ITSCM

READINESS

DISASTER RECOVERY PLAN

TOWN OF CALEDON

Company: Town of Caledon
Date: insert date
Version: DRAFT

Document Control

Version History

Version	Date	Comments
vDRAFT	April 16th , 2019	To be reviewed

Document Owners

Name	Title	Ownership

Detailed Response Strategy

For the purpose of this plan a disaster is defined as any event whose impact would fit the following criteria:

SYSTEMS	***Core operational systems which allow IT to deliver services are not available for over 4 hours during working hours***
SERVICES	***No Connectivity available for over 4 hours***
SITE	***Unable to access site for any period more than 4 business hours***

SYSTEMS	***Core operational systems which allow IT to deliver services are not available for over 4 hours during working hours***

Hardware Component Failure

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Contact Hardware vendor, identify if replacement can be procured before SLA's have been infringed.* *Restore systems on site if possible – allow 24-hour time frame before DRP is enacted in full*	*100% of core infrastructure will available on site or at the DR site* *100% of Critical applications and services will be available within 5 days on site or at the DR site. Important and minor systems to be functionally restored within 3 days*	*Disaster Recovery site will be restored to production systems.* *Build more hardware redundancy if required*

Software Failure

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Contact software vendor or in-house developer for support, upgrades, revisions or patches.* *Restore last known working version of the software stack.* *Restore systems on site if possible – "x" hour SLA before DRP enacted in full*	*100% of core infrastructure will available on site or at the DR site* *100% of Critical applications and services will be available within "x" hours on site or at the DR site.* *Important and minor systems to be restored within "x" days*	*Ensure that strict quality controls are placed on the operational environments.* *Develop roll back procedures.*

Security Breaches

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Identify the systems affected. Take appropriate action, permissions, take off line. Eliminate security breach.* *Restore systems on site if possible.*	***Security breach must be closed before activating redundant DR systems.*** *100% of core infrastructure will available on site or at the DR site.* *100% of Critical of applications and services will be available within "x" hours on site or at the DR site.*	*Assess security breach, identify audits, patches or any mitigation routines that could prevent this event.* *Take legal or disciplinary action if required.* *If physical breach, review security procedures with facilities and mitigate.*

Virus

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Identify the systems affected. Take appropriate action, update virus definition, patch and deploy if required.* *Restore systems on site if possible. Use systems restore procedures.*	***Virus incident must be eliminated or isolated before activating redundant DR systems.*** *100% of core infrastructure will available on site or at the DR site.* *100% of Critical applications and services will be available within "x" days on site or at the DR site.*	*Assess virus incident identify audits, patches or any mitigation routines that could prevent this event.* *Take legal or disciplinary action if required.*

Data Loss

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Restore data from archives. Use systems restore procedures.*	*100% of core infrastructure will be available on site or at the DR site.* *100% of Critical applications and services will be available within "x" days on site or at the DR site.*	*Enable strict controls around data, audit systems and ensure correct permissions are set per data set.*

Human Error

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Restore systems from backups. Use systems restore procedures.*	*Eliminate error; ensure there is no replication to DR systems.* *100% of core infrastructure will be available on site or at the DR site.* *100% of Critical of applications and services will be available within “x” hours on site or at the DR site.*	*Training, documentation, limit access to systems.*

SERVICES

No Connectivity available for over 4 hours

Power Failure

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Establish if wider electricity cut or issue with premises. *If local area outage, seek timelines for rectification and act accordingly* *If within building, facilities to act immediately to rectify*	*Full power to be restored within “x” hours in local issue, “x” hours if within premises* *If catastrophic invoke DRP*	*If internal issue seek programme of maintenance to avoid future incidents.*

