



# **Outage Reporting and Mitigation Regulations for the Electronic Communications Sector**

**ECS 07/2024**

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## Citation

These Regulations may be cited as the Outage Reporting and Mitigation Regulations, 2024.

## Part 1: Introduction

### 1.1 Scope and Objectives

In the exercise of the powers conferred upon it by section 8(1)(d) of the Communications Act, 2009, the Utilities Regulation and Competition Authority (“URCA”) hereby issues these Regulations relating to the reporting and mitigation of Outages affecting Public Electronic Communications Networks and Public Electronic Communication Services in The Bahamas.

1.1.1 The objectives of these Regulations are as follows:

- (a) to ensure that URCA is notified by Licensees of Major Planned Outages, Major Emergency Planned Outages, and Major Unplanned Outages in a timely and standardized manner;
- (b) to ensure that URCA receives necessary information from Licensees to assess the magnitude and frequency of Major Planned Outages, Major Emergency Planned Outages, and Major Unplanned Outages;
- (c) to facilitate URCA’s monitoring of Licensees’ service restoration activities with respect to Major Planned Outages, Major Emergency Planned Outages, and Major Unplanned Outages;
- (d) to ensure that URCA receives necessary information from Licensees to identify common recurrent issues adversely impacting the functioning of Public Electronic Communications Networks and Services in The Bahamas;
- (e) to ensure that Licensees conduct in-depth analysis of the root causes of Major Unplanned Outages; and
- (f) to clarify URCA’s powers to require a Licensee to commission and bear the cost of a Compliance Audit to assess whether such Licensee has implemented and complied with relevant industry best practices, standards, specifications, and/or recommendations, in compliance with its duty to mitigate and remedy Outages.

### 1.2 Application

1.2.1 These Regulations shall apply to all Licensees of URCA that have established, maintain, and operate

a Public Electronic Communications Network and/or provide Public Electronic Communications Services pursuant to an Individual Operating Licence or a Class Operating Licence Requiring Registration.

- 1.2.2 These Regulations do not apply in circumstances where a Disaster Emergency has been declared under section 27 of the Disaster Preparedness and Response Act, as in such circumstances, the reporting obligations set out in the Disaster Management Regulations for the Electronic Communications Sector, as issued by URCA from time to time, shall apply.

### **1.3 Entry into effect**

These Regulations shall come into effect on the date of their publication in accordance with section 12 of the Communications Act, 2009.

### **1.4 Definitions**

- 1.4.1 In these Regulations, any word or expression to which a meaning has been assigned in the Communications Act has the meaning so assigned and, unless the context otherwise requires, the following terms will have the following meanings:

- (a) "Auditor" means a suitably qualified and independent person(s) capable of conducting the Compliance Audit.
- (b) "becoming aware" means the point in time at which a Licensee gains actual knowledge or constructive knowledge of a fact or circumstance.
- (c) "Comms Act" means the Communications Act, 2009.
- (d) "Compliance Audit" means an examination of the network components, facilities, systems, personnel, procedures, and any other relevant aspect of a Licensee's network to assess such Licensee's compliance with relevant industry best practices, standards, specifications, and/or recommendations with respect to mitigating and remedying Outages.
- (e) "Critical Infrastructure" includes airports, seaports, Emergency Organisations, national security/emergency preparedness operations, the Royal Bahamas Defence Force and the Royal Bahamas Police Force, Fire Services and any other assets, systems, and networks that significantly impact the social and/or economic well-being of The Bahamas or affect The Bahamas' ability to provide national security.
- (f) "detecting" means becoming aware of an Outage by way of (i) network monitoring systems, network alarms, customer reports, reports from employees, agents, or independent contractors; or (ii) other means by which a Licensee would become aware of the existence of an Outage.

