Meeting Date: 12 March 2020

TRANSPOWER AND AUTHORITY COMMUNICATION PLANS AND PRACTICES FOR REDUCED SECURITY, OUTAGES & SECURITY OF SUPPLY EMERGENCIES

SECURITY AND RELIABILITY COUNCIL

Transpower and the Electricity Authority both have important roles communicating to stakeholders (including the public) about various power system incidents and situations. This paper explains the communications arrangements of the two organisations.

Note: This paper has been prepared for the purpose of the Security and Reliability Council (SRC). Content should not be interpreted as representing the views or policy of the Electricity Authority.

Transpower and Authority communication plans and practices

1. Background

1.1 The SRC secretariat's work on a risk management framework identified that the communication preparedness of the Electricity Authority (Authority) and Transpower were important for minimising the adverse impacts of various supply shortages.

1.2 Accordingly, item #13 in the SRC's multi-year work programme is:

> "The communications plans and preparedness strategies of key agencies [Transpower and the Authority] for supply emergencies."

1.3 This item was scheduled for presentation to the SRC in its first meeting of 2020 because:

a) the SRC had never previously received advice on this matter

b) of the SRC's discussions of Transpower communication of outages and reduced security at previous meetings.

1.4 While many of the SRC members have previous experiences of how Transpower has communicated about outages or the existence of reduced grid security, this paper has not been conceived as a backward-looking review of previous communications. Nonetheless, SRC members should consider whether Transpower's current/latest arrangements satisfactorily address the range of situations highlighted by previous experience.

2. The Authority's arrangements

2.1 The Authority has a dedicated communications team within its Organisational Performance and Delivery Group. The resourcing arrangements for the communications team allow for flexibility to scale up to respond to the needs of any situation. Relevant Authority staff will attend the meeting and be available to respond to questions from the SRC.

2.2 The Authority has two communications plans of relevance to the SRC's agenda:

a) Power System Incident Response Communications Plan (the incident plan)

b) Security of Supply Communications Plan (the security of supply plan).

2.3 With respect to both plans, the Authority has roles to consider in the execution of its communications activities:

a) as regulator of electricity markets, there may be implications for policy-making

b) as the enforcement agency for the Electricity Industry Participation Code 2010 (Code), the incident may raise non-compliances for investigation

c) as the monitoring agency for the electricity industry, there may be implications for post-event reporting

d) as the counter-party to the contracts with market operation service providers, their performance may also be a contractual matter.

2.4 The incident plan deals with events (typically some kind of power outage) that are more likely to manifest at short notice and last for hours or days (though the plan is not restricted by this). Some key points about the plan are that it recognises:

a) that there could be many asset owners (grid owner, distributors, generators, direct-connect consumers) involved in responding to an incident. Asset owners will have the best (and often the only) view of what has happened with their assets and what the future availability of those assets will be

b) there will be other organisations that will have a role in communicating with stakeholders about an incident, such as the system operator and the Minister of Energy and Resources

c) if an incident is significant enough, media will be seeking balance in their reporting and therefore approach independent energy commentators, professional associations and industry associations for comment.

2.5 The security of supply plan deals with situations that are more likely to manifest over the course of weeks and months and last for weeks or months ('dry winters' are the archetypical example). Some key points about the plan are that it:

a) recognises the system operator has the primary role in responding to a situation of this kind

b) provides for the Authority to establish a Security of Supply Response Team.[1]

2.6 The Authority and system operator are well-aligned about our mutual expectations of our roles. Page nine of Transpower's attached paper accurately describes our roles.

> "Both the system operator and the Electricity Authority would need to work together, with Transpower taking the primary public communications role. Transpower would be responsible for providing any operational information and answering any operational queries that arise. The Electricity Authority would focus on providing any information related to the regulatory policies and market arrangements."

[1] The Authority has exercised this capability before when in mid-2017 hydro storage approached the (since-renamed) hydro risk curves.

3. Transpower's arrangements

3.1 Transpower have provided the attached paper to respond to this agenda item. Attendees from Transpower will attend the meeting, introduce their paper and respond to questions from the SRC.

3.2 Transpower's paper is provided on behalf of all-of-Transpower, though it recognises and distinguishes between Transpower's different roles.

