SYSTEM COORDINATION BULLETIN

QUARTERLY UPDATES: 1 JANUARY 2024 - 31 MARCH 2024

In accordance with Rule 288 of the Pilbara Network Rules (the Rules), the ISO must periodically, at least once every quarter, publish a bulletin giving brief information on matters discussed in system coordination reports which may impact the operational and commercial decisions of Pilbara electricity market participants.

The report is to include details of:

- The incidence and extent of constraint directions issued;
- The incidence and extent of system operations directions and precontingent directions issued;
- The incidence and extent of non-compliances with directions; and
- The incidence and extent of noteworthy incidents in the power system (including contingencies, pre-contingent actions, shortfalls in essential systems services and occasions on which the power system was not in a secure state or was outside the technical envelope) together with, for each incident:
  1. Information about the circumstances that caused the incident; and
  2. Information about the actions the ISO and registered NSPs took in response to the incident; and
  3. The results of any post-incident discussion or investigation.

The ISO must not include any confidential information in the System Coordination Bulletin. The ISO has consulted with the information owners as required under the Rules prior to publishing this bulletin (see Subchapter 11.2 of the Rules).

This System Coordination Bulletin should be read in conjunction with Chapter 7 of the Rules and the Interim Protocol Framework Procedure.

INCIDENCE AND EXTENT OF DIRECTIONS ISSUES

Table 1 provides details of the incidence and extent of the directions issued under the Rules, including:

- Pre-contingent [Rule 79];
- Systems operations [Rule 188];
- Emergency [Rule 189]; and
- Constraint [Rule 258].

Table 1: Directions issued

DATE	TYPE OF DIRECTION	FACILITY DIRECTED	REASON	COMPLIANCE WITH DIRECTION (Y/N)
8/03/2024	Supply of 15 MW of generation	Port Hedland Power Station, APA DEWAP	Gas supply issues at a power station resulted in additional generation support being required. ISO Control Desk activated the Loss of Generation or Load Protocol, directing APA to supply an additional 15 MW of generation. Protocol was active for 6 hours and 18 minutes, then was formally deactivated.	Y

NOTEWORTHY INCIDENTS IN THE POWER SYSTEM

Table 2 provides an overview of noteworthy incidents that occurred in the power system during the reporting period.

For the purposes of this System Coordination Bulletin, a noteworthy incident in the power system includes contingencies, pre-contingent actions, shortfalls in essential system services and occasions on which the power system was not in a secure state or was outside the technical envelope [see Rule 163], which might have been credibly expected to adversely affect [see Rules 166 and 183(5)]:

- Security or reliability, as defined by the System Security Objective; or
- The ability of any part of a covered transmission network to benefit from essential system services; or
- The ability of a covered NSP to provide transmission voltage contracted network services; or
- Anything else ISO determines as a noteworthy incident.

As per Rule 162, the “System Security Objective” is to:

- Maintain the power system inside the Technical Envelope where practicable, and otherwise promptly return it to inside the Technical Envelope; and
- Maintain the power system in a Secure State where practicable, and otherwise return it to a Secure State as soon as practicable; and
- Otherwise — to a GEIP standard maintain, and to a GEIP standard seek to improve, security and reliability.

Table 2: Noteworthy incidents in the power system

DATE	DESCRIPTION OF CIRCUMSTANCES THAT CAUSED THE INCIDENT	ACTIONS TAKEN BY ISO AND NSP IN RESPONSE TO INCIDENT	POST INCIDENT DISCUSSION OR INVESTIGATION (Y/N)
January – March 2024	Long-term planned transmission outage resulted in alternative energy supply arrangements being put in place by NSPs to ensure system security.	Pre-outage risk assessments were conducted collaboratively by the relevant Registered NSPs and shared with the ISO and all system coordination participants. Alternative energy supply arrangements were put in place by affected NWIS participants. Regular discussions at system coordination meetings and separate bilateral meetings to ensure any system security risks were being managed.	N
2/1/2024	A pole fire led to a feeder fault, causing a frequency excursion to 49.37 Hz. Frequency recovered and stabilised above 49.75 Hz within less than 1 minute.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers.	N
12/1/2024	A lightning strike caused a 220 kV line trip. This resulted load rejection and the system frequency to rise to a maximum of 50.43 Hz. The non-covered islanded network frequency dropped to 48.98 Hz triggering UFLS scheme within the non-covered islanded network. The islanded network resynchronised after stabilising approximately 38 minutes from the initial trip. The interconnectors were restored and system returned to normal operating conditions 1 hour and 18 minutes after the event.	The event was managed by the NSP on whose network the event occurred, in communication with other NSP controllers and the ISO Control Desk. No protocols or system operation directions were given. NSP has prepared a report on the event and provided to ISO. The ISO has shared relevant findings with NSP controllers.	Y
17/1/2024	A bushfire tripped a transmission line causing load rejection and the system frequency to rise to 50.35 Hz. Frequency recovered and stabilised to below 50.25 Hz within 2 minutes after the initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers. After frequency stabilised, the loss of generation was picked up by the primary FCESS response.	N

