1.0 Introduction

Vessels transiting within port limits from the Barrow Island Pilot Boarding Ground (PBG) to the Materials Offloading Facility (MOF) require an approved passage plan which can be shared between Pilots and vessel Masters. This work instruction has been compiled in accordance with documents *GOR-COP-0187 - Pilot Passage Plan Guideline* and approved according to *GOR-COP-0186 - Passage Plan Approval Procedure*.

1.1 Purpose

This work instruction details the navigation route between the PBG and the MOF, providing Pilots, Masters and Bridge Navigation Teams sufficient information to conduct a vessel along the route in a safe and controlled manner whilst minimising risk to personnel, environment and property.

1.2 Scope

This Work Instruction begins when a vessel arrives at the PBG and concludes when it reaches an assigned berth within the MOF.

CAUTION:

This passage plan is tidally restricted for vessels with drafts greater than 4.5m. All vessels must maintain a UKC of at least 1.0m or 15% of maximum draft (whichever is the greater).

Caution must be taken when using buoys for navigation, particularly post severe storm/cyclone activity.

The vessel may not have the controlling draft and therefore the drafts of assist vessels must be considered.

1.3 Target Audience

This work instruction is primarily intended for use by ABU Marine Pilots, vessel Masters and vessel Bridge Navigation Teams.

1.4 Acronyms and Abbreviations

The below table defines the acronyms and abbreviations used in this document

Acronym/Abbreviation	Meaning
AMSA	Australian Maritime Safety Authority
BWI	Barrow Island
CBM	Conventional Buoy Mooring
CD	Clearing Distance
ECDIS	Electronic Chart Display and Information System
JHA	Job Hazard Analysis
kts	knots
m	metres

Acronym/Abbreviation	Meaning
MOF	Materials Offloading Facility
MPX	Master Pilot Exchange
nm	Nautical miles
OOW	Officer of the Watch
PBG	Pilot Board Ground
Pilot	ABU Marine Pilot
PI	Parallel index
PPU	Portable Pilotage Unit
SOLAS	International Convention for Safety Of Life At Sea
UKC	Under Keel Clearance
XTE	Cross Track Error

2.0 Waypoint Bank

Waypoint	Reference	Latitude	Longitude
WP001	PBG	20°48.60'S	115°36.00'E
WP002	SE CBM	20°49.74'S	115°33.72'E
WP003	Outer Leads	20°48.00'S	115°30.25'E
WP004	Inner Leads	20°47.70'S	115°28.81'E
WP005	Berth	Various	Various

3.0 Route Bank

Route	Waypoint Sequence
4.0 Passage Plan - PBG to Materials Offloading Facility (MOF)	WP001, WP002, WP003, WP004, WP005

4.0 Passage Plan - PBG to Materials Offloading Facility (MOF)

Waypoint	WP001 (PBG)	• Pilot will board at the PBG as shown on AUS 62. • Vessel and Pilot Boat are to discuss and agree on vessel speed and heading prior to transfer, ensuring a good lee is provided for boarding. The pilot ladder will be rigged as per *SOLAS 2010 Chapter V Reg 23* as amended and secured to a height above the waterline as requested by the Pilot Boat. • Pilot will setup and use PPU for the passage as an independent means of position fixing. • Pilot, Master and Bridge team will conduct MPX fully explaining No Go Zones, abort points and other relevant information. • The Pilot will detail the manoeuvring of the vessel to the berth, including mooring arrangements and tug configurations as part of the MPX. • Anchors are to be cleared away and ready for letting go prior to entering port limits. • Call the Port of Barrow on VHF Ch10 when crossing Port Limits. • Parallel indexing to be setup and utilised throughout passage. • Extra caution to be taken in vicinity of the PBG due to the potential for converging traffic. • At the PBG, the Flood tide sets to the South West. The Ebb tide sets to the North East. • Environmental data, including tidal flow and wind conditions for the passage will be available to the Pilot and communicated to vessel Master. • In the event of any failure, the vessel will (if possible) return to port limits or anchor (being aware of any obstructions). • Night operations may require additional or alternate position fixing due to backscatter and masking of lights due to shore lights.
Latitude	20°48.60'S	
Longitude	115°36.00'E	
Course	242°T	
Speed	~6 to 10kts	
Leg Distance	2.4nm	
Minimum Depth at CD	10.0m	
Maximum Cross Track Error	200m	
Primary Fixing	Visual/PPU	
Secondary Fixing	GPS/RADAR	
Parallel Index		

