

Auckland Anniversary 2023 - Flood Response Re- view

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FINAL






Preface

This report has been prepared for Waka Kotahi and Auckland Transport by Tristan Lees-Baker, Director Connect Infrastructure Ltd.

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1 Executive Summary

1.1 Introduction

This review was commissioned by Waka Kotahi NZ Transport Agency (Waka Kotahi) and Auckland Transport (AT) to investigate Auckland Traffic Operations Centre's (ATOC) response to the significant weather event over the Auckland Anniversary weekend in late January 2023.

The review findings are intended to be used to assist ATOC, Waka Kotahi and AT to identify key lessons and opportunities for improvement in the process of incident management including future resource needs and capabilities.

1.2 Summary Key findings

The main body of the report discusses the review findings, highlighting observations and insights and provides recommendations for improvement.

The key findings are summarised below:

- The weather forecast prior to the event did not predict the levels of rainfall that Auckland experienced over the Anniversary weekend, particularly during the evening of Friday, 27th January 2023. This affected ATOC, Waka Kotahi and AT's ability to prepare for an event of this scale.
- The rainfall intensity was unprecedented causing flooding and significant slips which affected large swathes of the transport network. Routine processes to gather information on the status of the transport network, update multiple platforms and provide information to Auckland Emergency Management, Waka Kotahi, AT and customers could not cope with the volume of information.
- Staff changes within ATOC over the previous 18 months had resulted in loss of experience in dealing with significant unplanned events.
- There was an expectation from senior leaders at Waka Kotahi and AT that ATOC could provide real time information via social media throughout the duration of the event.
- Waka Kotahi and AT use different systems and processes to record and provide information. This is inefficient during the course of routine operations but became problematic, and in some cases unusable, during the emergency event.
- Due to the duration of the event being quickly followed by Cyclone Gabrielle, many personnel were working extended hours affecting health and wellbeing.
- Senior leaders within Waka Kotahi outside of Auckland were unaware of the event until later in the evening on the 27th January.
- There was a lack of Coordinated Incident Management System (CIMS) training within the Incident Management Team (IMT) and the wider Waka Kotahi and AT teams involved in the response.
- There was a consensus that there was insufficient practical, in-person CIMS exercises being routinely carried out.
- Although not a focus of the review, several interviewees raised business continuity issues at ATOC, including back-up power generation and lack of inter-operability with the Wellington Transport Operations Centre.



- It was fortunate that a partial IMT had been set up to manage the Elton John concert at Mt Smart Stadium earlier the same day. When it became evident that the flood event required a specific response, the IMT was split, with a separate Incident Controller for the concert and another focussed on the weather event.
- Direct involvement in operational matters by executive level senior leaders contravened the governance role in CIMS which is largely around oversight, assigning resources and strategic direction (outside of the operational response).
- The IMT was not resourced with a 'Strategic Communications' role whose function is to provide high level oversight and issues management relating to the emergency event to senior leaders, elected officials and key stakeholders.
- There is duplication of process and approvals between Waka Kotahi and AT. An example is preparation, approval and dissemination of media messaging. This was demonstrated more recently on the 9th May 2023 weather event.
- Some personnel involved in the IMT were doing more than one role, including their regular role over the course of the weather event.
- The criticality of the Public Information Management function within the IMT was highlighted many times during the interviews. During this event, the function was undertaken by AT personnel who were also doing their regular roles and who had no experience in CIMS.
- There was inconsistency in how disruption across all modes was managed during the event, particularly obtaining vital public transport network status.
- Due to the event occurring during the summer and at the start of a long weekend with Auckland and Northland having a public holiday on the Monday, many people from AT and parent organisations were on leave with others in acting roles.

1.3 Successes

Inevitably the conversations with interviewees focussed on areas that could be improved. However, there were a number of successes highlighted by the team. These are summarised as follows:

- An early decision to set up a partial IMT for the Elton John concert facilitated the establishment of an IMT for the weather event.
- It is understood that ATOC was the first support agency to establish an IMT specifically for the weather event.
- Auckland Emergency Management acknowledged ATOC's proactive communication and successful working relationship at an operational level.
- Due to the public holiday weekend, a number of personnel were on leave and others were in acting roles. There were many examples where people cancelled leave, offered help and support and worked extended hours to improve the ATOC response to the weather event and to assist in recovery.
- Waka Kotahi's Auckland System Management Alliance's close working relationship with ATOC, including having personnel co-located at the Traffic Operations Centre, assisted during the response phase.



1.4 Summary Recommendations

Each of the findings in the main body of the report provides either recommendations supplemented with guiding information or narrative on proposed opportunities for improvement to be considered by ATOC's Joint Management Board (JMB). The key recommendations are summarised here:

R1 – ATOC's Role, Aligning Expectations

The partnering agreement entered into by Waka Kotahi and AT is now over 10 years old. There have been significant changes to traffic demand, disruptions, technology and customers' expectations on how they travel. There is an opportunity to refresh the Partnering Agreement and re-set ATOC's purpose, with clarity on its remit, a review of its goals and objectives, and set commensurate levels of service.

R2 – Common Operating Procedures and Processes

Develop an integrated, common operating model across Waka Kotahi and AT, allowing more effective and efficient processes within ATOC and supporting functions.

R3 – Roles, Responsibilities and Resourcing

Detailed review of the resource requirements to achieve the desired levels of service improving the resilience of the team during future emergency events and provide greater clarity on roles and responsibilities involved during response.

R4 – Incident Response – Tactical and Operational

Undertake a review of IMT resources including training and experience. There needs to be sufficient people trained and experienced to fulfil these functions, particularly during an extended period. Training and exercising to include governance and personnel from Waka Kotahi and AT who have a role in the response.

R5 – Customer Communication

Provide customers with a 'one network' view including relevant, reliable and easily accessible information when they need it to support them in making decisions regarding travel.

R6 – TOC Resilience and Business Continuity Procedures (BCP)

Opportunities to review ATOC's existing BCP processes to improve the resilience of ATOC.



2 Introduction

2.1 Purpose of the review

This review was commissioned by Waka Kotahi and AT to investigate ATOC's response to the significant weather event at the beginning of the Auckland Anniversary weekend in late January 2023.

The objectives of the review are:

- To share experiences and learn from this event with a view to identifying:
 - Areas for improvement in emergency response, resilience and internal/external communication.
 - Successes.
 - Ways to strengthen the tactical incident response framework of ATOC.
 - Recommendations to improve the strategic crisis management processes of Waka Kotahi & AT.
- To build confidence with stakeholders and the community in ATOC, Waka Kotahi and AT's commitment to, and capability in, responding to future disruptive events.