Table 2: Noteworthy incidents in the power system

DATE	DESCRIPTION OF CIRCUMSTANCES THAT CAUSED THE INCIDENT	ACTIONS TAKEN BY ISO AND NSP IN RESPONSE TO INCIDENT	POST INCIDENT DISCUSSION OR INVESTIGATION (Y/N)
19/1/2024	A generating unit tripped at 33 MW, causing frequency low of 49.7 Hz. Frequency recovered and stabalised above 49.75 Hz within 3 seconds.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers. After frequency stabilised, the loss of generation was picked up by the primary FCESS response.	N
21/1/2024	A feeder tripped on reclose, causing frequency to rise to 50.27 Hz. Frequency recovered and stabilised to below 50.25 Hz within 4 seconds.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers.	N
30/1/2024	Due to dry weather and pollution on feeder, auto reclose event caused frequency deviation peak at 50.26 Hz. Frequency recovered and stabilised to below 50.25 Hz within 3 seconds.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers. After frequency stabilised, the loss of generation was picked up by the primary FCESS response.	N
12/2/2024	Flashover and trip on an interconnection between Horizon Power and Rio Tinto networks. The system remained synchronised and frequency remained within operating standards System event lasted 3 hours and 18 minutes.	ISO Control Desk was advised that NSP's ESS response limited to 35 MW (from 40 MW contracted).	N
20/2/2024	Overcurrent protection caused an interconnection between the Horizon Power and Rio Tinto networks to trip, increasing system frequency to 50.24 Hz. Frequency was stabilised within 1 minute of the initial trip. System event lasted 1 hour and 57 minutes.	ISO Control Desk was advised that NSP's ESS response limited to 35 MW (from 40 MW contracted).	N

Table 2: Noteworthy incidents in the power system

DATE	DESCRIPTION OF CIRCUMSTANCES THAT CAUSED THE INCIDENT	ACTIONS TAKEN BY ISO AND NSP IN RESPONSE TO INCIDENT	POST INCIDENT DISCUSSION OR INVESTIGATION (Y/N)
2/3/2024	An Emergency Shutdown (ESD) valve operated at the gas delivery station, shutting gas supply to the power station and resulting in a 100 MW loss of generation. This caused the system frequency to drop to 49.20 Hz and triggered UFLS and UFIS schemes in the non-covered islanded network. Frequency was stabilised within 1 minute of the initial trip. The interconnectors were restored and system returned to normal operating conditions 3 hours and 24 minutes after the event.	The event was managed by the NSP on whose network the event occurred, in communication with other NSP controllers and the ISO Control Desk. No protocols or system operation directions were given. ISO Control Desk enabled secondary FCESS [under Rule 209] in the east Pilbara. NSP to prepare a report on the event and provide to ISO. The ISO will share relevant findings with NSP controllers.	Y
4/3/2024	Pole top fire caused a feeder to trip, resulting in a frequency low of 49.52 Hz. Frequency recovered and stabilised above 49.75 Hz within 1 minute of the initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers.	N
5/3/2024	Suspected lightning caused a feeder auto-reclose. Auto-reclose cleared the fault. Frequency low of 49.69 Hz and stabilised within 1 minute of initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers.	N
10/3/2024	Generator trip caused frequency low of 49.65 Hz. Frequency recovered and stabilised above 49.75 Hz within one minute of initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by the ESS droop response. After frequency stabilised, the loss of generation was picked up by the primary FCESS response.	N
13/3/2024 – 17/3/2024	Tropical cyclone approaching NWIS.	Potential tropical cyclone was discussed at system coordination meetings and emails circulated to ensure communications across all NSP controllers as the situation developed. Ultimately, no impact on NWIS.	N

