantial, it must first consult with the public and then approve the proposed amendment only if it considers that the amendment will not have a material adverse effect on Western Power or a network user.

In November 2015 Western Power applied to the Authority to make a number of amendments to Rules¹. In February 2016, the Authority published an Issues Paper² as a prelude to a public consultation process that it initiated in accordance with clause 12.54(a) of the Code. As a result of the public consultation, it received six submissions from interested parties, all of which are available on the Authority's website³

We have been engaged by the Authority to provide advice to inform its consideration of whether or not to approve Western Power's proposed amendments and this report documents this advice. Our report takes into account the information provided in Western Power's application, the submissions received by the Authority as a result of its public consultation process and Western Power's responses to these submissions, which it has provided to the Authority.

¹ *Submission to the Economic Regulation Authority for amendments to the Technical Rules, November 2015 – Part A; Western Power (Ref DM# 12645771, v12A).*

² *Proposed Amendments to the Technical Rules Submitted by Western Power, Issues Paper; Economic Regulation Authority, February 2016.*

³ <https://www.erawa.com.au/electricity/electricity-access/western-power-network/technical-rules/technical-rules>.

2. APPROVAL CRITERIA

Clause 12.54(b) of the Code states that the Authority must approve a proposed amendment *only* (our emphasis) if it considers that the amendment will not have a material adverse impact on [Western Power] or a user. In this case Western Power is the applicant, so we have assumed that the proposed amendments will not have a material adverse impact on it, and have not considered this aspect in detail for this report⁴.

Hence, in writing this report we have considered the impacts of Western Power's proposed amendments on its network users. We have looked at these impacts in the context of the objectives of the Rules as specified in clause 12.1 of the Code. These objectives are that the Rules:

- a) *are reasonable;*
- b) *do not impose inappropriate barriers to entry to a market;*
- c) *are consistent with good electricity industry practice; and*
- d) *are consistent with relevant written laws and statutory instruments.*

Application of criteria (a) and (b) above require a higher degree of judgement and are therefore more subjective than the application of the other two criteria. Furthermore, criterion (b) requires consideration of the economic impact and is therefore particularly relevant to the Authority's consideration of whether or not to approve the proposed amendments. Western Power is a monopoly and its network users do not have the option of choosing an alternative service provider. The constraints that the Code places on how Western Power can develop and amend its Technical Rules, including the requirement for public consultation and the approval of an economic regulator before any changes can take effect, appear to be designed to limit the extent to which Western Power can use its monopoly power.

In undertaking this review, we have considered each amendment proposed by Western Power in the following context:

- What is the impact of the amendment on users?
- Why is the amendment necessary and are the benefits of the amendment greater than, or commensurate with, any adverse impact on users? We have taken the view that it is up to Western Power to describe and justify the benefits of any amendments it proposes. Our role is to critically review this information, and also information included in any public submissions, and to advise the Authority whether we think sufficient information has been provided to justify a Rules amendment. It does not extend to making an independent assessment of a proposed amendment if doing so requires reliance on information not provided to us in the application or the public submissions. It follows that it is open to the Authority to decline to approve an amendment because the benefits have not been justified, which is not to say that the amendments could not be justified if additional information not provided by the applicant was also taken into account.
- We have also considered whether the benefits could be achieved more cost effectively than implied by the proposed amendment. This assessment is regardless of where the cost falls – in our view an inappropriate barrier to entry is created if the costs imposed on users are materially greater than the costs that Western Power would incur to achieve the same outcome.

⁴ Clause 12.50 of the Code provides for an application for a technical Rules amendment by the Chairman of the Technical Rules Committee or the service provider of an interconnected network. In such a situation, the impact of a proposed amendment on Western Power would need to be considered.

Finally, we have looked at the wording of the amendments proposed by Western Power and suggested alternative wording where we considered it appropriate to increase clarity and conciseness, or to reduce ambiguity.

3. PROPOSED AMENDMENTS

3.1 DC INJECTION AMENDMENT

3.1.1 Description of Proposed Amendment

Clause 3.2.1(c)(3) of the Rules states that:

A User must not inject into the transmission or distribution system any DC component of current produced by its own equipment.

