

**DISASTER EVACUATION REPORT FOR PORTMORE (SUMMARY)**

## INTRODUCTION

The Portmore Evacuation Plan details the arrangements necessary to cope with the disastrous effects resulting from meteorological events such as hurricanes, tropical storms flooding, storm surges, wind destruction, depressions.

There are two parts to the plan. **Part A** provides locational, demographic and physical information on the area. **Part B** presents the operational procedures which will be used by Office of Disaster Preparedness and Emergency Management (ODPEM), the community, local government authorities and organisations in the parish in the preparations, management and coordination of evacuations prior to the landfall of these meteorological events.

It assigns responsibilities for specific roles and functions for the Portmore Management Committee, Government Agencies and authorities, participating agencies and the general public. It will also serve as a guide in the emergency decision-making process through the provision of coordination for all activities, personnel and any other resources which will need to be garnered in the Evacuation process. Thereby ensuring the reduction in loss of life and property, and the efficient and rapid evacuation of residents of the vulnerable areas in the event of a disaster.

### 1.1 THE AUTHORITY

The Portmore Evacuation Plan is a sub-plan of the National Disaster Plan. The National Disaster Response Plan of Jamaica is produced under the provisions of section 15 of **The Disaster Preparedness and Emergency Management Act 1993**. Authority for declaring a state of emergency is vested in the Governor General on the advice of the Prime Minister. The Office of Disaster Preparedness and Emergency Management (ODPEM), through its Director General will co-ordinate during the state of emergency, all personnel, medical and emergency services made available by respective departments, various organisations local authorities and any other persons who may be so determined. ODPEM's responsibilities are according to section (4) of the ODPEM's Act of 1993:

*" The principle objects of the office is to advance disaster preparedness and emergency management measures in Jamaica by facilitating and co-ordinating the development and implementation of integrated disaster management systems".*

### 1.2 USE OF THE PLAN

The Portmore Evacuation plan is to be used: -

- (a) For operational response to meteorological disasters which impact on Portmore
- (b) For the education and training of members of the community in Disaster Mitigation, Prevention, Preparedness, Response, Rehabilitation and Recovery, including annual simulation exercises.
- (c) For the provision of information to the general public before, during and after disasters.
- (d) For the provision of the appropriate disaster related equipment and material for the EOC.

### **1.3 THE ACTIVATION PROCEDURE**

## 1.4 Alert Phase

### 48 hours before impact

ACTIVITIES	RESPONSIBILITY
1. Partially activate NEOC at ODPEM to monitor the overall situation.	<b>ODPEM</b>
<ol style="list-style-type: none"> <li>1. Instruct Parish Disaster Committee of intended plans to Evacuate</li> <li>2. Alert Portmore Residents via the media.</li> <li>3. Alert JDF, Fire Brigade, Police, Transport Authority and other agencies forming part of the Portmore Disaster Committee.</li> <li>4. Make available all relevant information on the hazard to the residents of Portmore and the general public.</li> <li>5. Make available all relevant Shelters and Assembly Point locations to the residents of Portmore and the general public.</li> </ol>	<b>ODPEM</b>
<ol style="list-style-type: none"> <li>1. Keep abreast of the situation and maintain constant communication with ODPEM</li> <li>2. Assist in alerting process.</li> <li>3. Commence mobilization.</li> </ol>	<b>Police</b>
<ol style="list-style-type: none"> <li>1. Keep abreast of the situation and maintain constant communication with ODPEM.</li> <li>2. Commence mobilization.</li> </ol>	<b>JDF</b>
<ol style="list-style-type: none"> <li>1. Keep abreast of the situation and maintain communication with ODPEM.</li> <li>2. Commence mobilization</li> </ol>	<b>Fire Brigade</b>
<ol style="list-style-type: none"> <li>1. Notify the Portmore Public Transportation franchise operator(s) of intended evacuation &amp; maintain contact with PDMC</li> <li>2. Keep abreast of the situation and maintain communication with ODPEM</li> </ol>	<b>Transport Authority</b>

### 48 hours before impact (cont'd)

ACTIVITIES	RESPONSIBILITY
1. Alert Portmore Disaster Committee of intent to commence evacuation	<b>St. Catherine Parish Disaster Coordinator</b>
1. Convene meeting with the Portmore Disaster Management Committee	<b>Chairperson of Portmore Disaster Committee</b>
<p>1. Activate, and assume responsibility for, the establishment and administration of the Portmore Emergency Operations Centre (PEOC). This includes:</p> <ul style="list-style-type: none"> <li>• Personnel and equipment</li> <li>• Communication links with ODPEM, the response agencies and personnel</li> <li>• Stationery, message pads, display maps and other resources.</li> </ul>	<b>Portmore Disaster Management Committee</b>

## 1.5 BRIEFING STAGE

### 36 Hours before impact

ACTIVITIES	RESPONSIBILITY
1. Continuous monitoring of the threat and disseminate information to Portmore EOC and the public	<b>ODPEM</b>
1. Activate emergency shelters within the Portmore area. 2. Maintain contact with relief and welfare workers for the emergency shelters 3. Instruct Assembly Point leaders to proceed to their assigned assembly points 4. Dispatch Citizen Band and other assigned communications personnel to proceed to their designated assembly points and assist Assembly Point leaders with communications.	<b>Portmore Disaster Management Committee</b>

## 1.6 EVACUATION STAGE

### 24 hours before impact

ACTIVITIES	RESPONSIBILITY
<ol style="list-style-type: none"> <li>1. Instruct the PDMC to activate the Evacuation Plan</li> <li>2. Advise PHC to activate plan for Portmore Police Division Headquarters.</li> </ol>	<p><b>ODPEM</b> <b>ODPEM</b></p>
<ol style="list-style-type: none"> <li>1. Monitors the activities of all response agencies according to the Portmore Evacuation Plan.</li> <li>2. Monitors the evacuation process.</li> <li>3. Maintains communication with ODPEM.</li> </ol>	<p><b>Portmore Disaster Management Committee</b></p>
<p>Alert the Portmore Police Divisional Headquarters to activate their plan.</p> <p>Dispatch Police representatives to the Portmore EOC</p> <p>Dispatch Police Traffic control personnel to the checkpoints.</p> <p>Deploy security personnel to the evacuated areas, as requested by the Portmore EOC</p> <p>Carries out the Evacuation of the Fort Augustus Female Prison.</p> <ol style="list-style-type: none"> <li>5. Assign personnel to: <ul style="list-style-type: none"> <li>• Protect Property</li> <li>• Prevent vandalism</li> <li>• Control traffic</li> <li>• Maintain security</li> <li>• Assist in the pre-positioning of communications equipment.</li> </ul> </li> </ol>	<p><b>Police High Command</b></p>
<p>Initiate evacuation procedures for Transportation of evacuees.</p>	<p><b>Transport Authority</b></p>

### 24 hours before impact (cont'd)

ACTIVITIES	RESPONSIBILITY
<ol style="list-style-type: none"> <li>1. Evacuation by air and sea.</li> <li>2. Assist with security.</li> <li>3. Pre-positioning of communication resource equipment.</li> </ol>	<b>JDF</b>
<ol style="list-style-type: none"> <li>1. Deploy representatives to Portmore EOC</li> <li>2. Pre-positioning of resources: <ul style="list-style-type: none"> <li>• communication equipment</li> <li>• manpower to assist with evacuation</li> </ul> </li> <li>3. Assist in the evacuation especially persons with special needs (e.g. disabled and aged).</li> </ol>	<b>Jamaica Fire Brigade</b>
<ol style="list-style-type: none"> <li>1. Coordinate the dispatch of public transportation vehicles for the evacuation process.</li> <li>2. Dispatch representative to Portmore EOC</li> </ol>	<b>Transport Authority</b>
<ol style="list-style-type: none"> <li>1. Ensure that all members of the PDMC are present at EOC.</li> <li>2. Confirm the mobilisation of all response/emergency agencies.</li> <li>3. Confirm evacuation status of assembly points.</li> <li>4. Confirm the status of the transportation procedures for evacuation.</li> <li>5. Confirm status of assembly points.</li> <li>6. Provide situation reports for ODPEM.</li> <li>7. Direct any necessary on-the-spot changes in the evacuation procedure.</li> </ol> <p>Coordinate the overall evacuation process.</p>	<b>NEOC Director, Portmore Disaster Management Committee</b>
<ol style="list-style-type: none"> <li>1. Ensure that the shelters are operational.</li> <li>2. Ensure that special health and welfare needs for the evacuees are met.</li> <li>3. Call out CB operators to the Portmore EOC.</li> </ol>	<b>Portmore Disaster Management Committee</b>