Table 2: Noteworthy incidents in the power system

DATE	DESCRIPTION OF CIRCUMSTANCES THAT CAUSED THE INCIDENT	ACTIONS TAKEN BY ISO AND NSP IN RESPONSE TO INCIDENT	POST INCIDENT DISCUSSION OR INVESTIGATION (Y/N)
29/3/2024	Generator trip caused frequency low of 49.675 Hz. Frequency recovered and system was stabilised above 49.75 Hz within 1 minute of the initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers. After frequency stabilised, the loss of generation was picked up by the primary FCESS response.	N
30/3/2024	Feeder auto-reclose caused frequency excursion to 50.25 Hz, stabilised within 1 minute of the initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers.	N
31/3/2024	Snake caused a 33 kV feeder to trip and resulted in load rejection and the system frequency to rise to 50.34 Hz. Frequency recovered and stabilised to below 50.25 Hz within 1 minute of the initial trip.	As the system was in a secure and normal operating state, the frequency excursion was managed by generator droop response, including responses from ESS providers.	N

RESULTS OF POST-INCIDENT DISCUSSIONS OR INVESTIGATION

Table 3 provides an overview of results of post-incident discussions or investigations during the reporting period.

In accordance with Subchapter 7.6 of the Rules, the ISO may conduct informal discussions [Rule 196] or investigations [Rule 197] on the following:

- a Contingency or other event which in the ISO's opinion jeopardised, or had the potential to jeopardise, the System Security Objective to a significant extent; or
- an unplanned outage of a facility or network element for which a planned outage would be a notifiable event; or
- a Protocol being activated or the ISO referring any other matter relating to the Protocol Framework.

The primary objective of ISO's post-incident discussions and investigations is, with a view to maintaining and improving security and reliability, to enable and promote:

- continuous improvement of the Rules, the Procedures, and the operation of the power system; and
- appropriate accountability for Rules Participants.

Table 3: Post-incident discussions or investigations

DATE	OVERVIEW OF INCIDENT AND DISCUSSION OR INVESTGATIONS	RESULTS AND RECOMMENDATIONS
12/1/2024	**Event Description** A lightning strike caused a 220 kV line trip. This resulted in load rejection and the system frequency to rise to a maximum of 50.43 Hz. The non-covered islanded network frequency dropped to 48.98 Hz triggering UFLS scheme within the non-covered islanded network. The islanded network resynchronised after stabilising approximately 38 minutes from the initial trip. The tie-line interconnectors were restored and system returned to normal operating conditions 1 hour and 18 minutes after the event. The event was managed by the NSP on whose network the event occurred, in communication with other NSP controllers and the ISO Control Desk. No protocols or system operation directions were given. **Purpose of Informal Discussion** The NSP prepared a report of the incident and provided it to ISO. The ISO shared relevant findings with NSP controllers with the purpose of understanding and improving the reporting and coordination of systems operations functions.	The ISO continues to focus on validating modelled generator responses against unplanned events data for the purpose of continuous improvement of the whole of system model. Improvements were identified in the need to standardise reporting of unplanned events, and a template developed and circulated to the NSP controllers.

Table 3: Post-incident discussions or investigations

DATE	OVERVIEW OF INCIDENT AND DISCUSSION OR INVESTGATIONS	RESULTS AND RECOMMENDATIONS
2/3/2024	**Event Description** An Emergency Shutdown (ESD) valve operated at the gas delivery station, shutting gas supply to the power station and resulting in 100 MW loss of generation. This caused the system frequency to drop to 49.20 Hz and triggered UFLS and UFIS schemes in the non-covered islanded network. Frequency was stabilised within 1 minute of the initial trip. The interconnectors were restored and system returned to normal operating conditions 3 hours and 24 minutes after the event. **Purpose of Informal Discussion** The NSP is preparing a report of the incident and will provide it to ISO. The ISO will share relevant findings with NSP controllers, with the purpose of understanding and improving the reporting and coordination of systems operations functions.	The ISO will complete the Informal Discussion when all information from NSPs has been received.