3.3 The SRC secretariat has reviewed Transpower's paper and considers that it is a materially accurate and thorough discussion of Transpower's arrangements. On page five of Transpower's paper, Transpower asserts:

> "Distribution companies are the party best able to communicate with consumers regarding security of supply issues. They know the communications best suited to their audiences, what wider community consultation may be needed, how media engagement should be run within their area, and how community feedback should be managed. Our experience is that distribution companies respond quite differently to system security information; some place great value on it while others seem less concerned."

3.4 This captures an important part of Transpower's philosophy to engaging with communities. The SRC may wish to consider:

a) commenting on this approach

b) whether the lower levels of concern by some distributors is a matter for further SRC investigation or advice.

4. Questions for the SRC to consider

4.1 The SRC may wish to consider the following questions.

Q1. What further information, if any, does the SRC wish to have provided to it by the secretariat?

Q2. What advice, if any, does the SRC wish to provide to the Authority?

Transpower's communications plans and practices for outages and reduced security

1. Introduction

Transpower plans or experiences around 8,000 asset outages a year. These are for maintenance, capital works, and outages arising from events on the system. Some outages have market impacts ranging from minor (the majority) to material (such as outages on the HVDC link). All planned outages are notified ahead of time to market participants; those likely to materially impact market participants and customers are accorded additional communication actions.

Some planned outages reduce security, such as by placing customers on N-security[1]. For many reduced-security outages (such as of one of two supply transformers at a point of supply) it is relatively easy to determine if a reduction in security will occur. Sometimes, whether or not a customer is placed on reduced security may depend on the load and generation patterns on the day, or the combination of outages on the system (something not always apparent in planning time).

In addition, security can be affected by New Zealand's reliance on hydro electricity, meaning when hydro levels fall below certain levels a communications and response regime for industry (and, ultimately, consumers) is initiated. This situation differs from daily considerations of system security and is commented on in section 7 only for completeness.

Transpower's communications regarding outages and reduced security have developed organically over the years, based upon its operational needs as system operator and grid owner. Increasingly, these operational requirements have been supplemented by communications focussed on a wider set of industry participants and stakeholders (including regulators and consumers).

2. General approach to communications

Transpower has two independent, Code-mandated roles: system operator and grid owner. These are relevant to the matters of planned and unplanned outages. These roles require each to undertake certain communications in mandated situations, as well as other operational communications that make for efficient and effective performance of their respective roles managing the grid and power system. These communications have developed as the grid and the electricity market themselves have developed and are described in more detail below, but essentially mean that:

- the system operator advises participants of what it needs them to do to resolve forecast or actual system security concerns or, more generally, about possible impacts of asset outages on the power system or shortages of generation capacity
- the grid owner advises participants of its plans (annual, down to daily) for maintenance and capital works that require asset outages.

[1] For further information about N-security, refer to SRC paper Transmission Security: Introduction to Concepts and Governance, October 2019

In addition, Transpower's position as a State Owned Enterprise and good corporate citizen means it has communications requirements sitting across the independent system operator and grid owner roles which ensure wider stakeholder and community communication needs are satisfied. It's external communications policy[2] supports how these requirements are delivered.

The key objectives of all these communications requirements and practices are:

- gaining industry participation and cooperation to enable outages to proceed and for post-event restorations to be managed effectively
- making market participants aware of planned outages, to support efficient market outcomes
- giving participants and consumers relevant information regarding possible or actual system events or ability to assess the consequences of planned outages
- avoiding, to the extent practicable, stakeholders being surprised by power system and market conditions, and events.

3. Planned outages

Planned outages occur for many reasons. They may arise under a longer term planned maintenance regime (good electricity industry practice asset management) or from short range planning (where, for example, an unexpected asset issue arises). The outages may be called for maintenance, repair or capital renewal reasons. Most planned outages occur without any impact to customers, and consequently are of limited interest to participants.

But other planned outages may have material impacts on directly connected customers (distribution companies and industrial plants) or consumers. These become a focus for Transpower's communication efforts and obligations.

All planned outages

For planned outages our communications are mainly directed to planners in distribution companies, large industrials, generation companies and other knowledgeable market participants (notably, retailers and market position-takers). These parties generally have a good understanding of our network, often deal with our outage planners on a regular basis, and in many cases are parties we work with to coordinate our outages with their own, or make arrangements regarding connected assets that are required to securely manage the system during an outage. The latter might be agreements to ensure connected assets are in or out of service, or that required levels of generation are offered. Key parts of these operational communications are governed by the Code[3], and the grid owner's Outage Protocol[4].