The Terms of Reference included three areas to be considered during the review:

1. ATOC, Waka Kotahi and AT's response to and management of the emergency event.
2. Roles and responsibilities, capabilities and mindsets, critical processes and information flows.
3. ATOC, Waka Kotahi and AT's readiness for a future significant, disruptive event.

The Terms of Reference for this review are included in Appendix B.

2.2 Review Approach

A series of interviews were conducted with 45 key personnel involved in the event from ATOC, AT and Waka Kotahi. The interviewees were nominated by the three organisations. The information collected during the interviews were grouped into key themes acknowledging some of the information was conflicting due to individuals' roles, involvement, or perspectives. However, key themes emerged and are detailed within this report.

Additional material was provided to the reviewer following the interviews which supported the discussion or provided additional context.

Each of the findings have been categorised as an Observation, Insight, Lesson Identified or a Lesson Learnt. This is known as 'O.I.L.L.' and is current best practice for lessons management. Observations and Insights have been included in this report with Recommendations aimed at addressing the Lessons Identified.

2.3 Acknowledgement

The people interviewed provided their time willingly and were candid in their responses. Due to the time period between the event and conducting the interviews, recollection of some of the detail varied but there was sufficient commonality to identify the key themes and recommendations.



3 Background

3.1 The Weather Event – Friday 27th January

The weather event over the Auckland Anniversary weekend, particularly the evening of Friday 27th January, resulted in significant flooding across Tāmaki Makaurau causing loss of life and significant disruption to the transport network.

The rainfall levels were unprecedented with a typical summer's worth of rainfall occurring in a 24-hour period which NIWA described as a 1-in-200 year event. Auckland had already experienced a wet month prior to the Auckland Anniversary flood event, particularly as a result of Cyclone Hale between 7th and 12th of January.

"... It was already a very wet January before the storm on the 27th, but that single event doubled the total over a single day. Rainfall intensities in the early evening, at the height of the storm, were quite astounding." - Honorary Associate Professor Anthony Fowler from the School of Environment at University of Auckland

On Thursday 26th January, MetService issued a heavy rain warning for Auckland for the period 6am to 10pm on Friday 27th January.

At around 10am on the 27th, MetService issued another heavy rain warning for Auckland, although the severity of the weather event that eventuated was not forecast. The alert level was 'Orange'.

During the afternoon of the 27th, following a telephone call between the ATOC Senior Leadership Team and members from AT's Executive Team, ATOC established a partial IMT focussed on the Elton John concert at Mt Smart Stadium. There had been earlier concerns raised on getting people to/from the concert due to public transport being affected as a result of bus driver shortages and a rail block-of-line impacting rail services. AT put on additional special event buses.

An AT social media post encouraging people to drive or walk to the concert had already received significant public interest and heightened the focus on social media messaging.

There was some deliberation whether a specific IMT for the concert was required but a decision was made to stand one up.

At around 2.40pm, AT advised the public that there were no trains available and there were bus shortages and urged people to get to the stadium early.

Shortly before 4pm, MetService issued a severe thunderstorm warning. Flooding on the network was being reported around this time. The alert level remained at Orange.

As it became clearer that the network was affected by flooding and slips, a decision was made by ATOC to split the IMT with separate Incident Controllers responsible for the weather event and the concert. It is understood that ATOC was the first Government support agency to establish an IMT under the CIMS model.

Rainfall intensity increased, and at around 7pm the Elton John concert was cancelled with many people already at Mt Smart Stadium and others travelling there for an intended 7.30pm start. This resulted in thousands of people needing to make their way from Mt Smart Stadium.

Meanwhile, reports of flooding and slips intensified. The Auckland System Management Alliance and AT's Road Corridor Maintenance teams were endeavouring to understand the extent of the impacts on the state highways and local roads to feed information back to the IMT. This was particularly challenging for the AT Road Corridor Maintenance team due to the number of incidents – there were over 2,000 slips on the local roads network over the course of the weekend.



The Auckland System Management Alliance and Road Corridor Maintenance teams were providing information to ATOC as best they could, but the labour-intensive process to collate the information and then communicate with ATOC to enter the information into the two Waka Kotahi and AT incident reporting systems was overwhelming. The added complication was the requirement to ensure information was verified in the Waka Kotahi Traffic Road Event Information System (TREIS) system before the information was published to Waka Kotahi's Journey Planner. This meant that the accuracy of information on road closures and detour routes was unreliable due to the rapidly evolving nature of the event.

Gathering information from the field and turning it into actionable intelligence was particularly problematic.

During the early evening, the Auckland Travel Information Team at ATOC was providing updates via social media including Twitter. There was one person on shift who was able to perform this function as the previous shift had left earlier in the day. At the end of a 12-hour shift, at around 7.30pm, a 'final tweet' of the day was issued. The inability to provide social media updates outside of standard hours (6am to 7pm) was a particular issue as the incidents due to the weather event increased. To exacerbate the issue, the ATOC Travel Information Team Leader was on leave but returned to ATOC at 10.00pm. Social media updates resumed around 10.30pm.

Senior leaders from AT, had travelled to ATOC earlier in the afternoon due to concerns about public transport arrangements for the Elton John concert. This meant they were able to provide direction to the team in person.

Senior leaders from Waka Kotahi based outside of Auckland, including the Executive, were unaware of the extent of the flooding issues and impacts on the state highway system earlier in the evening.

3.2 Timeline¹ (from mid-afternoon, 27th January)

7.50am – ATOC's Real Time Operations Manager advised that a Public Information Manager had yet to be confirmed for the Elton John concert IMT.

10.54am – An ATOC Auckland Travel Information team member was confirmed as the Public Information Manager. The Public Information Manager role was to monitor social media feeds and publish real time messages (on selected channels only, being unable to update webpages).

11.50am - A telephone call was held between the AT Executive, ATOC, and other AT personnel regarding concerns around communications associated with the Elton John concert.

2.40pm - AT advised the public that there were no trains available to travel to the concert and that there were bus shortages, urging people to get to the stadium early.

3pm – During a telephone call between ATOC's Senior Leadership Team and AT including members from the Executive Team, a decision was made by AT's acting Chief Executive to stand up a full IMT for the Elton John concert.

4pm – A telephone call was held with the Real Time Operations leaders to finalise arrangements to operationalise the full IMT.

