

PART 12

WEATHER WARNINGS

CONTENT

Section	Description
1	General
2	Organisation
3	Civil Aviation Department
4	<i>Airport Fire Contingent</i> <i>Not Applicable</i>
5	<i>Fire Services Department</i> <i>Not Applicable</i>
6	Hong Kong Police
7	<i>Department of Health / Port Health Division (Airport Section)</i> <i>Not Applicable</i>
8	<i>Hospital Authority</i> <i>Not Applicable</i>
9	AA Airfield Department
10	AA Terminal Operations Department
11	AA Airport Emergency Centre (AEC)
12	AA Corporate Affairs Department
13	Aviation Security Company Ltd.
14	AA Technical Services Infrastructure Department
15	AA Retail and Advertising Department
16	Airline / Handling Agent
17	Ramp Handling Licensee

Section	Description	
18	<i>Not used</i>	<i>Not Applicable</i>
19	Line Maintenance Franchisee	
20	Into-Plane Fuelling Franchisee	
21	Cargo Terminal Operators	
22	<i>Customs and Excise Department</i>	<i>Not Applicable</i>
23	<i>Immigration Department</i>	<i>Not Applicable</i>
24	<i>Government Flying Services</i>	<i>Not Applicable</i>
25	Mass Transit Railway Corporation	
26	<i>Food & Environmental Hygiene Department</i>	<i>Not Applicable</i>
27	Information Services Department	
28	<i>Security Bureau</i>	<i>Not Applicable</i>
29	<i>Marine Department</i>	<i>Not Applicable</i>
30	<i>Civil Aid Services</i>	<i>Not Applicable</i>
31	<i>Auxiliary Medical Service</i>	<i>Not Applicable</i>
32	<i>Civil Engineering and Development Department</i>	<i>Not Applicable</i>
33	<i>Lands Department (Survey and Mapping Office)</i>	<i>Not Applicable</i>
34	Hong Kong Observatory (Airport Meteorological Office)	
35	<i>Tenants and Employees</i>	<i>Not Applicable</i>
36	Public Bus Operators	

Section	Description	
37	<i>Transport Department /Transport & Logistics Bureau</i>	<i>Not Applicable</i>
38	AA Medical Services	
39	AA Safety, Security and Business Continuity Department	
40	Tsing Ma Management Limited	
41	Landside Department	
42	AA Integrated Airport Centre	
43	<i>Hong Kong St. John Ambulance Brigade</i>	<i>Not Applicable</i>
44	<i>Air Accident Investigation Authority</i>	<i>Not Applicable</i>
45	AA Aviation Logistics Department	
46	AA APM and Baggage Department	
Appendix 12-A	Guidelines for Aircraft Ramp Handling under Strong Wind Conditions	
Appendix 12-C	Guidelines for Precautionary Actions to be performed by Aircraft Servicing Companies under “Amber” and “Red” Warnings of Airport Lightning Warning System	
Appendix 12 D	Tsunami Risk, Prediction and Warning – Excerpted from Security Bureau Circular “Contingency Plan for Natural Disasters (Including those arising from severe weather conditions)”	

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GENERAL**1. Introduction**

The Airport Meteorological Office issues aerodrome warnings for the protection of aircraft and rescue vessels at the airport and provides information on the issuing and cancelling of Tropical Cyclone Warning and Strong Monsoon Signals. The Central Forecasting Office at the Hong Kong Observatory Headquarters also issues Rainstorm Warnings which while intended for public use, may also be relevant to ground operations at the airport.

This Part summaries the functions and responsibilities of the Airport Authority and other airport operators in the event of severe weather affecting operation at the airport.

The Security Bureau Circular for “Contingency Plan for Natural Disasters (Including Those Arising from Severe Weather Condition)” defines the roles and responsibilities of Government Departments in the event of natural disasters resulting from severe weather conditions.

In determining precautionary measures at the airport, factors to be taken into account include the intensity of the tropical cyclone, its distance, speed and direction of approach to the airport, as well as the airport facilities which will become exposed to strong winds and heavy rain.

Guidelines for aircraft ramp handling under strong wind conditions are suggested and provided in Appendix 12-A.

To provide early warnings of thunderstorms at the airport, an “Airport Lightning Warning System” has been installed. Guidelines for precautionary actions to be performed by aircraft servicing companies under “Amber” and “Red” warnings are suggested and provided in Appendix 12-C.

The Hong Kong Observatory is responsible to provide tsunami warnings to the HKG SAR. Excerpts from the Security Bureau Circular for “Contingency Plan for Natural Disasters” on tsunami risk, prediction and warning are reproduced in Appendix 12-D.

Section 1**2. Weather Warnings****2.1 Tropical Cyclones**

2.1.1 Information on the issuing and cancelling of Tropical Cyclone Signals.

2.1.2 Classification of Tropical Cyclones

Tropical Cyclone Classification	Maximum 10-minute mean wind near the centre
Tropical Depression	41 to 62 km/h
Tropical Storm	63 to 87 km/h
Severe Tropical Storm	88 to 117 km/h
Typhoon	118 to 149 km/h
Severe Typhoon	150 to 184 km/h
Super Typhoon	185 km/h or above

2.1.3 Tropical Cyclone Signals

<u>Signals</u>	<u>Weather Conditions</u>
No. 1	A tropical cyclone is centered within about 800 km of Hong Kong and may affect the territory.
No. 3	Strong wind is expected or blowing generally in Hong Kong near sea level, with a sustained speed of 41-62 km/h, and gusts which may exceed 110 km/h, and the wind condition is expected to persist.
No.8 NW No.8 SW No.8 NE No.8 SE	Gale or storm force wind is expected or blowing generally in Hong Kong near sea level, with a sustained wind speed of 63-117 km/h from the quarter indicated and gusts which may exceed 180 km/h, and the wind condition is expected to persist.
No. 9	Gale or storm force wind is increasing or expected to increase significantly in strength.
No. 10	Hurricane force wind is expected or blowing, with sustained speed reaching upwards from 118 km/h and with gusts that may exceed 220 km/h.

Section 1

Tropical Cyclone Signals also provide information about the levels of the sea in Hong Kong waters and their predicted changes when these are significant.

2.1.4 Typhoon Co-ordination Meetings

In the event that Tropical Cyclone Signal No. 8 is to be issued as advised by Hong Kong Observatory (HKO) or the weather is expected to impact on airport and flight operations, AA may hold co-ordination meeting(s) with the airport community at the Airport to review on the severity of the tropical cyclone and operational impacts to the airport and to coordinate necessary actions as required.

2.1.5 Precautionary Announcement on air traffic disruption due to tropical cyclone

When air traffic is disrupted or likely to be disrupted by the weather brought about by tropical cyclone, HKO will include a precautionary announcement in the Tropical Cyclone Warning Bulletin to advise the public to contact their airlines for the latest flight information.

2.2 Strong Monsoon

The Strong Monsoon Signal is issued when winds associated with the summer or winter monsoon are in excess of or are expected to exceed 40 km/hr. near sea level anywhere in Hong Kong.

2.3 Rainstorm Warnings

2.3.1 “Amber” Rainstorm Warning

Heavy rain has fallen or is expected to fall generally over Hong Kong, exceeding 30mm in an hour, and is likely to continue. There will be flooding in some low-lying and poorly drained areas. Members of the public are advised to pay attention to weather changes as these may lead to Red or Black rainstorm situation.

“Red” Rainstorm Warning

Heavy rain has fallen or is expected to fall generally over Hong Kong, exceeding 50mm in an hour, and is likely to continue. It means that heavy rain could cause serious road flooding, and people who have to travel should carefully consider the weather and road conditions.

Section 1“Black” Rainstorm Warning

Very heavy rain has fallen or is expected to fall generally over Hong Kong, exceeding 70mm in an hour, and is likely to continue. It means that there is serious road flooding and weather conditions are inclement. People should take shelter in a safe place.

- 2.3.2 When prolonged rain occurs, the signals may also be issued even if the specified hourly rainfall levels are not breached. In case heavy rain develops suddenly, a Red Rainstorm Warning may be issued without being preceded by Amber, and likewise, a Black Rainstorm Warning may not be preceded by a Red Rainstorm Warning.

2.4 Aerodrome Thunderstorm Warning

- 2.4.1 This refers to thunderstorm warnings issued by Airport Meteorological Office for the protection of airport personnel, facilities and equipment when thunderstorms are expected to occur in the airport.
- 2.4.2 When an Aerodrome Thunderstorm Warning is issued by Airport Meteorological Office, Line Maintenance Franchisees should ensure that the aircraft is properly earthed using the earthing point near to the aircraft stop bar marking.

2.5 Airport Lightning Warning System

- 2.5.1 The Hong Kong Observatory provides the Airport Authority with airport lightning warning signals based on lightning strikes detected and the intensity of radar echo. The Airport Authority will subsequently issue “Amber” and “Red” Airport Lightning Warnings on the airfield
- “Amber” Warning

Lightning activity is expected at the airport. Avoid non-essential activities at the open areas.

“Red” Warning

Lightning activity is detected at the airport. Take measures to protect against the lightning strike.

- 2.5.2 The AA IAC-ACC is responsible for the dissemination of warning message through an auto voice message distribution system.

Section 1

2.5.3 Real time red and amber warning lights, and audio alert are also provided at all aprons.

2.6 Aerodrome strong wind/gusts warning

This refers to strong wind/gusts warning issued by Airport Meteorological Office for the protection of airport personnel, facilities and equipment when:

a/ the mean wind exceeds or forecast to exceed 21 kt; or

b/ the gusts exceed or forecast to exceed 31 kt

2.7 Aerodrome Tsunami warning

This refers to Tsunami Warning issued by Airport Meteorological Office for the protection of airport personnel, facilities and equipment when significant tsunami (one with tsunami height of 0.5 metre or higher) is expected to arrive in Hong Kong within 3 hours.

(Note : the criteria of issuing Aerodrome Tsunami Warning is the same as the Tsunami Warning issued for the general public (see para. 4 and Appendix 12-D)

2.8 Adverse Weather Traffic Contingency for Tsing Ma Controlled Area (TMCA):-

<u>Wind Speed</u>	<u>Action</u>
10-minute mean wind speed reaches 60 kph but not exceeding 75 kph (Stage I)	All wind-susceptible vehicles (i.e. all motor vehicles exceeding 1.6m in height, motor cycles and motor tricycles) will be diverted to use the lower deck.
10-minute mean wind speed excess of 75 kph (Stage II)	All vehicles will be diverted to use the lower deck of Tsing Ma bridge.

3. **Airport Authority Airport Emergency Centre (AEC)**

3.1 The Airport Emergency Centre, connected to the Integrated Airport Centre and located adjacent to Airport Gate 1 (Grid reference K30 on page 2-3 in Part 10A, Section 2), will be activated during the passage of a typhoon or when impacts to airport and flight operation are expected, or be activated during tsunami at the Boardroom of HKIA Tower or 11th floor of Regal Airport Hotel Executive Club

Section 1

Lounge when the centre above mentioned is not serviceable. The AEC will function as a central point of command and coordination for the Airport Authority, airlines, Government Departments and airport operators to facilitate the rapid recovery to normal operations.

- 3.2 The Airport Emergency Centre will be activated by the AA Airport Duty Manager once the Tropical Cyclone Signal No.8 is issued, or at his discretion when impacts to airport and flight operations are expected. The Airport Emergency Centre will be staffed by the AA Airport Duty Manager, who will take on the role as AEC Manager. He will be responsible for the management, staffing and communications of the Airport Emergency Centre (*See Section 39 of this part*). The AA Executive Director, Airport Operations (or his deputy) will report to the AA Airport Emergency Centre for an initial briefing and subsequently be based there in overall charge of the airport operations recovery. He will brief and maintain contact with the Chief Executive Officer (CEO) and Chief Operating Officer (COO) of the Airport Authority. The AA General Managers, Airfield, Terminal Operations Department and Landside Department will each report to the Airport Emergency Centre for an initial briefing and subsequently oversee the activities under Sections 9, 10 and 41 respectively. In the case of weather warnings, the operation of the Airport Emergency Centre will be supported as necessary, by representatives of Air Traffic Control, Self-Handled Airlines / Handling Agents, AVSECO, Airline Operators Committee, Hong Kong Airline Service Providers Association Operations Committee (HOC), Police, AA Communication Services, Line Maintenance Franchisees, Ramp Handling Licensee, AA Technical Services Infrastructure Department and AA Airfield Department.

3.3 **Operations Recovery**

Following the passage of a Tropical Cyclone, the Airport Emergency Centre, which is chaired by the AA Executive Director, Airport Operations (or his deputy), will coordinate operations recovery amongst members from Ramp Handling Licensee, Line Maintenance Franchisee, Airside Bus Control, Handling Agents and Self-Handled Airlines with the objective of ensuring a rapid return to normal operations. The AEC will:

- Coordinate the rescheduling of aircraft movements if necessary (*see Part 16*)
- Exchange information and coordinate an airport wide response to arrivals, departures, delays and cancellations
- Coordinate the response to any flow control measures imposed by Hong Kong Air Traffic Control and other Flight Information Regions (FIRs) on the Passenger Terminal Building and aircraft parking stands

Section 1

- Decide measures on pooling resources both within the Passenger Terminal Building and on the Apron such as implementation of the contingency procedures on the “Equipment Pooling Arrangement” for critical ramp equipment.
- 3.4 The web-based Aviation Meteorological Dissemination System (AMIDS) is accessible by authorized personnel through the AEC Team PC console.
- 3.5 The Airport Emergency Centre is equipped with the following systems:
- Personal Computers with AA network access / internet / Email
 - Hotline to key Government Departments
 - Telephones / Facsimile
 - Wi-Fi wireless internet access
 - Terrestrial Trunked Radio system
 - Audio Conferencing System
 - Multimedia Video Wall Display
 - Closed Circuit Television System Monitors
 - Flight Re-scheduling Control System display
 - Landing Sequence Display
 - Television
 - Photocopier / Printer
 - Airport Grid Maps
 - Emergency Procedures Manuals
 - HKIA Contact Directory
- 3.6 In the event the AEC could not perform its function, a backup AEC may be designated at an available location during emergencies by the Airport Duty Manager. Instead of full provision of AEC facilities, a mobile equipment kit would be deployed as far as possible including a laptop, telephone, a set of EPM to facilitate the communication and command.

