OUR NETWORK

Ergon Energy Network and Energex operate in a vast area covering 1.7 million square kilometres. This consists of approximately 207,000 km of overhead and underground high voltage and low voltage distribution power lines and 1.7 million poles.

The high voltage network operates at a variety of voltages ranging from 220kV, 132kV, 110kV, 66kV, 33kV, 22kV, 19.1kV, 12.7kV, and 11kV. The low voltage network is reticulated at 415/240/230 Volts.

The network also includes 33 isolated power stations, 71 bulk supply points and 504 zone substations.

Ergon Energy Network and Energex are responsible for the provision of electricity from the NSW and NT border up to the Torres Strait. It has 124 depots located across 17 operational areas to provide fault response, and planning and maintenance activities for electrical related emergencies.
Disclaimer

Ergon Energy Network and Energex’s Summer Preparedness Plan 2020-21 is prepared and made available solely for information purposes.

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Availability of the Summer Preparedness Plan 2020-21

This plan is available on the Energex and Ergon Energy websites www.energex.com.au and www.ergon.com.au
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EXECUTIVE SUMMARY

Ergon Energy Network and Energex, as part of Energy Queensland have undertaken detailed preparation and planning to ensure we are prepared for the 2020-21 summer season in Queensland. This Summer Preparedness Plan (SPP) has been developed on behalf of both Ergon Energy Network and Energex.

As the climate, our environment and our customer needs change, we are presented with a myriad of challenges and therefore need to ensure our network is resilient, able to withstand the impact of natural hazards and our planning and response capability will minimise the impact to our customers and communities.

This plan provides details of our planning and preparations that are carried out for summer 202021 to provide Queensland with a reliable network to minimise interruptions during extreme weather conditions, and where interruptions do occur, to ensure we keep the community fully informed and respond as quickly as possible to restore supply safely.

Over the 2019-20 bushfire and storm season, Ergon Energy Network and Energex experienced several severe storms and bushfires impacting our networks. In addition, toward the end of the summer storm season, the broader EQL group was impacted by the COVID-19 pandemic including the planning and operational staff.

Each of these emergency events resulted in the business escalating its response and activating dedicated emergency management teams to coordinate a whole of business response.

The bushfires season commenced early in August 2019 with multiple fires impacting our network across the state from Stanthorpe in the South, Gold Coast in the South East up to Mareeba in the Far North. More than 100 poles required replacing due to direct impacts.

Severe storms across South East Queensland caused extensive damage to the Energex network from the Sunshine Coast to Brisbane in late December, and in January to the Ipswich Lockyer Valley and Gold Coast - impacting over 115,000 customers.

In early 2020, the COVID-19 pandemic spread across the state impacting the wider EQL business. As a result, the majority of EQL office-based employees transitioned to working remotely from home while the field employees required strict safety and operating protocols to be able to continue to maintain the electricity network for our customers, communities and critical services.
In 2019-20, reliability of supply in our regions outperformed the Distribution Authority’s Minimum Service Standard (MSS) limits for 10 out of 12 measures with average outage duration (SAIDI) for Ergon Energy’s Urban and Long Rural network remaining unfavourable to the MSS limit. In addition to the impacts from adverse weather conditions, the network’s reliability performance across all SAIDI measures was also influenced by an increase in the frequency and duration of planned supply interruptions. These planned interruptions were primarily required to accommodate an increase in safety-driven works on ageing sections of the network. This work is essential to the future safety and reliability of our networks.

The 2019-20 system peak demand on the Energex network was 5,069MW at 5.00pm on 3 February 2020. While it is slightly lower than last year’s summer peak demand of 5,086MW, on a temperature corrected basis demand has continued to increase (50 PoE – 2018-19 4,988MW, to 2019-20 5,050MW). Recorded summer maximum demand has averaged 4,906MW with 1.9% growth p.a. over the last five years. Analysis indicates that the continued growth of solar PV will continue to reduce loads during daylight hours.
In regional Queensland the network peak demand and energy delivered this year featured fluctuations from previous years. The historic 2019-20 system peak was 2,660 MW at 7.00pm on 16 December 2019, an increase of 36MW over last year’s peak. The higher peak can be attributed somewhat to growth but more so to a hot summer across all Ergon regions at one time. The results were significantly higher than the temperature corrected 50 PoE peak but still less than the 10 PoE peak for 2019-20.

Energy usage patterns are changing due to changes in customer behaviour, price, energy efficiency initiatives and the continued rapid deployment of distributed generation such as solar photovoltaic (PV). Solar PV presents a number of technical challenges such as power quality and voltage management. We have progressed a range of innovative solutions such as changing operating times for hot water systems to ensure the network is able to cost effectively manage these challenges. Our focus is also on how to maximise value from its existing assets to the benefit of its customers. This will be achieved by optimising life cycle costs, engaging with stakeholders and customers to further develop appropriate and sustainable demand side management solutions.

We continue to apply a high level of rigour to planning and managing the network in the event of higher than anticipated peak demand in 2020-21.

Preparations for summer 2020-21 are well advanced with key operational expenditure (OPEX) and capital expenditure (CAPEX) programs underway. The network CAPEX program for 2020-21 is in line with the security standards and focus on maintaining a safe, secure and reliable network.

