

## Multi-Agency Flood Plans: Municipal Planners Guidelines

**3. The risk of flooding:** descriptive overview of the flood risk covered by the plan and details of the specific communities/areas at risk: should be a clear parallel to the risk assessment information published in the related Community Risk Register.

Where fluvial flooding is an issue, a flood risk summary sheet should be completed for each community at risk differentiating between those that are covered by a flood warning service and those that are not. Communities can be grouped by the Water Resource Agency to assist with collation of the required data.

Flood Risk Summary Sheets should be accompanied by associated map to help responders in an incident to quickly identify the areas that are at risk. They should clearly show known locations of vulnerable groups and key infrastructure.

[Flood Risk Summary Sheet](#) [Link](#)

The information to populate these tables is mostly available from the Central Statistical Office (CSO) and the Ministry of Social Development. It may be necessary to make an additional check with the Water Resources Agency to confirm which communities are not/cannot be provided with a flood warning service. At present, there is no specific warning service for flash flooding.

The location of vulnerable people and critical local infrastructure should be included in this section. Welfare response plans should be identified or signposted to the relevant section.

### 4. Ownership and audience

- Who is responsible for updating and maintaining the plan
- Who the intended audience is and how they will be notified of updates
- Specific dates for a review of the plan should be set out
- Consideration should be given to new risk assessments, lessons identified from exercises or floods, organizational or personnel changes and procedural changes to inform plan review or update

### 5. Meteorological Service Local Flood Warning Plan (as per National Response)

**6. Communications Strategy:** Warning and informing the public is a requirement of the Government's Communication Strategy. Reference should be made to any other plans containing information relating to communications; ensure these components are covered:

- Arrangements for special internal communications before/during/after a flood
- Procedure for managing cross boundary mutual aid – any special MOUs/ protocols that staff/ departments should follow
- Media arrangements including how to access local radio
- Useful pre-prepared announcements and/or media releases
- Triggers for communication with other responders and the public
- Contact details of all key emergency response personnel, or details of a contacts database/directory where this information is available
- Arrangements to set up and operate help lines/ information lines including specific communication procedures for vulnerable people and the media

[National Communications Strategy](#) [Link](#)

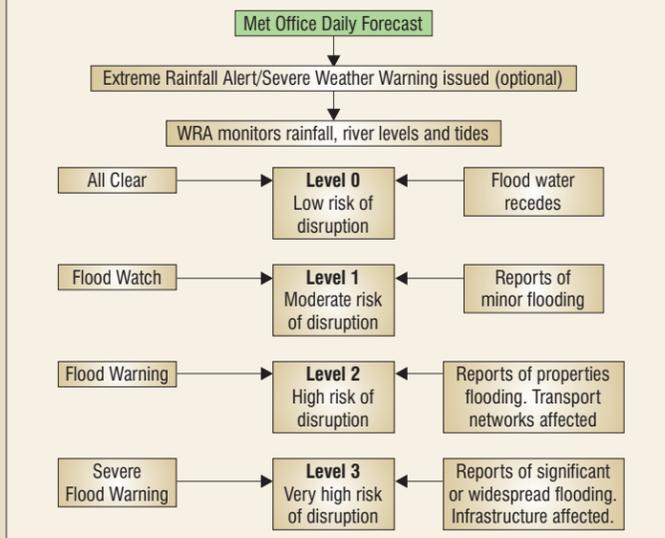
**7. Telecoms Failure:** should be consideration given to detailing telecoms contingencies available such as landlines, mobiles, email, fax, satellite phones, and any other arrangements or agreements with other responding organizations.

### 8. Plan Activation – thresholds and triggers

Should include clear information in respect of the planning assumptions for the different types of flooding relevant to the plan to ensure consistency in approach and definitions of the expected scale of response of the various local flood risk levels. As a minimum, should cover – alert and standby procedures; who is informed – public members, colleagues and professional partners; instruction for opening control/ command centres

In respect of severe weather warnings it is important to clarify what % likelihood would trigger a particular response. It is also important to capture the trigger point for declaring a major emergency.