Telephony Failure

Planned Response Strategy	Expected Response Results	Post-Disaster Expectations
Assess situation then enable Disaster Recovery Plan if required for systems affected. *Contact provider for immediate engineer investigation – “x” hour SLA expected for resolution* *Move staff if appropriate.* *Restore systems on site if possible.*	*100% of core infrastructure will be available on site or at the DR site* *100% of Critical of applications and services will be available within “x” hours on site as “ghost system in place.*	*Once the Network is again accessible, restore to production systems.*

SITE	***Unable to access site for any period more than 4 business hours***	
Administration Building Cannot be Accessed		
Planned Response Strategy	**Expected Response Results**	**Post-Disaster Expectations**
Assess situation then enable Disaster Recovery Plan if required for systems affected. *The cause will determine likely time and cost of impact* *-Fire* *-Structural Failure* *-Power Failure* *-Water Damage* *-Vandalism* *-Acts of War or Terrorism* *-Unique Circumstances* *Move staff as and if appropriate.*	*100% of all core infrastructure will be available immediately at DR Site* *100% of Critical applications and services will be available within "x" hours at DR site. Important and minor systems to be restored.*	*Once the office is again accessible, restore to production systems.*

Information Technology Statement of Intent

This document delineates Town policies and procedures for technology disaster recovery, as well as our process-level plans for recovering critical technology platforms and the telecommunications infrastructure. This document summarizes our recommended procedures. In the event of an actual emergency situation, modifications to this document may be made to ensure physical safety of our people, our systems, and our data.

Our mission is to ensure information system uptime, data integrity and availability, and business continuity for the Town of Caledon.

Policy Statement

Corporate management has approved the following policy statement:

- The Town shall develop a comprehensive IT disaster recovery plan;
- A formal risk assessment shall be undertaken to determine the requirements for the disaster recovery plan;
- The disaster recovery plan should cover all essential and critical infrastructure elements, systems and networks, in accordance with key business activities;
- The disaster recovery plan should be periodically tested in a simulated environment to ensure that it can be implemented in emergency situations and that the management and staff understand how it is to be executed;
- All staff must be made aware of the disaster recovery plan and their own respective roles; and
- The disaster recovery plan is to be kept up to date to take into account changing circumstances.

Objectives

The principal objective of the disaster recovery program is to develop, test and document a well-structured and easily understood plan which will help the Town recover as quickly and effectively as possible from an unforeseen disaster or emergency which interrupts information systems and business operations. Additional objectives include the following:

1. The need to ensure that all employees fully understand their duties in implementing such a plan;
2. The need to ensure that operational policies are adhered to within all planned activities;
3. The need to ensure that proposed contingency arrangements are cost-effective;
4. The need to consider implications on other corporate sites; and
5. Disaster recovery capabilities as applicable to key customers, vendors and others.

Staffing Requirements

Initial Assessment Team

It is the responsibility of the Initial Assessment Team to assess the level of impact and deploy the Disaster Recovery Plan (DRP) as they see appropriate. The IAT has the authority to invoke the plan if the impact is predicted to be as above rather than waiting for it to be a known.

The assessment team consists of the following individuals:

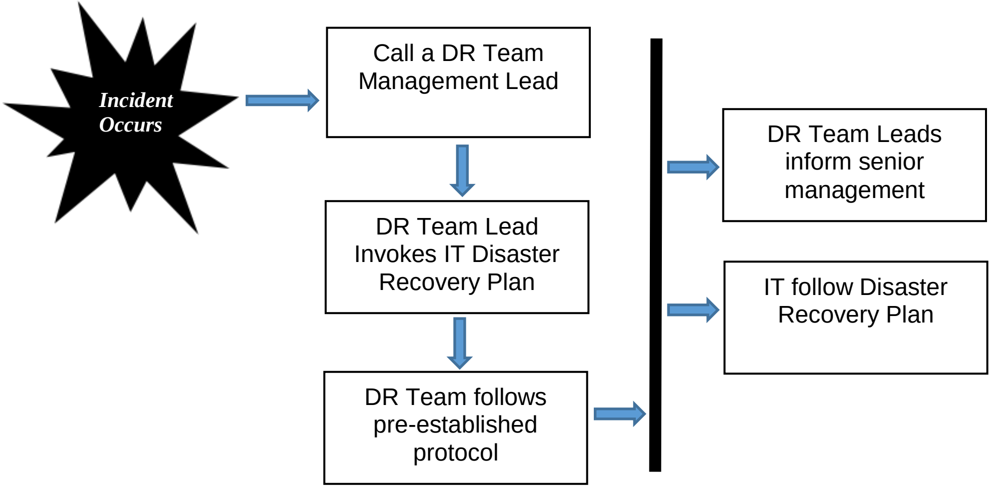
Primary		
Name	Mobile	Email
Erin Britnell	416-550-1437	Erin.Britnell@caledon.ca
Secondary		
Name	Mobile	Email
Nicholas Alleyne	416428-7778	Nicholas.Alleyne@caledon.ca
Melissa Yardy	416-819-2339	Melissa.Yardy@caledon.ca

