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| **NWC OT Cybersecurity Backup and Recovery Policy** | |
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**Reference Documents**

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| ECC-1:2018 | National Cybersecurity Authority  Essential Cybersecurity Controls (NCA ECC) |

**Document Roles and Responsibilities**

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**Glossary**

| **Word or Phrase** | **Explanation** |
| --- | --- |
| **Access** | Ability to make use of any information system resource. |
| **Application** | A software program hosted by an information system. |
| **Asset** | A major application, general support system, high impact program, physical plant, mission critical system, personnel, equipment, or a logically related group of systems. |
| **Asset Register** | A list of all information assets, which includes their ownership, location, description, name, and value. |
| **Asset Owner** | A person or group of people who have been identified by management as having responsibility for the maintenance of the confidentiality, availability, and integrity of that asset. The asset owner may change during the lifecycle of the asset. |
| **Audit** | Independent review and examination of records and activities to assess the adequacy of system controls, to ensure compliance with established policies and operational procedures. |
| **Availability** | Ensuring timely and reliable Access to and use of information. |
| **Backup** | Copying data to protect against Loss of Integrity or Availability of the original. |
| **Business Continuity Plan (BCP)** | A Plan defining the steps required to Restore Business Processes following a disruption. The Plan will also identify the triggers for Invocation, people to be involved, communications, etc. |
| **Change** | The addition, modification, or removal of anything that could have an effect on operations. |
| **Change Management** | The Process is responsible for controlling the lifecycle of all Changes. The primary objective of Change Management is to enable beneficial Changes to be made, with minimum disruption to OT process. |
| **Compliance** | Ensuring that a Standard or set of Guidelines is followed. A means of conforming to a rule, such as a specification, policy, standard or law. |
| **Confidentiality** | The property that information is not made available or disclosed to unauthorized individuals, entities, or processes. |
| **Cryptography** | The art of protecting information by transforming it (encrypting it) into an unreadable format. |
| **End point protection** | Safeguards implemented through software to protect end-user machines such as workstations and laptops against attack (e.g., antivirus, antispyware, anti-adware, personal firewalls, host-based intrusion detection and prevention systems, etc.). |
| **Encryption** | The translation of data into a secret code. Encryption is the most effective way to achieve data security. |
| **Immediate Line Manager** | An individual responsible for network resources (people, data, processing capability) who is charged with conducting business of an organization. |
| **Incident** | Vulnerability and threat together result in an incident. An information security incident is indicated by a single or a series of unwanted or unexpected information security events that have a significant probability of compromising business operations and threatening information security. |
| **Integrity** | The property of safeguarding the accuracy and completeness of assets. |
| **Network** | A network is a group of two or more computer systems linked together. |
| **Owner** | The organization unit department/activity/ business unit which has its own policies and procedure and is responsible for its development and implementation.  The owner will be the head of the department/area/activity/business unit that is responsible for developing and implementing the policy or procedure. |
| **Patch** | A fix to a program that eliminates a vulnerability exploited by malicious hackers. See vulnerability and patch. |
| **Perimeter** | The continuous line forming the boundary of a closed geometrical figure. |
| **Policies** | Reference documents and rules with the clear aim/goal to guide decisions and achieve desired outcomes.  Policies may be at an organization or company level and These are used to implement the decisions and to organize the procedures and work process which have been defined by the respective departments according to the approved template and are aligned with the business objectives of the organization. |
| **Procedures** | Is the way of carrying out a process or activity. |
| **Purpose** | The business reason for the document and or the associated process. |
| **Review and approval** | The process steps are taken to ensure that policies and procedures are accurate and support the organization in meeting its objectives in an appropriate manner. The approval is the evidence that the review has been completed to satisfaction of the appropriate person e.g. CEO / Executive Committee / BOD. |
| **Risk** | The possibility of suffering harm or Loss. In quantitative Risk Management, this is calculated as how likely it is that a specific Threat will exploit a particular vulnerability.  A combination of the probability of an event and its consequence. |
| **Risk Analysis** | The systematic use of information to identify sources and to estimate risk. |
| **Risk Assessment** | The overall process of risk analysis and risk evaluation. |
| **Risk Management** | The Process is responsible for identifying, assessing and managing Risks. Risk Management can be quantitative (based on numerical data) or qualitative. |
| **Incident Response Team** | An ad-hoc team created to handle a security incident. |
| **Supplier** | A Third Party responsible for supplying goods or services that are required to deliver IT/OT services. Examples of suppliers include commodity hardware and software vendors, network and telecom providers, and outsourcing Organizations. |
| **Threat** | A threat is anything that might exploit Vulnerability. Any potential cause of an Incident can be considered to be a Threat. For example, a fire is a threat that could exploit the Vulnerability of flammable floor coverings. This term is commonly used in Information Security Management and IT/OT Service Continuity Management but also applies to other areas such as Problem and Availability Management.  A potential to cause an unwanted incident which may result in harm to a system. |
| **Test Environment** | A controlled Environment used to test Configuration Items, Software Builds, OT/IT Services, Processes, etc. |
| **Virus** | A program that enters a computer usually without the knowledge of the operator. Some viruses are mild and only cause messages to appear on the screen, but others are destructive and can wipe out the computer's memory or cause more severe damage |

# Backup and Recovery

## Purpose

This document outlines Backup and Recovery Security Policy in the Operational Technology (OT) environment of National Water Company (NWC). Although there is a convergence between Operation Technology and Information Technology, the standard practices of Information Technology (IT) are not directly applicable to OT, as OT generally requires stricter access control of external information. The compromise of such information could have a more significant impact.

