

MACKAY AIRPORT PTY LTD



Mackay Airport

CYCLONE PLAN

Issue 1 – Revision 6 – 18 March 2011

SECTION 8 OF AERODROME EMERGENCY PLAN

Disclaimer

The Mackay Airport Cyclone Plan has been prepared by Mackay Airport Pty Ltd in consultation with the Airport Cyclone Committee for use by its members. Persons should not take any action in reliance on the contents of this plan, but should consult their own legal expert or advisor prior to taking such action. Mackay Airport Pty Ltd and the Airport Cyclone Committee disclaim all liability to any person howsoever arising, done or omitted to be done, in reliance to any degree upon this plan or portions of it.

8 MACKAY AIRPORT CYCLONE PLAN

8.1. AUTHORITY

- 8.1.1 The Mackay Airport Cyclone Plan has been prepared by Mackay Airport Pty Ltd (MAPL) and is issued as a supporting plan to the Aerodrome Emergency Plan for use by Mackay Airport. It may be used as guidance for airport tenants in the preparation of individual company cyclone plans.
- 8.1.2 Airlines, operators, tenants and contractors are fully responsible for the safety and security of their own aircraft, buildings, plant, equipment and materials. They are to ensure that at all stages of alert, appropriate action is taken to remove or secure their property to safeguard it from damage and prevent it from causing damage to other property.
- 8.1.3 All major tenants and operators are to maintain an action plan detailing precautions to be taken in the event of a cyclone.

8.2. CYCLONE COMMITTEE

- 8.2.1 When Stage 2 of the Plan is declared, Mackay Airport Pty Ltd will convene a meeting of the Cyclone Committee consisting of the following core members:

- Mackay Airport Pty Ltd
- Airservices Australia
 - Air Traffic Services
 - Infrastructure Support Services
 - Aviation Rescue and Fire Fighting Service
- Qantaslink (Aviation Ground Handling)
- Jetstar (Aviation Ground Handling)
- Virgin (Mackay Aviation Services)
- Tiger (Aerocare)
- Shell/BP
- Caltex
- CQ Rescue
- ISS Security
- Australian Air Express
- Virgin Tech
- GA Representative
- Carepark
- Compass Group
- Relay
- O'Brien Electrical Services Mackay

Additional meetings will be held on an 'as required' basis as determined by MAPL Management.

- 8.2.2 An arrangement has been made with the Bureau of Meteorology Tropical Cyclone Warning Centre (TCWC) in Brisbane to provide specific Mackay forecasts for the Cyclone Committee. Contact with TCWC will be through the MAPL Manager Aviation (MA).

- 8.2.3 The MA, through the Cyclone Committee, shall ensure that the Mackay Regional Council Local Disaster Management Group and the District Disaster Management Group, the latter being chaired by the QPS, are kept fully informed of the status of the airport.
- 8.2.4 As long as a cyclone warning remains current (from Stage 2 to the commencement of Stage 4), the committee will meet at frequent intervals and assist MAPL in deciding the timings for the declaration of Stages 3 and 4.
- 8.2.5 The Cyclone Committee will re-convene at Stage 7 to commence clean-up and recommence airport operations as soon as possible.

8.3. ALERT PHASES – OVERVIEW

- 8.4.1 MAPL has adopted a seven stage alert system for the purpose of classifying responses to a cyclone as shown in Table 1, Airport Cyclone Alert Stages, below:-

Note: All wind speeds are shown in kilometres per hour (km/h) with knots (kt) in brackets. Table 3 under Section 3.4 at Appendix A page 4, provides wind speed conversions between kt and km/h.

Note: The minimum and maximum times quoted in Table 1 are to be used as a guide depending on the cyclone category – e.g. Category 1 uses minimum lead times while Category 3 and above use maximum lead times.

Table 1 – Airport Cyclone Alert Stages

Stage	When Initiated
1.	Initiated on announcement by the Bureau of Meteorology of a Cyclone Watch, i.e. winds above gale force 24-48 hours away.
2.	Initiated on announcement by the Bureau of Meteorology of a Cyclone Warning, i.e. winds above gale force within 24 hours.
3.	Cyclone Warning current. As a general guide, this stage will be declared when wind gusts in excess of 100 km/h (54 kt) are 6-12 hours away. Hourly monitoring of forecasts prior to declaring Stage 4.
4.	As a general guide, this stage will be declared when gusts greater than 100 km/h (54 kt) are 3-6 hours away.
5.	Gale Force Winds have commenced (i.e. sustained 75km/h (41 kt) with gusts to 100 km/h (54 kt)).
6.	Gale Force Winds have passed, all clear not yet announced as Stage 5 may be re-declared.
7.	Local All Clear.