## **12 hours before impact**



ACTIVITIES	RESPONSIBILITY
<ol style="list-style-type: none"> <li>1. Continue monitoring threat.</li> <li>2. Liaise with the Evacuation Team to ensure that the evacuation process has been complete.</li> </ol>	<p><b>NEOC Director, Portmore Disaster Management Committee</b></p>
<ol style="list-style-type: none"> <li>1. Maintain security at the shelters.</li> <li>2. Maintain a presence the evacuated areas of Portmore in order to prevent looting.</li> <li>3. Ensure that all residents have evacuated the designated area(s).</li> </ol>	<p><b>Police</b></p>
<ol style="list-style-type: none"> <li>1. Assist with the security at shelters.</li> <li>2. Maintain presence in Portmore in order to prevent looting and protect property.</li> <li>3. Ensure that residents have left the designated area(s).</li> </ol>	<p><b>JDF</b></p>
<ol style="list-style-type: none"> <li>1. Finalise the transportation of persons by public buses.</li> <li>2. Ensure that the buses are secured.</li> </ol>	<p><b>Transport/Authority/Police/JDF/Volunteer Agencies</b></p>
<ol style="list-style-type: none"> <li>1. Collect information on: <ul style="list-style-type: none"> <li>• the evacuation process of residents in the high risk areas of Portmore.</li> <li>• Security deployment to protect property.</li> <li>• Whether/not shelters are functioning.</li> </ul> </li> <li>2. Provide ODPEM with situation reports on a timely basis.</li> <li>3. Secure the Portmore EOC</li> </ol>	<p><b>Portmore EOC Director</b></p>

**6 hours before impact**

<b>ACTIVITIES</b>	<b>RESPONSIBILITY</b>
1. Evacuate all security and emergency services personnel to their respective bases	<b>ODPEM/PDMC/JDF/JCF/JFB/MOH</b>

## 1.7 RESPONSE STAGE *AFTERMATH*

ACTIVITIES	RESPONSIBILITY
<ol style="list-style-type: none"> <li>1. Inform Portmore EOC that all storm activities have been completed.</li> <li>2. Deploy damage survey teams.</li> </ol>	<p><b>ODPEM</b> <b>ODPEM/National Damage Assessment Team.</b></p>
<ol style="list-style-type: none"> <li>1. Provide ground reconnaissance and intelligence to the EOC.</li> <li>2. Provide security for the area in order to prevent looting.</li> <li>3. Provide traffic control for residents returning to Portmore.</li> </ol>	<p><b>Police/Fire Brigade/JDF/PDMC</b></p>
<ol style="list-style-type: none"> <li>1. Ensure response agencies are at EOC.</li> <li>2. Coordinator emergency response for Portmore.</li> <li>3. Determine areas of greatest damage (<i>in keeping with National Damage Assessment Sub-plan of National Plan</i>)</li> <li>4. Ensure access roads are opened for rehabilitation for evacuated areas.</li> <li>5. Liaise with Police to ensure traffic control and security matters are addressed.</li> <li>6. Receive requests for welfare assistance.</li> <li>7. Provide information on damage and welfare needs to ODPEM &amp; St. Catherine Parish Disaster Committee.</li> <li>8. Coordinate the continued management of open shelters.</li> <li>9. Ensure closure of Portmore EOC.</li> <li>10. Provide Situation Report to ODPEM &amp; St. Catherine Parish Disaster Committee.</li> </ol>	<p><b>Portmore EOC Director/PDMC</b></p>

## 1.8 RECOVERY STAGE

ACTIVITIES	RESPONSIBILITY
In keeping with the National Disaster Plan (1997)	<b>ODPEM/Parish Disaster Committee/Portmore Disaster Management Committee</b>

## **2.0 PORTMORE EVACUATION PLAN PROCEDURES**

Evacuation of Portmore will be carried out using public and private transportation. The procedures involved using both systems are detailed as follows:

### **2.1 PRIVATE TRANSPORTATION EVACUATION PROCEDURES.**

All private transporters will be required to travel along the designated routes for their communities, which would be the same for all public transportation.

- Municipal Boulevard (I-95)
- Waterford Dyke Road on to the Mandela Highway
- Gregory Park Main road on to the Mandela Highway
- North Dyke Road on to the Mandela Highway
- Dawkins Drive on to Causeway Main Road (one way thoroughfare out of Portmore)
- Augusta Drive (Port Henderson Road) on to the Causeway Main Road
- Dunbeholding Main Road on to the Spanish Town Bypass
- Bernard Lodge main road on to the Spanish Town Bypass
- Lakes Pen and Grange Lane Main Roads will be used as alternate routes to Spanish Town should the situation warrants.

The access route into Portmore for private transportation is via Mandela Highway on to the North Dyke Road.

Private transporters will commence evacuation once an **alert** has been given to evacuate.

### **2.2 PUBLIC TRANSPORTATION EVACUATION PROCEDURES.**

The primary mode of transportation for evacuation at this stage is via Public Buses from the Franchise Operator in Portmore. Each bus involved in the evacuation process will be issued with a map. This map will indicate the evacuation routes for the specified assembly point(s) that a bus, or buses, will be evacuating. Other modes of transportation will be accessed from the response agencies, which includes (JDF, JCF, JFB, PWD, ODPEM,) and be called the secondary mode of transport.

The evacuation of Portmore will be conducted in four phases. Priority zones will be evacuated in the first three phases and secondary zones in the fourth phase. The procedure will be altered to begin with communities that are at that time rendered most vulnerable to the impending or occurring disaster. The general procedure for evacuation of communities is as follows:

- an alert is given to evacuate
- residents proceed to the nearest assembly point in their community
- organize and prepare residents for evacuation
- Board residents on to designated buses and evacuate.

The same procedure will be applied for the partial evacuation of a community or Portmore.

The evacuation procedures for informal settlements are as follows:

- An alert signal is given to evacuate
- Residents will assemble along the main road of their respective communities
- Buses will be demarcated with the respective community name and issued with a map indicating evacuation route(s)
- A member of the assembly point staff will accompany the bus in order to organize and prepare residents for evacuation
- Board residents on buses and evacuate

### **2.2.1 PHASE ONE (P1)**

In the first phase of evacuation, the assembly points of each zone will be activated. Priority Zones 1, 2, 5, and 6 communities will commence evacuation simultaneously within 30 minutes of an alert signal to evacuate. (See Map 1 and Table 1). There are 16 assembly points facilitating the 14 communities that will be evacuated in the first phase.

The Routes for Priority Zones in Phase 1 of evacuation is as follows: -

- *Priority Zone 1*: - route is via the Waterford Dyke Road via Mandela Highway to Kingston (R1NK) & (route is through the Christian Pen Community via Mandela Highway to Kingston (R7NK).
- *Priority Zone 2* - route is via the Causeway Main Road to Kingston (R2EK).
- *Priority Zone 5* - route is via Bernard Lodge Road to Spanish Town (R5WSpT).
- *Priority Zone 6* - route is via the Dunbenholding Road to Spanish Town (R6WSpT).

### **2.2.2 PHASE TWO (P2)**

The second phase of the evacuation process will begin between 30 minutes - 45 minutes after Phase 1's evacuation has commenced (1 hour - 1 hour and 15 minutes after an evacuation alert has been issued). Priority Zone 4 will be the only zone commencing evacuation in the second phase. Here, there is one assembly point facilitating two communities with a population of approximately 3440, to be evacuated.

Route for Priority Zone 4 is via the Causeway to Kingston (R4EK)<sup>1</sup>

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<sup>1</sup> The population in Priority Zone 4 is relatively small and will require less time to evacuate. As such this route (R4EK) will be used as an access into Portmore or an additional route for Phase 3 and Priority Zone 3 private vehicles. The time period of evacuation process and distance of routes is unknown.

### **2.2.3 PHASE THREE (P3)**

The third phase of evacuation will begin between 30 minutes - 45 minutes of the second phase's initiation. That is, (1 hour 45 minutes - 2 hours after an evacuation alert has been issued). Priority Zone 3 is the last and sole Priority Zone that will commence evacuation in this phase. There are four assembly points facilitating six (6) communities with a population of approximately 10,031 to be evacuated.

