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## CHAPTER 12

### DISASTER MANAGEMENT

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#### 12.1 Overview

The project proponent plans to develop and implement a Disaster Management Plan for the project aimed at identifying the different potential disasters that could impact the development. The term ‘disaster’ is loosely used in this chapter and is referred to as any incident, accident, or natural occurrence that could affect the operation of the project in whatever way. This plan will focus on five potential types of disasters that can arise from various sources and affect the operation and livelihood of the project in some form or fashion. The five types that are referred to are both anthropogenic and natural in origin.

Once in operation, a more comprehensive and detailed plan will be developed and implemented for the project and will include but not limited to the disasters such as those outlined and summarized in the table below.

**Table 12.1** Summary of the Disaster Preparedness Plans for PPM&YC

<b>Disaster</b>	<b>Description</b>	<b>Response Plan</b>	<b>Stages</b>
Hurricanes and tropical storms	Hurricanes and storms can vary in strength damaging the project’s infrastructure thus affecting the operation of the project.	Hurricane Preparedness Plan	Alert, Response, Recovery
Fire	Just like hurricanes, fire outbreaks can vary in size and location and can cause irreparable damage to the project’s infrastructure.	Fire Prevention and Response Plan	Response
Fuel/oil Spills and leaks	This incident affects the soil and water on a whole if not properly addressed.	Spill Contingency Plan (Tier levels)	Response, Recovery
Climate Change	This slow occurring natural occurrence can pose serious risks to the project if not adapted and monitored over time.	Tidal Rise Contingency Plan	Alert, Response
Medical	Medical emergencies can occur at any moment without giving notice and therefore requires a quick and coordinated effort to respond to this need.	Medical Emergency Plan (Transportation and Evacuation)	Response, Recovery

The proposed PPM&YC will take into consideration these five potential disasters among others and plan accordingly in order to mitigate and remediate any negative effects these types of disasters could have on the infrastructure, operation and management of the development.

## **12.2 Management Structure**

The management and staff of PPM&YC will formulate an Emergency Committee to address the aforementioned Disaster Management Plan. This committee will be charged with the task of electing an Emergency Coordinator and his/her subordinate, who shall direct and execute all the activities outlined by the response plans. The emergency committee must conduct periodic meetings to address important issues concerning the disaster management plans. Such important issues should be the objectives of the committee, their roles and responsibilities, updates, training, drills as well as their terms of reference (TOR) which they will abide by. The Emergency Committee will also decide on the election policies for coordinators.

## **12.3 Hurricane Preparedness Plan (Evacuation Plan)**

This is the most common natural phenomenon occurring in Belize and the only one that would require a full scale evacuation. Belize lies within the hurricane belt, and is vulnerable to high wind and storm surge. During the past 100 years, Belize has been hit several times by major hurricanes. Belize has been hit 40 times by storms ranging from tropical depressions to hurricanes (Usher, 2000). The return period for storms since 1870 is three (3) years, and the vulnerability increases from North to South (Usher 2000).

The hurricane season in Belize commences officially on June 1<sup>st</sup> and ends on November 30<sup>th</sup>. As part of its overall Management Plan, the EIA has also considered the issue of safety needs resulting from potential threats other than hurricane. The Hurricane Preparedness Plan (HPP) is aimed at making reasonable preparations should the project be threatened by an imminent Tropical Depression or Hurricane strike. This is to enable the developers to protect their employees and assets, and also to ensure that the project is able to continue to function after the hurricane has passed.

For this plan to be effective there will be a full meeting between the management and the staff to review the plan prior to the beginning of the Hurricane Season every year: There will also be simulation exercises in relation to various elements of the plan.

### **12.3.1 Purpose of Plan**

The purpose of this hurricane preparedness plan is to:

- (i) To establish the coordinating mechanisms necessary for PPM&YC to prepare and implement measures to safeguard property and lives of all concerned during the threat of a storm or hurricane.
- (ii) To increase awareness to management and others (boaters, guests ect.) of the need for hurricane preparedness,

- (iii) To aid fellow residents of the village where required with humanitarian assistance or other and to work in conjunction with the Caye Caulker Emergency Services.
- (iv) To liaise with the local and national emergency committees as to their plans, objectives and information.