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[2] This is Transpower's 2019 External Communications Policy, which covers how Transpower manages communications with its stakeholders in a consistent and coordinated manner.

[3] See the following sections of the Code: Part 3.2A; 7.1A; 7.2; 8.8; Schedule 8.3 Tech Code D; Part 12 subpart 7; Policy Statement [Part 7]

[4] The Outage Protocol requires that Transpower (as grid owner) publishes a draft outage plan by 31 Jan, a final plan by 19 May; meets with customers by 31 March, holds an annual forum and notifies changes to the plan.

Transpower's outage planning process, reflecting both grid owner and system operator elements, is supported by an Outage Planning Policy, developed with industry participation and published on our website[5]. The objective of the policy is to allow Transpower (separately as system operator and grid owner) and other asset owners to meet Code obligations related to their planning connected asset outages in a manner that is consistent, repeatable and enables the system operator to act impartially. The process expresses five principles when planning outages: consider concurrency, timing, costs/benefits of outages, identify impacts and consider notification periods.

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For planned outages we provide the following, searchable information, which starts with the annual outage plan but is updated daily with additions and changes:

- our website
- the Planning Outage Coordination Process website (POCP).

Both sources are intended for use by persons who understand outage planning and how Transpower's planning process occurs; in short, parties who understand how the power system works. POCP includes information about our outages as well as generator outages and a few large industrial user and distributor outages. Distributors have not historically made regular use of POCP, preferring to use our website and other direct notifications from Transpower to gain awareness of outage plans and proposals. We have recently been working with some distribution companies to help them use POCP, particularly as POCP has the functionality for automated email notifications of changes.

POCP information currently includes only 'confirmed'[6] outages. POCP and our web tool are being changed so that by June 2020 each will be able to also present tentative outages, giving participants an even earlier look at forthcoming outage plans.

Communicating the grid owner's annual outage plan

Each January we share our draft grid owner annual outage plan (covering planned grid maintenance and capital projects) for the coming financial year. This is posted to our website and also sent directly to connected customers and participants who register with us as 'interested parties'. Our planning staff then meet with many customers on a 1:1 basis to step through these forthcoming plans. These meetings are followed by an annual outage planning forum (this year to be held in Wellington – and at Auckland and Christchurch by video link - on 16 March), where the plan and other outage planning-related material is open for consideration and discussion.

Developing our annual outage plan is the main opportunity we have to discuss the best time of year for proposed grid outages and to coordinate with other parties (noting POCP is used by other asset owners, notably generation companies, to record their outage intentions). Feedback is received and considered when finalising the plan, which is published in May of each year.

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[5] Available on Transpower's website at https://www.transpower.co.nz/sites/default/files/bulk-upload/documents/SP-OC-759%20Outage%20planning%20policy.pdf

[6] Confirmed (approved) are those that outages which have gone through our internal assessment and approval processes. Tentative (lodged) are outages which have not yet been through the annual plan process, or have arisen since that plan was published but which have not yet been through an approval process.

What this means is that for each of Transpower's financial years a plan of proposed outages, optimised as best as possible to meet customer needs and accounting for planned generator outages, is published, ahead of the start of the financial year. Of course, many changes to each plan occur thereafter, as shifting grid, system operation and connected asset and market requirements change in or near real time.

All changes of plan (including most unplanned outages) are notified through POCP (hourly) and website (daily) updates.

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Some planned outages – where material market or customer impacts are expected or likely - are subject to further communications with industry and other stakeholders, as planning progresses towards the works being undertaken.

Further communications with customers and participants, in planning time

In addition to hourly POCP and daily web updates we send out the following notifications:

- Asset Variation Notices. These go to connected customers and interested parties whenever we make changes to the annual outage plan involving new outages, cancelled outages, and material changes to outages
- notifications of upcoming outages. These go out around 6 weeks out from outages, and are of two kinds:
    - one (an Outage Advice) is sent for information purposes where an outage may affect a customer – for example the customer is placed on N-security (an example is in Annexure 1)
    - the second is for confirming an agreement reached with an asset owner (distribution companies, generation companies, direct connect industrials) to support an outage by managing assets in agreed ways, to support system security. Such actions may be an agreement to generate, reduce load during an outage, shift load from a GXP etc.

In some cases, where we need to coordinate safe switching of assets during an outage, we share and coordinate detailed switching plans with connected customers.

