



# Emergency Response & Mitigation Planning

Understanding Public Works Role:  
Effective Operations Management for  
Emergencies



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## INTRODUCTION

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Public Works Departments have responsibility for the prevention, protection, mitigation, response, and recovery of emergencies. An emergency can be a natural, accidental, or intentional event that requires local governments to plan for and/or immediately respond to ensure the safety of the community.

Before, during, and after an emergency, the **information-gathering process** completed by local public works will determine an Emergency Response Plan. An effective plan will reduce response time, enhance training, reduce costs, and prevent loss of life.

During an emergency, local public works are usually first on the scene and work alongside other emergency response agencies to ensure public safety. It is crucial to have an efficient and accurate Emergency Response Plan developed through accumulated information, proper documentation, and continuous inspections. The information collected through Risk Analysis will develop pre-determined guidelines for emergency response. The guidelines would include procurement procedures, training, maintenance requirements, historical data, and the responsibilities of everyone.



# PUBLIC WORKS ROLE

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The procedures in an Emergency Response Plan must be specific to the incident type, flexible for changing scenarios, provide support, and identify resources. The cornerstones for every emergency plan are prevention, preparedness, response, and recovery.

## Prevention



Prevention policies help to ensure that the risk of the occurrence of emergencies is either eliminated or minimized.

1. Completing a Risk Assessment.
2. Implementing controls to minimize hazards.
3. Training employees.
4. Inspecting regularly.

## Preparedness



By implementing prevention policies, public works will be prepared to effectively respond to an emergency.

1. Identifying resources and capabilities.
2. Documenting equipment lists.
3. Understanding special needs areas.
4. Conducting drills and exercises.
5. Ensuring Mutual Aid Agreements with other agencies/organizations.



# PUBLIC WORKS ROLE

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## Response



It is important to develop an organized approach to manage the overall Emergency Response Plan. The emergency planning resources provided by various local, state, and federal organizations and the information accumulated from continuous **digital inspections** will assist by providing a guide for response actions.

1. Communicating information to all responders.
2. Providing expertise.
3. Assessing & documenting damage.

## Recovery



Public works function during recovery is to restore operations after an event. The equipment, staff, and resources available to a Public Works Department can allow them to help move materials, open closed roads, repair roads and bridges, and tear down damaged buildings, trees, and other obstacles.

1. Restoring operations.
2. Removing debris.
3. Providing documentation to justify cost reimbursements.

# PREVENTION & PREPAREDNESS: Plan Development

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The Emergency Plan must take into account all potential emergency situations and assess them through Risk Analysis. Mitigation planning and priority setting will help determine what areas should be included in developing the plan, and whom to liaise with to accumulate more information. Public works operations, pre-incident, involve providing ongoing inspections of all municipal owned facilities, operations and utilities. Some of the areas of concern that will be covered will include areas of potential flooding, wildfires, earthquakes, transportation interruptions, water and sewer system disruptions, and communication systems.

The requirements/recommended practices for Emergency Planning are listed in the various national and state-based policies. The Federal Emergency Management Agency (FEMA) provides various support for emergency management. Individual State's Office of Emergency Management also provides ongoing support for floods, wildfires, earthquakes, and many other disastrous events. Other resources include local fire departments, police, emergency services, public utility providers, highway and transportation contacts, forestry service organizations, and government agencies.

There are also many NFPA standards and OH&S standards that detail and discuss pre-incident planning, emergency response planning, wildfires, earthquakes, windstorms, flooding, and many other incidents that various municipalities and subsequently public works operations need to be prepared for.



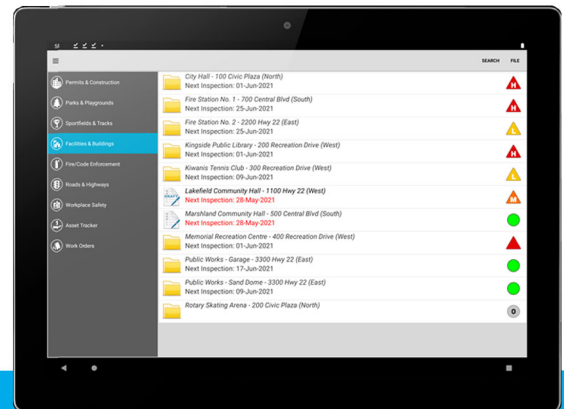


# Establish Planning Team



To create and develop an effective plan, human resources need to be organized and assigned based on technical skills, knowledge, and interest. The Planning Team will be responsible for accumulating in-depth information about all the potential hazards that could occur and what actions should be taken in response to those events. This Team will need to continuously document and assess data to ensure that the plan is current and that the necessary equipment, facilities, and resources are available for a potentially hazardous event.

Potential administrative obstacles that may occur include staff turnover, time delays, and miscommunication. These problems will impact the efficiency and effectiveness of your Emergency Response Plan, which could lead to fatalities during a disaster.