Waypoint	WP002 (SE CBM)	• The CBM to the North of the track is considered a No Go Zone. • No Go Zones exist to the North of the track until clear of the Lowendal Shoal. • When vessel is on a steady heading/speed ~6kts, tugs can be made fast in vicinity of CBM. • Beware of converging traffic in the vicinity of the South Cardinal Mark. • The Flood tide sets to the South West. The Ebb tide sets to the North East. • When abeam of the South Cardinal Mark, report to the Port of Barrow on VHF Ch10 and gain permission to enter the MOF (also close the MOF and associated channel to other traffic). • In the event of any failure, the vessel will (if possible) return to port limits or anchor (being aware of the oil pipeline and other obstructions).
Latitude	20°49.74'S	
Longitude	115°33.70'E	
Course	298°T	
Speed	~6kts	
Leg Distance	3.7nm	
Minimum Depth at CD	6.0m	
Maximum Cross Track Error	50m	
Primary Fixing	Visual/PPU	
Secondary Fixing	GPS/RADAR	
Parallel Index	LNG 1 at 0.4nm	

Waypoint	WP003 (Outer Leads)	• Final planned abort position is abeam of H5. • MOF leading lights and sector lights can be utilised if transiting the main channel. • Be aware of traffic departing the MOF. • Be aware of potential backscatter on this leg due to shore lights. • Call the Port of Barrow on VHF Ch10 when passing MOF1/2 inbound. • The Flood tide sets to the South. The Ebb tide sets to the North. • When transiting the main channel, the Flood tide is generally strongest in the vicinity of HB5 and the Ebb tide is generally strongest when close to the breakwater. Caution must be used in determining tidal flow due to variations. • When tide and vessel's draft permits, an emergency escape route to the North between MOF1/3 or to the South between MOF2/4 can be considered for the main channel. • Effect of tide diminishes when entering the MOF basin. • Test communications with tugs and ensure they are all aligned with the planned manoeuvre. • In the event of any failure, the vessel will continue to the swing basin or proceed to anchor, clearing any obstructions with tug assistance.
Latitude	20°48.00'S	
Longitude	115°30.25'E	
Course	282°T	
Speed	~3 to 6kts	
Leg Distance	1.4nm	
Minimum Depth at CD	5.5m	
Maximum Cross Track Error	50m	
Primary Fixing	Visual/PPU	
Secondary Fixing	GPS/RADAR	
Parallel Index	Breakwater at 0.05nm	

Waypoint	WP004 (Inner Leads)	• At night, visual references ahead of the vessel are limited. As such, a greater reliance on radar fixing and PI methods may be required. • The swing basin is 320m in diameter. • If necessary, reconfigure tugs in the swing basin. • Rate of turn shall be monitored. • Ensure adequate clearing distances between the vessel (and her tugs) and any obstructions, such as other vessels, navigational marks and mooring dolphins. • Manoeuvring on approaches to the berth to be done at slow speed (less than 1 knot over the ground). • Depths outside of MOF basin are generally too shallow and, as such, the area outside of the MOF is considered a No Go Zone. • In the event of a failure, and depending on the situation, the vessel will hold position in the swing basin, proceed to a safe berth or proceed to anchor, clearing any obstructions with tug assistance. • Call Port of Barrow on VHF Ch10 once first line is ashore and again when all fast. • Release and dismiss the tugs. • Pilot will normally disembark by Pilot Boat. The vessel is to follow any instruction from the Pilot Boat in regards to the rigging of the ladder. The pilot ladder will be rigged as per *SOLAS 2010 Chapter V Reg 23* as amended and secured to a height above the waterline as requested by the Pilot Boat.
Latitude	20°47.70'S	
Longitude	115°28.81'E	
Course	Various	
Speed	<1kts	
Leg Distance	Various	
Minimum Depth at CD	6.5m	
Maximum Cross Track Error	N/A	
Primary Fixing	Visual/PPU	
Secondary Fixing	GPS/RADAR	
Parallel Index	N/A	