Significant planned outages and reduced security

One-off communications strategies and procedures are developed for major project works where reduced security or material outages are expected (such as for the current 2020 HVDC works) and for 'business as usual' maintenance and non-major capital works where material reduced security or outages are expected (such as for the Karapiro/Ohakune/Hinuera outages on Sunday 8th February 2020). For these, a variety of communications are used and include both system operator and grid owner resources and perspectives, and involve Transpower's corporate customer and communications teams (and reliance on our external communications policy) as needed.

Increasingly, it has become Transpower's practice to initiate industry conferences to advise participants about major outages while those outages are still in planning stages. This greatly expands upon the information available in the Annual Outage Plan and on POCP. Participants

and the Electricity Authority are advised by Customer Advice Notices (CANs)[7] of our intention to hold such meetings. To encourage attendance, participants whose presence is regarded as essential are generally contacted directly.

A recent example is the industry-wide consultation and planning that occurred in 2019 for the HVDC outages which commenced in January 2020 and which continue through into April. Several teleconferences (which included Electricity Authority staff) have been held and information provided to interested parties (including via a dedicated web page), to ensure participants were well aware of the nature and scope of the planned work, outage timings, potential market impacts and potential project risks (including how and why delays might occur).

For such matters Transpower's corporate customer and communications teams assist with ensuring participants and, where desirable, the wider public are advised of what is going to happen. For the Karapiro/Ohakune/Hinuera outages in early February 2020[8] Transpower's communications team ensured briefing notes and public notices (in a variety of media) were available and published, that operational or communications counterparts at affected customers (distributors and major industrials) were briefed, and a timetable of communications activities (intended to ensure the widest possible awareness of the outages) was in place and actioned, including liaison with local business, industry groups such as Federated Farmers and communities. Plans for these outages changed several times as industry and customer feedback was received, before the work commenced.

Transpower's website provides helpful information for consumers on managing day to day activities through an outage, including links to Dairy NZ for information specific to dairy farmers.

Material reductions in system security

Transpower's outage planning and communications teams carry out weekly reviews of planned outages where N-1 security may not be maintained. When a planned outage is likely to result in a significant load (generally more than 200 MW in a region, or 50 MW for 48 hours in a major urban area) being at risk (e.g. reduced from N-1 security to N) Transpower collaborates with the relevant distribution company to consider what communications are required with wider audiences[9].

Distribution companies are the party best able to communicate with consumers regarding security of supply issues. They know the communications best suited to their audiences, what wider community consultation may be needed, how media engagement should be run within their area, and how community feedback should be managed. Our experience is that distribution companies respond quite differently to system security information; some place great value on it while others seem less concerned.

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[7] Customer Advice Notices are email advices sent to parties who register for the service. Most often CANs are used to advise about immediate operational matters (such as a change in the status or capability of the HVDC asset or a change in the Reserves Management Tool). They are also used for communicating operationally important industry advisories, such as the holding of an industry teleconference.

[8] These were 10-hour day-time outages affecting many consumers across the Waikato and Piako regions

[9] This has the effect of bringing a special focus to 'significant risk to supply' situations which might otherwise be notified to a distribution company only by an Outage Advice notice (Annexure 1).

Our External Communications Policy sets out our approach and allows for tailored approaches depending on our customer's views on requirements. To that end, a specific communication protocol now exists between Transpower and Wellington Electricity (WE*), recognising the unique situation of Wellington CBD system security (when certain transmission outages occur). This protocol was developed following the March 2019 reconductoring work on lines from Wilton to Central Park, during which it unexpectedly became necessary to place the Wellington CBD area on N security for several days[10]. This situation led to revisions to Transpower's external communications policy[11]. For instance, if in future an outage is planned to have a similar impact on the Wellington CBD, Government officials and regulators will be briefed well before the outage commences, together with WE*'s electricity dependent customers.

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New Zealand Generation Balance (NZGB)

The system operator calculates (and publishes) information on the surplus electricity supply available to meet peak demand on a given day. This is to give the market an early indication when margins will be tight and enable generators and load takers to take action to avoid situations where the system operator may have to face higher security risks. The NZGB takes into account generation and transmission outages which might reduce or limit available maximum generation to meet potential peaks (most likely morning or afternoon peaks).