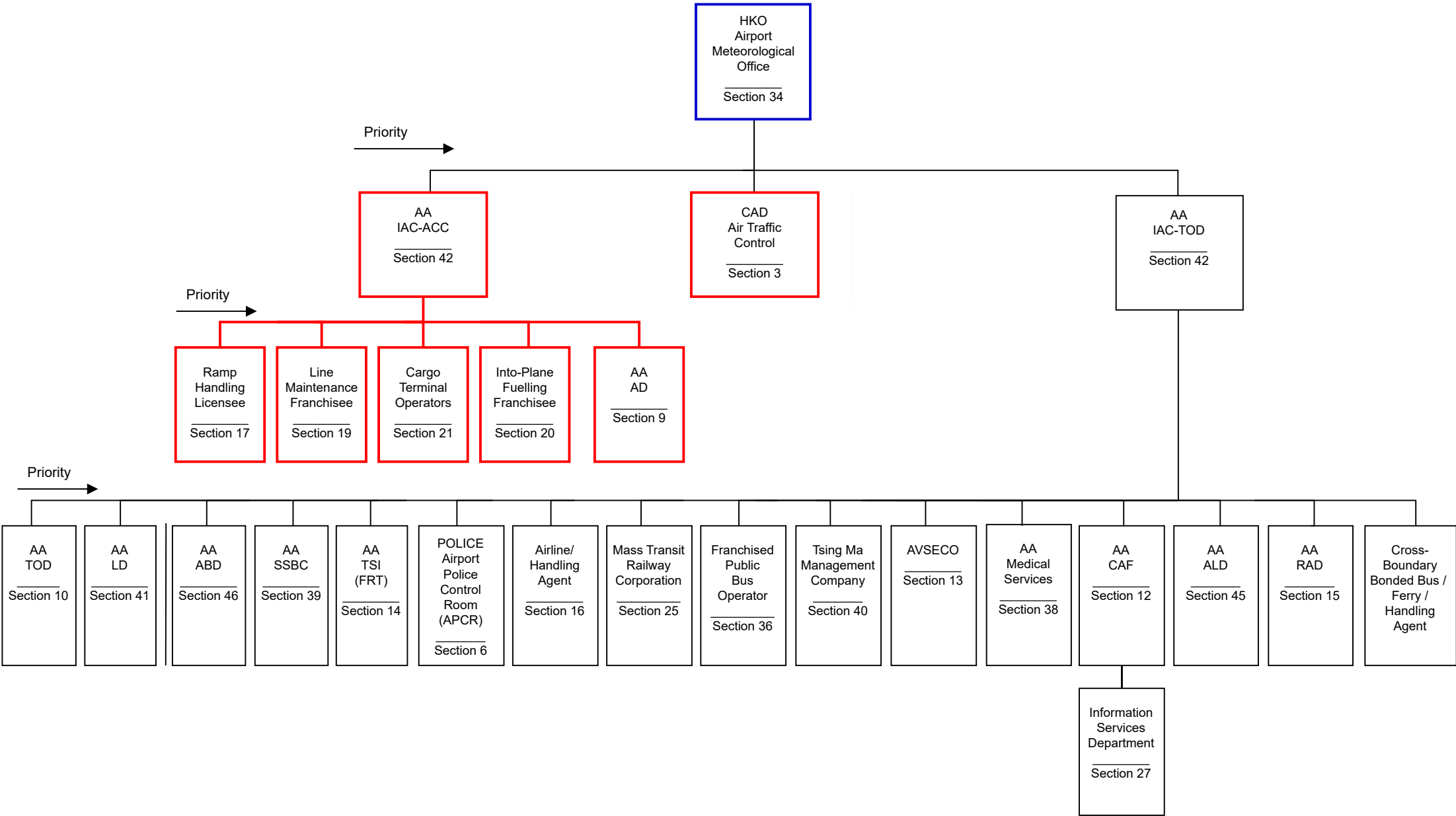
4. Tsunami Warnings

- 4.1 Tsunami risk, prediction and warning for HKG SAR are contained in the Security Bureau Circular for “Contingency Plan for Natural Disasters (Including Those Arising from Severe Weather Condition)”.
- 4.2 Relevant excerpts on tsunami procedures from the SB Circular are reproduced as Appendix 12-D.

Section 1

- 4.3 The Hong Kong Observatory will be responsible to assess and then issue appropriate tsunami warnings through an alerting system as stated in the SB Circular.
- 4.4 The Airport Authority will receive these tsunami warnings via the government Information Services Department and Hong Kong Observatory.
- 4.5 The Airport Authority will then relay these warnings to all airlines and ramp operators.
- 4.6 Information Services Department and the Transport Department will be responsible to alert other organizations including land and sea transport operators as well as mass media agencies like radio, newspapers and television companies.
- 4.7 These warnings include tsunami precautions that the Hong Kong Observatory will advise the public to follow.

Weather Warnings
Alerting Diagram



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**CIVIL AVIATION DEPARTMENT
(AIR TRAFFIC CONTROL)****RESPONSIBILITIES**

- Attend “typhoon co-ordination” meetings at AEC
- Provide ATC capacity information to AEC to assist in the rescheduling of flight movements

Alerted by Airport Meteorological Office

Action by Air Traffic Control

1. In the event that a typhoon co-ordination meeting at the airport is to be held, attend such meeting and co-ordinate necessary actions.
2. When the Airport Emergency Centre is activated due to severe weather, deploy a liaison officer to AEC to liaise on rescheduling of flight movements and other air traffic issues
3. Liaise with AEC for the issuance of NOTAM under severe airport disruptions if situation warrants.
4. Inform AEC the possible or actual activation of Taxiway Contingency Parking procedures if situation warrants the holding of aircraft on taxiways as notified by the Tower.
5. Upon receipt of tsunami warning, coordinate with IAC-ACC on the timeline for serving the last arrival and departure flights before implementation of the Tsunami plan by AA.
6. Maintain a chronological log of events and actions taken.

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HONG KONG POLICE**RESPONSIBILITIES**

- Crowd management
- Vehicular traffic control
- Liaison with Security Bureau

Alerted by: AA-TOD

Action

1. When AA Airport Emergency Centre (AEC) is activated due to severe weather, deploy a liaison officer to the AEC to coordinate the implementation of crowd control procedures within the Terminal Building and carry out vehicular traffic control at the landside.
2. The liaison officer will maintain communication with Security Bureau Emergency Monitoring and Support Centre (EMSC) in respect of disruptions to airport operations.
3. Maintain a chronological log of events and actions taken.

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AA AIRFIELD DEPARTMENT**RESPONSIBILITIES**

- Precautionary measures to protect aircraft, passengers, other personnel, and property on the airfield
- Apron and airfield inspection
- Wind speed measurement

Alerted by IAC - ACC

1. When Tropical Cyclone Signal No.3 is issued**1.1 Action by Airfield Duty Manager**

- 1.1.1 Ensure windscreen shields (if equipped) are installed on Airfield Department vehicles as appropriate and ensure they have adequate fuel.
- 1.1.2 Coordinate with Airport Meteorological Office to regularly update weather reports and forecast on the wind direction and speed, in particular, the maximum wind speed of the tropical cyclone.
- 1.1.3 Monitor progress of retracting airbridges as per laid-down procedures.
- 1.1.4 Liaise with airlines, Line Maintenance Franchisees, Ramp Handling Licensees, cargo operators and Into-Plane Refueling Franchisees to remove or secure all ground equipment, including the applicable equipment of the AA Equipment Pooling Scheme, on the aircraft parking stands, equipment parking areas and the apron.
- 1.1.5 Ensure empty containers are properly secured and tied-down in the container racking storage area by the Ramp Handling Licensee.

1.2 Action by Assistant Manager, Airfield

- 1.2.1 Assign Bird Control Unit to remove the speakers of the Bird Distress Call Systems, and to assist in airfield and apron duties.
- 1.2.2 Instruct works contractors on airside to ensure the integrity of hoarding and secure or remove all loose objects from the works sites.
- 1.2.3 Ensure loose objects or debris are removed from the airfield by the apron cleaning contractor.

- 1.2.4 Ensure loose objects and debris are removed from the refuse compactor station by the contractor.
- 1.2.5 Ensure all Foreign Object Damage (FOD) bins are secured and emptied.
- 1.2.6 Coordinate with AA Technical Services Infrastructure Department to inspect and clean up storm drains.
- 1.2.7 Coordinate with AA Technical Services Infrastructure Department to tie down Fixed Ground Power flexible cable connection units at remote stands.
- 1.2.8 Ensure apron drains are clear and oil traps are open.

2. When Tropical Cyclone Signal No.8 or above is issued

2.1 Action by Airfield Duty Manager

- 2.1.1 Ensure the operation of Aircraft Parking Aid is under close monitoring by the operators. Suspend the Aircraft Parking Aid unit if any unit is suspected of being affected by the strong wind.
- 2.1.2 Set priority to retract and tie-down the airbridges at the parking stands most exposed to the prevailing wind in accordance with the laid-down procedures.
- 2.1.3 Coordinate with AA Technical Services Infrastructure Department to tie down the PCA hose and install cover to the hose basket.
- 2.1.4 Arrange Airfield Department officers to assess the wind speed measured at the three aprons (North, South and West) using anemometers at one-hour intervals.
- 2.1.5 Implement procedures for retracting and tie-down of airbridges.
- 2.1.6 Liaise with Line Maintenance Franchisees and Ramp Handling Licensees to retrieve or secure applicable equipment of the AA Equipment Pooling Scheme on the aircraft parking stands, equipment parking areas and the apron.

3. Procedures for Retracting, Tie-down and Untie of Airbridges

- 3.1 The table below summarizes the limitation on airbridge operation under strong wind condition, with all wind speeds being 10-minutes mean speeds:

		Passenger Terminal				T1S
Stand		All frontal stands other than N5, N64, D212 and D216	S23, N60, N62 & N66 ¹	N5, N64, D212 & D216		
Aircraft Type Served		Up to Code E	Code F	Up to Code E ²	Code F	
When wind ≥ 25 knots (around 45 km/h))	Airbridge to be retracted	Inner	Inner	Middle		Not Applicable
	Airbridge allowed for pax embarkation or disembarkation	Outer	Outer at main deck only	Outer	Inner & Other at main deck only	
When wind ≥ 35 knots (around 65 km/h)	Airbridge to be retracted	Both inner and outer	Both inner and outer	All Airbridges	All Airbridges	Airbridge under monitoring by airline staff and airbridge operator
	Airbridge allowed for pax embarkation or disembarkation	Outer under monitoring by airline staff and airbridge operator	Outer at main deck under monitoring by airline staff and airbridge operator	Outer under monitoring by airline staff and airbridge operator	Outer at main deck under monitoring by airline staff and airbridge operator	
When wind ≥ 40 knots (around 75 km/h)		All airbridges should be retracted				
When wind ≥ 77 knots (around 140 km/h)		All airbridges should be tied down				

Note 1: Operation of S23, N60, N62 & N66 when serving aircrafts up to Code E shall follow the instructions under "All frontal stands other than N5, N64, D212 & D216"

Note 2: The No.1 airbridge is not in use when serving aircraft up to Code E

3.2 When wind speed reaches 25 knots (around 45 km/h)

- 3.2.1 Airfield Duty Manager will assess the wind speed measured at the three aprons and determine the order for retracting the inner airbridges, giving priority to those most exposed to the prevailing wind.

3.3 When wind speed reaches 35 knots (around 65 km/h)

- 3.3.1 Airfield Duty Manager will assess the wind speed measured at the three aprons and determine the order for retracting the remaining airbridges in Passenger Terminal, T1 Midfield Concourse (T1M) and T1 Satellite Concourse (T1S), giving priority to those most exposed to the prevailing wind.
- 3.3.2 Should passenger embarkation or disembarkation be required, Airfield Duty Manager to liaise with IAC-ACC and airlines to ensure that an airline staff be present at the L2 Door to monitor the condition of the aircraft, together with an airbridge operator to monitor the operation of the airbridge throughout the period it is docked to the aircraft. The airbridge must be retracted from the aircraft if the condition becomes

hazardous, and as soon as passenger embarkation or disembarkation is completed.

3.4 When wind speed reaches 40 knots (around 75 km/h) or above

- 3.4.1 All airbridges at those parking stands where the recorded wind speed has reached 40 knots (around 75 km/h) should be retracted.

3.5 When wind speed is forecast to strengthen to 77 knots (around 140km/h) or above

- 3.5.1 Airfield Duty Manager will assess the wind speed recorded at the three aprons to determine the order for the tie-down of the outer airbridges. Priority should be given to those airbridges most exposed to the prevailing wind, and those with inactive aircraft. Advise AEC of actions taken.
- 3.5.2 The inner airbridges of all frontal stands and the middle airbridge of N5, N64, D212 and D216 should be tied down as soon as possible.
- 3.5.3 Airlines should arrange refueling of aircraft prior to towing if it is necessary to increase ballast.
- 3.5.4 Airfield Duty Manager will coordinate with AA Technical Services Infrastructure Department to tie down the outer airbridges.

3.6 When wind speed reaches 77 knots (around 140 km/h)

- 3.6.1 Airfield Duty Manager will assess the wind speed recorded at the three aprons and advise AEC.
- 3.6.2 Check that airbridges at those parking stands where the measured wind speed has reached 77 knots (around 140 km/h) have been tied-down.
- 3.6.3 When the outer airbridges are tied down in the extended position, aircraft will be parked short of the normal stop bar.

3.7 When wind speed drops below 77 knots (around 140 km/h) and forecast to remain below 77 knots (around 140km/h) but above 40 knots (around 75 km/h)

- 3.7.1 Airfield Duty Manager will liaise with AA Technical Services Infrastructure Department to un-tie and retract the outer airbridges, giving priority to those stands on which aircraft are ready to depart as weather conditions improve.

- 3.7.2 After the outer airbridges have been untied, but are still retracted, the Line Maintenance franchisees to re-position the aircraft to the normal parking positions.
- 3.7.3 After all the outer airbridges have been untied, but are still retracted, AA Technical Services Infrastructure Department should untie the inner and middle airbridges but keep them retracted.

3.8 When wind speed drops below 40 knots (around 75 km/h) and forecast to remain below 40 knots (around 75km/h)

- 3.8.1 Release all retracted airbridges.
- 3.8.2 When the locally measured wind speed still exceeds 35 knots, docking of outer airbridge for passenger use is subject to precautionary measures stated in Para. 3.3.2.
- 3.8.3 Assistant Manager, Airfield will conduct check on damage to the airbridges.

4. When Tropical Cyclone Signal No.8 is cancelled

4.1 Action by Airfield Duty Manager

- 4.1.1 Coordinate with AA Technical Services Infrastructure Department to untie the airbridges at the parking stands.
- 4.1.2 Coordinate with AA Technical Services Infrastructure Department to untie the PCA hoses and uncover the hose baskets.
- 4.1.3 Coordinate with AA Technical Services Infrastructure Department to carry out external inspection and walk test of any suspected defective Aircraft Parking Aid.
- 4.1.4 Instruct the apron cleaning contractor to clean up the apron prior to the resumption of operations.
- 4.1.5 Coordinate with Equipment Pooling Scheme housekeeping team to retrieve all the resources used to tie up the applicable equipment on the aircraft parking stands, equipment parking areas and the apron.

4.2 Action by Assistant Manager, Airfield

- 4.2.1 Prior to resumption of normal aircraft operation, dispatch runway sweepers and ensure the apron cleaning contractor cleans the aircraft maneuvering area.

4.2.2 In conjunction with AA Technical Services Infrastructure Department, assess any damage on installations and facilities and prepare a damage assessment report.

4.2.3 Request TSI to untie all Fixed Ground Power cables at remote stands

5. When any of the following weather warnings is issued :

- Strong Monsoon
- Rainstorm Warning
- Aerodrome Thunderstorm Warning

5.1 Action by Airfield Duty Manager

5.1.1 Coordinate with airlines, Line Maintenance Franchisees, Ramp Handling Licensees, cargo operators and Into-Plane Refueling Franchisees to secure all ground equipment on the aircraft parking stands, equipment parking areas, and the aprons.

5.1.2 Inspect container racking storage with ramp handling operators and ensure empty containers are properly secured and tied down in their storage areas.

5.2 Action by Assistant Manager, Airfield

5.2.1 Instruct works contractors on airside to ensure the integrity of hoarding and secure or remove all loose objects from the works sites.