The basic overall responsibilities of the PPM&YC management is to ensure that the coordinating mechanism that will ensure maximum safety of property or lives during an incoming storm, is put in place, and to make sure the developer or residents/guests are familiar with the mechanism.

### 12.3.2 NEMO Storm Information System

The “official alert” system for a storm or hurricane entails the coordination between the management of PPM&YC, the National Emergency Management Organization (NEMO) and the Belize National Meteorological Service (NMS). The PPM&YC management will also supplement their information of the threat via the Internet. The emergency coordinator will therefore activate the required hurricane plan.

The proposed project will follow the official alert and hurricane categories profile in place by NEMO. Such categories along with the wind speeds are illustrated in the following:

Tropical Depression	29 mph – 38 mph
Tropical Storm	39 mph – 73 mph
Hurricane Category 1	74 mph – 95 mph
Hurricane Category 2	96 mph – 110 mph
Hurricane Category 3	111 mph – 130 mph
Hurricane Category 4	131 mph – 155 mph
Hurricane Category 5	Above 155 mph

PPM&YC will adopt the official Warning Flag System as follows:

Flags	Phases
One Red Flag	Preliminary Alert Phase (Storm/Hurricane Watch)
One Red flag with Black Center	RED I Phase (storm or hurricane watch)
Two Red Flags with Black Centers	RED II (Warning Phase)
One Green Flag	Green Phase ( ALL CLEAR)

### 12.3.3 Pre-Season Preparation

At the beginning of May each year the Emergency Committee will ensure that all the required hurricane items are available and properly maintained ready for use. The Emergency Coordinator will ensure that all of these equipments are checked and available at all times during the hurricane season. Just prior to the hurricane season, any overhanging trees at PPM&YC will be trimmed.

The Emergency Coordinator will also ensure that all buildings and assets such as equipment, boats and vehicles are photographed (digital with date) at the beginning of each hurricane season, for possible insurance claims.

The Emergency Coordinator will also ensure that all non-national employees are registered with their respective Embassies or Consuls.

#### **12.3.4 Implementation Plan during Threats**

##### ***Preliminary Alert - Hurricane Watch***

This is the First Phase, and means that a storm or hurricane may threaten within 72 hours. A storm or hurricane is within 21° N 80° W of Belize.

##### ***Actions to be Taken:***

- (i) The Emergency Committee should be prepared to convene and take action if the Belize Weather Bureau issues a warning.
- (ii) Stay informed by radio and television of the storm's progress.
- (iii) Obtain hurricane tracking chart for Committee members and project management,
- (iv) Obtain the contact number etc. from the Management, including guests with marine vessels, and inform vessel owners of the alert phase,
- (v) Ensure that contact is made with all guests and captains of vessels, whether by direct or indirect means to alert them of the phase and to make initial contact.
- (vi) Prepare a checklist (electronically) of items required in the event of a strike
- (vii) The Emergency Coordinator will identify and categorize items or equipment to be removed as follows: list of equipment to stay, and list of those to be removed to designated site.
- (viii) Prepare a tentative list of all the guests and management staff on the island.

##### ***Hurricane Warning – Red 1 Phase (Watch)***

During this phase, a hurricane may threaten within (36) thirty-six hours. A hurricane or storm is located within 20° N 85° W.

##### ***Actions to be taken:***

- (i) Advise all vessel Captains to leave the marine areas immediately and take their vessel to safe harbor or properly moor their boats to the marina.
- (ii) The Emergency Coordinator will advise all employees and available human resources to install the hurricane shutters on the villas, hotel and other buildings.
- (iii) Advise all occupants of the island including guests and employees to be prepared to evacuate the island upon the recommendations of NEMO.
- (iv) Identify official shelter for guests and any other employee in need of such shelters,

- (iv) Management will identify employees to report to work after the hurricane or after the Green Phase all clear is given.
- (iv) Update NEMO on all actions taken.

