



ABU - Port of Barrow Island Cyclone Procedure

ABU Marine Operations

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1.0 Introduction

The Port of Barrow Island is a declared State-owned Port under the Shipping and Pilotage Act 1967. The Western Australia Department of Transport Harbour Master for the Port of Barrow Island manages the Port remotely through his Port Operating Requirements and recognising the role of the on-site Marine Superintendent.

Chevron Australia Pty Ltd is the company currently undertaking activities at the Port of Barrow Island under an arrangement with the State of Western Australia and is the operator of the Port.

The Port of Barrow Island Cyclone Procedure is intended to provide additional detail to supplement and interpret the Port Operating Requirements issued by the Harbour Master, and enable timely preparation of the Port in readiness for a tropical low or cyclone threatening to impact the Port of Barrow Island and mitigate any associated risks to personnel, the environment, Port infrastructure and assets (property).

1.1 Purpose

The purpose of this Port of Barrow Island Cyclone Procedure is to ensure that:

- All vessels planning to put to sea and/or transit to the mainland have adequate time to clear the Port and adjacent coast, in order to avoid the impact of any approaching system.
- Smaller vessels working in the Port have sufficient time to take the necessary steps to enact their cyclone plans before the onset of adverse weather and sea conditions make this activity more hazardous than normal.
- The Port is clear of all trading vessels and the Port support vessels are secured in their cyclone rated pens prior to the impact or potential impact of a tropical low or cyclone.
- The Marine Superintendent can provide clear guidance on the decision process about which marine operations can continue once a cyclone alert threat has been activated.

1.2 Scope

The scope of this document includes:

- Cyclone contingency plan requirements for Port of Barrow Island users.
 - Port of Barrow Island cyclone response stages.
 - Resumptions of operations following a cyclone response.

1.3 Objectives

The objectives of this document are to:

- Provide clarity on the triggers for cyclone response planning for the Port.
- Advise Port users of what actions will be taken at each stage of cyclone response.
- Detail what actions are required by the Port, post experiencing a cyclone event and prior to recommencing operations.

1.4 Target Audience

This document is intended for use by:

- The Harbour Master
- Barrow Island and Perth Marine Operations Team

- Barrow Island Emergency/Cyclone Management personnel.
- Chevron Australia Emergency/Cyclone management personnel.
- Lifters and Lifting Co-ordinators.
- Barrow Island Gas Plant Ownership and Operating Agreement (BGPA) Operators.
- LNG, Condensate and Oil tanker operators.
- LNG, Condensate and Oil tanker personnel.
- Supply Chain Management and Shore Base Co-ordinators.
- Vessel Masters and management for vessels based at, visiting or trading to the Port of Barrow Island.

1.5 Acronyms and Abbreviations

Table 1-1: Acronyms and Abbreviations

| Acronym/Abbreviation | Meaning |
|------------------------|---|
| ABU | Chevron Australia Business Unit |
| BoM | Bureau of Meteorology |
| BWI | The Port of Barrow Island |
| CBM | Conventional Buoy Mooring operated by WA Oil |
| CCP | Cyclone Contingency Plans |
| CCG | Cyclone Coordination Group |
| GMT | Gorgon Marine Terminal comprising of the LNG/Condensate Jetties East and West |
| Harbour Master | The Western Australia Department of Transport Harbour Master for the Port of Barrow Island |
| nm | Nautical miles |
| Marine Operations Team | The BWI Marine team headed by the Marine Superintendent and including Marine Pilots and Marine Communications Operators (MCO's) |
| Marine Superintendent | Means the individual or his/her delegate, recognised by the Western Australia Department of Transport as responsible for ensuring that the Port adheres to Commonwealth & State maritime legislation and the WA DoT Harbour master's representative for the Port of Barrow Island |
| Port | The Port of Barrow Island |
| PIC | Person In Charge of the Barrow Island Gorgon Facility |
| SCM | Supply Chain Management |
| SSU | BoM Special Services Unit |

2.0 Procedure Overview

2.1 Cyclone Threat Monitoring

The Port of Barrow Island receives daily weather forecasts from the Bureau of Meteorology - Special Services Unit (SSU). The forecasts will be distributed via electronic mail to vessel's masters and personnel engaged with operations within the Port of Barrow Island. During the cyclone season, cyclone and tropical low development forecasts are received daily. When there is potential for a system to develop, forecasts are broadcast at six hourly intervals. The forecast frequency is increased to three hourly updates following the 'named' development of a tropical low or cyclonic system.