Western Power is seeking to delete this clause and to insert into the Rules a new clause 3.2.1(g) that states⁵:

(g) DC Injection

- (1) *A User connecting at high voltage to the distribution system, or connecting to the transmission system, must not inject into the transmission or distribution system any DC component of current produced by its own equipment;*
- (2) *A user connected at low voltage must not inject into the distribution system any DC component of current produced by its own equipment that exceeds 0.5% of the maximum power transfer capacity of the connection point per phase as specified in the relevant connection agreement;*

Excessive DC injection can lead to adverse effects in AC networks, such as causing increased levels of harmonics and waveform distortion in network assets which use magnetic cores (see cl 3.2.1(c)); and in some circumstances can cause corrosion of metallic assets.

An accuracy of 5% applies for LV connection point DC injection measurement. Readings must be taken at normal operating temperature, under full site load, and/or full site generation output conditions, and be calculated as two minute averages. LV connection point DC injection measurements below 10mA can be considered insignificant.

Western Power is further proposing a number of consequential amendments to other clauses in the Rules to ensure consistency.

The motivation for this amendment is that it is not practical to reduce DC current injection into the network to zero unless the connection is through a transformer. Users connecting directly to the low voltage network do not need a transformer, and requiring users to provide an isolating transformer simply to eliminate DC current injection is not reasonable because the cost is excessive. Western Power argues that the proposed amendment will limit the injection of DC current into the network to acceptable levels without requiring users to install isolation transformers specifically for this purpose.

3.1.2 Existing Situation

In order to manage this issue, Western Power's existing practice is to:

- Allow the connection of inverter coupled generators rated at less than 10kVA single phase or 30kVA three phase to the low voltage network provided they comply with clause 3.7 of the Rules. In particular clause 3.7.3(b) permits only the use of inverters that have been type tested to prove compliance with

⁵ Letter ref 13507648v2 from Western Power to the Authority dated 25 February 2016. A copy of the letter is on the Authority's website.

AS4777.2 2005. This standard limits the DC output of the inverter to 0.5% of the inverter current rating.

- Automatically provide an exemption from clause 3.2.1(c)(3) of the Rules for higher rated inverter coupled generators connecting to the low voltage network provided that the DC injection current measured at the connection point is less than 0.5% of the connection point rating⁶.

It appears that Western Power's efforts to limit the injection of DC currents into the low voltage network are focused on inverter coupled generators. Other loads, such as variable speed drives, fluorescent and LED lights and computer power supplies can also cause DC current injection into the network. However, user installations with such loads but no inverter coupled generator are allowed to connect to the network without any monitoring of DC injection currents.

3.1.3 Public Submissions

As noted above, the public consultation process initiated by the Authority drew six submissions. These had two main themes.

- Submitters were concerned the amendments did not cover the use of DC residual current devices. We believe this issue is outside scope of the Rules. The use of DC residual current devices is a safety issue relating to the design of the electrical installation with a user's premises rather than to the impact that a user's connection might have on the operation of Western Power's network. Hence this issue comes within the purview of the EnergySafety division of the Department of Commerce rather than the Authority.
- Submitters also noted that the amendment would impact load connections without inverter coupled generators connecting to the network. As indicated above, Western Power currently allows such loads to connect without requiring any measurement or monitoring of DC injection currents. If the proposed amendment is approved, it would extend the monitoring regime to include these loads, and thus potentially impose additional costs on such connections to ensure compliance. Submitters noted that no other distribution utility in Australia or New Zealand had a requirement limiting DC current injection and that Western Power's application provided no evidence that any limit was necessary.

In response, Western Power has advised the Authority that⁷:

Western Power acknowledges the points raised and the industry perspective they convey but maintains that the proposed change is the best way forward at present. In the recent months, while existing as an exemption, this amendment has resolved many of the embedded generation connection issues without raising safety concerns. However, Western Power suggests that in the future, if and when further analysis is completed and with the conclusion of the Electricity Market Review (and transition to the National Electricity Rules), additional changes to the way DC is regulated can be considered including wholly removing the limits.