Route for Priority Zone 3 is via the Causeway to Kingston (R2EK).

### **2.2.4 PHASE FOUR (P4)**

The third phase and all its related priority zones should be completely evacuated in order to commence the fourth phase of evacuation. The evacuation of the secondary zones. However, should the situation warrant, evacuation of Phase Four (P4) may begin within 15 - 30 minutes after Phase Three (P3) has commenced (2 hours and 30 minutes - 3 hours after an alert has been issued).

The communities in Secondary Zones 1, 2 and 3 will commence their evacuation simultaneously using their respective routes. The Routes are as follows:

- Route for Secondary Zone 1 is via the Mandela Highway to Kingston (R7NK).
- Route for Secondary Zone 2 is via the Bernard Lodge Road to Spanish Town (R5WSpT).
- Route for Secondary Zone 3 is via the Dunbenholding Road to Spanish Town (R6WSpT).

There are ten assembly points facilitating 26 communities with a population of approximately 30,275 (total is 13 of 26 communities) to be evacuated.

### **3.0 POLICE TRAFFIC CONTROL POINTS**

In order to facilitate Private Transportation's traffic flow, Police Traffic Control Points will be established for the evacuation and return of residents after the hazard threat has subsided. These Police traffic control Points are the following road intersections:

1. Dawkins Drive, Causeway Main road and Augusta Drive (Port Henderson Road)
2. Portmore Parkway, Portmore Drive and West Parade Road
3. Portmore Parkway, Passage Fort Drive, Waterford Parkway, and Waterford Dyke Road.
4. Passage Fort Drive, Gregory Park and Newlands Main Road
5. Grange Lane Main Road and North Dyke Road
6. Christian Pen Main Road, Waterford Dyke Road, Lakes Pen Main Road and North Dyke Road.
7. North Dyke Road and Bernard Lodge Main Road.
8. Newland Main Road and Naggo Head Drive
9. Braeton Parkway and North Dyke Road
10. Braeton Parkway and Newland Main Road
11. Naggo Head Drive and Hellshire Main Road
12. Naggo Head Drive and Braeton Parkway
13. Augusta Drive (Port Henderson Road) and Portmore Parkway



**TABLE 1: LIST OF ZONES, COMMUNITIES, ASSEMBLY POINTS  
AND ROUTES**

ZONES	COMMUNITIES	ASSEMBLY POINTS	ROUTES
Priority Zone 1	Waterford	<b>1.</b> Waterford Infant School <b>2.</b> Waterford Primary School <b>3.</b> Waterford Comprehensive High School	North Dyke Road onto the Mandela Highway or South Dyke Road onto the Toll Road
Priority Zone 1	Caymanas Gardens Site A	<b>4.</b> Caymanas Race Track Parking Lot	Gregory Park Main Road onto the Dyke Road or Portmore Villa Blvd onto the Dyke Road
Priority Zone 1	Portsmouth	<b>5.</b> Portsmouth Primary School	Right onto Portmore Parkway which then take you to the Dyke Road
Priority Zone 2	Passage Fort Independence City	<b>6.</b> Passage Fort Gospel Assembly <b>7.</b> Passage Fort Football Field	Portmore Drive onto the intersection of Heart Academy down to the intersection of Waterford, right onto the Dyke Road or Passagefort Drive onto Municipal Blvd
Priority Zone 2	Westchester	<b>8.</b> Westchester Community Centre	Dawkins Drive onto the Toll Road
Priority Zone 3	Edgewater	<b>9.</b> Edgewater Baptist Church	Portmore Parkway onto Dawkins Drive onto the Toll Road or Augusta Drive onto the Toll Road
Priority Zone 3	Bridgeview	<b>10.</b> Edgewater Community Centre	Portmore Parkway onto Dawkins Drive onto the Toll Road or Augusta Drive onto the Toll Road

**TABLE 1: LIST OF ZONES, COMMUNITIES, ASSEMBLY POINTS AND ROUTES (Continued).**

ZONES	COMMUNITIES	ASSEMBLY POINTS	ROUTES
Priority Zone 3	Graveymeade Westmeade West Port	<b>11.</b> West Port Community Centre	Bridgeport Road to Westbay onto Fort Augusta Drive or Portmore Parkway onto Dawkins Drive Then onto the Toll Road
Priority Zone 3	Bridgeport	<b>12.</b> Bridgeport Comprehensive High School	South onto Germaine Road then onto Port Henderson Road This route can either takes you onto Fort Augusta Drive or Portmore Parkway onto Dawkins Drive
Priority Zone 4	West Bay Port Henderson	<b>13.</b> Bayside New Testament Church of God	Fort Augusta onto the Toll Road
Priority Zone 5	Southborough	<b>14.</b> Southborough Community Centre	Newland Road which will take you onto Grange lane then onto Municipal Boulevard (I-95)
Priority Zone 5	Marine Park	<b>15.</b> Naggo Head Primary School	Along Naggo Head onto Newland Road onto Grange Lane onto Municipal Blvd or onto the Pt. Henderson towards the West Bay roundabout then onto the Ft. Augusta Drive onto the Toll Road
Priority Zone 6	Braeton 3 & 4	<b>16.</b> Braeton All Age School/S.D.C. Sports Complex	Municipal Blvd onto the Mandela Highway
Priority Zone 6	Queen Park Kensington	<b>17.</b> Belmont Park Primary School	Forth Street onto Hellshire at intersection (85) North onto I-95 or right along Braeton Road to West Bay roundabout onto Ft Augusta Drive onto the Toll Road
Priority Zone 6	Chedwin	<b>18.</b> Greater Portmore Learning Resources Centre	Dunbeholding onto Spanish Town or Braeton Parkway onto the Municipal Blvd
Priority Zone 6	Breaton New Town Sabina	<b>19.</b> Greater Portmore basic school. <b>20.</b> Greater Portmore High School <b>21.</b> Greater Portmore Primary School	Hellshire Road onto the Municipal Blvd

**Source: Office of Disaster Preparedness and Emergency Management (ODPEM) March -1999**

**TABLE 2: LIST OF EVACUATION PHASES, ZONES, ASSEMBLY POINTS & EVACUATION ROUTES**

<b>EVACUATION PHASES</b>	<b>ZONES</b>	<b>ASSEMBLY POINTS</b>	<b>EVACUATION ROUTES</b>
Phase 1	Priority Zone 1   Priority Zone 2   Priority Zone 5 & 6	# 1 – 5   # 6 – 8   # 14 – 21	<ul style="list-style-type: none"> <li>• North Dyke Road onto the Mandela Highway or South Dyke Road onto the Toll Road</li> <li>• Gregory Park Main Road onto the Dyke Road or Portmore Villa Blvd onto the Dyke Road</li> <li>• Right onto Portmore Parkway which then take you to the Dyke Road</li> <li>• Portmore Drive onto Portmore Parkway down to the intersection of Waterford, right onto the Dyke Road or Passagefort Drive onto Municipal Blvd</li> <li>• Dawkins Drive onto the Toll Road</li> <li>• Newland Road which will take you onto Grange lane then onto Municipal Boulevard (I-95)</li> <li>• Along Naggo Head onto Newland Road onto Grange Lane onto Municipal Blvd or onto the Pt. Henderson towards the West Bay roundabout then onto the Ft. Augusta Drive onto the Toll Road</li> <li>• Municipal Blvd onto the Mandela Highway</li> <li>• Forth Street onto Hellshire at intersection (85) North onto I-95 or right along Braeton Road to West Bay roundabout onto Ft Augusta Drive onto the Toll Road</li> <li>• Dunbeholding onto Spanish Town or Braeton Parkway onto the Municipal Blvd</li> <li>• Hellshire Road onto the Municipal Blvd</li> </ul>
Phase 2	Priority Zone 4	# 13	<ul style="list-style-type: none"> <li>• Fort Augusta onto the Toll Road</li> </ul>
Phase 3	Priority Zone 3	# 9 – 12	<ul style="list-style-type: none"> <li>• Portmore Parkway onto Dawkins Drive onto the Toll Road or Augusta Drive onto the Toll Road</li> <li>• Portmore Parkway onto Dawkins Drive onto the Toll Road or Augusta Drive onto the Toll Road</li> <li>• Bridgeport Road to Westbay onto Fort Augusta Drive or Portmore Parkway onto Dawkins Drive Then onto the Toll Road</li> <li>• South onto Germaine Road then onto Port Henderson Road This route can either takes you onto Fort Augusta Drive or Portmore Parkway onto Dawkins Drive onto the Toll Road</li> </ul>
Phase 4	Secondary Zone 1	# 22 – 25	<ul style="list-style-type: none"> <li>•</li> </ul>