This plan has been developed as part of a long-term continuous improvement approach. It provides details of the capital and operating programs as well as operational responses, system preparations and planned communication activities.

As part of our ongoing commitment to our communities, dedicated team lead our Emergency Planning and Response and disaster preparedness activities across Queensland. This team will focus on preparation, planning, resilience, response and recovery improvement opportunities to ensure we minimise the impact of significant events on our network, our communities and our customers.

Preparation for summer 2020-21 has four major areas of focus:

- Pre-summer Network Preparations
- Network Resilience
- Emergency Planning and Response
- Communication.

In developing Summer Preparedness Plans 2020-21, we are committed to providing all staff with a safe workplace and the knowledge and skills to work safely, particularly during emergency conditions.
1. PURPOSE AND SCOPE

In the lead up to the summer storm season this Summer Preparedness Plan (SPP) is developed in conjunction with significant preparation activities aligned to four major focus areas:

- Pre-Summer Network Preparations - preparing the network to ensure the capacity and security of supply will meet summer energy and peak demand
- Network Resilience - maintaining the network to minimise the impact of extreme weather events on customers’ electricity supply
- Emergency Planning and Response - planning for, identifying and responding to disruptions, natural disasters and emergencies that impact on customers’ electricity supply
- Communication - continuing to provide timely and accurate communication with Ergon Energy Network and Energex’s stakeholders, customers and the media, in relation to network disruptions.

The SPP addresses these focus areas in several ways. It describes specific activities, including capital expenditure programs and operational or maintenance expenditure programs that have been undertaken before the start of summer. Furthermore, the SPP details our capacity to manage and respond to extreme weather events and emergencies through appropriate emergency response programs, customer information systems, public communications strategies and resourcing levels.

The combined EQL electricity network distributes electricity to 3.5 million South East Queenslanders and more than 761,000 regional Queenslanders. More than 70% of the network is located in regional areas with vast distances between many communities. The regional network includes a higher proportion of sub-transmission compared to the South East Queensland network and one of the largest Single Wire Earth Return (SWER) networks in the world. The radial design of the network constrains supply restoration options when responding to disruptions.

The network is impacted each summer by a range of variable weather conditions including severe electrical and windstorms, cyclones, floods and bushfires through to periods of high temperature and humidity. In preparation for this, an extensive pre-summer program is carried out to prepare the network and minimise disruptions to customers’ electricity supply. Customer communications processes are also reviewed to continually improve fault call response times and keep customers informed when such extreme events occur.
## 2. DEFINITIONS, ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAU</td>
<td>Business as Usual – resources and effort are focused on the planned and budgeted work required to operate and maintain electricity infrastructure, its operational functions and capabilities.</td>
</tr>
<tr>
<td>Disaster</td>
<td>A disaster is a serious disruption in a community, caused by the impact of an event, that requires a significant coordinated response by the State and other entities to help the community recover from the disruption (definition: Disaster Management Act 2003, Section 13). NOTE: a disaster can only be declared by a Disaster District or the State Government with the specific approval of the responsible Minister.</td>
</tr>
<tr>
<td>Disaster Management</td>
<td>Disaster management means arrangements about managing the potential adverse effects of an event, including, for example, arrangements for mitigating, preventing, preparing for, responding to and recovering from a disaster (definition: Disaster Management Act 2003).</td>
</tr>
<tr>
<td>Disruption Events</td>
<td>Events that disrupt the normal functions of businesses, the economy and/or communities and include those that are man-made (e.g. terrorist attack, bomb threat) and natural (e.g. storm, cyclone, fire, flood, network or non-network asset failure, influenza pandemic).</td>
</tr>
</tbody>
</table>
| Emergency             | A sudden and unexpected event that disrupts the normal operating functions, capabilities, resource and/or people of the organisation and requires an immediate response to prevent escalation of its scale or severity. For example, but not restricted to:  
  - Localised electricity network damage, or potential damage, due to fire, flood, storm or accident etc.;  
  - Loss of operating facilities and/or resources;  
  - Loss of ICT operating systems. |
| Flooding-Major        | In addition to the criteria for moderate flooding, extensive rural areas and/or urban areas are inundated. Properties and towns are likely to be isolated and major traffic routes likely to be closed. Evacuation of people from flood affected areas may be required |
| Flooding-Minor        | Causes inconvenience. Low-lying areas next to watercourses are inundated which may require the removal of stock and equipment. Minor roads may be closed, and low-level bridges submerged. |
| Flooding-Moderate     | In addition to the criteria for minor flooding, the evacuation of some houses may be required. Main traffic routes may be covered. The area of inundation is substantial in rural areas requiring the removal of stock. |
| Flooding-Q100         | Refers to a flood level or peak that has a one in a hundred, or 1%, chance of being equaled or exceeded in any year (also referred to as annual exceedance probability) |
| Hazard                | An event, object or scenario that has the potential to cause harm to people and/or cause damage to property or assets. |
| LiDAR                 | Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure ranges which are transformed to measurements of actual three-dimensional points of the reflective target in object space. LiDAR produces mass point cloud datasets that can be managed, visualised, analysed, and shared using ArcGIS. |
| Level 1 Emergency     | Events are routine incidents that are managed as part of normal business operations and are not managed through emergency, crisis or business continuity management arrangements. |
Level 2 Emergency These events are the first level of non-routine events. They are more complex either in size, resources or risk; and are events that are beyond the capability of normal business operations and require specific command and control arrangements. E.g. Impacts to EQL’s normal operations may be substantial but may be relatively foreseeable and contained.