## Plan Activation – thresholds and triggers



Local Response Level	Trigger	Actual or forecast impact	Response
<b>LEVEL 0</b> (Low risk of disruption)	No flood warning / watches, severe weather warnings in force	No further flooding expected. Properties/roads could still be flooded out but flood water receding	Concentrate on recovery if flooding has occurred. Where no flooding has occurred revert to business as usual
<b>LEVEL 1</b> (Moderate risk of disruption)	Flood Watch in force / severe weather warning in force that may result in flooding / Reports of minor impact flooding	Low impact flooding of gardens and minor roads	Clarify with Met Office what further rainfall / flooding expected; place approx. staff on standby. Review plans. Prepare for worsening situation
<b>LEVEL 2</b> (High risk of disruption)	Severe Flood Warning in force / severe weather warning in force that is ?? % likely to result in flooding / reports of widespread flooding / media interest	Flooding up to 100 properties for each Flood Warning in force; many more properties affected by flash flooding; main roads and infrastructure affected. Evacuations may be required	Open EOC and inform relevant stakeholders. Clarify with Met Office what further rainfall / flooding is expected. Instigate local major incident plan if available
<b>LEVEL 3</b> (Very high risk of disruption)	Flood Warning in force/ severe weather warning in force that is ?? % likely to result in flooding / reports of property flooding / media interest	Flooding of more than 100 properties for each Severe Flood Warning in force. In addition, large numbers of properties affected by flash flooding	Maintain flow of information to stakeholders inclusive of the national disaster office
<b>LEVEL 4</b> (Recovery)	Flood warnings/severe flood warnings downgraded / all clears issued / no warnings of severe weather that may result in flooding	Flood water receding	Local Authority to facilitate rehabilitation and restoration of the community

**9. Flood Rescue:** Local authorities are advised to work closely with the agency most recognized to effectively deal with Search and Rescue. If a plan exists it would be useful to incorporate it in this section.

**10. Actions, Roles and responsibilities:** should set out the actions, roles and responsibilities of all responding agencies in relation to the triggers, for each community at risk from flooding. It should detail where possible command centre(s) would be established.

It should also detail specific environmental impacts and responsibilities as well as health and safety considerations for both the public and personnel involved in responding to a flooding incident. It is important to think about the sort of information which may be needed at a later stage by Central Government.

*Refer to the National Flood Specific Roles and Responsibilities as a guide*



Government of the  
Republic of Trinidad  
and Tobago  
Ministry of National Security



SNAPSHOT:  
Flood

July 29, 2014

## National Flood Response Plan

(Original Plan was in rough draft form)

There are approximately ??? people in Trinidad and ??? in Tobago who live in floodplains. In addition, many more people work in, visit or travel through potentially vulnerable areas and could be unfamiliar with the risk. The cultural mix more so in Trinidad and the high mobility of the population serve to make incident and emergency response more complex.

Climate change means that we are likely to experience an increase in the intensity, severity and frequency of extreme weather events inclusive of flooding.

To limit both the probability and consequence of flooding, the customary response has been to (include if anything has been done overtime to reduce the likelihood of flooding such as cleaning drains and water channels). These measures do not entirely eliminate the chance of flooding and it is therefore important to develop a communication strategy which will ensure a continuing visibility around the potential threat of flooding. The consequences of flooding may be controlled by avoiding development in flood risk areas (this should be advocated by some policy statement and the development of a flood risk register).

Emergency planners are encouraged to work closely with their specialist planners to avoid development in inappropriate areas to ensure developments have adequate emergency plans if they are sited in inappropriate areas.

### There are two main causes of flooding:

**1. Wide Scale Surface Water Flooding:** is where rainfall exceeds natural and highway drainage capacity and excess water collects in low lying and flat areas. Flooding can occur very quickly with little or no warning. This will often result from intense downpours over small localized areas and also from more prolonged rainfall over a wide area where the ground becomes saturated.

Road networks are affected most frequently from seemingly small amounts of rainfall and properties are affected in the more severe events. Most regions have large areas susceptible to surface water flooding.

