This Dispatch Protocol has been prepared pursuant to discussions held in accordance with the Discussions Framework between Stanwell, MCPL, SCL North West Pty Ltd, MIM, DPS Co, EHM, MMG, EECL and EEQ dated 5 April 2013.

North West Power System Dispatch Protocol

August 2014

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1. Definitions

1998 Dispatch Protocol means the original protocol developed to regulate certain technical and operational matters as between MCPS and its Offtakers, originally issued on 30 June 1998 and as revised from time to time (the most recent amendments being as agreed on 29 January 2013), including by variation or practice adopted or acted upon by MCPL, the Network Operator and the Offtakers.

ACCC means the Australian Competition and Consumer Commission.

AEMO means the Australian Energy Market Operator.

APS means Aggreko Power Station, being approximately 20MW of additional generating units installed adjacent to XPS by Aggreko Pty Ltd, which is leased to, and operated by, MIM and for which, for the purposes of the Dispatch Protocol, MIM is the responsible Participant.

Authorised Demand means the maximum average rate of transfer of electricity across a Point of Connection, for either import or export (as relevant), as permitted in the relevant CAA, PPA or ESA, where the rate is measured over a 30-minute period finishing on the hour or on the half-hour. For the avoidance of doubt, while 'Authorised Demand' is a CAA defined term, PPAs and ESAs include similar concepts.

AVR means **Automatic Voltage Regulator,** an automatic control system to regulate the terminal voltage of a Generating Unit or transformer or the voltage of a busbar.

Black Start means the process of restoring the Generating Units at the Major Power Stations and the Supply Network, after a total deenergisation of the NWPS, to re-establish power supply to the NWPS.

Black Start Capability means the ability to turn on a Generating Unit without drawing electricity from the Supply Network.

Block means a collection of individually sheddable loads connected into an Offtaker's SLSS.

CAA means a connection and access agreement, which is a current or future arrangement either between the Network Operator and a Generator, or between the Network Operator and an Offtaker, under which the Network Operator makes its part of the Supply Network available for the transmission of electricity for the benefit of the Generator or Offtaker (as relevant).

CB means a circuit breaker.

CCA means the *Competition and Consumer Act 2010* (Cth)

Chairperson means the chairperson of the Working Committee appointed in accordance with the Charter.

Charter means the Working Committee Charter in Schedule 1.

Chumvale Substation means the Network Operator's 220kV substation adjacent to the town of Cloncurry.

Confidential Information has the meaning given to that term in clause 11(a).

Contingency Event has the meaning given to that term in clause 8.7(a).

Contract Day means from 0800 hours on one day to 0800 hours on the following day.

Customer means a party to a PPA or ESA with either an Offtaker or Generator for an aggregate load of 10MW or less, that is connected (whether directly or indirectly) to any part of the Supply Network.

Dataset means the input and output data prepared for the NWPS using data provided by MIM and EECL, as referred to in in Schedule 3.

Dispute Notice has the meaning given in clause 12(a).

Dispatch Protocol means this document as amended from time to time and includes all Schedules to this document.

DPS means Diamantina Power Station, a 242MW gas-fired power station, which, as at the Effective Date, is being (or has been) constructed by DPS Co south-west of MCPS.

DPS Co means Diamantina Power Station Pty Limited ACN 149 762 176 (a special purpose vehicle company owned 50%/50% by AGL Energy Limited and the APA Group).

Duchess Road Substation means the Network Operator's 132kV substation in the town of Mt Isa, which is, as at the Effective Date, connected to the MCPS "A" Station 132kV switchyard.

EDMS means an electronic document management system maintained by the Generation Coordinator at which Participants can access copies of the Dispatch Protocol, NWPS Model and Dataset, load shed tables, meeting minutes, technical reports and audits and other relevant documents as agreed from time to time.

EECL means Ergon Energy Corporation Limited ACN 087 646 062.

EEQ means Ergon Energy Queensland Pty Limited ACN 121 177 802.

Effective Date means the date this Dispatch Protocol comes into effect in accordance with clause 2.5.

EHM means Ernest Henry Mining Pty Limited ACN 008 495 574, a company whose ultimate parent company is Glencore plc.

EIC means the Electricity Industry Code made under the *Electricity Act 1994* (Qld).

Embedded Power Station means any or all of MPS, XPS, APS and the ICPL Acid Plant, and any other source of electricity generation which is 10MW or greater in aggregate, does not supply electricity to a third party and is not operated by a Major Generator.

Energy Balance Agreement means an energy balance agreement entered into by DPS Co and MCPL, dated on or around the date of the Dispatch Protocol.

Ernest Henry Mine means the mine owned by EHM and located approximately 36 kilometres north-east of Cloncurry.

ESA means a current or future energy supply agreement between a Major Generator and an Offtaker or Customer for the supply of energy from a Major Generator to an Offtaker or Customer.

FILS means a frequency initiated load shed function, which is one of the functions performed by the LSS, and which is triggered by a frequency signal alone and does not rely on a signal from a Generating Unit CB. The FILS is also a back-up function in the event of a PLS failure to stabilise frequency above a predetermined level.

FILSB means a reactive frequency initiated Load Shed Block, which is an agreed block of load made available by an Offtaker to be shed by operation of the LSS.

FILS Event means a circumstance that results in the LSS carrying out a FILS under section 5.1(c) of Schedule 7.

Force Majeure Event means:

(a) an event or circumstance defined as a 'Force Majeure Event', 'Force Majeure' or 'Event of Force Majeure' or similar term under an existing CAA, PPA or ESA (as the case may be) that is affecting a Participant; or

(b) an event or circumstance in connection with the NWPS that is affecting a Participant and which is not within the reasonable control of the affected Participant (acting in accordance with GEOP), including matters that are colloquially referred to as "acts of God", including earthquakes, drought, floods, washouts, landslides, bush fire, lightning, and storm.

Generating Unit means an individual unit at a Power Station, for example, unit A6 or A7 at MCPS.

Generation Coordinator means the party responsible for co-ordination of the operation of generation on the NWPS.

Generator means an owner or operator of a Power Station or other generating plant.

GEOP means Good Engineering and Operating Practice and means those practices, methods and acts, as varied from time to time, that are commonly used in the energy or resources industry in Australia (including the practices, methods and acts which are applicable having regard to the age, type and size of the relevant infrastructure (as the case may be), their design configuration and their remote geographic location) and the exercise of that degree of skill, diligence, prudence and foresight that would reasonably be expected from recognised owners and operators of power facilities to design, construct, operate, maintain and repair electricity facilities lawfully, safely, reliably, efficiently and economically.

George Fisher Mine means the lead zinc mine owned by MIM located approximately 22 kilometres north of Mt Isa (which was previously known as the Hilton Mine). The George Fisher Mine includes the George Fisher North Mine and 2 x 132kV switchyards at the George Fisher Mine and the George Fisher North Mine.

HV means high voltage, which is a nominal voltage greater than or equal to 132kV.

Interval Meter has the meaning given to that term in the EIC.

ICPL Acid Plant means the acid production facility located adjacent to the MIM copper smelter in Mount Isa, which is owned and operated by Incitec Pivot Limited and which generates nominally 9MW of electricity.

Island means the formation of a network with or without one or more Generators and/or users which, prior to some event, were connected to the rest of the Supply Network and which, after that event, may potentially operate at a different power system frequency.

kW means a kilowatt.

Lady Annie Mine means the copper mine of that name owned and operated by CST Mining Group Limited, which is located approximately 120 kilometres north-west of Mt Isa.

Lady Loretta Mine means the mine of that name owned by MIM, which is located approximately 140 kilometres north-west of Mt Isa.

Load Encroachment is where there is a mismatch between system load and available generation, where that mismatch causes frequency to fall slowly.

Load Encroachment Event is a situation where there is Load Encroachment that meets the parameters for shedding of Load Shed Blocks in accordance with section 5.1(d) of Schedule 7.

Load Losses are defined in section 4.7(f) of Schedule 4.

Load Shed Block or **LSB** means an amount of MW that is available to be shed by the Load Shedding System, and which is determined in accordance with the relevant portion of Schedule 7. Load Shed Blocks may be either:

(a) Proactive Load Shed Blocks (**PLSB**) (see section 5.1(b) of Schedule 7); or

(b) Frequency Initiated Load Shed Blocks (**FILSB**) (see section 5.1(c) of Schedule 7).

Load Shedding System or **LSS** means the MLSS and the SLSS, which, together with the FILS system as a back-up function, form an automated process of disconnection of loads from the NWPS in a controlled, safe and pre-determined manner. The LSS is further described in Schedule 7.

LPS means the **Leichhardt Power Station,** which is a 60MW open cycle gas turbine generating plant (with diesel and Black Start Capability) owned by DPS Co, which is located adjacent to DPS.

Major Generators means DPS Co and MCPL, and any future owner of a Major Power Station, and, where applicable, means either of these entities individually.

Major Power Stations means MCPS, DPS and LPS, and any future Power Station greater than 10MW in aggregate that supplies electricity to a third party, and where applicable, means any of these Power Stations individually.

Manual Load Management means the intervention of the Generation Coordinator or a Major Generator in relation to an Offtaker's load to, for example, prevent or manage a potential Contingency Event.

MCPL means Mica Creek Pty Ltd ACN 075 522 093.

MCPS means the Mica Creek Power Station, a 246.8MW power station at Mt Isa, Qld, owned by MCPL, which is a subsidiary of Stanwell.

MDP has the meaning given to that term in the EIC.

Metering Data has the meaning given to that term in the EIC.

Metering Dynamics is a specialist metering division of Energex Limited ABN 40 078 849 055.

Metering Installation has the meaning given to that term in the EIC.

Metering Obligations means the obligations under this Dispatch Protocol and Chapter 9 of the EIC.

Metering Provider has the meaning given to that term in the EIC.

MIM means Mount Isa Mines Limited ACN 009 661 447, a subsidiary of Glencore plc.

Minister means a Minister of the Queensland Government.

Minor Power Station means a source of electricity generation which is less than 10MW in aggregate, is not operated by a Major Generator and which can operate in parallel with the Supply Network, but which does not export electricity outside the premises of the operator (for example, the 5 x 1MW diesel generators at MMG's Century Mine).

MIT means the Mt Isa Terminal, a 132kV substation within the Mount Isa Mine.

MLSS means the Master Load Shedding System, which is an automatic system installed to disconnect load in the event of a sudden loss of generation or a drop in system frequency.

MMG means either or both of MMG Century and MMG Dugald River.

MMG Century means MMG Century Limited ACN 006 670 300.

MMG Dugald River means MMG Dugald River Pty Ltd ACN 083 405 556.

Mount Gordon Mine means the mine of that name owned by Aditya Birla Minerals Limited, which is located approximately 120 kilometres north of Mt Isa.

Mount Isa Mine means the mine of that name owned by MIM, which is located in the town of Mt Isa.

MPS means the Mines Power Station, being the 12.5MW and 15MW waste heat recovery Generating Units operated by MIM, situated at Mt Isa and for which, for the purposes of the Dispatch Protocol, MIM is the responsible Participant. MPS control room is the contact point for MIM's communications with the Generation Coordinator.

MVAr means megavolt ampere reactive.

MW means a megawatt.

NEM means the National Electricity Market.

Network Owner means any Participant that owns 132kV or 220kV transmission assets (which includes the Network Operator) and any future owner or operator of 132kV or 220kV transmission assets that are interconnected with the NWPS.

Network Operator means EECL as the owner and operator of the 220kV, and portions of the 132kV, electricity transmission systems forming part of the NWPS.

New Entrant means a person who wishes to become a Participant in the NWPS.

No Load Losses are defined in section 4.7(f) of Schedule 4.

North West Power System or **NWPS** means the isolated electricity generation and transmission network centred on Mt Isa, Queensland, which is not connected to the national electricity grid.

NWPS Model means a computer-based model used to carry out studies on the existing NWPS, or proposed changes to the NWPS, and which is generated from the Dataset.

Offtakers means MIM, EHM, EEQ, MMG Century and MMG Dugald River, and any future entity (including an electricity retailer) with an aggregate connected load (i.e. demand) greater than 10MW and a direct connection to the Supply Network, and **Offtaker** means each of them individually.

Participant means a Major Generator, Network Owner (including the Network Operator), or Offtaker that is, or becomes, a signatory to the Dispatch Protocol.

Pendine Street means the Pendine Street substation, a 132kV substation within the MIM lease adjacent to the MIM copper smelter in Mount Isa.

PLS means Proactive Load Shedding, which is a function of the MLSS and which is triggered by a trip signal from a Generating Unit CB.

Point of Connection means a point on either:

(a) the Supply Network which the relevant Network Owner makes available to a Major Generator, Offtaker or Customer for the electrical connection of its operations to that portion of the Supply Network and hence the greater NWPS; or

(b) a Major Generator's assets which that Major Generator makes available to an Offtaker or Customer for the electrical connection of its operations to the Power Station and hence the greater NWPS,

and any additional or substituted points as may be agreed in writing from time to time between the relevant entities (and notified in writing to the Generation Coordinator), and where applicable, means each point individually.

Power Factor is the cosine of the phase angle between the voltage and the current for an alternating current (AC) power circuit.

Power Purchase Agreement or PPA means a current or future power purchase agreement between a Major Generator and an Offtaker for the sale of electricity from a Power Station to an Offtaker.

Power Station means each Major Power Station, Minor Power Station or Embedded Power Station and any future source of electricity generation approved for connection under this Dispatch Protocol. A Power Station includes those parts of the switchyards and substations located in close proximity to that Power Station to the extent those parts function as an operational or integrated part of that Power Station.

Proactive Load Shed Block or **PLSB** means a pre-armed and proactive Load Shed Block, which is an agreed block of load made available by an Offtaker to be shed by operation of the MLSS in accordance with Table 4 of Schedule 7 in the event of a Major Power Station Generating Unit tripping.

PSS means a power system stabiliser, a system used to assist in stabilising power networks.

PSS/e is a power system simulation software program, which uses the Dataset to facilitate the computer modelling of the NWPS load and fault studies, stability studies etc. required by the Working Committee.

Responsible Person means the person ultimately responsible for the provision of Metering Installations and the collection of Metering Data in respect of a Point of Connection in accordance with the Metering Obligations.

Register of Representatives means the list of Representatives kept by the Secretary, which sets out, from time to time, the then-current Participants and their Representatives.

Representative means a person selected by a Participant to be a member of the Working Committee in accordance with the Charter.

Reserve Plant Margin means an amount of generation capacity available at a Major Generator's Power Station that is generally not electrically interconnected with the NWPS under normal operating conditions but which is available for such interconnection in order to either supply that Major Generator's Offtakers' loads or replace unavailable generation, if required.

Review Notice has the meaning given in clause 13(b).

ROCOF means rate of change of frequency.

SCADA means a supervisory control and data acquisition system used to manage a process or system.

Schedule means a schedule of this Dispatch Protocol.

Secretary means the secretary to the Working Committee appointed in accordance with the Charter.

SLSS means a Slave Load Shedding System, which forms an integral part of the LSS, in conjunction with the MLSS, and which is located at each of the Offtakers' premises.

Spinning Reserve means the total amount of spare generating capacity at a Major Generator's Power Station which is electrically interconnected with the NWPS, but which is not currently committed to supply that Major Generator's Offtakers' demands, and which is immediately available to supply either a shortfall in generated capacity or increase in demand to a Major Generator's Offtaker.

Stanwell means Stanwell Corporation Limited ACN 078 848 674, the ultimate holding company of the owner and operator of MCPS, and includes its wholly-owned subsidiaries, MCPL and SCL North West Pty Ltd ACN 075 522 119.

Supply Network is a collective term, meaning the 132kV and 220kV electricity transmission systems that form part of the NWPS. As at the Effective Date, these are owned and operated by MIM, DPS Co, MCPL and the Network Operator. The Supply Network includes those parts of the switchyards and substations located in close proximity to the Supply Network to the extent those parts function as an operational or integrated part of the Supply Network.

Threshold Change means a change listed in section 1(a) of Schedule 3.

Threshold Demand is the minimum nameplate capacity of equipment connected or to be connected to the NWPS which requires compliance with the requirements of this

Dispatch Protocol. As at the Effective Date, the Threshold Demand is set at 10MW. This value may be varied from time to time by the Working Committee.

U/G means underground.

Unserved Energy is defined in section 8 of Schedule 7 of this Dispatch Protocol.

Voice Communications means communication between Participants by means of telephone.

Working Committee means the group of Representatives nominated in accordance with the Charter, who are responsible for the administration and implementation of this Dispatch Protocol.

XPS means the X41 Power Station, which is, as at the Effective Date, an existing 41MW natural gas fired power station operated by MIM, which is situated at Mt Isa Qld and for which, for the purposes of the Dispatch Protocol, MIM is the responsible Participant.

2. Overview

2.1 The North West Power System (NWPS)

The NWPS is an isolated grid and is not connected to the NEM.

The Participants of the NWPS include a number of Generators, Network Owners (including a Network Operator) and Offtakers.

Customers are not classed as Participants and are not directly involved in the administration of the Dispatch Protocol. Their interests are taken into account by the relevant Generator or Offtaker from whom they receive their electricity supply.

Each Generator or Offtaker is responsible for ensuring that its Customers comply with this Dispatch Protocol.

The Participants agree that it is necessary to coordinate certain activities of all Participants, and certain New Entrants in the NWPS, using protocols to achieve a safe, reliable and stable system with formal procedures to allow for growth of the NWPS over time.

This Dispatch Protocol has been created for the mutual benefit of all the Participants and applies to all Participants.

2.2 Participants in the NWPS

The Participants in the NWPS at the Effective Date are detailed in Schedule 9 - List of Participants. The Working Committee must update Schedule 9 as required from time to time.

2.3 Relationship between the Participants

(a) The obligations of the Participants under this Dispatch Protocol are owed severally (and not jointly or jointly and severally).

(b) Nothing in this Dispatch Protocol shall constitute a partnership between the Participants, and no Participant is constituted as an agent (or other fiduciary relationship) of any other Participant for any purpose.

2.4 Dispatch Protocol

(a) This Dispatch Protocol is based on the 1998 Dispatch Protocol, which established, in relation to the NWPS:

(i) the responsible parties for planning adequate capacity to meet the Offtakers' and other Customers' energy needs;

(ii) the general requirements for the quality of energy supplied;

(iii) the procedures for dispatch of energy by the Generators;

(iv) the principles and procedures applying to the Load Shedding System;

(v) the responsible parties and processes for ensuring that the NWPS is operated safely and securely; and

(vi) the general requirements for the metering of energy.

(b) This Dispatch Protocol replaces the 1998 Dispatch Protocol and incorporates the following amendments:

(i) dispatch procedures to accommodate the addition of DPS and LPS;

(ii) other updates to capture changes in operating practices; and

(iii) additional definition around technical standards and procedures for the operation of the NWPS and the connection of new load and generation and any extensions to the Supply Network, or new supply networks.

2.5 Effective Date

This Dispatch Protocol will commence at the commencement of the second Contract Day after each of the following conditions have been satisfied:

(a) DPS Co has certified to Stanwell that it has in place the necessary systems, procedures and personnel to undertake its responsibilities as Generation Coordinator and that the DPS is ready to commence combined cycle commercial operations; and

(b) the ACCC has granted either interim authorisation under section 91 of the CCA or authorisation under section 88(1A) and 88(1) of the CCA, and that authorisation has become unconditional,

(the **Effective Date**).

The target Effective Date is 1 November 2014.

Until that time the 1998 Dispatch Protocol will remain in effect.

2.6 Purpose

The Dispatch Protocol:

(a) establishes the membership and obligations of the Working Committee;

(b) governs the conduct and interaction between the Participants in relation to the safe and reliable supply of power in the NWPS;

(c) defines a set of protocols to be used by the Participants for the safe and reliable delivery of electricity of agreed quality throughout the NWPS;

(d) defines a set of technical standards for the NWPS which will apply to any future development of the NWPS;

(e) recognises the need for energy interchange and settlement agreements between the Major Generators; and

(f) establishes a framework for Black Start and Supply Network restoration processes.