### ***Hurricane Warning – RED 2 Phase***

Whenever Phase 2 (Red) is given, this means that a hurricane is likely to strike Belize within (24) twenty-four hours.

Actions to be taken:

- (i) The checklist of items required will then be printed and each head of department will be provided with a checklist,
- (ii) The precautionary list will be printed and provided to each head of department,
- (iii) Final hurricane preparations should be concluded
- (iv) Evacuation of employees, guests and residents should be completed

### ***Fourth Phase – Green (All Clear)***

This is the ALL CLEAR, which will be declared by NEMO after the hurricane has passed and it is safe to return to review the effects of the hurricane.

***Actions to be taken:***

- (i) The Emergency Committee will attempt to return and survey the project site as soon as possible,
- (ii) The Emergency Committee will immediately make a brief report on all damages (supported with photographs), and prepare an estimate of damages, and submit the same to NEMO and Management for their perusal.
- (ii) Employees of the project ownership will report as previously advised.
- (iii) Clean-up phase will commence with the assistance of project employees, and all available human resources, where possible.

### **12.3.5 Safety Precautions**

These precautions will be made available to each caye occupant and employees in the event of a hurricane. These will be delivered during Phase 2 – Red Warning Phase, and shall be updated every year by the Emergency Committee.

The following are some basic precautionary guidelines:

1. Pay no attention to rumors. Only rely on the official reports and weather advisories but under no circumstances telephone the Weather Services, nor any other national radio station) or Belize Telemedia Limited exchange as this will hamper the hurricane tracking and information service for everyone.

2. Close and secure all hurricane shutters properly.
3. Be sure that a window or door can be opened on the side of the house opposite to the one facing the wind.
4. Be sure that you have an adequate supply of drinking water as well as canned food or other food that needs no cooking or refrigeration. If you own a coal or kerosene stove get it into working order and procure a supply of kerosene and coal as it may come in handy after a hurricane.
5. Keep a good flashlight handy as well as candles and storm lanterns as the electricity supply will likely be cut off or knocked out during the storm.
6. Check on everything that may blow away or be torn loose during a storm and store them inside the buildings if possible. Remember that garbage cans, garden tools, signs, awnings and other objects may become weapons of destruction in hurricane winds.
7. If the center of the “eye” of the storm passes directly over you, there will be a lull in the wind lasting from a few minutes to half an hour or more depending on the speed of movement of the hurricane. Remain in a safe place. Make emergency repairs if necessary during the lull, but remember that the wind may return suddenly from the opposite direction, frequently with even greater violence.
8. Never leave your shelter until the official “ALL CLEAR” has been given.

#### **12.4 Fire Prevention and Response Plan**

Fire outbreaks whether small or large can be detrimental to the project and in some instances be life threatening. It is therefore important to consider its likelihood and the circumstances surrounding its propagation. PPM&YC will develop a Fire Prevention Response Plan aimed at addressing the awareness and the mechanism necessary for its response. Presently, the National Fire Service has a fire station in Caye Caulker and it is located 2.5 miles from the project site. Therefore any small fire will be required to be dealt with internally via the plan.

##### **12.4.1 Purpose of Plan**

The basic responsibilities of the Emergency Committee is to ensure that the coordinating mechanism that will ensure maximum safety of property or lives during a blaze, is put in place, and to make sure the developer or guests are familiar with the mechanism.

The purpose of the Fire Prevention and Response plan for the proposed project is to:

- (i) increase awareness to guests, management and others of the need for a fire prevention and response plan,
- (ii) To establish the coordinating mechanisms necessary for management to prepare and implement measures to safeguard property and lives of all concerned should a fire occur in a building

- (iii) Indicate all possible evacuation routes for each condo, cabaña and other buildings on the property.

### 12.4.2 Fire Prevention

Fire prevention is an important aspect in precluding its occurrence. While water is plentiful at the project site, its immediate availability may not be possible. Measures designed to prevent and control fires include:

**I. Use of fire retardant material** - The use of nonflammable building material will be encouraged within the project. For example the use of sheet roofing instead of shingles will be encouraged as well as the use of fire rated doors, perspex windows and fire resistant barriers.