Port Hedland is called Marapikurrinya referring to hand shaped formation of natural tidal creeks moving from the coast.

SYSTEM METRICS - EVENTS

Table 4: Unplanned events

EVENT	SUM OF EVENTS THIS REPORTING PERIOD	SUM OF EVENTS YEAR-TO-DATE	SUM OF TRADING INTERVALS THIS REPORTING PERIOD	SUM OF TRADING INTERVALS YEAR-TO-DATE
Abnormal frequency events	13	21	13 (0.3% of trading intervals for the quarter)	21 (0.16% of trading intervals for the year)
UFLS	2	3	2	3
UFIS	1	1	4	4
Unplanned islanding events	1	2	7	8
Secondary FCESS enablement (unplanned)	1	2	The ISO monitors this metric, but does not publish this information as it is commercially sensitive	The ISO monitors this metric, but does not publish this information as it is commercially sensitive
Protocol activations	1	1	10	10
System operations directions, pre-contingent directions, emergency directions	1	1	10	10
Constraint directions	0	0	0	0

Figure 1: Quarterly moving averages of system events

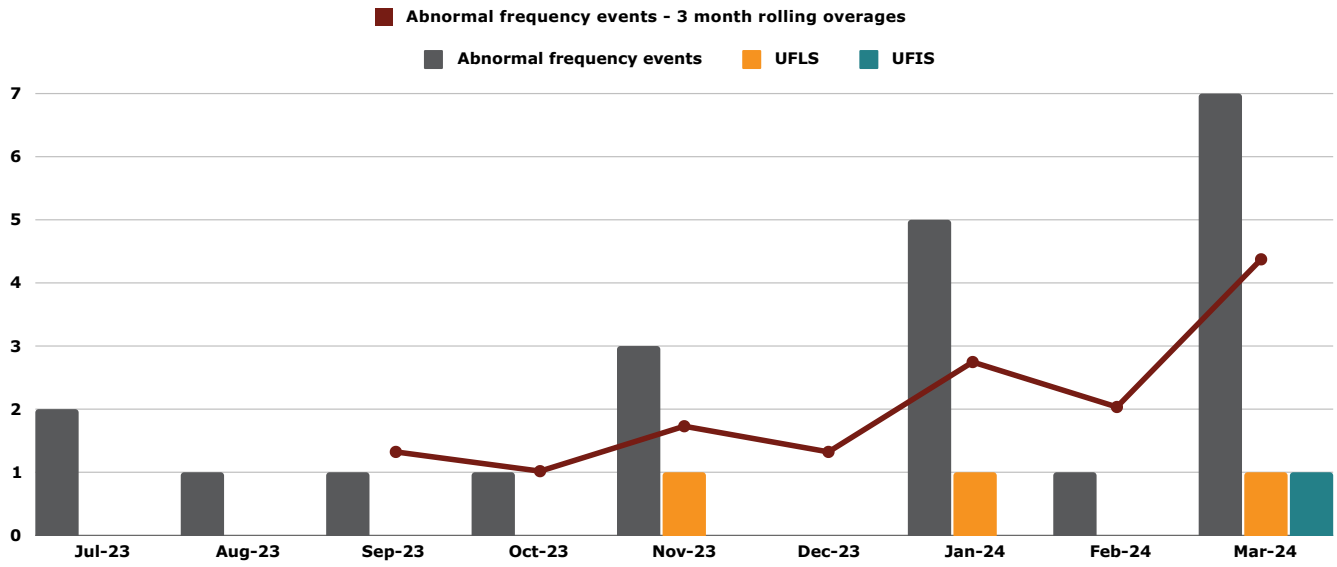


Table 5: Planned events

EVENT	SUM OF EVENTS THIS REPORTING PERIOD	SUM OF EVENTS YEAR-TO-DATE	SUM OF TRADING INTERVALS THIS REPORTING PERIOD	SUM OF TRADING INTERVALS YEAR-TO-DATE
Planned Islanding Events	0	2	The ISO monitors this metric, but does not publish this information as it is commercially sensitive	The ISO monitors this metric, but does not publish this information as it is commercially sensitive
Secondary FCESS enablement (planned)	0	2		