5.2.2 Ensure loose objects or debris are removed from the airfield by the AA apron cleaning contractor.

5.2.3 Inspect the refuse compactor building to ensure loose objects and debris are removed by the cleaning contractor.

5.2.4 Ensure all FOD bins are secured and emptied.

5.2.5 Coordinate with AA Technical Services Infrastructure Department to inspect and to clean the storm drains

5.2.6 Ensure apron drains are clear and oil traps are open.

6 When any of the following weather warnings is cancelled:

- Strong Monsoon
- Rainstorm Warning
- Aerodrome Thunderstorm Warning

6.1 Action by Assistant Manager, Airfield

- 6.1.1 Coordinate with AA Technical Services Infrastructure Department to inspect and to clean the storm drains.
- 6.1.2 Instruct the apron cleaning contractors to clean up the aprons prior to resumption of operations.

7. Tsunami Warnings

The Hong Kong Observatory tsunami warnings will be sent to the IAC-ACC by phone and fax.

Upon receipt of tsunami warning**7.1 Action by Airfield Duty Manager**

- 7.1.1 Position all Airfield Department vehicles to higher land.

Once tsunami waves recede or tsunami warning is cancelled

Upon receipt of cancellation of the tsunami warning from Hong Kong Observatory

7.2 Action by Assistant Manager, Airfield

- 7.2.1 Arrange sweeping for all runways and taxiways on resumption of operations.

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AA TERMINAL OPERATIONS DEPARTMENT**RESPONSIBILITIES**

- Coordination of information on flight disruptions

Alerted by IAC - TOD**1. When Tropical Cyclone Signal Number 3 is issued****Action by** Terminals and Landside Duty Manager

- 1.1 Dispatch patrol staff to inspect the estate premises.
- 1.2 Liaise with AA Corporate Affairs Department in the handling of media enquiries.
- 1.3 Maintain close monitoring of terminal operations to minimise congestion and disruption.

2. When Tropical Cyclone Signal Number 8 or above is issued**Action by** Terminals and Landside Duty Manager

- 2.1 Maintain sufficient manning of IAC-TOD and, if necessary arrange additional staff for terminal operations duties in anticipation of continuous flight disruptions.
- 2.2 Coordinate with self-handled airlines/handling agents, AVSECO and IAC-ACC on the use of the arrivals west hall as a temporary APV for departure flights when the use of all airbridges are suspended.
- 2.3 Arrange service extension of AA Medical Services if necessary.
- 2.4 If AEC is already activated, notify AEC of all actions taken.

3. When any of the following weather warnings is issued

- Strong Monsoon
- Rainstorm warning
- Aerodrome Thunderstorm Warning

Action by Terminals and Landside Duty Manager

3.1 Maintain close liaison with Assistant Manager - ACC, Airfield to minimise disruption to terminal operation caused by changes in stand and gate allocation. Monitor the effect on flight movements and update development and status.

3.2 Dispatch patrol staff to inspect the estate premises.

4. When any Weather Warnings are canceled

Action by Terminals and Landside Duty Manager

4.1 Coordinate with AA Technical Services Infrastructure Department to conduct an inspection and damage assessment of all related facilities.

4.2 When alerted by AEC, send representative(s) to AEC to assist in the implementation of "Flight Re-scheduling Control" procedure if it is initiated.

5. When tsunami waves are expected to reach HKIA

Action by Terminals and Landside Duty Manager

5.1 Guide all transit / transfer passengers to Level 6.

5.2 Evacuate all passengers from APM trains and platforms.

5.3 Display emergency messages on the three giant displays at T1.

5.4 Set up the temporary TDMO at Level 7 Customer Service Counter.

6. Once tsunami waves recede

Action by Terminals and Landside Duty Manager

6.1 Display message at strategic locations on A2 stands.

6.2 Coordinate with TSI on facilities damage check.

6.3 Prepare to set up crowd management facility at Transition Deck, Check-in Aisles, Airline Services Desk and Transfer Areas.

7. Maintain a chronological log of events and actions taken

8. Reference on procedures

8.1 Please refer to TOD/LD Procedure no. TLPM/003 Adverse Weather Procedures - Indoor / Outdoor.

AA AIRPORT EMERGENCY CENTRE (AEC)**(Tel : 2182 0088 Fax : 2182 0090)****RESPONSIBILITIES**

- Off-scene airport command, control and communication centre
- Coordination and dissemination of information to and from all responders
- Coordination of welfare to passengers and other affected person(s)
- Coordination of joint Media Management Plan of responding parties
- Coordination of the airport's Business Continuity Plans

Representatives Present

- AA Executive Director, Airport Operations (or Deputy Director, Airport Operations)
- AA Airport Duty Manager
- AA General Manager - Terminal Operations
- AA General Manager – Landside
- AA General Manager - Airfield Department
- AA General Manager – APM & Baggage
- Air Traffic Control
- AVSECO
- Police
- Self-handled Airlines / Handling Agents
- Airline Operators Committee (AOC)
- AA Corporate Affairs Department
- Hong Kong Airline Service Providers Association (HASPA)
- Line Maintenance Franchisee
- Ramp Handling Licensee
- AA Technical Services Infrastructure Department
- AA Airfield Department
- AA APM & Baggage Department
- AA Terminal Operations Department
- AA Landside Department
- AA Retail and Advertising Department
- AA Aviation Logistics Department
- AA Third Runway Department

1. General Functions of AEC

- 1.1 Liaise and coordinate with Air Traffic Control (ATC), IAC-ACC, and IAC-TOD, IAC-LD, IAC-ABD, Airline Operators Committee (AOC) and Self-Handled Airlines / Handling Agents on the flight information ensuring that displays are updated and are as accurate as possible while maximising capacity of the system. If necessary, direct manual suppression of all flights without confirmed ETAs and ETDs.
- 1.2 With close communication of franchisees, coordinate the parking stand allocation and ramp operations activities.
- 1.3 Liaise with AA Corporate Affairs Department on the handling of media enquiries.
- 1.4 Coordinate with AA Technical Services Infrastructure Department, Air Traffic Control (ATC), IAC-ACC and IAC-TOD on damage assessment and emergency repairs to airport installations and facilities.
- 1.5 In order to achieve the operations recovery, the Airport Emergency Centre, chaired by the AA Executive Director Airport Operations (or his deputy), will coordinate amongst Ramp Handling Licensee, Line Maintenance Franchisee, Handling Agents and Self-Handled Airlines with the objective of ensuring a rapid return to normal operations. The AEC will, where appropriate:
 - *Decide and prioritize operation recovery for critical airfield facilities, services and operations*
 - Coordinate the rescheduling of aircraft movements by the activation of the “Flight Re-scheduling Control” procedures if required (*Part 16 Section 1*)
 - Exchange information and co-ordinate an airport wide response to arrivals, departures, delays and cancellations.
 - Coordinate the response to “flow control” measures imposed by Hong Kong Air Traffic Control and other Flight Information Regions (FIRs) on Passenger Terminal Building and aircraft parking stands.
 - Decide measures on pooling resources both within the Passenger Terminal Building and on the Apron such as the implementation of contingency procedures on the “Equipment Pooling Arrangement” for critical ramp equipment.

2. Roles and Responsibilities of AEC Representatives**2.1 AA Executive Director Airport Operations (or his deputy)**

- Responsible for managing and recovering the airport operations around the weather warnings.
- Responsible for providing regular updates to AA Chief Executive Officer (CEO) and Chief Operating Officer (COO).

2.2 Airport Duty Manager

- Responsible for activation of the AEC.
- Act as the AEC Manager and responsible for management and operations of the AEC.
- Responsible for alerting responding parties to send a representative to the AEC with the assistance of Terminals and Landside Duty Manager.

2.3 AA General Manager – Terminal Operations (See Section 10)

- Oversees activities under Section 10 and ensures minimal disruption to normal Passenger Terminal / Landside operations.
- As a result of the incident, should there be considerable no. of stranded passengers within the PTB, consider the need to:
 - Initiate mobilization of “**Passenger Care Team**” to provide care and support to stranded passengers
 - Initiate mobilization of St. John Ambulance’s Standby First-Aid team to the airport to cater for the medical needs of stranded passengers
 - Activate contingency procedures to deal with Taiwan / China bound passengers

2.4 AA General Manager – Landside

- Oversees landside activities and ensure minimal disruption to normal operations.
- Liaise with MTRC for possible service extension of the Airport Express trains services if required

2.5 AA General Manager – Airfield (See Section 9)

- Oversees activities under Section 9, and ensures minimal disruption to normal Airfield / Apron operations.

2.6 AA General Manager – APM & Baggage

- Oversees APM and Baggage Hall activities and ensures minimal disruption to normal APM and baggage operations.

2.7 AVSECO (See Section 13)

- Act as liaison between the AEC and AVSECO Duty Security Manager on the airport security situation updates.
- In consultation with Assistant Manager – Terminal Operations, implement and reinforce crowd control measures as required.

2.8 Air Traffic Control (See Section 3)

- Act as liaison between the AEC and ATC on re-scheduling of flight movements and implementation of flow control.
- Provide information on neighboring airports operations and any likely impacts on Hong Kong.
- Liaise with AA for the issuance of NOTAM under severe airport disruptions if the situation warrants.

2.9 Police (See Section 6)

- Act as liaison between the AEC and Police's activities
- In consultation with Terminals and Landside Duty Manager, implement and reinforce crowd control measures as required.

2.10 Self-Handled Airlines / Handling Agents (See Section 16)

- Inform the AEC or IAC-ACC of flight schedule changes.
- Ensure the welfare of stranded passengers if any.

2.11 Airline Operators Committee (AOC)

- Act as liaison between the AEC and AOC members including all airline operators and ground operators.
- Timely disseminate information posted at AEC to AOC members.
- Act as the authority to make decisions and co-ordinate on behalf of AOC members on factors affecting normal airport operations.
- Implement measures to minimise the disruption to normal airport operations.
- Ensure the welfare of stranded passengers if any.

2.12 AA Corporate Affairs Department (See Section 12)

- Act as liaison between the Airport Authority, Information Services Department and the press media.
- Prepare and issue press statements.

Section 11

- Handle and manage press enquiries.

2.13 Hong Kong Airline Service Providers Association (HASPA)

- Liaise with AA Airfield Department's representative and activate contingency procedures on "Equipment Pooling Arrangement" for critical ramp equipment if the situation warrants.

2.14 Line Maintenance Franchisee (See Section 19)

- Act as liaison between the AEC and Line Maintenance Franchisee's activities

2.15 Ramp Handling Licensee (See Section 17)

- Act as liaison between the AEC and Ramp Handling Licensee's activities

2.16 AA Technical Services Infrastructure Department (Section 14)

- Act as liaison between the AEC and Fault Response Team (FRT) on airport maintenance activities.
- Effect emergency repairs of damaged airport facilities.

2.17 AA Airfield Department

- Act as liaison between the AEC, IAC-ACC and other airfield / apron operational areas.

2.18 AA Terminal Operations Department

- Act as liaison between the AEC, IAC-TOD and other passenger terminal operational areas.

2.19 AA Landside Department

- Act as liaison between the AEC, IAC-LD and other landside operational areas.

2.20 AA Retail and Advertising Department (See Section 15)

- Act as coordinator for catering services throughout the Passenger Terminal Building and emergency supplies for Terminal Operations Department.

2.21 AA APM and Baggage Department

- Act as liaison between the AEC, IAC-ABD and other APM and Baggage operational areas.

2.22 AA Aviation Logistics Department (see Section 45)

- Act as liaison between the AEC and Aviation Logistics Franchisees on related activities.

2.23 AA Third Runway Department

- Oversee response activities by TRD
- Act as liaison between the AEC and other 3RS works area.

AA CORPORATE AFFAIRS DEPARTMENT**RESPONSIBILITIES**

- Media co-ordination
- Issue of press release

Alerted by IAC-TOD

Action by Assistant General Manager, Media & Communications

1. When AA Airport Emergency Centre (AEC) is activated due to severe weather, deploy a representative to AEC to liaise with AA Airport Duty Manager in the handling of media enquiries and public relations.
2. Notify Information Services Department.
3. Provide regular briefings and update to media. All press statements must reflect an agreed position of Government, AA and other involved organisations. They must be cleared with Chief Executive Officer (CEO) of the Airport Authority or the most senior AA representative present.
4. Arrange timely dissemination of flight disruption and relevant airport information to passengers via AA web-site.
5. Maintain a chronological log of events and actions taken.

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AVIATION SECURITY COMPANY LTD.**RESPONSIBILITIES**

- **Liaison**
- **Crowd control and maintain order**
- **Control access to AEC**

Alerted by: IAC-TOD

Action by AVSECO Duty Security Controller

1. When AA Airport Emergency Centre (AEC) is activated due to severe weather, deploy an officer to AEC to act as liaison.
2. Instruct all duty staff to stand by.
3. Position guards outside AEC to control access, and issue AEC access permits to AEC representatives.
4. Deploy personnel to the areas where crowds are developing to maintain order.
5. Maintain a chronological log of events and actions taken.

This page has nil content

AA TECHNICAL SERVICES INFRASTRUCTURE DEPARTMENT**RESPONSIBILITIES**

- Precautionary measures
- Damage Assessment and repair

Alerted by IAC-TOD

Action by All Maintenance Managers and Assistant Maintenance Managers of Technical Services Infrastructure Department

1. When Tropical Cyclone Signal Number 3 is issued

- 1.1 Arrange inspection of all AA buildings and fixtures, carrying out emergency remedial work.
- 1.2 Ensure:
 - 1.2.1 All outdoor loose articles are secured or properly stored.
 - 1.2.2 All externally mounted equipment on AA buildings is secured.
 - 1.2.3 All sub-stations are water-tight.
- 1.3 Liaise with Terminals & Landside Duty Manager and Assistant Manager - Airfield to prevent blockage of drains throughout the Passenger Terminal Building, Landside, Airfield and Apron areas.
- 1.4 Together with Airfield Department and Ramp Handling Licensee, arrange to retract inner air-bridges according to the procedures in para. 3 of Section 9.
- 1.5 Liaise with Maintenance Contractor to tie down Fixed Ground Power flexible cable connection units at remote stands upon request by IAC-ACC.
- 1.6 Ensure sufficient staff are available for operational duties should a higher Tropical Cyclone Warning Signal be raised.

2. When Tropical Cyclone Signal Number 8 or above is issued

- 2.1 Liaise with Maintenance Contractor to tie down PCA hoses and install covers to hose baskets upon the request by IAC-ACC.
- 2.2 Together with Airfield Department and Ramp Handling Licensee, arrange to retract and tie-down airbridges according to the procedures in para. 3 of Section 9.

3. When Tropical Cyclone Warning Signal number 8 is canceled

- 3.1 Liaise with IAC-ACC to untie the Fixed Ground Power flexible cable connection units at remote stands.
- 3.2 Liaise with IAC-ACC to untie the PCA hoses and uncover the hose baskets.
- 3.3 Liaise with IAC-ACC to carry out external inspection and walk test of Aircraft Parking Aid before resumption of operation.
- 3.4 Together with Airfield Department and Ramp Handling Licensee, arrange for the untying and release of airbridges according to the procedures in para. 3 of Section 9.
- 3.5 In conjunction with IAC-ACC and IAC-TOD, carry out damage assessment on airport installations and facilities and prepare damage assessment report.