8.4. NOTIFICATION OF CYCLONE ALERT STAGES.

- 8.4.1 Stages 1 and 2 will be automatically initiated on announcement of a cyclone watch or a cyclone warning respectively.
- 8.4.2 Stages 3 and 4 will be declared by the General Manager Airport (GM), in consultation and agreement with members of the Airport Cyclone Committee. The timing of these phases will depend on the proximity and severity of a cyclone.
- 8.4.3 At any time during Stages 1 to 4, the Bureau of Meteorology may issue an Airport Warning. Airport Warnings will be treated in accordance with individual company policy.
- 8.4.4 MAPL (via telephone, SMS or Email) will advise airport tenants on the Distribution List when Stages 1 to 4 are activated.
- 8.4.5 There will be no formal notification of Stages 5 to 6 from MAPL to airport tenants. The Bureau of Meteorology will issue normal cyclone warnings through the media during these stages.
- 8.4.6 At Stage 7, MAPL will contact members of the Cyclone Committee by whatever means are available to convene a meeting to commence clean up and recommence airport operations as soon as possible. MAPL will give airport tenants a minimum of two hours notice, prior to the airport re-opening.

8.5. STAGE 1

Note: In the following stages, the minimum and maximum times are to be used as a guide depending on the cyclone category - e.g. Category 1 uses minimum lead times whilst Category 3 and above use maximum lead times.

- 8.5.1 Initiated on an announcement by the Bureau of Meteorology of a **Cyclone Watch**, i.e. winds above a strong gale force (75 km/h (41 kt) or greater) are 24-48 hours away.
- 8.5.2 Airport tenants should commence initial preparation for a cyclone and consider the following actions:
- Conducting a review of company cyclone procedures
 - Securing or removing non-essential equipment from open areas
 - Checking emergency stores and equipment (fuel, generators, radios, medical supplies etc)

8.6. STAGE 2

- 8.6.1 Initiated on announcement by the Bureau of Meteorology of a **Cyclone Warning**, i.e. winds above strong gale force (75 km/h (41 kt) or greater) within 24 hours.
- 8.6.2 Airport tenants should complete the initial preparation for a cyclone and:
- Implement company cyclone procedures.
 - Finish securing or removing non-essential equipment from open areas.
 - Continue to monitor cyclone advices from the Bureau of Meteorology directly, as part of a system of monitoring available cyclone activity information.
 - Light aircraft owners/operators should consider relocating, storing or tying down aircraft.

8.7. STAGE 3

- 8.7.1 Cyclone Warning current. As a general guide, this stage will be declared when wind gusts greater than 100 km/h (54 kt) are 6 to 12 hours away.
- 8.7.2 Airport tenants should consider or commence partial shutdown of their facilities in accordance with company cyclone procedures and take the following actions:
- Move external equipment to safe areas, secure contents of premises, important documents, backup computers etc.
 - Light aircraft should be relocated, stored or securely tied down.
 - Consider sending non-essential staff home.
 - Precautions in the event of local flooding / storm surges.
- 8.7.3 Major airlines should consider the scheduling implications for long haul flights leading to the Stage 4 declaration. MAPL to liaise with airlines before stage 4 is declared.
- 8.7.4 Bureau of Meteorology is to provide hourly updates where possible with hourly monitoring of forecasts prior to declaring Stage 4.

8.8. STAGE 4

- 8.8.1 As a general guide, Stage 4 will be declared when wind gusts greater than 100km/h (54 kts) are 3-6 hours away.
- 8.8.2 A staged shutdown of major airport facilities will commence upon declaration of Stage 4. This may include aprons, terminals, airport ground lighting, navigation facilities, car parks, gensets etc.
- 8.8.3 ATC, ARFFS and major airlines will cease operations as soon as practicable after the declaration of Stage 4.
- 8.8.4 Airport tenants are expected to complete shutdown of their own operations in a similar time frame.
- 8.8.5 After consultation with airlines and ATC, and upon departure of last aircraft, the MA will issue a NOTAM advising of non-availability of airport facilities (from time/date).