2.7 Objectives

The objectives of the Dispatch Protocol are to establish:

(a) responsible parties for planning and operating various portions of the Supply Network;

(b) a responsible party for co-ordinating the operation of generation in the NWPS;

(c) parameters that will ensure that adequate generation capacity is provided to ensure stand-by plant to reliably supply Offtakers and Customers;

(d) standards for quality of energy supply;

(e) procedures for dispatch of electricity;

(f) procedures to ensure system security including load shedding;

(g) responsible parties and processes to ensure that the NWPS is operated safely and securely;

(h) metering standards to be employed;

(i) the principles to be applied to the calculation and allocation of system transmission losses;

(j) the requirements for interchange of system information between the Participants that are necessary for the safe and secure operation of the NWPS;

(k) the frequency of Working Committee meetings, and guidelines for the conduct of meetings; and

(l) procedures to consider the scheduling of NWPS equipment outages to minimise the impact on system reliability.

2.8 Obligations of Participants

In order to successfully implement the Dispatch Protocol, the Participants must:

(a) comply with the requirements of this Dispatch Protocol, and, in particular, with the technical standards set out in Schedule 2;

(b) provide suitably qualified and authorised members of their staff to act as the relevant Participant's Representative and to take an active role in the working of the NWPS;

(c) contribute equitably to the cost of the annual works program established by the Working Committee to provide oversight of the NWPS;

(d) recognise the importance of the MLSS to the security of the NWPS and:

  (i) have the capability of shedding loads to match blocks of generation determined by, and relative to, their respective Major Generator; and

  (ii) accurately allocate their Load Shed Blocks to the required Blocks to reflect the increasing impact of the relevant Load Shed Blocks to the relevant Participant's business;

(e) participate fully with the Working Committee in relation to the studies, reports and audits carried out to provide oversight of the NWPS;

(f) in relation to any of their assets which could impact on the performance of the NWPS, comply with GEOP and the requirements of the Dispatch Protocol; and

(g) comply with the directions of the Generation Coordinator where required to assist in system restoration.

2.9 High Level Principles

The Dispatch Protocol is based on the following high-level principles:

(a) the Dispatch Protocol is developed for the primary benefit of stakeholders in general and the Generators and Offtakers who are directly connected to the Supply Network, and also to indirectly benefit Customers;

(b) new generation capacity and load on, and changes to the network configuration within, the NWPS are welcome, subject to certain such changes complying with necessary technical requirements and satisfactorily addressing any issues that the new generation capacity, load or changed configuration may raise for safety, reliability and quality of electricity supply;

(c) if there is a conflict between this Dispatch Protocol and the terms of a PPA, ESA or CAA (as it exists as at the Effective Date), the terms of the relevant PPA, ESA or CAA will prevail as between the parties to the relevant PPA, ESA or CAA. The terms of any PPA, ESA or CAA entered into after the Effective Date must not be inconsistent with this Dispatch Protocol;

(d) the Working Committee is the body responsible for the management, planning, technical standards and operating rules, as detailed in the Charter;

(e) a Major Generator connected to the NWPS will be appointed by the Working Committee to act as the Generation Coordinator. See clauses 2.12 and 2.14;

(f) equity between stakeholders is to be applied while ensuring safety and system security, subject to technical constraints, operational restrictions and contractual obligations. This means that, subject to the technical constraints, operational restrictions will be applied fairly and equitably on all Offtakers, and only to the extent necessary to maintain the safety and security of the NWPS;

(g) Participants will comply with GEOP;

(h) the Generation Coordinator will be responsible for coordinating the operations of the Major Power Stations so that the following factors are controlled effectively and in compliance with the requirements of Schedule 2:-

  (i) system frequency;

  (ii) voltage and reactive power flows through suitable control mechanisms;

  (iii) Major Generator loading in compliance with contractual obligations through application of appropriate governor control mechanisms; and

  (iv) management of the Major Generators' energy balance process;

(i) Major Generators are required to have available sufficient generation capacity to ensure that they can satisfy their contractual obligations to relevant Offtakers or Customers in relation to:-

  (i) contracted load;

  (ii) Spinning Reserve; and

  (iii) Reserve Plant Margin;

(j) Confidential [redacted]

(k) each asset owner is responsible for the operation and maintenance of its assets;

(l) each Major Generator must have Black Start Capability to be able to restore power to their respective Offtakers and Customers;

(m) automatic load shedding, implemented through the LSS, will be used to protect the NWPS and to mitigate the risk of a system collapse. Together with the SLSS, the MLSS will automatically disconnect agreed Load Shed Blocks within Offtakers' facilities in a structured process, and FILS installed at each Offtaker's site will act to back up the MLSS;

(n) in the event that a change in the NWPS creates a need for modifications to existing components of the NWPS, then the relevant costs associated with that modification will be borne by the Participant requesting the change and making any required application for approval under this Dispatch Protocol;

(o) subject to clause 2.9(q), all equipment installed and commissioned prior to the Effective Date will be grandfathered from, and will not have to comply with the technical requirements set out in this Dispatch Protocol (other than Schedule 2, sections 2 - 10);

(p) subject to clause 2.9(q), any equipment installed and commissioned after the Effective Date must comply with the requirements of this Dispatch Protocol, including Schedule 2, sections 2 – 17 and any other Schedules that may be applicable;

(q) other than where equipment is replaced using an identical spare (or a spare that has the identical electrical characteristics and load of the equipment being replaced) or the replacement equipment does not impact on contracted capacity or load, the benefit of the clause 2.9(o) grandfathering provision will cease to apply in respect of any item of equipment when the item is replaced or upgraded. Any replacement or upgraded equipment must comply with the requirements of this Dispatch Protocol (including any Schedules that may be applicable); and

(r) a Threshold Change will be permitted by the Working Committee as long as the Working Committee is satisfied that the entity carrying out the relevant change complies with the requirements of Schedule 2. The Working Committee has no role in respect of the connection of generation or load, or changes to networks comprising the NWPS, where that change is not listed in section 1(a) of Schedule 3.

2.10 Review and Amendment of the Dispatch Protocol

(a) Subject to paragraphs 2.10(b) and 2.10(c), this Dispatch Protocol may be amended from time to time by a minuted resolution of the Working Committee at a Working Committee meeting.

(b) A Schedule must not be amended in a way that is inconsistent with the body of this Dispatch Protocol.

(c) The following provisions of this Dispatch Protocol may not be amended without the written consent of all Participants:

(i) Clause 2.9 – High Level Principles;

(ii) Clause 2.12 – Generation Coordinator;

(iii) Clause 3.4 – New Facilities in the NWPS;

(iv) Clause 4.8 – Future Generation Capacity;

(v) Clause 5.3 – Future Additions to the Supply Network;

(vi) Clause 6 – Energy Dispatch; and

(vii) Clauses 8.6, 8.7, 8.8, 8.9, 8.10 and 8.11 – System Security;

(d) No less frequently than every 3 years, within 14 days after the anniversary of the Effective Date, the Generation Coordinator will ensure that the Secretary to the Working Committee circulates to all Participants a clean copy and a marked-up copy of the Dispatch Protocol containing all changes to the Dispatch Protocol since its last review.

2.11 System Management – The Working Committee

The Working Committee is the body with the overall responsibility for administering the Dispatch Protocol to ensure the safe and effective management of the NWPS.

The Participants in the NWPS are listed in Schedule 9. The Working Committee must ensure that Schedule 9 is kept up to date.

The Working Committee will consist of a Representative from each Participant. As at the Effective Date, the Representatives of the Working Committee are also listed in Schedule 9.

EECL and EEQ may be represented on the Working Committee by the same individuals.

MIM and EHM may be represented on the Working Committee by the same individuals.

Participants in the NWPS must be signatories to the Dispatch Protocol. Representatives must be authorised by their Participating organisation to act on behalf of the Participant in their dealings with the Working Committee.

The roles, responsibilities, membership and operation of the Working Committee are set out in the Charter.

2.12 Generation Coordinator

The Generation Coordinator is appointed by the Working Committee and is responsible for the following:-

(a) to act impartially in all dealings relating to the NWPS;

(b) to coordinate the process for generation dispatch between Major Generators in compliance with their respective contractual obligations, including any energy balance program;

(c) to consolidate the daily, 7th day, monthly and annual energy and demand forecast for Offtakers and to plan and coordinate the necessary generation outputs from the Major Generators as outlined above;

(d) to oversee the implementation and operation of control facilities necessary to provide reliable and stable control of voltage and reactive power at the Points of Connection for the Major Generators;

(e) to liaise with Network Owners (including the Network Operator) to achieve safe, reliable and efficient management of the NWPS;

(f) to oversee the implementation and operation of both governor and AVR control systems for frequency, system time control, voltage and reactive power, which are necessary to provide stable and responsive power production into the NWPS;

(g) the implementation, management and maintenance of the MLSS, which will include review of MLSS operations and detailed reporting to the Working Committee in respect of its operation in a Contingency Event;

(h) to report to the Working Committee at each regular meeting on the performance of the NWPS, Major Generators, Supply Network and Offtaker issues;

(i) in consultation with the Working Committee, to review any technical procedures required for safe operation of the NWPS, for example, Black Start, load shed, restoration of supply procedures (to the extent the procedure affects the NWPS and not individual Power Stations), etc;

(j) to coordinate restoration of supply to the NWPS following a system disturbance or system blackout and, following any system restoration process, provide a report to the Working Committee;

(k) to ensure that any New Entrant to the NWPS becomes a signatory to this Dispatch Protocol prior to connection of its load or generation or transmission assets to the NWPS;

(l) the implementation and maintenance of an EDMS, including ensuring that a complete set of current relevant documents can be viewed on the EDMS; and

(m) to ensure adequate spinning reserve will be maintained to:

(i) enable the Generating Units to provide the forecast changes in demand as notified by the Offtakers and Major Generators; and

(ii) ensure system stability for normal operating conditions.

The Participants acknowledge that it is expected that the Generation Coordinator will use its best endeavours to perform its obligations under this Dispatch Protocol but:

(n) the Generation Coordinator role is a not for profit role undertaken voluntarily for the benefit of all Participants;

(o) the Generation Coordinator role does not include an ability or obligation to legally enforce this Dispatch Protocol against other Participants or require the Generation Coordinator to enforce any obligations under its agreements with other Participants;

(p) certain parts of the performance of the Generation Coordinator role are dependent on other Participants complying with their obligations under the Dispatch Protocol.

2.13 Decisions of Generation Coordinator

The decisions of the Generation Coordinator can be reviewed by the Working Committee at any time at a meeting of the Working Committee.

The Working Committee will provide opportunities for Participants to provide feedback and concerns to the Generation Coordinator.

2.14 Appointment & Termination of Generation Coordinator

(a) The Working Committee has the authority to appoint the position of Generation Coordinator in accordance with the Charter. The appointment of the Generation Coordinator is expected to be permanent except as outlined in 2.14(b).

(b) The performance of the Generation Coordinator will be reviewed by the Working Committee at least annually. The Working Committee may seek to reallocate the position of Generation Coordinator in the event of major changes to the roles of Major Generators in the NWPS or in the event that the

Generation Coordinator is not carrying out its functions under the Dispatch Protocol to the satisfaction of the majority of the Working Committee.

3. NWPS Requirements

3.1 Quality of supply

Specific obligations for the quality of supply of energy to individual Offtakers are currently contained in the relevant ESAs, PPAs and CAAs. Where possible, these conform to the Australian Standards, the EIC and recognised industry codes of practice.

From the Effective Date, all ESAs, PPAs and CAAs that are subsequently executed by Participants shall either reference or include standards that do not conflict with the standards listed in Schedule 2 – Technical Standards.

Generators, Network Owners (including the Network Operator) and Offtakers are required to comply with the requirements set out in Schedule 2 to ensure that the quality of supply throughout the NWPS is maintained for the benefit of all Participants. Furthermore, Generators and Offtakers must ensure that their Customers also comply with the requirements set out in Schedule 2 for this reason.

Schedule 2 will be maintained by the Working Committee to ensure that future Threshold Changes can be made while maintaining the required quality of supply, system security and overall reliability.

3.2 NWPS Model

In association with the development of DPS, a NWPS Model and Dataset covering the NWPS has been created and is held by DPS Co. The Generation Coordinator will manage the Dataset on behalf of all Participants.

Upon request to the Generation Coordinator, the Generation Coordinator will make the Dataset available to Participants and New Entrants via the EDMS.

The Dataset will be maintained in a format suitable for direct use by PSS/e (without conversion). If necessary, the Dataset can also be made available in R.A.W. format.

Schedule 3 – System Studies and Planning outlines the procedures to be followed by any Participant wishing to make a Threshold Change.

Participants shall advise the Generation Coordinator of any such planned changes to assets and the revised data for the Dataset prior to implementing the changes. The Working Committee may direct that the Participant undertake system modelling to ensure that the relevant changes will not have a material adverse effect on the operation of the NWPS.

Participants must also ensure that they do not permit third parties to implement such changes to the NWPS through their assets without first requiring that third party to become a Participant in accordance with clause 3.4 and comply with this provision.

3.3 Asset Maintenance

Participants must operate and maintain their assets that are connected to the NWPS in accordance with this Dispatch Protocol and GEOP.

3.4 New Entrants and New Facilities in the NWPS

The requirements for new and modified facilities are detailed in Schedule 2 and clauses 4.8 and 5.3.

The Working Committee will permit a Participant to carry out a major extension to, or replacement of major components in, existing facilities, provided that the modifications to existing facilities comply with the requirements in Schedule 2 and, where relevant, Schedule 3.

The Working Committee will admit a New Entrant if:

(a) prior to the disclosure of any Confidential Information to the New Entrant, the New Entrant enters into a confidentiality agreement with the Participants (on terms and conditions reasonably satisfactory to the Participants);

(b) its facilities comply with the requirements in Schedule 2;

(c) the set of system studies including stability studies has been completed as per the technical requirements as detailed in Schedule 3 and the results of the system studies show that the facilities will not adversely impact the safety, reliability and quality of electricity supply in the NWPS and of its Participants; and

(d) it becomes a signatory to this Dispatch Protocol.

All equipment connected to the NWPS must be capable of its intended mode of operation within the tolerance ranges specified in the Dispatch Protocol.

Proposals to undertake a Threshold Change must satisfy the requirements set out in the Schedules of this Dispatch Protocol so that the standards of design and compatibility requirements are met.

The party proposing the relevant change is required, at its cost, to carry out the required system studies using the Dataset detailed in Schedule 3, and to provide the results of these studies to the Working Committee for their consideration of technical compliance.

3.5 Removal of equipment in the NWPS

If a Participant wishes to remove a major component of its existing facilities (or a major piece of equipment), and that removal could impact fault currents, system stability, integrity or performance of the NWPS, that Participant must provide the Working Committee with a set of system studies including stability studies completed as per the technical requirements as detailed in Schedule 3.

The system studies must be provided to the Working Committee at least 12 months prior to the proposed removal works.

3.6 Metering and Loss Allocation

Participants are required to comply with Schedule 4 of this Dispatch Protocol.

Subject to legally enforceable exemptions (if any), metering in the NWPS is required to comply with the more stringent of Chapter 9 of the EIC and Schedule 4.

In order to determine energy losses and loss allocation in the NWPS, an MDP will allocate energy (including losses) between Participants, and provide data to Participants, in accordance with the principles established in Schedule 4 of this Dispatch Protocol.

As at the Effective Date, and unless changed in accordance with the principles set out in Schedule 4, the Network Operator is the appointed MDP.

The transfer of electricity across any Points of Connection established after the Effective Date must comply with the more stringent of the requirements of Chapter 9 of the EIC and Schedule 4.

4. Generation

4.1 Major Generators

On and from the Effective Date, there will be two Major Generators selling electricity to third parties on the NWPS, being:

(a) MCPL, which owns and operates MCPS; and

(b) DPS Co, which owns and operates DPS and LPS.

The Major Power Stations are owned by the Major Generators, are located adjacent to one another, and supply power into the Supply Network.

All other Power Stations existing as at the Effective Date are classed as Embedded Power Stations or Minor Power Stations.

4.2 Energy Dispatch

Each Major Generator has the obligation to supply the energy needs as contracted by their respective Offtakers and Customers, subject to their PPAs and ESAs. Each Major Generator shall have sufficient capacity available to meet its forecasted Offtaker and Customer loads.

The Generation Coordinator has the obligation to coordinate the respective levels of generation into, and load from, the Supply Network to enable the delivery of the necessary generation and to maintain system frequency, voltage and time error control for the NWPS as required by this Dispatch Protocol (including Schedule 2).

Subject to the terms of the Energy Balance Agreement, each Major Generator must comply with the instructions of the Generation Coordinator given in accordance with this Dispatch Protocol.

4.3 System Time Clocks

All Participants must have access by GPS to Australian Eastern Standard Time in Mount Isa to ensure accurate and consistent event reporting and to identify the root cause of system faults.

The Generation Coordinator:

(a) is responsible for the management of system time control;

(b) will monitor system time error and manage system time corrections; and

(c) must have a system clock and a discrepancy clock to maintain system frequency in accordance with the requirements of Schedule 2.

4.4 Energy Balance

The Generation Coordinator shall use reasonable endeavours to ensure generation dispatched into the Supply Network matches actual contracted load on the Supply Network at all times. However, the Participants agree that it is not possible for energy dispatched into the Supply Network by Generators to meet contractual load obligations to instantaneously match Offtaker and Customer demand (including allocated losses) on the Supply Network.

Accordingly, it will be necessary for Major Generators that sell energy under PPAs or ESAs using the NWPS to settle imbalances between energy dispatch and load between the Major Generators. Such arrangements will be negotiated between Major Generators and the terms of such arrangements are outside the scope of this Dispatch Protocol.

4.5 Generation Capacity

The capacity of the generating plant in service at any time will be subject to the terms of the Participants' ESAs and PPAs for loads contracted and forecast by Offtakers and Customers.

Each Major Generator must provide Spinning Reserve and Reserve Plant Margin as required under the ESAs and PPAs with their respective Offtakers. Other than the obligation to ensure adequate spinning reserve is maintained under clause 2.12(m), there is no specific requirement for Spinning Reserve or Reserve Plant Margin under this Dispatch Protocol.

The protection for the NWPS and mitigation against system collapse is provided by the LSS. In the event of the loss of generation capacity, the LSS will operate automatically to disconnect an amount of load to match the deficiency in generation following the generation loss.

Reserve Plant Margin in the NWPS has been established as part of the bilateral negotiations between Offtakers and Generators in the establishment of their PPAs and ESAs, including a risk assessment process in considering commercial positions under the PPAs and ESAs.

4.6 Operation of Minor Power Stations and Embedded Power Stations in the NWPS

Each Offtaker with a source of electricity generation that can be connected in parallel with the Supply Network (provided it has been approved under this Dispatch Protocol) must at all times have the necessary protection and control systems in service, and the necessary protection settings applied, so as to coordinate with the relevant Network Owner's protection systems and settings and prevent damage to the NWPS.

The requirements for future embedded Generating Units are contained in Schedule 2.

Each relevant Offtaker shall ensure that the owners and operators of relevant Minor Power Stations and Embedded Power Stations are required to install, and to have in service at all times during which the Minor Power Station and Embedded Power Station is supplying power, protective equipment to disconnect the Minor Power Station and Embedded Power Station from the NWPS in the event of a MLSS operation, or remote CB operation, resulting in island operation.

Each relevant Offtaker shall ensure that owners and operators of relevant Minor Power Stations and Embedded Power Stations are required to operate their Minor Power Stations and Embedded Power Stations at a Power Factor consistent with the Power Factor specified in their respective ESA, PPA or CAA and as close to the Power Factor of their load as practicable.

4.7 Obligation to Keep Informed

All Generators shall keep the Working Committee informed on the detail and settings of protection and control systems and settings on 220kV and 132kV portions of the Supply Network and on their internal assets which could impact on the Supply Network. Any proposed change in schemes or settings that may have an impact on the Dataset, or on the safe and reliable operation of the NWPS, must be submitted to the Network Operator and Generation Coordinator for referral to the Working Committee for approval.