4. When any of the following weather warnings is issued

- Strong Monsoon signal
 - Rainstorm warning
 - Aerodrome Thunderstorm Warning
- 4.1 Arrange inspection to all AA buildings, fixtures and carry out emergency repair if required.
 - 4.2 Ensure outdoor loose articles are secured or properly stored.
 - 4.3 Ensure all externally mounted equipment on AA buildings are secured.
 - 4.4 Liaise with Terminals & Landside Duty Manager (and Assistant Manager – Airfield) to prevent blockage of drains throughout the Terminal Building, Landside, Airfield and Apron areas.
 - 4.5 Advise all outdoor staff and contractor workers as far as practicable, stay inside vehicles or buildings and stay clear of floodlight masts and tall metal structures.

5. When any of the following weather warnings is cancelled

- Strong Monsoon
- Rainstorm
- Aerodrome Thunderstorm Warning

5.1 In conjunction with IAC-ACC and IAC-TOD, carry out damage assessment on airport installations and facilities and prepare damage assessment report.

6. Tsunami**6.1 Tsunami Warnings**

6.1.1 Alert all contractors and relay tsunami warnings

6.1.2 Action by FRTMO:

- a. Check quantity and condition of:
 - Sandbags
 - Water pumps
 - Portable and mobile generators
- b. Arrange relocation of equipment to L/8 kerb side
- c. Take actions to prevent water damage of critical plant rooms (e.g. AGL Vaults and Electrical Substations)
- d. In consultation with ADM, evacuate and relocate to a fallback location (e.g. Multi-Function Room at HKIA Tower 2)

6.1.3 Coordinate with ABD to arrange stopping of APM, shut down of associate switchgear, and removal or protection of valuable control components.

6.1.4 Coordinate with ABD to arrange protection of BHS and associated equipment; removal or protection of valuable control components.

6.2 Once tsunami waves recede

6.2.1 Perform health check to airport operation critical systems such as AGL, HV/LV network, BHS, APM, GBMS, MBMS, SCADA, ALB, etc.

6.2.2 Prioritize allocation of resources according to results of health checks and maintain communication between FRTMO and IAC.

7. Maintain a chronological log of events and actions taken.

This page has nil content

AA RETAIL AND ADVERTISING DEPARTMENT**RESPONSIBILITIES**

- Coordination of catering services and supplies in Passenger Terminal Building

Alerted by IAC-TOD

Action by Assistant General Manager, Retail Management

1. When the Airport Emergency Centre (AEC) is activated, deploy a representative to the AEC.
2. Liaise with caterers throughout the PTB to coordinate services.
3. Arrange emergency supply of relief items (i.e. bottled water, sandwiches and snacks, etc) for distribution to stranded passengers by Terminal Operations Department and Passenger Care Team.

This page has nil content

AIRLINES / HANDLING AGENTS**RESPONSIBILITIES**

- Advise IAC-ACC on flight movement changes
- Safeguard aircraft and equipment on airfield
- Send representative to AEC
- Disseminate update flight information to passengers
- Ensure welfare of passengers
- Attend “typhoon coordination” meetings at AEC
- Adhere to “Flight Re-scheduling Control” procedures

Alerted by IAC-TOD

Action by Airlines/ Handling Agents

1. When Tropical Cyclone Signal Number 3 is issued

- 1.1 Liaise with IAC-ACC and Line Maintenance franchisee to ensure that aircraft which have to stay at the airport are secured.
- 1.2 Take action in advance to safeguard equipment on the apron and to prevent them from becoming a safety hazard to others.
- 1.3 Inform IAC-ACC and passengers of any anticipated disruption to flight movements and continue update IAC-ACC on any changes to flight movement information.
- 1.4 Ensure welfare of stranded checked-in passengers by providing catering and other services.
- 1.5 Liaise with IAC-TOD and AVSECO Duty Security Manager in the event of large number of stranded passengers in the Terminal.

2. When Tropical Cyclone Signal Number 8 is issued

- 2.1 Attend the typhoon co-ordination meeting when notified by AA and co-ordinate necessary actions.
- 2.2 Prepare aircraft for relocation.

Section 16

- 2.3 Deploy a liaison officer to AEC to coordinate flight movement information and ground serving activities with the objective of ensuring a rapid return to normal operations.
- 2.4 Ensure an airline staff is present at the L2 door to monitor the condition of the aircraft together with the airbridge operator to monitor the operation of the airbridge when passenger embarkation or disembarkation is required at the wind speed of 65km/h.
- 2.5 Arrange refuelling to increase ballast for the aircraft before re-positioning the aircraft to facilitate tie-down of airbridges.
- 2.6 When air-bridges are tied down, coordinate IAC-ACC, IAC-TOD and Ramp Handling Licensee for special handling and parking arrangement for wide-bodied aircraft parked at frontal stands.

3. When any of the following Weather Warnings is issued

- Strong Monsoon signal
 - Rainstorm warning
 - Aerodrome Thunderstorm Warning
- 3.1 Take action in advance to safeguard, relocate or secure aircraft and equipment on the apron and to prevent them from becoming a safety hazard to others.
 - 3.2 Advise all outdoor staff as far as practicable, stay inside vehicles or buildings and stay clear of aircraft and floodlight masts.
 - 3.3 Inform IAC-ACC of any disruptions to flight movements and continue updating on any changes to flight information
 - 3.4 Ensure welfare of stranded checked-in passengers by providing catering and other services.
 - 3.5 Liaise with IAC-TOD and AVSECO Duty Security Manager in the event of large number of stranded passengers in the Terminal.

4. Flight Re-scheduling Control Procedures

- 4.1 When alerted by IAC-ACC, implement the Flight Re-scheduling Control procedures as stipulated in Part 16 Flight Rescheduling Control.
- 4.2 If required, suspend passenger check-in for flights cancelled or rescheduled and coordinate with IAC-TOD to provide a guarded

passenger baggage storage area at Level 2 baggage sortation area for baggage accepted before the suspension.

5. Maintain a chronological log of events and actions taken.

This page has nil content

RAMP HANDLING LICENSEE**RESPONSIBILITIES**

- Safeguard equipment on airfield
- Coordinate apron and ramp activities
- Send representative to AEC

Alerted by IAC-ACC

Action**1. When Tropical Cyclone Signal Number 3 is issued**

- 1.1 Remove loose objects from the ramp and secure all ground equipment not in use on the aircraft parking stands, equipment and staging areas, and the apron areas.
- 1.2 Inspect container racking storage area with AA Apron Section to ensure containers are securely tied down.
- 1.3 At wind speed of 25 knots (around 45km/h), the standing-by airbridge operators from the 3 Ramp Handling Licensees will report to AA Technical Services Infrastructure office on Level 4 at Stand N30 to prepare for retraction of inner (R2) airbridges as follows:
 - HAS – South Apron and T1 Satellite Concourse
 - JATS – North Apron and T1 Midfield Concourse
 - SATS – West Apron
- 1.4 Collect all safety cones from parking stands and properly store all the safety cones together with the dedicated trolleys at the designated area on each parking stand.
- 1.5 Tie up the safety cones and dedicated trolleys to fixtures such as columns or crash barriers. Each Ramp Handling Licensee shall be responsible for the stands parking with aircraft of their respective customer airlines. For stands without aircraft parking, the responsibility for tying up the safety cones and dedicated trolleys is in accordance with the following area demarcation:
 - HAS - Frontal and remote stands of South Apron and North Apron, T1 Satellite Concourse, and Cargo Apron stands X1R to X8 and X33 to X35

- JATS - Remaining Midfield Area stands D301 to D328 and West Cargo Apron.
- SATS - Frontal and remote stands of West Apron, and T1 Midfield Concourse.

2. When Tropical Cyclone Signal Number 8 is issued

- 2.1 Deploy a liaison officer to AEC to coordinate apron and ramp activities for aircraft servicing, with the objective of ensuring a rapid return to normal operations.
- 2.2 At wind speed of 35 knots (around 65km/h), the outer (R3) airbridge will be retracted, giving priority to those most exposed to the prevailing wind. If passenger embarkation or disembarkation is required to use the outer airbridges, an airbridge operator must attend throughout the period it is docked to the aircraft.
- 2.3 Coordinate with Assistant Manager - Airfield for airbridge operators to standby to position airbridges for tying down.
- 2.4 If tying down of airbridges is required, the airbridge operators should report to AA Technical Services Infrastructure office at Level 4 near Stand N30 to position the airbridges as follows:
 - HAS - South Apron and T1 Satellite Concourse
 - JATS - North Apron and T1 Midfield Concourse
 - SATS - West Apron
- 2.5 When airbridges are tied down, coordinate with IAC-ACC and IAC-TOD for special handling and parking arrangement for wide-bodied aircraft parked at frontal stands.
- 2.6 Tie up the mobile stairs to fixtures such as columns or crash barriers. The following Ramp Handling Licensee shall be responsible for the stands parking with aircraft of their respective customer airlines. For stands without aircraft parking, the responsibility for tying up the mobile stair is in accordance with the following area demarcation:
 - HAS - Frontal and remote stands of South Apron and North Apron.
 - JATS - Remaining Midfield Area stands D301 to D328.
 - SATS - Frontal and remote stands of West Apron and T1 Midfield Concourse.

3. When Tropical Cyclone Signal Number 8 is canceled

Section 17

- 3.1 When wind speed decreases below 77 knots (around 140km/h) but still remains on 40 knots (around 75km/h), liaise with IAC-ACC and AA Technical Services Infrastructure to un-tie airbridges to a retracted mode.
- 3.2 When wind speed decreases below 40 knots (around 75km/h), liaise with IAC-ACC to carry out functional check of airbridges and resume normal operation for R3 airbridge, and then for R2 airbridge when wind speed below 25 knots.
- 3.3 Should the shortage of ramp equipment be foreseen to cope with the operations recovery, immediately highlight to AEC via HASPA representative to consider the need to activate the contingency procedures on "Equipment Pooling Arrangement" for critical ramp equipment.

4. When any of the following Weather Warnings is issued

- Strong Monsoon signal
 - Rainstorm warning
 - Aerodrome Thunderstorm Warning
- 4.1 Remove loose objects from the ramp and secure all ground equipment not in use on the aircraft parking stands, equipment and staging areas, and the apron areas.
 - 4.2 Advise all outdoor staff as far as practicable to stay inside vehicles or buildings and keep clear of aircraft and floodlight masts.

5. Maintain a chronological log of events and actions taken.

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LINE MAINTENANCE FRANCHISEE

RESPONSIBILITIES

- Safeguard aircraft and equipment on airfield
- Coordinate apron and ramp activities
- Send representative to AEC

Alerted by IAC-ACC

Action

1. When Tropical Cyclone Signal Number 3 is issued

- 1.1 Liaise with airlines and Apron Control Centre to ensure that aircraft remaining at the airport are secured and arrange for aircraft to be re-positioned if necessary.
- 1.2 Remove loose objects and secure all ground equipment not in use on the aircraft parking stands, equipment and staging areas, and the apron areas.

2. When Tropical Cyclone Signal Number 8 is issued

- 2.1 Deploy a liaison officer to AEC to coordinate apron and ramp activities for aircraft servicing, with the objective of ensuring a rapid return to normal operations.
- 2.2 Coordinate with IAC-ACC and airlines to re-position aircraft at parking stands affected by retraction of the airbridges.
- 2.3 Remove earthing cables from aircraft and properly store earthing cable reelers at the designated area on each parking stand after all aircraft servicing activities have been ceased.
- 2.4 Tie up aircraft chock trolleys, earthing cables and service steps to fixtures such as columns or crash barriers. Line Maintenance Franchisee shall be responsible for the stands parking with aircraft of their respective customer airlines. For stands without aircraft parking, the responsibility for tying up the aircraft chock trolleys is in accordance with the following area demarcation:

- CASL - Frontal and remote stands of North Apron, T1 Satellite Concourse, T1 Midfield Concourse,

Maintenance Apron stands M31 to M38 and L-stands.

- HAECO - Frontal and remote stands of South Apron, Cargo Apron, and Maintenance Apron stands M1 to M10 and M21 to M24.
- PAPAS - Frontal and remote stands of West Apron, West Cargo Apron, and Remaining Midfield Area stands D301 to D328.

3. When any Tropical Cyclone Warning Signal Number 8 is canceled

- 3.1 Reposition aircraft at frontal stands to normal parking position after untying of airbridges.
- 3.2 Should the shortage of ramp equipment be foreseen to cope with operations recovery, immediately highlight to AEC via CROW representative to consider the need to activate the contingency procedures on "Equipment Pooling Arrangement" for critical ramp equipment.

4. When any of the following weather warnings is issued

- Strong Monsoon signal
 - Rainstorm warning
 - Aerodrome Thunderstorm Warning
- 4.1 Liaise with airlines and Apron Control Centre to ensure that aircraft remaining at the airport are secured and arrange for aircraft to be re-positioned if necessary.
 - 4.2 Remove loose objects and secure all ground equipment not in use on the aircraft parking stands, equipment and staging areas, and the apron areas.
 - 4.3 Advise all outdoor Staff as far as practicable, stay inside vehicles or buildings and stay clear of aircraft and floodlight masts.
 - 4.4 If the Aerodrome Thunderstorm Warning is issued by the Airport Meteorological Office or "amber" warning is issued by the Airport Lightning Warning System (ALWS), earth the aircraft using the earthing point near to the aircraft stop bar marking.

5. Maintain a chronological log of events and actions taken.

INTO-PLANE FUELLING FRANCHISEE**RESPONSIBILITIES**

- Coordinate apron and ramp activities

Alerted by: IAC-ACC

Action**1. When Tropical Cyclone Signal Number 8 is issued**

- 1.1 Liaise with AEC to coordinate apron and ramp activities for aircraft servicing.

2. When any of the following weather warnings is issued

- Strong Monsoon signal
- Rainstorm warning
- Aerodrome Thunderstorm Warning

- 2.1 Advise all outdoor Staff as far as practicable, stay inside vehicles or buildings and stay clear of aircraft and floodlight masts.

3. Maintain a chronological log of events and actions taken.

CARGO TERMINAL OPERATORS**RESPONSIBILITIES**

- Safeguard equipment on airfield

Alerted by IAC-ACC

Action**1. When Tropical Cyclone Signal Number 3 is issued**

- 1.1 Liaise with airlines and IAC-ACC to ensure that aircraft remaining at the airport are secured and arrange for aircraft to be re-positioned if necessary.
- 1.2 Prepare to move loose containers into the building and inspect container racking storage area with AA Apron Section to ensure containers are securely tied down.
- 1.3 Remove loose objects and secure all ground equipment not in use on the aircraft parking stands, equipment and staging areas, and the apron areas.
- 1.4 Collect all safety cones from parking stands and properly store all the safety cones together with the dedicated trolleys at the designated area on each parking stand.
- 1.5 Tie up the safety cones and dedicated trolleys to fixtures such as columns or crash barriers. Each Cargo Terminal Operator shall be responsible for the stands parking with aircraft of their respective customer airlines. For stands without aircraft parking, the responsibility for tying up the safety cones and dedicated trolleys is in accordance with the following area demarcation:

- HACTL- Cargo Apron stands X9 to X31

2. When any of the following weather warnings is issued

- Strong Monsoon signal
- Rainstorm warning
- Aerodrome Thunderstorm Warning

Section 21

- 2.1 Move loose containers into the building and inspect container racking storage area with AA Apron Section to ensure containers are securely tied down.
 - 2.2 Remove loose objects and secure all ground equipment not in use on the aircraft parking stands, equipment and staging areas, and the apron areas.
 - 2.3 Advise all outdoor Staff as far as practicable, stay inside vehicles or buildings and stay clear of aircraft and floodlight masts.
- 3. Maintain a chronological log of events and actions taken.**

MASS TRANSIT RAILWAY CORPORATION**RESPONSIBILITIES**

- Public notices
- Notification of service suspension
- Extension of Airport Express services

Alerted by: Transport Department/ IAC-TOD

Action**1. When Tropical Cyclone Signal number 8 is issued**

- 1.1 Disseminate information to the public in the Airport Station through the strategic placement of Tropical Cyclone Signal notices and notices to advise passengers to check flights status before proceeding to the airport.
- 1.2 Endeavour to give early notice to IAC-TOD of any anticipated reduction in levels of service and subsequent resumption to normal levels of service.

