

Cullen Bay Marina Cyclone Plan

Introduction

Tropical cyclones occur in the Darwin region between November and April. Cyclone Tracey clearly showed how much damage and loss of life can result from inadequate preparation.

Tropical Cyclone Watch

Under current arrangements, the Bureau of Meteorology issues a Tropical Cyclone Watch when a tropical low or a cyclone is located within the NT forecasting district, *but not expected to bring gale force winds to the Darwin city area within the next 24 hours*. This watch will be issued by radio, coast radio and television stations.

Tropical Cyclone Warning

A Tropical Cyclone Warning will be issued by the Bureau of Meteorology if a cyclone is expected to cause gale force winds in the Darwin area within the next 24 hours. Any significant changes or developments will be broadcast as **Flash Warnings** to attract attention. Updated warnings will be issued every three hours and repeatedly broadcast.

When the cyclone centre is near Darwin, warnings will be updated and issued more frequently. Positions and movements will be broadcast when the cyclone is being tracked by radar and if the cyclone is moving towards the city.

It is most important that the lives and property of employees and their families are protected. Those staff required for duty at all or any phases of the emergency must observe all safety precautions. Time will be allowed to all employees to carry out initial securing of their homes and property.

It is intended that the marina will be secured so far as possible by the twelve hour warning, and that all staff will be free to attend to their own affairs not later than the six hour warning.

Control of the emergency procedure will be exercised by the Marina Manager who will be in direct liaison with Emergency Services and the Counter Disaster Committee.

In the event of a cyclone, the Lockmaster (on duty), who will be in continuous contact with the Bureau of Meteorology, will keep the Marina Manager informed of the latest information available and will liaise with the Marina Manager regarding the degree of preventative measures to be implemented.

Those personnel equipped with radio units should endeavour to secure them as thoroughly as possible as these units may be our main communication links during the post-transit period.

Lock Operation

During periods of strong winds and imminent / actual cyclonic activity, the lock should be in shutdown mode, with passage of boats through the lock prohibited at these times.

Shutdown mode will occur at the twelve hour warning or earlier if it is dangerous to remain at the control consol. Only in an extreme emergency, and with the Marina Manager's authority, will the lock operate after the 12 hour warning has been issued.

Stormwater Discharge

Design water levels for the Inner Harbour are as follows: -

100 year average recurrence interval (ARI) flood level	+3.7m AHD
Two year ARI flood level	+2.6m AHD
Normal high water level	+1.8m AHD
Normal operating level	+1.5m AHD
Low water level	+0.5m AHD

Design water levels for the Lock are as follows: -

Storm surge sea level	+5.1m AHD
Highest navigable sea level	+3.9m AHD
Extreme high inner harbour water level	+3.7m AHD
Highest navigable inner harbour water level	+2.5m AHD
Lowest navigable inner harbour water level	+0.5m AHD
Lowest navigable sea level (2.4m draught)	-4.1m AHD

Stormwater from the surrounding area discharges into the inner harbour.

Estimates of the quantity of stormwater inflow have been made by Sleeman Dunkley Treacy Maunsell Pty Ltd and are shown below: -

Estimated Stormwater Inflow to Inner Harbour – 1% probability of exceedence.

Duration (Hours)	Volume (MI)
6	160
12	190
24	271
48	380

The case where the 100 year ARI rainfall event coincides in time with the storm surge resulting from the 100 year ARI cyclone and that the storm surge occurs at a time of high spring tides, has been evaluated.

The sluice gates in the lock gates are sized to discharge the 100 year ARI flood from the inner harbour.

While stormwater inflow to the inner harbour is occurring, a Lockmaster must be in full time attendance at the lock to effect flood discharge and maintain inner harbour water levels as per design.

The sluice gates must be operated with reference to sea levels, OPEN when sea level is BELOW harbour level and CLOSED when sea level is ABOVE harbour level.

WORST CASE SITUATION

Where all lock gates are open and water is rapidly discharging from the lock due to error, damage or sabotage, DO NOT ATTEMPT TO CLOSE GATES. ALLOW THE MARINA TO DRAIN UNTIL THE TIDE TURNS.