8.9. STAGE 5

- 8.9.1 Gale force winds have commenced. *Airport operations have ceased.*
- 8.9.2 In the event of a cyclone, any airport staff or passengers stranded at the airport will be directed to a designated area within the terminal which is deemed most appropriate by MAPL. MAPL staff or delegates will continually monitor this area during the cyclone until the all clear is given.

8.10. STAGE 6

- 8.10.1 Gale force winds have passed; *all clear* not yet announced as Stage 5 may be re-declared. *Airport operations still ceased.*

8.11. STAGE 7

- 8.11.1 Local all clear is issued once the gale force winds have passed Mackay and it is safe to return to the airport, even though a tropical cyclone warning may still exist (Stage 2).
- 8.11.2 Airport tenants should commence clean up of their own facilities and liaise with MAPL on loss of services or damage to facilities. MAPL to ensure airport tenants are given a minimum of two hours notice, prior to the airport re-opening.
- 8.11.3 The Airport will recommence operations after the Bureau of Meteorology has advised that the cyclone threat has passed and the serviceability of all aircraft movement areas is confirmed. Timings will be dependent on the severity of the cyclone, but expect a *minimum* of 3-6 hours before operations can re-commence. With a severe cyclone this may extend to several days.
- 8.11.4 MAPL NOTAM lifted by MA.

Appendix A – TROPICAL CYCLONE WARNING SYSTEM

I. Tropical Cyclone Warning System

I.1 Tropical Cyclone Advises are issued by the Bureau of Meteorology Tropical Cyclone Warning Centre (TCWC) and broadcast by radio and television stations.

I.1.1 Information is also available directly from the Bureau by:

Fax Poll

Cyclone track map 1902 935 277

Telephone

Cyclone advice 1300 659 212

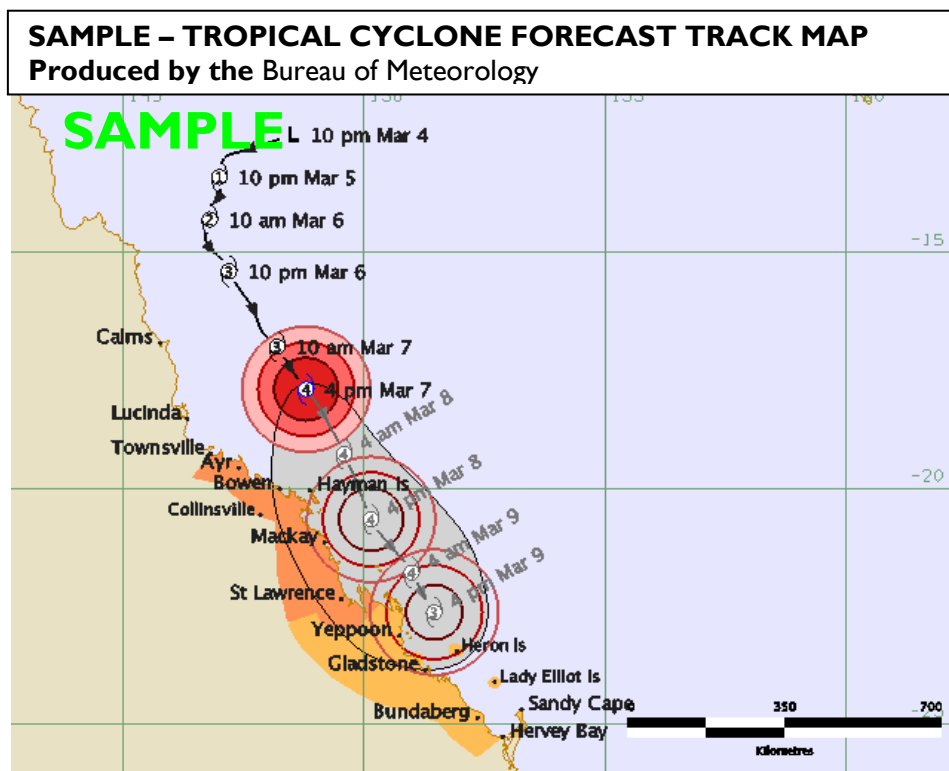
Internet

www.bom.gov.au

I.2 A **cyclone forecast track map**, besides showing the past cyclone track, also shows distinctive colours or shades to depict watch and warning zone areas of:

- *Very destructive winds*: hurricane force winds with gusts exceeding 165 km/h (90 kt) (associated with severe cyclones – Cat. 3 and above).
- *Destructive winds*: gusts greater than 120 km/h (65 kt) (equivalent to storm force)
- *Stronger gales*: gusts exceeding 100 km/h (55 kt). With these winds (shown by the light pink shade below), people have difficulty moving about in open areas.