**II. Qualified personnel to install electrical system** - Only certified Electricians will be allowed to carry out any electrical work on the premises. Each building, after completion, should be approved by the Belize Electricity Limited.

**III Building Codes** - The project will call for the construction of condos, cabañas and other buildings, with heights above (1) one and possibly (2) two stories high. A set of building codes will be developed by the engineers of the project, in order to ensure adequate construction of buildings. The engineering standards will also include provisions for adequate and safe wiring; plumbing, heating, and cooling systems will also be in conformity with acceptable building codes.

### 12.4.3 Fire Protection Equipment/Systems

All the units and buildings on the property will be protected from fire in one form or another. PPM&YC will install these systems to protect lives and property. The following are fire detection, notification and suppression systems that will be used to control a fire.

#### 1) *Fire alarm detection and notification systems.*

- *Smoke and heat detectors:* The project will install fire detection equipment in the form of smoke and heat detectors in each of the units and in the building hallways and walkways. The smoke/heat detectors will activate the smoke alarm possibly signaling a fire or of something burning.
- *Manually activated pull station:* Certain buildings will also have a manually activated pull station in the event that someone sees a fire. It is essential that both guests and staff are aware of these warning devices and their potential use in protecting lives and property.

#### 2) *Fire Suppression Systems.*

- *Hydrants:* Fire hydrants will also be used on the project. These hydrants will be spaced out according to each developmental zone, zone densities and marina. Water for these hydrants will be gotten from the recycled wastewater. A portable water pump with hoses will be coupled to the hydrants and used to extinguish the fire.

- *Commercial Kitchen hood exhaust/suppression system (foam):* This only applies to the restaurants on the property. Industrial ranges have an exhaust hood to vent fumes and integrated in the hood is a fire suppression system consisting of a foam water mixture.
- *Fire Extinguishers:* PPM&YC will install multi-purpose dry chemical (Class ABC) fire extinguishers. Dry chemical extinguishers will range in sizes of 5 lbs to 10 lbs and will be installed in every building, condo, and cabaña. These will also be installed at key areas such as hallways, walkways, marina piers, containment walls, generators, electrical panels, maintenance areas, etc.

#### **12.4.4 Fire Response**

As mentioned previously, fire outbreaks are unpredictable but can be prevented. It is difficult to portray a response plan for the project site considering the different scenarios that might arise from a fire. It is important though, to have in mind certain tips and guidelines as to the advent of a fire. These guidelines may come in the form of a fire combating plan whereby trained staff may utilize the different fire controls to extinguish the fire.

Fire outbreaks often require an evacuation plan and for this reason, a comprehensive evacuation plan will be required to be developed. This plan is important and must address congested areas such as the restaurants, bars, marina and other buildings.

#### **In the advent of a fire (small fires)**

Fires first start small and then grow large as time progresses and if there is enough fuel, oxygen and heat for the fire.

#### **Actions to be taken:**

- (i) Sound the alarm
- (ii) Use an extinguishing media preferably a fire extinguisher to fight the fire
- (iii) Do not fight a large fire with a fire extinguisher
- (iv) Check to see that the fire is completely smoldered
- (v) Inspect the fire area and assess for damages
- (vi) Close off the area for safety purposes.

At some point, the Emergency Coordinator needs to be notified of the situation. A report of the incident should be submitted to the Emergency Committee for assessment.

#### **In the advent of a Fire (large fire)**

Utilize these procedures if a large fire occurs such as a building unit or otherwise

#### **Actions to be taken:**

- (i) Sound the Alarm

- (ii) Use an extinguishing media such as a fire extinguisher and the fire hydrant to fight the fire.
- (iii) If possible, remove any fuel (combustible material) that could be engulfed by the fire
- (iv) Use fire hydrant and full pressure aiming at the base of the fire
- (v) Evacuate any persons within the area or found in the area at the time of the incident
- (vi) Once contained, check if the fire has been completely extinguished
- (vii) Inspect the fire area and assess for damages

At some point, the Emergency Coordinator needs to be notified of the situation. A report of the incident should be submitted to the Emergency Committee for assessment. Notify any member of the National Fire Service for further investigation and recommendation.

