



APA DEWAP Pty Ltd

1 July 2024

# APA Network - Planning Standards & Criteria



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## Contact details

Please contact us for more information on ADEWAP services:

Email: [nwisnetworkaccessenq@apa.com.au](mailto:nwisnetworkaccessenq@apa.com.au)

Attention: Head of Commercial

Level 12, 141 St Georges Terrace Perth WA 6000

Further information can be found here:

Webpage: [North West Interconnected System \(NWIS\) | APA Group](#)

# 1. Introduction

## 1.1. Purpose

This document is APA DEWAP Pty Ltd's ("ADEWAP") Planning Standards & Criteria prepared in accordance with the Pilbara Network Rules ("PNR") and the Pilbara Network Access Code ("PNAC") for the APA Network<sup>1</sup> in the Pilbara. This document sets out information relevant to the Harmonised Technical Rules ("HTR").

The purpose of the ADEWAP<sup>2</sup> Planning Standards & Criteria is to ensure a balance between providing safe, secure, and reliable quality of electricity supply at the lowest possible cost.

## 1.2. Legislative framework

The Planning Standards & Criteria forms part of ADEWAP's Network Development Policy requirements outlined at section 41 (1) of the PNAC and sets out the ADEWAP network planning criteria. The Network Development Policy requires:

*41 (1) The NSP of a light regulation network must ensure that the network development policy sets out*

- (a) information regarding, and setting benchmarks for, network planning and the technical standard and reliability of delivered electricity, comprising —*
  - (i) its "network planning criteria" as defined in, and in accordance with, the Pilbara networks rules; and*
  - (ii) information about limits, constraints and likely outages; and*
  - (iii) any other information as required,**to ensure that the information provided under this section 41(1)(a) is —*
  - (iv) consistent with good electricity industry practice; and*
  - (v) sufficiently detailed and complete to enable an applicant or user to determine the value represented by a particular reference service when considered together with the other information published by the NSP under this Chapter 4;*

*and*

- (b) a contributions policy in accordance with section 41(2).*

ADEWAP's Planning Standards & Criteria also meets the requirements of clause 2.5 of the HTR which is as follows:

### 2.5 Transmission and Distribution System Planning Criteria

- (a) In NSP must develop, maintain and from time to time review, and may from time to time amend, planning criteria for its network ("network planning criteria").*
- (b) An NSP's network planning criteria must:*
  - a comply with GEIP and these rules;*
  - b seek to be consistent with the overall objective of (at least) maintaining security and reliability within its network and across the power system;*
  - c for a covered Pilbara network:*
    - i be consistent with the Pilbara electricity objective; and*

<sup>1</sup> For the purposes of this document, references to "APA Network" have the same meaning as Alinta Port Hedland Network as defined in the PNAC.

<sup>2</sup> The term "ADEWAP" in this document refers to the Network System Provider (NSP) for the Alinta Port Hedland network as set out in the PNAC.

- ii *so far as practicable consistent with the balance of this clause 2.5(b), seek to accommodate access seekers', network users' and consumers' reasonable requirements regarding the connection of loads or generation.*

The purpose of the ADEWAP Planning Standards & Criteria is to ensure a balance between providing safe, secure and reliable quality of electricity supply at the lowest possible cost.

### **1.3. Application**

The Planning Standards & Criteria applies to connection applicants or users of the APA Network in the Pilbara. The APA Network is described in the ADEWAP System Description.

### **1.4. Effective period**

Planning Standards & Criteria applies from 1 July 2024. ADEWAP will update this document from time to time as required.

### **1.5. Confidentiality**

ADEWAP respects the confidentiality associated with prospective network connections in accordance with the PNAC.

### **1.6. Other relevant information**

Other documents prepared in relation to PNAC information requirements include:

- ADEWAP System Description
- ADEWAP Contributions Policy
- ADEWAP Queuing Policy
- ADEWAP User Access Guide
- ADEWAP Services and Pricing Policy

These documents can be found here [North West Interconnected System \(NWIS\) | APA Group](#)

## 2. ADEWAP network planning criteria

The ADEWAP network planning criteria (NPC) sets out the planning criteria used by ADEWAP for achieving and maintaining security and reliability on the APA Network, which:

- a) applies to network users and connection applicants on the APA Network; and
- b) defines the technical performance standards and characteristics of reliability for electricity delivered by a Reference Service(s) on the APA Network.

Connection applicants and users should note that ADEWAP's other network policies and standards, including the ADEWAP Contributions Policy, may also apply depending on the network access requirements.

The information below refers to clauses of the HTR which define the power quality and technical standards of ADEWAP's network planning criteria, and which are applicable to network access on the APA Network.