Note: *In absence of the primary assessment team member(s) a secondary team member will have the authority to declare a disaster and invoke the DRP.*

Incident Management Team

Comprises management, technical and other support staff who will be responsible for notification of all relevant staff, activation of recovery services provided by third party organizations and establishing operational capability at the Town Administration building. The team is also responsible for the overall management of recovery activities.

[1]Notification Calling Tree


Incident Occurs
Call a DR Team Management Lead
DR Team Lead Invokes IT Disaster Recovery Plan
DR Team follows pre-established protocol
DR Team Leads inform senior management
IT follow Disaster Recovery Plan

[1] ***Call Tree (to be structured):*** *Discoverer calls their supervisor: Nicholas or Melissa. If neither are available calls Erin. Management team (Nicholas, Melissa, Erin) contact remaining members of IT team Communication role handled members of the management team.*

Key Personnel Contact Information (Internal)

Disaster Recovery Team		
Name, Title	**Contact Option**	**Contact Information**
Ankur Arora **Administrator, Server and Network**	*Mobile*	416-805-3256
	Email	Ankur.Arora@caledon.ca
Nicholas Alleyne Supervisor, IT Operations and Infrastructure	*Mobile*	416428-7778
	Email	Nicholas.Alleyne@caledon.ca
Krunal Barot Administrator, Server and Network	*Mobile*	647-444-5070
	Email	Krunal.Barot@caledon.ca
Adam Weiler Administrator, End User Computing	*Mobile*	416-3581526
	Email	Adam.Weiler@caledon.ca
Abhijit Boro Administrator, Database and Application	*Mobile*	416-659-7467
	Email	Abhijit.Boro@caledon.ca
Aruna Liyanage Administrator, Database and Application	*Mobile*	416-578-8003
	Email	Aruna.Liyanage@caledon.ca
Abbey Akinrinola Developer, Web Applications	*Mobile*	647-376-4857
	Email	Abbey.Akinrinola@caledon.ca
Lori Allard Technician, Help Desk	*Mobile*	647-273-3869
	Email	Lori.Allard@caledon.ca
Ruchira Welikala Coordinator, GIS	*Mobile*	647-519-5802
	Email	Ruchira.Welikala@caledon.ca
Melissa Yardy Supervisor, IT Corporate Solutions	*Mobile*	416-819-2339
	Email	Melissa.Yardy@caledon.ca
Erin Britnell Interim Manager, Information Technology	*Mobile*	416-550-1437
	Email	Erin.Britnell@caledon.ca
Dexter Pereira ROLE, Information Technology	Mobile	647-328-4640
	Email	Dexter.Pereira@caledon.ca