4.12pm - Flooding on the Western (train) Line outside Glen Eden. Trains delayed.

4.29pm – Several Ritchies buses stuck at the depot due to flooding.

4.35 – Ten Brougham Buses delayed due to a slip at Dome Valley.

4.38pm – Intersection of Felix and Mt Smart Road flooded.

¹ Part information from 'Auckland Flood Response Review', by Bush International Consulting, 31 March 2023



- 4.47pm - Auckland Emergency Management activated an IMT in response to severe flooding in West Auckland, with the first meeting at 4.50pm.
- 5-6pm – ATOC decision to split the IMT into two workstreams, with an Incident Controller focussed on the concert and another focussed on the weather event.
- 5.17pm – The first event log for the concert issued by ATOC Events.
- 5.50pm - MetService issued a severe thunderstorm warning and again at 5.53pm saying that torrential rain was expected.
- 5.55pm - Waka Kotahi issued a tweet saying that flooding on the Northern Motorway near Northcote was causing delays.
- 6.02pm – a news report of a car submerged on the Northern Motorway near Northcote. Over 400 FENZ callouts with all trucks across Auckland deployed.
- 6.10pm - Waka Kotahi closed SH12 Brynderwyns detour.
- 6.35pm - MetService issued another severe thunderstorm warning.
- 6.53pm – Regional Facilities Auckland advised ATOC of the decision to cancel the first night of the Elton John concert. There was approximately 8,000 people at the stadium at this stage.
- 7.16pm - AT issued a tweet saying that special buses were being used to get people from Mt Smart stadium. Severe flooding was reported in the vicinity of the stadium.
- 7.33pm – The ATOC Auckland Travel Information team issued a ‘final’ update via Twitter.
- 7.40pm – Waka Kotahi issued an update on the status of the motorway network via its ‘Traffic and Travel Information’ webpage on the Waka Kotahi website.
- 7.45pm – A call was initiated by ATOC with Waka Kotahi’s Executive Assessment Team, the decision to establish a Waka Kotahi National Emergency Response Team was made.
- 7.50pm – Waka Kotahi updated its webpage on the Southern Motorway closure.
- 8.30pm – Auckland Emergency Management held a second IMT meeting including MetService, Health, Liaison for Lifelines, National Emergency Management Agency, utilities and attended by ATOC.
- 8.45pm – National Emergency Response Team meeting held. The first Situation Report was issued at 9.30pm.
- 9.01pm – The Minister of Transport instructed Waka Kotahi to re-open social media channels.
- 9.07pm – MetService emailed ATOC to inform them that the warning had been upgraded from ‘Orange’ to ‘Red’ for the Auckland region for the period until 3am on Saturday 28th.
- 9.27pm – AT advised people to stay home due to road closures and public transport cancellations.
- 9.27pm – Auckland’s Mayor signed a Declaration of Emergency but this is not communicated by Auckland Emergency Management until 10.17pm.
- 9.30pm – The first Situation Report was issued by the National Emergency Response Team controller.
- 10.15pm – Auckland Emergency Management IMT meeting.
- 10.25pm – The ATOC Auckland Travel Information team re-opened social media channels and provided an update on road closures due to flooding.
- 10.28pm – A State of Emergency for Auckland was announced.
- 11.42pm – Final Elton John concert event log issued by ATOC events.
- 11.45pm – IMT for the concert was stood down.



3.3 Subsequent Weather Events

It is worth acknowledging that following the Auckland Anniversary event, multiple regions in the North Island including Auckland were significantly affected by Cyclone Gabrielle (5th - 11th February 2023). Auckland also experienced another significant weather event on 9th May 2023, causing disruption to the transport network.

Although this review was focussed on the Auckland Anniversary weekend flood events, relevant information provided to the reviewer following more recent events was taken into consideration where these supported a finding and/or recommendation.

3.4 Role of ATOC

ATOC is a joint venture between AT and Waka Kotahi. ATOC manages the transport network in real time. It operates 24/7, helping to ensure users of the transport network can do so efficiently and safely.

Key functions of ATOC include:

- Real-time monitoring of Auckland's transport network including public transport.
- Managing unplanned events affecting the transport network including weather systems.
- Optimising traffic signals in real-time to help improve safety and efficiency.
- Providing travel information to help ensure customers are informed before and during their journeys.
- Managing planned events including roadworks and public events, by working with relevant parties to minimise disruption.
- Reviewing signalised intersection designs to improve safety and efficiency.

A partnering agreement between Waka Kotahi and AT was signed in 2011, the overarching goal being defined as, '... to enable customers to make smarter more informed travel choices about the way they travel, achieving the most from Auckland's transport services and infrastructure and keeping Auckland moving by a single network approach.' The agreement sets out ten ways on how this is expected to be achieved.



4 Key findings

4.1 ATOC's Role - Aligning expectations

A partnering agreement was entered into by Waka Kotahi and AT in September 2011, that details ATOC's purpose and goals. The transport system has changed significantly during this period including increased traffic volumes, use of technology, provision of public transport services and how customers expect to be communicated with.

As the event unfolded, it was clear that the levels of service expectation from Waka Kotahi and AT was different from what ATOC was set-up to deliver.

4.1.1 Observations and Insights

- a. ATOC uses the CIMS model to establish an IMT for both planned and unplanned events dependent on the severity of the event. The CIMS structure is well defined and is adopted for incident management by local and central Government. It operates within a command-and-control framework with defined functions and hierarchy.
- b. The expectations of ATOC by Waka Kotahi and AT's senior leaders during the event was misaligned with ATOC's operational set-up e.g., ability to provide social media updates 24/7. Feedback was that this misalignment was due to the defined operating model, approved resourcing including staff numbers and the efficiency of process and technology systems.
- c. Understandably, there was significant interest in the status of the network by the senior leadership of both Waka Kotahi and AT. There was an expectation that the IMT would provide frequent updates as the event unfolded. Due to the volume of incidents being identified on the network the IMT needed to focus on their defined roles.
- d. Waka Kotahi and AT are not working integrally and treating the Auckland transport system as 'one network'. Each organisation has its own processes, approvals, delegated financial authorities, priorities and expectations making it challenging to provide a consistent, effective and efficient response to emergency events.
- e. There is opportunity to manage Auckland's transport network as a fully integrated, multi modal transport system.
- f. There needs to be better alignment between Waka Kotahi and AT regarding consistent external messaging. The internal approval processes for media messages are different so the cadence and content of messaging is inconsistent (see section 4.5).
- g. The processes in place are not supporting consistency between Waka Kotahi and AT. In many circumstances each organisation relies on its own processes and systems. An example is that there are different media teams, with different approval processes. To achieve common messaging, Waka Kotahi's Auckland Northland Director of Regional Relationships connected with AT's acting CE on Saturday, 28th to align external messaging. This was reliant on key individuals rather than having processes in place to achieve the outcome.