- (g) "Emergency Communication Services" means services offering the Licensee's subscribers the ability to connect in priority, from any service area via any subscriber or public terminal or device, to national pre-defined emergency numbers to communicate in emergency situations, regardless of the status of a customer's subscription status.
- (h) "Emergency Organisations" means in respect of any locality: (a) the relevant public police, fire, ambulance, and coastguard services for that locality; and (b) any other organisation, as directed from time to time by URCA as providing a vital service relating to the safety of life in emergencies.
- (i) "Emergency Planned Outage" means an Outage of Licensee's electronic communications network that is urgently scheduled to address public safety, critical maintenance and/or repair needs.
- (j) "Family Island" means any of those inhabited Islands and Cays situate within the Commonwealth of The Bahamas save and except for the Islands of New Providence, Grand Bahama, Abaco, Eleuthera and Exuma.
- (k) "Licensee" means any licensee of URCA that has established, maintains, and operates a Public Electronic Communications Network and/or provides Public Electronic Communications Services pursuant to an Individual Operating Licence ("IOL") or a Class Operating Licence Requiring Registration ("COLRR").
- (l) "Outage" means a degradation in the ability of an end-user to establish and/or maintain a channel of communication as a result of the failure of, or degradation in the performance of a Licensee's network or service.
- (m) "Planned Outage" means an Outage of Licensee's electronic communications network that is a part of regular operation and maintenance activities, where the Licensee knows at least seventy-two (72) hours in advance that such an event will occur.
- (n) "Public Electronic Communications Network" means an electronic communications network provided wholly or mainly for the purpose of making electronic communications services available to members of the public.
- (o) "Public Electronic Communications Service" means an electronic communications carriage service over a public electronic communications network including –
- (i) Fixed broadband services;
  - (ii) Fixed telephony services;
  - (iii) Mobile broadband services;
  - (iv) Mobile telephony services;
  - (v) Satellite based services; and

- (vi) Pay television services<sup>1</sup>.
- (p) "Reporting Hours" means between 8:00AM (ET) and 8:00PM (ET) on each day of the week.
- (q) "Unplanned Outage" means an Outage that is not a Planned Outage or an Emergency Planned Outage.

## **1.5 Interpretation**

15.1 In these Regulations, unless the contrary appears:

- (a) headings are for convenience only and do not affect interpretation;
- (b) a reference to a statute or other law includes regulations and other instruments under it and consolidations, amendments, re-enactments or replacements of any of them;
- (c) words in the singular include the plural and vice versa;
- (d) words importing persons include a body whether corporate, politic, or otherwise;
- (e) where a word or phrase is defined, its other grammatical forms have a corresponding meaning;
- (f) mentioning anything after include, includes or including does not limit what else might be included;
- (g) words and expressions which are not defined have the meanings given to them in the Comms Act; and
- (h) reference to a person shall include firms or companies.

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<sup>1</sup> Includes free-to-air television services provided by Cable Bahamas Limited.

## **Part 2: Outage Reporting Threshold**

### **2.1 Major Outages**

2.1.2 A Major Outage is any Outage affecting –

(a) 1,000 or more of the Licensee’s customers for the affected Public Electronic Communications Service situate on the Island of New Providence that lasts sixty (60) minutes or longer;

(b) 500 or more of the Licensee’s customers for the affected Public Electronic Communications Service situate on the Islands of Grand Bahama, Abaco, Eleuthera, or Exuma that lasts sixty (60) minutes or longer;

(c) 20 or more of the Licensee’s customers for the affected Public Electronic Communications Service situate on any other Family Island that lasts sixty (60) minutes or longer;

(d) the performance of 5 or more access nodes and/or base stations within a Licensee’s network situate on the Island of New Providence that lasts sixty (60) minutes or longer;

(e) the performance of 3 or more access nodes and/or base stations within a Licensee’s network situate on the Islands of Grand Bahama, Abaco, Eleuthera, Exuma or any other Family Island that lasts sixty (60) minutes or longer;

(f) any Public Electronic Communications Service that is solely provided by a Licensee to customers situate in the geographic area of The Bahamas affected by such Outage, that lasts sixty (60) minutes or longer;

(g) Critical Infrastructure that lasts thirty (30) minutes or longer; or

(h) access to Emergency Communications Services that lasts thirty (30) minutes or longer.

## **Part 3: Mandatory notification of Outages to URCA**

### **3.1 Designation of a person responsible for Outage Reporting**

- 3.1.1 Licensees shall designate a person responsible for the submission of Outage notifications and reports to URCA (“Contact Person”) and shall provide URCA with the person’s title and contact information. The Contact Person shall have the responsibility for the completeness and accuracy of the information contained in the Outage Notifications and Reports.
- 3.1.2 Licensees shall notify URCA in writing of any changes to the Contact Person’s identity and contact details within twenty-four (24) hours of such change.
- 3.1.3 The Contact Person shall certify and sign the Outage Notifications and Reports prior to submitting them to URCA and ensure that the information contained therein is current, complete, and accurate to the best of his/her knowledge and belief.
- 3.1.4 Licensees may designate other specific Contact Persons in each Outage Notification. Should URCA require further information about an Outage, URCA may contact the specific Contact Person for that Outage Notification, if that Contact Person is specified in the most recent notification about the Outage, and/or the default Contact Person designated by the Licensee.