The inner harbour has been designed to cope with a rapid draw down of water. In such a situation boat owners should be notified and every effort made to minimise damage to vessels.

Attempting to close gates in this situation would more than likely result in the destruction of the gates and severe damage to the lock structure.

TROPICAL CYCLONE WATCH

The following action is to be taken when a Tropical Cyclone Watch is declared: -

Lockmaster

1. Institute continuous radio watch
2. Arrange re-mooring of vessels as required
3. Supervise general security measures
4. Check all lashings that may be required to secure cargo and equipment
5. Ensure that all vehicles and mobile equipment are fuelled and oiled
6. Arrange for all loose items in the Marina to be removed or secured
7. Test run emergency lock hydraulic pump motor
8. Ensure vessels already in the Marina are adequately secured. Report to Marina Manager.
9. Change batteries on portable radios

In the event of a decision NOT to close the Marina, i.e- continuance of Tropical Cyclone Watch, the procedures implemented for condition **Tropical Cyclone Watch** will be maintained until further notice.

TROPICAL CYCLONE WARNING

In the event of a decision to close the Marina, i.e- notification of Tropical Cyclone Warning, the procedures will be fully implemented.

Lockmaster

1. Maintain lock functions and other security functions until instructed by the Marina Manager to proceed home
2. Turn off all unnecessary power in the Marina at main switchboards.

Marina Inner Harbour

Control of the Inner Harbour will be exercised by the Marina Manager. If the Marina Manager is occupied elsewhere, the Lockmaster will undertake this duty.

Movement of vessels into the basin will be controlled on VHF Channel 11.

Instructions as to which berth a vessel is to occupy will be given to the vessel whilst in the lock by way of a diagram or VHF Channel 11.

1. It is conceivable that the situation will be reached when all berths are occupied and there are still vessels waiting to enter.

Vessels will only be allowed to enter the Marina if adequate berthing facilities are available for them. All emergency locations adequate for berthing of vessels will be used – the Marina Manager, or, if unavailable, the duty Lockmaster having the authority to determine what is an adequate emergency berth.

POST CYCLONE ACTIVITIES

After the passage of a cyclone, police teams will begin preliminary surveys of damage. If the cyclone returns, the Warning stage may be re-activated.

With the declaration of the "All Clear", the Senior Lockmaster on duty should notify (or report to) the Darwin Port Authority Cyclone Centre (89 3990) so that assessment can quickly be made of our overall needs and requirements. This will assist in the earliest possible resumption of our operations and a return to normal.

Marina Manager

1. Overall Control – Liaison with Chairman, Emergency Services, Disaster Committees.

CULLEN BAY FUEL DISPENSING FACILITY – CYCLONE EMERGENCY PROCEDURES

1. There are two scales of advice:
 - A) General public through Bureau of Meteorology; and
 - B) Counter Disaster Organisation
2. Cyclone **Watch** - When a tropical alert has been given, the following actions are to be taken:-
 - 2.1 Loose materials in the site are to be removed from the sit, put under cover or tied down.
 - 2.2 The telephonist is to maintain a constant radio watch for further cyclone warning broadcasts.

3. Cyclone **Warning**

- 3.1 Final clean up of area.
- 3.2 Close and lock all storage tanks and bowsers.
- 3.3 Fill all Emergency Services vessels on invoice, if necessary.
- 3.4 Drain run-down pipelines from storage tanks to bowsers, by manually closing solenoids / valves (in small shed) and drain through bowser nozzles (approx. 100 ltrs of each product).

4. **Advice to Shelter**

- 4.1 Turn off electric power at sub-station.
- 4.2 Advise Emergency Services Headquarters of shelter location of Lockmaster / Site Manager.
- 4.3 All staff to move to shelters.