4. Unplanned outages

Unplanned outages (resulting from an asset failure, weather or other event) can initiate other communications needs and responses. Our grid owner Regional Services Managers are responsible for engaging with customers over unplanned outages, generally when a loss of supply occurs, but also where security is materially affected. These are direct, one-to-one communications regarding the nature of the event and ongoing management; they supplement real time communications which are occurring between system operator and grid owner control rooms and the control rooms of distribution companies and industrial direct connects.

Transpower's communications team engages with communities when an unplanned loss of supply occurs. They manage public and stakeholder inquiries about an event, monitor social media and provide information through our public-facing website, and Facebook and LinkedIn channels, allowing consumers access to the best available information regarding the outage while it is in progress[12]. Our customer team supports event communications needs, as required.

For major unplanned events Transpower has an established procedure[13] for internally coordinating the management of an event, including communication needs of connected parties and other stakeholders. Specific roles and responsibilities for those communications are assigned, and web-accessed contact details are available for all directly connected customers.

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[10] See the Transpower paper "Wellington Region N Security Review" February 2020.

[11] See para 4.2 of the Wellington Region N Security Review paper

[12] Accurate information about the status of an in-flight outage can be difficult to obtain, especially about return times.

[13] This is an internally published procedure *Event Response – Major Power System Events*

Some major events require communications with civil defence and emergency management entities; Fire and Emergency NZ; NZ Police[14], Health Boards and other LifeLine entities.

Rangitata River event December 2019

In some situations, the consequences of a major event may be enduring, requiring on-going communications. The December 2019 flooding in Canterbury is an example. That event caused significant damage to Transpower assets when the Rangitata river breached its banks, damaging nine towers (or foundations) on the important Roxburgh-Islington 220 kV line. Building a temporary line across the Rangitata before winter is now underway, with a permanent repair likely to be completed in August 2020.

The absence of the line (until the temporary line is in place) has impacted Transpower's summer outage plans as well as reducing upper South Island system security.[15] Details of the ratings of this conductor and transfer limits have been shared with industry. Customers are being kept informed of updates through regular teleconferences and via a dedicated webpage[16].

Electricity Emergency Contact List

Transpower provides the industry with a list of contact names and numbers for Transpower, distribution companies, generators and directly connected customers, to assist manage communications between relevant parties during major events (outside of control room to control room communications). This list is updated six monthly.

5. Real time or near real time communications

The nature and timing of communications by Transpower in the real time environment are managed by internal protocols and procedures (in the case of the system operator and grid owner) and also by the Policy Statement (in the case of the system operator). These communications are typically restricted to inter-control room communications, intended to serve immediate system and asset management requirements. The Policy Statement details the nature of warning and grid emergency communications[17] used by the system operator for managing potential or actual events on the system and, in particular, encouraging participants to respond to developing or actual unplanned outage events.

The Policy Statement also requires the system operator to notify participants of standby residual shortfalls[18], notice of which are sent by email to registered participants, when the relevant situations arise. These notices provide early warning of scheduled generation shortages (which

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[14] For instance, grid owner operations centre personnel call the Police immediately any regional loss of supply occurs.

[15] Margins between the expected load and the voltage stability limit were expected to be tight though manageable, with the support of the Upper South Island load controller. When the temporary line is completed the circuit will still suffer reduced thermal capacity, continuing to affect system security until the permanent line is re-established.

[16] *https://www.transpower.co.nz/system-operator/information-industry/rangitata-flooding-event-islington-livingstone-circuit-outage*

[17] Formal notices are defined in the Code and described in the Emergency Planning section of the system operator's Policy Statement. The notices include Warning Notices (WRN) and a Grid Emergency Notice (GEN).

[18] A standby residual shortfall is a situation where there are either insufficient generator offers, and instantaneous reserves offers following a contingent event to schedule sufficient reserves for a second event and/or there are insufficient generator offers to restore interruptible load following a contingent event.

affect security of supply), generally in enough time to enable generators to respond in a way that may resolve the security of supply situation.

The system operator also uses Customer Advice Notices (sent to parties who register for the service) to provide market participants with less immediate system but market relevant information, including some information regarding security of supply (such as NZ Generation Balance information) and industry operational meetings (such as those called to consider major planned outages, such as the 2020 HVDC outages).

6. Forthcoming improvements

Recent work to better communicate reduced security outages

Transpower has recently reviewed its outage database to identify all outages that clearly put customers on N-security. This database containing information on which points of service may be impacted in such circumstances has been updated. This will improve the quality of our notifications to customers and will support moves underway to provide a forward-looking report on our website about N-security outages.