3.1.4 Comment

Clause 3.2.1(c)(3) is impractical in respect of connections to the low voltage network unless a transformer is used to isolate a user's equipment from the network⁸. Any electrical load incorporating an electronic switch has the potential to produce DC currents, which can be injected back into the low voltage network. Common sources of DC current

⁶ Exemption No 30 dated 15 May 2015 for low voltage connection points. See also http://www.westernpower.com.au/documents/technical_rules_direct_current_injection_exemption-low_voltage_connection_of_compliant_inverters.pdf

⁷ Email dated 29 March 2016.

⁸ A transformer is a device that will only work on alternating current circuits. Any direct current fed into a transformer input will not be passed through to the output.

include computer power supplies, fluorescent lights and LEDs, suggesting that the current in a low voltage circuit supplying commercial office buildings could potentially have a high DC current component. In its submission, Wood and Grieve states that:

In our significant experience, we have not yet had a DC injection reading of zero returned by a contractor on a commercial site, and thus must deduce that the majority of these customers do not comply with the current Rules⁹.

It is also an established fact that high levels of DC currents in an electrical network can have adverse side effects. These include magnetic saturation in distribution and measurement transformers causing overheating, and corrosion of buried metal pipework, including gas and water pipes. However, the severity of these adverse effects is unclear and our very high level internet search confirms Wood and Grieves' assertion that there is no consensus within the industry as to what an appropriate limit for DC current injection should be. We found one paper written in 2005 for the UK Department of Trade and Industry that suggested that injection of 40.5A DC per phase into a 500kVA transformer would be unlikely to cause harmful side effects to the transformer. This compares with Western Power's proposed limit of just under 3.5A DC (per phase) for a similar size connection point. The paper acknowledged that the corrosion of buried pipes and cables was a cause for concern, given that accepted levels of corrosion attack define a dissolution of 0.18kg of steel per year for a constant DC current of 20mA. However, it notes that other straightforward techniques such as the use of sections of plastic gas pipe can directly prevent current flow, and hence corrosion, in buried pipe sections and recommends that a more holistic approach be considered for managing this issue within the context of developing a corrosion management code of practice¹⁰.

However, Western Power has not provided any evidence to show that the present levels of DC injection into its network are creating issues of sufficient magnitude to require mitigation or control. We note that the issue of what is an appropriate level of DC injection has still to be resolved by the industry and that there is some research that indicates that the levels currently applied by Western Power are unduly restrictive. The fact that no other distribution utility in New Zealand or Australia has a similar requirement and that there is no evidence that this has created problems is also relevant.

To date, Western Power's attempts to control DC current injection have been selective in that they have targeted only one potential current source, inverter coupled generators. Connections that do not include an inverter coupled generator are allowed to connect without restriction. The proposed amendment will extend the monitoring regimes to cover these loads, and on the surface this may seem fair. However, in our view it is unreasonable that users wanting to connect these loads to the network will only now, as a consequence of the proposed amendment, be at risk of being required to pay an additional compliance cost, in order to address a problem that Western Power has provided no evidence to show is having negative consequences. The possibility that the requirement may be lifted entirely, after additional investigation sometime in the future, as suggested by Western Power (see Section 3.1.3), is unlikely to provide any consolation to users caught by the proposed amendment in the interim.

It would have been helpful if Western Power's application had included a comparison of DC current injection levels measured at connection points of similar capacity with and without inverter coupled generators. This would have allowed us to assess whether the present focus on loads with inverter coupled generators was justified, and to assess the likelihood that other loads would actually incur new costs if the proposed amendment was approved.

Another issue with the way that Western Power deals with the issue of DC current injection is that it allows inverter coupled generators rated under 10kVA single phase and 30kVA three phase to connect without monitoring DC current injection levels, provided the inverters comply with AS 4777 and other requirements of clause 3.7 of the Rules, and

⁹ *Comment on the Proposed Amendments to Western Power's Technical Rules*; Wood and Grieve Engineers, 11 March 2016, p4.

¹⁰ *DC Injection into Low Voltage AC Networks*; Paper prepared for the DTI Technology Programme by the University of Strathclyde, 2005.

it has not indicated that it intends to change this approach. This is not in compliance with clause 3.2.1(c)(3), which the Rules state apply to *all* (our emphasis) users. The current practice also provides a loophole whereby such users with other equipment that generates high levels of DC current may be connected without detection.