Figure 1 – Sample Cyclone Track Map



Community Threat	Past Cyclone Details
Warning Zone - Gales within 24 hours	Past Location and Intensity Number
Watch Zone - Gales from 24 to 48 hours	Past Track and Movement
Current Cyclone Details	Forecast Cyclone Details (at 24 and 48 hours from issue)
Current Location and Intensity Number	Forecast Location and Intensity Number
Very Destructive Winds	Very Destructive Wind Boundary
Destructive Winds	Destructive Wind Boundary
Gale Force Winds	Gale Force Wind Boundary
	Most Likely Future Track
	Range of Likely Tracks

TROPICAL CYCLONE FORECAST TRACK MAP

The Bureau of Meteorology introduced a new graphical product for the 2005-06 Tropical Cyclone Season. This product provides a map displaying the forecast positions of each tropical cyclone up to 24 hours ahead. It will be similar in style to the Tropical Cyclone Threat Map and is available on the Bureau's web page at www.bom.gov.au/weather/qld/cyclone

This product will not contain all the information in the Tropical Cyclone Advice, especially important details on the cyclone impact, such as the sometimes dangerous threat of storm surge.

Below are the main features of the Tropical Cyclone Forecast Track Map.

Forecast Track

- The forecast track is the most likely path of the cyclone.
- The latest position is shown in **BLUE** and the 12 and 24 hour forecast positions in **BLACK**.
- The numbers in the circles at the centre locations show the intensity Category, or if the system is expected to significantly weaken, an "L" is used to indicate a low pressure centre.

Grey Zone of Uncertainty (otherwise known as the **Cone of Uncertainty**)

- The grey zone is the area within which the cyclone centre is expected to be in the following 24 hours.
- This covers most scenarios but occasionally the cyclone may move outside this area.
- Importantly, the impact of the cyclone will almost certainly extend well beyond the grey zone.

Wind Thresholds

- Solid coloured ellipses surround the current cyclone position, similar to the Threat Map.
- The open ellipses surrounding the forecast positions represent the outer extent of each category of wind strength, assuming the cyclone follows the official forecast track.
- Note that the ellipses may be omitted from the 12 hour forecast position to minimise clutter.
- The winds are likely to extend beyond these areas as the cyclone will almost certainly not follow the forecast track exactly. The coastal extent of the Warning zone reflects this uncertainty.

A **cyclone outlook** is issued around mid-afternoon each day during the cyclone season providing an assessment (low/medium/high) of the likelihood of an existing cyclone entering the Coral Sea or a new cyclone forming in the Coral Sea within 72 hours.

- 1.3 A **cyclone information bulletin** is issued at 6-hourly intervals when a cyclone exists within the Queensland region, but is not expected to threaten coastal communities and island communities within the next two days.
- 1.4 A **cyclone watch** is issued if a cyclone or potential cyclone exists and there are strong indications that winds above gale force will affect coastal or island communities within 24 to 48 hours of issue.
- 1.5 The message contains a brief estimate of the cyclone's location, intensity, severity category and movement and identifies the coastal area that could be affected.
- 1.6 Watch messages are renewed every six hours.
- 1.7 A **cyclone warning** is issued as soon as gales or stronger winds are expected to affect coastal or island communities within 24 hours. It identifies the communities being threatened and contains the cyclone's name, its location, intensity (including maximum wind gusts and its severity category) and its movement.
- 1.8 As well as indicating expected maximum wind gusts near the centre of the cyclone, warning messages will usually indicate the strength of the maximum wind gusts expected over particular areas in the following terms:

- Gales with gusts to 120 km/h (65 kt).
 - Destructive winds with gusts above 120 km/h (65 kt).
 - Very destructive winds with gusts above 170 km/h (90 kt).
- 1.9 Forecasts of heavy rainfall, flooding and abnormally high tides are included when necessary.
- 1.10 Communities under threat are also advised to take precautions necessary to safeguard their lives and property.
- 1.11 The cyclone siren will only be sounded by radio and television stations if *destructive* winds are expected within the next 12 hours.
- 1.12 Cyclone warnings are issued every three hours. When a cyclone is under radar surveillance close to the coast and poses a severe threat, hourly advices are issued.
- 1.13 A tropical cyclone advice is prefixed “FLASH” when it is the first warning to a community not previously alerted by a cyclone watch. It is also issued when major changes are made to the previous movement towards the coast or rapid intensification.