## Solution:

Implementing a streamlined workflow through a **digital inspection and work order process** will ensure that the accumulated information is properly documented for consistency and accuracy. Inspection checklists can be customized with emergency terminology so that all staff are trained for real life scenarios. Additionally, any potential hazards that require maintenance can be communicated immediately to the appropriate personnel through an internal portal with push notifications to reduce time and miscommunication issues.



# Risk Analysis

Risk Analysis identifies and evaluates the potential hazards within the jurisdiction to reduce the damage to infrastructure and loss of life. This is a proactive strategy to ensure more effective operations when an event occurs.

It is important to gather sufficient information at a local level to ensure all governments and emergency agencies involved are prepared for the potential hazards. There is no defined method for gathering and presenting this information, but having a **streamlined process** with digital documentation and communication is pivotal for efficiency and effectiveness.

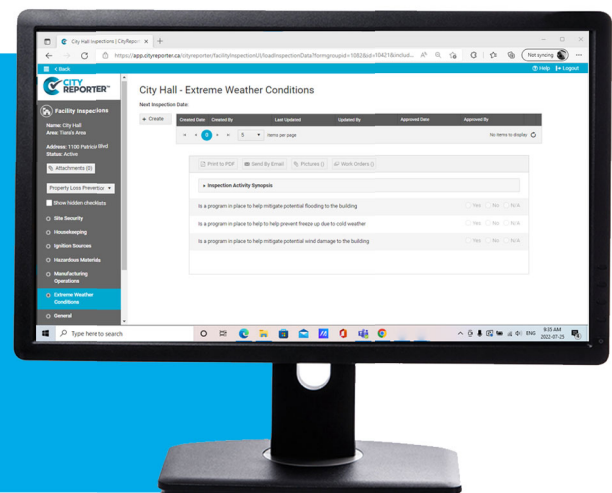
## 1. Identify Hazards

All natural hazards and any assets impacted by them are identified by location, description, extent, previous occurrences, and future probability. Also, it is beneficial to identify non-natural hazards such as terrorist attacks, watermain breaks, traffic incidents, infrastructure damage, etc.

The responsibilities of Public Works Departments include maintaining facilities and building operations; ensuring all water and sewer systems are operational; preserving electrical and communication systems; helping with flood and wildfire mitigation; opening transportation and supply chain corridors; and working with local emergency responders, hospitals, and building owners.

### Tip:

Having effective and simple **digital checklists** for identifying hazards will save time, eliminate mistakes, and automate documentation and communication. With a **checklist editor** each planning area can have custom checklists for its assets and the potential hazards that may impact it.



# Risk Analysis

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## 2. Establish Critical Areas

Based on the identified hazards, each area in the jurisdiction and its assets (current and future) will be assessed on their vulnerability. This includes a description of the assets, the locations, and the impacts that the hazard will have on them.

This notifies all public works personnel of the critical areas and what attention they require such as any upgrades needed to ensure the facilities, buildings, and/or resources will be available in the event of a catastrophic event. An example is a water and sewer system that does not have a backup generator or secondary power source adequate to maintain critical functions should operations be disrupted.



### Tip:

For critical areas, inspections will be more frequent and any damage/upgrades identified will be a high priority for maintenance. **Digital inspections** can have a priority status and a next inspection date set to have the faults efficiently repaired or replaced.



# Risk Analysis

## 3. Evaluate Information

The information gathered is then evaluated to develop the next actions that are required should a disaster happen. The evaluation will indicate preventative actions such as upgrades, maintenance, and inspections. Additionally, it will indicate responsive actions such as debris removal, opening transportation routes, snow/ice control, etc.

Local public works need to be aware of the resources required for each action and prepared for any event. One emergency event can involve more than one hazard, such as an earthquake causing electrical issues, flooding, and debris blockages. So, it is vital that all systems are functioning, workflow is streamlined, and resources are readily available.

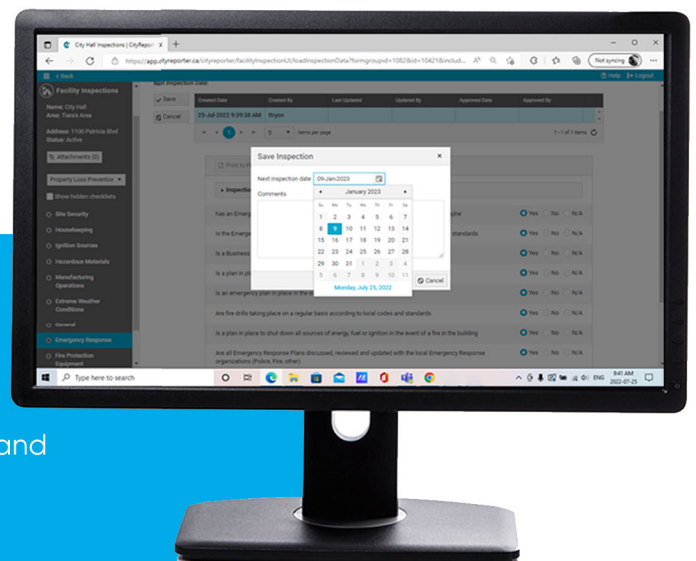
## 4. Record & Update

Once the information has been evaluated, having proper documentation is essential. Risk Analysis is not a static assessment and requires continuous updating as assets, infrastructure, and the environment change.