4.1.2 Recommendation 1 - ATOC's Role

There is an opportunity to refresh the Partnering Agreement and re-set ATOC's purpose, be clear on its remit and review its goals and objectives and set commensurate levels of service and include the following specific actions:



- a. One network - develop alignment between Waka Kotahi and AT on the outcomes they are collectively trying to achieve by having one traffic operations centre in Auckland and define what 'one network' really means.
- b. Purpose – opportunity for Waka Kotahi and AT to be clear, and align on, the purpose of ATOC in the current operating environment and being positioned for the future. In advance of this review, Waka Kotahi to consider the role of ATOC and the Wellington Transport Operations Centre including primary function.
- c. Jointly consider ATOC's scope, what it can and cannot do, including whether ATOC should be exclusively Auckland focussed and whether the JV arrangement is appropriate going forward.
- d. Goals – review the goals stated in the ATOC Partnering Agreement. Ensure they are relevant and future proofed with sufficient detail to understand what success looks like).
- e. Levels of service – develop updated levels of service to achieve the goals. An example could be extending the ability to provide social media updates.
- f. Establish a one customer / one network reporting framework which measures ATOC's achievement against defined Key Result Areas and Key Performance Indicators.

4.2 Common operating procedures and processes

Waka Kotahi and AT have similar, but different, systems and processes for recording, reporting and communicating information. There needs to be an integrated, common operating model allowing more effective and efficient processes within ATOC.

ATOC is a joint venture between two organisations (Waka Kotahi and AT) that have similar responsibilities for managing, maintaining, and operating transport networks, each having its own systems, processes and procedures. ATOC has developed over time to accommodate the unique aspects of each organisation.

During the weather event, the significant volume of information put pressure on individuals as well as systems and processes, to the point ATOC was unable to keep pace with collating and updating information to both organisations meaning the information being provided to stakeholders (e.g., Auckland Emergency Management) and to customers could not be relied upon.

4.2.1 Observations and Insights

- a. Intelligence is a key function of the CIMS model. It provides the other CIMS functions with a detailed understanding of the incident and how it could potentially develop.
- b. There was a lack of useable intelligence during the event, particularly during the first 24hrs, due to the speed that incidents on the network were occurring and the inability for field crews to undertake assessments, collate the information and supply it to the Intelligence team in ATOC.
- c. The Intelligence team were attempting to build a basic, technological (GIS) tool during the event to provide better quality information to Auckland Emergency Management (lifelines), the Public Information Manager and the rest of the IMT.
- d. The volume of information on the night of the 27th January, meant that the routine process for capture of information in the field, communicating back to ATOC, updating TREIS and RiskShield could not cope. Staff were overwhelmed with the volume of data.
- e. Incident detection and field data collection / reporting.



- There are different systems being used in Auckland. AT, through their Road Corridor Maintenance team and contractors, and Waka Kotahi, via the Auckland System Management Alliance, have different tools to assess, collate information and report incidents on the network. There is a need to develop a common tool that provides more efficient assessment of the status of the network.
 - It was reported that different Road Corridor Maintenance contractors use different systems to record the information making it challenging to collate the data and provide it to the Intelligence team in a consistent useable format.
 - There were significantly more issues on the AT network compared to the state highway / motorway network. There were approximately 2,000 slips on AT's network and the speed and volume of issues during the initial 24hrs was unprecedented.
 - The Auckland System Management Alliance use a separate system, called D4H, for incident reporting and intelligence. This requires triple handling from a tracking sheet per incident to D4H to TREIS (see next).
- f. Updating Waka Kotahi and AT's incident reporting systems:
- Waka Kotahi uses TREIS to provide real time information on events / incidents, including general warnings, on the state highway network. This information is used to update Waka Kotahi's Journey Planner, update Waka Kotahi's website and provide information for messaging via social media. Options to replace TREIS have been investigated.
 - Prior to updating Waka Kotahi's Journey Planner, each incident requires verification. This was a particular problem during the Auckland Anniversary weather event due to the number of incidents and ability for the teams to verify the information.
 - AT uses RiskShield to record events / incidents on their network. This information is used to provide updates to AT's website and social media messaging.
 - RiskShield was bypassed as the system could not be updated fast enough.
 - Having two similar, but different systems, is inefficient. AT is currently investigating options to replace RiskShield and potentially TREIS (in Auckland).
- g. Turning data into Intelligence:
- Ineffective routine processes cannot be scaled effectively during an emergency event. Therefore, the Intelligence function was not able to analyse the information and make recommendations. Time was spent cleansing and validating the data and creating tools during the response stage burdening IMT resources. The result was that the Intelligence function was unable to support effective decision making.
- h. Provision of network status, incidents and detour information:
- Waka Kotahi uses different platforms to provide information to customers including Journey Planner for state highways as their one source of the truth. Waka Kotahi also uses social media, website updates as well as live / written updates to radio and television.
 - There was insufficient resource able to update Journey Planner for an event of this scale. In addition, there was a technical issue whereby the Journey Planner website stopped functioning / updating. The two issues resulted in the information available to customers and stakeholders being unreliable.



- o AT uses similarly named Journey Planner for public transport (via a website or mobile app) and also other media channels, including social media similar to Waka Kotahi.
- o Google uses information from Waka Kotahi and AT to update Google maps. This information was inconsistent including detour routes. Anecdotally a lot of network users use Google rather than access different platforms. Both Waka Kotahi and AT have a representative who liaises with Google to try to ensure the information is consistent.
- i. Although not a focus of this review, it is worth noting that there are inconsistencies between the Wellington Traffic Operations Centre and ATOC operate e.g., approach to standard operating procedures, ability to update social media, provision of road closure information.