2. Storm Tides

- 2.1 The warning may mention above normal tides. The effect in terms of the risk of flooding at the coast will be described as follows:
- Abnormally high tides could cause minor flooding...
 - Exceptionally high tides could cause serious flooding....
 - Dangerously high tides could cause inundation of low-lying coastal land...
- 2.2 If evacuation of waterfront areas becomes necessary, additional messages from police or local government authorities will say who should move and will give details of evacuation shelters.

3. Cyclone Severity

- 3.1 An estimate of cyclone severity is included in the advices in accordance with Table 2, Bureau of Meteorology - Cyclone Categories, below.
- 3.2 The severity in the zone of maximum winds and therefore the effects felt at individual locations may not be exactly as described in the accompanying table. Refer to a cyclone track map for a more accurate guide of winds at specific locations.
- 3.3 It should also be noted that the category does not refer to storm tides; if a storm tide is expected it will be mentioned separately in the cyclone warning.

Table 2 – Bureau of Meteorology – Cyclone Categories

Category/Max Wind Gust	Typical Effects
Category 1 < 120 km/h (<65 kt)	Negligible house damage. Damage to some crops, trees and caravans. Craft may drag moorings.
Category 2 121 – 170 km/h (66 – 90 kt)	Minor house damage. Significant damage to signs, trees and caravans. Heavy damage to some crops. Risk of power failure. Small craft may break moorings.
Category 3 165 – 220 km/h (90 – 120kt)	Some roof and structural damage. Some caravans destroyed. Power failure likely.
Category 4 221 – 280 km/h (121 – 150 kt)	Significant roofing loss and structural damage. Many caravans destroyed and blown away. Dangerous airborne debris. Widespread power failures.
Category 5 >280 km/h (> 151 kt)	Extremely dangerous with widespread destruction.

3.4 Advice on wind speeds is included in Table 3, Wind Speed Conversions, below.

Table 3 – Wind Speed Conversions

Km/h	Kt	kt	km/h
10	5	10	19
20	11	20	37
30	16	30	56
40	22	40	74
50	27	50	93
60	32	60	111
70	38	70	130
80	43	80	148
90	49	90	167
100	54	100	185
110	59	110	204
120	65	120	222
130	70	130	241
140	76	140	259
150	81	150	278
160	86	160	296
170	92	170	315
180	97	180	333
190	103	190	352
200	108	200	370
210	113	210	389
220	119	220	407
230	124	230	426
240	130	240	444
250	135	250	463
260	140	260	482
270	146	270	500
280	151	280	519

(Note: values rounded to nearest whole number)

Appendix B – Tropical Cyclone Plan Linkages

Bureau of Meteorology	Mackay Airport Pty Ltd
1. Monitor Phase Tropical Cyclone outlook	
2. Information Phase Regular TC Bulletins	
3. Watch Phase TC Advices every 6 hours Strong Gale Force winds (in excess of 75km/h [41kt] 24 to 48 hours away)	Stage 1
4. Warning Phase TC Advices every 3 hours or hourly Strong Gale Force winds (in excess of 75km/h [41kt] less than 24 hours away)	Stage 2
Airport Warnings a) Wind gusts in excess of 100km/h (54kt) are 6-12 hours away b) Wind gusts in excess of 100km/h (54kt) are 3-6 hours away c) Strong Gale Force winds have commenced (sustained winds 75km/h [41kt] with gusts to 100km/h [54kt])	Stage 3 Stage 4 Stage 5
5. Severe Weather Phase Strong Gale Force winds have passed , all clear not yet announced as Stage 5 may be re-declared	Stage 6
6.No warnings locally Tropical Cyclone no longer a threat	Stage 7 Local All Clear

NOTE 1: Sustained winds refer to 10 minute mean winds

NOTE 2: Wind gusts refer to 3 second wind gusts