3.1.5 Conclusion

The zero DC injection requirement of clause 3.2.1(c)(3) is unachievable for most users connecting to the low voltage network. We see little point in maintaining this requirement for users connecting to the high voltage network as the transformer associated with the connection point also acts as an isolating transformer and prevents DC current injection. We therefore recommend that this requirement be deleted.

We do not recommend that Western Power's proposed new clause 3.2.1(g) be approved because it will potentially impose new compliance costs on certain categories of user. Western Power has not provided any evidence of the need for these costs and, furthermore, has signalled that the requirement could be lifted at some stage in the future, should further study indicate that it is unnecessary.

We also have concerns about Western Power's current practice of applying an automatic exemption from clause 3.2.1(c)(3) of the Rules for users wishing to connect larger inverter coupled generators to the network, provided that they meet specified DC current injection limits at their connection point. This is because this practice treats this class of user differently from other users, in that users without inverter coupled generators are not required to demonstrate compliance with injection current limits. Western Power has provided no measurements or other evidence to show that levels of DC current injection levels at connections where the load includes an inverter coupled generator are significantly higher than at other connections.

In summary, we suggest that Western Power delete clause 3.2.1(c)(3) of the Rules and align its practice with other distribution utilities in Australia and New Zealand. Should evidence become available that this could cause a problem, Western Power should make a fresh application for an amendment to the Rules. We would expect such an application to be supported by objective evidence showing the extent of the problem that it is trying to address and analysis demonstrating that its proposed solution is a cost effective approach to dealing with the issue.

3.2 AS 4777 DATE AMENDMENTS

Clause 3.7 of the Rules currently requires that inverters used to connect small inverter coupled generators to the network comply with AS 4777:2005. This standard has recently been updated and Western Power has proposed to amend this requirement to remove the year 2005 from all references in the Rules to AS 4777. The reason for this is to ensure that any inverter that to the latest version of the standard, but not to AS 4777:2005, can connect with the network without requiring an exemption from the Rules.

We recommend the Authority approve this proposed amendment. We see no reason for equipment that has been shown to comply with the latest version of any relevant standard to be prevented from connecting to the network. In the unusual event of a situation arising where Western Power wanted to allow only the connection of equipment complying with an earlier version of a standard, then in our view it is reasonable that the reason for such a requirement be subject to scrutiny through a Rules amendment application, because of the potential for it to disadvantage manufacturers.

There are other requirements in the Rules where a similar situation arises. Specifically:

- Clause 2.2.3(a) refers to AS/NZS 61000.3.7(2001);
- The text box underneath Table 2.3 refers to AS 61000.3.7(2001);
- Clause 2.2.4 refers to AS/NZS 61000.3.6(2001);

- The text box under Table 2.5 refers to AS 61000(2001);
- Clause 2.2.6 refers to AS 2344(1997);
- Clause 2.3.3(b) refers to AS/ANZ 61000.3.7(2001);
- Clause 2.3.3(c) refers to AS/ANZ 610003.7(2001);
- Clause 2.3.3(d) refers to AS/NZS 6100(2001);
- Clause 2.3.4(a) refers to AS/NZS 61000.3.6(2001);
- Clause 2.3.4(c) refers to AS/NZS 61000.4.7(1999);
- Clause 2.9.1(c) refers to AS 60044(2003);
- Clause 3.2.1(e) refers to AS 2344(1997);
- Clause 3.3.3. refers to AS 1359(1997);
- Clause 3.6.9(d) refers to AS 1359(1997);
- Clause 3.6.10.1(l) refers to AS 60947.6.2(2004);
- Attachment 4 refers to AS 3851 (1991) (Amendment 1-1992); and
- Attachment 7 refers to AS 3851 (1991) (Amendment 1-1992).

Western Power should consider removing the dates from all these references. There is also a need to correct the typographical errors in the references in clauses 2.3.3(b) and (c) (AS/ANZ should be AS/NZS).