4.2.2 Recommendation 2 - Common Operating Procedures and Processes

Develop an integrated, common operating model allowing more effective and efficient processes within ATOC and include the following specific actions:

- a. Develop a common incident reporting tool to ensure the Auckland System Management Alliance, AT's Road Corridor Maintenance contractors and public transport are reporting consistent information to ATOC. Explore options to have a single real time event / incident logging and management system .
- b. There is a need to develop a common tool that provides more efficient assessment of the status of the network to improve accurate and informed decision making. This can be used to better inform the other functions within the IMT including Public Information Management, but also Auckland Emergency Management and others.
- c. Explore options to integrate technology systems to enable faster updates when information is available and reduce duplication of communication messaging, approvals and channels e.g., webpages, journey planning tools, social media, media spokespeople across all teams including the Auckland System Management Alliance, Road Corridor Maintenance, ATOC and public transport.

4.3 Roles, Responsibilities and Resourcing

ATOC is resourced to deliver a level of service that has developed over time based on evolving expectations (see Recommendation 1 above). Generally, the resource level is adequate to deliver routine services including unplanned events. However, the events in late January placed the team under significant pressure particularly as some staff were also experiencing personal issues relating to the flood event.

There was significant reliance on key people who worked extended hours affecting personal health and wellbeing.

4.3.1 Observations and Insights

- a. Due to the long weekend, a number of people were in acting roles. Preparedness for the role in an emergency event was varied. This was particularly prevalent within Waka Kotahi with the following acting roles: Chief Executive, General Manager Transport Services, National Media Manager, Regional Media Manager, Regional Communications and Engagement Manager, Regional Manager Maintenance and Operations and others.
- b. To respond appropriately over the duration of the event (considering the effects of Cyclone Hale then Cyclone Gabrielle) key individuals were working excessive hours without a break. Reports of working more than 60 hours was not uncommon. There were examples of localised recognition including Time Off In Lieu, but this was inconsistent.



- c. Some personnel are better suited to routine, planned and unplanned events and others better suited to rapidly evolving emergency events. Consideration needs to be made on whether individuals are naturally suited to the task in hand.
- d. Logistics during the event was critical including availability of trained people, managing hours of work / fatigue, wellbeing checks.
- e. Except for ATOC's control room staff, other teams generally work during normal business hours, Monday to Friday with a few exceptions. However, personnel do work outside of these hours when required but there is a reliance on people's availability and goodwill to do this.
- f. Waka Kotahi's web-publishing team are rostered to enable regular updates which is necessary during these rapidly evolving events.
- g. Due to location of some key Waka Kotahi staff (e.g., Wellington, Northland, Waikato) during the event, AT staff were more visible which created some tension. A better understanding of which roles are involved and where they are based, will provide confidence to the wider Auckland team that there is sufficient engagement and support.
- h. There had been a lack of practical scenario-based CIMS exercises involving all levels of ATOC including the ATOC Joint Management Board. Due to Covid and personnel changes, exercises had largely been confined to desktop, lacking the reality of an actual emergency event. Generally, there has been good engagement and participation from ATOC and the Day of Operations team but engagement from others could be improved.
- i. The Auckland Travel Information team were resourced to issue messaging for special events. The operators are not communications experts and would require additional upskilling if the expectations of the role changes to include a greater level of communications support.
- j. There was a high reliance on individuals with institutional knowledge which creates a vulnerability if these individuals are unavailable.
- k. There needs to be better role clarity and expectations during the response phase. This includes roles external to the IMT.

4.3.2 Recommendation 3 - Roles, Responsibilities and Resourcing

The following recommendations highlights opportunities to improve the resilience of the team during future emergency events.

- a. Review resource requirements in line with the agreed levels of service (see Recommendation 1 above). As an example, this could include reviewing who has access to social media channels, who is appropriately trained to update social media including opportunities for cross training (see below) or utilising Wellington Transport Operations Centre for Waka Kotahi channels.
- b. Ensure there is sufficient trained and experienced personnel to cover extended periods. This not only includes people involved in the IMT, but also includes the Auckland Travel Information Team, communications and engagement, media etc.
- c. Develop and implement wellness checks during extended events including an ability to address any issues identified e.g., providing additional support, rostering change of personnel.
- d. Review and update job descriptions and employment agreements for all staff involved in unplanned event response to include requirements to be rostered, on standby or work in shifts, compensating staff as appropriate. This will improve clarity on expectations of the role and reduce reliance on individuals.



- e. Implement scenario based practical exercises that replicates emergency events. These are to include all personnel involved including governance and other executive level senior leaders. Include representatives from Auckland Emergency Management and emergency services as appropriate to build relationships for future events.
- f. Review who requires CIMS training and to what level and undertake a gap analysis. This will include personnel outside of ATOC who have a role during response to an unplanned event e.g., AT's Road Corridor Maintenance team, Public Information Managers. Ensure the training is curated for ATOC. Put a system in place to identify when refresher training is required and to provide training to new team members. Governance also to be included. This recommendation extends to other relevant non-CIMS training to improve confidence and robustness of response during an emergency event.

4.4 Incident Response – Tactical & Operational

There needs to be greater clarity and understanding of the IMT function and individual roles within it. There also needs to be sufficient people trained and experienced to fulfil these functions, particularly during an extended period.

4.4.1 Observations and Insights

- a. The decision to stand up a partial IMT earlier in the day on the 27th January for the Elton John enabled effective transition to the weather event. There were two separate Incident Controllers for the Elton John Concert and the weather event.
- b. On Friday, 27th January, at around 7.45pm the Group Manager ATOC initiated an Executive Assessment Team (Group Manager ATOC, Lead Advisor Emergency Management and the Senior Manager Maintenance and Operations) call and agreed to stand up a National Emergency Response Team due to Northland and Auckland being cut off from each other. The first meeting was at 8.45pm, with the first sitrep being issued at 9.30pm. Soon after, there was confirmation to the Minister of Transport that a National Emergency Response Team had been stood up. There needs to be further reflection on whether this decision could have been made earlier.
- c. The process to establish a Waka Kotahi National Emergency Response Team is well understood and works efficiently. There is opportunity to extend a similar level of understanding between the respective organisations (Waka Kotahi, ATOC and AT) when standing up an IMT at ATOC. There is also an opportunity to have a single escalation process for emergency events in Auckland which initiates relevant responses from both organisations e.g. AT's Crisis Management Plan.
- d. The interrelationship between the National Emergency Response Team and the ATOC IMT requires clarification. The National Emergency Response Team focussed solely on state high-ways and had little interest on the state of the rest of the Auckland network during the event. The National Emergency Response Team required a Liaison Officer from ATOC but did not request any updates. They relied on the Auckland System Management Alliance to provide updates on the state highway network in Auckland.
- e. Waka Kotahi's Executive, including the acting Chief Executive, and other Senior Leaders who were not actively involved in the event earlier in the day or located in Auckland, were unaware of the severity of the event. The Executive Assessment Team could also reflect on whether they should have informed Waka Kotahi's Executive earlier.
- f. Waka Kotahi's acting Regional Media Manager (who is based ordinarily outside of Auckland and was undertaking a dual role) was not contacted by the IMT. Instead, they were informed



by the acting National Media Manager (who was based in Wellington) who had been contacted by the National Communications & Engagement Manager (who was on leave in South Island). There needs to be a process of who needs to be contacted and when. The Regional Media Manager did not have access to a current contact list and was not familiar with who they needed to contact.