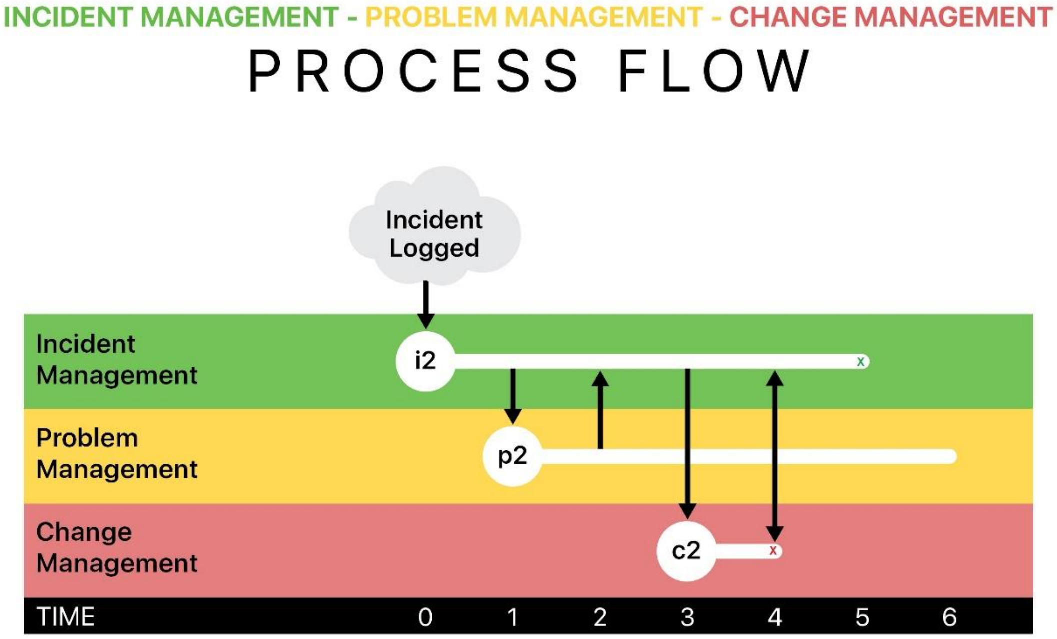
Key Personnel Contact Information (External)

Name	Role	Phone	Email	Notes
CC	Fiber Optic Network	Regular hours (7am-5pm): 416-752-6907 After Hours: Jason Y: 416-705-4816 David M - 416-697-6601		
Region of Peel PSN on-call	Public Sector Network (PSN)	416-473-1917		
Sheridan Internet	Primary Internet at Town Hall			
Frontier Internet	DR site Internet	1-866-833-2323 or 416-847-5240 Technical Support Press 2	support@frontiernetworks.ca	They are able to pull up account based on organization name.
PacketWorks Internet	Secondary Internet and Primary SIP connection.	1-866-723-7703	support@packetworks.net	Provide location address
Unitrends support	Backup Appliance	1-888-374-6124		Asset # 938S-700-70015
Introtel	Telephony Vendor	Regular hours: 905-625-8700 After hours: 647-204-9526	cservice@introtel.com	
Cisco	Network Device Vendor	1-800-553-6387		Device details available through https://cway.cisco.com/mydevices/devices. Account details available through password state (search Cisco Login ID)
Lenovo	Servers	1-844-392-8599		Device details available through https://datacentersupport.lenovo.com. Account details available through password state (Search Lenovo ID)
Dell EMC	SAN	1-800-543-4782		
Microsoft		1-800-936-4900		Requires Access ID - which is available through Password State

Name	Role	Phone	Email	Notes
				(search Microsoft support)
VMware	Virtualization Platform	1-877-486-9273		Customer # 1643967469

IT Service Continuity Management

Incident Management Process Flow



- *At **TIME = 0**, an External Event is detected by the Incident Management process. This could be as simple as a user calling to say that a service is unavailable or it could be an automated alert from a system monitoring device.*

  *The incident is logged and classified as incident **i2**. Then, the incident owner tries to match **i2** to known errors, work-arounds, or temporary fixes, but cannot find a match in the database.*

- *At **TIME = 1**, the incident owner creates a problem request to the Problem Management process anticipating a work-around, temporary fix, or other assistance. In doing so, the incident owner has prompted the creation of Problem **p2**.*