	Secondary Zone 2	# 26 - 28	
	Secondary Zone 3	# 29 - 31	

**TABLE 2: LIST OF EVACUATION PHASES, ZONES, ASSEMBLY POINTS & EVACUATION ROUTES (cont'd)**

ZONES	COMMUNITIES	ASSEMBLY POINTS	ROUTES
Secondary Zone 1	Christian Pen Lesser Portmore Hamilton Gardens Watson Grove Gregory Park Caymanas Gardens "D"	<b>22.</b> Gregory Park All Age	Route 7 North to Kingston R7NKgn
Secondary Zone 1	Meadowvale Surrey Meadows	<b>23.</b> Caymanas Race Track Parking Lot	Route 7 North to Kingston R7NKgn
Secondary Zone 1	Independence City  Cumberland	<b>24.</b> Southborough Primary <b>25.</b> Truth Tabernacle United Church of Jamaica  <b>26.</b>	Route 7 North to Kingston R7NKgn Route 7 North to Kingston R7NKgn
Secondary Zone 2	Portmore Gardens Cumberland - Meadows	<b>27.</b> Church of the Holy Spirit "Anglican Church"	Route 5 West to Spanish Town R5WSpTwn
Secondary Zone 2	West Cumberland Meadows	<b>28.</b> Braeton Housing Scheme "Open Space".	Route 5 West to Spanish Town R5WSpTwn
Secondary Zone 2	Braeton	<b>Assembly Points 14 &amp; 15</b>	Route 5 West to Spanish Town R5WSpTwn
Secondary Zone 2	Naggo Head Newlands	<b>29.</b> Portmore Pines Plaza	<b>Same Route</b>
Secondary Zone 3	Portmore Pine Silver Stone	<b>30.</b> Ascot High School <b>31.</b> Ascot Primary School <b>32.</b> Open space beside Basic school in Silver Stone <b>33.</b> Park Located in Pines	Route 6 west to Spanish Town R6WSpTwn
Secondary Zone 3	Belmount Park, Monza Daytona, Epsom, Ascot Aintree, Bandown Park		Route 6 west to Spanish Town R6WSpTwn

Source: Office of Disaster Preparedness and Emergency Management (ODPEM) March -1999



## **EVACUATION ROUTES MAPS**

### **4.0 THE PORTMORE EMERGENCY EVACUATION ORGANISATION**

#### **PERSONNEL TO BE STATIONED AT PORTMORE EOC – PORTMORE HEART ACADEMY**

##### **EOC COORDINATOR: (CHAIRMAN PORTMORE MANAGEMENT COMMITTEE)**

###### **Responsible for:**

- ◆ Coordinating all responses to the event, and manage the information flow to ODPEM, the Parish Disaster Committee and the Media.
- ◆ Identifying and allocate resources as needed.
- ◆ Providing briefing for EOC Staff.
- ◆ Preparing interim and final reports.

##### **ASSEMBLY POINT COORDINATOR**

###### **Responsible for:**

- ◆ Providing information on status of Assembly Points to the EOC Coordinator.
- ◆ Directing Assembly Point Managers on policy issues.
- ◆ Providing information on resources needed.
- ◆ Liaising with the Transportation and Welfare Coordinators on the movement of evacuees
- ◆ To provide periodic written/oral reports for the EOC Coordinator

##### **TRANSPORT COORDINATOR**

###### **Responsible for**

- ◆ Providing information on the status of Transportation availability.
- ◆ Directing the Transportation Manager on the deployment of transportation.
- ◆ Making arrangements with the Gas Stations for the provision of fuel.
- ◆ Liaising with the Assembly Point and Welfare Coordinators on the movement of evacuees.
- ◆ Providing periodic written/oral reports for the EOC Coordinator

## **WELFARE COORDINATOR**

### **Responsible for**

- ◆ Providing information on Shelter and Relief arrangements.
- ◆ Providing information on resource requirements (goods/manpower).
- ◆ Coordinate shelter activities between Kingston and St. Catherine.
- ◆ Providing periodic written and oral reports for the EOC Coordinator
- ◆ Ensuring the selection and training of shelter managers.

## **COMMUNICATIONS COORDINATOR**

### **Responsible for**

- ◆ Identifying communication facilities. With the assistance of ODPEM
- ◆ Developing the communication network.
- ◆ Assigning communications facilities to assembly points/shelters/transportation (buses).
- ◆ Reporting on the communication capability.
- ◆ Providing written/oral reports for the EOC Coordinator

## **INFORMATION COORDINATOR**

### **Responsible for**

- ◆ Establishing links with the media houses.
- ◆ Ensuring the preparation of briefings before, during, and after events for the information of the EOC Director/PDC/ODPEM.
- ◆ Arranging appropriate interviews on the preparation and response measures carried out

## **EMERGENCY TEAM**

This team is comprised of the following agencies:

- ◆ Jamaica Constabulary Force
- ◆ Jamaica Defence Force
- ◆ Jamaica Fire Brigade
- ◆ Roads and Works
- ◆ West Indies Home Contractors (WIHCON)
- ◆ Urban Development Corporation
- ◆ Ministry of Health
- ◆ Red Cross
- ◆ Salvation Army
- ◆ Adventist Development Relief Agency (ADRA)



- ◆ Churches
- ◆ Poor Relief
- ◆ Ministry of Labour, Social Security and Sports

**Responsibility:**

The Emergency team is responsible for:

- ◆ Traffic control
- ◆ Security
- ◆ Public Alert System
- ◆ Road Clearance
- ◆ Health and Welfare issues
- ◆ Rescue operation
- ◆ Evacuation

**4.1 RESPONSE TEAM AND THEIR ROLE OUTSIDE THE EOC**

### **Assembly Point Manager**

- a) Coordinates all evacuation procedures and activities at the assembly point.
- b) Liaises with the Portmore EOC and Transport Authority personnel.
- c) Issues periodic status reports of assembly points to ODPEM and the operational EOC.
- d) Authorize EPF's package for each transportation before departure.
- e) Dispatches transportation to the respective collection areas/destination.
- f) Maintains count of the number of evacuees evacuating the assigned assembly points.
- g) Maintains count of the number of evacuees dispatched to the different collection areas/destinations from the assigned assembly point(s).

### **Sorting Officer 1**

- a) Briefs families and individuals on evacuation procedures.
- b) Distributes and instructs families and individuals how to complete Evacuation Population Form (EPF).
- c) Directs families and individuals to the waiting area(s).

### **Sorting Officer 2**

- a) Collects and ensures that each family and individual EPF is complete with all the necessary information.
- b) Conducts head count of families and individuals in the loading area(s) for transportation.
- c) Continues to brief the evacuees on evacuation procedures.

### **Loading Officer**

- a) Checks each family and individuals and ensures that the information corresponds with their respective EPF they are loaded on to transportation for evacuation.
- b) Ensures that all family members are loaded on to the same transportation.
- c) Briefs evacuees on the destination (shelters) and other relevant procedures.

## **TRANSPORT PERSONNEL**

### **Portmore Mini Bus Association**

- ◆ Coordinates the movement of evacuees from assembly points to shelters.
- ◆ Advises evacuees on the condition of evacuation routes.
- ◆ Provide a listing of personnel within the association.
- ◆ Ensures that Drivers/Conductors provide information on number the of evacuees transported.

#### **WELFARE PERSONNEL/ SHELTER MANAGERS**

- ◆ Report to assigned shelter(s).
- ◆ Register evacuees.
- ◆ Provide welfare support.

#### **COMMUNICATIONS PERSONNEL**

- ◆ Identify personnel and train appropriately to provide communication link between Assembly Points, Shelter and the EOC.
- ◆ Provide reports on road condition to EOC.

## 5.0 ASSEMBLY POINT COMPOSITION

There are twenty-nine (29) Assembly Points involved in the evacuation procedures. Each Assembly Point requires a basic staff of **Four** personnel. This staff complement will be augmented to facilitate the evacuation population size.