Level 3 Emergency These events are the most significant emergencies. They require substantial effort and resources across different regions / areas of EQL and have the potential to substantially disrupt business operations or significantly harm EQL’s reputation. These emergencies require specific command and control arrangements and resourcing to a much greater degree than a level 2 event.

Risk Potential impact on objectives (either losses or opportunities) due to a particular event, hazard or scenario. Risk is the product of likelihood and consequence.
3. REFERENCES

Internal

Energy Queensland Risk and Resilience Policy
Energy Queensland Organisational Resilience Strategy
Energy Queensland Emergency and Business Disruption framework
Energy Queensland Union Collective Agreement 2017
Energy Queensland Crisis and Emergency Leadership Team Charter
Bushfire Risk Management Plan 2020/21
Energy Queensland Pandemic, Epidemic or Outbreak Event Plan, June 2020
Emergency Management Plan – Distribution Network
EQL Low Carbon Future Statement
EQL Environmental Substantiality and Cultural Heritage Policy.

External

Electricity Act 1994 (Qld)  Electricity Regulation 2006 (Qld)
Electrical Safety Act 2002 (Qld)
Electrical Safety Regulation 2013 (Qld)
Disaster Management Act 2003 (Qld)
Emergency Management Assurance Framework (QLD)
Queensland Disaster Management Arrangements
Queensland State Disaster Management Plan 2018
Queensland State Natural Hazards Risk Assessment 2017
State Earthquake Risk Assessment
Severe Wind Hazard Assessment for Queensland
Queensland State Government Pathways to a climate resilient Queensland, Queensland Climate Adaption Strategy 2017-2030
Queensland Bushfire Plan 2020
NSW Legislation obligations under the Electricity Supply (Safety and Network Management) Regulation 2014 (NSW) under section 7(2)(b)
ISSC 33 Guideline for network configuration during high bushfire risk days
ISSC 31 Guideline for the management of private overhead lines
4. PRE-SUMMER NETWORK PREPARATIONS

During 2019-20, network performance has been evaluated and additional planning undertaken to identify parts of the network that warrant augmentation and refurbishment to keep pace with forecast demand increases or improve system reliability, security and resilience. This analysis has resulted in prudent operating and capital programs being established to minimise the impact of summer weather conditions on customers’ electricity supply. The separately published Distribution Annual Planning Reports (DAPR) for both the Energex and Ergon Energy networks provides a five year view of network management strategies.

We are committed to the achievement of best practice asset management strategies to ensure the safe and reliable operation of our network. We manage our assets in a manner that minimises the associated network risk as well as ensuring customer supply reliability during times of severe storms, major flood, bushfires and other weather events.

5. CAPITAL INVESTMENT PROGRAM

We are required to ensure adequate system capacity and maintain an acceptable customer service level under the respective Distribution Authority. Capital investment programs have been developed and implemented to achieve the outcomes end users of electricity seek with regard to the quality and reliability of electricity services. The capital investment programs are based on the following key criteria:

- Maintaining a safe network for our employees, customers and communities
- Safety Net Targets for restoration of supply following a “low likelihood/high consequence” contingency event
- Minimum Service Standards (MSS) that set a level of required reliability
- Feeder improvement programs to improve reliability on constrained 11kV feeders
- Other regulatory requirements as per the National Electricity Rules (NER).

6. NETWORK CONTINGENCY PLANNING

The specific activities undertaken to prepare the network and maintain reliability against natural hazards include network capacity and security improvement programs, safety net requirements, plant emergency rating information, strategic spare components, peak load monitoring, temporary load support and demand management. Contingency planning ensures network security and encompasses a number of aspects:

- Network contingency and load transfer plans
- Strategies for spares and replacement of major plant such as power transformers
- Availability of mobile generators for deployment to provide an emergency supply in situations where practicable
- Availability of two 33/11kV mobile substations in the South East, three 10MVA 66/33/22/11kV mobile substations (NOMADS) in the Southern and the Northern regions for deployment to provide an emergency supply where practicable
- Application of available demand management options.

6.1. Contingency Planning for Summer (System Normal Conditions)

Each year, the entire network is reviewed to ensure that all substations and feeders can supply a forecast peak load under system normal conditions i.e. against the Normal Cyclic Capacity (NCC). A process has been implemented to monitor loads during the summer peak period so that as hot weather develops, emerging “hot spots” where demand growth may have exceeded the previous annual forecasts are identified. In these cases, corrective action to avoid an overload is taken well before a capacity constraint occurs.
6.2. Automatic Under-Frequency Load Shedding (UFLS)

Under Frequency Load Shedding (UFLS) is an automatic load shedding process that happens almost instantaneously to protect the power system if there is a major unplanned outage in the National Electricity Market. An event such as the sudden failure of a major generator or transmission line resulting in available electricity supply falling below customer demand results in a reduction in system frequency and potential instability.