- *At **TIME = 2**, the problem owner of **p2** returns the expected temporary fix to the incident owner of **i2**. Note that both **i2** and **p2** are active and exist simultaneously. The incident owner for **i2** applies the temporary fix.*

- *In this case, the work-around requires a change request. So, at **Time = 3**, the incident owner for **i2** initiates change request, **c2**.*
- *The change request **c2** is applied successfully, and at **TIME = 4**, **c2** is closed. Note that for a while **i2**, **p2** and **c2** all exist simultaneously.*

- *Because **c2** was successful, the incident owner for **i2** can now confirm that the incident is resolved. At **TIME = 5**, **i2** is closed. However, **p2** remains active while the problem owner searches for a permanent fix. The problem owner for **p2** would be responsible for implementing the permanent fix and initiating any necessary change requests.*

IT Service Continuity Management

ITSCM goes far beyond other ITIL processes such as Incident Management. For example, the second one focuses on dealing with less significant events; while Service Continuity Management is more related to those incidents than to their impact on the organization; they can be classified as disastrous. This classification may vary from company to company, but it always includes those events whose incidence is capable of interrupting Business Continuity.

Refer to *Figure 1* for a detailed overview of the Town's process flow at time of disaster (TOD).

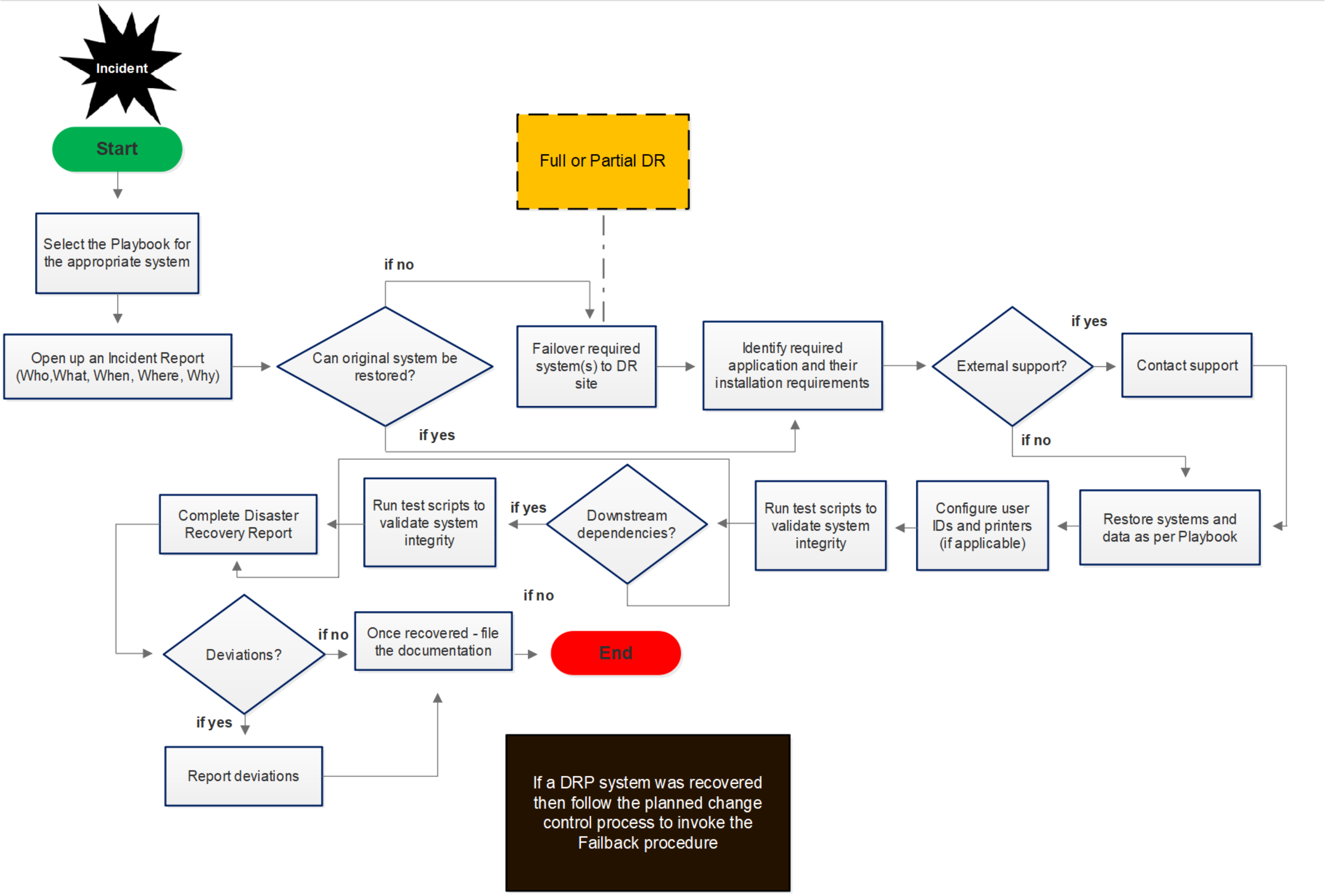

Incident
Start
Select the Playbook for the appropriate system
Open up an Incident Report (Who,What, When, Where, Why)
Can original system be restored?
if no
if yes
Full or Partial DR
Failover required system(s) to DR site
Identify required application and their installation requirements
External support?
if yes
if no
Contact support
Restore systems and data as per Playbook
Configure user IDs and printers (if applicable)
Run test scripts to validate system integrity
Downstream dependencies?
if yes
if no
Run test scripts to validate system integrity
Complete Disaster Recovery Report
Deviations?
if no
if yes
Once recovered - file the documentation
End
Report deviations
If a DRP system was recovered then follow the planned change control process to invoke the Failback procedure