### **12.5 Spill Contingency Plan**

The proposed development will institute and develop a Spill Contingency plan in order to respond to a spill and/or leak involving hydrocarbons, especially considering that the project plans to sell fuel to the boats. Each spill is different and it is not practical to develop a spill response procedure which will encompass every situation. It is better to understand the goals of the response plan in order to tackle every spill situation. Such understanding coupled with training will enable those involved in the response effort to determine the best practical procedures given the various conditions.

#### **12.5.1 Purpose of Plan**

The purpose of the plan is to outline the procedures necessary to reduce and contain the effect of a spill by means of a well-coordinated response and is intended for the following purposes:

- To increase staff awareness on Spill Response procedures taking into consideration the different governmental Tier response levels.
- To define the coordinating mechanisms necessary for staff to utilize their resources in Response Procedures.
- To establish and define clearly the roles and responsibility of Management in Spill Contingency and Response procedures.

#### **12.5.2 Mechanism**

This plan institutes the need for a timely and effective response to incidents. In order to respond rapidly and successfully to a spill, personnel responsible for containing and cleaning up the spill must know the steps that need to be followed during and after the spill. Contingency plans describe information and processes for containing and cleaning up a spill that occurs in a defined area of the project. Because the approaches and methods for responding to oil spills are constantly evolving, and each spill provides an opportunity to learn how to better prepare for future incidents, contingency plans also are constantly improving and providing increased protection to human health and the environment from these accidents.

### 12.5.3 Response Policy

The following tables are DOE Tier levels as described by the National Emergency Preparedness Plan for Oil Spills (NEPPOS)

**Table 12.2** Marine Spills Levels

<b>Tier</b>	<b>Quantity (gals)</b>	<b>Location</b>	<b>Response</b>
I	1,000-10,000	Coastal/ Marine	To be managed by polluter
II	10,000-100,000	Coastal/ Marine	Requires government assistance for management
III	>100,000	Coastal/ Marine	Requires Government and/or external assistance

**Table 12.3** Inland Spill Level

<b>Level</b>	<b>Quantity</b>	<b>Location</b>	<b>Response</b>
A	<1,000	On land or Inland	To be managed by polluter
B	>1,000 or poses significant health hazard and requires evacuation	On land or Inland	Responsible party requires GoB assistance to manage the discharge.

For the purpose of this project both Tier I and Level A will be considered. This is especially so because of the fuel transportation from the mainland to the project site, as well as the project's daily operations and intended fuel use.

### 12.5.4 Fuel Management

Fuel management is a very critical safety issue considering the location of the project site. It is however, not a difficult task to do considering the small to medium volumes that will be handled by the project during construction and operation. Fuel will be managed to prevent spills and leaks via the following:

- *Storage:* Fuel will be stored inside a reinforced concrete containment wall. This will be designed to contain 110% of the maximum tank volume. To protect against any accidental fire the tank will be sited away from all electrical installations within the utility zone.
- *Documentation:* It is important to keep in mind that the project must order the correct amount or volume of fuel required for operation. For this reason, all the fuel consumed and received must be recorded.
- *Maintenance:* It is necessary to inspect all containment walls and fuel containers. Improper functioning of these can lead to unnecessary spills and leaks. Another important

issue is fuel lines. The less there are, the better. It is with that reason that the fuel tanks must be as close as possible to the generators.

### **12.5.5 Waste Oil Management**

Although not required to be developed fully considering the volumes produced, it is important however, to reiterate that the project is in an ecologically fragile environment. Small oil spills for this matter, do fall under the Spill Contingency Plan. Waste oil will be managed according to the following:

- *Storage:* All waste oil will be stored in properly sealed drums and inside a containment wall. This would most probably be inside a fuel tank containment wall.
- *Handling:* Used oils are a legal responsibility of PPM&YC and thus should be handled adequately and with care.
- *Disposal:* Although the volume may be very small, it is important to properly discard the accumulated waste oil. Once stored, the waste oil should be disposed in conjunction with other resorts or commercial enterprises with similar waste.