2. When Tropical Cyclone Signal number 8 is canceled

- 2.1 Disseminate information to the public in the Airport Station through the strategic placement of Tropical Cyclone Signal notices and notices to advise passengers to check flights status before proceeding to the airport.
- 2.2 Conduct an inspection and damage assessment, and arrange for repairs and clean up.

3. Upon request by Airport Emergency Centre (AEC) in view of transport needs for stranded passengers, consider to the need to extend Airport Express services as required.

4. Maintain a chronological log of events and actions taken.

This page has nil content

INFORMATION SERVICES DEPARTMENT**RESPONSIBILITIES**

- Co-ordinate overall public relations and press release strategies for handling media enquiries and issue advisory warnings and related information.

Alerted by: Hong Kong Observatory/ AA Corporate Affairs Department

Action

1. When the weather is expected to impact on airport and flight operations, or when Tropical Cyclone Signal number 8 is issued, liaise with AA Corporate Affairs Department in the handling of media enquiries.
2. All press statements must reflect an agreed position of Government, AA and other involved organisations. They must be cleared with the Chief Executive Officer (CEO) of the Airport Authority or the most senior AA representative present.
3. Maintain a chronological log of events and actions taken.

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HONG KONG OBSERVATORY (AIRPORT METEOROLOGICAL OFFICE)

RESPONSIBILITIES

- Provide weather warnings
- Provide information support in the “typhoon co-ordination” meetings at HKIA

Action

1. Use telephone or fax to inform IAC-ACC and IAC-TOD when:
 - 1.1 10-minute averaged wind speed reaches or forecast to reach 25 knots (around 45 km/h)
 - 1.2 10-minute averaged wind speed reaches or forecast to reach 35 knots (around 65 km/h)
 - 1.3 10-minute averaged wind speed reaches or forecast to reach 40 knots (around 75 km/h)
 - 1.4 10-minute averaged wind speed reaches or forecast to reach 77 knots (around 140 km/h) or above
 - 1.5 10-minute averaged wind speed drops below 77 knots (around 140 km/h) but remains above 40 knots (around 75 km/h)
 - 1.6 10-minute averaged wind speed drops below 40 knots (around 75 km/h)
 - 1.7 10-minute averaged gusts exceed or forecast to exceed 31 knots (around 58 km/h)
 - 1.8 information on the issuing and canceling of Tropical Cyclone Signals
 - 1.9 information about the levels of the sea in Hong Kong waters and their predicted changes when these are significant during the passage of tropical cyclones
 - 1.10 information on the issuing and canceling of any of the following weather warnings:
 - Strong Monsoon Signals

- Rainstorm Warnings
- Aerodrome Thunderstorm Warnings
- Tsunami Warnings
- Toxic Chemical Aerodrome Warnings

In conjunction with AA, send a representative to provide meteorological information support in the weather briefing/typhoon co-ordination meeting, and co-ordinate necessary actions.

FRANCHISED PUBLIC BUS OPERATORS**RESPONSIBILITIES**

- Alerting
- Notification

Alerted by: IAC-TOD

Action**1. When Tropical Cyclone Signal number 8 is issued**

- 1.1 Endeavour to give early notice to IAC-TOD and Transport Department of any anticipated reduction in levels of service and subsequent resumption to normal levels of service.
- 1.2 Disseminate information to the public in the Ground Transportation Centre Bus Terminus through the strategic placement of Tropical Cyclone Signal notices.

2. When Tropical Cyclone Signal number 8 is canceled

- 2.1 Disseminate information to the public in the Ground Transportation Centre Bus Terminus through the strategic placement of Tropical Cyclone Signal notices.

3. Maintain a chronological log of events and actions taken.

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AA MEDICAL SERVICES

RESPONSIBILITIES

- Provision of medical services to passengers

Alerted by IAC-TOD

Action by AA Medical Services Team

1. When Tropical Cyclone Signal Number 8 is issued

- 1.1 If requested by Terminals and Landside Duty Manager, consider the need to extend medical services as required.

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**AA SAFETY, SECURITY AND BUSINESS CONTINUITY
DEPARTMENT****RESPONSIBILITIES**

- Management & administrative support of Airport Emergency Centre

Alerted by IAC-TOD

Action by AEC Team Leader

1. Proceed to the Airport Emergency Centre.
2. Alert respective AEC support staff to report to the AEC.
3. Activate the AA Safety, Security and Business Continuity Department's internal procedures.
4. Deploy the AEC support staff to perform duties in accordance with the AEC Operations Manual.

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**TSING MA MANAGEMENT COMPANY
(TSING MA CONTROL CENTRE)****RESPONSIBILITIES**

- Notification

Alerted by: Transport Department / IAC-TOD

Action

1. Endeavour to give early notice to IAC-TOD of any anticipated reduction in the levels of service and subsequent resumption to normal levels of service.
2. Maintain a chronological log of events and actions taken.

This page has nil content

AA LANDSIDE DEPARTMENT**RESPONSIBILITIES**

- Coordination of information on flight disruptions
- Coordination of ground transportation service providers

Alerted by IAC-TOD**1. When Tropical Cyclone Signal Number 3 is issued****Action by Assistant Manager – Landside Services**

- 1.1 Contact First Ferry Services Company to ascertain if any disruption to ferry services between Tung Chung and Tuen Mun is anticipated.
- 1.2 Maintain close monitoring of landside operations to minimise congestion and disruption.

2. When Tropical Cyclone Signal Number 8 or above is issued**Action by Assistant Manager – Landside Services**

- 2.1 Maintain sufficient manning of IAC-LD and, if necessary arrange additional staff for landside operations duties in anticipation of continuous flight disruptions.
- 2.2 Coordinate with MTRC and relevant stakeholders to pursue the identified transportation contingency arrangement to minimize the operational disruptions.

3. When any of the following weather warnings is issued

- Strong Monsoon
- Rainstorm warning
- Aerodrome Thunderstorm Warning

Action by Assistant Manager – Landside Services

- 3.1 Notify Airport Authority senior management as per Landside Department internal alerting proforma.

- 3.2 Maintain close liaison with Assistant Manager - ACC, Airfield to minimise disruption to terminal operation caused by changes in stand and gate allocation. Monitor the effect on flight movements and update development and status.

4. When any Weather Warnings are canceled

Action by Assistant Manager – Landside Services

- 4.1 Coordinate with AA Technical Services Infrastructure Department to conduct an inspection and damage assessment of all related facilities.

5. Tsunami

Action by LD duty staff

- 5.1 Upon receipt of Tsunami Warnings
 - 5.1.1 Notify Cross-Boundary Bonded Bus / Ferry Handling Agent (BHA / FHA) immediately.
- 5.2 When tsunami waves are expected to reach HKIA
 - 5.2.1 Facilitate and assist with evacuation of passengers and personnel from SkyPier Terminal and Landside road network
- 5.3 Once tsunami waves recede
 - 5.3.1 In consultation with ADM, activate crowd management procedure at GTC on resumption of service

6. Maintain a chronological log of events and actions taken

7. Reference on procedures

- 7.1 Please refer to TOD/LD Procedure no. TLPM/003 Advers Weather Procedures - Indoor / Outdoor.

AA INTEGRATED AIRPORT CENTRE**RESPONSIBILITIES**

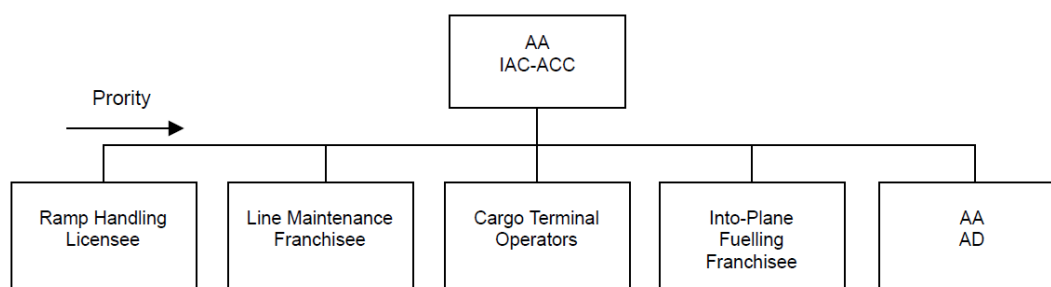
- Alerting
- Coordination of precautionary measures to protect aircraft, passengers, other personnel, and property on the airfield
- Coordination of information on flight disruptions
- Coordination of ground transportation service providers
- Public announcements

Alerted by Airport Meteorological Office

1. When Tropical Cyclone Signal No.3 is issued**1.1 Action by IAC-ACC**

1.1.1 Alert the Assistant Manager - Airfield and Airfield Duty Manager.

1.1.2 Alert the following:



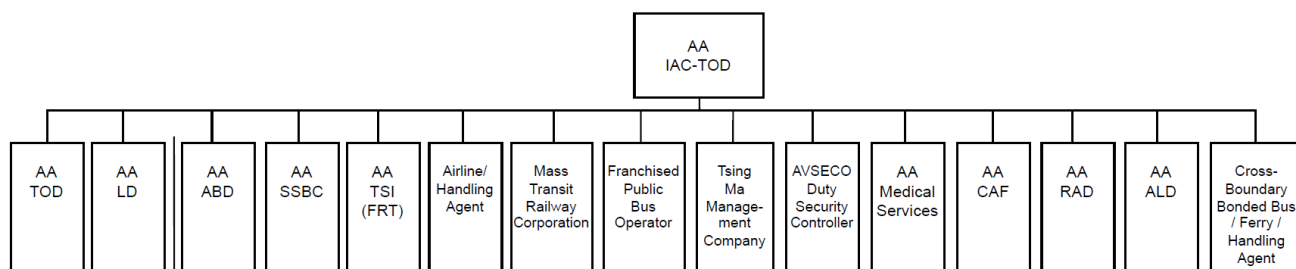
1.1.3 Notify the following:

- General Manager – Airfield
- Deputy General Manager - Airfield
- Assistant General Manager - Airfield Services
- Assistant General Manager - Infrastructure Management & Coordination
- Assistant General Manager - Standards and Services Delivery
- General Manager – APM & Baggage
- Assistant General Manager – APM Operations
- Assistant General Manager – Baggage Operations
- Executive Director, Airport Operations

- Deputy Director, Airport Operations
- General Manager – Land, Property & Aviation Franchises

1.2 Action by IAC-TOD

1.2.1 Alert the following:



1.2.2 In addition notify Airport Authority senior management as per AA Terminal Operations Department internal alerting pro-forma.

1.2.3 Disseminate information to the public in the Passenger Terminal Building through the strategic placement of Tropical Cyclone Warning notices and making public announcements at 15 minute intervals.

1.2.4 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains, clear any debris and ensure adequate manpower is available.

1.2.5 Provide information on weather status to airlines and handling agents.

1.3 Action by IAC-LD

1.3.1 Disseminate information to the public in SkyPier Terminal and landside area through the strategic placement of Tropical Cyclone Warning notices and making public announcements at 15 minute intervals.

1.3.2 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains, clear any debris and ensure adequate manpower is available.

1.3.3 Dispatch patrol staff to inspect road network and estate premises.

1.4 Action by IAC-ABD

1.4.1 Broadcast the Tropical Cyclone Warning message at Baggage Hall via Public Announcement at 30 minute intervals.

- 1.4.2 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains, clear any debris and ensure adequate manpower is available.
- 1.4.3 Communicate with AA Technical Services Infrastructure Department and APM contractor staff for APM tunnel inspection.
- 1.4.4 Dispatch patrol staff to inspect the Baggage operational areas at Terminal 1 (T1), T1 Midfield Concourse (T1M) and Remote Transfer Facilities (RTF), Automation of Arrival Bag Delivery (AABD) tunnel and Skyper Baggage Handling System.

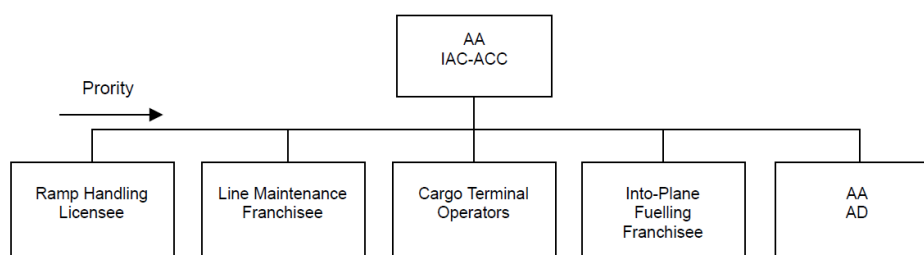
2. When weather conditions are anticipated to affect airport and flight operations after issuing of Tropical Cyclone Signal Number 3

2.1 Action by IAC-TOD

Upon notification from AA Airport Duty Manager of the activation of the Airport Emergency Centre (AEC), alert the following organizations to send a representative to the AEC to act as liaison immediately:

- AA Executive Director, Airport Operations (or his deputy)
- AA General Manager - Safety, Security & Business Continuity
- AA General Manager - Terminal Operations
- AA General Manager – Landside
- AA General Manager - Airfield
- AA General Manager – APM & Baggage
- Air Traffic Control
- AVSECO
- Police
- Self-handled Airlines / Handling Agents
- Airline Operators Committee (AOC)
- AA Corporate Affairs Department
- Hong Kong Airline Service Providers Association (HASPA)
- Line Maintenance Franchisee
- Ramp Handling Licensee
- AA Retail & Advertising Department
- AA Technical Services Infrastructure Department
- AA Airfield Department
- AA APM & Baggage Department
- AA Terminal Operations Department
- AA Landside Department
- AA Aviation Logistics Department
- AA Land, Property & Aviation Franchises

3. When Tropical Cyclone Signal No.8 or above is issued



3.1 Action by IAC-ACC

3.1.1 Alert Assistant Manager - Airfield and Airfield Duty Manager.

3.1.2 Alert the following:

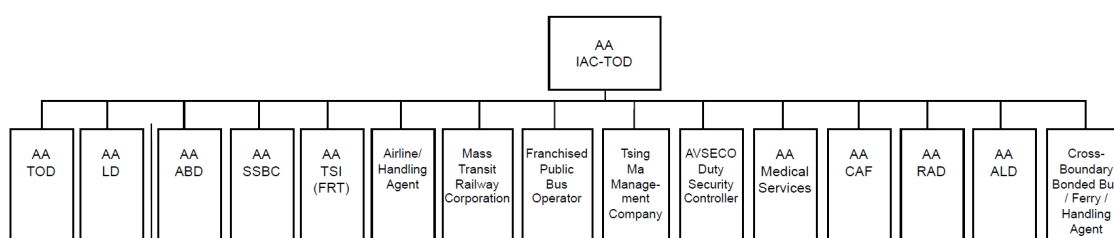
3.1.3 Notify the following:

- General Manager – Airfield
- Deputy General Manager - Airfield
- Assistant General Manager – Airfield Services
- Assistant General Manager – Infrastructure Management & Coordination
- Assistant General Manager – Standards and Services Delivery
- General Manager – APM & Baggage
- Assistant General Manager – APM Operations
- Assistant General Manager – Baggage Operations
- Executive Director, Airport Operations
- Deputy Director, Airport Operations

3.1.4 Coordinate with airlines, ramp handling licensee, line maintenance franchisees and Apron Section on the requirements to secure and/ or to re-position aircraft parked on the apron according to the prevailing wind direction and forecast changes.