**2. Fluvial Flooding:** results from an overtopping or breach of a river bank or from blockage in the channel. All of which have occurred in Trinidad in recent years. Rivers respond to rainfall at different rates according to several factors, such as land use, catchment size and typography.

The Meteorological Service is responsible for issuing flood warnings for both wide scale surface water flooding and fluvial flooding.

**Major Incidents:** Any of the above scenarios may lead to the declaration of a major incident – an emergency requiring the implementation of special arrangements by one or all of the emergency services and will generally include the involvement, either directly or indirectly, of large numbers of people. These include:

- Rescue and transportation of a large number of casualties
- Large scale combined resources of police, fire and the ambulance service
- Mobilization of the emergency services and support services, to cater for the threat of death, serious injury or homelessness to a large number of people; and
- Handling many enquiries from the public and the news media.

### The aim of the plan is to:

- Provide strategic direction to responders, before, during and after a significant flooding incident
- Provide the necessary links to existing plans and procedures
- Clearly identify triggers and mechanisms for declaring a major incident
- Assist strategic decision making by highlighting flood risk areas
- Clarify roles and responsibilities of all responders and the actions they are required to take before and during flooding incidents.

### Flood Risk

In addition to residential and business properties, there are numerous public buildings and infrastructure at risk of flooding. Critical infrastructure at risk of flooding will be listed in the Municipal Corporation Multi Agency Flood Plans.

**Hazard Analysis:** to describe the characteristics of the flood threat and the effects on the country/community affected. To cover – origin, cause, frequency, time of generation, speed of onset, predictability, magnitude, ability to control the causes, control of the flood itself, scope of the predictable impact, duration of impact, destructive potential i.e. depth of inundation, hydraulic action, abrasion, etc.

- Identify (and map where possible) areas prone to flooding after definition
- Determine frequency and intensity of flood events.
  - Associated hydro-meteorological events
  - Associated anthropogenic factors
  - Speed of onset/lag time
  - Duration
- Identify and describe any secondary hazards
  - Debris/mud flows and landslides
  - Public Health issues
  - Hazardous materials discharge

[Hazard Analysis](#) [Link](#)

**Public Communications:** During a major flooding incident, the Information Task Group (ITG) will be activated concurrently with the National Emergency Operations Centre (NEOC) activation.

The ODPM NEOC supporting the ITG will be the main group that is used to co-ordinate communications actions in Trinidad and in Tobago during a major emergency. The NEOC brings together the key players involved in dealing with a crisis or emergency, but it is a flexible group and during an incident others will be invited to join as required.





# National Flood Response Plan

## Major Incident – Thresholds and Triggers

The Municipal Corporations' Multi Agency Flood Plans will provide thresholds and triggers for the initial response by local level responders. These thresholds will vary between municipalities. Some key considerations related to escalating a flood to a major incident or convening a critical stakeholder meeting:

### 1. "Immediate Impact" Events

- a) Flash flooding with no prior warning. Caused by either heavy rainfall (surface water), blockage in a river causing overtopping of banks
- b) The impacts of the flooding are likely to cause risk to life and property due to either water depth/ velocity

### 2. "Rising Tide" Events

- a) Flood Warning issued by the Met Office
- b) Extreme Weather/Severe Weather issued by the Met Office
- c) Critical infrastructure site(s) affected or at risk

"Immediate Impact" thresholds will be triggered by impact on the ground and "Rising Tide" thresholds will be triggered by forecasts or a slowly worsening situation.

### 3. Meteorological Service Local Flood Warning Plan

The Meteorological Service operates a flood warning service for most areas at risk of flooding from rivers or the sea. If flooding is forecast, warnings are issued using a set of easily recognizable codes.

Each Flood Watch/Warning/Severe Flood Warning is issued for a pre-defined area (i.e., Flood Watch Areas or Flood Warning Areas) and represent the risk at a local level (not issued at regional level). Current codes used for fluvial flooding are:



Issued when rivers are expected to come out of banks. There may be minor flooding of low-lying areas, roads and high ways. Flooding to properties is not expected at this stage although transport networks may be affected and disruption is likely. Flash flooding is also likely when Flood Watch is issued. In Trinidad some of the rivers react so rapidly to rainfall, particularly thunderstorms, that Flood Watches may be issued before the rainfall starts. This is because there is not enough time to issue the Flood Watch once the rainfall starts and river levels start rising. This method is prone to false alarms though as they are entirely dependent on accuracy of the weather forecast.