### **12.5.6 Contingency Equipment**

Spill response equipment is the most important component in the Spill Contingency Plan. This equipment can vary depending on the size and type of the activity. For the interest of PPM&YC the following equipment will be required:

- Spill response Kits – these will be made available to the maintenance staff and installed at key locations such as generators, boats, etc.
- Containment Booms – these are mostly for marine spills and will be deployed if need be the case.

### **12.5.7 Safety and Response Priorities**

The Emergency Committee for PPM&YC will ensure that the following priorities are taken into consideration:

- Safety to human life is the highest priority in any response, and should be ensured that all management personnel are protected.
- Containment of incident to stabilize the situation.
- Minimize and prevent any adverse environmental impact

Basic response information that should be available whenever an action is taken includes the following:

- Type of oil involved: this could be lubricating oil, engine oil, waste oil, diesel fuel, and gasoline fuel.
- Size of spill: this includes all the Tier levels described by DOE.
- Location of spill: this involves the shoreline and entire caye.
- Prevailing Conditions: choppy seas, windy, rainy, overcast, sunny, calm, low/high tide.
- Environmental sensitivity of potential or actual impact area: this includes the sensitive area of the beach and inland locations.

## **12.6 Tidal Rise Contingency Plan**

Tidal rise is a natural phenomenon derived from the process of global warming. Included in this phenomenon is the terminology of climate change. This process impacts a wide range of naturally occurring process on earth such as agriculture, sea rise, hurricane impacts etc.

The natural phenomenon of tidal rise is an extremely slow process taking several years to decades to materialize. Nevertheless, sea level rise can impact the project's shoreline. Such impact can include increased shoreline erosion, high storm surges, flooding, project inundation, changes in the surface water quality and ground water characteristics, increased flood risks and loss of tourism, recreation and transportation functions.

### **12.6.1 Purpose of the Plan**

The overall objective of the plan is to outline the procedures to:

- Prevent erosion and to protect vulnerable areas prone to such activity
- Formulate tidal charts, sea level maps, topographic maps and any other tools necessary to address these issues.
- Prepare a comprehensive plan to remediate the problem

### **12.6.2 Tidal Rise and Erosion**

The purpose of the contingency plan will be limited to sea level rise (tidal rise) which can be a disaster if not monitored. This plan will focus on the caye's shoreline and its erosion vulnerability. It's difficult to predict how much the mean sea level will rise and how will it affect the caye.

For the moment, the current evaluation of the caye is that of 1 feet above sea level. In addition to this, the project's infrastructure will be built two (2) feet above this level. This will serve as a buffer for the future. Another, mitigation plan involves the dredging of the sandy flats for project reclamation. This would deepen the piers and provide adequate fill for the island.

### **12.6.3 Vulnerability to Climate Change**

According to Usher, (Usher 2000), the changes in the hydrological cycle in Belize as a result of

climate change, would be characterized by changes in sea levels, the intensity of hurricanes and its accompanying storm surge, and changes in rainfall patterns and temperature. These changes may result in the following impacts:

- Excacerbated erosion of the coastline and accompanying beach loss;
- Coral bleaching as a result in temperature rise,
- Potential negative impacts, including depletion of sea grass beds from resulting fresh water run off (including siltation etc.),
- Alteration or destruction of mangrove communities due to changes in precipitation and seasonality, resulting in the alteration of the productivity of mangrove ecosystems,
- Increased inundation as a result of sea level rise, with consequences such as salt-water intrusion,
- Inundation and salinization of lands, resulting in net decrease in productivity,
- Vulnerability to flooding and soil erosion of low lying communities,
- Loss in net tourism economic activities as a result of the combined effects of climate change (damage to coral reef etc.),
- Impact on human health due to the change in patterns of infectious diseases, especially in water supplies and food,

These issues are of a national scale, and the results would be more visible as cumulative impacts of climate change, rather than resulting from individual project development. However, it is important to plan along these lines, which is the primary focus of this section. Planning will include the elevation of property by land filling, the construction of buildings to standards to withstand major hurricanes, and the establishment of building codes and guidelines that will be satisfactory to minimize damage during disasters.