- g. The CIMS structure approach is based on 'Command- and-Control' which conflicted with senior leaders' expectations from both organisations during the night of the 27th January. Due to the evolving nature of the event, there were requests for frequent updates as well as instructions issued to the IMT. Attempting to provide information and respond to these instructions took the IMT's focus away from managing the event.
- h. If a similar event occurred in the future, consider an interface resource between the respective organisations including the National Emergency Response Team (if stood up) and AT's Crisis Management Team.
- i. The severity and duration of the event placed high demands on the IMT and Incident Controller(s) specifically. Extended hours under a high-pressure environment took its toll on individuals.
- j. Later in the event (early the following week) the planning was far more effective. Rosters were in place including less experienced people to provide back-up and learning opportunities.
- k. The Auckland System Management Alliance has a close working relationship with ATOC with staff able to perform IMT functions including Incident Controller. A number of Auckland System Management staff are co-located at ATOC enabling improved communication and efficient response. Consider a similar role(s) for AT's Road Corridor Maintenance team to better respond to future events.
- l. The planning and intelligence functions were undertaken by the same person. Dependent on the scale of the event and response required, these functions should be separate.
- m. Interaction with Auckland Emergency Management:
 - o ATOC is responsible for joint representation at Auckland Emergency Management on behalf of AT and Waka Kotahi. The Auckland Emergency Management Liaison Officer roles are part time (within AT) and needs to be formalised with appropriate training and role clarity. The Auckland Emergency Management Liaison Officer role is critical and requires personnel who have sufficient knowledge, skills and influence to make decisions and understand consequences from a network and emergency management perspective.
 - o An Auckland Emergency Management Liaison Officer representative was physically based at Auckland Emergency Management during the event and was the point of contact with ATOC which was considered to be a positive approach, adding value to both organisations.
 - o There appeared to be communication issues between ATOC and Auckland Emergency Management, particularly on the 27th January. The first call between ATOC and Auckland Emergency Management was around 5pm. Auckland Emergency Management was then in briefings until 8pm, and reportedly difficult to contact. Auckland Emergency Management were unable to provide a response plan to ATOC.
 - o There were issues with the timing of ATOC's IMT and the Auckland Emergency Management IMT meetings, with clashes occurring making it challenging to attend and provide information updates. Cadence of meetings needs to be established to gather intelligence and provide information to Auckland Emergency Management.



- Feedback during the interviews was that the Auckland Emergency Management usually provides good direction to support agencies but lacked experience during the early stages of the emergency event.
 - There needs to be ongoing strengthening of relationships with Auckland Emergency Management outside of an emergency situation, focussed on expectations, particularly regarding information from ATOC to feed into the Auckland Emergency Management.
 - Timely, accurate information is important to Auckland Emergency Management. There were occasions when they were referred to the website(s) for latest information instead of it being provided in a desired format.
 - A question was raised as to whether there was the correct level (seniority) of representatives at Auckland Emergency Management by ATOC.
 - There needs to be better communication between Auckland Emergency Management, Waka Kotahi and AT when considering issuing public travel advisory messages. There needs to be joint understanding of the impacts on the transport system and plan accordingly.
- n. Approval was given by the Group Manager ATOC to hire a helicopter for early on Saturday 28th, to gain a better understanding of the impacts of the event on the network but this decision was overturned which undermines authority and disempowers.
- o. Public Information Management:
- The Public Information Management function in the IMT is critical to enable development of consistent messaging to the public. There were a number of issues raised during the interviews. There is an opportunity to improve how the Public Information Management function works within an ATOC IMT ensuring integrated and consistent messaging between Waka Kotahi and AT.
 - The Public Information Manager roles in the ATOC IMT were undertaken by AT personnel who also had their regular roles. Personnel undertaking this function need to be released from their routine activities during high intensity events.
 - It was reported that personnel who performed the Public Information Manager function were not formally CIMS trained.
 - There is opportunity for specialist Public Information Management roles to ensure appropriate messaging is developed for specific channels e.g., customer, social media, website.
 - The Waka Kotahi Public Information Manager was not part of the ATOC IMT and operated separately from the other Public Information Managers.
- p. Public Transport:
- There is inconsistency of information on the effects of the emergency event on the public transport network including public transport services compared with the rest of the transport network e.g., AT do not have a mechanism to capture number of disruptions on the public transport network which in turn affects the ability to provide information to customers via the mobile app or the Passenger Information Displays (PIDs).
 - It was challenging for the public transport liaison officers based at ATOC to have sufficient capacity to run the network as well as update the IMT.



- Due to significant flooding, some bus services needed to be cancelled or re-routed. There was some discussion on whether bus drivers should be instructed to stop (safely), return to the depot if possible or continue if safe to do so. The latter option was adopted. There was concern that if services were halted, customers would be stranded with few options to get home safely.

4.4.2 Recommendation 4 - Incident Response

Undertake a review of IMT resource including training and experience. There needs to be sufficient people trained and experienced to fulfil these functions, particularly during an extended period. Additional guidance and templates are required to effectively manage emergency events in the future.