To prevent this, the electricity grid is equipped with strategically located Under Frequency Relays. The relays are grouped into blocks of varying customer types to minimise impact. This automatic load shedding process is developed to minimise impact on critical loads.

The Australian Energy Market Operator (AEMO) requires Energy Queensland to have 60% of its loads available for Under Frequency Load Shedding. We work closely with Powerlink to review the UFLS blocks. The increasing level of rooftop solar generation is also changing the load on distribution feeders available for shedding if it is required during the day. We have also confirmed a continuous review of load shedding schedules to better understand where significant rooftop solar generation is connected on the distribution network.

Each event which initiates load shedding is quite different and the amount and type of load shed depends on system loading (day of the week, the time of day and season), system synchronous capacity available etc. Similarly, the time required to re-energise and restore electricity supply after UFLS is also variable.

6.3. Supporting Safety Net Targets

Prudent and efficient investments under the Safety Net provisions provide mitigation for credible contingencies that could otherwise result in outages longer than the Safety Net targets. Safety Net is defined as effective mitigation of the risk of any low probability/high consequence network outages to avoid unexpected customer hardship and/or significant community or economic disruption. Safety Net targets for power restoration times are prescribed for different locations and energy loads at risk.

Restoration targets are defined in Schedule 4 of Ergon Energy Network and Energex’s Distribution Authorities “…to the extent reasonably practicable”. This acknowledges that regardless of level of preparation, there will always be circumstances where it is impossible to meet the restoration targets at the time of an event (for example, if it is unsafe to work on a line due to ongoing storm activity), though these should be rare.

We continue to review the changing state of the network for Safety Net compliance as part of the normal network planning process, ensuring that care is taken to understand our customers’ needs when considering the competing goals of service quality and reliability against cost of network.

6.4. Strategic Spares

As part of our strategic planning, strategic spares are defined as major items of plant held in stock that may be required to be used to replace, permanently or temporarily, a critical network or system element that has incurred damage due to a system fault or failure. The strategic spare would only be used where supply to customers cannot be maintained without its use, or if network security would be unacceptably compromised. An appropriate level of strategic spares is maintained throughout the storm season.

The identification and allocation of spare power transformers for contingency events is now addressed within the Joint Strategic Spares Strategy and necessary strategic spare transformers have been identified and held in stock.
6.5. Mobile Generators for Emergency Response

Mobile standby generators are used to provide emergency response to sub-transmission and distribution network faults that cannot be rectified by switching or immediate fault restoration. This assists in restoration of supply in a manner that minimises customer disruption. The fleet of mobile generators also provide flexibility for feeder support during extreme temperature/load events where existing network assets need to be supplemented.

These generators are also pre-emptively deployed to locations likely to be isolated during significant flooding or storm damage.

Our Ergon Energy Network mobile generator fleet is approximately 14.3MVA in total capacity available. The current fleet includes 32 low voltage generators ranging in size from 33kVA to 625kVA, with an additional six containerised low voltage mobile 1250kVA units and five Pegasus 1250kVA HV injection units. These HV injection units comprising of a 1250kVA generator and 1250kVA Pegasus unit, are capable of being directly connected to either the underground or overhead 11kV or 22kV networks. There are several generators currently committed to remote areas of the network.

The Energex mobile generator fleet is 23.3MVA in total capacity. The current fleet includes 45 low voltage generators ranging in size from 60kVA to 500kVA and five high voltage mobile 1250kVA units. There are currently 3.25MVA (4 x 500kVA generators and 1 X 1250kVA generator) committed to network support. In addition to our own generation equipment, arrangements are in place to hire low voltage generators to ensure adequate feeder support.

Additional generators ranging from 30kVA to 1250kVA are available from local hire companies.

Where flooding has potential to interrupt supply to critical sites or groups of customers, generators may be mobilised on a priority basis as approved by Emergency Managers (including advice from Disaster Management Groups). Where there is a major flood and access to communities is likely to be inaccessible, generators will be considered for strategic early deployment.

Regional plans have been developed to identify and optimise switching points and generator connection points. Permanent connection points for HV generation are included in our Geospatial Information Systems (GIS) to assist in planning considerations.

6.6. Demand Management Network Support

Ergon Energy Network and Energex have a Demand Management (DM) Program, which involves working with our customers and industry partners to reduce demand to maintain system reliability in the short term and over the longer term defer capital projects. Each year load at risk areas on the network are identified through the DAPR.

These areas are analysed for suitability for DM solutions. Where deemed suitable, Target Areas are established, and incentives offered to customers for DM solutions. Contracts are established with customers to provide permanent or point in time (e.g. at certain times in summer) load reduction. DM solutions can include energy efficiency, power factor correction, load curtailment, load shifting and customer embedded generation. Details of target area locations and constraint are found on the Ergon Energy Network and Energex websites.

A number of non-network alternative generation contracts exist which provide network support, if needed, over higher risk periods. Broad based DM is also incentivised across the State. It delivers demand reductions across the whole network, rather than just in a local load at risk area. These demand reductions achieved from appliances connected to control load and Peak Smart air conditioners, which can be called upon during emergency or extreme peak demand summer events.

The DM Plan 2020-21 highlights the DM capability that can be called upon during times of peak network demand or as part of emergency response. This capability is called upon to minimise
interuptions from extreme weather conditions. This same capability can also be called upon to provide network demand response to AEMO i.e. lack of reserve events.