4.8 Future Generation Capacity

A Participant which is a Generator or Network Operator must not undertake or allow the addition of generation capacity to the NWPS where the nameplate rating of the

aggregate Generating Units or the value of the load exceeds the Threshold Demand unless the following conditions are met:

(a) compliance with the technical requirements as detailed in Schedule 2; and

(b) approval from the Working Committee, which approval must not be withheld if:

(i) the set of system studies including stability studies has been completed as per the technical requirements as detailed in Schedule 3; and

(ii) either:

(A) the results of the system studies show that the proposed generation will not adversely impact the safety, reliability and quality of electricity supply in the NWPS and of its Participants; or

(B) the studies identify an adverse impact on the safety, reliability and quality of electricity supply, and the entity addresses those issues to the satisfaction of the Working Committee (acting honestly and reasonably) before connecting.

The proposed operation of new generation in parallel with the Supply Network requires careful prior study and system design approval authorisation by the Working Committee and the Network Operator to do so. Consultation with all Offtakers will also be required to ensure that current fault ratings within the Offtakers' own systems are not exceeded because of the connection of new generation.

5. The Supply Network

5.1 Network Owners & Network Operator

As at the Effective Date, there are four HV switchyards located in and adjacent to the MCPS site which form an interconnected part of the NWPS and are the supply points for distribution of electrical energy to Offtakers and Customers. These switchyards provide the interconnection between the generation capacities of the Major Power Stations. These switchyards also interconnect to the Supply Network.

MIM owns and operates a 132kV network that supplies energy to its operations at the Mount Isa Mine and George Fisher Mine. Five 132kV power lines connect the DPS "D" switchyard to MIM substations at X41, Pendine Street, MIT and the George Fisher Mine.

DPS Co owns and operates:

(a) twin 132kV lines which connect DPS and LPS to the "D" switchyard;

(b) two 132kV interconnectors between "D" switchyard and "B" switchyard; and

(c) the "D" switchyard.

MCPL owns and operates the "A" switchyard and the two 132kV interconnectors between "A" switchyard and "B" switchyard.

EECL is the owner and operator of a 132kV network that currently connects MCPS to EECL's Duchess Road substation for supply to the local Mt Isa community. EECL is also the owner and operator of a 220kV network which connects the EECL "C" switchyard with 220kV portions of the Supply Network to the Gunpowder 220/11 kV substation and MMG Century's mine to the north and to Ernest Henry Mine and the Chumvale Substation (which supplies power to the town of Cloncurry to the east).

Each Network Owner is responsible for the operation and maintenance of its assets.

The Network Owners will be responsible to control those elements of electricity quality under their control to conform to the requirements of electricity quality defined in Schedule 2.

5.2 Auto re-closing of the Supply Network

The Network Operator has enabled automatic re-closing of line feeder switchgear after interruption due to a fault on the Supply Network. Re-closing will be attempted without first determining whether any load or generation is connected.

Offtakers must ensure that their installation (and those of their relevant Embedded Power Stations and Minor Power Stations) contain the necessary interlocks to prevent damage to equipment when automatically re-energised in this manner, or to automatically disconnect such equipment before re-energisation can occur.

Auto-reclosing is not implemented on the 132kV lines supplying MIM operations.

Single phase and three phase auto-reclosing is used on the 220kV lines to the Mount Gordon Mine and MMG's Century Mine.

Only three phase auto reclosing is used on the 220kV line to the Ernest Henry Mine.

Auto reclose may be implemented on the 132kV feeders to Duchess Road Substation.

5.3 Future additions to the Supply Network

A Participant which is a Network Owner or Network Operator may not undertake or allow any extension to the Supply Network or major changes of load to the NWPS where the value of the load exceeds the Threshold Demand unless the following conditions are met:

(a) compliance with the technical requirements as detailed in Schedule 2; and

(b) approval from the Working Committee, which approval must not be withheld if:

(i) the set of system studies has been completed as per the technical requirements as detailed in Schedule 3; and

(ii) either:

(A) the results of the system studies show that the proposed activities will not adversely impact on the safety, reliability and quality of electricity supply in the NWPS and its Participants; or

(B) the studies identify an adverse impact on the safety, reliability and quality of electricity supply, and the entity addresses those issues to the satisfaction of the Working Committee (acting honestly and reasonably) before connecting.

6. Energy dispatch

6.1 General

Normal system operation is defined as when system frequency and voltages are within the specified normal ranges as detailed in Schedule 2, and the available generation and network capacities are adequate to meet the actual and forecast needs. Offtakers' loads

are added and removed in accordance with normal operational requirements at each of the Offtakers' locations.

The purpose of operating procedures is to prevent excursions in frequency and voltage outside the specified normal ranges. This will avoid system disturbances that might eventually result in widespread large load shedding by the LSS and consequent severe disruption to Offtakers' operations and to the Power Stations.

However, actions by Generators, Network Owners or Offtakers can cause relatively large electrical disturbances on the NWPS that cause the system to operate outside the specified normal ranges of frequency and voltage, and which can have the potential to cause system instability unless portions of the Supply Network are quickly isolated or loads quickly curtailed.

In order to prevent this from occurring, key elements in procedures used to control the connection of large loads are:

(a) forecasting of loading conditions at Offtakers' operations in the short and medium term;

(b) detailed requirements for notifying demand and energy requirements on an annual, monthly, 7 day ahead and daily basis as set out in the ESAs and PPAs, and as required by this Dispatch Protocol;

(c) communication by data signalling and telephone between the Offtaker and the Generation Coordinator, and the Major Generator responsible for supplying a load, prior to the connection and intentional disconnection of large loads other than those already advised to the Generation Coordinator and Major Generator in load forecasts. Similarly, following a significant event affecting power generation, transmission or load at any Participant's operations (including the Major Power Stations), this will be quickly communicated between the Generation Coordinator and affected Offtaker(s);

(d) real time data acquisition by the Generation Coordinator and Network Operator of the status and loading at each Offtaker's Point of Connection. This will inform the Generation Coordinator immediately there is a significant change in Supply Network equipment status and loading by Offtakers; and

(e) the regular review and amendment of operating procedures in light of actual experience . This can be expected to be particularly important during the initial period of a new Generator's or Offtaker's operations.

6.2 Notification of Energy Requirements and Demand

The purpose of the energy and demand forecasts is to allow the Generation Coordinator and the Major Generators to plan to meet the requirements of their Offtakers.

Each Offtaker is to submit to the Generation Coordinator and its respective Major Generator its forecast for energy (in Microsoft Excel format) on an annual, monthly and daily basis as a requirement of this Dispatch Protocol.

These requirements are to be presented for each period generally as follows and commencing on the Effective Date:

(a) **Annual Requirements**

Energy (MWh) and maximum half hourly MW demand for each month in the following year.

Unless otherwise agreed, annual forecasts for the following calendar year must be provided to the Generation Coordinator prior to the end of August.

(b) **Monthly Requirements**

Energy (MWh) and maximum half hourly MW demand for each day in the following calendar month.

Unless otherwise agreed, monthly forecasts for the following month must be provided to the Generation Coordinator on the 15th day of each month.

(c) **Daily Requirements**

Unless otherwise agreed, before 2100 hours each day, each Offtaker is to submit to the Generation Coordinator its daily requested energy forecast (MWh) and maximum half hourly MW demand forecast for the second and seventh following Contract Days.

Participants that own or operate Minor Power Stations or Embedded Power Stations must provide "gross" and "net" energy requirements. The gross amount is the Participant's total energy demand for the day. The net amount is the difference between the gross amount and the energy to be generated by the Participant's Minor Power Stations or Embedded Power Stations.

(d) **Future Year Requirements**

Unless otherwise agreed, Offtakers will use their best endeavours to provide the annual Energy (MWh) and maximum half hourly MW demand) for the following four (4) years at the annual meeting of the Working Committee (as referred to in section 1.11 of Schedule 1).

(e) **Changes to Notified Energy Requirement**

Requirements notified prior to 0600 for the following Contract Day may be amended in writing prior to 0600 on the Contract Day. After 0600 on the Contract Day, the Offtaker's written forecast cannot be changed.

In the event of unplanned outages, the Offtaker must, as soon as possible, communicate changes to the forecast verbally with the Generation Coordinator and Major Generator via telephone in the Participant's control room.

(f) **Offtaker Outage**

Within 2 weeks after the commencement of each quarter, Participants are required to notify the Generation Coordinator of their planned shut downs in each quarter for the next 12 months. This information will be incorporated into a regional shut down schedule to assist all Participants with the development of long term outage plans. The regional outage shut down schedule will be issued to all Participants.

(g) **Format of Notification**

Examples of the format for presentation of forecast requirements to the Generation Coordinator are included in Schedule 5. Verbal notification may still be used for unplanned changes, followed by formal notification in writing.

The data structures have been designed to suit the electronic transfer of all forecast types including modifications, and all Offtakers will provide the required outputs to the Generation Coordinator in this format by email. The Offtakers are responsible for developing and maintaining their own energy forecast systems to support this requirement.

6.3 Starting of Single Large Capacity Equipment

For large individual loads rated greater than 3MW, or those with an instantaneous apparent power demand during starting greater than 10MVA, a "permission to connect" procedure has been established. No such load may be started without the approval of the Generation Coordinator in accordance with the established procedure as outlined below. The Generation Coordinator and the relevant Offtaker or Customer must keep the relevant Major Generator informed of the following communications.

This takes the form of verbal communication between the Offtaker and the Generation Coordinator at least 30 minutes prior to the intended starting of such large loads. The Offtaker will nominate the intended starting time of day and the particular load to be started.

The MW limit for large loads will be reviewed periodically and adjusted to match system capability as the power generation capacity is increased over time. Proposals to amend these load ratings should be submitted to the Working Committee for approval.

If sufficient generation capacity will be available from the relevant Generator at the nominated time, the Generation Coordinator will promptly advise permission to start. Where notice is less than 30 minutes and the required generation capacity is immediately available, the Generation Coordinator is not to withhold or delay permission.

The Offtaker will be required to communicate again if the intended starting or stopping time of day, or duration of the plant operation, is to be varied substantially from that previously nominated to the Generation Coordinator and relevant Generator.

The Offtaker is to communicate to the Generation Coordinator any substantial unscheduled interruption (i.e. greater than a 10MW load and 30 minutes duration) by the Offtaker of a load that automatically stops and restarts, is cyclic in operation, and is operating under a previous permission. The load may be restarted following the unscheduled interruption without a further permission to connect, providing the load will be operating within the forecast limits previously nominated.

In the future the verbal communication procedure for permission to connect may be automated through an interlocking system, subject to agreement between the Offtaker, the relevant Major Generator and the Generation Coordinator to do so and it being technically feasible.

6.4 Connection of Large Collection of Loads

The rapid loading (i.e. high rate of load ramp-up) of large plant load collections comprising individual loads smaller, but in aggregate greater, than that nominated in Clause 6.3 needs to be managed so that the loading rate does not exceed the rate at which available generation capacity can be increased.

To manage such events effectively, loading procedures will be followed by Offtakers. These procedures shall apply to:

(a) starting of loads aggregating greater than 10MW over a 30 minute period; and

(b) starting of loads aggregating greater than 5MW over any 5 minute period.

These procedures include:

(c) Voice Communications to the Generation Coordinator by the Offtaker at least 30 minutes prior to the actual intended starting of such load groups detailing the size and duration of the load. Voice Communications are to be logged in the log book by the sender and receiver as soon as possible and the electronic

recordings are to be kept for at least 5 years. The Generation Coordinator and the relevant Offtaker must keep the relevant Major Generator informed of these communications.

(d) monitoring by the Generation Coordinator of Offtakers' load variations automatically via the Supply Network SCADA system, or directly at 132kV and 220kV feeders.

The MW limit for large load groups will be reviewed periodically and increased where possible to match system capability as the installed power generation capacity increases over time, or as the procedures for forecast of daily requirements become more accurate and comprehensive.

Proposals to amend these load ratings should be submitted to the Working Committee for consideration and approval.

6.5 Control of Large Cyclic Loads During Generating Unit Synchronising

The potential coincidence during start-up of demands from large loads with regular cyclic demand pattern such as large mine hoists, shovels and drag-lines may cause system frequency and voltage excursions outside satisfactory limits. It may be necessary in future for the Generation Coordinator to coordinate some such loads as agreed with the Major Generator whose Offtakers and Customers are affected to minimise coincidence of cyclic large loads and consequent excessive real and reactive power demands on generation.

The normal operation of large cyclic loads such as hoists, shovels and the like may present difficulties to any power station operation during synchronisation of Generating Units to the NWPS. The Generation Coordinator will advise all relevant Offtakers ahead of the intended time of synchronisation, and then immediately after synchronisation when conditions are stable.

It may be necessary to temporarily halt the operation of selected large cyclic loads for a brief period immediately prior to synchronisation of Generating Units. An Offtaker must comply with a verbal direction by the Generation Coordinator to temporarily halt its load. The Generation Coordinator shall ensure the number of requests to temporarily halt loads is kept to the absolute necessary minimum, and that any halt is less than five minutes per synchronisation event.

7. Communication and distribution of information

7.1 Overview

The following information shall be provided to all Participants where it is possible to do so and directly relevant to that Participant:

(a) the status and output of Generating Units, including parameters of volts, MW, MVAr and Hz; and

(b) the status and load information for key sections of the Supply Network and Offtaker loads and incomer circuit breakers,

which will provide valuable data to all Participants in the NWPS.

The Participants agree that this information can be shared with other Participants, but is otherwise confidential, and that further disclosure of that information could be adverse to the commercial interests of a Participant. The written consent of Participants must be obtained prior to further disclosure of this information.

Each Participant has the right to restrict the provision of commercially sensitive data to other Participants. The basic conduit for this data flow will be the Network Operator SCADA with additional inputs from the MLSS as required where this is possible.

Information relevant to a particular Offtaker can be made available to the Offtaker at the Network Operator SCADA terminal in the main substation at that Offtaker's site.

Each Participant will be responsible for the translation of data from the SCADA and MLSS protocols to meet their internal system requirements.

7.2 Information required

The following information is required to be made available to the Major Generators:

(a) **Supply Network**

The Network Operator provides real time data through its SCADA system where the existing SCADA system permits. Additional SCADA data will only be provided by the Network Operator on the basis of a commercial agreement to do so.

This information provides the following:

(i) loadings on key elements of the Supply Network;

(ii) system voltage;

(iii) circuit breaker status (closed/open);

(iv) position of line isolators and earth switches; and

(v) information re protection trips and alarms.

(b) **Additional information provided by the Network Operator**

The Network Operator SCADA also monitors the following information at the Points of Connection to its 132kV and 220kV portions of the Supply Network:

(i) status of the Offtaker's incoming circuit breaker (closed/open);

(ii) voltage at the Point of Connection;

(iii) instantaneous and half- hourly MW and MVAr demand; and

(iv) Embedded Power Stations' connection status and load.

Some of this data is critical information required in relation to the MLSS and will be provided to the Generation Coordinator and the Major Generators.

(c) **MIM's 132kV Network**

MIM will provide information to the Generation Coordinator from the "D" switchyard, which relates to the five 132kV feeders supplying the MIM loads at the Mount Isa Mine and the George Fisher Mine.

This information will be:

(i) voltage;

(ii) MW and MVAr demand;

(iii) feeder circuit breaker status;

(iv) information re trips and alarms; and

(v) where possible, status of line isolators and earth switches.

(d) **Connected Generating Units**

The status of all the Generating Units in the Major Power Stations and Embedded Power Stations will be advised to the Generation Coordinator and the Major Generators.

The data will include:

(i) list of generating units connected to the NWPS;

(ii) MW loading on each Generating Unit;

(iii) HV bus volts at the Offtaker's substation; and

(iv) status (closed/open) of circuit breakers connecting the Offtaker's generation to the Supply Network.

This information should be available from the MLSS.

7.3 Voice Communications

A telephone connection will be provided between each Offtaker's and each Generator's control location and the DPS control room, which will be the control room used by the Generation Coordinator. Currently this channel is via a Telstra connection.

A dedicated telephone connection will exist between the Generation Coordinator, the Network Operator, the Major Generators and the MPS, as the central controller of MIM's Embedded Power Stations.

Within the Network Operator's 220kV portion of the Supply Network, dedicated voice channels will be via power line carrier. These phones lines connect the Network Operator's substations at the sending and receiving ends of these parts of the Supply Network.

Control rooms at the Major Power Stations, which manage the interface to the Supply Network and Offtakers, are required to maintain logs of all Voice Communications relating to operation of the NWPS. The telephones associated with these communication systems must include voice recording facilities to ensure that a full record of Voice Communications is maintained. Voice Communications are to be logged in the log book by the sender and receiver as soon as possible and the electronic recordings are to be kept for at least 5 years.

7.4 Key Contact Details

Emergency and routine contact details are to be maintained and kept current as a part of Schedule 6 of the Dispatch Protocol. Schedule 6 will be maintained by the Secretary to the Working Committee and confirmed at each Working Committee meeting. Each Participant is obliged to provide updates to the Secretary in a timely manner and ensure that the contact numbers provided will result in an assured response at all times.

8. NWPS System Security

8.1 General

It is the responsibility of all Participants to ensure that their equipment connected to the NWPS is designed, operated and maintained in accordance with GEOP so that the security of the NWPS is not put at risk.

It is the responsibility of all Participants to address identified non-conformances within their facilities that could impact on the reliable performance of the NWPS in a timely manner, and in accordance with GEOP, to maintain the integrity of the NWPS. The cost of the correction of non-conformances will be borne by the owner of the non-conforming facilities.

8.2 Design

Plant and equipment connected to the NWPS should comply with GEOP, the requirements in Schedule 2, and in accordance with the requirements of any agreed ESA, PPA or CAA. The design of the equipment and its protection and control systems and settings will need to satisfy the requirements of the NWPS Model to demonstrate acceptable performance under steady state and transient conditions when connected to the NWPS as required by Schedule 3.

It is acknowledged by all stakeholders that excursions beyond the normal tolerances may occur during Contingency Events such as system faults, short circuits or sudden changes in generating capacity or system loads.

The exchange of information between Participants during the design phase of changes such as those referred to in section 1(a) of Schedule 3 is critical to allow projects to be effectively developed. Participants are required to respond to requests for information and requests for approvals in a timely manner.

8.3 Maintenance

Participants in the NWPS are required to maintain the equipment connected to the Supply Network in compliance with GEOP. In particular, the testing of protective devices required to prevent damage to Offtakers' equipment or the Supply Network should be carried out in accordance with section 15 of Schedule 2. The testing regime should include circuit breaker tripping, unless this is not possible for production purposes. Where circuit breaker tripping is not carried out as part of protection testing, this test must be carried out at the earliest opportunity. Copies of these test reports should be available for review by the relevant Network Operator and/or Network Owner (as applicable) if required.

8.4 Operational Matters

These measures need to take account of factors unique to the isolated NWPS, such as:

(a) individual Offtaker's power demands being relatively large in comparison both with each Generating Unit's rated output capacity, and the total installed generation capacity on the NWPS;

(b) unscheduled connection of individual large motors (as detailed in clause 6.4), representing a significant proportion of the Spinning Reserve;

(c) large collections of load that can be quickly brought into service by individual Offtakers can exceed the rate at which additional generation capacity is able to be provided by the Generation Coordinator;

(d) coincidence during start-up of large loads with regular cyclic demand pattern such as large mine hoists, shovels and drag-lines could cause excessive real and reactive power demands on the generation as well as voltage and frequency fluctuations on the NWPS outside specified limits;

(e) large capacitive (leading Power Factor MVAr) loading on the generation caused by the long 220kV and 132kV portions of the Supply Network (this will create operational constraints when reconnecting unloaded portions of the Supply Network following widespread disconnections within the Supply Network); and

(f) infrequent load shedding, to be actioned in a purposeful effort to maintain overall system integrity following a Contingency Event. This would normally be automatic but may also be manually initiated by the Generation Coordinator.