Issued when flooding of up to 100 properties is expected in a specific Flood Warning Area, from fluvial or flash flooding. In Trinidad, the rapid response of urban catchments to thunderstorms may preclude the issue of Flood Warning before some flooding has occurred, usually from flash flooding.



This warning is issued when flooding of over 100 properties is expected in a specific Flood Warning Area from fluvial or flash flooding. The risk of severe flooding is high and fatalities are possible. Can also be issued if flooding to local or national critical infrastructure is expected, which may or may not include extensive property flooding. In the event of a breach (overtopping of a main river) or an intense thunderstorm, a severe flood warning may be issued without prior issue of any other warning.

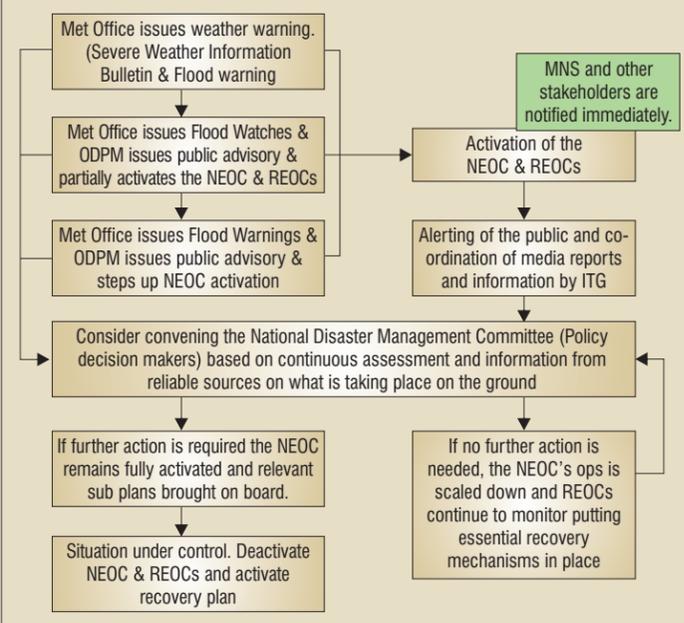


This notice is issued when there is no further flooding expected, or the risk of flooding has subsided. All Clears are generally issued when river levels fall back within their banks and will stay contained for at least

24 hours. Planners should work closely with the Meteorological Office and the Water Resources Agency to clarify which Flood Warning Areas (if any) fall within their area of responsibility. Planners will also need to ensure that where relevant warnings have been issued, they are received by the most appropriate team/individual (bearing in mind that they can be issued 24/7) and are actioned in a timely and clearly defined way. The plan should set out the actions to be taken for each warning level. Warnings can be received by SMS text message, email, fax or telephone voice message.

**Additional Met Office Services:** provide the public with Severe Weather Information Bulletins. These are targeted towards warning of severe or exceptionally severe weather likely to result in considerable inconvenience to a large number of people or to present a danger to life.

### Sequence of events leading up to declaring a major incident or initiating a meeting with EOC stakeholders



### The Information Task Group (ITG) will:

- a) Ensure that during a major flood incident, there is a coordinated strategy for handling the media and communicating with the public
- b) Provide co-ordination between frontline responders and government
- c) Select spokesperson in collaboration with the ODPM for interviews
- d) Brief the NEOC, the ODPM executive and critical stakeholders on all information circulating regarding flooding incidents
- e) Be available to meet as a group – either in person, by conference call or other means as available
- f) Set up/ co-ordinate/ operate a media centre as per ITG Media Emergency Plan
- g) Prepare media strategy outlining key messages and top lines

Other supporting agencies to use ITG guidelines to formulate their media plans



### Actions, Roles and Responsibilities

All disasters/emergencies are considered local. However, the ODPM NEOC must be aware at all times of the status of any incident at the municipal level should there be a need to provide assistance once the situation escalates. Further, the ODPM along with the respective municipal authority should notify all critical stakeholders of events so they can either become fully operational or be on active stand-by.