7. MITIGATION AND RESILIENCE ACTIVITIES

With a large overhead electricity network traversing long distances through densely vegetated areas in rural Queensland, there is a high exposure to the elements and severe weather events can have a significant impact on supply reliability. In order to minimise these impacts, we have identified and implemented critical maintenance activities, including a vegetation management and cyclical maintenance program.

EQL also has a range of measures in place to protect its depots and offices that may be impacted by these natural hazards as they support the network response effort of our teams in the field.

7.1. Vegetation Management

Ergon Energy Network and Energex actively seek to minimise the risk of vegetation around the overhead assets, and includes consideration of public safety, network reliability, quality of supply, customer service and network operating costs. This includes from the impact of natural hazards.

The approaches used to manage vegetation include:

- A cyclic program, to treat or cut vegetation on all overhead line and high-risk proximity trees routes with cycle times dependent upon local conditions, urban density and growth rates
- A warranty period after cycle cut during which time all zones are assessed to ensure that vegetation will remain typically clear for the whole of the assigned treatment cycle
- Reactive treatment activities to address localised instances where vegetation is found to be within clearance requirements. If a member of the public or employee identifies individual vegetation sites which are close or make contact with the mains, Ergon Energy Network and Energex will assess and if necessary, rapidly deploy a crew to re-establish safe clearances.

Regular audits of activities for completion and quality of works providing recommendations and actions for rectification.

7.2. Inspection and Maintenance Programs

Ergon Energy Network and Energex operate an ongoing asset inspection and maintenance program on the network to comply with The Electrical Safety Act and the Code of Practice - Works.

Our aim is to provide a resilient network through a detailed annual program of work to improve, develop, maintain and operate the network. Included as part of this inspection program is the:

- Routine inspections of substation equipment are completed dependant on equipment types, classification and condition
- Routine inspections of overhead lines and poles are completed through ground-based condition assessments
- Testing of overhead high voltage earthing systems to ensure their effectiveness in the protection of plant and equipment and public and staff safety
- Visual inspection of water way crossings, underground pillars and a range of other network assets
- Identification of visible vegetation hazards
- Use of thermal surveying inspections of bulk, zone and distribution substation sites and plant
• Periodic Light Detection and Ranging (LiDAR) inspections on feeders in accordance with our inspection programming to identify vegetation and conductor clearance issues. Issues are then prioritised to ensure immediate actions where required or are programmed into our regular maintenance programs

• In selected high rainfall areas, detailed pole top inspections are also carried out on selected feeders on a four-year cycle (mid cycle from the main asset inspection program).

7.3. Worst Performing Feeder Improvement Program

Ergon Energy and Energex have obligations under their respective Distribution Authorities to report on poor performing feeders and undertake worst performing feeder improvement programs.

The worst performing feeder improvement program criteria is set out in Clause 11.2(c) of the Distribution Authority No.D01/99 for Ergon Energy and the Distribution Authority No.D07/98 for Energex as outlined below:

Clause 11. Improvement Programs

(c) The worst performing feeder improvement program will apply to any distribution feeder that meets the following criteria:

(i) The distribution feeder is in the worst 5% of the network’s distribution HV (high voltage) feeders, based on its three-year average SAIDI/SAIFI performance; and

(ii) The distribution HV feeder’s SAIDI/SAIFI outcome is 200% or more of the MSS SAIDI/SAIFI limit applicable to that category of feeder.

The purpose of the improvement programs is to enable customers with the worst reliability outcomes to benefit from tailored network reliability improvement measures, where prudent opportunities to do so exist. The tailored improvement measures include prudent network capital investment and network operation. Capital investment examples include the installation of automatic circuit reclosers or sectionalisers, remote control gas switches, line fault identification units, reconductoring using covered conductor, and installing additional feeder tie points.

The overall approach for the worst performing feeder improvement program includes the following in order of preference and affordability:

• Improved network operation by:
  o investigating to determine predominant outage cause
  o implementing reliability or operational improvements identified through the investigation of any unforeseen major incidents
  o improving fault-finding procedures with improved staff-resource availability, training and line access
  o improving availability of information to field staff to assist fault-finding, which could include communications, data management and availability of accurate maps and equipment
  o planning for known contingency risks until permanent solutions are available

• Prioritisation of preventive-corrective maintenance by:
  o scheduling asset inspection and defect management to poorly performing assets early in the cycle
  o scheduling worst performing distribution feeders first on the vegetation management cycle
  o undertaking wildlife mitigation (e.g. birds, snakes, possums, frogs) in the vicinity of worst performing distribution feeders
• Augmentation and refurbishment through capex by:
  - refurbishing or replacing ageing assets (for both powerlines and substations).

The improvement programs are well progressed and will continue to be reviewed during 2020-21.

7.4. **Bushfire Risk Mitigation**

Bushfires are an inherent part of the Queensland environment. The vastness of the land, community centres and the resulting electricity network increases the risk of potential impact to the network. Failure of components of an overhead electricity reticulation system may also present a potential source of ignition and combined with unfavourable environmental conditions may increase the risk of a bushfire.