### **3.2 Outage Notification Process**

- 3.2.1 Licensees shall give URCA forty-eight (48) hours’ advanced notice of any Major Planned Outage.
- 3.2.2 Licensees shall give URCA twenty-four (24) hours’ advanced notice of any Major Emergency Planned Outages.
- 3.2.3 The Notice of Major Planned Outage to URCA shall include details of the nature of the public safety, maintenance or the upgrading of the network and the estimated duration of the Planned Outage. Where a Major Planned Outage exceeds the estimated duration for the service and network to be restored set out in the Notice of Major Planned Outage, such Outage shall be considered an Unplanned Outage. The Licensee shall notify URCA in writing, within two (2) hours after becoming aware that the Major Planned Outage is likely to exceed the estimated duration and provide reason(s) for the delay and a new estimated time for restoration of service.
- 3.2.4 The Notice of Major Emergency Planned Outage to URCA shall include details of the critical and/or emergency repairs and the estimate duration of the Major Emergency Planned Outage. Where a Major Emergency Planned Outage exceeds the estimated duration for the service and network to be restored set out in the Notice of Major Emergency Planned Outage, such Outage shall be considered a Major Unplanned Outage. The Licensee shall notify URCA in writing within two (2)



hours after becoming aware that the Major Emergency Planned Outage is likely to exceed the estimated duration and provide reason(s) for the delay and a new estimated time for restoration of service.

- 325 Licensees shall report to URCA in writing any Major Unplanned Outage.
- 326 Within two (2) hours upon detecting a Major Unplanned Outage, the Licensee shall submit an Initial Outage Notification of any such Outage to URCA.
- 327 For Unplanned Major Outages, lasting more than two (2) hours, the Licensee shall submit an Outage Update Notification to URCA periodic Outage Update Notifications every four (4) hours thereafter, until the resolution of the Unplanned Major Outage.
- 328 Licensees shall notify URCA of the resolution of any Unplanned Major Outage no later than two (2) hours after the normal functioning of the communication networks and/or services has been restored by submitting an Outage Resolution Notification to URCA.
- 329 Licensees shall submit to URCA a detailed Outage Report no later than twenty-eight (28) calendar days after the submission of Outage Resolution Notification.
- 32.10 A Licensee may defer its Outage notification obligations herein that become due outside of the Reporting Hours, to the next calendar day.
- 32.11 Where a Licensee elects to defer its Outage notification obligations pursuant to section 3.2.10 above, such Licensee shall submit the requisite Outage notification to URCA on or before 10:00 AM (ET) on the next calendar day.
- 32.12 Licensees shall adhere to all timelines set out in this Part, save and except where a Licensee has made a request for an extension of time to URCA with supporting reason(s) and URCA does not object to such request.

### **3.3 Means of Communication**

- 331 Initial Outage Notifications, Outage Update Notifications, Outage Resolution Notifications and Outage Reports shall be submitted to URCA via e-mail to the contact person designated by URCA to handle such matters or through any other electronic platform so designated by URCA.
- 332 In circumstances where a Licensee is unable to submit Outage Notifications, Outage Update Notifications, Outage Resolution Notifications and Outage Reports by email or through an electronic platform designated by URCA, such Licensee is required to contact URCA by other reasonable means including by telephone. Where such circumstances no longer exist, such Licensee shall immediately comply with its Outage Notification and Outage Reporting obligations herein.

### **3.4 Content of Outage Notifications and Reports**

341 Major Planned Outage Notifications shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.1), and shall contain the following information:

- (a) the Licensee's name;
- (b) the date and time of the Outage;
- (c) the geographical area(s) to be affected by the Outage;
- (d) the number of the Licensee's customers affected by the Outage;
- (e) the network components affected;
- (f) the electronic communications services to be affected by the Outage;
- (g) a description of the Outage and the reasons for its scheduling;
- (h) an estimate duration of the Outage;
- (i) confirmation on whether affected customers were provided 48 hours' advance notice of the Outage and if so by which means of communications; and
- (j) the contact details of the person(s) whom URCA may contact for the purpose of requesting additional information, if different from the default Contact Person designated by the Licensee.