3.2 Action by IAC-TOD

3.2.1 Alert the following:



- 3.2.2 In addition notify Airport Authority senior management as per AA Terminal Operations Department internal alerting pro-forma.
- 3.2.3 Monitor and coordinate with self-handled airlines/handling agents and IAC-ACC on the use of APV gates when aircraft are allocated to remote stands in lieu of frontal stands.
- 3.2.4 Coordinate with terminal catering operators on contingency arrangements for the welfare of stranded passengers.
- 3.2.5 Coordinate with self-handled airlines / handling agents on flight movements and FIDS display capacity.
- 3.2.6 If AEC is already activated, notify AEC of all actions taken.

3.3 Action by IAC-LD

- 3.3.1 Coordinate on matters relating to public transport disruption and specific contingency measures.
- 3.3.2 Coordinate with AA contractors and licensees on contingency arrangements for the welfare of stranded passengers.
- 3.3.3 Should there be a reduction in the level of service of the Lantau Link due to high wind conditions, as notified by TMCA operator:
 - 3.3.3.1 Notify AA Corporate Affairs Department and the public to expect a delay on passenger movements into and out of the airport and to make public announcement every 15 minutes.
 - 3.3.3.2 Co-ordinate with the Airport Police for traffic control if necessary.
 - 3.3.3.3 Monitor and co-ordinate the provision and request for the service extension if required for ground transport by various operators – Airport Express train services, public buses, taxi, hotel vehicles and tour coach etc.
 - 3.3.3.4 Co-ordinate with Transport Department's Emergency Transport Co-ordination Committee (ETCC) when activated.
 - 3.3.3.5 Regularly update AA Corporate Affairs Department in AEC with the latest situation on ground transport service arrangements for dissemination to the public.

3.3.3.6 Liaise with the Committee chaired by the Permanent Secretary for Transport and Housing in the event of total closure of the Lantau Link.

3.4 Action by IAC-ABD

3.4.1 Broadcast the Tropical Cyclone Warning message at Baggage Hall via Public Announcement at 30 minute intervals.

3.4.2 Coordinate with Ramp Handling Licensee and Baggage Handling System Operation contractor for the usage of baggage facilities and ensure adequate manpower is available.

3.4.4 If AEC is already activated, notify AEC of all actions taken.

4. Procedures for Retracting, Tie-down and Untie of Airbridges

4.1 The table below summarises the limitations on airbridges operation during passage of a tropical cyclone, with wind speeds all in 10-minutes average.

Tropical Cyclone Signal Number	Wind Speed (km/h)	Limitation on Airbridges Operation
3	41 - 62	When wind \geq 25 knots (around 45 km/h) Inner airbridges to be retracted. Passenger embarkation or disembarkation to be conducted using the outer airbridges only.
8	63 - 117	When wind \geq 35 knots (around 65 km/h) Outer airbridges should be retracted. If use of outer bridge for passenger embarkation or disembarkation is required, it must be monitored by airline staff and airbridges operator.
		when wind \geq 40 knots (around 75 km/h) All airbridges should be retracted
9-10	118 or above	when wind \geq 77 knots (around 140 km/h) All airbridges should be tied down.

4.2 When wind speed reaches 25 knots (around 45 km/h)

- 4.2.1 IAC-ACC will instruct the 3 Ramp Handling Licensees to report to the AA Technical Services Infrastructure Office on the Apron Level at Stand N30 to prepare for retraction of air-bridges.
- 4.2.2 IAC-ACC will inform AEC of wind speed measurements exceeding 20 knots and to prepare for the tie-down of inner airbridges.

4.3 When wind speed reaches 35 knots (around 65 km/h)

- 4.3.1 IAC-ACC will inform Airport Emergency Centre, airlines and Ramp Handling Licensee of those aircraft affected and the arrangements to retract the outer airbridges.
- 4.3.2 Should passenger embarkation or disembarkation be required, IAC-ACC should liaise with airlines and Assistant Manager - Apron to ensure that an airline staff is present at the L2 Door to monitor the condition of the aircraft, together with an airbridges operator to monitor the operation of the airbridge throughout the period it is docked to the aircraft. The airbridge must be retracted from the aircraft if the condition becomes hazardous, and as soon as passenger embarkation or disembarkation is completed.

4.4 When wind speed reaches 40 knots (around 75 km/h) or above

- 4.4.1 IAC-ACC will advise Airport Emergency Centre, airlines, Ramp Handling Licensee and Airside Bus Control of the parking stands where both airbridges have been withdrawn from operation.

4.5 When wind speed is forecast to strengthen to 77 knots (around 140km/h) or above

- 4.5.1 IAC-ACC will inform AEC, airlines, Ramp Handling Licensee and Line Maintenance franchisees of the arrangements to re-position aircraft to short of the stop bar to facilitate the tie-down of the outer airbridges.

4.6 When wind speed reaches 77 knots (around 140 km/h)

- 4.6.1 IAC-ACC will inform AEC, airlines, Ramp Handling Licensee and Line Maintenance franchisees of the airbridges at those parking stands where the measured wind speed has reached 77 knots (around 140 km/h) that will be tied-down.

4.7 When wind speed drops below 77 knots (around 140 km/h) and forecast to remain below 77 knots (around 140km/h) but above 40 knots (around 75 km/h)

- 4.7.1 IAC-ACC to will coordinate with Assistant Manager - Apron to un-tie and retract the outer airbridges, giving priority to those stands on which aircraft are ready to depart as weather conditions improve.

4.8 When wind speed drops below 40 knots (around 75 km/h) and forecast to remain below 40 knots (around 75km/h)

- 4.8.1 IAC-ACC will inform IAC-TOD, Airlines, Ramp Handling Licensee and Airside Bus Control on the resumption of operation of the outer airbridges when wind speed drops below 40 knots, and the inner airbridges at 25 knots.
- 4.8.2 IAC-ACC will liaise with Ramp Handling Licensee to perform functional checks of the airbridges.

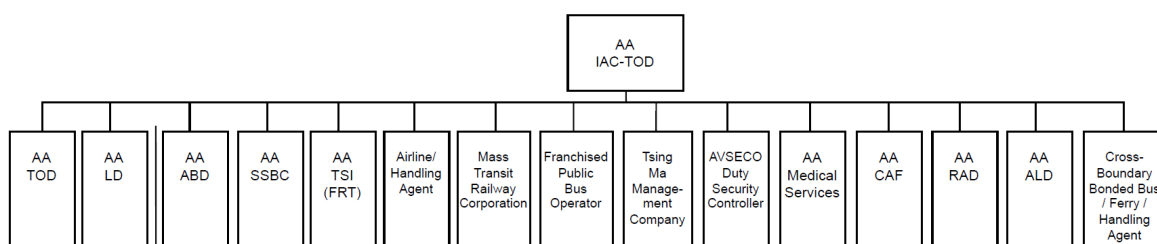
5. When Tropical Cyclone Signal No.8 is cancelled

5.1 Action by IAC-ACC

- 5.1.1 Inform all concerned that according to the alerting procedures in para.1.1.1 to 1.1.3 that the weather warning is stood down.
- 5.1.2 Coordinate parking stand allocation to resolve off-schedule arrivals and departures.
- 5.1.3 Compile a report on flight disruptions.
- 5.1.4 Activate the “Flight Re-scheduling Control” procedure.
- 5.1.5 In consultation with ATC to consider the need to activate the contingency procedures of aircraft parking at taxiways if the situation warrants.
- 5.1.6 Maintain a chronological log of events and actions taken.

5.2 Action by IAC-TOD

- 5.2.1 Alert the following:



5.2.2 In addition notify Airport Authority senior management as per AA Terminal Operations Department internal alerting proforma.

5.2.3 Coordinate the compilation of a report on flight disruptions and any damage to facilities.

5.2.4 Make public announcements that weather warnings are lowered.

5.3 Action by IAC-ABD

5.3.1 Coordinate the compilation of a report on flights disruptions.

5.3.2 Make public announcements at Baggage Hall that weather warnings are lowered.

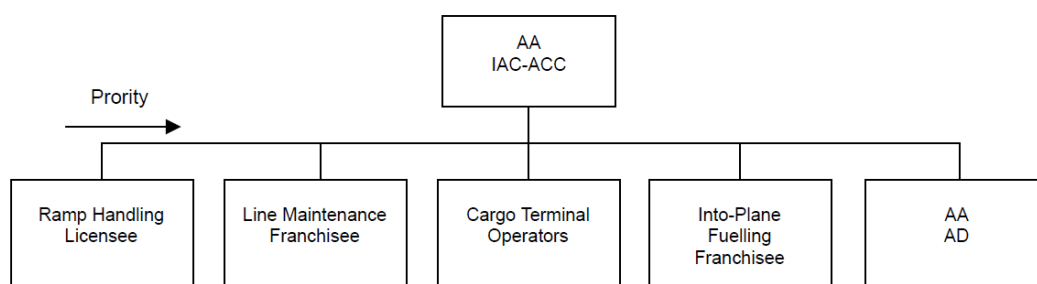
6. When any of the following weather warnings is issued :

- Strong Monsoon
- Rainstorm Warning
- Aerodrome Thunderstorm Warning

6.1 Action by IAC-ACC

6.1.1 Alert the Assistant Manager – Airfield and Airfield Duty Manager.

6.1.2 Alert the following:



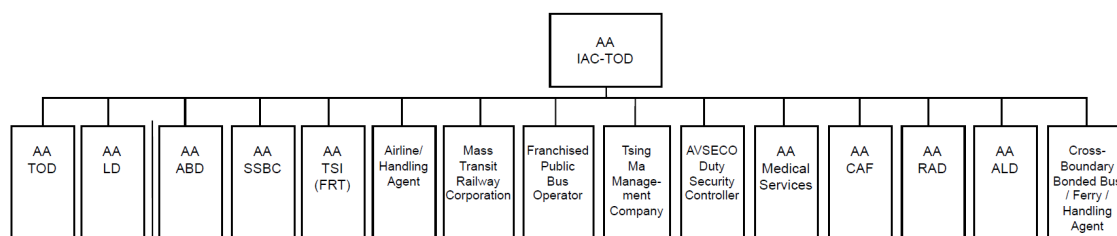
6.1.3 Notify the following:

- General Manager – Airfield
- Deputy General Manager - Airfield
- Assistant General Manager – Airfield Services
- Assistant General Manager – Infrastructure Management & Coordination
- Assistant General Manager – Standards and Services Delivery
- General Manager – APM & Baggage
- Assistant General Manager – APM Operations
- Assistant General Manager – Baggage Operations
- Executive Director, Airport Operations

- Deputy Director, Airport Operations

6.2 Action by IAC-TOD

6.2.1 Alert the following:



6.2.2 In addition, notify Airport Authority senior management as per Terminal Operations Department internal alerting proforma.

6.2.3 Dispatch patrol staff to inspect estate premises.

6.2.4 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains and clear any debris and ensure adequate manpower is available.

6.2.5 Disseminate information to the public at the Passenger Terminal Building through the strategic placement of Weather Warning notices and by making special public announcements at 15 minute intervals.

6.3 Action by IAC - LD

6.3.1 Dispatch patrol staff to inspect road network and estate premises.

6.3.2 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains and clear any debris and ensure adequate manpower is available.

6.3.3 Disseminate information to the public at SkyPier Terminal and landside area through the strategic placement of Weather Warning notices and by making special public announcements at 15 minute intervals.

6.3.4 Advise all outdoor Operations Staff and contractor workers as far as practicable, stay inside vehicles or buildings and stay clear of tall metal structures.

6.4 Action by IAC-ABD

- 6.4.1 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains, clear any debris and ensure adequate manpower is available.
- 6.4.2 Coordinate with Ramp Handling Licensee and Baggage Handling System Operation contractor for the coming baggage flow and ensure adequate manpower is available.

7. When any of the following weather warnings is cancelled:

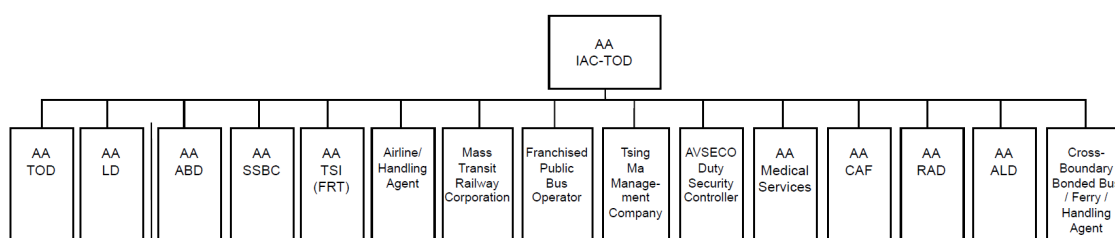
- Strong Monsoon
- Rainstorm Warning
- Aerodrome Thunderstorm Warning

7.1 Action by IAC - ACC

- 7.1.1 Inform all concerned that according to the alerting procedures that the weather warning is stood down.
- 7.1.2 Coordinate the completion of a report on flight disruptions and any damage to facilities.

7.2 Action by IAC-TOD

- 7.2.1 Alert the following:



- 7.2.2 In addition notify Airport Authority senior management as per AA Terminal Operations Department internal alerting proforma.
- 7.2.3 Coordinate the compilation of a report on flight disruptions and any damage to facilities.
- 7.2.4 Make public announcements that weather warnings are lowered.

8. Tsunami Warnings

The Hong Kong Observatory tsunami warnings will be sent to the IAC-ACC, IAC-TOD, and FRTMO by phone and fax.

Upon receipt of tsunami warning:

8.1 Action by IAC-ACC

- 8.1.1 Relay warning message to the Airport Duty Manager
- 8.1.2 Send the tsunami warning message to AFC and all ramp operators by e-fax.
- 8.1.3 Liaise with ATC on the timeline for serving the last arrival and departure flights before implementation of the Tsunami plan.
- 8.1.4 Update control centers of all ramp operators with the tsunami warnings received.
- 8.1.5 Inform ramp operators to reposition their GSE to higher land and release their nonessential staff from operation.
- 8.1.6 Reposition ACC to the backup ACC near Boarding Gate 47 when instructed by the ADM.
- 8.1.7 Inform all ramp operators to stop operation and evacuate staff to L6 of T1 if required, and inform Apron Team to check and ensure that all ramp operators are evacuated.

8.2 Action by IAC-TOD

- 8.2.1 Relay these warnings once received to the Airport Duty Manager.
- 8.2.2 Send the tsunami warning message to all airlines and ground handling agents, AVSECO by e-fax.
- 8.2.3 Notify Airport Duty Manager and Terminals and Landside Duty Manager to activate level 1 manning of Airport Emergency Centre.
- 8.2.4 Broadcast the emergency alert to all Terminal Operations Department duty staff, AAP and contractors.