3.3 CLARIFYING DEFINITIONS

3.3.1 Connection Point

The current definition of a connection point in the Rules is:

The agreed point of supply established between the Network Service Provider and a User.

In Western Power's view this definition lacks clarity. It argues that is because the definition is contractual in nature, whereas the term connection point is generally used in the Rules to refer to a physical point on the network.

It proposes to redefine a connection point in the Rules as:

For contractual purposes connection point is defined as a point on the network identified in, or to be identified in, a contract for services as an entry point or exit point or bidirectional point. With reference to a physical location, connection point is defined as a point on a network at which network assets (owned by Western Power) are connected to assets owned by another person.

For clarification Western Power proposes that the following definitions be added to the Glossary.

Bi-directional point:

A single connection point at which electricity is transferred into and out of a network.

Entry point:

A single connection point at which electricity is more likely to be transferred into the network than out of the network.

Exit point:

A single connection point at which electricity is more likely to be transferred out of the network than into the network.

In our view Western Power's proposed amendment is more ambiguous than the current definition. For example:

- The criterion for determining whether a connection point is used in a particular instance as a contractual reference or a reference to a physical location is unclear. We would normally expect the term "connection point" to refer to a physical location on a network when it is used in a contract document;
- Western Power's proposed definition of a connection point used for contractual purposes lacks clarity in our view. In essence it defines a connection point as a point on the network identified in a contract as a connection point.
- The use of the term "another person" is too broad. For example, a point on a network where a measuring instrument hired by Western Power was connected would fit this definition, but would not be a connection point for the purposes of the Rules. In our view, there is no reason why the term "user" should not be used, consistent with the terminology used in the Rules. It was suggested that the term "user" would not include the owner of an interconnected network, but we believe that such a person would be a "user" in accordance with the definition in clause 1.3(b)(3).

Finally, we note that Western Power is not explicitly referred to in the body of the Rules. The term "Network Service Provider" is used to be consistent with the NER and also to avoid the need to revise the Rules if Western Power changed its trading name.

We propose the following definition, which we believe addresses all the concerns raised by Western Power:

A point on the network where the Network Service Provider's primary equipment is connected to primary equipment owned by a User.

We prefer the term "primary equipment" over the alternative "primary assets" because "primary equipment" is a defined term in the Glossary

3.3.2 Connection Assets

The Rules currently define "connection asset" as:

The equipment that allows the transfer of electricity between the electricity transmission or distribution system and an electrical system that is not part of that transmission or distribution system. This includes ant transformers or switchgear at the point of interconnection (including those that operate at a nominal voltage of less than 66kV) but does not include the lines and switchgear at the connection point that form part of the transmission and distribution system.

Western Power believes that this definition lacks clarity and is not consistent with the definition in the Access Code. We agree.

Western Power proposed new definition is:

For a connection point, means all of the network assets that are used only in order to transfer electricity to or from the connection point.

We recommend that the Authority approve this amendment.

3.3.3 Point of Common Coupling

The term “point of common coupling” is not defined in the Rules. Western Power’s application notes that there is a general understanding within the electrical power industry with respect to the term “point of common coupling” but for the purposes of the Rules a general understanding is not sufficient, particularly when a user is required to meet the power quality requirements defined in clauses 2.3.3 and 2.3.4.

Therefore, Western Power proposes to include the following as a new definition in the rules for the term “point of common coupling”.

The point on the WPN where Western Power requires compliance with the Technical Rules clauses 2.3.3(a) and 2.3.4(a). Under normal circumstances this compliance is required at the connection point but Western Power may, at its sole discretion, allow the point of common coupling to be at a point on the network upstream from the connection point, where it is reasonable to do so in accordance with good electricity industry practice.

We have two concerns about the definition proposed by Western Power.

- The “general understanding” of the meaning of the point of common coupling is the point on the network where the connection assets for a connection point are connected to assets that are shared with other network assets. While in most cases this will be a point electrically very close to the connection point, it will not always be the case. For example, the point of common coupling for a mine supplied by a dedicated transmission line owned by Western Power will be at the remote end of the line from the mine, whereas the connection point will be at the mine end of the line. In this situation, requiring power quality limits to be met at the connection point rather than the point of common coupling would impose a more onerous requirement on the mine owner than the relevant Australian standard.
- It follows that Western Power’s proposed definition would allow it to impose a more onerous requirement on a network user than required by the relevant Australian standard “at its sole discretion”. This would allow it to use its monopoly power as it saw fit. We do not see this as being consistent with the objective of the Code, which places limits on Western Power’s use of its monopoly power.