## **12.7 Medical Response Plan**

The proposed development will implement a medical response plan in the event of a medical emergency. In general, the proposed response plan will cater to basic first aid health care and will only include emergency transportation to a recognized health institution capable of treating the patient. This is a new issue that has to be incorporated into this chapter especially considering the nature of the development and the age group of the projected visiting population. This plan will be required to be enhanced and approved by a certified doctor, health institution or NEMO.

### **12.7.1 Purpose of the Plan**

The purpose of the Medical Response plan for the proposed project is to:

- (i) To establish the coordinating mechanisms necessary for management to respond to a health crisis and to implement basic first aid where applicable.

- (ii) In addition, to institute the coordinating mechanism necessary to secure appropriate transportation of the patient to a recognized health institution.
- (iii) Increase awareness to guests, management and others of the availability of basic first aid.

### **12.7.2 Basic First Aid**

As mentioned previously, the proposed development plans to offer basic first aid treatment in the event of a medical emergency. **First Aid** is the provision of limited care for an illness or injury, which is provided, usually by a certified person, to a sick or injured patient until definitive medical treatment can be accessed, or until the illness or injury is dealt with (as not all illnesses or injuries will require a higher level of treatment). It generally consists of series of simple, sometimes life saving, medical techniques, that an individual, either with or without formal medical training, can be trained to perform with minimal equipment.

This equipment usually involves the medical supplies commonly found in a first aid kit. A first aid kit is a collection of supplies and equipment for use in giving first aid, particularly in a medical emergency. Most first aid kits contain bandages for controlling bleeding, personal protective equipment such as gloves and a breathing barrier for performing rescue breathing and CPR (cardiopulmonary resuscitation), and sometimes instructions on how to perform first aid.

#### **Aims**

The 3 main aims of first aid, commonly referred to as the “3 Ps” are:

- **Preserve life**
- **Prevent further injury**
- **Promote recovery**

In addition, some trainers may also advocate a 4th ‘P’- **Protect yourself**, although this is not technically an ‘aim’ of providing first aid, and some people would consider that it is adequately covered by ‘Prevent further injury’ as this refers to the casualty, yourself or others.

### **12.7.3 Transportation (Evacuation) of Patient**

When conventional First Aid requires additional medical attention such as in the event of a boating accident or heart problems, the patient must be transported to a recognized health institution for further treatment. The act of preparing the patient and notifying the institution is a very complicated and critical issue. But this can be facilitated by a well coordinated effort whereby the staff can notify the institution ahead of time and making transportation arrangements.

The closest health institution is the Caye Caulker Health Center where a nurse and doctor provide basic health care to the villagers. These health professions can also be contacted at night or in the advent of an emergency. In order to facilitate transportation services to the health center, PPM&YC will have a special cart to transport the injured or sick to the health center. Prior notification to the health center will be provided by staff.

In the same token, critical patients will be required to be transported to a better facility such as the Karl Heusner Memorial Hospital in Belize City which offers secondary care and some tertiary health care. Contact must be established by the resort to both the transportation provider as well as to the KMH. Critical persons can be transported either by boat or airlifted by plane or helicopter. The project’s location offers a quick alternative to person’s being airlifted.

### 12.7.5 Contact Information

Contact information is an important factor in considering emergency situations. It can be used in cases of fire, medical and hurricane emergencies. The following table lists the possible contact information for emergencies. This table must be supplemented by the emergency committee listing the member’s contact information.

**Table 12.4** Caye Caulker Emergency Services

<b>Institution/Department</b>	<b>Contact Number</b>	<b>Alternate Number</b>
Caye Caulker Health Center	226-0166	<b>911</b>
Karl Heusner Memorial Hospital	223-1548	223-5686
Caye Caulker Fire Service	226-0353	
Caye Caulker Police Station	226-0179	226-2022/ <b>911</b>

### 12.8. Training and Development

Risks and hazards abound in our society and therefore the proposed development is no exception. The Emergency Committee of Pelican Point will develop a training and development program for the resort. This program will cover basic areas designed to minimize and prevent injury and illness where possible. This program will not be required to divulge in general or in details about the many risks and hazards that exist or affect the project. Nevertheless, it’s important to address these concerns, especially considering the location of the project.