SYSTEM METRICS - ENERGY

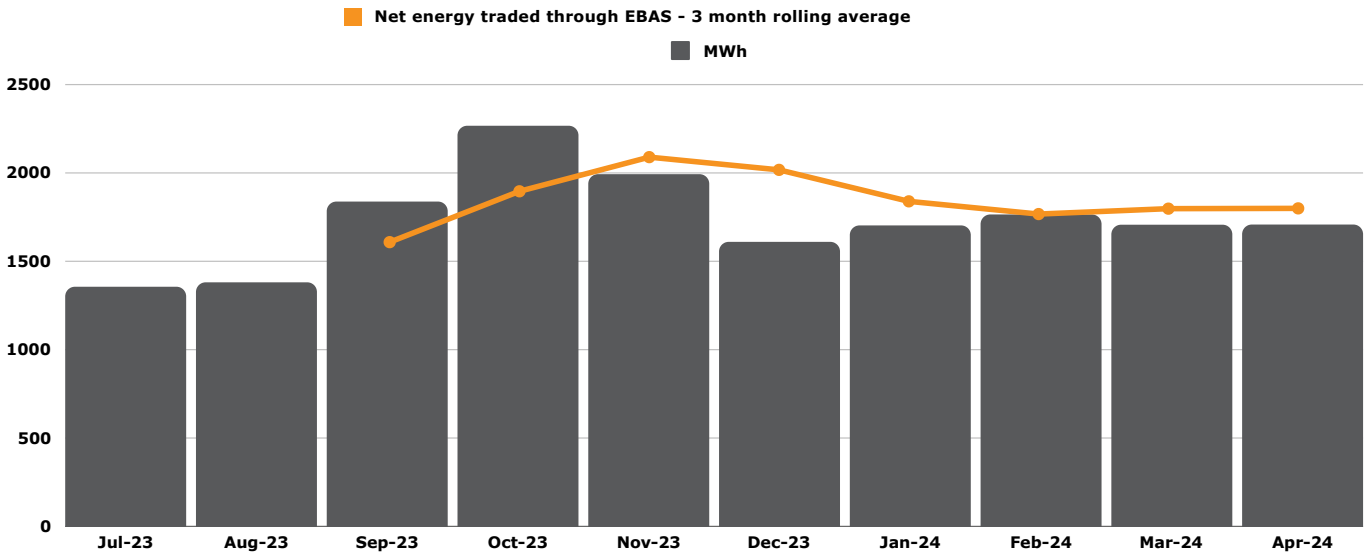
Table 6 – 2022-23 Total electricity production and emissions (Clean Energy Regulator Data)

METRIC	2022/2023 TOTAL
Electricity Production	2,957 GWh
Total emissions (scope 1 and scope 2)	1,711,614 t CO2-e

Table 7: Net energy traded through EBAS

METRIC	SUM THIS REPORTING PERIOD (MWH)	SUM YEAR-TO-DATE (MWH)
Net energy traded through EBAS	5,180	17,328

Figure 2: Quarterly moving averages of energy traded through EBAS (MWh)



SYSTEM METRICS - GENERATING FACILITIES

Table 8: Installed generating facilities Covered Networks

METRIC	NUMBER	CAPACITY
Thermal generating facilities*	4	442 MW
Renewable facilities	0	0
BESS	0	0