- a. Preparedness – known network risk areas:
 - There are now known areas of the network that are prone to flooding during severe weather events. As a preparedness function, the following options could be implemented prior to the event, including:
 - Capital improvements including improved drainage, raising levels, lifting controllers etc.
 - Pre-event catchpit clearing.
 - Standby generators (via maintenance contractors) for controllers that are often affected by flood waters.
 - Develop public transport plans for Day of Operations to implement to avoid known flood risks e.g., sections of the Northern Busway.
 - Early closure of roads known to flood and implement detours (before flooding occurs).
- b. Clarify ATOC's role in a National Emergency Response Team including attendance at meetings and provision of information and updates.
- c. Maintain a register of personnel who are appropriately trained and experienced to undertake a defined role within the IMT. This will assist the IMT logistics function to plan resource requirements and availability.
- d. When developing rosters, consider suitability of personnel specific to the emergency event. More experienced personnel may be better suited to the initial response and others, who are less experienced, may perform better later in the response cycle.
- e. Consider developing an emergency event response portal where all relevant information is maintained for currency and which is accessible by those involved in the response, this could include:
 - Flow chart(s) including escalation process e.g., Tactical Assessment Team, IMT, Executive Assessment Team, AT's Crisis Management Team.
 - Links to role cards for each IMT role (see below).
 - Escalation processes, who needs to be informed, consulted etc. Consider reviewing the escalation process to ensure it is fit for purpose.
 - Maintain a centralised database of key internal and external stakeholders including current contact details.
- f. Develop a set of role cards for each IMT role to enable the IMT to undertake their functions effectively and provide clarity to those who may interact with it.



- g. Ensure individuals have only one function within the IMT and release them from their day job if possible. This may depend on the scale of the event.
- h. The Public Information Management function needs further review. Consider:
 - o Having a single Public Information Manager coordinating other Public Information Management roles from Waka Kotahi and AT to support consistency in messaging.
 - o Ensuring Public Information Managers are trained and understand their role.
 - o Having specialised Public Information Managers reporting to the IMT Public Information Manager e.g., social media, website. Public Information Managers to engage and develop relationships with Public Information Managers from other organisations e.g., Auckland Emergency Management, Emergency Services, KiwiRail etc.
- i. Implement hot/cold debriefs to manage lessons following emergency events. Centralise findings and pro-actively manage actions.
- j. Review accessibility requirements including physical access to ATOC (swipe cards), ability to log in to ATOC, AT and Waka Kotahi systems at the office or from home.
- k. Consider how public transport can be better integrated during the response phase in an emergency event, including:
 - o Sufficient capacity to run the network as well as providing information to the IMT i.e., ability to collate information on incidents, developing templated customer communications, developing templated information for public transport operators, establishing detour Standard Operating Procedures for known flood risk areas etc.
- l. Consider the need for a dedicated role that interfaces with Waka Kotahi and AT to manage internal communication, including keeping the Executive teams updated, allowing the IMT to undertake their defined role.

4.5 Customer Communication

The focus of the IMT earlier in the day on the 27th January, was on the Elton John concert and associated public transport issues including driver shortages and rail block of line. As the rainfall intensity increased, the focus widened to impacts on the transport network across Auckland.

4.5.1 Observations and Insights

- a. Customers' expectations of the level of communication from Government agencies during an emergency event is higher than normal. There needs to be an ability to scale quickly and provide accurate and consistent messaging.
- b. Customers were trying to access information from a variety of sources including Waka Kotahi, AT, Google, Facebook, Twitter etc. ATOC lacked the ability to provide social media updates past 7.30pm on the 27th January.
- c. ATOC is not resourced to provide social media updates out of hours (6am-7pm, Mon-Fri). Outside of these hours customers are directed to Journey Planner for the state highway network but there is no option available for AT. Public Transport information can only be updated between 6am-9pm.



- d. During routine operations, there is inability to cover the full media cycle (5am-10pm). This level of service needs to be reviewed.
- e. There were requests from Waka Kotahi external to ATOC to access social media to provide updates who were Public Information Management trained but these were not formally requested via the IMT.
- f. ATOC produced Situation Reports (sitreps) for the ATOC IMT and Waka Kotahi produced different sitreps as part of the National Emergency Response Team.
- g. There was a question regarding the quality of information provided in the sitreps. Public Information Managers wanted to be able to lift the relevant information out of the report and provide to customers via the various channels. This was not possible and information was required to be supplemented or re-written. There is an opportunity to develop exemplars.
- h. There was feedback that suggested there was insufficient information in the sitreps to meet Auckland Emergency Management requirements.
- i. There was a disconnect between AT and Waka Kotahi media teams affecting consistency of information. They each send the other copies of media releases, but they go through their respective hierarchy for approvals. This can affect consistency of messaging and timing.
- j. Bringing together the two teams (Public Transport Information and Auckland Travel Information) has not released the expected benefits, more work is needed in this area.
- k. Social media has been viewed as providing supplementary information to traditional channels. Communication expectations have changed, with customers using social media to access information. There is an opportunity to review how social media is used to provide information and also to gather information from the community, particularly on the status of the network (even if the information is unverified).
- l. Within Waka Kotahi, there appears to be a limited number of people trained in, or willing to provide, live media updates. This falls largely to two people, one in Northland the other in Wellington. A similar issue arose with AT, and it was a challenge to find senior leaders to front media and attend Auckland Emergency Management meetings. The Executive General Manager Safety undertook this function during this event for AT and the Auckland Northland Regional Maintenance and Operations Manager for Waka Kotahi.

4.5.2 Recommendation 5 – Customer Communication

Opportunity to provide customers relevant, reliable and accessible information when they need it to support them in making decisions regarding travel.

- a. Review the operating model for customer communications to clarify purpose and function i.e., provide travel information advice and/or general communications.
- b. Review the levels of service including extending the ability to provide 24/7 information to customers via a variety of channels.
- c. Investigate options for Waka Kotahi and AT to use common communication channels to provide consistent, integrated travel information to customers via ATOC.
- d. Develop customer communication plans for emergency events including templated messages.
- e. Establish an understanding and process with Auckland Emergency Management to ensure messaging is consistent between Auckland Emergency Management, Waka Kotahi and AT.



- f. Better integrate the ATOC Travel Information team and public transport Information team to deliver consistent, reliable information to customers.
- g. Explore opportunities to work more closely with third parties e.g., Google, Waze.
- h. Be clear who is responsible for communications and stakeholder engagement and how this interacts with the IMT.
- i. Consider whether there needs to be a formal Travel Information Liaison Officer role in the IMT.
- j. Consider ATOC media spokespeople who can represent both Waka Kotahi and AT.

4.6 TOC Resilience & Business Continuity Procedures

Although it was not a focus of the review, the following issues and opportunities were raised to improve resilience of ATOC.

4.6.1 Observations and Insights

- a. The flood event raised concerns on the suitability of back-up power generation at ATOC as well as vulnerability of critical pieces of hardware.
- b. There is different levels of service between Wellington Transport Operations Centre and ATOC e.g., Wellington Transport Operations Centre is able to provide social media updates 24/7 via trained operators (shift leads) and has associated Standing Operating Procedures in place.
- c. ATOC commented that due to the number of incidents, inclusion of the AT roading network and integration of public transport means that inter-operability between the two TOCs is unrealistic.
- d. There could be opportunity for Waka Kotahi to improve resilience managing the national state highway network through greater consistency between Wellington Transport Operations Centre and ATOC.