The Staff composition is as follows:

### **Sorting Officer 1:**

#### **Responsibilities**

- (a) Brief Families and individuals of evacuation procedures.
- (b) Distribute and instruct families and individuals how to complete *Evacuation Population Form (EPF)*.
- (c) Direct families and individuals to waiting area(s).

### **Sorting Officer 2:**

#### **Responsibilities**

- (a) Collect and ensure that each family and individual **EPF** is completed with the necessary information.
- (b) Conduct head count of families and individuals with cross – reference to each **EPF**.
- (c) Direct each family and individuals to the loading area(s) for transportation.
- (d) Continue to brief evacuees of evacuation procedures.

### **Loading Officer:**

#### **Responsibilities**

- (a) Check of each family and individuals to correspond with their respective EPF, as they are loaded on to transportation for evacuation.
- (b) Ensure that all family's members are loaded on to the same transportation.
- (c) Brief evacuees of destination and other relevant procedures.

**Assembly Point Manager  
Responsibilities**

- (a) Coordinate all evacuation procedure and activity at the assembly point.
- (b) Liaison with Portmore EOC and Transport Authority personnel.
- (c) Issue periodic status reports of assembly points to ODPEM and operational EOC.
- (d) Authorize **EPF**'s package for each transportation before departure.
- (e) Dispatch transportation to respective collection areas/destination.
- (f) Maintain count of the number of evacuees evacuating the assign assembly point.
- (g) Maintain count of the number of evacuees dispatch/sent to the different collection areas/destinations from the assign assembly point.

## **6.0 THE MAJOR COMPONENTS OF THE PLAN INCLUDES:-**

### **6.1 Risk and Vulnerability Assessment**

- Identification and analysis of flood and hurricane hazards that may affect Portmore.
- Analysis of potential damage impacts
- Identification and prioritization of evacuation zones

### **6.2 Public Duration and Warning Components**

- Guideline for establishment of a comprehensive programme for public education
- Description of existing system of forecasting approaching storms and issuing warnings
- Procedure for public dissemination of emergency orders for warning evacuation.

### **6.3 Evacuation and Rescue**

- Area-wide procedure of orderly evacuation of residents vulnerable to the hazards of impending storms;
- The identification of the best evacuation routes and estimated total time (mobilization time, travel time, queering delay time) to evacuate threatened residents to safe location.

### **6.4 Shelter**

- Designation of safe structures with a total capacity adequate to shelter evacuated residents on a short term basis
- Guidelines for shelter management

### **6.5 Recovery Component**

- Guidelines to facilitate an effective public and private response in the post-disaster restoration of infrastructure and community services as well as the protection of public health.

The Portmore Evacuation Plan is designed in accordance with the National Disaster Strategy for combating disasters specifically in the areas of:

- a. Rigorous mitigation, prevention and preparedness programmes
- b. Disaster Education

- c. Provision of information at all levels before, during and after a disaster
- d. Provision of appropriate and state of the art equipment to disaster response agencies.

## **7.0 THE AREA - PORTMORE**

### **7.1 Location**

The area referred to as 'Portmore' under the Portmore evacuation Plan includes Portmore, Greater Portmore, Bernard Lodge and Lime Tree. However, for ease of reference the area is referred to as Portmore in this document. Portmore is located in the south-eastern quadrant of the parish of St. Catherine. Specifically it is located 13 km West of downtown Kingston, and 9 km South-east of Spanish Town (See Map 1 contained in pocket fold ).

### **7.2 Topography**

The topography of Portmore can be broken down into three distinct zones:

1. The highlands of Port Henderson Hills and Hellshire hills
2. The low lands of the St. Catherine plain, and
3. The coastal spits

The Port Henderson Hills is an anticline which rises to a height of 213 m (698 ft) above sea level. The St. Catherine plains form the alluvial fan which converge near Spanish Town and slopes gently to the sea. The highest elevation is 6.1m (20ft). The North-East trending spit is long, narrow, topographically low. It encloses the salina, Dawkins Pond and Great Salt Pond.

The area is also partially drained by a series of irrigation channels and man-made drains. The irrigation channels are mainly in the western and northern portion (agricultural zone) of the study area. Within the developed areas major drains are constructed in order to carry storm water run-off.

### **7.3 Hydrology**

Surface water represents the excess in precipitation over evapo-transpiration losses when allowance has been made for infiltration and surface detention. Jamaica is made up of ten (10) hydrological basins. The Portmore/Hellshire sub-district is located in the Rio Cobre basin, which is further sub-divided into two sub basins, and their hydro-stratigraphic units.

### **7.4 Drainage**

The area is relatively well drained by the water channels. However, it has been observed that the drainage system creates a problem for the water quality obtained from the wells in the area. Prior to the 1970's, the area was mainly used for agricultural purposes. Fields were initially irrigated with fresh water from the Rio Cobre River and other water sources. This water usually filters through the fields and into the sea or in the



nearby ponds. In so doing there was a natural equilibrium between saline water from the sea and fresh water from the land. However, due to a reduction in the volume of fresh water the above mentioned equilibrium has been distributed. The result is the salinization of hitherto agricultural lands (See Map 1 – Drainage enclosed).

Within the built-up areas, large drains collect and carry water into the sea without infiltration into the soils. The Ferry River, Barnes Creek, Naggo Head Spring, and Campeache gully also play an important role in the drainage system. The Naggo Head Spring and Campeache Gully are seasonal streams. The increasing urbanization of the catchment area of Naggo Head Spring has reduced the possibility for small surface storage. However, small-scale storage of seasonal storm run-off and excess irrigation may occur within the Campeachy Gully.

#### **7.4.1 Ground water flow in the Limestone Aquifer**

In the limestone aquifer, the gross flow is quite simple. Water enters the in the recharge areas and flows to discharge points such as abstraction wells, springs and probably the sea. There is almost a radial flow pattern from the limestone towards Caymanas, Bernard Lodge area and Hellshire Hills.

The Caymanas Bernard Lodge area also receives also ground water flow from the limestone outcrops, East of the Rio Cobre. A great part of the flow in this aquifer takes place below the Caymanas Bernard Lodge area. This includes also includes the flow to Ferry Spring. It should be mentioned that the highest transmissivity values are encountered east of the Rio Cobre. At present the Portmore/Hellshire sub-district is drained mainly by the Rio Cobre River.

#### **7.5 Geology & Soils**

Portmore comprises three main geological formations (See Map 2 – Geology).

1. The "basal" younger Liguanea Alluvium by "deltaic" deposits
2. The limestone hills, which is comprised of both yellow and white limestone, and
3. The Marsh and salinas

##### **7.5.1 White Limestone Group**

The White limestone group is comprised of the Troy Dolomite and the Newport Formation. They are located in and constitute the bulk of the Hellshire and Port Henderson Hills.

The Troy Dolomite formation can only be observed outcropping on the Port Henderson Hills of the project area. It overlaps the Grants Pen clays of the yellow limestone group totalling at least 300ft and at most 500ft. The outcrop in the Port Henderson Hills is an area of gently rounded topography in contrast to the fretted and

jagged terrain of the Newport Formation. The Newport Formation outcrops through the Hellshire Hills.

### **7.5.2 Yellow limestone Group**

#### *Grants Pen Clay*

This formation is only seen in the Rodney Lookout area where it consist of a variable series of clays, sands, white marl and conglomerates. From drilling investigations, Grants pen Clay is overlain and overlapped by the Troy Limestone of the White Limestone Group and appears to be more that 130ft.

Soils formed on limestone hills of white and yellow limestone's are generally loamy and skeletal. They are excessively drained and shallow and with the surface layer generally of a thickness ranging from 5 to 20cm. Run off is high due to steep slopes (more than 20%). Permeability is also high.

### **7.5.3 Upper Coastal Group**

#### *Liguanea Gravels and Alluvium*

Gravels exist in the form of alternating clayey grits, silts a sands. Sediments are poorly sorted and subangular with high clay content. The liguanea gravels are though to be of maximum 600ft and on more solid white limestone.

The north-eastern boundary of the study area, except for Hellshire and Port Henderson Hills, is covered by a broad spread of alluvium deposits. These deposits may be as thick as 400 ft and thickening in a south-eastern direction.

Permeability is variable, tending to be low if clay content is high or if soil is both well graded and compact.