Training is the field concerned with workplace learning to improve performance. Such training can be generally categorized as *on-the-job* or *off-the-job*. On-the-job describes training that is given in a normal working situation, using the actual tools, equipment, documents or materials that they will use when fully trained. On-the-job training is usually most effective for vocational work. Off-the-job training takes place away from normal work situation which means that the employee is not regarded as productive worker when training is taking place. An advantage of off-the-job training is that it allows people to get away from work and totally concentrate on the training being given. This is most effective for training concepts and ideas.

#### (a) Hurricane Preparedness Plan

Hurricanes and storms can cause severe property damage and flooding, especially considering the project environment. Moreover, the restoration time is virtually unknown with these types of sustained damages. With this in mind, the Emergency Committee will carry out yearly training in

the form of drills to fine tune and sort out the preparation process. These drills are important in accessing the integrity and functionality of the preparedness plan.

### **(b) Fire Prevention and Response Plan**

Fire outbreaks are dangerous if not contained and extinguished in time. Time is of the essence when dealing with fires. The Emergency Committee of Pelican Point Marina and Yacht Club will ensure that the persons assigned to fight a fire are properly trained. Training can be carried out by the National Fire Service upon request. The trainee will basically get an understanding of the concepts of a fire and how to properly operate and use a fire extinguisher to fight small fires. The training will be enhanced to include the usage of the project's fire hydrant system to extinguish large fires that might occur. Special attention will be paid to this section as it signifies the last line of defense for the proposed project. The fire hydrant lines (loops) will be buried underground for aesthetic purposes. The training will also include the maintenance of both the fire extinguishers and fire hydrant systems.

### **(c) Spill Contingency Plan**

Training in this field will be limited to small localized spills that could occur on the caye and any marine spills. Precedence will be given to the small spills since the probability is much higher. Needless to say, marine spills will be of concern, but these can be more aptly addressed by mitigation measures. Trainees in this area will be required to learn the basics in spill containment and remediation process. This will involve the deployment of spill kits to the required areas and also undertaking remediation services. Training in this field can be undertaken by the Department of the Environment, or private consultancies.

### **(d) Tidal Rise Contingency Plan**

There are no specific training in this field nevertheless, a monitoring program must be developed of some sort to monitor the erosion of the caye, deposition of sediments and water quality and flooding where necessary.

### **(e) Medical Emergency**

Much of first aid is common sense, and people are almost certain to learn some elements as they go through their life (such as knowing to apply an adhesive bandage to a small cut on a finger). However, effective life-saving first aid requires hands-on training by experts, especially where it relates to potentially fatal illnesses and injuries, such as those that require Cardiopulmonary resuscitation (CPR), as the procedures may be invasive, and carry a risk of further injury to the patient - which the '3 aims' of first aid above, clearly try to avoid.

To be adequately trained, a person must attend a course (hopefully leading to a qualification or certificate), but then, due to regular changes in procedures and protocols, based on updated clinical knowledge, must attend regular refresher courses or re-certification in order to ensure they are doing the best for the patient (and to minimize the chance of being held liable for further injury or deterioration).

Training in first aid is often available through the Red Cross or through commercial providers, who will train the staff for a fee. This commercial training is most common for training of employees to perform first aid in their workplace.

As the key skill to first aid is preserving life, the single most important training a first aider can receive is in the primary diagnosis and care of an unconscious or unresponsive patient. The most common mnemonic used to remember the procedure for this is ABC, which stands for **Airway, Breathing and Circulation.**

**(f) Others**

There are many other training programs that are required by the proposed development. Most of these include on the job training such as landscaping, life guard, fuel dispatcher, etc. In the tourism field, there are many such instances that require some sort of qualification and training. Nevertheless, the proposed development plans to implement training exercises into the operation of the project.