2.2 The Barrow Island Cyclone Coordination Group (CCG)

When a forecast indicates that there is potential for a system to develop, the Cyclone Coordination Group (CCG) will convene to resolve any potential factors that may be required in the cyclone threat assessment. The group includes the Barrow Island PIC, Port of Barrow Island representative(s) (Marine Superintendent) and Emergency Management, along with key operational personnel. Several factors will influence the demobilisation of vessels including tug availability, pilot availability, vessel operational requirements, plant operational requirements, localised weather conditions and pilotage limitations (e.g., weather, tide, UKC).

To assist in the decision-making process at this meeting and prioritisation of vessel demobilisation, the Port of Barrow Island representative will source additional information from the following personnel:

- Pilot/Loadmaster and export vessel Master.
- Lifting Coordinator.
- Production Operations Superintendent.
- ABU Marine Supply Chain Management and Logistics.
- Tug and Pilot vessel operator.

Information required from the above personnel will include:

- Details of their vessels that are operating in the Port.
- Vessel Masters' intentions for demobilisation.
- Any limitations for sailing, e.g., loading status; stability & stress condition; machinery or propulsion limitations and any other considerations or limiting factors.
- Operational constraints on the Jetty and Production systems.
- Recommended demobilisation priority.

2.3 Cyclone Threat Assessment

Key to the decision-making process in declaring a cyclone alert are the time frames required to activate the resources and plans necessary to continue Port operations where possible, prepare vessels for departure, ensure the safety of personnel and ensure the safe haven for BWI based marine assets. The decision to declare a cyclone alert state will be based on worst-case scenarios and, in most cases, will ensure adequate margins of safety are applied for all personnel and vessels operating at BWI.

To that end, the decision to clear the Port may be made ahead of any of action directed by regulators or by other operators from this same region.

2.4 Cyclone Contingency Plans

In accordance with the Port of Barrow Island Information Manual and Barrow Island Terminal Regulations (approved by the Harbour Master's operating requirements), vessel operators shall ensure that each vessel operating in the Port has an appropriate cyclone contingency plan or procedure in place that is approved by the Marine Superintendent, and that vessel Master's are familiar with the plan. Such plans or procedures should ensure that vessels have an adequate response time to proceed to sea or proceed to the adjacent coast to avoid the impact of any approaching cyclonic event.

Prior to the commencement of cyclone season, marine contractors operating in the Port shall confirm to the Marine Superintendent that they have reviewed their Cyclone Contingency Plans and provide a copy of any updated or revised procedures.

2.5 Cyclone Season

Cyclone season in the northwest region of Australia is during the months between 1 November and 30 April. There are no safe havens or cyclone rated moorings located within the Port other than the tug pens, which are for exclusive use of the Gorgon Marine Terminal (GMT) tugs and pilot boat.

3.0 Cyclone Response

The Port of Barrow Island will employ a staged response to a cyclone threat; each vessel operator will comply with their own CCP, however where their staged response lags behind the BWI cyclone response, these procedures take precedence and will form the primary guidance for all vessels within the Port.

Table 3-1: Port of Barrow Island Cyclone Response Stages

| Stage | Key Action | Description |
|-------|------------|---|
| 1. | Monitor | Tropical cyclone or tropical low (System) has formed within 800nm (1500km) and is tracking towards Port. |
| 2. | Prepare | System approaches or develops within 400nm (750km) and is tracking towards Port, with potential for impact. |
| 3. | Clear Port | System approaches or develops within 300nm (550km) and/or gale force winds are forecast to affect the Port within 24 hours. |
| 4. | Close Port | System approaches or develops within 200nm (370km) and/or gale force winds expected to affect the Port within 12 hours. |
| 5. | Open Port | Cyclone or threat of cyclone has passed – damage assessment and recovery. |

In the event that vessels are required to proceed to sea for cyclone avoidance, the Gorgon Marine Terminal sequence for sailing Trading vessels will generally be, but not restricted to the following order:

1. Membrane LNG Carriers.
2. MOSS LNG Carriers.
3. Condensate/Crude Tankers.

This sequence may vary depending on the vessel's loaded condition, weather conditions and the priorities determined by the BWI Marine Operations team in consultation with the Cyclone Coordination Group.