342 Major Planned Emergency Outage Notifications shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.2), and shall contain the following information:

- (a) the Licensee's name;
- (b) the date and time of the Outage;
- (c) the geographical area(s) to be affected by the Outage;
- (d) the number of the Licensee's customers affected by the Outage;
- (e) the network components affected;
- (f) the electronic communications services to be affected by the Outage;
- (g) a description of the Outage and the reasons for its scheduling;
- (h) an estimate duration of the Outage;
- (i) confirmation on whether affected customers were provided 24 hours' advance notice of the Outage and if so by which means of communications; and
- (j) the contact details of the person(s) whom URCA may contact for the purpose of requesting additional information, if different from the default Contact Person designated by the Licensee.

343 Regarding Major Unplanned Outages, Licensees shall complete and submit The Initial Outage Notification in accordance with the template found Annex A (A.3), and such Initial Outage Notification shall contain the following information:

- (a) the Licensee's name;

- (b) the date and time of the Outage;
- (c) the geographical area(s) affected if known to the Licensee at the time of submission of the notification to URCA;
- (d) the electronic communications services to be affected by the Outage if known to the Licensee at the time of submission of the notification to URCA;
- (e) the number of the Licensee's customers affected by the Outage if known to the Licensee at the time of the submission of the notification to URCA;
- (f) a brief description of the cause of the Outage if known to the Licensee at the time of issuing the notification; and
- (g) an estimated time of restoration if known to the Licensee at time of the submission of the notification to URCA.

344 Regarding Major Unplanned Outages, Outage Update Notifications shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.4) and shall provide:

- (a) any update or changes to the information included in the Initial Outage Notification;
- (b) the number of the Licensee's customers affected by the Outage; and
- (c) the estimated time to resolve the Outage.

345 Regarding Major Unplanned Outages, Outage Resolution Notifications shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.5) and shall provide:

- (a) all the information included in the Initial Outage Notification and Outage Update Notifications together with any further changes or updates since the most recent Outage Update Notification;
- (b) the actual time of restoration; and
- (c) details on the corrective measures applied (if any) by the Licensee.

346 Regarding Major Unplanned Outages, Outage Reports shall be submitted by Licensees to URCA in accordance with the template in Annex A (A.6) and shall inform URCA of the detailed root causes of the Outage, and any mitigation actions taken by the Licensee to avoid a future recurrence of the Outage(s) of a similar nature. The Outage Report shall include:

1. A chronology of events detailing the nature of the Outages including, at a minimum;
  - a. Technical details of all points of failure;
  - b. The time at which each failure occurred;
  - c. The effect of each failure;
    - i. Network activity and service provision;
    - ii. The number of customers impacted in the respective service areas;
    - iii. Services impacted in each of the respective service areas.
  - d. The time at which relevant personnel would have been made aware of the failure.

2. Details of the root cause(s) of the Outage(s), including to the extent within the Licensee's knowledge.
3. Details of all systems in place, both physical and procedural, to prevent Outages of this nature, and the extent to which those systems performed as intended or failed to perform as intended, thereby contributing to, or mitigating the extent of, the Outages.
4. Steps taken to restore network functionality after the Outages, including where appropriate escalation of the problem and any extraordinary actions taken.
5. Network Resilience Considerations:
  - a. Single Point(s) of Failure
  - b. Redundancy
  - c. Availability and proper functioning backup equipment or infrastructure
  - d. Capacity and proper functioning of network components and software
  - e. Power supply (including back-up)
  - f. Availability of replacement
  - g. Any other network resilience systems.
6. Any additional safeguards or changes to the Licensee's standard operating procedures that the Licensee proposes to implement in order to better guard against future Outages of this nature.

## **Part 4: Mitigation and Remedying of Outages**

### **4.1 Duty to Mitigate and Remedy Outages**

4.1.1 A provider of a Public Electronic Communications Network or a Public Electronic Communications service shall implement and comply with relevant industry best practices, standards, specifications, and/or recommendations for the purpose of –

- (a) identifying risks of Outages occurring;
- (b) reducing risks of Outages occurring; and
- (c) preparing for the occurrences of Outages.

4.1.2 A provider of a Public Electronic Communications Network or a Public Electronic Communications service shall implement and comply with relevant industry best practices, standards, specifications, and/or recommendations to –

- (a) ensure that Outages are remedied as soon as reasonably practicable; and
- (b) mitigate adverse effects from Outages.