5. **Post Cyclone**

- 5.1 Lockmaster / Site Manager reports to site when possible.
- 5.2 Lockmaster / Site manager assesses:
 - i. Status of storage and dispensing equipment (system should NOT be operated manually)
 - ii. Immediate needs of emergency services
 - iii. Status of supply to site from fuel terminal
- 5.3 Lockmaster / Site Manager allocates resources to needs of Emergency Services according to their priorities.
- 5.4 Dispensing of fuel is to commence with the following provisos:
 - 5.4.1 The bona fides of an official requisitioning product or equipment is established within reason.
 - 5.4.2 Supplies are to be documented by at least a Manual docket or listing. Data recorded to include:
 - A) Name of Government Department
 - B) Name of person taking product
 - C) Registration number of vessel
 - D) Signature, if possible

CYCLONE PROGRESS MAP

BUREAU OF METEOROLOGY MESSAGES

CYCLONE WATCH

A tropical low or tropical cyclone exists, but is unlikely to affect the site area within the next 24 hours

CYCLONE WARNING

A tropical cyclone is expected to cause gale-force winds in the site area within the next 24 hours

CYCLONE WARNING

Increasing threat to the site area

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COUNTER DISASTER STAGES OF ACTIVATION

STAGE 1

STAGE 2

STAGE 3

Declared when available information suggests destructive winds are likely to affect a Region 1 Community within the next 6 to 12 hours

STAGE 4

At this time, an official announcement will be made to the public advising all persons to TAKE SHELTER

STAGE 5

Declared when winds have reached the boundary of Region 1

STAGE 6

Declared when winds no longer pose a threat to communities within Region 1.
(NB – ALL CLEAR has NOT yet been announced – Stage 5 may need to be re-declared, if necessary)

ALL CLEAR

Declared when it is considered safe for the public to leave shelters

NT GOVERNMENT MARINE SAFETY BRANCH – CULLEN BAY FERRY TERMINAL / FERRY PONTOON CYCLONE RESPONSE PLAN

When a CYCLONE WATCH has been issued by the Bureau of Meteorology and a decision is taken to commence securing the port area, the Marine Advisor, marine Safety Branch, Department of Infrastructure, Planning and Environment, will inform Cullen Bay Management when, or if, securing action is deemed necessary.

The following action is required by Cullen Bay Management staff:

CYCLONE WATCH (Counter Disaster Stage 1)

- A) If the Mandorah ferries are still in operation, the Masters thereof should be warned that use of the pontoon may be suspended and that they should consider shelter for their vessels, no vessel is to remain secured to the pontoon unattended.
- B) A notice to the public should be posted at the head of the walkway informing the public that closure and operation of the pontoon and terminal may be imminent.
- C) Loose materials in vicinity of the Ferry Terminal and on the pontoon to be removed or secured.

CYCLONE WARNING (Counter Disaster Stage 2)

- A) All use of the pontoon and terminal facilities, except for Emergency Services, is to be suspended and access to the pontoon and walkway barred, but pontoon access gate should be left UNLOCKED.
- B) All water and power connections to the pontoon and terminal facility are to be switched off at the main fuse panel on the terminal for electricity and at the main metering point for the water supply.
- C) Kiosk and toilet doors to be locked.

CYCLONE WARNING (Counter Disaster Stage 3)

- A) Close and lock all Australian Fuel Distributors (AFD) fuel installation storage tanks and bowsers.
- B) Drain run-down pipelines from storage tanks to bowsers, by manually closing solenoids / valves (in small shed) and drain through bowser nozzles (approx. 100 litres of each product).
- C) When run-down is completed, then turn off electric power to AFD fuel installation at sub-station.
- D) Cullen Bay Management report to Marine Adviser and Darwin Port Corporation's Operations Manager that the pontoon and terminal buildings are secured.

ALL CLEAR

After declaration of the 'ALL CLEAR', use of the terminal and pontoon should not be recommended until a thorough inspection of the structure has been undertaken and approval given by the Marina Adviser, marine Safety Branch.

Note: The Darwin Port Corporation, Operations Manager / Harbour Master will decide when the Port will be closed or reopened to vessel traffic.

CONTACTS

Darwin Port Corporation
Harbourmaster Ph: - 8947 7201

Marine Safety Branch
Ph: - 8999 5235