IMPORTANT NOTICE:

Consultation between the Marine Superintendent and the Harbour Master will ensure appropriate staging is announced at the appropriate times and disseminated accordingly to vessels within or scheduled to call at the Port.



The Master of a vessel within the Port retains responsibility for ensuring the safety of his/her personnel and of the vessel. Notwithstanding the vessel operator's own CCP, where a vessel operators staged response lags behind the BWI cyclone response, these procedures will take precedence and will form the primary guidance for all vessel Master's within the Port.

3.1 Stage 1 – Monitor

SSU Warnings indicate that a tropical cyclone or low has formed or moved within 800nm (1,500kms) of the Port of Barrow Island and is tracking towards Port or that there is potential for a system to develop.

- The Port of Barrow Island cyclone response procedure will be implemented.
- The Marine Superintendent will monitor the development of the system.

- The Marine Superintendent will promulgate warnings and advice to Port users via electronic mail or by VHF or telephone where this is not possible.
- The Marine Superintendent will plan for a possible Port closure.
- There are no restrictions on vessel movements.
- Notify Chevron Marketing & Digital Communications to update Cyclone status on Port of Barrow Island Website

3.2 Stage 2 – Prepare

A tropical cyclone or low is tracking towards the Port, is within 400nm (750kms) and has the potential to affect the Port of Barrow Island.

- After consultation with the Harbour Master, the Marine Superintendent will promulgate warnings and advice to Port users via electronic mail or by VHF or telephone where this is not possible.
- The Port of Barrow Island will commence preparations for a cyclone impact.
- The Marine Superintendent will instruct Port users to commence implementing their cyclone plan or procedure if they have not already done so.
- Timelines for Port departure need to be developed to ensure that preparations, which may require significant lead-time, are commenced at an appropriate point to ensure their completion before cyclonic conditions affect the Port of Barrow Island. The timelines should consider the following
- Time required for cargo / ballasting operations to be completed to the required safe stage where for the vessel is able to sail.
- Time required for GMT Marine Loading Arm (MLA) draining, purging and disconnection.
- Time required by vessels to reach safe waters ahead of approaching cyclones (by consultation with vessel Master).
 - There are no restrictions on general vessel movements. Specific GMT/CBM vessel considerations are detailed in sub paragraphs below.
 - During cargo loading, a minimum of one tug is to be on standby at the tug pen. Off duty tugs are to remain on call for an early departure scenario.
 - Vessel movements or loadings are subject to the forecast weather conditions, localised weather, tide and tidal streams.
 - Notify Chevron Marketing & Digital Communications to update Cyclone status on Port of Barrow Island Website.

3.2.1 Condensate Tanker

- Decisions to berth Condensate Tankers will be made by the Marine Superintendent in consultation with the CCG and based on the localised weather/tidal conditions and the forecasted potential for a system to impact the Port.
- There are no restrictions for Condensate Tankers loading at the GMT. Masters are to be kept informed of the situation and are to make early calculations to establish proposed timelines should the system continue to close in on the Port.

3.2.2 Moss LNG Carrier

- Decisions to berth Moss LNG Carriers will be made by the Marine Superintendent in consultation with the CCG and based on the localised weather/tidal conditions and the forecasted potential for a system to impact the Port.
- LNG Carriers may continue loading provided the localised weather forecasts indicate a vessel can safely proceed to sea prior to the onset of Stage 4 and with the consultation and approval of the BWI Marine Operations Team.