8.3 When tsunami waves are expected to reach HKIA

- 8.3.1 As instructed by ADM, dispatch Auto Voice Message Distribution System (AVMD) message on location of the relocated AEC.
- 8.3.2 Broadcast the following message via Public Announcement System:
 - a. Arrival passengers to clear arrival formalities and leave the Airport as soon as possible;

- b. Transfer passengers to proceed to Departure Level or contact airline at respective transfer areas;
- c. Departure passengers shall leave airport as soon as possible when their flight is without ETD; and
- d. Airport visitors / users shall leave airport as soon as possible.

8.3.3 IAC – TOD will vacate IAC and relocate to the designated fallback location (e.g. Multi-Function Room at HKIA Tower 2).

8.3.4 Broadcast suspension of AEL service message in terminal buildings, if required.

8.4 Action by IAC-LD

8.4.1 Send the tsunami warning message to all landside contractors, Cross-Boundary Bonded Bus / Ferry Handling Agent and marine cargo operator by e-fax.

8.4.2 Alert LD senior management via SMS.

8.4.3 Maintain close liaison with MTRC and ETCC on status of off island transportation.

8.4.4 Notify LD duty staff to prepare for evacuation of personnel.

8.5 When tsunami waves are expected to reach HKIA

8.5.1 Alert all landside contractors and operators to evacuate to safe areas.

8.5.2 Advise Cross-Boundary Bonded Bus / Ferry Handling Agents to alert all Bonded Bus / ferry operators and upstream BCF / ports to suspend Bonded Bus / ferry operation. Arrange all ferries berthed at SkyPier Terminal to depart immediately.

8.5.3 IAC – LD will vacate IAC and relocate to the designated fallback location (e.g. Multi-Function Room at HKIA Tower 2).

8.6 Action by IAC-ABD

8.6.1 Broadcast the emergency alert to all APM and Baggage Department duty staff, franchisees and Baggage Hall tenants.

8.6.2 Alert APM and Baggage Department senior management.

8.6.2 Liaise with AA Technical Services Infrastructure Department on contingency arrangements for APM and/or Baggage operational areas.

8.6.3 Coordinate with concerned parties for the evacuation if APM and/or Baggage operational areas are involved.

8.7 When tsunami waves are expected to reach HKIA

8.7.1 Alert all APM and Baggage Department duty staff, franchisees and Baggage Hall tenants to evacuate to safe areas.

8.7.2 IAC-ABD and duty staff at Baggage Hall will vacate and relocate to the designated fallback location (e.g. Multi-Function Room at HKIA Tower 2).

Once tsunami waves recede

8.8 Action by IAC-ACC

8.8.1 Notify AFC and all ramp operator cancellation of the tsunami warning by e-fax and telephone.

8.8.2 Coordinate with TSI for rectification of affected apron, airfield facilities.

8.8.3 Resume control function at IAC-ACC.

8.8.4 Prepare to activate the FRCS on resumption of traffic.

8.8.5 Inform ramp operators to ensure the readiness of GSE and manpower.

8.9 Action by IAC-TOD

8.9.1 Broadcast message to passengers.

8.9.2 In consultation with ADM, alert AVSECO to secure extra resource for crowd management operations.

8.9.3 Resume control function at IAC-TOD.

8.10 Action by IAC-LD

8.10.1 Notify all landside contractors and operators to activate recovery procedures.

8.10.2 Notify FHA to activate recovery procedures and convene the Ferry Rescheduling Group if required.

8.10.3 Resume control function at IAC-LD.

8.11 Action by IAC-ABD

8.11.1 Notify all APM and Baggage Department duty staff, franchisees, Baggage Hall tenants to activate recovery procedures.

8.11.2 Resume control function at IAC-ABD.

9. Airport Lightning Warning

9.1 When “Amber” or “Red” lightning warning signal is issued by the HKO, IAC-ACC will disseminate warning message through the Auto Voice Message Distribution System to ramp operators concerned.

9.2 Advise all Airfield Department duty staff to take precautionary measures should a lightning strike occur at or in the vicinity of the airport. As far as practicable, staff should stay inside their vehicles or buildings and keep clear of aircraft and floodlight masts.

9.3 Advise all APM and Baggage Department duty staff and contractors to take precautionary measures should a lightning strike occur at or in the vicinity of the airport. As far as practicable, staff should stay inside their vehicles or buildings and keep clear of tall metal structures.

10. Toxic Chemical Aerodrome Warnings

10.1 The Hong Kong Observatory toxic chemical warnings will be sent to the IAC-ACC by phone and fax.

10.2 IAC-ACC will relay these warnings once received to the Airport Duty Manager

10.3 IAC-ACC will then multi-fax to all air cargo and ramp operators these toxic chemical warnings.

10.4 Cancellations of tsunami warnings are to be carried out as per the above process.

11. Maintain a chronological log of events and actions taken.

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AA AVIATION LOGISTICS DEPARTMENT**RESPONSIBILITIES**

- Coordination and monitoring of necessary actions taken by related ALD franchisees
- Disseminating updated weather and local transportation information to franchisees

Alerted by IAC - TOD

Action

1. When the Airport Emergency Centre (AEC) is activated, deploy a representative to the AEC.
2. Arrange timely dissemination of information on weather conditions, local transportation and flight disruption to franchisees.
3. Coordinate with franchisees on all the precautionary measures such as fuel ballasting, securing of loose objects and repositioning of GSE on ramp.
4. Coordinate with franchisees for a smooth operation recovery

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AA APM AND BAGGAGE DEPARTMENT**RESPONSIBILITIES**

- Coordination of information on flight disruptions

Alerted by IAC-ABD**1. When Tropical Cyclone Signal Number 3 is issued**

Action by APM Assistant Duty Manager and/or Assistant Manager, Baggage

- 1.1 Liaise with AA Technical Services Infrastructure Department and instruct cleaning contractor to inspect drains, clear and debris and ensure adequate manpower is available.
- 1.2 Communicate with AA Technical Services Infrastructure Department, APM contractor staff for APM tunnel inspection.
- 1.3 Dispatch patrol staff to inspect the Baggage operational areas at Terminal 1 (T1), T1 Midfield Concourse (T1M) and Remote Transfer Facilities (RTF), Automation of Arrival Bag Delivery (AABD) tunnel and Skypier Baggage Handling System.

2. When Tropical Cyclone Signal Number 8 or above is issued

Action by APM Assistant Duty Manager and/or Assistant Manager, Baggage

- 2.1 Maintain sufficient manning of IAC-ABD and, if necessary arrange additional staff for APM and baggage operations duties in anticipation of continuous flight disruptions.
- 2.2 Coordinate with Ramp Handling Licensee and Baggage Handling System Operation contractor for the usage of baggage facilities and ensure adequate manpower is available.
- 2.3 If AEC is already activated, notify AEC of all actions taken.

3. When any of the following weather warnings is issued

- Strong Monsoon
- Rainstorm warning

- Aerodrome Thunderstorm Warning

Action by APM Assistant Duty Manager and/or Assistant Manager, Baggage

- 3.1 Notify Airport Authority senior management as per APM and Baggage Department internal alerting proforma.
- 3.2 Maintain close liaison with Assistant Manager – ACC, Airfield to minimize disruption to baggage operation caused by changes in stand and gate allocation. Monitor the effect on flight movements and update development and status.

4. When any Weather Warnings are canceled

Action by APM Assistant Duty Manager and/or Assistant Manager, Baggage

- 4.1 Coordinate with AA Technical Services Infrastructure Department and APM and Baggage Department contractor to conduct an inspection and damage assessment of all related APM and Baggage facilities.

5. Tsunami

Action by APM Assistant Duty Manager and/or Assistant Manager, Baggage

- 5.1 Upon receipt of Tsunami Warnings
 - 5.1.1 Notify all APM and Baggage Department duty staff, franchisees and Baggage Hall tenants immediately.
- 5.2 When tsunami waves are expected to reach HKIA
 - 5.2.1 Facilitate and assist with evacuation of personnel from Baggage Hall to safe areas.
- 5.2 Once tsunami waves recede
 - 5.3.1 Coordinate with TSI on facilities damage check.

6. Maintain a chronological log of events and actions taken.

Guidelines for Aircraft Ramp Handling under Strong Wind Conditions

These are the guidelines for aircraft ramp handling under strong wind conditions for Ramp Handling Operators, Line Maintenance Franchisees, Catering Operators and Into-plane refueling franchisees. It is suggested that 40 knots will be the wind speed that most of the essential ramp operations will cease.

10-min Wind Speed in excess of Knots (Km/hr)	Ramp Activity	Actions
> 25 kts (around 45 km/h)	Passenger embarkation / deplaning	<ul style="list-style-type: none"> • Inner airbridges to be retracted. Passenger embarkation or deplaning to be conducted using the outer airbridges only.
	Cargo & Baggage Loading	<ul style="list-style-type: none"> • Ensure empty containers are properly secured and tied-down in the container racking storage area.
	Aircraft Fuelling	<ul style="list-style-type: none"> • Arrange fuel uplift to increase ballast.
	Line Maintenance	<ul style="list-style-type: none"> • Airline additional chocking arrangements to be activated during strong wind conditions.
>30 kts (around 55 km/h)	Ground Power	<ul style="list-style-type: none"> • All mobile high lift platforms will not be elevated. • Withdrawal and tie down the Fixed Ground Power flexible cable connection units at remote stands.
	Line / Base Maintenance	<ul style="list-style-type: none"> • Aircraft should not be lifted on jacks.
>35 kts (around 65 km/h)	Passenger embarkation / deplaning	<ul style="list-style-type: none"> • Outer airbridges to be retracted. If the use of outer bridge for passenger embarkation or deplaning is required, it must be monitored by airline staff and airbridge operator.
	Catering	<ul style="list-style-type: none"> • Catering trucks will not be elevated.
	Pre-Conditioned air	<ul style="list-style-type: none"> • Withdraw the use of the PCA.

Remarks: In operating ramp equipment under the above wind speed, operators are required to ensure that their Ground Services Equipment must be able to sustain the prevailing wind, and to observe the Authority's instruction, if any, especially during rainy or other weather conditions. Moreover, company's typhoon procedures must be adhered to.

10-min Wind Speed in excess of Knots (Km/hr)	Ramp Activity	Actions
>40 kts (around 75 km/h)	Passenger Embarkation and Deplaning	<ul style="list-style-type: none"> • All airbridges should be retracted • Passenger Steps will not be operated in an elevated mode with fully extended hydraulic stabilizers.
	Passenger Loading	<ul style="list-style-type: none"> • Aircraft doors will not be opened. • Set aircraft parking brake with a fully charged hydraulic system.
	Disabled passenger handling using wheelchair lift	<ul style="list-style-type: none"> • Wheelchair lifting truck will not be elevated
	Baggage & Cargo Loading	<ul style="list-style-type: none"> • Lower Deck Loader and Main Deck Loader will not be operated.
	Aircraft Fuelling	<ul style="list-style-type: none"> • Aircraft refueling will be suspended.
	Line Maintenance	<ul style="list-style-type: none"> • Aircraft passenger and cargo doors should not be opened. • Aircraft towing at all stands will be: <ul style="list-style-type: none"> - Suspended if not yet started - Continued until completion if it has already started • Aircraft arrival and departure handling at remote stands will be suspended
	Cargo	<ul style="list-style-type: none"> • Aircraft cargo doors will not be opened.
>60 kts (around 111 km/h)	Line Maintenance	<ul style="list-style-type: none"> • Aircraft arrival and departure handling at all stands will be suspended.
>77 kts (around 140 km/h)	Passenger Embarkation / Deplaning	<ul style="list-style-type: none"> • All airbridges should be tied down

Remarks: In operating ramp equipment under the above wind speed, operators are required to ensure that their Ground Services Equipment must be able to sustain the prevailing wind, and to observe the Authority's instruction, if any, especially during rainy or other weather conditions. Moreover, company's typhoon procedures must be adhered to.

Appendix 12-C**1.0 Guidelines for Precautionary Actions to be performed by Aircraft Servicing Companies under “Amber” and “Red” Warnings of Airport Lightning Warning System****(i) General Guidelines**

Lightning Warning Organization	“Amber” Warning	“Red” Warning
All Airport Operators	<ul style="list-style-type: none"> • All Control Centres disseminate information to ramp staff when alerted by Apron Control Centre. • Prepare for the issue of “Red” Warning. • Suspend all activities unrelated to aircraft servicing and give priority to high priority, time critical ramp activities. 	<ul style="list-style-type: none"> • All Control Centres disseminate information to ramp staff. • Cease all outdoor works and take immediate shelter • Do not take shelter under aircraft fuselage and wings. • Avoid contact with the external parts of aircraft. • Keep clear of tall objects. • Keep clear of metal objects. • Do not hold metal objects such as tools or umbrellas. • Do not work on high stands and platforms. • Remain alert for the cancellation of “Red” Warning to resume operation.

(ii) Specific Guidelines

Lightning Warning Organization	“Amber” Warning	“Red” Warning
Airport Authority	<ul style="list-style-type: none"> • IAC-ACC disseminates amber alert through Auto Voice Message Distribution System (AVMDS) to all Control Centres. 	<ul style="list-style-type: none"> • Cease aircraft marshalling at cargo and remote stands. • IAC-ACC disseminates “Red” Warning through Auto Voice Message Distribution System (AVMDS) to all Control Centres. • Co-ordinate with ATC to disseminate “Red” Warning at the airfield to pilots. • Make announcement to passengers and public by Terminal Operations Department when necessary.
Line Maintenance Franchisees	<ul style="list-style-type: none"> • Do not commence work on high access equipment. 	<ul style="list-style-type: none"> • If an aircraft is ready for push back but not yet started, aircraft tractor will suspend push back

Appendix 12-C

	<ul style="list-style-type: none"> • General guidelines whenever applicable. • Do not deploy back of stand road blockers • Towbarless tractor connect to the aircraft until the aircraft is fully detached from the aerobridge or any other ground servicing equipment 	<p>and wait until stand-down of “Red” Warning.</p> <ul style="list-style-type: none"> • When aircraft is being pushed back for departure after “Red” Warning is announced. <ul style="list-style-type: none"> ♦ Wing walker continue discharging his/her duties until the tail of the aircraft enters the taxilane. He / She then moves back to the safe sheltered area. ♦ The aircraft with tow tractor will be left on the taxilane with headset man standby inside the tractor. ♦ All ground support will be immediately suspended until the “Red” warning expires. • Cease all work inside aircraft fuel tank. • Arrival aircraft will be assigned to park on frontal stands. After switching off anti-collision beacons, Line Maintenance crew must signal to the airbridge operator to commence airbridge docking for passenger disembarkation.
Ramp Handling Franchisees	<ul style="list-style-type: none"> • General guidelines whenever applicable. 	<ul style="list-style-type: none"> • Suspend aircraft loading & unloading activities. • Immediately seek shelter near the Passenger Terminal Building, inside aircraft cabin or compartment, or inside fully enclosed vehicles. • Under safe conditions, Line Maintenance crew shall give signal to the airbridge operator to commence airbridge docking • Suspend pre-positioning of outer airbridge for Code C aircraft at T1 Midfield Concourse (to facilitate the activation of Aircraft Docking Guidance System) • In the event that an arrival aircraft with an inoperative APU, AAHK Airfield Officer will signal to the airbridge operator to dock the airbridge for passenger disembarkation. • General guidelines whenever applicable.