### **7.5.4 Soils**

Soil is formed, basically from the weathering and accumulation of parent rock. Depending on how developed a particular soil and the climatic condition at work; it develops its own characteristics. The soils existing in the Portmore district and their associated characteristics are shown below in Table (1) and Map 3 attached.

**Table 3: Showing Soil Characteristics within the Study Area**

Soil Name	Map Symbol	Dominant slope Range	Drainage through soil	Any High Water Table	Moisture supplying capacity	Layer if any Limiting root penetration	Erosion Hazard	Natural Fertility	Any Special management problems
Bonny Gate Stony Loam	77	>.20 degrees	Extremely rapid	-	Very low	Bed rock at 1" - 1'	Very great if cultivated	moderate	Extreme shallowness extreme stoniness steepness Erodability
Ferry Sility clay	126	0-2 degrees	Good in top soil, very slow below	Very variable maybe from 24" - 50"	High	Variable water table	Almost nil	High to medium alkaline often saline	Drainage some salinity
Caymanas clay Loam	127	0-2 degrees	-do-	-	- do-	-	Almost nil	High to very high alkaline	Loss of structure with cultivation. In poor rainfall area
Caymanas Sandy Loam	128	- do-	Very good	-	High to fair	-	Almost nil	High to very high alkaline	Loss of structure with cultivation. In poor rainfall area
Mangrove	MA								
Salina	SAL								

Source: Soils of Jamaica

### 7.5.5 Soils within Greater Portmore

#### The Housing Area:

The upper 10-20ft of the sub-soil, that is a layer of shattered and partly weathered rock between the topsoil and the bedrock consists of predominantly silt and clay material. In the vicinity of the 90 bend on the dyke at Reid's Pen and about 20-30ft sea level, the sand was encountered at ground level.

The silt/clay material on the upper sub-soil was generally firm and hard. Laboratory test done by Jentech Ltd, on selected samples of clay/silt (mostly clay) material shown that the clay is of high plasticity but low compressibility. The water table within the area varies from a low of 2ft at the southern end to 20ft at the north-eastern end.

### 7.5.6 Along The Dyke

The subsoil along the dyke may be viewed as predominantly firm, fined grained material (silt) and compacted to be dense, coarser grained material (sand). Soil

investigation indicates that the sub-soil for the entire area consist predominantly of clayed silt and fine sand material at varying depths. Ground water level ranges from a 0 - 6ft in height from the North-eastern to South-west sections.

## **7.6 Land Use**

Within the study area the major land-uses are

- Woodland
- Residential
- Mangroves
- Mixed cultivation

Other Land-uses

- Light Industry
- Heavy Industry
- Commercial & Recreational

### **7.6.1 Squatting**

Major squatting areas can be found in Christian Pen, Gregory Park, Caymanas Estate and Central Village, Naggo Head. Land tenure within the study area rests with Government and quasi-government (UDC) agencies along with private ownership.

<b>Table 4: Showing Critical facilities, Communities found and areas of Direct Responsibilities</b>		
SERVICE	COMMUNITIES	No. of Communities of direct responsibility
<b>Police Stations</b>	Caymanas	ten (10)
	Waterford	six (6)
	Bridgeport	sixteen (16)
	Greater Portmore	forty two (42)
<b>TOTAL</b>	<b>4</b>	<b>74</b>
<b>Fire Stations</b>	Waterford	
<b>TOTAL</b>	<b>1</b>	
<b>Health Facilities</b>	Greater Portmore	Type three health centre (Govt.)
	Christian Pen	Type three health centre (Govt.)
	Waterford	Type two health centre (Govt.)
	Bridgeport	Dental Clinic (Govt.)
<b>TOTAL</b>		<b>4</b>
<b>Social Services</b>	School for the mentally retarded	
	Junior Centre	
<b>TOTAL</b>		
<b>Community Centre</b>	Southborough Passage Forth Greater Portmore	

Source: ODPEM 1998

## 7.6.2 The Periphery

1. The Causeway-Kingston area is characterized by large industrial uses as Telecommunication of Jamaica warehouse, an old zinc factory and the freezone. All other area is open space/wetlands. The Hunts bay bridge separates the causeway North and South.
2. There are illegal structures located on both sides of the causeway. These are used as dwelling, storage shed, and vendor stalls.

3. Augusta Drive to Portmore is characterized by commercial and residential uses. The southern side along Port Henderson Beach is more developed than the northern side and is a popular recreational area. There are approximately ten residential, thirty commercial and two institutional buildings. The commercial use is restaurants. The institutional uses include one church and the Port Henderson Beach Office. There are also several open lots and large guesthouses at different stages of construction.
4. Most of the lands on the northern side are either open or wetlands. One residential, three commercials and one large building called Concord Plaza - constricted with the intention of being "a place for children". This structure directly abuts the road.
5. The land in the vicinity of the Port Henderson Bridge near the Forum Hotel and Cottages to Portmore is primarily residential and commercial. These residential units are located beyond the 100 metres road reserve. There are approximately six commercial buildings, restaurants, small businesses a medical centre, and one school. These are located along the road.
6. The route to Portmore from the Causeway along Dawkins Drive is open space/wetlands on both sides. However a few illegal structures are being established along the roadside.

## 8.0 DEMOGRAPHY

Portmore is a major and dynamic area within the Kingston Metropolitan Region (KMR). Its population has grown to such a magnitude that its size is considered to be paramount to a large town (see Map 4 attached)

Population growth for Portmore is highlighted in table 3 below. The population growth rate of the parish of St. Catherine varies from 4.5% to 6.2%, far exceeding the National average of 0.9% per annum. The growth is as a direct result of Portmore being planned as a growth centre with concentrated residential sub divisions. It was recommended in early 1996 that the area receive city status because of its rapid population and spatial growth.

**Table 5 Showing Population Growth trend in Portmore**

Years	Population	Growth Period	Annual Growth rate	Data source
1970	5100			
1982	73,426	1970-82	19.6%	1982 census
1991	93,799	1982-91	2.1	1991 census
1996	170,000	1991-96	10%	1996 and beyond
<b>Built out</b>	<b>260,000</b>			<b>WICHON</b>

Source: Planning sectorial Analysis of the population of Portmore Building Department – UTECH (1995)

## 8.1 Household Size

The average household size is approximately 4.2 persons, comprising 2.9 children per household. Approximately 65% of Portmore's population is below fourteen years, while about 10% may be considered aged (over sixty years). Life expectancy at birth for females is about 72 years and males approximately 69 years.

Portmore has 38 communities overall (see table 4) with Greater Portmore housing 34.4 % of the population (48212 Central sector 20.7% or 29,003 and, the Northern sector 44.9% of the population or 62,795).

**Table 6 Showing subdivision zones for Portmore**

<b>SUBDIVISION ZONES FOR PORTMORE</b>			
Sub division zones	Community	Pop'n Community	Total pop
1	Hellshire		
2	Greater Portmore	11,479 dwelling	48,212
3	Breaton Marine Park Naggo Head	5975 1054 2054	9083
4	Southborough New Lands Bridgeport	4129 2978 6688	13,885
5	Edgewater/Sec F West Bay Armada Port Henderson	4428 526 432	5386
6	West Port Bridge View Garvey Meade Cumberland West Chester Portmore Gardens West Meade	1685 3369 9183 4907 1472 1660	22,276
7	Independence City Passage Fort Waterford Portsmouth	6016 7378 18,111 6416	37,921
8	Caymanas Gardens Christian Pen Hamilton Gardens Surrey Meadows/Lesser Portmore Meadowvale Gregory Park Watson Grove	3517 3022 2044	8583
9	Lakes Pen Lime Tree Gardens Bernard Lodge Dunbee Holden		
<b>TOTAL</b>			<b>140,010</b>

Source: Statistical Institute of Jamaica for Population Data St. Catherine Parish Council for Sub-Division Zones

### **8.1.1 Population Characteristics**

The community of Portmore is bordered by Mandela Highway and Caymanas Estate to the North, Kingston Harbour and the Caribbean Sea to the East, Bernard Lodge to the West and the Hellshire Hills to the South.

### **8.1.2 Age/Sex Structure**

This is an area of approximately 8830.74 acres or 3, 573.75 hectares comprised of eight (8) sub division zones (see Table 4) the total population for Portmore district at the 1982 census was 73,426 persons. Females accounted for 38,916 or 53.0% and males 34,510 or 47.0% of the total number of persons. It is evident that females represented the larger proportion of the population.