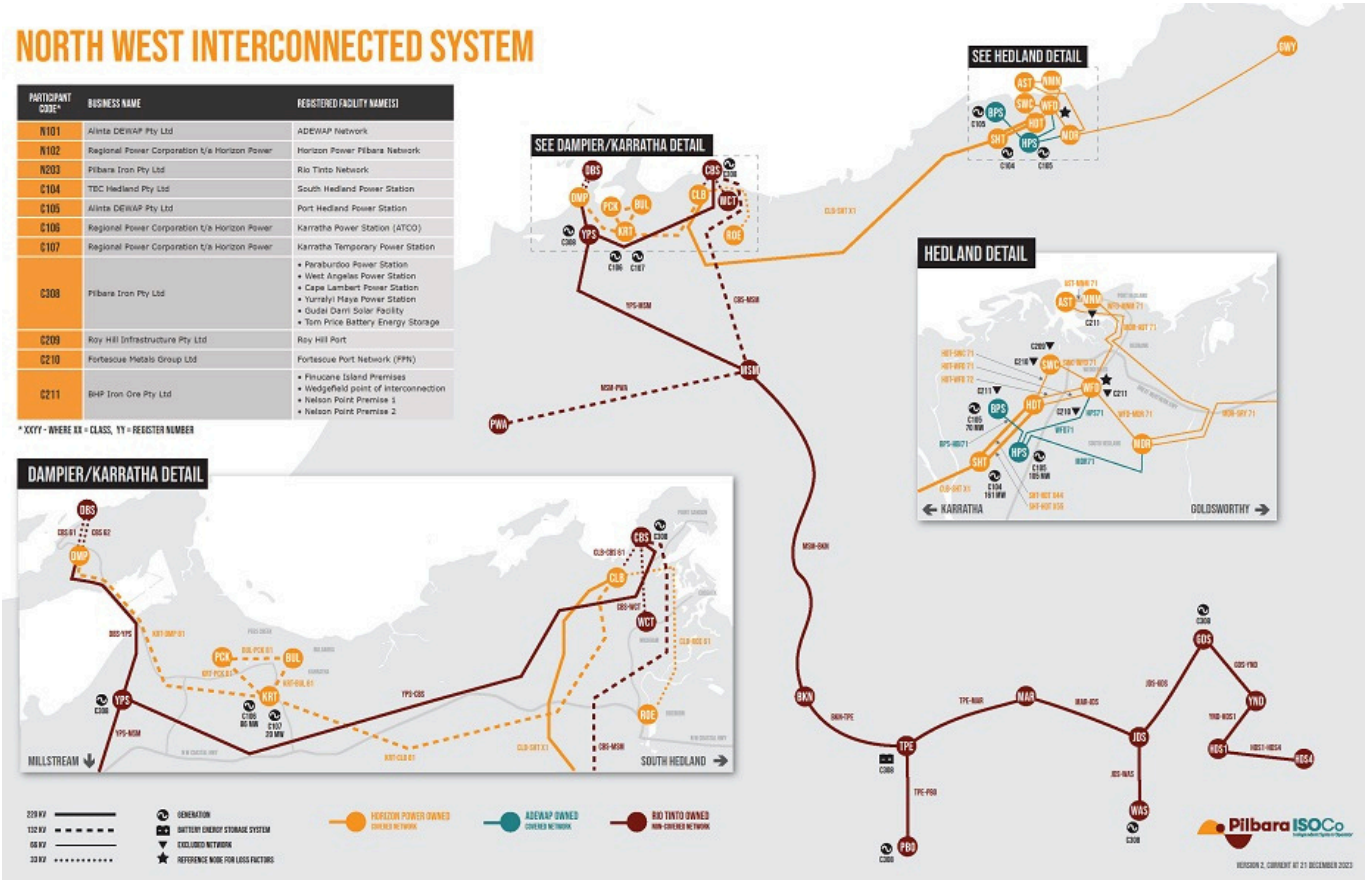
*Note - Includes generation connected to networks that are Covered under Part 8 of the Electricity Industry Act 2004. Covered networks in the NWIS include APA DEWAP and Horizon Power, this does not include any generation owned by Rio Tinto

Table 9: New connections

METRIC	NUMBER OF NEW GENERATORS	NUMBER OF NEW GENERATORS YEAR-TO-DATE	NEW INSTALLED CAPACITY IN REPORTING PERIOD	NEW INSTALLED CAPACITY YEAR-TO-DATE
New thermal generation	0	0	0	0
New renewable generation	0	0	0	0
New BESS	0	0	0	0
New load facilities or excluded networks	0	0	0	0
Total new facilities >10 MW	0	0	0	0

Karijini National Park

NWIS SYSTEM MAP



WEBSITE LINK: HTTPS://PILBARAISOCO.COM.AU/NWIS/SYSTEM-MAP/