Figure 1 - Town of Caledon DR Process Flow

Recovery Procedures

Data and Backups

Unitrends is the current backup system that is being used by the Town of Caledon. This system is both hardware and software. It is built using an underlying unix operating system. The system allows for full backups of the Town server computers, and storage that is currently (Feb 2018) stored in the DR Site server room

Backups are done at the following levels:

1. Virtual Machine (VMware level)
2. Application (SQL, Exchange)
3. Host/File Level (physical servers)

Backup Type	Frequency	Retention
Virtual Machines	24 hrs	35 days
Host/File Level	24 hrs	21 – 70 days
Application	6 hrs	n/a

Backup Copy

Backups are archived on a nightly basis. The Archives have been run on drives that are loaded into the Unitrends server and changed monthly. There are 4 slots at the bottom that are used for this. The drives are labeled (eg June_2015 1/2) to show month as well as how many drives are used. The data on the drives is retained for 24 months.

The following type of data is archived:

- Email database
- SQL databases
- File shares

Note: Not all of the above types are archived.

Current DR Recovery Capabilities

- ✓ The DR site is a scaled down version of the primary DC. All the components at the primary DC have the same or scaled down counterpart at the DR site.
- ✓ Storage is replicated between the two sites
- ✓ VMware SRM allows for a quick failover of Critical VMs in a DR scenario.
- ✓ There are also some clustered production workloads (Geo-Clustered SQL databases) running at the DR site which allows for near instant failover.
- ✓ There is phone system is DR site is configured as a backup, which can handle inbound and outbound calls.
- ✓ Core infrastructure services like DHCP, DNS, Active Directory, Internet Access are available through the DR site as active server(s) and network devices exists at the DR site providing those services.

Disaster Recovery Activation Procedures (sample)

The following list sets out the main tasks to be undertaken in plan activation. It is possible however that the Incident Management Team will be required to modify these tasks and or sequence in order to meet the circumstances pertaining at the time of the event.