We see no reason why the definition of “point of common coupling” should not reflect the “general understanding” within the industry and suggest the following.

The point on the network where connection assets associated with a connection point are connected to primary network assets that are shared with other users.

We suspect that the definition proposed by Western Power has been formulated to allow a Western Power owned connection asset to subsequently be used to supply new users, well as the original user the asset was built to supply. Once this occurred, the Western Power asset would become part of the shared network as it would be used to supply more than one network user. As a result, the point of common coupling (where the connection assets associated with the connection point are connected to the shared network) would move closer to the connection point. As indicated above, this could place a more onerous requirement on the original user.

While we recognise the issue, this does not change our view, as such matters can be dealt with by commercial negotiation. For example:

- If, at the time of installation, Western Power sees a potential for a connection asset to supply other users at a later date, it could negotiate the location of the point of common coupling with the original user at the time it seeks connection. In this situation we would expect the additional costs that a user might face in

meeting the requirement at the agreed connection point to be offset by a discount on the price that Western Power would normally charge for providing the connection asset.

- On the other hand, if Western Power wants to change the status of a connection asset after it is in service in order to accommodate a new application for connection, it could negotiate with a user to improve the standard of its installation to allow the point of common coupling to be shifted, and to compensate the user for the cost of doing so.

3.4 COMMENTS ON 2011 PUBLIC SUBMISSIONS

In its final decision approving the current version of the Rules, the Authority identified four issues that had been raised by interested parties at a late stage in the approval process¹¹. The decision noted that further discussion and consultation was required to resolve these issues so that could be considered at the next Rules revision.

These submissions related to:

- Definitions of the terms “consumer”, “generator” and “user”;
- Definitions of the term “generating unit”;
- The rate of reconnection of small inverter coupled generating units following a supply interruption; and
- The requirement for a generating unit to have ride through capability, depending on the voltage at which the generating unit’s connection to the network is made.

In its application, Western Power has commented on each of these four issues and confirmed that it has engaged directly with the party making each submission. We have reviewed this commentary and concur with Western Power that no further intervention is necessary at this time.

Two of the submissions relate to the meaning of terms defined in the Rules. We assisted the Authority in its initial approval of the Rules and also in its review leading up to the November 2011 decision. We can confirm that the Rules were prepared internally by Western Power and, while they have been reviewed by the Authority, the Technical Rules Committee and ourselves on at least two occasions, they have never been closely scrutinised by an experienced legal draftsman. The discussion in Section 3.3 of this report illustrates how difficult it can be to develop definitions that are relevant, concise and unambiguous.

3.5 TYPOGRAPHICAL CORRECTIONS

Section 4 of Western Power’s application lists a number of typographical corrections that are required. Most of these relate to the correction of spelling mistakes and do not require comment.

However, we have some concerns over Western Power’s proposal to change the wording in clause A12.2 from “National Professional Engineers’ Register Standing” to “National Professional Engineers Register (NPER) or equivalent standing”. In particular:

- Engineers Australia has advised that the NPER no longer exists and was replaced by the National Engineering Register (NER);
- The addition of the phrase “or equivalent standing” not only changes the meaning but is ambiguous in that it is not clear whether the equivalence relates to the

¹¹ *Decision on Proposed Amendment of the Technical Rules for Western Power’s South West Interconnected Network*; Economic Regulation Authority, November 2011, pp 11-12.

Register or to the qualifications and experience of the certifier. It is also not clear who is to judge equivalence.

- As noted by Engineers Australia in its second submission, the reference to the NPER occurs in more than one place in the Rules. We think all references need to be changed and the terminology used should be the same in all cases.

In reviewing the wording of these references, Western Power should consider whether it is necessary for certifiers to be on the NER, or whether independent persons with the required skill and experience but who are not on the NER would also be acceptable.