8.5 NWPS Constraints

The current constraints in the NWPS include:

(a) the maximum online generation capacity before fault levels are exceeded is 450MW. This fault level limitation is imposed by equipment in the "A" switchyard at the Mica Creek Power Station. If the fault level limitation is reasonably expected to be exceeded, the Generation Coordinator will determine the Generating Units to remain online;

(b) a transformer capacity restriction in the event of the loss of a 132kV/220kV transformer supplying electricity to "C" switchyard; and

(c) in an Islanding event, the 220kV portions of the Supply Network have a MVAr demand, which requires a minimum online generation capacity of 40MVAr.

8.6 Operation of Embedded and Minor Power Stations on the NWPS

It will be the responsibility of Participants with power generating plant operating in parallel with the Supply Network to provide protection and control systems, and to apply appropriate settings coordinated with the relevant Network Owner, that support stable operation of the NWPS.

Participants with generation that can be connected to the NWPS shall have the necessary protection and control systems, with appropriate settings applied in coordination with the relevant Network Owner, to prevent damage to other Participants' equipment. This shall include over-current and reverse power protection and (if necessary) pole-slip protection.

The MPS, XPS, APS and ICPL Acid Plant are currently approved to operate in parallel with the Supply Network.

8.7 Contingency Events

(a) **Circumstances**

A Contingency Event may arise following an unexpected major disturbance to the usual stable operating state of the NWPS. Possible Contingency Events could include:

(i) loss of a major amount of generation capacity;

(ii) unauthorised connection of large amounts of load exceeding available Spinning Reserve;

(iii) major failures on the Supply Network;

(iv) loss of a major transmission transformer or associated switchgear;

(v) major damage to a Participant's facilities;

(vi) significant constraint on regional infrastructure;

(vii) a Force Majeure Event; and

(viii) anything resulting in a Load Encroachment Event or a FILS Event (whether or not listed above).

It is expected that such events would occur infrequently, but when they do it may be without prior warning.

(b) **Planned Responses**

Following a significant Contingency Event involving a generation shortfall (such as the first two items in clause 8.7(a)), it is usually necessary to rapidly attempt to restore the NWPS to a stable state by activating the MLSS and automatic selective disconnection of loads. The alternative of taking no action is likely to result in more widespread disruption and larger loss of loads, with more generation being disconnected and resulting in longer reconnection times.

Manual Load Management may be used to manage generation shortfalls, stabilise the NWPS or manage a Contingency Event.

The key elements required to respond to Contingency Events are a fast speed of response, and the ability to take progressive action in discrete steps to restore stability to minimise the extent of the necessary disruption to Offtakers and Customers.

There are two main situations requiring planned responses:

(i) a major shortfall of generation capacity in relation to loads (see clause 8.8); and

(ii) reconnection of loads following a major disconnection (see clause 8.9).

8.8 Major Generation Shortfall

(a) **Effects**

In the event of the sudden loss of a substantial amount of connected generation capacity, system frequency will begin to fall. Simultaneously, there will be some consequent small load reduction due to frequency-dependent loads. But unless some other action is taken, the loss of a large amount of generation is likely to cause a drop in system frequency and the operation of generator under frequency protection and cascade tripping of generation. Cascade tripping of generation will lead to a system collapse.

Unless load is disconnected so that the remaining system loading matches the available amount of generation, protection and control systems will automatically Island the Generating Units at the Major Power Stations from the Supply Network in order to avoid complete shutdown of each Generating Unit. Resupply of all previously connected loads could then take some hours.

(b) **Load Shedding System - LSS**

To avoid cascade tripping of generating units, a system of PLS, supported by a back-up FILS, following a generation shortfall will be provided by the MLSS. DPS Co will install the MLSS at DPS and the necessary connections via dedicated communication links to MCPS and to the relevant SLSS at each Offtaker's site.

A PLS trip is initiated by a Generating Unit circuit breaker opening and causing a deficiency in total system on-line generation capacity compared with the system load at the time.

For a PLS trip, load shed signals are sent quickly (typically less than 50 milliseconds) to an SLSS unit at each Offtaker's site. The SLSS unit is connected directly to interrupters controlling the loads nominated for shedding.

Schedules 7 and 8 describe the MLSS and SLSS, including prioritisation of shedding and the procedures to be followed for implementation.

(c) **Allocation of Loads to be shed**

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[redacted]

The Working Committee will review the performance of the LSS at each meeting and will consider its effectiveness in protecting the equity of Unserved Energy among Participants the NWPS where appropriate.

The Working Committee will ensure that the requirements of the LSS are satisfied in the event of a New Entrant connecting to the NWPS and the New Entrant's load or generation is incorporated appropriately into the LSS. If the New Entrant is an Offtaker or a Customer, the level of load available to be shed in the event of a Contingency Event under clause 8.8 must be determined by the respective Major Generator's load blocks.

(d) **Back-up Systems**

In the event of failure of the MLSS, a Supply Network fault or a major fault in a Participant's facility, the under frequency relay (FILS) installed at each Offtaker's site will operate at a time dependent on the rate of change of frequency. This will function in an entirely reactive manner by monitoring system frequency and rate of change of frequency (ROCOF).

The purpose of the FILS is to back-up the MLSS in event of its failure, or the failure of the communication system to each Offtaker's SLSS, or a failure to respond to a generation shortfall situation undetectable by the MLSS. The operations of the FILS will be delayed to allow the PLS time to act (where relevant and available).

As a final resort, the 132kV and 220kV feeders from the Generating Units would be tripped by a FILS system to Island the Major Power Stations, should the under frequency systems at the Offtakers' sites fail to shed sufficient load quickly enough to restore system frequency.

8.9 Reconnection of Offtakers after a Major System Contingency Event

There are two areas of activity that need to be considered in relation to the restoration of power following a shortfall in generation capacity. These are:

- operational issues; and
- non-Power Station issues. Schedule 8 details the priority issues that are non-Power Station related.

Operational Issues

Operational issues relate to activities necessary for the safe, orderly and rapid restoration of electricity supply to all of the Offtakers' facilities and to any Customers. The complexity and extent of these actions will depend on the level of load shed. This could range from the loss of part of a Power Station's output or the loss of a single Generating Unit at a Major Power Station to the loss of the entire generation output at a Major Power Station or the loss of all generation in the NWPS.

The necessary drawings, documents and control screens will clearly identify those points within the NWPS where it is possible to synchronise sections of the Supply Network to assist in NWPS system restoration.

Schedule 8 details the procedures to be followed during restoration of supply.

8.10 Procedure for restoration

Each Major Generator must have installed (or have available via contract arrangements) sufficient Black Start Capability to enable their respective Generating Units to be restarted to restore power to their respective Offtakers.

Managing the restoration in the most appropriate manner is likely to require a detailed exchange of data between the affected control centres. It may be necessary for the Generation Coordinator, in consultation with the Major Generators, to make decisions regarding the restoration schedule to satisfy the priorities presented by all Offtakers and Customers and the operational capability of the NWPS.

It is unlikely that any two load shed events will be the same. In order to manage the complexities of the restoration process, the procedures detailed in Schedule 8 have been established to assist with the decision-making process.

Each load shed event or system black event will need to be addressed as an individual event. Past operating experience will be of value in understanding the range of issues to be resolved during a system restoration. It is essential that the Generation Coordinator leads the coordination of the restoration program (in consultation with the Major Generators) and that all Participants in the NWPS cooperate to the fullest possible extent with requests made of them. Any such event will need to be the subject of a review by the Working Committee, in which performance concerns and improvement opportunities are identified for future application.

8.11 Supply Network Restoration

Following a major system Contingency Event that involves the loss of a long HV portion of the Supply Network, care needs to be taken with line re-energisation e.g. 158km of 220kV to Ernest Henry Mine, total VAR requirement = 24MVAr; approx. 380km of 220kV to Gunpowder/Century = 42MVAr approx.

The connection of long unloaded HV portions of the Supply Network on to a lightly MW loaded generating base may cause the Generating Units to operate at a high leading Power Factor. This could cause instability at low excitation and could cause the Generating Units to trip.

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Any imbalance of energy between the Major Generators' Offtakers will be accounted for in the Energy Balance Agreement. Periods of energy imbalance are expected to be less than 24 hours.

The amount of local load to be first connected will vary depending upon the number of Generating Units available and also which Generating Units are available, due to the different capacity of each Generating Unit at leading Power Factors.

The Generation Coordinator must, to the extent possible, ensure that one Generator / Offtaker pairing (as per an ESA or PPA) is not prejudiced if the Contingency Event was the fault of another Generator / Offtaker pairing.

Capabilities at zero Power Factor, i.e. entirely reactive leading MVAr generation and no MW, are:

NWPS Generating Units Capability					
Plant			Plant		
DPS	MW Rating	MVAr At 0 MW	MCPS	MW Rating	MVAr At 0 MW
STG 10	41.6	32.85	A4	33	14
GT11	41.6	32.85	A5	35	18.79
GT12	41.6	32.85	A6	35	18.26
STG 20	41.6	32.85	A7	35	18.26
GT 21	41.6	32.85	B1	35	9.9
GT 22	41.6	32.85	C1	35	21.76
LPS			C2	20	10.8
GT31	60	23	M1	5.5	2.7
			M2	5.5	2.7
			M3	12.5	6.75

The different scenarios of generation capacity that might first become available will determine what MW load (with normal lagging MVAr) needs to be first connected.

8.12 Reactive Power (VAr) Control

(a) All Generators are responsible for managing reactive power.

(b) The Generation Coordinator is responsible for managing the 132kV system voltages at "B" switchyard and resultant reactive power flow in the NWPS. DPS and LPS will control voltage in the "D" switchyard.

(c) The Generation Coordinator is responsible for coordinating with the Network Operator on the management of overall system voltages and reactive power flows in the NWPS.

(d) As a general principle, VAr loading allocated to each Major Generator shall be matched to its respective Offtaker VAr demands, taking into account the system VAr requirements relative to the load.

9. Co-ordination of work

9.1 Overview

Each asset owner is responsible for the operation of its assets. Because the NWPS consists of independently owned and operated but interdependent assets, it is required that operations and maintenance activities are planned and managed as far in advance as possible to try to minimise the impact on the NWPS and the Participants.

9.2 Across Boundary Connections and Services

Where a Participant relies on another Participant for provision of connections and/or services to ensure the correct functioning of equipment, the Participants must keep each other informed of any planned or unplanned interruptions to these connections and/or services, and keep the interruptions to the minimum practicable duration.

In the event that two Participants are bound by the requirements of a single CAA, ESA or PPA then the requirements of that agreement will apply in this regard.

9.3 Across Boundary Isolation and Earthing

Where a Participant relies on the operation of another Participant's switchgear to provide isolation or earthing to allow safe electrical access to its plant and equipment in accordance with its high voltage operating procedures, then:

(a) the Participants will agree upon a 'safe system of work' to be implemented between them for such work. This safe system of work will require that an approved switching sheet is prepared by one Participant and forwarded to the other Participant for review and for approval, prior to carrying out the works;

(b) the document "The Queensland Electricity Entity Procedures for Safe Access to High Voltage Apparatus" will be used as a guide to the practices which should be adopted;

(c) persons who prepare and authorise switching sheets must be authorised by their employers to do so;

(d) persons who are responsible for carrying out high voltage switching procedures must also be qualified and authorised by both their employers and the Participant that owns or operates the assets; and

(e) each Participant will be responsible for applying their safety locks to the relevant isolation point in accordance with their approved practices.

9.4 Planned Outages

Planned works on major plant and equipment, whether in Major Power Stations, the Supply Network, or an Offtaker's installation, have the potential to reduce both the quality of supply and availability of supply. Participants shall keep each other informed of the proposed timing and extent of such outages, via the Working Committee, and use reasonable endeavours to co-operate to minimise the impact on other Participants.

The following procedures are required between Participants to minimise the impact of outages on other Participants.

Participants must establish a set of operating protocols under the CAAs with the Network Owners (as relevant) and the Network Operator, which will outline procedures for planned works, unplanned works and switching procedures.

In general, the operating protocols will establish:

(a) the frequency of meetings;

(b) notification procedures for planned and unplanned events;

(c) target response time for the Network Owner / Network Operator;

(d) agreed methods of supplying loads under abnormal conditions;

(e) agreed methods of switching and outage procedures; and

(f) an up to date list of contact personnel involved in operational matters as well as planned and unplanned outages.

9.5 Non-Conformance

(a) Each Participant must promptly rectify any non-conformances in relation to a Participant's assets that are identified by a Participant's own routine inspection and test programmes, or by studies, reports and audits carried out regarding the NWPS by the Working Committee, where such non-conformances could impact on the performance of the NWPS or the NWPS's compliance with GEOP, or be contrary to the requirements of the Dispatch Protocol.

(b) Where the Working Committee considers rectification to be critical to the function of the NWPS, the rectification work must be undertaken immediately. Otherwise, a non-critical non–conformance must be rectified within 18 months.

10. CCA

(a) In operating under this Dispatch Protocol, the Participants will not discuss or disclose:

(i) the pricing under PPAs or ESAs;

(ii) information which will prevent, restrict or limit the Participants' production capability or capacity to supply electricity, other than as required to maintain the safety and stability of the NWPS;

(iii) confidential information relating to each of the Participants, unless its disclosure is not prohibited by a PPA/ESA or a CAA, as the case may be, and is required for the operation of this Dispatch Protocol; and

(iv) any other matter which may be in breach of the CCA.

(b) The Participants are committed to complying with all applicable laws, in particular, the CCA, during the operation of the Dispatch Protocol, including obtaining any necessary authorisation from the ACCC.

(c) This Dispatch Protocol will terminate if, following the Effective Date, any interim authorisation granted by the ACCC is revoked or expires, and the ACCC has not granted authorisation under sections 88(1A) and 88(1) of the CCA, or authorisation has been granted but has not become unconditional.

11. Confidentiality

(a) The Dispatch Protocol, Working Committee business and all information received by a Participant under or in connection with the Dispatch Protocol (including by a Representative in the course of fulfilling its duties as a member of the Working Committee) shall be confidential (**Confidential Information**). Confidential Information must not be disclosed to persons other than Participants unless the communication is specifically authorised by the Dispatch Protocol or the Working Committee from time to time. This obligation continues after a Participant ceases to be a Participant.

(b) Participants may utilise Confidential Information received as a consequence of their membership of the Working Committee solely for tasks necessary to implement requirements of the Dispatch Protocol.

(c) The obligation in clause 11(a) above does not apply to the extent the disclosure is:

(i) by a Participant to its legal and other professional advisers, auditors and other consultants, suppliers and employees of that Participant or that Participant's Related Bodies Corporate who require the information for

the purposes of the Dispatch Protocol or for the purpose of advising that Participant in relation to the same, provided that such other party agrees to maintain the confidentiality of the Confidential Information as per clause 11(a);

(ii) of information which is publicly available other than as a result of breach of the Dispatch Protocol;

(iii) required by law;

(iv) in the case of DPS Co, to its financiers (and their advisers), provided that such other party agrees to maintain the confidentiality of the Confidential Information as per clause 11(a); or

(v) in the case of Stanwell, EECL and EEQ, to its shareholding Minister and its departmental officers.

12. Dispute Resolution

(a) If a dispute arises between the Participants under the Dispatch Protocol (including between Representatives under the Charter) which cannot be settled between the Participants by negotiation within 30 days, then one of the Participants may give written notice to each other Participant involved in the dispute ("**Dispute Notice**").

(b) The Dispute Notice must set out the details of the dispute, the steps taken to resolve the dispute, and request that the Participant nominate, within 7 days, a senior officer authorised to settle the dispute.

(c) The senior officers of the relevant Participants shall meet within 14 days of the date of the Dispute Notice and shall use their reasonable endeavours to resolve the dispute.

(d) If the senior officers fail to reach agreement within 14 days of that meeting, the dispute will be determined by an independent expert appointed by the Working Committee, taking account of the nature of the dispute.

(e) If the Working Committee cannot agree on the identity of an independent expert within 14 days of the date that the senior officers fail to reach agreement, the independent expert will be appointed by the Institute of Arbitrators and Mediators Australia (Queensland branch).

(f) The independent expert's determination will be binding on the affected Participants.

(g) The costs of the independent expert will be borne equally between the Participants involved in the dispute, unless otherwise determined by the independent expert.

13. Review of Working Committee Decisions

(a) If a New Entrant wishes to participate in the review process provided by this clause 13, it must agree in writing to be bound by this Dispatch Protocol.

(b) If a dispute arises between a New Entrant and the Working Committee or a Participant and the Working Committee in relation to clauses 3.4, 4.8 or 5.3 which cannot be settled between the New Entrant and the Working Committee or the Participant and the Working Committee by negotiation within 30 days,

then either the New Entrant or the Participant may give written notice to the Working Committee of the dispute (Review Notice).

(c) The Review Notice must set out the details of the dispute, the steps taken to resolve the dispute, and request a review of the Working Committee's decision by an independent expert.

(d) If the parties cannot agree on the identity of an independent expert within 14 days of the date of the Review Notice, the independent expert will be appointed by the Institute of Arbitrators and Mediators Australia (Queensland branch).

(e) The independent expert's determination will be binding on the New Entrant or Participant (as relevant) and the Working Committee.

(f) The costs of the independent expert will be borne equally between the New Entrant or Participant (as relevant) and the Working Committee, unless otherwise determined by the independent expert.

14. Force Majeure

(a) Subject to the terms of an existing CAA, PPA or ESA (as applicable), no Participant is liable to another Participant for any failure to perform or delay in performing its obligations under this Dispatch Protocol if that failure or delay is due to a Force Majeure Event.

(b) The Participant that is prevented from performing its obligations under this clause (the 'Affected Participant') must:

(i) remedy or minimise the effects of the Force Majeure Event to the extent required under any applicable CAA, PPA or ESA (as applicable) or as otherwise may be reasonably practicable; and

(ii) take all action reasonably practicable to inform the other Participants of the impact of the Force Majeure Event on the Affected Participant's ability to carry out its obligations under the Dispatch Protocol and the Affected Party's plans to remedy or minimise the effects of the Force Majeure Event pursuant to this clause.

15. Liability

(a) Where:

(i) any liability arises under this Dispatch Protocol on the part of one Participant in relation to another Participant; and

(ii) those Participants are parties to a CAA, PPA or ESA with each other in relation to the NWPS,

those Participants acknowledge and agree that the terms of that CAA, PPA or ESA will regulate the liability of those respective Participants under this Dispatch Protocol.

(b) The Participants acknowledge and agree that to the fullest extent permitted by law, the Generation Coordinator has no liability to any Participant for any acts or omissions by the Generation Coordinator to the extent that it has acted in good faith and in its capacity as Generation Coordinator.

(c) The Participants acknowledge and agree that to the fullest extent permitted by law, this Dispatch Protocol does not limit any duty of care at law or under statute that a Participant may owe to another Participant.

(d) Subject to clauses 14, 15(a), 15(b), 15(c), the terms of any applicable CAA, PPA or ESA and any applicable statute, the Participants acknowledge and agree that to the fullest extent permitted by law no Participant will be liable to another Participant in connection with this Dispatch Protocol **to the extent it has acted honestly, reasonably and in accordance with GEOP**.

16. Governing Law

This Dispatch Protocol is governed by the laws of the Queensland and each Participant unconditionally and irrevocably submits to the non-exclusive jurisdiction of the courts of that State.

Signing page

Signed for **STANWELL CORPORATION LIMITED ABN 37 078 848 674** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **MICA CREEK PTY LIMITED ABN 82 075 522 093** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **SCL NORTH WEST PTY LIMITED ABN 89 075 522 119** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **DIAMANTINA POWER STATION PTY LIMITED ABN 55 149 762 176** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **MOUNT ISA MINES LIMITED ABN 87 009 661 447** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **ERNEST HENRY MINING PTY LIMITED ABN 18 008 495 574** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **MMG CENTURY LIMITED ABN 59 006 670 300** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **MMG DUGALD RIVER PTY LIMITED ABN 19 083 405 556** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **ERGON ENERGY QUEENSLAND PTY LIMITED ABN 11 121 177 802** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Signed for **ERGON ENERGY CORPORATION LIMITED ABN 50 087 646 062** by an authorised officer in the presence of

Signature of officer

Signature of witness

Name of officer (print)

Name of witness (print)

Office held

Schedule 1 – Working Committee Charter

1.1 Purpose

The Working Committee is the body with the overall responsibility to oversee the effective management of the NWPS through the implementation of the Dispatch Protocol.