The Met Office as the only legal entity to issue flood bulletins/warnings/etc. and should engage the ODPM leadership at an agreed upon time frame that would be worked out prior to any event taking place. There should also be the close collaboration with the WRA and the Ministry of Works and Transport where deemed necessary.

Activation of the NEOC/REOCs will be done according to the respective SOPs.

### Flood Specific Roles and Responsibilities

Agency	Risk	Pre-planning	Emergency Response	Recovery
Met Office	Fluvial & Flash Flooding	Prepare and maintain Flood Warning Plan;	Minor flood: Issue warnings Major flood: As for minor flood	
WRA	Fluvial & Flash Flooding	Advise on developing proposals; Update flood risk maps; Support flood risk assessments; Maintain watercourse capacity & flood mgmt structures	Minor flood: Monitor catchments; Major flood: As for minor flood	
TTFS	Fluvial & Flash Flooding	SOP response to a special service. Responsibilities under the ??? Act.	Minor: Liaise with any relevant agency; prioritize response and resources. Assist with pumping. Give priority to flooding involving risk of life, fire or explosion. Environmental issues Major: As with minor flood. Inform relevant officers. Assess resources.	Assist other agencies minimize the impact on the community.
TTPS				
Ambulance GMRTT				
TTDF				
MOWT				
MOLG				
MOH				

### Concept of Operations

Initial alert and notification can come from the public (directly or through the media), or any of the agencies that provide technical services (Met. Service, Drainage/Water Resource Service) associated with water resource and/or flood management.

Following confirmation, the event will be handled as a:

- Level 1 Emergency through the routine activities of the Emergency Services (Police, Fire, Health), and Technical Services (Met. Service, Drainage/Water Resource Service).
- Level 2 (or higher) Emergency, at which time the EOC Call Out cascade is initiated, the NEOC/REOC is activated and the various agencies named in the National Flood Contingency Plan enter into a coordinated response.

EOC activation initiates Standard Operating Procedures (SOPs) in these functional areas to manage the flood event:

- Alert and Notification
- Telecommunications
- Emergency Operations Centre
- Municipal Disaster Committee
- Flood Control
- Evacuation
- Transport
- Search and Rescue
- Security
- Emergency Relief
- Health
- Public Health
- Near-shore Environment
- Debris Removal
- Damage Assessment
- Public Information and Education
- Recovery

## Multi-Agency Flood Plans: Municipal Planners Guidelines

The information here is intended to provide guidance on the detail to be included within the components of a multi-agency flood plan (MAFP).

### 1. Introduction and Document Control

- Brief background and context of the Plan, which is included/excluded
- Plan Author(s) • Primary reviewers • Distribution details • Document version

**2. Aim and objectives of the plan:** describe the purpose of the plan and the strategic outcome expected in responding to a flood (i.e what successful implementation of the plan would look like). It should also clarify the purpose of the plan i.e. whether it should be used during a flooding incident or whether it is a planning tool for use prior to an incident.

It should also describe the different types and sources of flooding and their status with the Community Risk Register. Should include maps of the flood outline for fluvial flooding. Maps should be of suitable scale to identify key infrastructure and transport networks that are at risk of flooding.

### 3. The risk of flooding:

#### Community Flood Risk Summary Sheet

(For a community provided with a flood warning service)

Description:		
No. of people/properties at risk:	No. of vulnerable people at risk:	Key vulnerable infrastructure
No. of properties registered to Flood Warning service:	Return Period:	Lead Time:
Flooding History (if known):		
Flood Defences/Alleviation Measures (if any)		
Flood Warning Status Area(s) at risk (refer to map)		
Flood Watch:		
Flood Warning:		
Severe Flood Warning:		
Risk Assessment:		
Likelihood:		
Impact: - Health - Social - Economic - Environmental	Mean Impact Score	Final Risk Rating