4.6.2 Recommendation 6 - TOC Resilience & Business Continuity Procedures

It is understood that there are several improvements underway aimed at addressing the above, including:

- a. Back-up power generation and moving critical hardware.
- b. Explore opportunities for greater consistency between Wellington Transport Operations Centre and ATOC, particularly in managing state highway operations across the country.



5 Appendix A - Acronyms

Acronym	
AT	Auckland Transport
ATOC	Auckland Traffic Operations Centre
CIMS	Coordinated Incident Management System
IMT	Incident Management Team
TREIS	Traffic Road Event Information System
Waka Kotahi	Waka Kotahi NZ Transport Agency



6 Appendix B – Review Terms of Reference

REVIEW FOLLOWING THE JANUARY 2023 AUCKLAND FLOODING EVENT AND STATE OF EMERGENCY

Terms of Reference – DRAFT

6 MARCH 2023

Sponsor: Chief Executive of Waka Kotahi

PURPOSE

This terms of reference sets out the objectives, scope and approach to complete an independent review of the response by the Auckland Traffic Operations Centre (ATOC) Waka Kotahi and Auckland Transport to the January 2023 Auckland flooding events and state of emergency.

It is intended that this review will help ATOC identify key lessons and opportunities for improvement in the process of incident management including future resource needs and capabilities. The review will also provide Waka Kotahi and Auckland Transport with any lessons to be learned in their Crisis Management process including structure or hierarchy.

CONTEXT [NOTE: ALL FACTS IN CONTEXT ARE TO BE CONFIRMED]

- On Friday 27 January 2023, a significant weather event unfolded in the Greater Auckland region, resulting in unprecedented rainfall levels across Tāmaki Makaurau. This resulted in widespread flooding, significant slips and disruption to the transport network across the city.
- A state of emergency for the Auckland region was declared late on Friday evening.
- The way the transport network was managed in response to the flooding event is of significant public and political interest given the breadth of Waka Kotahi and AT's infrastructure assets and critical roles and responsibilities in managing the Tāmaki Makaurau transport network.
- Waka Kotahi and Auckland Transport have committed to undertaking an independent review including internal and external communications.
- A review into the event response is underway in relation to partner agencies and Auckland Council (AC).

OBJECTIVES

1. The objectives of this independent review are to share experiences and learn from this event with a view to identifying:
 - a. successes;
 - b. areas for improvement in emergency response, resilience and internal/external communication;
 - c. ways to strengthen the tactical incident response framework of ATOC; and
 - d. recommendations to improve the strategic Crisis Management processes of Waka Kotahi & Auckland Transport
2. To build confidence with stakeholders and the community in ATOC, Waka Kotahi and Auckland Transport's commitment to, and capability in, responding to future disruptive events.

SCOPE

The response to the Auckland flooding event in January 2023 by ATOC and Waka Kotahi, with a primary focus on the events of Friday 27 January, along with the broader response that followed over the next five days, up until Wednesday 1 February 2023. The review focus will be on response structures at a local (including the LIMT in Auckland) and national operations level (led by NERT) for ATOC, Waka Kotahi and Auckland Transport.

Questions to be considered in the review:

1. **Determine a factual account of ATOC, Waka Kotahi and AT's response to and management of the emergency event.**
 - a. This includes reviewing:
 - i. the detection, assessment, activation and escalation processes that were used, roles and responsibilities of key individuals involved.
 - ii. the response strategies deployed, interaction with other agencies and internal and external communications.
2. **Identify key learnings to consider roles and responsibilities, capabilities and mindsets, critical processes and information flows.**
 - a. The review will determine what was done successfully and what could have been improved in relation to:
 - i. **Communication** – the timeliness and quality of information within ATOC to the public, stakeholders and senior leadership and Crisis Management teams of Waka Kotahi and AT about the event
 - ii. **Management of the network** – the timeliness of closing affected roads and managing infrastructure impacts
 - iii. **Emergency and Incident Management** – how effective was the setting up and running of the NERT and LIMT, including the interaction between them
 - iv. **Co-ordination and involvement of IMT & CMT** - how effective was the arrangement from initial response
 - v. **Working with external parties** – how effective was the engagement with other external parties who had a role in managing the response.
 - vi. **Resourcing, health, safety, and wellbeing** – in the context of managing repeat crisis/weather events. This includes staffing levels, shift rotations, facilities, technology and support mechanisms.
3. **Assess ATOC, Waka Kotahi and Auckland Transport's readiness for a future significant, disruptive event in the Auckland region as occurred on 27 January 2023.**
 - a. This includes an assessment of ATOC's incident response framework and Waka Kotahi & AT's Crisis Management Framework in preparation for adverse weather events (and other appropriate) scenarios, training and awareness of key personnel, monitoring of potential, emerging events and maintaining business continuity through events.

The review will not include a forensic investigation of all emails and phone records. Reliance will be made on the information provided by interviewees.

APPROACH AND KEY CONSIDERATIONS

This review will:

- Be conducted by an independent reviewer with the requisite skills and experience.
- Actively consider the ongoing nature of the response, and the impact that this is having on key staff and stakeholders involved.
- Follow good practice and will focus on the systemic factors and learnings from the event. The review will not appraise the performance of named individuals and will respect the dedicated effort and contribution by all people involved.
- Document key information and capture relevant information and evidence to store in a central location for easy access.
- The review is subject to the Official Information Act or the Local Government Official Information and Meetings Act. The independent reviewer must be familiar with the principle of availability under those Acts, and the exceptions to disclosure

The final timing and approach will be finalised with the independent reviewer, however it is likely to include a combination of interviews and small group sessions to address the areas in scope, and where possible verifying key facts through documented evidence (e.g. emails, media releases etc.).

Draft findings will be provided to ATOC's Joint Management Board for feedback and accuracy prior to finalisation of a report and presentation for the Chief Executives of AT and WK.

TIMING

The priority must remain on emergency activities, planning the recovery phase and building resilience in the network. The review will commence in late April 2023. The final timing will be confirmed with the sponsor and independent reviewer and a detailed timeline will then be developed to account for key individuals' availability. The scope involves external partner agencies that will require time to engage.

SIGN OFF

The terms of reference have been agreed:

Name	Title	Signature	Date