1.2 Membership

All Participants in the NWPS are deemed to be members of the Working Committee.

Any New Entrant will become a member of the Working Committee from the date that it becomes a signatory to the Dispatch Protocol.

1.3 Representatives

Each Participant must, as soon as possible after becoming a signatory to the Dispatch Protocol, nominate one Representative to represent it on the Working Committee by giving written notice to the Chairperson, except that the Participant in the role of Generation Coordinator must nominate two Representatives to the Working Committee - one to represent the Generation Coordinator and one to represent the Major Generator.

Each Representative must be suitably qualified and experienced in the electricity industry, and must have the necessary authority from the Participant to take any actions required by the Working Committee on behalf of the Participant. Each Representative must provide the Chairperson with written evidence that the person has been given authority by the Participant to act in that capacity.

Each Representative is taken to have authority to exercise the rights and privileges and perform all obligations of the Participant in connection with the Dispatch Protocol. The Representative is responsible for briefing its Participant in relation to issues arising at meetings.

A Representative, acting reasonably, may report to the Chairperson if they form a view that another Representative does not have the skills or authority appropriate to fulfil the Participant's obligations and responsibilities under this Charter and the Dispatch Protocol. The Chairperson will consult with the affected Participant as to whether its Representative should be replaced or another course of action should be implemented.

A Participant may nominate a new Representative at any time, by giving written notice to the Chairperson, who will inform the other Participants.

The Secretary will maintain a record of all appointed Representatives in the form set out in Schedule 6 and will notify the Participants of changes to the Register of Representatives in a timely manner. The Secretary must make the Register of Representatives available to each Participant on request.

1.4 Resignation from Working Committee

A Participant may only resign from the Working Committee if it is no longer a Participant in the NWPS, in which case the Participant must give the Working Committee as much advance notice as reasonably practicable. The resignation will take effect on the later of the date it has been received by, and minuted at, a meeting of, the Working Committee or the date set out in those minutes. Failing receipt of a Participant's formal resignation,

when a Participant ceases its operations in the NWPS, it is deemed to no longer be a Participant for the purposes of this Dispatch Protocol.

1.5 Appointment & Termination of Chairperson and Secretary

The Chairperson of the Working Committee will be a Representative elected by the Working Committee on terms of 3 years. Chairpersons may be re-elected.

The Secretary of the Working Committee will be provided by the Generation Coordinator (because the Generation Coordinator will hold essential data in relation to the performance of the NWPS and the MLSS) and approved by the Working Committee.

The Working Committee may at its discretion replace the Chairperson and/or the Secretary (as the case may be), should it have reasonable grounds to do so.

1.6 Responsibilities of Chairperson

The Chairperson is responsible for:

(a) leading the Working Committee in reviewing and discussing Dispatch Protocol issues;

(b) organising, chairing and coordinating meetings;

(c) ensuring the efficient organisation and conduct of the Working Committee;

(d) briefing all Representatives in relation to issues arising at meetings;

(e) facilitating effective contribution by all Representatives; and

(f) performing the tasks, exercising the rights and bearing the responsibilities set out in this Charter.

The Chairperson may delegate the role to another person of its choice at any time and for any period, with the approval of the Working Committee, provided that the delegation does not result in a material reduction in the efficiency or effectiveness of the Working Committee in carrying out its activities.

1.7 Responsibilities of Secretary

The Secretary is responsible for:

(a) attending all meetings as required;

(b) preparing minutes of meetings and resolutions of the Working Committee and circulating these to all Representatives;

(c) maintaining the Register of Representatives, which contains up-to-date contact details for each Representative, in the format contained in Schedule 6 of this Dispatch Protocol;

(d) maintaining the list of key contact details for other staff of the Participants, including name, position, telephone numbers, e-mail, fax and postal addresses, as set out in Schedule 6; and

(e) no less frequently than every 3 years, within 14 days after the anniversary of the Effective Date, circulating to all Participants a clean copy and a marked-up

copy of the Dispatch Protocol containing all changes to the Dispatch Protocol since its last review.

The Secretary's role is administrative only and the Secretary does not have any voting or other rights.

1.8 Functions of the Working Committee

The function of the Working Committee is to:

(a) agree and adopt this Charter;

(b) be the responsible body for managing the Dispatch Protocol;

(c) make decisions regarding the implementation and operation of the Dispatch Protocol;

(d) amend the Dispatch Protocol, subject to the limitations contained in clause 2.10 of the Dispatch Protocol;

(e) appoint a Chairperson;

(f) manage changes in the appointment of the Secretary and Generation Coordinator;

(g) oversee the provision of independent system modelling to ensure ongoing system standards are maintained when significant new loads or generation are to be established;

(h) approve the MLSS and its attendant components, and review on an annual basis the equity of Unserved Energy between Offtakers supplied by a common Major Generator. Any resultant inequity is a matter for the relevant Major Generator and its Offtakers;

(i) agree upon process and operating rules conducive to safe, reliable and efficient operation of the system which will apply to Offtakers, Network Owners and Generators;

(j) agree on the technical standards that will apply to the changes referred to in section 1(a) of Schedule 3 or upgrades or significant changes at existing Participant facilities;

(k) receive reports and recommendations in relation to proposals for such changes;

(l) approve proposals for such changes that comply with the technical requirements of the Dispatch Protocol;

(m) receive regular reports on the performance of system components from Participants in relation to their components of the system;

(n) establish a routine work programme and budget in accordance with section 12 of this Charter;

(o) perform a risk assessment and develop a risk register and a process for dealing with Contingency Events; and

(p) on an annual basis, confirm the latest version available of the PSS/e and determine whether an upgrade is required.

1.9 Rights and Obligations of Representatives

Each Representative must:

(a) use best endeavours to attend all meetings of the Working Committee;

(b) perform all functions and duties as provided under this Charter and the Dispatch Protocol in relation to the Working Committee;

(c) provide reasonable assistance to the Chairperson, Secretary and Generation Coordinator in respect of its Participant's compliance with the Dispatch Protocol;

(d) discharge their duties honestly and reasonably and for a proper purpose;

(e) exercise the degree of care and diligence that a reasonable person would exercise if they were in the Representative's position;

(f) avoid or fully disclose any actual, potential or perceived conflicts of interest of a professional or personal nature;

(g) not improperly disclose, or make improper use of, information gained through their position as a Representative, and acknowledge that such information might be inadvertently disclosed and/or confidential or commercially sensitive;

(h) not take improper advantage of their position as a Representative; and

(i) make reasonable enquiries if relying on information or advice provided by others.

Representatives have the right to be supported at a meeting by a suitably qualified technical member of the Participant (or their consultant) to assist in the presentation and discussions of technical matters.

Should a Representative:

(j) intend to be accompanied at a meeting as outlined above; or

(k) wish to appoint an alternative temporary representative in the event they are unable to attend a meeting;

this should be notified to the Chairperson at least 2 days prior to the meeting.

1.10 Meetings

(a) The Chairperson must convene and conduct meetings at least every 3 months (and more frequently if necessary) for the purpose of consulting with Participants on the management of the NWPS and the operation and implementation of the Dispatch Protocol. One of these meetings will be the annual meeting required by section 1.11 of this Schedule 1.

(b) Issues to be considered by the Working Committee include:

(i) the performance of the NWPS and quality of supply;

(ii) the operations of load shedding events;

(iii) the MLSS and SLSS performance; and

(iv) interface and safety issues between Participants.

(c) The Chairperson must give Participants at least 14 days notice of a meeting or such notice as the Participants agree. Such notice must include the agenda, date, time and location of the meeting.

(d) Any Participant may also convene a meeting on 14 days notice or such other period of notice as the Participants agree. Such notice must include the agenda, date, time and location of the meeting.

(e) Meetings may be held using any technology agreed to in writing by all Participants, for example: teleconference or video conference.

(f) The quorum for a meeting is four Representatives, which must include the Representative performing the role of Generation Coordinator. If a quorum is not present within 30 minutes of the scheduled start time for the meeting, the meeting is adjourned to such time and place that the Representatives present decide. The Chairperson must ensure that all other Representatives are notified in writing of the time, date and place of the adjourned meeting.

(g) Where a decision is to be made by the Working Committee, a consensus is required to carry the vote unless otherwise stated in the Dispatch Protocol or this Charter.

(h) Each Representative has one vote, except that:

(i) the Participant in the role of Generation Coordinator with two Representatives does not get two votes, but only has one vote for the two Representatives;

(ii) the Participant in the role of Chairperson does not get an additional vote;

(iii) if EECL and EEQ appoint a single person to be their Representative, that person will have two votes (i.e. one for each Participant); and

(iv) if MIM and EHM appoint a single person to be their Representative, that person will have two votes (i.e. one for each Participant).

(i) The Chairperson, utilising the Secretary, must keep, or arrange to be kept:

(i) minutes of the Working Committee meetings; and

(ii) records of the Working Committees' reports and recommendations.

(j) The Secretary must circulate copies of the minutes within 7 days after the meeting.

(k) The minutes, reports or recommendations must be made available to all Participants upon their request.

(l) A copy of any such minutes, reports or recommendations signed by the Chairperson will be taken to be a true record unless the contrary is proven.

(m) The Participant performing the role of Generation Coordinator, acting reasonably, is entitled to require the Chairperson to:

(i) include any matter pertaining to generation co-ordination issues on the meeting agenda;

(ii) provide the Generation Coordinator's Representative reasonable time to present generation co-ordination issues on any matter listed on the agenda; and

(iii) provide the Generation Coordinator's Representative reasonable opportunity to address the meeting on any relevant matter pertaining to generation co-ordination issues not included on the agenda. However, the Generation Coordinator's Representative will use its best endeavours to ensure that all known relevant matters are on the agenda.

1.11 Annual Meeting

The Chairperson must convene and conduct an annual meeting to consider the key items of the Dispatch Protocol, including:

(a) the operation of the LSS during Contingency Events through the year;

(b) establishing an audit to prove the effectiveness of the MLSS equipment and that the actions of the SLSS at each Participant's sites are compliant with the agreed programmes;

(c) reviewing the Unserved Energy and the impact on all Offtakers;

(d) reviewing and adjusting load shedding priorities as required and updating the MLSS and SLSS details in Schedule 7 accordingly;

(e) reviewing the maintenance programmes for equipment associated with the NWPS to identify the risks of equipment failure which could adversely impact the NWPS;

(f) reviewing the operational performance of all the Participants and their equipment and identifying areas where improvements are required;

(g) considering proposed changes or additions to the NWPS from all Participants and confirming that such changes are reflected in future energy forecasts provided to the Generation Coordinator.

1.12 Routine Work Programme

(a) The Working Committee will establish a routine work programme and budget on a 4-year cycle designed to confirm the integrity of the NWPS for the benefit of all Participants.

(b) The Working Committee is responsible for establishing a programme of work necessary for the good management of the NWPS.

(c) An indicative NWPS work programme is outlined below:

(i) Year 1 - Audit of the LSS;

(ii) Year 2 - Fault level and relay coordination study;

(iii) Year 3 - System stability study and metering review; and

(iv) Year 4 - external audit of Participant's maintenance programme relevant to the NWPS.

(d) This work programme will be repeated for future years.

(e) The Working Committee will establish an annual budget to carry out the work and request funding from Participants. The annual works programme budget will be capped at $100,000 per year for at least the first 3 years from the Effective Date.

(f) The Working Committee may agree a future higher or lower maximum budget to suit the needs of the NWPS at the relevant time. However, future annual budgets must be set at least 12 months in advance of the commencement of the work programme to allow Participants to make the necessary internal budget commitments.

(g) Participants will contribute equally to the costs of the works detailed in the programme. However, if the budgeted or actual costs of the annual works programme exceeds $100,000, the Working Committee may agree an alternative equitable cost-sharing method.

(h) Within 2 months of the end of any calendar year, the Chairman and Secretary of the Working Committee will prepare an annual report setting out a summary of the costs incurred by the Working Committee in the previous calendar year (including a comparison of costs incurred against budgeted costs), together with reasonable supporting information for distribution to the Participants.

(i) Within 30 days of 1 July, 1 October, 1 January and 1 April in each year the Dispatch Protocol is in effect, the Secretary will provide a quarterly report to the Working Committee detailing:

(i) funds received from Participants during the previous quarter;

(ii) commitments and payments made during the previous quarter;

(iii) funds available; and

(iv) activities planned for the following twelve month period.

Schedule 2 – Technical Standards for the NWPS

1. Introduction

These technical standards have been developed to ensure the safe and reliable operation of the NWPS under all operating conditions. Participant's facilities (including related systems and facilities) must operate satisfactorily for the full range of variation of system parameters and characteristics, and at the distortions and disturbances, specified in this Schedule.

The technical standards included in this Dispatch Protocol are minimum standards to be applied. Participants may adopt higher standards, provided these are approved by the Working Committee and comply with the requirements of the relevant CAA.

This Schedule may not be amended without the written consent of all Participants.

2. Voltage at the Points of Connection

The Supply Network has been designed to be three phase supply with a nominal frequency of 50 Hz and a nominal voltage of either 132kV or 220kV. However, Participants have a key role in controlling voltage and frequency on the Supply Network.

Voltage control at the 132kV busbars in switchyards "A", "B" and "D" shall be the responsibility of the Generation Coordinator (noting that voltage at switchyard "D" will be controlled by DPS and LPS generation). Voltage control on the 220kV portions of the Supply Network shall be the responsibility of the Network Operator. In order for the Generation Coordinator and Network Operator to control voltage, Participants must co-operate with and assist these entities by doing each of the following:

(a) operating their facilities to, and promptly complying with reasonable requests of either the Generation Coordinator or the Network Operator that are designed to assist in, maintaining the voltage of the Supply Network within the range of 100% and 110% of the nominal voltage for normal situations; and

(b) promptly complying with reasonable requests of either the Generation Coordinator or the Network Operator to reduce the voltage of the Supply Network below 100% of nominal voltage under light load conditions where this is necessary or desirable in order to assist with the reduction of high voltage conditions on that Supply Network.

3. Voltage Fluctuations

Equipment connected to the Supply Network must be designed and operated so that:

(a) voltage fluctuations at Points of Connection do not, as a whole, exceed those shown in Figure 1 of AS2279, Part 4 for the "Threshold of Perceptibility", except on infrequent occasions and for short intervals of time; and

(b) voltage fluctuations do not reach the "Threshold of Irritability" defined in AS2279, except during abnormal circumstances such as voltage dips associated with short circuits caused by faults, and voltage changes associated with unexpected loss of generation plant.

Under fault conditions the voltage in the Supply Network may fall to very low levels for brief intervals. These intervals are often of a duration less than 200 milliseconds, but may be as long as two seconds. It is each Participant's responsibility to ensure that its electrical installations are capable of withstanding voltage transients due to switching operations or faults (such as by setting protection to trip units if this condition puts them at risk).

4. Voltage Control and Reactive Power Capability

Generating Units at Major Power Stations must:

(a) be continuously capable of supplying or absorbing at the Points of Connection an amount of reactive power of at least 0.395 times the Authorised Demand for export; and

(b) have excitation control systems sufficient to maintain stable voltage at their Points of Connection to within 0.5% of the voltage set point nominated by the Generation Coordinator.

5. Voltage Impulse Withstand Level

All of the equipment associated with each Point of Connection shall be designed to withstand, without damage, the applicable voltage impulse levels specified in Table 1 of AS62271.1 and the range of operating conditions that may arise, in a manner consistent with this Schedule.

6. Power Factor

(a) Subject to paragraph (b) below, under normal operating conditions:

i. Offtakers will use reasonable endeavours to maintain a Power Factor at the Points of Connection of between 0.80 lagging and unity ("Optimal Power Factor Range"); and

ii. if an Offtaker wishes to maintain a Power Factor at the Points of Connection outside the Optimal Power Factor Range, it must seek the approval of the relevant Network Owner and the Generation Coordinator.

(b) Notwithstanding paragraph (a) above, even when Participants are operating their assets in accordance with GEOP, variations are likely to occur which will lead to a Power Factor at the Points of Connection of between 0.80 lagging and 0.95 leading.

7. Harmonic Current Distortion

Each Participant must ensure that, when summated at Points of Connection, the harmonic currents for each harmonic frequency do not exceed the levels shown in the table below for more than one hour in any day, and do not exceed twice those levels except for very short periods associated with short circuit faults. In addition, Total Harmonic Current Distortion (%THDI) and the individual harmonic current levels ($\%I_h/I_{h1}$) must be limited to values based on the ratio of the short circuit current to the current for the Authorised Demand for import or export to the values shown in the table below during normal operating conditions.

Table of Permitted Harmonic Content

Maximum harmonic current at Harmonic, h, as a percentage of the 50 Hz current for the Authorised Demand for import or export						
I_{SC} / I_L	THDI, %max	$I_{h<11}$ / I_{h1} %max	$I_{h11\ to\ <17}$ / I_{h1} %max	$I_{h17\ to\ <23}$ / I_{h1} %max	$I_{h23\ to\ <35}$ / I_{h1} %max	$I_{h\geq35}$ / I_{h1} %max
<50	2.5	2.0	1.0	0.75	0.30	0.15
≥50	3.75	3.0	1.5	1.15	0.45	0.22
Even harmonics are limited to 25% of the values given above						
I_{SC} = Maximum short circuit current at the summated Points of Connection I_L = Maximum h_1 current for the Authorised Demand for import or export						

THDI = Total Harmonic Current Distortion

NOTE: The Network Operator will use a control system within the NWPS of 217Hz for such functions as tariff control etc.

8. Voltage Unbalance

Each Participant must ensure that its equipment connected to the Supply Network only results in voltage unbalances that comply with each of the following restrictions:

(a) the voltage unbalance, expressed as the ratio of negative phase sequence voltage to positive phase sequence voltage, must not exceed 1% when averaged over any ten minute period;

(b) the voltage unbalance may exceed 2% only on infrequent occasions and for short durations not exceeding one minute in any hour. Such large voltage unbalance may occur as a result of faults, switching operations or transformer energisation; and

(c) Participants shall provide suitable protection against voltage unbalance to protect their equipment where necessary.

9. Frequency

The nominal operating frequency of the system is 50Hz. As is the case with voltage on the Supply Network, Participants have a key role in controlling frequency on the Supply Network. Accordingly, Participants must co-operate with the Generation Coordinator to maintain frequency throughout the NWPS and restore system frequency in accordance with the limits presented in the following table. The MLSS may initiate automated load shedding to assist in restoring the frequency on NWPS.

The Generation Coordinator and the Major Power Stations must have Generating Units capable of complying with the minimum requirements of the table below, and must operate those Generating Units in compliance with those requirements.

Condition	Containment	Stabilisation	Recovery
Accumulated time error	<15 seconds for 99% of the time		
Normal	49.5 to 50.5Hz		
Contingency Event	48.5 to 52Hz	49 to 51Hz within 5 minutes	49.5 to 50.5Hz within 10 minutes

10. Disturbance Issues

Each Participant acknowledges and agrees that:

(a) the distortion, fluctuation and unbalance limits specified in this Schedule are specified for NWPS intact operating conditions;

(b) the distortion, fluctuation and unbalance limits specified in this Schedule will be assessed at each Point of Connection; and

(c) the respective Network Owner or the Network Operator may undertake, or may reasonably require a program of tests to be undertaken, to ensure compliance with the relevant limits.