OT Security Operations policies aim to define the purpose, direction, principles, and basic rules for OT cybersecurity management for NWC.

This Policy provides necessary guidance on procedures and protocols required for an effective access control specifically focused on NWC OT Environment.

## Scope and Applicability

The Policy governs the Backup and Recovery for all NWC OT systems, devices, or applications and information deployed to support the NWC OT Environment.

This Policy applies to all NWC BU/Departments that use or have Access to NWC OT systems, devices, applications, and information deployment in support of NWC OT Environment at any level.

## Guidance

The Policy statements are in italics, where required, in <…>. It’s the rationale for each paragraph, clause, or section is non-italics, where required, in [….].

## Terminology

|  |  |
| --- | --- |
| **Term** | **Definition** |
| *SHALL* | *This term is used to state* ***Mandatory*** *requirements* |
| *SHOULD* | *This term is used to state* ***Recommended*** *requirements* |
| *MAY* | *This term is used to state an* ***Optional*** *requirement.* |

## Policy

1. *A formal procedure of backup and recovery shall be identified, documented, and implemented within all NWC.* [ISA 4.3.2.5.6, 4.3.4.3.9, ECC 2-9-1, ECC 2-9-2]
2. *The formal backup plan shall ensure that backup and restoration requirements of each system determine:* [ECC 2-9-3, ECC 2-9-3-1, ECC 2-9-3-2, ECC 2-9-3-3]
   1. *The type of backups to be performed,*
   2. *The periodicity or schedule of the backup,*
   3. *The protection to be provided to backup media based on the criticality of the information backed up.*
3. *All OT applications and operating systems software, data (including databases), user configuration information, system logs and hardware configuration information (where applicable) shall be backed up and restored in accordance with the Backup and Restoration Procedure. [ISA 4.3.2.5.6, 4.3.4.3.9]*
4. *A formal time period for backup shall be documented and defined.* [HCIS 5.7]
5. *The backup media shall be replaced immediately after encountering an error or at predefined time intervals whichever is earlier.*
6. *The backup media shall be appropriately labeled and numbered automatically by the backup system or manually by the administrator taking the backup.*
7. *Backup Storage shall meet the following requirement:* [ NIST SP 800-82 CP-6, CP-9]
   1. *On-site: On-site data backup shall be maintained in safe custody, preferably outside the server room and in a fireproof cabinet.*
   2. *Off-site: Off-site whenever, the backup media is moved to and from an off-site location, it shall be carried in a sealed and tamper-proof bag.*
8. *Backups shall be stored securely on-premises and off-premises. Recovery of OT Asset shall be tested using Backup at frequent intervals.*
9. *Backup that contains sensitive information shall be encrypted (where applicable).*[ HCIS 5.7]
10. *Access to Backups shall be controlled and only after proper management approval and authorization backup access shall be granted.*
11. *L0-1 Device Backups (i.e., Configuration & Application) shall be collected using vendor recommended procedures.*
12. *Network Device Backups (i.e., Configuration) shall be collected using vendor recommended procedures.*
13. *Recovery Procedures of an OT Asset shall prepare based on vendor recommendations.*
14. *Testing of OT Asset Recovery shall be performed after proper management approval and authorization.*
15. *Recovery Test Log shall be maintained and audited periodically.*
16. *Recovery of an OT Asset shall be performed after proper management approval and authorization as part of Incident Response.*

# Compliance

1. *This Policy shall be reviewed and updated regularly by the OT Cybersecurity Committee. NWC (if required) shall ensure that it remains appropriate in the light of any relevant changes to the law, organizational policies, or contractual obligations.*
2. *This Policy shall be reviewed and audited by an auditor external to National Water Company.*
3. *NWC may create additional regulations to cover specific areas beyond the scope of this Policy.*
4. *OT Cybersecurity Committee comprises representatives from all relevant parts of the organization. It shall oversee the creation of cybersecurity and subsidiary policies.*

# Exception Criteria

1. *This Policy addresses cyber security requirements related to Backup and Recovery. If needed, exceptions shall be formally submitted to the OT Cybersecurity Committee, including justification and benefits attributed to the exception.*
2. *The policy waiver period has a maximum period of one year and shall be re-assessed and re-approved, if necessary, for a maximum of three consecutive terms.*
3. *No Policy shall be provided an exception for more than three consecutive terms.*