Appendix 12-C

Into-Plane Refuellers	<ul style="list-style-type: none"> General guidelines whenever applicable. 	<ul style="list-style-type: none"> Stop refuelling according to Guidelines for Aviation Fuel Quality Control and Operation Procedures for Joint Into-plane Fuelling Services issued by Joint Inspection Group (JIG) Endorsed by IATA Aviation Fuel Working Group.
Self-handled Airlines	<ul style="list-style-type: none"> Maintenance crew shall install earthing device for aircraft on ground. 	<ul style="list-style-type: none"> Sections-in-charge shall evaluate severity of weather condition and consider suspension of work. <p>When ground servicing is suspended:</p> <ul style="list-style-type: none"> Ramp personnel shall take shelter in the Passenger Terminal Building, aircraft cabin or ramp vehicles. Flight Operations Department should notify the concerned flight crew about the suspension of ground handling.
Cargo Terminal Franchisees	<ul style="list-style-type: none"> General guidelines whenever applicable. 	<ul style="list-style-type: none"> Suspend ramp activities at open areas, including tractors and document van services. Immediately return to Cargo Terminal shelter area. General guidelines whenever applicable.
Hong Kong Business Aviation Centre	<ul style="list-style-type: none"> Avoid using highly conductive equipment. 	<ul style="list-style-type: none"> Aircraft push back for departure is applicable for HKBAC handling departures at cargo stands or passenger terminal stands, same as other LM franchisees. If an aircraft is ready for push back but not yet started, aircraft tractor operator will suspend push back and wait until stand-down of "Red" Warning. When aircraft is being pushed back for departure after "Red" Warning is announced. <ul style="list-style-type: none"> Wing walker continue discharging his/her duties until the tail of the aircraft enters the taxilane. He / She

Appendix 12-C

		<p>then moves back to the safe sheltered area.</p> <ul style="list-style-type: none"> ♦ The aircraft with tow tractor will be left on the taxilane with headset man standby inside the tractor. ♦ All ground support will be immediately suspended until the “Red” warning expires. <p>The procedures below applicable to the aircraft inside BAC apron</p> <ul style="list-style-type: none"> • Aircraft already on departure spot with aircraft tractor disengaged and wireless headset transmitter removed is not affected • If there is a reposition requirement for an aircraft to be repositioned from parking spot to the departure spot, if not commenced, then wait until stand down of “Red Warning”. If the reposition has been commenced, the aircraft with tow tractor will be left on the Z3 departure spot with headset man standby inside the tractor • All ground support will be immediately suspended until the “Red” warning expires.
Airlines		<ul style="list-style-type: none"> • Flight crew must not release the parking brakes • Wait until the cancellation of red lightning warning before resumption of the push back operation • Advise passengers at the gate of possible delay or, through the pilots if passengers already onboard.

Appendix 12-C

AVSECO	<ul style="list-style-type: none"> Supervisors should review staff work arrangements. 	<ul style="list-style-type: none"> Suspend all unnecessary operations and take shelter.
Caterers	<ul style="list-style-type: none"> General guidelines whenever applicable. 	<ul style="list-style-type: none"> Close the aircraft door concerned with the necessary Personal Protection Equipment i.e. electric resistant gloves, and cease ramp activities immediately. Take shelter i.e. inside the vehicle, the aircraft cabin or buildings. If there is no shelter available nearby, stay within the lightning protection zone covered by high mast. Lightning protection zone means the circular area surrounding the high mast with a radius equal to the height of high mast. Remember do not stay at the area bond by protective barriers and do not touch the metal surface of protective barriers or high mast. General guidelines whenever applicable.
Baggage reconciliation service operators	<ul style="list-style-type: none"> General guidelines whenever applicable 	<ul style="list-style-type: none"> Suspend aircraft side activities immediately. Operations within baggage basement to continue as normal. Immediately seek shelter near the Passenger Terminal Building, inside aircraft cabin or compartment, or inside fully enclosed vehicles. General guidelines whenever applicable.

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Tsunami Risk, Prediction and Warning – Excerpted from Security Bureau Circular “Contingency Plan for Natural Disasters (Including those arising from severe weather conditions)”

CONTINGENCY PLAN FOR NATURAL DISASTERS

(INCLUDING THOSE ARISING FROM
SEVERE WEATHER CONDITIONS)

**Emergency Support Unit
Security Bureau
Government Secretariat
October 2019**

File Ref. SB FR/1-90/4

Contingency Plan for Natural Disasters**Annex D****TSUNAMI WARNING SERVICE IN HONG KONG****Basics of Tsunami**

A tsunami is a series of water waves caused by an undersea earthquake, or much less frequently by an undersea volcanic eruption or an undersea landslide. Most tsunamis occur in the Pacific Ocean which covers more than one-third of the earth's surface and is surrounded by a series of volcanoes, deep-ocean trenches and island arcs where most earthquakes occur. This circum-Pacific seismic belt is the boundary of major tectonic plates and is also called the "ring of fire" for its high seismicity. Hong Kong is located more than 600 kilometres from this belt.

2. Since 1900, more than 1,300 tsunami events were observed or recorded worldwide. Over 45% of these events brought about casualties or damage, most of them were local or regional tsunamis that affected areas within a few hundred kilometres or up to a thousand kilometres of the source respectively. However, a great earthquake will sometimes generate a tsunami that sweeps across the entire Pacific and causes destruction at distant coasts. For example, the magnitude 9.5 Chilean earthquake in 1960 brought about significant loss of life and property in Hawaii and Japan. The magnitude 9.0 earthquake off the west coast of northern Sumatra on 26 December 2004 also caused great damage around the Indian Ocean, as far as the east African coast. The tsunami generated by the 9.0 earthquake off the east coast of north-eastern Japan on 11 March 2011 induced damage in the United States.

3. Tsunami waves are water waves with long wavelengths in the order of hundreds of kilometres. In deep waters of the open sea, a tsunami travels as fast as a commercial jet plane, has small amplitudes, and is often not felt by people on vessels. When a tsunami approaches the coast, it slows down with the decrease of water depth to speeds similar to those of a car moving on the road. The tsunami then increases in height rapidly and becomes dangerous. The height that a tsunami reaches at a specific location depends, besides the magnitude and fault mechanism of the earthquake, also on the shapes of the sea floor and the shoreline, and on the direction of propagation and other characteristics of the tsunami. The run-up height of a tsunami, i.e. the height that the sea reaches up the shore, further depends on the slope and other characteristics of the land surface. It is generally highest at beaches and shallow bays facing the approaching tsunami.

Risk of Tsunami in Hong Kong

4. The chance of Hong Kong being affected by a significant tsunami (i.e. one with a tsunami height of 0.5 metre or higher) is very small. Since automatic tide gauges were installed in Hong Kong in the early 1950s, only seven measurable tsunamis were recorded, all not significant. This is notably due to the sheltering effect of the land masses of Taiwan and the Philippines against tsunamis originated in the Pacific.

5. Similar to storm surges caused by approaching tropical cyclones, significant tsunamis may bring about inundation of low-lying coastal areas. Because of historical concern about storm surges, Hong Kong is already well prepared against tsunamis. Coastal designs of built-up areas in Hong Kong and general land use have catered for storm surges. This offers protection against tsunamis of considerable height (more than two times the highest tsunami recorded in Hong Kong since the early 1950s). For example, the land around Victoria Harbour

Contingency Plan for Natural Disasters

is at least 2.5 metres above the mean sea level, and 1 metre above the highest astronomical tides. Built-up areas around the Tolo Harbour are generally another metre higher than those around the Victoria Harbour.

Earthquake Monitoring and Information Dissemination in Hong Kong

6. As majority of tsunami is caused by earthquake, earthquake monitoring is an important part of the Tsunami Warning system. HKO has installed broadband seismographs at Po Shan Road, Mid-levels and the HKO's Headquarters, Tsim Sha Tsui to monitor earthquakes worldwide, especially those earthquakes in the South China Sea that will probably generate tsunami. The Po Shan Seismograph Station is one of the about 150 members of the Global Seismographic Network that possess broadband seismograph, its recorded seismic waves are provided via the Internet to the Incorporated Research Institutions for Seismology (IRIS) in the United States. Such real time data can then be obtained via IRIS by various earthquake and tsunami centres around the world such as the South China Sea Tsunami Advisory Centre (SCSTAC), the Pacific Tsunami Warning Centre (PTWC) and the Northwest Pacific Tsunami Advisory Centre (NWPTAC) for the determination of earthquake parameters.

7. HKO also operates seven short period seismograph stations at Cape D'Aguilar, Cheung Chau, Keung Shan, Lead Mine Pass, Luk Keng, Tsim Bei Tsui and Yuen Ng Fan respectively. This coupled with the seismograph stations at Po Shan and the HKO's Headquarters form a local earthquake monitoring network of nine stations for determining effectively the epicentre of locally felt earthquakes in Hong Kong's nearby regions. Accelerographs are also installed at some seismograph stations for recording peak ground acceleration during felt earthquake which help to determine the earthquake intensity in Hong Kong. Members of the public may log on to the following webpage of the HKO for the distribution of the earthquake monitoring stations in Hong Kong:-

https://www.weather.gov.hk/gts/quake/seismic_mon.htm

8. HKO's earthquake data processing system collects real time seismic waveform data from global and Hong Kong seismograph networks to compute earthquake parameters such as origin time, epicentre and magnitude. HKO also collects earthquake and tsunami information issued by the Ministry of Natural Resources of China, China Earthquake Administration, Earthquake Administration of Guangdong Province, PTWC, NWPTAC, SCSTAC, U.S. National Tsunami Warning Centre and U.S. Geological Survey.

9. For locally felt earthquakes and larger earthquakes worldwide, HKO will issue quick earthquake messages via its websites / social media and RSS to the public, and also SMS and emails to news agencies, media, related government policy bureaux and departments as well as earthquake and tsunami monitoring centres overseas. In addition, HKO will issue reports on strong earthquakes and locally felt earthquakes to the media via ISD.

Tsunami Prediction

10. While larger earthquakes in general generate tsunamis, there is no one-to-one correspondence because the size of a tsunami also depends on how the sea floor is displaced by the earthquake so that the magnitude of the earthquake is not the only factor. More elaborate methods of seismic analysis have emerged in recent years for inferring the mechanism and scale of earth crust rupture associated with an undersea earthquake. But some necessary details are still difficult to determine for an accurate estimation of the size of the resulting tsunami,

Contingency Plan for Natural Disasters

particularly in the early stage of seismic analysis.

11. At a few places in the world where there is abundance of past tsunami data, the height of the tsunami at any specific point can be estimated from the location, magnitude and other characteristics of the earthquake using analogies from historical tsunami events. This is however not applicable to places which has not experienced major tsunamis in the past, like Hong Kong.

12. The absence of historical data also makes calibration of numerical tsunami models difficult and hence there exists large uncertainties in the estimations.

13. While earthquake detection and seismic analysis do enable early warnings of tsunamis to be made, it carries an inherent degree of uncertainty and the false alarm rate and missing rate could be rather high.

Tsunami Watch and Warning

14. The Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) of the Intergovernmental Oceanographic Commission (IOC) under the United Nations Educational, Scientific and Cultural Organization (UNESCO) is coordinating the implementation of the tsunami warning and mitigation system for the Pacific and South China Sea. The PTWC serves as the operational centre of the PTWS for the Pacific (including the South China Sea), responsible for the dissemination of Tsunami Warning messages. In addition, the SCSTAC under the Ministry of Natural Resources of China and NWPTAC under the Japan Meteorological Agency also provide regional tsunami alerts for the South China Sea and the western North Pacific respectively. SCSTAC, PTWC and NWPTAC will make use of seismic data collected from seismographs all over the world to determine the location, depth and magnitude of the earthquake and assess the likelihood of a tsunami. SCSTAC, PTWC and NWPTAC would send tsunami messages to organisations participating in PTWS, including HKO, on details of any tsunami forecast including the locations affected, estimated time of tsunami arrival and tsunami height.

15. HKO makes use of the analysis results of its earthquake data processing system, the tsunami information issued by the SCSTAC, PTWC and NWPTAC as well as the monitoring of the sea level readings detected by tide gauges and buoys over the South China Sea and the Pacific to assess whether a tsunami will affect Hong Kong, and to determine the arrival time and estimate roughly the height of the tsunami. If a significant tsunami (i.e. a tsunami with a height of 0.5 metre or more above the normal tide level) is expected to reach Hong Kong within 3 hours, the HKO will issue a Tsunami Warning for the public. If a significant tsunami is expected to arrive at Hong Kong in more than 3 hours or a tsunami is not likely to be significant, the HKO will issue a tsunami information bulletin.

16. HKO also provides real-time sea level data from its tide gauges to SCSTAC, PTWC and NWPTAC for tsunami monitoring. SCSTAC, PTWC and NWPTAC make use of sea level data from coastal tide gauges and ocean-bottom mounted sea level sensors, updated seismic analysis, and other data to update their tsunami messages.

17. For a severe earthquake which occurs in the South China Sea close to Hong Kong, HKO will issue a warning as soon as practicable even before receiving any tsunami message from SCSTAC, PTWC or NWPTAC. In such cases, an assessment on the possibility of a significant tsunami in Hong Kong will be made based on the intensity of the locally felt tremor and the location of the earthquake as determined by HKO's own seismograph network.

Contingency Plan for Natural Disasters**Annex D**
Appendix A**Tsunami Warning**

1. The following information will be given in a Tsunami Warning:-
 - (a) Time of occurrence, location and magnitude of the earthquake that generates the tsunami.
 - (b) The estimated time of arrival of the tsunami at Hong Kong.
 - (c) The estimated tsunami heights in Hong Kong.
 - (d) An advice for members of the public to take precautions.
 - *(e) Normal tides of the day in Hong Kong.
 - *(f) Tsunami heights recorded around the Pacific, the South China Sea or Hong Kong.
 - (g) Precautionary announcements (see Appendix B to Annex D).

Items marked with an asterisk are optional depending on availability of information and relevance for a particular event.

Contingency Plan for Natural Disasters**Annex D**
Appendix B**Precautionary Announcements to Accompany a Tsunami Warning**

- (a) Stay away from shores, beaches and low-lying coastal areas. If you are there, move inland or to higher grounds. The upper floors of high, multi-storey, reinforced concrete building can provide safe refuge if there is no time to quickly move inland or to higher grounds.
- (b) Do not engage in water sports.
- (c) Vessels should stay away from the shore or shallow waters. If vessels remain moored in typhoon shelters, their moorings should be doubled and all personnel should leave the vessels and head for higher grounds.
- (d) Please observe these precautions until the Hong Kong Observatory cancels the Tsunami Warning.
- (e) Please stay tuned to the radio or television for further information.

Contingency Plan for Natural Disasters**Annex D**
Appendix C**Tsunami Information Bulletin**

1. The following information will be given in a Tsunami Information Bulletin:-
 - (a) Time of occurrence, location and magnitude of the earthquake that generates the tsunami.
 - (b) A statement to the effect that a tsunami has been or might be generated, and its estimated time of arrival at Hong Kong. If the tsunami height at Hong Kong is expected to be below 0.5 metre, this will be mentioned.
 - * (c) Normal tides of the day in Hong Kong.
 - * (d) Tsunami heights recorded around the Pacific, the South China Sea or Hong Kong.

Items marked with an asterisk are optional depending on availability of information and relevance for a particular event.

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