5.0 Execution of Passage Plan – Expectations

5.1 Notes for Master and Bridge Team

- Prior to commencing the passage inbound, the Master is to review the passage plan and plot the plan onto the appropriate charts or ECDIS system, briefing his/her Bridge teams accordingly. Any concerns or questions are to be raised with the Pilot prior to commencing the passage.
- In accordance with AMSA regulations, all charts (paper and electronic) and navigational publications must be corrected to the latest edition of the Australian and Western Australian Notices to Mariners, including any applicable Temporary Notices to Mariners that may be in force. Additionally, the vessel it to have available and understand the BWI Marine Notices that are in force. BWI Marine Notices and other relevant port information are located on the Port of Barrow Island website.

  https://www.chevronaustralia.com/our-businesses/barrow-island/barrow-island-port
- Charts required for the passage are the latest editions of Australian Hydrographic charts AUS 62, AUS 65, and AUS 66.
- Any deficiencies that may affect the vessel's operating performance are to be reported to the Pilot at the first available opportunity prior to commencing the passage inbound.
- All bridge navigational equipment must be switched on and functioning correctly prior to the Pilot boarding. All navigation systems, including paper charts, are to be arranged and displayed so that the Pilot can quickly determine the vessel's position, course and speed at any time during the passage.
- Anchors are to be cleared away and ready for letting go prior to the Pilot boarding.
- A MPX involving the Pilot, Master, and Bridge team will be conducted after the Pilot has arrived on the bridge. The Pilot will take conduct of the vessel at the conclusion of the MPX.
- To ensure an appropriate level of BRM, Pilots utilise a "Closed Loop" system of communications for the relay of orders. The Master/OOW is to ensure the bridge is managed such that all orders can be clearly heard, understood and responded to. The Master/OOW is to monitor course, helm orders and engine settings to ensure compliance with the Pilot's directions.
- Pilotage is compulsory for the Port of BWI and the Pilot will have the conduct of the vessel at all times whilst manoeuvring within port limits. It is acknowledged however, that the Master always remains in overall command of his vessel. Adhering to good BRM principles, Pilots actively encourage a "Challenge and Response" environment. If at any time the Master/OOW is unsure of the actions being taken, they are to challenge the Pilot and vice versa.
- Ship's position, proximity to dangers and UKC should be continuously monitored by the Master/OOW and cross-referenced with the passage plan. If the Master leaves the bridge, the OOW must always seek clarification from the Pilot when in any doubt as to the Pilot's actions or intentions.
- It is important to keep formal records of all navigational activities and any incidents in the appropriate Bridge Movement Logbook. Information recorded should be of an

appropriate standard so that the vessel's progress in to the Port can be reconstructed at a later date.

5.2 Notes for the Pilot

- Conduct of the vessel will be assumed by the Pilot in an unambiguous manner.
- The Pilot will assist the Bridge team to ensure radar conspicuous points, parallel indexing and any clearing bearings/ranges are properly understood.
- For each leg of the passage the Pilot is to brief the Master on the required fixing interval and methods used to determine ship's position. In determining the most appropriate fixing method and interval the following will be taken into consideration:
  - The state of wind, sea and weather
  - Proximity to navigational dangers
  - Traffic density
  - Manoeuvring characteristics of the vessel
  - Navigational equipment available, and
  - How position data is displayed, i.e. ECDIS or paper charts
- The Pilot is to ensure all navigation hazards (e.g. No Go Zones) are clearly marked on the chartlet.
- The Pilot will ensure tug and communication protocols are explained fully.
- If for any reason prior to commencing the passage plan, there is a need to deviate from the standard passage plan, a revised passage plan will be formulated and agreed between the Pilot and Master; any additional hazards will be identified and any mitigations/controls shall be detailed in an appropriate JHA.
- When manoeuvring vessels such that they are closing to within 50 metres of a fixed jetty, wharf or other moored vessel, approach speeds are to be less than 1.0 knot in order that all way can be taken off the vessel quickly and in a controlled manner, preventing any unplanned close quarters contact with said shore facilities or vessels.

If there is a need to deviate from the passage plan for any reason, the Bridge team must be fully briefed as to the Pilot's intentions, and the Pilot should make every opportunity to return to the passage plan as soon as possible.

6.0 Document Control

6.1 Ownership

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6.2 Revision History

Rev	Description	Date	Prepared By	Approved By
1.0	Approved for Use	27 April 2016	Cameron Crampton	Brad Ryman