11.System Design and Construction

Each Participant must ensure that:

(a) all of its electrical equipment associated with, and connected to, each Point of Connection, including earth grid and earthing connections, is designed and constructed to conform to the requirements of this Dispatch Protocol, GEOP, all relevant Laws and Australian Standards relevant to that equipment;

(b) the earthing of any such equipment complies with the ENA EG1-2006: Substation Earthing Guide (as relevant) to reduce step and touch potentials to safe levels;

(c) a Point of Connection must:

i. have an earth grid dedicated to the Participant's facilities at the Point of Connection;

ii. provide satisfactory earthing independent of the rest of the NWPS; and

iii. be installed and maintained in accordance with GEOP;

(d) any Generating Units:

i. are capable of safe and satisfactory operation in parallel with the Supply Network;

ii. are capable of effective and swift disconnection from the Supply Network to prevent injury to persons or damage to equipment; and

iii. are capable of safe and effective shutdown in accordance with GEOP without supply from the Supply Network; and

(e) each HV circuit which forms a part of a Point of Connection circuit must be capable of being earthed by a suitable fault current rated device. Where the design of the HV electrical apparatus does not allow testing with a voltage detector on all phases to prove the circuit is de-energised before earthing, then the earthing device must have suitably rated fault make earthing capability. For metal clad switchgear that is not withdrawable, this includes:

i. a circuit to bus isolator plus a fault make earth switch; or

ii. a circuit isolator with "test to prove de-energised" facilities for applying an earthing device.

12.Protection of Electrical Installations

(a) Each Participant must implement appropriate measures, including the installation and maintenance of protection and control facilities and switching procedures (developed jointly with the relevant Network Owner) in accordance with GEOP and relevant Australian Standards, to protect the Participant's electrical installations connected to the Supply Network against material disruptions to the quality of electricity, including loss of synchronism, power surges, excursions in voltage outside usual parameters, load reductions or voltage changes due to lightning, switching or earth faults, or single phasing, or any other similar changes, or due to the operation of any protective or auto-reclosing device in the Supply Network.

(b) Each Participant with a Generating Unit must ensure that such Generating Unit is maintained and operated in accordance with this Schedule and GEOP and an appropriate maintenance strategy must be developed by the Participant, giving consideration to the recommendations of the original equipment manufacturer (OEM) of the Generating Units.

13.Technical Standards for Embedded & Minor Power Stations

Embedded & Minor Power Stations shall have:

(a) suitable protective devices to disconnect from the Supply Network in the event of disconnection of their transmission feeder from the generation at a Major Power Station;

(b) protection so that operation of the transmission system auto reclosers does not have adverse impacts on them;

(c) AVRs and governors which will operate in synchronism with the Supply Network in a stable manner under all normal operating conditions; and

(d) protective devices to comply fully with the requirements identified in system studies carried out in relation to their installation.

14.Protection of the Supply Network

Each Participant must ensure that they comply with each of the following that is relevant to their assets:

(a) each Participant must ensure that its equipment at a Point of Connection is protected by devices and apparatus designed, installed, commissioned, maintained and tested in accordance with this Schedule and GEOP, in order to safely and effectively automatically disconnect any faulty equipment from the NWPS;

(b) where the Participant is a Network Owner or a Network Operator, that Participant must design, install, commission, maintain and test protection and control equipment necessary to safely and effectively disconnect faulty equipment from the Supply Network in accordance with the requirements of this Schedule 2 and GEOP. These protective devices will be designed to minimise damage to equipment and to minimise the level of disturbance to the Supply Network during faults;

(c) where the Participant owns or operates Major Power Stations, Embedded Power Stations or Minor Power Stations, the protection and control systems for these are designed, installed, commissioned, maintained and tested in accordance with this Dispatch Protocol and GEOP;

(d) where the Participant owns or operates Major Power Stations or Embedded Power Stations, the protection and control systems for these include protection to detect all faults on the Supply Network, including, but not limited to, earth faults, phase to phase faults, negative phase sequence, or overcurrent faults;

(e) where the Participant owns or operates Minor Power Stations, the protection and control systems for these are designed to prevent damage from faults or disturbances on the Supply Network and to be disconnected from the Supply Network in the event of Supply Network faults;

(f) all of the Participant's protection settings are coordinated with the Network Operator's protection systems, and, where relevant, the Network Owner's protection systems and, where applicable, the protection systems of other users of the NWPS; and

(g) no alterations to the protection and control equipment relating to a Point of Connection or Generating Units are performed without the Generation Coordinator's prior written consent (such consent not to be unreasonably withheld). The Generation Coordinator will consult with the Network Operator and any relevant Network Owner in this regard. If any changes involving more than relay settings are approved, and these changes are considered fundamental to the predictability of the protection system, then the whole protection system must be studied and tested in accordance with the applicable sections of Schedule 3 of this Dispatch Protocol.

15.Testing Interval for Protection Systems

Each Participant must ensure that:

(a) equipment constituting its protection system relating to a Point of Connection is subjected to comprehensive periodic testing within the following intervals:

i. systems containing only protection relays or modules, which include self supervision functions, are tested at intervals not exceeding 60 months (or a lesser period agreed between the Participant and the Network Operator and any relevant Network Owner); and

ii. systems containing any protection relays or modules, which do not contain self supervision functions, are tested at intervals not exceeding 48 months (or a lesser period agreed between the Participant and the Network Operator and any relevant Network Owner);

(b) the testing referred to above is comprehensive and includes circuit breaker tripping (unless such tripping would result in unacceptable interruption or disruption to the Participant's operations);

(c) it maintains records of any such testing referred to above;

(d) it provides prior notice of the testing referred to above to the Network Operator and any relevant Network Owner; and

(e) it allows the Network Operator and any relevant Network Owner to witness these tests.

16.Testing Interval for Load Shed System

The Generator Coordinator shall coordinate testing of the LSS with Participants at a frequency determined by the Working Committee necessary to demonstrate that reliable operation can be achieved. However, this interval period must not exceed 48 months.

17.Provision of NWPS Status Information

Unless otherwise agreed in writing by the Generation Coordinator and the Network Operator, each owner of a Major Power Station or Embedded Power Station must, at its own cost, make available to the Generation Coordinator and the Network Operator, via an agreed communications channel, information concerning the following:

(a) open/close status of the CBs relevant to the Point of Connection or Generating Units-;

(b) terminal volts and amps for each of the Generating Units;

(c) 220kV and/or 132kV bus voltage at the Point of Connection switchyard or substation;

(d) MW export from each of the Generating Units; and

(e) in respect of Major Power Stations, MVAr absorption/injection from each of the Generating Units connected to the Supply Network.

Schedule 3 – System Studies and Planning

1. Introduction

(a) This Schedule outlines the procedure to be followed by any Participant wishing to:

i. add or remove new generation capacity or load on the Supply Network where the nameplate rating of the aggregate Generating Units or the value of the load exceeds the Threshold Demand;

ii. carry out major reconfigurations of, or augmentations to, the Supply Network;

iii. establish new supply networks forming part of the NWPS;

iv. replace equipment in the NWPS where that equipment has a nominal rating equal to or greater than the Threshold Demand and that equipment is not being replaced with an identical piece of equipment (or a piece of equipment that has the identical electrical characteristics and load of the equipment being replaced);

v. permanently remove a major component of its existing facilities; or

vi. significantly alter the protection and control equipment relating to a Point of Connection or Generating Units.

each a **Threshold Change**.

(b) The requirements of these procedures are binding. Where a Participant is responsible for a third party as a Customer, retailer, generator or network provider, that Participant must ensure that third party's compliance with this Dispatch Protocol (including this Schedule 3).

(c) In this Schedule, a reference to a "Participant" includes a New Entrant.

2. System Study

(a) A Participant wishing to carry out a Threshold Change must conduct a system study. The study must detail the relevant equipment and consider as a minimum:

i. load and fault levels;

ii. protection requirements;

iii. critical fault clearance times;

iv. steady state and transient stability; and

v. governor, AVR and PSS requirements.

However, a system study may not be required for reconnection of equipment if determined unnecessary by the Working Committee on a case by case basis.

(b) As part of the establishment of DPS, consultants prepared a power system dataset for the power system using data provided by MIM and EECL (**Dataset**). The Dataset will be maintained as a current working document by the Generation Coordinator in accordance with clause 3.2 of the Dispatch Protocol. Following practice on the NEM, the Dataset will be maintained in a format compatible with PSS/e without conversion.

(c) To enable Supply Network studies to be undertaken, it is necessary for Participants to provide information relating to the impact of their installations on the Supply Network as a necessary input into the Dataset.

(d) Participants are required to provide the results of the internal system studies referred to in paragraph (c) above in PSS/e format to the Generation Coordinator. If necessary, the internal system studies referred to in paragraph (c) above and the Dataset can also be made available in R.A.W. format.

(e) The Dataset will be located on the EDMS.

3. Development Obligations

(a) A Participant connecting equipment resulting in a Threshold Change is required, at its own cost, to:

i. engage technically qualified personnel to modify and re-run a model using the Dataset over a range of operating scenarios in accordance with GEOP. The updated Dataset will be made available to the Participants by the Generation Coordinator on the EDMS. This updated Dataset will become the new Dataset and the basis for the NWPS Model once approved by the Working Committee in accordance with this Schedule and implemented by the relevant Participant;

ii. adopt all the technical requirements applicable to the development type defined in Schedule 2 of this Dispatch Protocol;

iii. return the updated Dataset in PSS/e format and associated documentation to the Generation Coordinator complete with all additional input and output data; and

iv. provide a full copy of the study with a comprehensive review of the proposed development and its impact on the NWPS to the Working Committee for technical consideration. The study will require review of both steady state and transient conditions to be provided, and must demonstrate that the development will comply with GEOP and the requirements of the Dispatch Protocol.

The Participant must also bear the costs of any necessary change to the LSS to appropriately incorporate the Threshold Change.

(b) A Participant connecting generation, networks or load below the Threshold Demand (but which could still reasonably be expected to impact fault levels or system stability, integrity or performance) is required to:

i. comply with the technical requirements listed in Schedule 2 of the Dispatch Protocol;

ii. provide full technical details of their proposal to the Generation Coordinator for inclusion in the NWPS Model. The Generation Coordinator may, at the Participant's cost, engage technically qualified personnel to incorporate the necessary changes into the NWPS Model and perform the necessary studies;

iii. pay all directly attributable costs associated with the proposed development; and

iv. comply with the technical requirements relating to Embedded Power Stations or Minor Power Stations, as relevant.

(c) Promptly (and, in any event within 3 months) of receipt by the Working Committee of the updated Dataset referred to in paragraphs 3(a)(i) and 3(a)(iii) above and the system study referred to in paragraphs 3(a)(iv) above, the Working Committee will advise the Participant wishing to connect equipment, generation, networks or load to the NWPS in writing of the date by which the Working Committee will respond to the request (which will not be unreasonably delayed). If this process does not take place in a timely manner, the Participant wishing to connect equipment, generation, networks or load to the NWPS may raise its concerns directly with the Working Committee.

Schedule 4 – Metering Requirements

4.1 Introduction

This Schedule applies to the metering of electricity only, and governs:

(a) the metering of electricity flows at Points of Connection;

(b) the calculation and allocation of energy losses between Participants within the 220 kV portion of the Supply Network;

(c) the use of Metering Data for:

i. the Energy Balance Agreement between the Major Generators;

ii. a Major Generator's billing purposes under the PPAs and ESAs; and

iii. a Network Owner's billing purposes under the CAAs.

4.2 Background

On and from the Effective Date, EECL is the Responsible Person, Metering Provider and MDP in respect of metering at all Points of Connection for the portions of the Supply Network owned by EECL. In addition, EECL is the Responsible Person, Metering Provider and MDP in respect of the Points of Connection between DPS Co's "D" switchyard and EECL's "B" switchyard. This may be changed in accordance with the Metering Obligations.

DPS Co is the Responsible Person in respect of metering at the Points of Connection for the portions of the Supply Network owned by DPS Co, with the exception of the metering at the Points of Connection between DPS Co's "D" switchyard and EECL's "B" switchyard. On and from the Effective date, Metering Dynamics is engaged by DPS Co to be the Metering Provider and MDP at the Points of Connection for which DPS Co is the Responsible Person.

4.3 Metering Installations and Metering Providers

Each Responsible Person may enter into a separate agreement with a Metering Provider for the provision, operation and maintenance of Metering Installations in accordance with the Metering Obligations. However, when the Metering Provider or MDP is not a Participant (e.g. Metering Dynamics), the Responsible Person that engages the Metering Provider or MDP is ultimately responsible for ensuring that the Metering Provider or MDP complies with this Dispatch Protocol, uses the Metering Data (and any other Confidential Information) only for tasks necessary to implement requirements of this Dispatch Protocol, and does not disclose any Confidential Information.

Subject to the next paragraph, each Responsible Person is responsible for their Metering Provider fitting their relevant Points of Connection with Metering Installations in accordance with the Metering Obligations, and otherwise ensuring that those Metering Providers comply with obligations on Metering Providers under those Metering Obligations. Each Metering Installation must be capable of measuring electricity flows across the Points of Connection in both directions. As at the Effective Date, the Metering Obligations require Metering Installations to be at least Type 2 Metering Installations.

As at the Effective Date, certain Points of Connection between MCPL and the Network Operator are, due to historical reasons and the recent transfer of the "B" switchyard from MCPL to the Network Operator, not all fitted with Metering Installations. These Points of Connection are referred to as "virtual metering" points (see Figure 1). MCPL and the Network Operator are currently reviewing this situation and will agree upon a way forward in respect of these Points of Connection, but these "virtual metering" points are otherwise grandfathered from, and do not need to comply with, the requirements of this Dispatch Protocol.

The Metering Provider must operate, maintain, test, calibrate, repair, replace and remove Metering Installations in accordance with the Metering Obligations.

Each Participant consents to the Metering Providers for their Points of Connection accessing the relevant Metering Installations for any relevant purpose, including complying with the Metering Obligations (provided that the Metering Provider provides reasonable notice of its intended access to, and complies with the reasonable requirements and directions of, the owner of the relevant Metering Installations and the party in control of that site, including entering into an access arrangement to specify the relevant site conditions if requested). Each relevant Participant, Metering Provider and MDP must cooperate to allow the Metering Provider to carry out its relevant obligations under the Metering Obligations.

Any discrepancies in the operation of Metering Installations is to be dealt with:

(a) in accordance with the Metering Obligations; and

(b) where relevant and practicable, taking into account any provisions of the relevant PPAs, ESAs and CAAs (provided that the relevant parties to those agreements must give the Metering Provider copies of these relevant provisions).

The Generation Coordinator will maintain a comprehensive table of Metering Installations in the NWPS (containing each Metering Installation's name, serial number, function, location and owner/Responsible Person) and will make this table available to Participants via the EDMS.

4.4 **Metering Data and MDPs**

Each MDP is responsible for collecting and managing Metering Data from their relevant Points of Connection in accordance with the Metering Obligations, and otherwise must comply with obligations on MDPs under those Metering Obligations.

Each MDP must disclose Metering Data in accordance with the relevant agreements between the parties and as follows:

(a) half-hourly data in NEM12 format must be delivered on a daily basis to the Generation Coordinator for the purposes of the Energy Balance Agreement;

(b) to Power Stations for the purposes of charging for the use of electricity generated;

(c) to the relevant Network Owner for the purposes of charging for the use of its portion of the Supply Network;

(d) in respect of a Point of Connection to the entities that are connected to each other at that Point of Connection; and

(e) otherwise as requested by a Participant for the purposes of billing or audit.

Each Participant consents to MDPs for their Points of Connection:

(f) accessing the Metering Installations for those Points of Connection for any relevant purposes, including complying with the Metering Obligations (provided that the MDP provides reasonable notice of its intended access to, and complies with the reasonable requirements and directions of, the owner of the relevant Metering Installations and the party in control of that site, including entering into an access arrangement to specify the relevant site conditions if requested); and

(g) accessing the Metering Data from those Metering Installations for any relevant purposes, including complying with the Metering Obligations and disclosure of the Metering Data as set out above.

Each relevant Participant, Metering Provider and MDP must cooperate to permit an MDP to carry out its relevant obligations under the Metering Obligations.

Any discrepancies in Metering Data are to be dealt with:

(h) in accordance with the Metering Obligations; and

(i) where relevant and practicable, taking into account any provisions of the relevant PPAs, ESAs and CAAs (provided that the relevant parties to those agreements must give the MDP copies of these relevant provisions).

4.5 **Energy Balance**

The Participants acknowledge that not all Points of Connection are fitted with Interval Meters (meaning that not all Points of Connection have the capability to meter the transfer of electricity across the Point of Connection on a half-hourly basis, which is the standard for energy metering in the NEM).

As at the Effective Date, the Major Generators are party to an Energy Balance Agreement, under which the Generation Coordinator uses certain energy balance software, together with half-hourly Metering Data in respect of all Points of Connection, to:

(a) determine the energy interchange imbalance between Major Generators for each 24-hour period (from midnight to midnight); and

(b) reconcile the energy generated by each Major Generator relative to the energy consumption of their contracted Offtakers and Customers for each calculation period.

Each Participant consents to the Major Generators:

(c) accessing the half-hourly NEM12 data in respect of their Points of Connection; and

(d) using that data,

as described above.

4.6 **Allocation of losses**

As at the Effective Date, there are no loss calculations required for the 132 kV portion of the Supply Network as the Metering Installations in respect of Points of Connection to that portion of the Supply Network are correctly located to achieve accurate recording of electricity flows across those Points of Connection.

All new Metering Installations for any Points of Connection to the 132 kV portion of the Supply Network must also be correctly located to achieve accurate recording of electricity flows across those Points of Connection.

As at the Effective Date, the Responsible Person for the Points of Connection to the 220 kV portion of the Supply Network is responsible for carrying out the following determinations:

(a) calculation of the total energy losses within that portion of the Supply Network;

(b) the allocation of those energy losses to relevant Points of Connection; and

(c) loss-adjusted loads for those Points of Connection,

so as to ensure that there are no abnormally large losses that may indicate a metering issue. This process must be undertaken in accordance with the Metering Obligations and the principles to be provided by EECL (and approved by the Working Committee).

The abovementioned Responsible Person for the Points of Connection to the 220 kV portion of the Supply Network must:

(d) disclose its determinations to relevant Participants who request them, but only to the extent that they apply to the relevant Participant's operations or the operation of this Dispatch Protocol; and

(e) provide loss-adjusted Metering Data for switchyard inputs and outputs in a format suitable for review by Participants.

The Working Committee may agree to the transfer of responsibility for these determinations, or the cessation of the obligation to carry out these determinations, but this requires a minimum of 12 months' notice and the Working Committee must be satisfied (acting reasonably) that:

(f) in the case of transfer of the obligation, alternative processes are implemented to permit appropriate liaison between the MDP and the person to be responsible for these determinations; and

(g) in the case of cessation of the obligation, that alternative processes will be implemented to ensure the accuracy of Metering Data in the 220 kV portions of the Supply Network.

The relevant Responsible Person must carry out its obligations under this section with appropriate ring-fencing from any related retail or generation roles.

The relevant MDP must ensure that the relevant calculations are transparent and auditable, including by:

(h) documenting and implementing an energy loss calculations and allocation process that ensures calculations are made in a repeatable and auditable manner in accordance with the principles in the Metering Obligations and GEOP;

(i) establishing and maintaining a register that records, for each Point of Connection included in the allocation process:

i. a unique identifier for each Metering Installation at the Point of Connection;

ii. the Offtaker responsible for the Point of Connection; and

iii. the Generator responsible for the Point of Connection.