We are committed to best practice asset management strategies, and whilst ever evolving and changing, we will continue to adapt both strategically and operationally to ensure the safe and reliable operation of our network.

This includes the establishment of a Bushfire Planning Committee and the development and application of a Bushfire Risk Management Plan to target issues and initiatives relating specifically to bushfires.

A key component of the plan is to outline how assets are managed to minimise the risk of bushfires to the network, maintain customer supply reliability and ensure a high level of safety for the community during times of bushfire.

The Bushfire Risk Management Plan is published each year and contains details of a range of general asset inspection, maintenance and upgrade programs as well as specific bushfire initiatives for the next bushfire season. Programs include ongoing asset inspection and maintenance programs for the overhead network which are compliant with The Electrical Safety Act and the Code of Practice - Works. More details of the specific programs and initiative can be found in the Bushfire Risk Management Plan.

Geographical spatial systems and publicly available mapping layers are made available to the response staff to identify high risk bushfire zones to assist in planning and mitigation strategies as well as response activities.

Collaboration with Queensland Fire and Emergency Service (QFES) at both Local and District Disaster Management Groups across Queensland assists to identify and reduce bushfire threats. We have a responsibility to manage any risks associated with our network to ensure the safety of our customers, the general community and the security of electricity supply.

Energex has active participation with QFES on the Regional Inter-Departmental Committees for the North Coast Region (incorporating Sunshine Coast and Gympie) and South East Brisbane Region (incorporating Brisbane, Redlands and Gold Coast).

Our regional teams engage with Rural Fire Brigades and the public to raise awareness of the importance of protecting the electrical network assets when conducting planned burns, as well as general electrical safety during firefighting activities. An additional mitigation measure, used in higher risk areas, includes creation of firebreaks around poles.

7.5. **Flood Risk Mitigation**

Many Queensland towns and cities are located within catchment areas, along major waterways and the east coast areas.

Queensland has many climatic zones across the state and as such experiences a range of storms, tropical lows and cyclones. The increase in rainfall and run off from these systems may have an immediate or delayed flood impact on population centres or electrical assets.
The Flood Risk Management Plan details information available to assist in the mitigation, planning and response to potential flood events. The plan includes the communication of safety related information for employees and the community to ensure a high level of safety for the community in the event of damage. A consolidated mapping system utilising internal collated data relating to asset impact in previous events and externally sourced information from government organisations assists to improve our knowledge, planning and response activities.

The Flood Risk Management Plan is reviewed and details the approach and key activities to manage flood events and improve flood resilience to the network assets. This plan incorporates learnings from major flood events across Queensland which have the greatest impact on the electricity network and continuity of electricity supply to customers including the 2011 Brisbane Floods, ex-TC Debbie flooding in April 2017; and North Queensland and Townsville Monsoon Flooding in March 2019.

Additionally, flood mitigation works have previously been implemented in regional Queensland to minimise impacts for flood areas in cities such as Rockhampton, Mackay and Bundaberg following several major flood events.

These works include HV and LV isolation points to assist in isolating impacted areas as flood waters rise or where rising flood waters breach regulated line clearances. Sufficient isolation points were created so the isolation areas were kept to a minimum. Our regions have flood levels available in our geospatial systems to identify plant that needs to be de-energised at specific flood heights.

In some circumstances, supply is required to be isolated to areas which are not inundated but flood waters impact neighbouring areas supplied by the same system. This has caused considerable concerns for these customers. For these areas, where feasible, alternate supplies have been constructed to maintain supply.

Liaison officers work with the Local and/or District Disaster Management Group to implement any proactive or reactive isolation required.

8. EMERGENCY PLANNING AND RESPONSE

In the lead up to the 2020-21 summer storm season preparations have been undertaken to ensure our ability to respond to short notice and escalated severe events in a safe, efficient and effective manner. These include:

- Embedding the implementation of a best practice emergency response framework
- Preparing comprehensive contingency plans for improving how we prioritise and schedule work during major or widespread outages
- Implementing emergency response procedures covering management of major network incidents
- Development of a detailed Emergency Management Plan for the Distribution Network
- Ensuring appropriate resources and skills are available to respond to an emergency or disruption event
- Development of a mobilisation and resourcing strategy for maximum response efficiency
- Enhancing our use of technology to gather, analyse and disseminate critical information
- Completion of training for all Emergency Managers and key emergency response roles.
- Annual scenario planning and conducting desktop exercises to test the effectiveness of the response during different conditions
- Proactive monitoring of weather patterns and forecasting
- Establishing and maintaining relationships with Disaster Management Groups at Local, District and State level.
8.1. Emergency Management

A comprehensive approach to emergency management has been adopted incorporating the Queensland Disaster Management guidelines emergency management phases of Prevention, Preparedness, Response and Recovery.


These plans align with the Queensland Disaster Management Arrangements framework and are enacted for major events when required to enable us to respond efficiently and effectively in order to minimise electricity supply disruption across our service area.

We use an emergency framework that can be utilised for all hazards and emergencies. The framework is based on the Australasian Inter-service Incident Management System (AIIMS) that is commonly used by emergency services agencies and other large organisations. It also meets the good practice attributes of the Queensland Emergency Assurance framework. The framework provides a structured, yet flexible and adaptable approach, able to be scaled to suit an event and provide effective and efficient control of incidents. It ensures an improved inter-agency cooperation and use of common terminology.