## 3. Power quality

The power quality and network performance requirements on the APA Network are to be maintained as follows:

1. **Frequency** – the ADEWAP NPC requires power system frequency to be maintained to within the technical envelopes defined at clause 2.2.1 of the HTR “Frequency Variations”.
2. **Voltage** – the ADEWAP NPC requires power system voltage to be maintained to within the technical envelopes defined at clause 2.2.2 of the HTR “Steady State Power Frequency Voltage”.
3. **Flicker** – the ADEWAP NPC requires power system flicker to be maintained to the limits set within clause 2.2.3 of the HTR “Flicker”.

## 4. Planning level

The planning levels for the APA Network comply with the following standards:

1. **Short Term Voltage Stability** – clause 2.2.9 of the HTR provide the Short Term Voltage Stability requirements of the ADEWAP NPC.
2. **Long Term Voltage Stability** – clause 2.2.11 of the HTR provide the Long Term Voltage Stability requirements of the ADEWAP NPC.
3. **Negative Phase Sequence** – protection level settings on the ADEWAP NPC are to comply with the settings provided at clause 2.2.5 of the HTR “Negative Phase Sequence”.



## 5. Planning level limits

The planning level limits for the APA Network are as follows:

1. **Harmonics** – the ADEWAP NPC requires power system harmonics to comply with the emissions limits defined within clause 2.2.4 of the HTR “Harmonics”.
2. **Electromagnetic Interference** – the ADEWAP NPC requires power system electromagnetic interference to comply to the interference limitations defined within clause 2.2.6 of the HTR “Electromagnetic Interference”.
3. **HTR clause 2.2.10** – Temporary Over-Voltages (planning level limits).

## 6. Generator performance settings

The specific generator performance settings of the ADEWAP NPC for the APA Network are listed below:

1. **Transient Rotor Angle Stability** – clause 2.2.7 of the HTR provide the generator performance settings relevant to Transient Rotor Angle Stability as required by the ADEWAP NPC.
2. **Oscillatory Rotor Angle Stability** – clause 2.2.8 of the HTR provide the generator performance settings relevant to Oscillatory Rotor Angle Stability as required by the ADEWAP NPC.

## 7. ADEWAP network planning philosophy

### 7.1. Application

The planning criteria in this section applies only to ADEWAP’s 66kV transmission network and not to connection assets. ADEWAP will design connection assets in accordance with a user’s requirement and the relevant requirements described in Chapter 3 (Technical Requirement of User Facilities) of the HTR.

### 7.2. Transmission system

ADEWAP seeks to achieve a transmission network redundancy standard of n-1 to network access on the APA Network. In simple terms, an n-1 level of network redundancy means that the loss of any one component of the network will not result in the loss of power supply to network users.

ADEWAP NPC applies a network redundancy standard of n-1 as the network planning default. An n-0 standard may be applied in scenarios where this is deemed appropriate. The deeming of an n-0 standard as the appropriate level of network redundancy is determined by ADEWAP (in its capacity as Network Service Provider) in consultation with the relevant user(s) of the APA Network, provided that (as a minimum) the network can maintain the steady state power system performance standards as defined by the HTR.

### 7.3. N-0 criterion

- a) A sub-network of the transmission system designed to the n-0 criterion will experience an inability to transfer power into an area supplied by that sub-network upon the loss of a transmission element. Following such an event, this power transfer capability will not be restored until the transmission element has been repaired, replaced or restored. HPS-TIG

66kV Transmission Line Tee off shall operate in accordance with the power system performance standard within 30mins of the loss of this interconnection.

- b) For a sub-network designed to the n-0 planning criteria, ADEWAP will use best endeavours to transfer load to other parts of the network to the extent that this is possible, and if spare power transfer capacity is available. Load shedding is permissible should sufficient back-up power transfer capacity not exist. Such load shedding will take place in accordance with each user's network access rights.

#### 7.4. N-1 criterion

- a) Any sub-network of the transmission system that is not identified as being designed to the n-0 criterion must be designed to the n-1 planning criterion.
- b) For sub-networks of the transmission system designed to the n-1 criterion, supply must be maintained, and load shedding avoided at any load level and for any generation schedule following an outage of any single transmission element. This excludes instances where operational restrictions have been agreed between ADEWAP and a user pursuant to clause 3.1(b) of the HTR.
- c) Following the loss of the transmission element, the power system must continue to operate in accordance with the power system performance standards specified in clause 2.2 of the HTR.
- d) Notwithstanding the requirements subclauses n-1 Criterion (b) and n-1 Criterion (c), where the failed transmission element is a zone substation supply transformer, supply may be lost for a brief switching period while loads are transferred to un-faulted supply transformers by means of transmission system switching.