4.7 **Loss Allocation Process**

Confidential

[redacted]

[redacted]

4.8 **Reporting for NWPS**

Within 3 business days of the end of each month, each MDP responsible for a Point of Connection must use its best endeavours to issue to each relevant Generator and Offtaker:

(a) a monthly statement in the standard meter data agent format (which will be in the same or similar format as issued by the Generation Coordinator's software program), showing:

i. the Point of Connection identifier;

ii. the relevant Generator;

iii. the relevant Offtaker;

iv. the meter numbers relevant to the Point of Connection;

v. the start and end dates and time for the period covered by the statement;

vi. for the period covered by the statement:

A. total energy transferred at the Point of Connection (kWh);

B. maximum demand recorded at the Point of Connection (kW);

C. "Load Losses" allocated to the Point of Connection (kWh);

D. "No Load Losses" allocated to the Point of Connection (kWh); and

E. total energy allocated to the Point of Connection, including losses (kWh); and

vii. where a Point of Connection has import and export metering, both sets of values shall be provided;

(b) an electronic file containing:

i. the Point of Connection identifier;

ii. for each half hour for each Point of Connection covered by the statement above:

A. demand in kW;

B. reactive power (in kVAr);

C. energy transferred (kWh);

D. "Load Losses" allocated to the Point of Connection during the month (kWh);

E. "No Load Losses" allocated to the Point of Connection (kWh); and

F. total energy transferred (kWh); and

iii. where a Point of Connection has import and export metering, both sets of values must be provided.

The MDP will use AEMO Meter Data File Format Specification NEM 12 as specified by AEMO. This will ensure that all meter data files are in a format suitable for input into the loss and allocation assessment.

4.9 **Right to Audit**

(a) In the event of a potential discrepancy in the operation of Metering Installations or in Metering Data, Participants must contact the relevant Metering Provider or MDP (as relevant) to resolve these concerns.

(b) Participants have the right to request an independent audit of the loss allocation process and its outputs.

(c) The auditor:

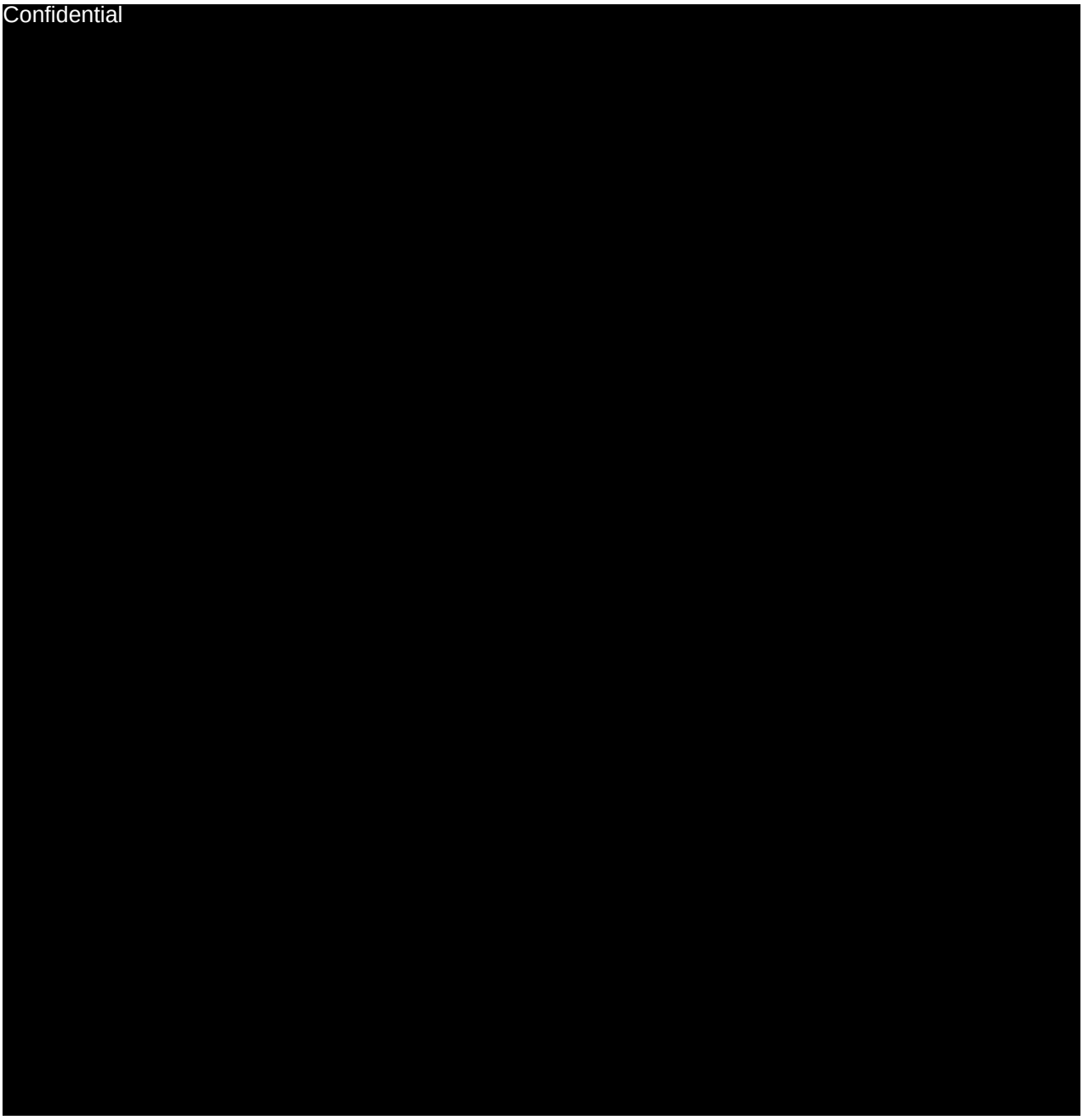
i. must be acceptable to both the Participant and the relevant MDP;

ii. will be entitled to access all information necessary to calculate the Participant's energy allocation over the period specified in the audit request; and

iii. must maintain the confidentiality of any other Participant information provided during the audit; and

(d) The cost of the audit shall be borne by the initiating Participant (or as otherwise recommended by the auditor).

Figure 1: Confidential



Schedule 5 – Forecast Data Format

The Participants agree that the nomination forms in this Schedule 5 are indicative only and that the Working Committee may advise alternative indicative nomination forms from time to time.

1. Daily Forecasts – second and seventh Contract Day

Forecast sheets are due to be delivered by email to the Generator Coordinator by 21.00 hours each day.

Daily Forecast for Offtaker For Contract Day DD/MM/YYYY		
Time	Total MWh	Maximum half hourly demand MW[1]
0800		
0830		
0900		
0930		
1000		
1030		
1100		
1130		
1200		
1230		
1300		
1330		
1400		
1430		
1500		
1530		
1600		
1630		
1700		
1730		
1800		
1830		
1900		
1930		
2000		
2030		
2100		
2130		
2200		
2230		
2300		
2330		
0000		
0030		
0100		
0130		
0200		

[1] EEQ does not have the capability to provide maximum half hourly demand MW data (being instantaneous peak demand). Instead of providing the maximum half-hourly demand MW, EEQ may provide a figure that represents the average of the MW demand applicable to the relevant half-hourly period.

0230		
0300		
0330		
0400		
0430		
0500		
0530		
0600		
0630		
0700		
0730		

2. Monthly Forecasts

Monthly forecasts are due to be delivered by email to the Generation Coordinator on the 15th day of the month preceding the month of forecast.

Monthly Energy Forecast for Offtaker For [Month] [Year]		
Date (Day of Month)	Total MWh	Maximum half hourly demand MW[2]
1 [Month]		
2 [Month]		
3 [Month]		
4 [Month]		
5 [Month]		
6 [Month]		
7 [Month]		
8 [Month]		
9 [Month]		
10 [Month]		
11 [Month]		
12 [Month]		
13 [Month]		
14 [Month]		
15 [Month]		
16 [Month]		
17 [Month]		
18 [Month]		
19 [Month]		
20 [Month]		
21 [Month]		
22 [Month]		
23 [Month]		
24 [Month]		
25 [Month]		
26 [Month]		
27 [Month]		
28 [Month]		
[29 [Month]]		
[30 [Month]]		
[31 [Month]]		

[2] Refer to footnote 1.

3. Yearly Forecasts

Yearly forecast are due to be delivered by email to the Generation Coordinator prior to the end of August in the year prior to the year of forecast.

Yearly Energy Forecast for Offtaker For [Year]		
Month	Total MWh	Maximum half hourly demand MW[3]
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

4. Future 4-Year Forecast

Future years beyond current	**Projected MWh**	**Projected maximum half hourly demand MW[4]**
+1		
+2		
+3		
+4		

[3] Refer to footnote 1.
[4] Refer to footnote 1.

Schedule 6 – Key Contact Details

Participant	Name	Responsibility	Telephone	Mobile	Fax	Email Address
Confidential						

Participant	Name	Responsibility	Telephone	Mobile	Fax	Email Address

Confidential

[redacted]

Participant	Name	Responsibility	Telephone	Mobile	Fax	Email Address

Confidential

[redacted]

Participant	Name	Responsibility	Telephone	Mobile	Fax	Email Address

Confidential

[redacted]

Schedule 7 – Load Shedding System (LSS)

1. Introduction

The purpose of this Schedule 7 is to set out:

(a) the need for a LSS;

(b) an overview of the LSS;

(c) the impact of PPAs & ESAs on the LSS process;

(d) the principles for shedding loads, in relation to sharing the impacts on a Major Generator fairly among its Offtakers;

(e) the function of the LSS, which is to provide protection against the collapse of the generation system in the NWPS;

(f) examples to illustrate load shedding operations; and

(g) how the LSS will function.

2. NWPS Supply Contracts and Commercial Considerations

It is proposed that load shedding actions will, as far as practicable, reflect the commercial supply obligations of each of the Major Generators where the cause of the load shedding is readily ascertainable. Thus in the event of a MCPS-initiated generator trip, the LSS will shed those loads contracted to and supplied by MCPL. In the event of a DPS-initiated generator trip, the LSS will shed those loads contracted to and supplied by DPS Co.

For the PLS to be effective, it will be necessary for each contracted Offtaker to make available to the LSS an amount of capacity to be load shed, where the Load Shed Blocks are sized to match the size of the respective generation blocks within their contracted Major Generator.

3. Master Load Shedding System (MLSS)

The original MLSS installed at MCPS will be replaced with a new MLSS to be installed at DPS, which will take account of the changes to generation, transmission interconnections and Offtaker and Generator Customer supply agreements. The replacement system will be supplied by DPS Co and will operate to sustain NWPS integrity through shedding of Offtaker load.

DPS Co confirms that:

(a) the LSS functional specification is; and

(b) when commissioned, the LSS will perform,

in accordance with this Dispatch Protocol.

4. The Need for Load Shedding

The purpose of the LSS is to minimise the need for the NWPS to operate large quantities of Spinning Reserve to protect the NWPS from collapse in the event of Contingency Events. This allows the NWPS to operate with lower levels of installed generating plant than would be required otherwise, with an attendant reduction in capital costs to all Participants.

Following a Contingency Event, it is usually necessary to rapidly attempt to restore the NWPS to a stable state by activating an automatic LSS. This will require some interim loss of electricity supply to Offtakers. The alternative of taking no action is likely to result in larger load losses to Offtakers and more Generating Units being disconnected, resulting in longer reconnection times.

The key elements of any system required to respond to Contingency Events are fast speed of response, and the ability to take progressive action in discrete steps to restore stability to minimise the extent of the necessary disruption to Offtakers.

5. Description of the NWPS LSS

The LSS consists of a number of components each with specific functions, but all designed to allow the NWPS to operate safely and reliably without the need to operate substantial levels of Spinning Reserve. The function of all of the components of the LSS is to disconnect loads in an orderly manner so that the generation capacity available to the Supply Network during a shortfall of generation event is adequate to maintain stability of the NWPS.

5.1. Components and Functions

(a) Summary

In brief, at a high level:

i. Load Encroachment load shedding is a time-delayed process used to manage slow encroachments of load levels, and Proactive LSB1 is dedicated to managing Load Encroachment Events;

ii. Proactive Load Shedding applies for Major Power Station Generating Unit trips (using Proactive LSBs 2-7 to balance out lost generation);

iii. FILS applies for other frequency drops, or for Major Power Station Generating Unit trips when the Proactive Load Shedding system does not operate; and

iv. Islanding is the last line of defence.

(b) Proactive Load Shedding (PLS) via MLSS

The PLS function is designed to protect the stability of the NWPS in the event that a Generating Unit within a Major Power Station trips. In this event, the amount of load shed is calculated based on remaining capacity available to that Major Generator, taking account of its available Spinning Reserve, and a suitable amount of load is shed from the relevant contracted Offtaker(s).

The level of load to be shed is constantly calculated for each of the Proactive Load Shed Blocks (which relate to the size of the potential Generating Unit trip and its available Spinning Reserve), and the MW value of the load is sent to the Offtaker's SLSS so that the SLSS is armed with a value of load to be shed.

In order to provide the necessary trip signal to an Offtaker's site, the signals from the MLSS are transmitted to a SLSS installed at the Offtaker's site via a high speed communication channel. In the event of a Generating Unit trip, the pre-armed amount of load can be shed in a very short period.

(c) Frequency Initiated Load Shedding (FILS) – Reactive Load Shedding

FILS is a reactive load shedding process. FILS has two functions in relation to the LSS.

Firstly, it acts as a backup to the MLSS in the event that the MLSS fails to disconnect loads following a reduction in generation and a fall in frequency. A Generating Unit trip is not a pre-requisite to FILS operation. FILS will trip a set of predetermined FILSB in response to falling frequency to protect the NWPS from collapse.

The second function of the FILS is to protect generation from a non-generation-triggered fault in a Supply Network which is not disconnected in a timely manner and which consequently causes the NWPS frequency to fall. The FILS will then trip a set of predetermined FILSB through the SLSS at the Offtakers' sites to allow the system frequency to recover.

FILS is operated by a set of ROCOF relays installed in each Offtaker's site. The ROCOF relays are set to trip a set FILSB depending on the rate of change of frequency (as shown in Table 1 below). The faster the frequency falls, the larger the blocks of load that are shed. The MLSS does not initiate a FILS trip. The MLSS allocates two FILSB at each Offtaker's site and the ROCOFs at the SLSS trip these FILSB based on the set values shown below in Table 1. These values are an aggregate amount of MW jointly contributed to by the Offtakers. FILS does not respond based on relevant contractual supply arrangements, and simply monitors system frequency as its source of initiation and acts to recover system frequency.

In the event of a communications failure, FILS will operate on the last valid data received.

The SLSS will confirm a FILS operation back to the MLSS.

Table 1 FILS Operations

Action	Under frequency (Hz)	Rate of change Hz/sec	Time delay in SLSS secs	Load shed MW	Offtaker in FILs-LSB1 & 2
FILS-LSB1	49	>-0.1	0.0	30	All
FILS-LSB2	49	≥-0.75	0.0 secs. after FILS 1	60	All

(d) Load Encroachment

Load Encroachment is a mismatch between system load and available generation that causes frequency to fall slowly. Load shedding for Load Encroachment Events can be caused by increases in Offtakers' loads above the forecast levels advised to the Major Generators or a gradual reduction of generated capacity from a Major Generator.

The Load Encroachment load shedding system will use PLS Load Shed Block 1 as a dedicated load block for managing load encroachment.

A Load Encroachment trip is achieved by the MLSS forcing arming of relevant Load Shed Blocks to 10MW when frequency falls below 49.25Hz. In this situation, the MLSS ROCOF's at DPS will force LSB arming to 10MW and issue a Load Encroachment load shedding trip every 2 seconds when frequency falls below a set value of 49.1 Hz (as shown in Table 2 below).

Table 2 Load Encroachment

MLSS Block	Frequency	Time Delay	Block size	Trip repeats/ time
PLS1	49.1Hz	0.0	10.0 MW	10 MW/ 2 sec

Trips will continue until frequency stabilises or FILS action is initiated.

A Load Encroachment trip status is also sent to the Offtakers to differentiate between "regular" PLS and a Load Encroachment Event.

The amount of arming and size of Load Shed Blocks is predetermined and is, as at the Effective Date, set at 10MW.

If the MLSS can readily determine which Offtaker's load is exceeding the generation available from its contracted supplier, the MLSS will arm and trip that Offtaker's loads. If the event is not attributable to a particular Offtaker, the 10MW blocks will be shed as equitably as possible across Offtakers.

DPS Co will install new ROCOF relays to measure the frequency at the MLSS.

(e) Slave Load Shedding System (SLSS)

The SLSS are control devices located at each of the Offtakers' sites. The MLSS continually calculates the value of Load Shed Blocks to be shed based on the value of available Spinning Reserve and the size of Generating Units that could trip, and communicates arming levels for each LSB to the SLSS. Thus the SLSS are always armed to the correct value for both FILS and PLS, and will respond by shedding the necessary loads in a very short time in the event of a Generating Unit trip or ROCOF operation.

The target time from trip initiation at the Major Power Station to trip action at an Offtaker's site is 250ms.

(f) Major Power Station Islanding

The last line of defence used to protect generation plant is Islanding of the Major Power Stations.

Under frequency relays to be installed at DPS will be set at a lower frequency than FILS settings, and will be coordinated with the protection and control systems of the Generating Units. An Islanding trip will open the feeder circuits on the 132kV and 220kV Supply Networks to remove all external load from the Major Power Stations, and to prevent export of generation into these Supply Networks. The objective is to allow the Generating Units to stay in service and continue to provide their own auxiliary loads to maintain operation of those Generating Units, so that restoration of the Supply Network can be completed without the need to use Black Start Capability to restart each of the Generating Units.

Should this facility fail to function, it is likely that the entire NWPS will be deenergised, with consequent long delays in restoring the Supply Networks.

Table 3 below shows the tripping channels that would be load shed after both PLS and FILS have operated. It is expected that there will already have been a significant loss of supply of load by this time.

Table 3 - Islanding of Major Power Stations

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[redacted]

(g) Summary

The LSS is a regime designed to handle events that are not normal operating conditions. Load shedding will be an automatic function through a pre-programmed system managed by the Generation Coordinator. The LSS will trip sufficient load from the system in an attempt to maintain system stability. All Offtakers (i.e. those customers with a Contract Capacity of 10MW and greater) will be connected to the MLSS via a series of SLSS. Collectively, these systems form the LSS.

6. Load Shed Blocks

As previously mentioned, for the LSS to be effective, it will be necessary for each contracted Offtaker to make available to the LSS an amount of capacity to be load shed, where the relevant Load Shed Blocks are either sized to match the size of the generation blocks within their contracted Major Generator, or otherwise appropriately sized.

Table 4 – Load Shed Blocks for Load Encroachment & PLS

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[redacted]

Note: the actual amount of load shed will also be determined by the available Spinning Reserve for that Major Generator and the Load Shed Blocks of that Offtaker.

Offtakers contracted to a Major Generator will have a total of three Load Shed Blocks in which to assemble their preferred load Blocks. The items of plant to be grouped to satisfy the size of the Load Shed Blocks are at the discretion of the Offtakers. However, each Offtaker is obliged to contribute sufficient sheddable load at all times to satisfy the Load Shed Block size as detailed in Table 4.

Offtakers are required to submit their selected Load Shed Blocks to the Generation Coordinator for programming into the MLSS. Offtakers must ensure that their SLSS is armed accordingly and functioning correctly at all times.

In order to confirm the status of loads available to be shed, the MLSS will display to the Generation Coordinator the "requested arming" and the "actual load armed".

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[redacted]

7. Categories of Importance

As a guide, the following order of grouping importance is suggested for Offtakers when arming their Load Shed Blocks:

Block 1 - Minimal Disruption Loads:

These are loads that do not directly affect production processes or essential or safety services if disconnected for a period of up to 1 hour or thereabouts. Typical examples may include storage hot-water systems and some air-conditioning motors, some lighting, etc. Production plant with substantial surge capacity that does not affect downstream processes for substantial periods of time is included in this category.

Block 2 - Production Loads:

These include loads that directly affect production - for example, crushers, conveyors, air compressors, mills, ore haulage winders, commercial and industrial loads.

Block 3 - Essential Loads:

These include loads that are essential to an operation, such as mine dewatering pumps, domestic dwellings, food refrigeration and accommodation camps.