### **4.2 Compliance Audit**

4.2.1 Where URCA has reasonable grounds to suspect that a Licensee is failing or has failed to comply with its obligations under sections 4.1.1 and 4.1.2 of these Regulations, URCA may request such Licensee to commission and bear the cost of a Compliance Audit by an Auditor to assess whether such Licensee is complying with its obligations under sections 4.1.1 and 4.1.2 of these Regulations.

4.2.2 Where URCA requests a Licensee to commission a Compliance Audit under this Part, the Licensee concerned shall prepare a Request for Proposal and Terms of Reference (“RFP-TOR”) seeking an Auditor to conduct the Compliance Audit and submit such RFP-TOR to URCA for review and URCA’s non-objection within thirty (30) calendar days of the date of URCA’s request under section 4.2.1 above.

4.2.3 Within fifteen (15) calendar days of a Licensee’s receipt of URCA’s non-objection to the RFP-TOR, the Licensee concerned shall issue the RFP-TOR for responses and advise URCA of the date of the issuance of the RFP-TOR.

4.2.4 Within thirty (30) calendar days of a Licensee’s issuance of the RFP-TOR, such Licensee shall submit the name(s), respective curriculum vitae(s), the Proposal and Terms of Reference and any other relevant information with respect to the Auditor that the Licensee proposes to engage to conduct

the Compliance Audit to URCA for review and URCA's non-objection.

- 4.2.5 Within thirty (30) calendar days of the Licensee's receipt of URCA's non-objection to the Licensee's proposed Auditor, the Licensee shall engage such Auditor to conduct the Compliance Audit and advise URCA of the date of the engagement of the Auditor.
- 4.2.6 Where URCA objects to the Licensee's engagement of a proposed Auditor, the Licensee concerned shall submit the name(s), respective curriculum vitae(s), the Proposal and Terms of Reference and any other relevant information with respect to an alternative proposed Auditor for URCA's review and non-objection within thirty (30) calendar days of URCA's objection under section 4.2.4 above.
- 4.2.7 Where URCA requests a Licensee to commission a Compliance Audit under this Part, the Licensee concerned shall fully co-operate with the Auditor and provide unrestricted access to all relevant information, personnel, network components, systems and facilities as deemed necessary by the Auditor.
- 4.2.8 Where URCA requests a Licensee to commission a Compliance Audit under this Part, such Compliance Audit shall define and implement a suitable audit methodology, including data sampling, interviews with the Licensee's relevant personnel (employees, agents, and contractors), and any other methods deemed necessary by the Auditor.
- 4.2.9 Licensees shall submit a detailed Compliance Audit report prepared by the Auditor setting out the findings of the Compliance Audit, and any recommendations and corrective measures to address identified non-compliance issues ("Report") to URCA within ninety (90) calendar days of the date of the engagement of the Auditor.
- 4.2.10 At the time of the submission of the Report to URCA, a Licensee may submit a written request to URCA for the deferral and/or rejection of any recommended corrective measure(s) set out in the Report. In this regard, the Licensee shall provide supporting reason(s) for its request, including evidence demonstrating undue burden, technical limitations, and/or an alternative measure(s) that achieve the same objective. URCA shall notify the Licensee in writing whether it objects or does not object to the Licensee's request.
- 4.2.11 Save and except where URCA does not object to Licensee's request pursuant to section 4.2.10 above, Licensees shall implement all recommendations set out in the Report and provide a report to URCA with supporting evidence demonstrating the corrective actions taken by the Licensee as recommended in the Report within ninety (90) calendar days of the date of the Report.
- 4.2.12 Licensees shall adhere to all timelines set out in this Part, save and except where a Licensee has made a request for an extension of time to URCA with supporting reason(s) and URCA does not object to such request.
- 4.2.13 Where URCA requests a Licensee to commission a Compliance Audit under this Part, the Licensee

concerned shall provide updates (including relevant information and documents to URCA) on the progress of the Compliance Audit, where requested to do so by URCA.

## **Part 5: Sanctions**

5.1.1 Failure to comply with any provision of these Regulations by a Licensee may result in URCA taking the appropriate enforcement action available under the Comms Act against such Licensee.