The emergency framework has been tailored for our business and integrated into a wider resilience framework to ensure there are clear triggers to escalate from routine incidents and events through to large scale emergencies.

8.2. Prevention

Our response planning is based on an all-hazards risk assessment of potential events and associated business impacts. Where practicable, we endeavour to design, construct and maintain the electricity distribution system to mitigate loss of supply resulting from a disaster or other event and conduct regular analysis of the network to identify requirements. Additionally, post-event reviews are undertaken at all levels to analyse our response and identify improvement opportunities.

8.3. Preparedness

Disasters or emergencies may occur at any time, with little or no warning from major storms or advance warning from larger events (e.g. bushfire, cyclones and floods) and the response framework is structured to be flexible to able to attend to all.

A Summer Preparedness Working group has been established to ensure our business units have conducted sufficient preparations in the lead up to the summer storm season, providing a safe and robust network, sound emergency response procedures and safety awareness to the community. This includes outworking a detailed action plan to prepare the business for the Summer Storm Season and has representation from across the business.

To further enable us to manage disaster events, an annual review of response plans and processes, training and exercising key staff is undertaken. These are required for completion by 30th September each year.

8.4. Response

Response to any major disruption event will be tailored to the location and severity of the situation. The structure adopted recognises different levels of response depending on the seriousness of the incident’s real or potential impact, and the level of resources and expertise required to manage the event.

We have three levels of response with a structured escalation process to ensure an appropriate and measured approach occurs.
For level one and two events we follow an escalated fault response model for small scale or short notice events. This model allows for flexibility in command and control structures, as well as the ability to escalate for additional resource support when required.

When an emergency escalates to, or a predicted emergency is identified for a level three event, a common framework is activated under the Emergency Management Plan.

For predicted level three events with lead times, the business will advise of its response status utilising phases aligned with Queensland Disaster Management Arrangements (Alert, Lean Forward, Stand Up and Stand Down). When any event is sudden or unexpected, the response may move rapidly through the relevant phases, while still ensuring that all actions to establish response teams, response centres, mobilise resources and communicate to all stakeholders are completed. The phases allow for the timely and coordinated effort to establish an appropriate response.

The main priorities immediately following the impact of an event is safety of employees and the community, identifying the number of customers affected, extent of damage, types of customers and availability of staff in terms of repair and network switching work. This information allows review and refinement of resourcing and restoration strategies and plans. Initially making the network safe for staff and the public occurs before restoration activities commence. Prioritisation of our restoration work is managed within the context of the relevant business operational plans. Where there are multiple interruptions to the network, the priority for restoration is to emergency services including as essential services, hospitals and emergency services. We continue to enhance our mobile and digital technology platforms to assist in improving our ability to respond, analyse damage and perform repairs including the capture of near real time intelligence through our Field Force mobility, LiDAR and geospatial mapping systems.

8.5. Recovery

Recovery is the coordinated process to permanently restore the operational capability, the network infrastructure or electricity supply to the community. This is usually conducted in parallel with the emergency response and these activities may occur in the Stand Up and Stand Down stages. Follow on recovery activities can also be triggered when further permanent works have been identified to be completed after the emergency event during planned programs of work.

8.6. Resourcing Levels to Support Contingency Plans

A diverse range of skilled resources are available to be engaged both internally and externally:

- A field workforce of approximately 4,400 (including design, construction, maintenance, inspection and vegetation workers)
- Access to a significant external resource base for construction and maintenance, and vegetation management activities
- Staff resources to provide safety advice, stakeholder and community engagement and logistics including accommodation coordination, field catering, supply and fleet support
- Leave rosters that are managed to ensure adequate availability of field resource for the summer period.

The geographic spread of our depots and resources assists in our response to network events. We are able to mobilise our resource capability across the state to meet the demands of any particular event.

8.7. Other Distribution Network Service Providers Assistance

At times, additional resources may be required to assist with a large-scale response. Memorandums of Understanding (MoU) have been developed with Essential Energy, Endeavour Energy, Ausgrid and Power and Water Corporation outlining the key principles and arrangements
between the companies. As part of the annual preparation, a review of the MoU’s is conducted. We also have arrangements in place for assistance from approved contractors.

8.8. **Powerlink and Queensland Fire and Emergency Services Joint Response**

A MoU is maintained with Queensland and Fire Emergency Services (QFES) and Powerlink (PLQ) and includes protocols for joint response. It outlines the approaches relating to bushfires, emergency contacts, and communication protocols for significant incidents and emergency events where the assets of the parties are impacted. During a significant network emergency, each emergency management team considers common issues and priorities to ensure the optimum state response.

8.9. **Queensland Fire and Emergency Services**

An MoU has been established with (QFES) for data sharing including licensed data relating to all Hazards/Incident events, risks and operational responses. This data includes planning and operational data within the Queensland Emergency Management Risk Framework (QERMF) tool within the Queensland Disaster Management Arrangements (QDMA). The data layers from the QDMA sharing group are used by Ergon Energy Network and Energex for planning and operational purposes.

8.10. **Liaison with Disaster Management Groups**

Outside of disaster situations, our representatives liaise with and attend periodic meetings scheduled by the State Disaster Coordination Group (SDCG), District and Local Disaster Management Groups (DDMGs/LDMGs), providing input and advice on key issues such as emergency response, critical infrastructure, business continuity and the impact of planned disconnection of supply.

During disaster situations, our representatives liaise and co-ordinate responses with the SDCG, DDMGs and LDMGs, whilst independently maintaining a focus on restoration and safety of the electricity network.

8.11. **Forecasting of Extreme Weather Events**

EQL engage specialist weather forecasting arrangements to provide a range of services to assist in preparation for severe weather events and natural hazards. The data is provided on a specific internet website and includes:

- Current wind speed, wind direction, temperature and humidity conditions
- Historical observations of this weather data
- Comments on observed data and weather patterns specific to our network areas
- A five-day high-resolution forecast of temperature and wind speed
- General forecasts and weather warnings
- Links to satellite and radar information and displays
- Longer term climate outlook forecast
- Forecast weather patterns including heatwaves, storms and lightning levels
- Integration with QFES Sentinel satellite fire detection
- Bushfire real time and forecast mapping.

9. **COMMUNICATIONS**

We are committed to keeping customers and stakeholders informed and engaged in the preparations for the summer storm season and during emergency events.
9.1. Customer Operations Planning and Improvements

In preparation for the 2020-21 storm season Customer Operations has continued to improve how we support, advise and respond to customers during these potentially difficult times.

This will be facilitated through a number of initiatives including improved Interactive Voice Response (IVR) responses, additional information on the web-based outage finder and for Energex and Ergon Energy Network, the proposed implementation of a call back function on our General Enquiry line in regional Queensland.

A Disaster Assistance Program (DAP) provides contingency arrangements between our Contact Centres to provide assistance in a major event where capability is impacted.

9.2. Marketing and Customer Communications

For over 20 years, both Ergon Energy Network and Energex have built strong brand recognition as the public face of the electricity network to our customers and the primary information broker for electricity supply outage and restoration information. We have a strong and proven reputation of providing effective, timely, and accurate information during significant disruption events such as cyclones, floods, storms, bushfires, and peak demand (heatwaves) events.

The media and community engagement teams of Ergon Energy Network and Energex deliver timely, accurate, and targeted communications to internal and external stakeholders before, during, and after major weather events.

9.3. Media, Community Relations and Digital Platforms

We utilise our local and state-wide media and community stakeholder relationships to keep the important storm season messages 'top-of-mind' throughout the storm season. Key messages are delivered through multiple channels and targeted stakeholder engagement to raise community awareness of weather-related issues, such as cyclone preparation and electrical safety.

These communications focus on delivering key safety messages, setting customer expectations regarding network restoration, and directs customers to the online Outage Finder for updates for to the National Contact Centre to report damage and faults.

During significant events, our Community Outreach teams are deployed within impacted communities to provide face-to-face customer engagement focusing on safety messages, restoration updates, the re-connection process (following inundation/structural damage), as well as referrals to Ergon Energy Retail for account services and assistance. We also engage and inform customers on social media and the online Outage Finder to provide relevant and timely updates.

These digital platforms have now become the more popular information and communication channels for customers.

Our event-activated online Storm Centre directs customers visiting our websites to important information on preparations, what to do during major storms and cyclones, and the general process we follow to restore supply to its customers in impacted areas. During major events the site is updated regularly with the latest information regarding the response and restoration efforts.

10. OUR SAFETY COMMITMENT

We continue to be committed to ensuring the health and safety of our people and the community and on being a leader in safety – to take performance into the top quartile of industry-recognised benchmarks.

This has meant placing a priority on developing a sustainable safety culture across the business, a culture where safety is inherent in everything we do.
Our Summer Preparedness Plan has included scenario planning and reviewing all emergency response aspects and continued refinement of safety systems, such as fatigue management and driving plans.

In addition, 2020-21 planning and preparation have included detailed arrangements for COVID-19.

Our commitment to safety is also demonstrated by our determination to get our safety messages heard through our Community Electrical Safety Awareness Plan (CESAP). Underpinned by a detailed analysis of annual incident data, CESAP has evolved each year to address known community electrical incident problem areas using awareness campaigns targeted at industry sectors or extreme risk activities. This has seen a continued decline in community electrical safety incidents. These engagement efforts, and the specific communication activities discussed in this plan, are about ensuring that the risks associated with electricity are well understood.
## APPENDIX A. OPEX AND NETWORK CAPACITY AND SECURITY PROGRAM

### Table 1 – Energex Network Capacity & Security Program, Pre-Summer 2020/21

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<tr>
<th>Project Number</th>
<th>Project Name</th>
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<tr>
<td>C0601294</td>
<td>CLD - Est new 11kV feeder to the SW</td>
</tr>
<tr>
<td>C0552448</td>
<td>BRD - Est new 11kV fdr to north</td>
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### Table 2 – Ergon Energy Network Capacity & Security Program, Pre-Summer 2020/21

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<th>Major works</th>
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<tbody>
<tr>
<td>257767</td>
<td>ZS RPL MK RFB NEWL (substation upgrade)</td>
</tr>
<tr>
<td>338448</td>
<td>FN GORDSS Replace CAP Bank 1 CB RTS</td>
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