Block 4 - Safety Loads:

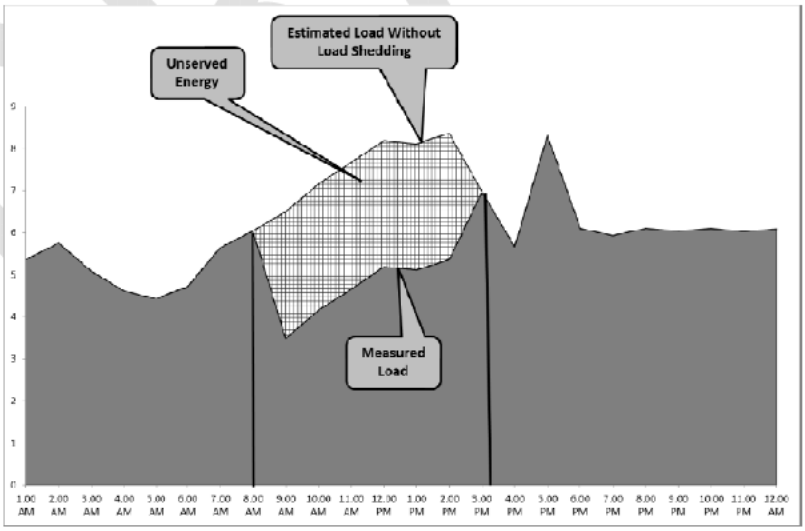
These include loads that are critical to the provision of health and fundamental safety services, and include hospitals, care centres, man-winders and essential ventilation to underground mines.

It is envisaged that Offtakers would nominate Block 3 - Essential loads and Block 4 - Safety loads as the last items to be shed.

8. Definition of Unserved Energy

The Unserved Energy (UE), for the purpose of this Dispatch Protocol, pertaining to an Offtaker for a load shedding event, is the amount of energy expressed in MWh that, had it not been for the load shedding event, would have been supplied to an Offtaker less the amount that was actually supplied to the Offtaker during the load shedding event. That is, the gap between the amount that should have been received and the amount that was actually received. Conceptually, this is demonstrated in Figure 1.

Figure 1 : Concept of Unserved Energy



9. Management of Unserved Energy

(a) **PLS** - The implementation of PPAs and ESAs which tie an Offtaker to one of the Major Generators means that for Proactive Load Shedding the concept of equalisation of Unserved Energy for this function will not apply and will not be accounted for as part of the Dispatch Protocol.

(b) **FILS -** Where a FILS Event is caused by events outside the Major Generator's facility i.e. by a Supply Network, then the equalisation of Unserved Energy will not apply and will not be accounted for as part of the Dispatch Protocol.

(c) **FILS –** where a FILS Event is caused by a Major Generator and this event impacts on the capacity delivered to a non-contracted party, equalisation of Unserved Energy will be actioned. Following review by the Working Committee, the FILS tripping programme will be biased to correct this anomaly. An Unserved Energy account will be kept, distributed and reviewed by the Generation Coordinator for equity based on the calculation of Unserved Energy. The Generation Coordinator will determine the appropriate corrective actions to remedy any mismatch between generation and load.

(d) **FILS –** where a FILS Event is caused by an Offtaker, the energy not supplied to that Offtaker caused by this event will be recorded, but not be used to calculate Unserved Energy or remedy inequity.

(e) **Load Encroachment –** Offtakers' loads above forecast - Provided that the MLSS has the necessary capacity to track the loads of individual Offtakers, then where an Offtaker causes a Load Encroachment Event and their load deviates from their load forecast for the day by more than 20% of that forecast, then the Offtaker responsible for the Load Encroachment Event will be subject to load shedding. The energy not supplied to that Offtaker caused by this event will be recorded, but will not be used to calculate Unserved Energy or remedy inequity.

(f) **Load Encroachment –** Major Generator output decay – the MLSS will monitor the target generation levels for each Major Generator and will initiate load encroachment load shedding to the relevant Offtakers by sending a 10MW shed signal at 2 second intervals until frequency recovers. Unserved Energy under this scenario will not be accounted for as part of the Dispatch Protocol.

(g) **Islanding -** During an Islanding event, the concept of Unserved Energy will not apply and will not be accounted for as part of the Dispatch Protocol.

10. Calculation of Unserved Energy (UE)

An analysis of an Offtaker's Unserved Energy (UE) shall be made by comparing metered usage during the load shedding event with the most recent 30 minute demand projection provided to the Generation Coordinator under Schedule 5 of the Dispatch Protocol. Each Participant shall have an obligation to notify the Generation Coordinator if there has been a change in circumstances that would materially impact the 30 minute demand projection from that advised to the Generation Coordinator in the 2-day-ahead forecast of load provided by the Offtaker. The calculation of UE will commence at the time of the LSS trip and will end when the MLSS is reset and the Major Generator has confirmed that the necessary generation capacity is available to supply the forecast load applicable to time of confirmation on the day in question. The rate at which the Offtaker increases load will be controlled by its relevant Major Generator.

The Generation Coordinator will, on a regular basis, review and present to the Working Committee meetings the summary of load shedding to date. This summary will include the position to date of UE for each Offtaker. The values of UE will be compared and presented at quarterly meetings and recommendations for changes to the Load Shedding System will be presented by the Generation Coordinator at the end of each calendar year in order to establish equity between Offtakers where the requirement for equity is agreed.

At each meeting of the Working Committee, the Working Committee will consider whether changes to the FILs or Load Encroachment load shedding order are required to correct any inequity in the percentage of UE between one Major Generator/its Offtakers and another Major Generator/its Offtakers, for example, where the percentage of UE incurred by a Major Generator/its Offtakers (as a percentage of total UE in the NWPS) is disproportionate by greater than 10% of that Major Generator/its Offtakers' percentage of contracted capacity (as a percentage of total contracted capacity in the NWPS) over a 12-month period. At the end of a two-year period, a further review of UE will be undertaken to assess any inequality in UE over this longer period. For comparison purposes, new Offtakers will be allocated a nominal starting value of UE equal to the previous 12 month year-to-date average of the current UE of all other Offtakers of that Major Generator.

11. Obligations of Offtakers

Offtakers must ensure that the level of loads available to be shed in each Load Shed Block is maintained and that suitable adjustments are made to maintain these levels when changes to an Offtaker's plant operations are made. Offtakers are obliged to notify the Generation Coordinator once they are aware of any fault with their SLSS, or where a Load Shed Block is not arming correctly.

Offtakers must give the Generation Coordinator a notice setting out the details of their equipment armed to Load Shed Blocks in order for those Load Shed Blocks to comply with the relevant MW rating referred to in Table 4. If the equipment armed to the Load Shed Blocks changes, Offtakers must provide an updated notice to the Generation Coordinator. [redacted]

Schedule 8 – System Restoration Procedures After Load Shed Events

1. Knowledge Base

1.1 The Generation Coordinator will need to have a sound knowledge of regional issues and Offtakers' facilities. To this end, Participants shall provide the Generation Coordinator with the following information in order to ensure that the Generation Coordinator is positioned to assist in managing the restoration of supply following a load shed event:

(a) details of the configuration and capacity of the Generation Units at Major Power Stations and Embedded Power Stations;

(b) Network Owner's control responsibilities and contact details;

(c) power system supply configuration for all Offtakers;

(d) Offtakers' electrical loading and Points of Connection;

(e) details of the current priority concerns within the system in relation to safety, people security, the community and other critical areas;

(f) contact phone numbers and contact names for each Participant (available in Schedule 6);

(g) details of each Major Power Station's internal auxiliary systems and their limitations; and

(h) location and capability of Generating Units with Black Start Capability in the Major Power Station facilities.

1.2 In addition, the Generation Coordinator will be required to have knowledge of the following:

(a) identification of all Supply Network points which are capable of performing synchronising between the Supply Network and Offtaker facilities and the operational control of these facilities;

(b) the functionality of the NWPS LSS;

(c) operator interface actions required in relation to the LSS;

(d) procedures for re-energising 132kV or 220kV busbars and transmission lines in the Supply Network;

(e) status of any auto-reclose facilities (single or three phase) available on the Supply Network;

(f) alternator MW ratings for all Generating Units in the Major Power Stations and Embedded Power Stations;

(g) alternator loading rate limits;

(h) MVAr limits of alternators;

(i) MVAr requirements for long feeders within the Supply Network;

(j) voltage control parameters, in particular, the voltage management under low load operating conditions on the 220kV portion of the Supply Network;

(k) NWPS system frequency limits;

(l) system block loads data;

(m) standard priority listing of non-Power Station restoration issues as listed in section 7 of this Schedule; and

(n) daily load forecasts provided by the Offtakers.

2. Load Shedding Events

2.1 Depending on the severity of the load shedding event and the performance of the installed protective devices throughout the NWPS and the LSS components, a load shedding event can result in a range of outcomes, such as:

(a) for a normal or routine event, the shedding of Load Shed Blocks at any one or more of an Offtaker's facilities;

(b) for a major event, the Islanding of the Major Power Stations; or

(c) for a major event where the Islanding of the Major Power Stations fails, it is likely that the NWPS will be totally deenergised.

2.2 Restoration procedures will vary dependent on the nature of the load shed event. There are 3 possible causes of a load shed event:

(a) Loss of generation capacity - this could be caused by loss of generation capacity within the Major Power Stations but could also be caused by the loss of an Embedded Power Station at a period when Spinning Reserve is at a minimal level;

(b) Load Encroachment - this could be caused by the start of a large electrical load or group of loads or by a slow degradation of output capacity from a Major Power Station or Embedded Power Station;

(c) An electrical fault – this could include:

i. an electrical fault in a Power Station, which should become obvious easily and quickly;

ii. an electrical fault within the Supply Network without effective protection system operation; and

iii. an electrical fault within an Offtaker's facilities without effective protection system operation.

2.3 In most cases, the LSS will result in a rapid stabilisation of the NWPS, and an orderly re-connection of loads can then commence. In unusual circumstances, the LSS may not operate sufficiently to prevent a significant cascading loss of generation capacity, resulting in Islanding of the Major Power Stations being required. Also, where installed protection devices fail to perform effectively, it is possible for the NWPS to be totally deenergised ("system black"). The following sections outline the principles to be adopted in recovering from "routine" and "system black" load shed events.

3. Coordination of recovery actions

3.1 The operation of a load shed event indicates that the normal stable state of power delivery throughout the NWPS has been changed by some abnormal event. For a routine event, such as the tripping or loss of capacity of a Major Generator's Generating Unit, the load shed event should, ideally, only impact on the contracted Offtaker of that Major Generator. More serious events such as the Islanding of a Major Power Station will impact on almost all the Participants.

The critical action required from all Participants is to make sure that all information relevant to the load shed event is made available to the Generation Coordinator as soon as possible. All calls made to the Generation Coordinator will be voice recorded to assist in any necessary review of the load shed event.

3.2 Participants should provide all available information on real-time events to the Generation Coordinator relating to any of the following:

(a) loss of power supply or loss of a Generating Unit;

(b) equipment faults or damage to plant under their control;

(c) any information on potential duration of an outage due to their equipment;

(d) abnormal supply conditions such as high or low voltage;

(e) circuit breaker status at their Points of Connection;

(f) high risk events such as bush fires; or

(g) high levels of lightning events.

3.3 Once the Generation Coordinator has the necessary information, it must:

(a) advise Participants of the nature of the load shed event or other system event;

(b) confirm that the necessary isolation of faulted equipment has been completed;

(c) confirm that Embedded and Minor Power Stations have been disconnected from the NWPS as required to allow re-energisation of the NWPS;

(d) confirm that NWPS system voltages have been returned to correct levels;

(e) confirm or establish that the necessary connections on the 132kV portions of the Supply Network interlinking Major Power Stations have been re-established and reenergised;

(f) coordinate the restart of generation capacity as required to meet loading;

(g) coordinate re-energisation of 220kV portions of the Supply Network, taking care to manage MVAr loading requirements on these portions in light of available Generating Unit VAr capacity; and

(h) coordinate the reconnection of loads to match to generation.

NOTE – the Generation Coordinator is only required to confirm the above information to the relevant Participants. The procedures and sequence of loading of Offtakers will depend on a range of power system and non-power system issues (see section 7 of this Schedule). The Generation Coordinator will use best endeavours to satisfy the many and varied demands of Participants.

4. Recovery from Routine Load Shed Events

4.1 The arrangement of PPAs and ESAs will impact on the load shedding process. In the case of a PLS, the LSS is designed so that, ideally, a generation shortfall by a Major Generator will result in load shedding of the relevant contracted Offtaker. Under this arrangement a routine load shed event should only impact one of the Major Generators and their contracted Offtaker(s). In the case of a FILS Event, it is possible that all Participants will be affected.

4.2 Following a load shedding event, the Generation Coordinator should:

(a) ascertain the cause. This information may be readily available from information available in the control rooms of the Major and Embedded Power Stations, or may require contact with other Participants;

(b) ensure that there are sufficient operational resources available to respond effectively to the event;.

(c) once this information is confirmed and the amount of Spinning Reserve available at the time has been established, the Generation Coordinator will commence corrective actions as outlined below:

i. confirm that any faulted generation equipment, Supply Network equipment or Offtaker equipment has been effectively isolated from the NWPS;

ii. increase the level of generation capacity of the impacted Major Power Station to allow the restoration of forecast energy to suit Offtaker demand;

iii. as a Major Generator's Load Encroachment Event should impact its respective Offtaker, the impacted Major Generator and Offtaker must coordinate to rectify the supply/demand imbalance;

iv. for a Supply Network fault, advise the Network Owner and Network Operator of any relevant information available and any known impact to Offtakers;

v. for a suspected fault within an Offtaker's facilities, advise the Offtaker of known facts and require that the cause of the event is identified and its impact on the NWPS eliminated before requesting permission to reconnect;

vi. keep Participants informed of facts as they become available;

vii. maintain a high level of communications between the Major Generators as well as MIM's MPS control room and EECL's operational control centre throughout such load shed events and subsequent system restoration;

viii. retain records of LSS events, including necessary data to allow preparation of reports to Participants relating to the event including, but not limited to, Unserved Energy and outage durations etc; and

ix. as soon as possible after the LSS event, prepare a report on the details of the incident for consideration by the Working Committee.

5. System Recovery from an Islanding LSS Event

In the event of a major loss of system frequency, the LSS will commence a load shedding process that will continue to shed loads until such time as the system frequency stabilises at level above 48Hz. In the event that the loads shed from the system are insufficient to prevent the system frequency from falling to 48 Hz, the load shed system will trigger the carrying out of Islanding. This means that a Power Station will be generating only sufficient electricity to run its auxiliary systems, and will not be exporting electricity. The purpose of this action is to prevent a total collapse of the NWPS (system black) or black shut down of the Power Station. This collapse would be brought about by opening of the 132kV breakers on the machines, which will island the gas turbines. Such opening is required to prevent damage to these machines if they are allowed to operate at frequencies in a range below 48Hz.

Following an Islanding, Participants must initially do the following:

5.1 Stage 1

(a) the Generation Coordinator (initial actions):

i. ascertain the cause. This information may be readily available from information available in the Power Station control rooms or may require contact with other Participants;

ii. ensure that there are sufficient operational resources available to respond effectively to the LSS event;

iii. confirm that any faulted generation equipment, Supply Network equipment or Offtaker equipment has been effectively isolated from the NWPS; and

iv. check that the correct procedures are followed so that the interconnection between the Major Generators and the Network Operator is established for rapid restart of the system.

This process will require careful management as the capacity available for restart may be limited during this stage of the restart by the configuration and capacity of the internal auxiliary system within a Major Generator's facilities.

(b) Major Generators and / or Network Operators:

i. The Network Operator will need to check and manage the voltage on the 220kV portion of the Supply Network as this voltage will rise when loads are low; and

ii. Operators at each Major Power Station may then commence restoration of the power supply to the auxiliary switchboards of Major Power Stations. Control of auxiliary system loadings will be managed by the relevant Major Generators within their respective plants.

(c) Once the Major Power Stations are isolated by Islanding, each Offtaker will need to take action to:

i. ensure any Embedded and Minor Power Stations in their system are isolated from the Supply Network;

ii. open the incoming Points of Connection from the NWPS; and

iii. confirm to the Generation Coordinator that it is now safe for the Generation Coordinator to restore power to the relevant section of the NWPS.

Note – this step must be completed and the Generation Coordinator notified before restoration can be commenced. It is important that all communications are recorded by automatic voice recording.

5.2 Stage 2

Confidential

[redacted]

5.3 Stage 3

Control rooms associated with the NWPS should keep detailed logs of events during LSS events and system restoration processes to support any necessary review of the system recovery.

The Generation Coordinator must also retain records of LSS events, including necessary data, to allow preparation of reports to Participants relating to the event, including, but not limited to, Unserved Energy and outage durations etc, and, as soon as possible after the LSS event, prepare a report on the details of the incident for consideration by the Working Committee.

6. Restoration of Supply – Black Start (System Black)

Each Major Generator must have Black Start Capability to restore power to their respective Offtakers.

In the event that the NWPS suffers a whole-of-system black out:

6.1 Stage 1

(a) the Generation Coordinator (initial actions) must:

i. ascertain the cause. This information may be readily available from information available in the Power Station control rooms or may require contact with other Participants;

ii. ensure that there are sufficient operational resources available to respond effectively to the LSS event;

iii. confirm that any faulted generation equipment, Supply Network equipment or Offtaker equipment has been effectively isolated from the NWPS; and

iv. check that the correct procedures are followed so that the interconnection between the Major Generators and the Network Operator is established for rapid restart of the system.

This process will require careful management as the capacity available for restart may be limited during this stage of the restart by the configuration and capacity of the internal auxiliary system within a Major Generator's facilities.

(b) Major Generators and / or the Network Operator must:

i. confirm that all feeder breakers from the Major Power Stations are disconnected from the deenergised sections of the NWPS;

ii. check that the correct procedures are followed so that the interconnection between the Major Generators and the Network Operator is established for rapid restart of the system. This process will require careful management as the capacity available for restart may be limited during this stage of the restart by the configuration and capacity of the internal auxiliary system within a Major Generator's facilities; and

iii. in the case of the Major Generators only, have within their facility (or have arrangements in place for) Black Start Capability;

(c) each Offtaker will need to take action to:

i. ensure any Embedded and Minor Power Stations in their system are isolated from the NWPS;

ii. open the incoming Points of Connection from the Supply Network; and

iii. confirm to the Generation Coordinator that it is now safe for their Major Generator to restore power to the relevant section of the Supply Network.

Note: this step must be completed and the Generation Coordinator notified before restoration can be commenced. It is important that all communications are recorded by automatic voice recording.

6.2 Stage 2

Confidential

[redacted]

6.3 Stage 3

Confidential

[redacted]

Control rooms associated with the NWPS should keep detailed logs of events during LSS events and system restoration processes to support any necessary review of the system recovery.

The Generation Coordinator must also retain records of LSS events, including necessary data, to allow preparation of reports to Participants relating to the event, including, but not limited to, Unserved Energy and outage durations etc, and as soon as possible after the LSS event, prepare a report on the details of the incident for consideration by the Working Committee.

7. Non-Power Station Restoration Issues

Each Major Generator shall fulfil the contractual requirements to their own respective Offtakers and Customers and is not obliged to supply power to any other Generator's Offtakers or Customers.

In considering the needs for emergency power supply following a NWPS blackout scenario, there are a number of issues to be considered by the Generation Coordinator, and the Major Generators in relation to their Offtakers, in terms of the priority of restoration of power. The restoration of supply between a Major Generator's Offtakers may be delayed while the below issues are considered and resolved as required:

<u>For communities:</u>

(a) hospital emergency power supplies;

(b) water supply;

(c) sewage systems;

(d) food storage;

(e) fuel delivery; and

(f) emergency services.

<u>For mine sites:</u>

(a) personnel safety;

(b) critical ventilation;

(c) emergency egress for people;

(d) emergency mine pumping;

(e) emergency power supplies;

(f) management of slurry pipelines;

(g) management of hot metal; and

(h) critical processes.

The MPS control room will be responsible for power to MIM's Mount Isa Mine and George Fisher Mine, but must coordinate with, and comply with directions from, the Generation Coordinator.

8. Loss of Gas Supply

Loss of gas supply is not covered under this Dispatch Protocol and is a contractual matter between Generators and Offtakers.