	Activities
1	Contact DR Team and advise of formal invocation.
2	Activate IT Services Technical Recovery Plans (refer to Playbooks as required)
3	Contact any external IT service providers, inform them of the situation and request activation of their procedures to switch delivery of services to the alternative premises (if required).
4	Contact Data Communications services provider; inform them of the situation and request activation of their procedures to switch data communications to the alternative premises (as required).
5	Contact telephony provider and request activation of their procedures to switch numbers to the alternative premises (as required).
6	Inform staff of actions taken and what is required of them in the short and longer term. Confirm which staff will relocate to the alternative premises (as required).
7	Arrange for staff transferring to DR site (if applicable)
8	Notify insurance company via broker for future claim (as required)
9	Review key contact list and complete any outstanding contacts.
10	Initiate formal status reporting system to cover: • Recovery activities – tasks undertaken, responsibilities and completion timetable. • Recovery costs tracking – set up cost centre and reporting mechanism.

Failback Procedures

IT Systems

This section will be high-level and refer to DR Playbook

Note: *Please refer to* ***Appendix O*** *in the DC Playbook for detailed failback instructions*

Plan Maintenance and Testing

While efforts will be made initially to construct this DRP is as complete and accurate a manner as possible, it is essentially impossible to address all possible problems at any one time. Additionally, over time the Disaster Recovery needs of the enterprise will change. As a result of these two factors this plan will need to be tested on a periodic basis to discover errors and omissions and will need to be maintained to address them.

Maintenance

The DRP will be updated annually or any time a major system update or upgrade is performed, whichever is more often. The Disaster Recovery Lead will be responsible for updating the entire document, and so is permitted to request information and updates from other employees and departments within the organization in order to complete this task.

Maintenance of the plan will include (but is not limited to) the following:

- Ensuring that call trees are up to date
- Ensuring that all team lists are up to date
- Reviewing the plan to ensure that all of the instructions are still relevant to the organization
- Making any major changes and revisions in the plan to reflect organizational shifts, changes and goals
- Ensuring that the plan meets any requirements specified in new laws
- Other organizational specific maintenance goals

During the Maintenance periods, any changes to the Disaster Recovery Teams must be accounted for. If any member of a Disaster Recovery Team no longer works with the company, it is the responsibility of the Disaster Recovery Lead to appoint a new team member.

Testing

The Town of Caledon is committed to ensuring that this DRP is functional. The DRP should be tested annually in order to ensure that it is still effective. Testing the plan will be carried out as follows:

1. Walkthroughs - Team members verbally go through the specific steps as documented in the plan to confirm effectiveness, identify gaps, bottlenecks or other weaknesses. This test provides the opportunity to review a plan with a larger subset of people, allowing the DRP project manager to draw upon a correspondingly increased pool of knowledge and experiences. Staff should be familiar with procedures, equipment, and offsite facilities (if required).
2. Simulations - A disaster is simulated so normal operations will not be interrupted. Hardware, software, personnel, communications, procedures, supplies and forms, documentation, transportation, utilities, and alternate site processing should be thoroughly tested in a simulation test. However, validated checklists can provide a reasonable level of assurance for many of these scenarios. Analyze the output of the previous tests carefully before the proposed simulation to ensure the lessons learned during the previous phases of the cycle have been applied.

3. Parallel Testing - A parallel test can be performed in conjunction with the checklist test or simulation test. Under this scenario, historical transactions, such as the prior business day's transactions are processed against preceding day's backup files at the contingency processing site or hot site. All reports produced at the alternate site for the current business date should agree with those reports produced at the alternate processing site.
4. Full-Interruption Testing - A full-interruption test activates the total DRP. The test is likely to be costly and could disrupt normal operations, and therefore should be approached with caution. The importance of due diligence with respect to previous DRP phases cannot be overstated.
5. Any gaps in the DRP that are discovered during the testing phase will be addressed by the Disaster Recovery Lead as well as any resources that he/she will require.