The population increases at a rate 2.02% per annum over the period 1982-91 to 93, 800. Females accounted for 53.76% or 50,428 and male 46.23% or 43,371 of the total population. The general distribution of males and females were about the same as that determined for 1982.

### **8.1.3 Comparison of Male and Female Population (1982 – 1991)**

Plotting male and female percentages against four-year age groups (up to 85+) yields a Broadbase pyramid. Broadbase pyramids are indicative of a high proportion of children in the population composition.

The 10 – 14 age group was highest with 13.4% in 1982. The 0 – 9 age group followed. The 15-19 age group was highest with 12.96% male in 1991. The 10 – 41 age group followed with 12.58 %.

The median age of the population also indicates the relatively young population that existed in 1982 median age 14.9 years. In 1991 median age 21.4 years

A Comparison of the pyramids for the area shows some similarities in composition. There is a tendency for sharp declines after 20 – 24 age groups; however, the 25 – 29 age groups (females) 1981/1991 shows no growth in population.

### **8.1.4 Population Distribution**

The greater proportion of population in Portmore was distributed across communities such as Waterford, Breaton, and the older communities (see community Profiles for 1991 – Attached appendix 1). It was less distributed over the areas of Port Henderson, Hillshire Hill and Caymans Estate.



The distribution also shows the 156-64 population booming in 1991 increasing the productivity possibilities.

### **8.1.5 Growth Rate**

Based on the 1991 and 1982 figure the male growth rate of 3.22% and female growth rate of 3.5% from the age cohorts 45-49 age group had the highest growth rate of 6.6%. The 40-44 age group 5.3% and the 50-54 age group 5.5% and 60-64 age group 4.8%. The 5-9 and 10-14 age groups had the lowest rate of 2.19% and 2.2% respectively.

## **9.0 TRANSPORTATION**

### **Major access routes & there conditions in and out of Portmore**

**9.1 The Causeway Main Road:-** commences at Marcus Garvey Drive and has four ones (two on either sides and moving in opposite directions) merging into two lanes upon approaching the Hunts Bay Bridge, then continuing with two lanes and ending at the intersections of Augusta Drive and Dawkins Drive. The road surface from Marcus Garvey Drive to the Hunts Bay Bridge is in good condition. There are scrubs growing onto the road reservations leading into Kingston. The road over and beyond the Hunts Bay Bridge is in fair condition, giving a bumpy ride due to the fact that numerous potholes are patched. There are shrubs encroaching on the road reservation. There are also spots along the road reservation (soft shoulders) were water from the mangroves settles.

**9.2 Dawkins Drive :-** begins at the intersections of Augusta Drive and the Causeway Main Road. Dawkins Drive is actually a continuation of the Causeway Main Road.

### **9.3 Main Arterial roads within Portmore**

**9.3.1 Portmore Parkway:-** This intersects Naggo Head in the south and Passage Fort Drive in the north. It serves the communities of Garveymeade, Westchester, Passage Fort on the Western side and Edgewater, Portmore Mall, H.E.A.R.T., Portsmouth on the Eastern side.

**9.3.2 Newlands Main Road** intersects Naggo Head Drive in the south then Southborough Drive, leading north and ending at the intersection of Passage Fort Drive. It serves the communities of - Southborough, Cumberland and Independence City on its eastern side, and the proposed development (resident) to its west. The road runs parallel with Portmore Drive.

**9.3.3 Dyke Road (North)** originates in Greater Portmore, traveling north and running parallel with the Newlands main road. These intersect at Southborough Drive then Passage Fort Drive ending at the intersections of the Waterford Dyke Road and Gregory Park main Road. This road facilitates new proposed development (residential) on its eastern side. On its western side there is shrubs and agricultural crops.

**9.3.4 Waterford Road (Dyke Road)** begins at the intersection of Passage Fort Drive and Portmore Parkway running parallel with the Rio Cobre River ending at the intersection of North Dyke Road and the Gregory Park Main Road. The road is bordered by a storm drainage canal to its western side along the community. On the eastern side it is bordered by the Rio Cobre River.

**9.3.5** Gregory Park Main Road begins at the intersection of Newland main road and Passage Fort Drive and ends at the Waterford Dyke Road. It facilitates the communities of Gregory Park, Meadowvale, and Caymanas Park.

**9.3.6.** Augusta Drive begins at the intersection of Dawkins Drive and the Causeway and runs along the Dawkins Pond on the north and Kingston Harbour on the south coast, ending at Naggo Head Drive in West Bay. It facilitates the communities of West Bay and various developments on the coast and also Port Henderson Beach.

**9.3.7** Naggo Head Drive runs east to west beginning at the intersection of (roundabout) of Augusta Drive and ends at the intersection of Greater Portmore and Hellshire Road. It facilitates West Bay, Bridgeport, Southborough, Marine Park, Breaton and Naggo Head.

**9.3.8.** Bridgeport Road runs east to west beginning at a roundabout, intersecting at Portmore Parkway and ending at the North Dyke Road. It facilitates communities such as Bridgeport, Westport, Westmeade, Cumberland and Portmore Gardens, Southborough, Newlands and Bridgeview.

## **10.0 ASSESSMENTS OF THREATS/HAZARDS**

### **10.1 Flooding**

Flooding may result from a number of sources:

1. Riverine
  - In spact
  - Overflowing banks
  - Reclaiming its course
2. Coastal
  - Storm surge
  - Rising sea levels
  - High tides
3. Land Based
  - Rising water table - Blocked drains
  - Waterlogging - Insufficient storm water runoff drains
  - Increasing runoff - Small drains

Most of the land surface in the Portmore/Hellshire Sub-District is low lying between zero and twenty feet above sea level (See Map 5 – Flood Prone Areas). There is also a high risk associated with flooding from rainfall particularly if associated with high tides and storm surge.

### **10.2 Riverine Flooding**

The Portmore area is fairly well protected from riverine floods by the Rio Cobre Dyke. The design of the dyke is such that the walls that border the Portmore canal are higher than the walls on the Caymanas estate side. As a result if the dyke approaches capacity it will overflow into the estate and not rise to flow over the right side into the established communities.

If the dyke is maintained, residents and public authorities should be prepared for flooding if the design discharge of 30 to 40 years return period is exceeded. On the other hand, if the dyke breaks in response to the above discharge lands from as high as the 10th contour and below would be inundated by riverine floodwaters.

### **10.3 Hurricanes**

The Portmore/Hellshire Sub-district is geographically exposed, that is, without natural land barriers. Hurricanes can have a devastating effect on the area. It is known that hurricanes often generate huge waves, however, the wave action associated with any hurricane will be greatly limited by the quays, the Palisadoes Spit, the shallows in front of Port Henderson, the Port Henderson strip and Dawkins Pond. The reach across Kingston Harbour and the depth of the water is such that one is likely to get much more

wave action in the Kingston waterfront area than in Portmore Town Centre. The buildings in the town centre have been designed to withstand hurricane force-winds. With present day hurricane early warnings, there should be no danger to life or structures in the town centre. Disruption of transport routes and damage to buildings and property are the two most serious implications to be considered in the event of a hurricane. In such a case evacuation would have to take place several hours before flooding begins.

If the trajectory of hurricane force winds is to be anywhere within a 200 nautical miles radius approaching from the south of Jamaica moving either east, south-east or south-west; it is very likely to pose severe threats to the Kingston Harbour and Greater Portmore. In fact, historically 77% and 81% have approached Jamaica from the above mentioned directions within 200 and 50 nautical miles radius respectively.

#### **10.4 Storm Surge**

A storm surge is the result of differential pressure within a hurricane and the push of converging winds around its eye. A surge is maximized in the North-Eastern quadrant of a storm, approximately 30 kilometers to the right of the eye. A major cyclone approaching Kingston from the south or South-East may cause extreme surge.

The triangular coastal embayment around the Kingston area would have a funnel effect and magnify the surge. A storm surge produced in 1722, with maximum wave heights of 4.85m (15.9 ft) was responsible for the destruction of Queenstown which was situated at the present location of Passage Fort. Queenstown was protected by direct strike by a 3m ridge.

It is possible that such breaches could occur again as the area near Queenstown that is now reclaimed land with a significantly large bedroom community established on it.