We are also considering how we can signal more complex combinations of outages that may reduce security to customers; currently it is difficult to distinguish the impacts of some outages where concurrent outages of other assets may create security impacts not apparent when each outage is individually reviewed. Whilst we do provide early notifications of such 'combinations' if detected, they often occur or are assessed close to real-time when interactions between outages can be affected by system conditions (such as demand and generation patterns or grid short term reconfigurations).

The system operator is currently facilitating a review of POCP, looking for enhancements of value to participants. This review concludes in late February, following which possible enhancements to the database will be assessed.

7. Security of supply ('dry winter planning')

As system operator, we are required to manage security of supply emergencies (e.g. in a dry year) which, in a worst-case scenario, will involve running an official public conservation campaign (OCC). Ultimately, our objective is to ensure the best possible operational, stakeholder and consumer outcomes from a security of supply (SOS) emergency. Communications are an essential element of delivering that objective.

We have in place the policies and procedures needed for communications during a SOS emergency, both for use with the industry and stakeholders, and for consumers. Our communications around a SOS event will have the objectives of providing a clear communication framework, making clear the communication role of relevant parties (including the regulator), ensuring timely and effective communication responses to the SOS as it develops, mitigating any confusion and correcting any misinformation (if required).

For a SOS emergency we have in place various plans, policies and procedures[19] to ensure our role can be carried out appropriately and with the confidence that careful pre-planning provides. An important role is communicating information to participants as a SOS situation develops, in the hope that the situation can be alleviated, if not prevented. The system operator has no mandate to direct or control the actions of the various parties (generators, distributors, consumers etc); it can only provide information to influence parties to take action to alleviate what may only be a developing security situation. Mandated powers only arise when the need for rolling cuts arises.

We have a documented communications plan to ensure clarity around the actions required to be taken. Both the system operator and the Electricity Authority would need to work together, with Transpower taking the primary public communications role. Transpower would be responsible for providing any operational information and answering any operational queries that arise. The Electricity Authority would focus on providing any information related to the regulatory policies and market arrangements.

Communications as a SOS develops

Under normal security conditions, we communicate with participants on a regular basis to ensure early signalling of any issues, including updates to the hydro lake conditions (weekly), changes to the Electricity Risk Curves (monthly) and Simulated Storage Trajectories (two monthly). The New Zealand Generation Balance is another security indicator available in normal (and abnormal) times.

As hydro storage falls and a SOS event becomes more likely, we increase the level of our communication with industry participants, including both formal and informal communication with major generators, industry participants and key stakeholders. Our usual weekly updates to industry would increase to daily, and regular industry teleconferences would be held to ensure participants are kept fully informed. There may be calls (effectively, suggestions) for action to be taken, including by Transpower as grid owner, to position the power system and its participants in the best possible state to cope with the developing position and, in particular, to avoid a SOS if possible.

If an SOS event reaches emergency state, we initiate a pre-planned process to activate the trigger to initiate an OCC. We have a standing engagement with an external communications agency to manage the creative design and public communications for an OCC (e.g. radio, television, newspaper, internet, social media etc.), enabling rapid response. We also have an agreed protocol with the Electricity Authority regarding overall management of the OCC.

Annexure 1 **Outage Advice notice**

[19] Emergency management policy; Security of Supply Forecasting and Information Policy; and System Operator Rolling Outage Plan. Each is approved by the Electricity Authority.

TRANSPOWER

OUTAGE ADVICE

Date:	07 November 2019	**Sender:**	Sarah McRae
Attention:	Outage Co-ordinator Unison	**Position:**	
Company:	Unison Networks Limited	**Ph No:**	
Fax No:		**Fax No:**	
Reference No:	NFN017574-2		
Version:	1	**File Reference:**	RDF_T3

The following equipment is proposed to be worked on:

Outage Block:	Description:	Nature:	Time Frame:	From:	To:	Recall:
RDF_T3	Redclyffe 220 / 110 kV Interconnecting Transformer T3	RS	Continuous	Sat 14/12/19 07:00	Fri 20/12/19 18:00	08:00 hrs

This outage is for the following reason:
Bushing replacement and corrosion control works

The impact of this outage will be:
Hawkes Bay on N Security

For information purposes only

Detailed Operational Requirements supplied by the National Grid Operations Centre shall be read in conjuction with this Outage Advice