3.2.3 Membrane LNG Carrier

- Decisions to berth Membrane Carriers will be made by the Marine Superintendent in consultancy with the CCG and based on the localised weather/tidal conditions and the forecasted potential for a system to impact the Port.
- A Membrane carrier alongside at the declaration of Stage 2 will not proceed to load past the lower sloshing limit (in each tank) unless it can load or transfer sufficient cargo to safely achieve the upper sloshing limit before the forecast time for the declaration of Stage 3.
- A Membrane LNG carrier alongside that is loaded between lower and upper sloshing levels at the declaration of Stage 2 must carefully plan and understand timings to achieve safe sloshing limits in the event of early departure and before the declaration of Stage 3.
- Approval to load or continue loading must be in consultation with the BWI Marine Operations Team and will be granted by the Marine Superintendent.

3.2.4 Oil Tanker – WA Oil CBM

Decisions to berth oil tankers at the WA Oil CBM will be made by the Marine Superintendent in consultation with the CCG and WA Oil, based on the localised weather/tidal conditions and the forecasted potential for a system to impact the Port.

There are no restrictions to movements or loadings. Masters are to be kept informed of the situation and developments.

3.3 Stage 3 – Clear Port

A tropical cyclone or low continues tracking towards the Port of Barrow Island, is within 300nm (550kms) and has the potential to impact the Port. Gale force winds are expected to affect the Port of Barrow Island within 24 hours.

- After consultation with the Harbour Master, the Marine Superintendent will continue to promulgate warnings and advice to Port users via electronic mail or by VHF or telephone where this is not possible.
- The Marine Superintendent will ensure that preparations are underway to ensure that the Port of Barrow Island and its anchorages will be cleared of all vessels at short notice.
- All trading vessels must ensure that they will be able to depart and be clear of the Port of Barrow Island Port limits at least 12 hours prior to the forecast onset of gale force winds. This timeframe is to ensure that all vessels have an adequate margin of safety to clear the coast and navigate open waters with a margin of safety and prior to the onset of cyclonic conditions.
- Sufficient tugs will remain on standby as required to assist a vessel to sail at short notice.

- Port users shall advise the Marine Superintendent once they have completed their cyclone preparations and are ready to sail via electronic mail or by VHF or telephone where this is not possible.
- Trading vessels will not be permitted to arrive at the Port facilities unless prior permission is granted by the Marine Superintendent. Permission for trading vessels to arrive will only be considered for extenuating circumstances i.e., emergencies, medical evacuation etc.
- Notify Chevron Marketing & Digital Communications to update Cyclone status on Port of Barrow Island Website.

3.3.1 LNG Carriers and Tankers

- At the declaration of Stage 3, tanker loading at the CBM, or LNG carriers / Tankers alongside the GMT are to make all necessary preparations to be able to depart within 1-hours' notice. Readiness to sail must take into consideration tidal heights, localised weather, and current/tide as well as the time required to disconnect any loading arms in a safe and controlled manner. LNG Carriers or Tankers may also need time to prepare with respect to transferring cargo or ballast and ensure adequate stability criteria are met.
- Where one or more vessels remains alongside the GMT, the GMT assist tugs will remain on permanent standby in the tug pen to assist with the departure of vessels from the GMT at short notice.
- The Marine Superintendent will require all LNG Carriers and Tankers to depart the Port prior to declaring Stage 4 of this Cyclone Procedure.

3.4 Stage 4 – Port Closed

A tropical cyclone or low continues tracking towards the Port of Barrow Island, is within 200nm (370kms) and is likely to impact the Port of Barrow Island. Gale force winds are expected to affect the Port of Barrow Island within 12 hours.

- Where possible, the Marine Superintendent, in consultation with the Harbour Master will continue to promulgate warnings and advice to Port users via electronic mail or by VHF or telephone where this is not possible.
- The Port of Barrow Island will be closed to all vessels except those wishing to transit the Port of Barrow Island enroute to safer waters.
- The Port of Barrow Island will be closed to all commercial operations, including activities not associated with Chevron.