Regular inspections should be conducted to ensure that the changes made to equipment and operations are working and meeting the needs as determined by the initial inspections.

### Tip:

By utilizing **digital inspection software**, the workflow becomes streamlined, and inspections are easily documented, reported, and scheduled to create more efficient operations.





# RESPONSE

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There are two distinct functions in Emergency Response Management where public works can be involved, the administration function to manage the response plan and the operations function to control the incident.

Public works operation has a major responsibility when it comes to continuing operations during a major incident. The resources available allow public works to help open closed roads, provide fire breaks, and mitigate flooding. Additionally, public works are responsible for the ongoing maintenance of utilities including water drains, sewer operations, power sources, electrical, gas, and others. For example, during a flood public works will fill sandbags to help mitigate damage by providing direct physical berms, dikes, or blocking to redirect flood waters.



## KEY TAKEAWAYS

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### Prevent & Prepare



Organize resources, including human resources, based on skills and availability to develop a clear detailed plan.

1. Use a Risk Analysis to locate weaknesses in existing operations that could affect the response operations and time in the event of an emergency.
2. Conduct **regular inspections** to maintain equipment/assets and ensure any faults or weaknesses are corrected.
3. Identify and coordinate the necessary logistical support.
4. Utilize a **digital work order process** to ensure maintenance requirements and upgrades are communicated efficiently and accurately.

### Set Priorities and Mitigate



Conduct Risk Analysis by gathering information about potential hazards that pertain to each planning area, the assets within those areas, and the resources available.

1. Identify potential hazards.
2. Establish critical exposures and areas.
3. Evaluate information.
4. Record and update.



# KEY TAKEAWAYS

## Preventative Maintenance

Having a preventative maintenance process using **digital inspection software** will prevent and mitigate disasters, improve response times, and ensure due diligence.

1. Inspections for the required equipment for an emergency can be scheduled and maintained.
2. Concerns are noted and immediately addressed to ensure safety and reliability.
3. The checklist editor allows for updates due to changes in hazard exposures, codes, standards, regulations, etc.
4. Training practices, drills, and exercises are streamlined to ensure all personnel are prepared for the real situations.



## CONCLUSION

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The Public Works Department, as a standalone operation within a community, is typically the operator of all utilities, provider of safe/maintained transportation hubs, roads, bridges, and other operations.

When it comes to emergency response and disaster mitigation, the responsibilities that are inherent to all functional and operational Public Works Departments cannot be overstated. From planning to operational effectiveness whether it be for a flood, earthquake, wildfire, or any other disaster that can affect a municipality, public works will be involved.

The primary function of the Public Works Department along with all other members of the Emergency Response Team is to provide pre-incident planning through **robust inspection processes**. This will ensure all planning areas are considered, equipment inventories and testing are maintained, logistical support is available, communication between key stakeholders is open, and updates are implemented as required.

A fully functional **robust digital inspection system** will help the Public Works Department prepare accumulated information, maintain fundamental equipment, back-up power supplies, organize logistical support, and maintain a simple communication plan so all parties are on the same page, working together, in the event of an emergency.

## CONTACT

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### CityReporter

T: 250-564-2236

F: 250-564-3325

E: [cityinfo@noratek.com](mailto:cityinfo@noratek.com)

[www.cityinspectionsoftware.com](http://www.cityinspectionsoftware.com)

### Alan Kavanaugh

CRM, CCPI, Director of Loss  
Control and Risk Management,  
Noratek Solutions Inc.

T: 866-264-2236

E: [akavanaugh@noratek.com](mailto:akavanaugh@noratek.com)

### Tiara Tryon

Marketing Assistant & Editor

E: [ttryon@noratek.com](mailto:ttryon@noratek.com)



## SOURCES

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### **Federal Emergency Management Agency (FEMA)**

[www.fema.gov](http://www.fema.gov)

### **American Public Works Association (APWA)**

[www.apwa.net](http://www.apwa.net)

### **Government of Canada**

[www.publicsafety.gc.c](http://www.publicsafety.gc.c)

### **National Fire Protection Association (NFPA)**

[www.nfpa.org](http://www.nfpa.org)



## Inspection, Management, & Tracking Software



[www.cityinspectionsoftware.com](http://www.cityinspectionsoftware.com)