A storm surge with maximum wave heights of 4.85 m, as in the case of the 1722 hurricane that destroyed Queenstown would cover the contour levels up to 16 feet.

The *Storm Surge Analysis, Greater Portmore Development Project* (A. De B Consultants Ltd, Kingston Jamaica and Sandwell Inc. Toronto, June 1990) prepared for the Prime Ministers Task Force for West Indies Home Contractors Greater Portmore Project highlighted the potential for flooding of the Greater Portmore area from the sea due to hurricane induced storm surge. The focus of the study was the seacoast directly south of the development. This area forms the spit that separates the sea from the Great Salt Pond and the adjacent coastline.

The main objectives of the study were to determine the possible values and probabilities of occurrences of increased water depth at the coastline due to hurricane events. These developers used to determine the criteria to be used for surface water drainage outfalls from the development.

The development of the storm water drain was based on studies of the effects of hurricane on the rise in level of water in the salt pond, and eventually the flashes. The capacity of the storm water drain was design to take into consideration the back flow due to this rise. Flooding otherwise must be considered as a result of lack of maintenance.

Statistical data on hurricanes from 1871 to 1988 was used to give 118 years of data. Wind speed was given for 109 years, while sea level increases were considered from three distinct phenomena:

Hurricanes passing within 50 to 200 nautical miles radii of Kingston Harbour. Barometric Effect, wind induced surge and wave set-up were used to develop the parameters.

It was noted that sea level rise due to global warning was also considered. To this end a recommendation of a design sea level elevation of +6.0 ft. was given, base on 1 in 100 year storm surge occurrence. The specifics of the study are given below:

The Great Salt Pond is directly west of the entrance to the Kingston Harbour. The Greater Portmore, 10,000 housing unit were designed to discharge its storm water initially to the flashes and then ultimately (after a period of storage) to the sea via the Great Salt Pond.

The flashes are a low-lying marshy area approximately 4,000 ft. (1,200 m) in length by 650-ft. (220m) wide. It is directly south of Greater Portmore. It is separated from the Great Salt Pond by a road which is typically 5-6 ft. (1.5-1.8m) above mean sea level (m.s.l.). The flashes drain into the Great Salt Pond. The pond itself is approximately 5,250 ft. (1,600m) wide by 4,260 ft. (1,300m) deep. The Great Salt Pond inture is separated from the Caribbean Sea by an approximately 100m wide sand bar. A man-made opening exists at the eastern end of this bar which is 40-50 ft. (12.15m) wide and 10 ft. (3m) deep.

Unlike Kingston waterfront, which is sheltered by the Palisadoes Spit, the Great Salt Pond is by contrast, relatively exposed to open sea conditions. It is only shelter is due to the occurrences of the numerous shoals and quays between the shoreline and the edge of the continent shelf. An understanding of the open conditions was felt to be necessary for the evaluation of a design storm surge value at the shoreline. This will govern the invert level of drainage channels conveying waterway from the development to the sea.

The tables below show the value of wind speed as a function of return period:

**Table 7: Showing Value of Wind speeds as a Function of Return Period**

Return Period	Wind Speed (1-minute)	
(Years)	(Knots)	(m/s)
25	95	(49)
50	105	(54)
100	110	(57)

Source: Report Storm Surge Analysis, Greater Portmore Development Project (A De B consultants, 1990)

These winds were then inputted to a hydrodynamic surge model which resulted in the following storm surge generated values at the project shoreline at the bar between the Great Salt Pond and the sea.

**Table 8: Showing Storm Surge**

Return Period	Storm Surge	
(Years)	(ft.)	(m)
25	0.95	(.29)
50	1.10	(.34)
100	1.20	(.37)

Source: Report Storm Surge Analysis, Greater Portmore Development Project (A De B consultants, 1990)

The inverse barometer effect, that is, the increase in water level as a result of reduced atmospheric pressure, was also accounted for. The results of this analysis were:

**Table 9: Showing Increased Water Level**

Return Period	Water Level Increase	
(Years)	(Ft.)	(m)
25	0.95	(.29)
50	1.10	(.34)
100	1.20	(.37)

Source: Report Storm Surge Analysis, Greater Portmore Development Project (A De B consultants, 1990)

Both offshore wave and near shore climate were evaluated and the resulting wave climate were evaluated and the resulting were set-up (an increase in the mean water level as result of the conversion of breaking wave energy from kinetic to potential at the project shoreline calculated. The overall results of these analysis (excluding high tide effects).

**Table 10: Showing Total Storm Surge**

Return Period	Total Storm Surge	
(Years)	*(Ft.)	(m)
25	4.4	(1.34)
50	5.4	(1.65)
100	5.7	(1.74)

\* includes wind surge, barometric effect and wave set-up.

Source: Report Storm Surge Analysis, Greater Portmore Development Project (A De B consultants, 1990)

The analytical statement given indicates that action and resultant wave run-up inside the Great Salt Pond would be relatively small during storm conditions due to the small opening in the bar. The results as indicated above show that wave propagated and dissipated from deep water to the near shore area revealed that during the 100 years storm conditions, wave of the order of 5 to ft. (1.5-2m) would be experienced immediately offshore the barrier bar between the Great Salt Pond and the Caribbean Sea.

## **10.5 Hazard Analysis - Flooding**

### **Hazard Trends**

Historical records of incidents of flooding in Portmore highlight flood prone areas such as:

- Passage Fort - Passage Fort Drive
- Caymanas Gardens
- Waterford - Wym Way
- New Lands
- Naggoes Head
- Breaton Phase 3 - Barracuda Avenue

#### **10.5.1 Passage Fort**

Area floods after heavy rains. Floods are linked to obstructed drainage. Water settles everywhere and forms large pools in streets, yards and playground. These are said to persist for days after the rain. In Hurricane Gilbert two families were evacuated and house roofs removed.

#### **10.5.2 Waterford**

Lies adjacent to the dyke built to control the floodwaters of the Rio Cobre. Flooding is centered around uncleaned drains and malfunctioning sewage systems. The Waterford sub-division also experiences flooding. The intersection of Caymanas Drive and Rapid Way or Wym Way has suffered severe flooding bringing water into some houses. This is considered to be due to the inability of the open channel to accept stormwater flowing from Caymanas Park and Meadowvale. Flooding is also caused by blocked drains and restriction of run-off.

#### **10.5.3 Hurricane Gilbert**

Caused flooding in Independent City, Marine Park, and New Lands. Here roads are narrow, unpaved and bound on either side by high zinc fences. Drains to the west are often silted and overflow in times of heavy rains. Gilbert devastated the community, as houses roofs zinc fences were destroyed.



#### **10.5.4 Breaton**

Overall there are Six (6) phases related to Breaton. In Breaton proper Hurricane Gilbert is remembered in the community as having damaged and destroyed fruit trees and causing disruption in water, electricity and food supplies. The main concerns were mosquitoes, transport and high temperature in houses.

#### **10.5.5 Breaton Phase 3**

Another problem area is the sub-division of Breaton Phase 3. Here floodwaters have entered several houses along Barracuda Avenue.

#### **10.5.6 Bridgeport**

An area with severe flooding problem is Quarrie Drive to the south of Bridgeport. The flooded area sometimes extends as far south as the Port Henderson Hills and west to the Port Henderson Canal, covering most of Naggo Head Drive and Naggo Head School. From all indications flooding is caused by run-off from outside the subdivision and siltation of the Port Henderson canal. Hurricane Gilbert caused little more than flooding in southern section.

#### **10.5.7 Gregory Park**

The area is susceptible to high winds by virtue of the infrastructure, zinc roofs. The next major problem is one of flooding, mainly due to lack of maintenance of drains in the area. There is very little likelihood that this area would be affected by a storm surge.

Ground water level ranges from 0 - 6ft in the south-west to no water in the north-west.

### **10.6 Major Floods Recorded By Study Area**

In the Flood rains of 1977, very heavy floods occurred in the Salt Island to Creek Town Gully drainage area. Few people were affected and the flooded area was isolated.

The Gilda rains of October 17, 1973 brought floods for Friendship due to overflowing of the Rio Cobre Canal.

An upper level trough on June 12, 1979 caused flooding up to 5ft in Breaton and Westport. Later the same year, on September 12, "Frederick" damaged Edgewater round about. Houses and roads in Portmore and New Breaton were flooded.