3.5 Stage 5 – Open Port – Resume Normal Operations with Caution

- Once the cyclone or threat of cyclone has passed and conditions permit, the Port of Barrow Island will be re-opened. This may be a phased process, dependent on wind and sea conditions, damage assessment and recovery. Note: If safe to do so, this stage can be initiated at any time through this process. The Marine Superintendent, in consultation with the Harbour Master will notify users via electronic mail or by VHF or telephone where this is not possible, when the Port of Barrow Island has re-opened
- Typically, the actual and forecast winds are to be less than gale force (approx. 55km/h – 30kts) with commensurate sea conditions before the Port of Barrow Island will be re-opened.
- In some circumstances, the resumption of normal operations may include restrictions. Examples could include the closure of berths or areas of caution/restriction for vessels to operate in. Any restrictions will be advised

through the 'Open Port' notification process. If there are no cautions/restrictions advised in the 'Open Port' notification, operators can assume that all normal operations can be conducted.

- If there are any conditions warranting cautions/restrictions over an extended period of time (e.g., damage to Navigational Aids), the Marine Superintendent will issue a relevant Marine Notice for the Port of Barrow Island.
- Operators and Masters will need to make their own assessment as to the suitability of prevailing conditions for the safety of their particular operation.
- Some restrictions on vessel berthing and movements may still be in force.
- Notify Chevron Marketing & Digital Communications to update Cyclone status on Port of Barrow Island Website.

3.6 Resumption of Normal Port Operations

In order to ensure that facilities within the Port of Barrow Island are safe, prior to the resumption of operations, operators shall confirm to the Marine Superintendent that berths and any associated navigation aids and channels are serviceable and safe for operations. Of particular concern are:

- The ability to provide a safe berth.
- Fendering and mooring arrangements.
- Ship shore interface equipment.
- Charted depths alongside or in a berth are confirmed.
- Navigation aid's location verified and lit;
- Channel charted dimensions (depth and width) confirmed.

Any damage to berth facilities, channels or navigation aids shall be reported to the Marine Superintendent as soon as possible, and where appropriate, warnings will be issued by the Marine Superintendent via Marine Notice(s).

4.0 Roles, Responsibilities and Competencies

The following table outlines the roles, responsibilities and competencies associated with this document.

Table 4-1: Roles, Responsibilities and Competencies

| Role | Responsibilities |
|--------------------------|---|
| Marine Superintendent | <ul style="list-style-type: none"> • The BWI Marine Superintendent (PC) is responsible to the BWI Person In Charge (PIC) for the implementation of the Port Cyclone Procedure. The PC will consult with Port operators to ensure timely execution of these procedures to ensure that the Port is prepared for the onset of cyclonic conditions. • The PC is to review these procedures annually, prior to commencement of cyclone season. The PC is also to ensure any changes to these procedures are communicated to the relevant stakeholders (e.g., Port Regulator and BWI Emergency Management Coordinator). • After a cyclone event, the Marine Superintendent will coordinate efforts to re-establish operations and confirm the Port is ready to be re-opened for normal operations. • Consult with the Harbour Master and adjacent Ports (e.g., Dampier Port) of intentions to close/open Port |
| Vessel Masters/Operators | <ul style="list-style-type: none"> • The Master of a vessel within the Port retains responsibility for ensuring the safety of the vessel and those onboard. Notwithstanding the vessel operator's own cyclone procedures, the Master of a vessel operating within the Port shall be guided by these cyclone procedures. |

5.0 Continual Improvement

This document is to be reviewed annually, prior to commencement of cyclone season.

6.0 References

The following documentation is either directly referenced in this document or is a recommended source of background information.

Table 6-1: References

| Ref. No. | Description | Document ID |
|----------|--|--------------|
| 1. | Chevron ABU Marine Oil Pollution Plan | OE-11.01.101 |
| 2. | Barrow Island Port Information Manual | GOR-COP-0176 |
| 3. | ABU - Cyclone Response Plan | OE-11.01.112 |
| 4. | ABU – Emergency Contact Directory | OE-11.01.142 |
| 5. | HR Wallingford Tidal Stream Predictions | |
| 6. | Gorgon - Barrow Island Terminal Regulations Manual | GOR-COP-0174 |