## **Part 6.        Periodic Review**

6.1.1    URCA will review these Regulations as necessary to ensure that they remain effective and relevant.



## Annex A: Outage notification and report templates

### A.1 Major Planned Outage Notification Template

#### Details of the Licensee

**Name of the Licensee:**

**Name of the Contact Person in case further information is required by URCA:**

**Telephone:**

**E-mail address:**

#### Details on Planned Outage

**Date and time scheduled for the Outage:**

**Geographical area(s) affected:**

**Number of customers affected:**

**Network components affected:**

**Have affected customers been provided 48 hours' advance notice of the and if so by which means of communications:**

**Electronic communications services affected:**

**Estimated duration of the Planned Outage:**

**Description of the reason(s) for the Outage:**

**I, the undersigned, hereby certify that, to the best of my knowledge, the information provided herein is true and accurate.**

Name:

Signature:

Date:

## A.2 Major Emergency Planned Outage Notification Template

### Details of the Licensee

**Name of the Licensee:**

**Name of the Contact Person in case further information is required by URCA:**

**Telephone:**

**E-mail address:**

### Details on Planned Outage

**Date and time scheduled for the Outage:**

**Geographical area(s) affected:**

**Number of customers affected:**

**Network components affected:**

**Have affected customers been provided 24 hours' advance notice of the Outage and if so by which means of communications:**

**Electronic communications services affected:**

**Estimated duration of the Outage:**

**Description of the reason(s) for the Outage:**

**I, the undersigned, hereby certify that, to the best of my knowledge, the information provided herein is true and accurate.**

Name:

Signature:

Date:

## A.3 Major Unplanned Outage Notification Template

### Details of the Licensee

**Name of the Licensee:**

**Name of the Contact Person in case further information is required by URCA:**

**Telephone:**

**E-mail address:**

### Minimum information for Initial Outage Notification

**Date and time of the onset of the Outage:**

**Geographical area(s) affected (if known):**

**Number of customers affected (if known):**

**Network components affected (if known):**

**Have affected customers been notified of the Outage and if so by which means of communications:**

**Electronic communications services affected (if known):**

**Description of the reason(s) that caused the Outage (if known):**

**I, the undersigned, hereby certify that, to the best of my knowledge, the information provided herein is true and accurate.**

Name:

Signature:

Date:

## **A.4 Major Unplanned Outage Update Notification Template**

**Name of Licensee:**

**Number of customers affected:**

**Estimated time to resolve the Outage:**

**Geographical area(s) affected:**

**Electronic communications services affected:**

**Any further particulars on the Outage:**

**Description of the reason(s) that caused the Outage (if known):**

**I, the undersigned, hereby certify that, to the best of my knowledge, the information provided herein is true and accurate.**

Name:

Signature:

Date:

## **A.5 Major Unplanned Outage Resolution Notification Template**

**Name of Licensee:**

**Actual time of restoration:**

**Particulars of the Outage (including any updates and/or changes since the submission of the most recent Outage Update Notification):**

**Details on corrective measures applied (if any):**

**I, the undersigned, hereby certify that, to the best of my knowledge, the information provided herein is true and accurate.**

Name:

Signature:

Date:

## A.6 Final Outage Report

**Name of Licensee:**

**Root Cause Analysis including:**

1. **A chronology of events detailing the nature of the Outage(s) including, at a minimum;**
  - a. **Technical details of all points of failure;**
  - b. **The time at which each failure occurred;**
  - c. **The effect of each failure;**
  - i. **Network activity and service provision;**
  - ii. **The number of customers impacted in the respective service areas;**
  - iii. **Services impacted in each of the respective service areas.**
  - d. **The time at which relevant personnel would have been made aware of the failure.**
2. **Details of the root cause(s) of the Outage(s), including to the extent within the Licensee's knowledge**
3. **Details of all systems in place, both physical and procedural, to prevent Outages of this nature, and the extent to which those systems performed as intended or failed to perform as intended, thereby contributing to, or mitigating the extent of, the Outages.**
4. **Steps taken to restore network functionality after the Outages, including where appropriate escalation of the problem and any extraordinary actions taken.**
5. **Network Resilience Considerations:**
  - a. **Single Point(s) of Failure**
  - b. **Redundancy**
  - c. **Availability and proper functioning backup equipment or infrastructure**
  - d. **Capacity and proper functioning of network components and software**
  - e. **Power supply (including back-up)**
  - f. **Availability of replacement**
  - g. **Any other network resilience systems.**
6. **Any additional safeguards or changes to the Licensee's standard operating procedures that the Licensee proposes to implement in order to better guard against future Outages of this nature.**

**I, the undersigned, hereby certify that, to the best of my knowledge, the provided information is true and accurate.**

Name:

Signature:

Date: