1.0 Introduction

Vessels transiting within port limits from the Barrow Island Outer Pilot Boarding Ground (PBG) to the Gorgon Marine Terminal (GMT) via the primary route, require an approved passage plan which can be shared between Pilots and vessel Masters. This work instruction has been compiled in accordance with SOLAS chapter V (Annex 24 and Annex 25) which provides the legislative guidance for passage planning.

1.1 Purpose

This work instruction details the navigation route between the PBG and the GMT, 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 outer PBG and concludes when it reaches an assigned berth at the GMT.

CAUTION:
Caution must be taken when using beacons for navigation, particularly post-severe storm/cyclone activity.

1.3 Target Audience

This work instruction is intended for use by ABU Marine Pilots, vessel Masters and 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
BITR	Barrow Island Terminal Regulations
BWI	Barrow Island
CBM	Conventional Buoy Mooring
CD	Clearing Distance
ECDIS	Electronic Chart Display and Information System
ETA	Estimated Time of Arrival
GMT	Gorgon Marine Terminal
JHA	Job Hazard Analysis
kts	knots
m	metres
MOF	Materials Offloading Facility

Acronym / Abbreviation	Meaning
MPX	Master Pilot Exchange
nm	Nautical miles
Pilot	BWI Marine Pilot
PS	Port Superintendent
OOW	Officer of the Watch
PBG	Pilot Boarding Ground
PEL	Sectored leading light
PI	Parallel index
PP	Passage Plan
PPU	Portable Pilotage Unit
SMS	Safety Management System
SOLAS	International Convention for Safety Of Life At Sea
RPM	Revolutions per minute
UKC	Under Keel Clearance
W/O	Wheel Over
XTE	Cross Track Error

2.0 Waypoint Bank

Waypoint	Reference	Latitude	Longitude
WP001	Outer PBG	20° 47.60'S	115° 38.00'E
WP002	LNG 4	20° 50.52'S	115° 32.15'E
WP003	Turning Basin	20° 49.11'S	115° 29.81'E

3.0 Route Bank

Route	Waypoint Sequence
Passage Plan – PBG to Gorgon Marine Terminal – Primary Route	WP001, WP002, WP003

4.0 Passage Plan – PBG to Gorgon Marine Terminal – Primary Route

Waypoint	WP001 (Outer PBG)
Latitude	20° 47.60'S
Longitude	115° 38.00'E
Course	242°T
Speed	~8kt
Leg Distance	6.2nm
Minimum Depth at CD	13.3m
Maximum Cross Track Error	200m
Primary Fixing	Visual/PPU/ECDIS
Secondary Fixing	RADAR
Parallel Index	LNG 5 242°/0.24nm

- Pilot will board at the outer PBG (20° 47.60'S, 115° 38.00'E).
- 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.
- At the PBG, the Flood tide sets to the South West. Ebb tide sets to the North East.
- Pilot will setup and use a PPU for the passage as an independent means of position fixing.
- Pilot to have completed a UKC calculation for the passage.
- The Pilot will detail the manoeuvring of the vessel to the berth, including mooring arrangements and tug configurations as part of the MPX.
- Confirmation that the main engine has been tested ahead and astern prior to crossing port limits and recorded in the ship's log and MPX form.
- Anchors are to be cleared away and ready for letting go prior to entering port limits.
- Appropriate PI to be setup and utilised throughout passage.
- Environmental data, including tidal flow and wind conditions at the Jetty head will be available to the Pilots and communicated to vessel Master.
- Call the Port of Barrow on VHF 10 when crossing Port Limits.
- Two terminal tugs will rendezvous with the vessel at Port Limits and make fast.
- Test communications with tugs and ensure they are all aligned with the planned manoeuvre.
- Night operations may require additional or alternate position fixing due to masking of navigation lights due to back scatter.
- Extra caution to be taken in vicinity of the PBG due to the potential for converging traffic.
- In the event of any failure, the vessel will (if possible) return to port limits or anchor (being aware of any obstructions).
- A 1-mile radius turn is to be implemented when LNG 3 and LNG 5 are in transit (W/O position) for the alteration of course to starboard onto the next course leg.

Gorgon Pilotage Passage Plan
PBG to Gorgon Marine Terminal - Primary Route

Waypoint	WP002 (LNG 4)	• Additional terminal tugs as required to rendezvous with vessel in vicinity of LNG 5 and make fast. • Suitable number of tugs are to be made fast prior to passing LNG 6 & 7 beacons. • Prior to passing LNG beacons 6 and 7 the Pilot is to inform the Port of the vessel's expected time for first line and confirm that any vessel occupying the adjacent berth is aware of the arriving vessel movements. • When approaching LNG 6 and 7 beacons, the vessels speed will be adjusted ensuring good steerage way for the channel transit and a controlled deceleration for the manoeuvre into the turning basin. • Be aware of potential back scatter on this leg due to shore lights. • The main leads maybe obscured on this leg due to vessels at the berth. Always positively identify and monitor the PEL light as backup for the main leading lights on the passage inbound. • Flood tide sets to the South. Ebb tide sets to the North.. • Abort Point is 0.7nm from the channel entrance (LNG 6 and LNG 7). • When the vessel passes LNG 6 and 7 beacons it is committed to the channel and will ground if it departs the channel boundaries. • Vessel's speed will be adjusted for final leg of passage in preparation for manoeuvring.
Latitude	20° 50.52'S	
Longitude	115° 32.15'E	
Course	303°T	
Speed	~ 6.0kt	
Leg Distance	2.6nm	
Minimum Depth at CD	13.3m	
Maximum Cross Track Error	50m	
Primary Fixing	Visual/PPU/ECDIS	
Secondary Fixing	RADAR	
Parallel Index	LNG 12 – 303º/0.38nm	

Gorgon Pilotage Passage Plan
PBG to Gorgon Marine Terminal - Primary Route

Waypoint	WP003 (Turning Basin)
Latitude	20° 49.11'S
Longitude	115° 29.81'E
Course	Various
Speed	Various
Leg Distance	N/A
Minimum Depth at CD	13.3m
Berth Alignment	000°T/180°T
Maximum Cross Track Error	N/A
Primary Fixing	Visual/PPU/ECIDS
Secondary Fixing	RADAR
Parallel Index	N/A

- Flood tide sets to the South. Ebb tide sets to the North.
- Vessels will swing to port in the Turning Basin and berth "Head Out". Any exceptions to this will be discussed during the MPX.
- The Turning Basin is approximately 850m long x 650m wide.
- Care to be taken during manoeuvring to ensure tugs are not placed into danger with navaids, etc.
- Pilot will monitor the wharf berthing aids to ensure safe closure rate with the fenders.
- The vessel is to be landed close to the final position and parallel to the line of the wharf.
- Maximum landing speed is 10cm/s.
- No lines to be run without permission from the Pilot.
- The mooring plan is to be reiterated to the Master prior to running mooring lines.
- Pilot to establish communication with the mooring teams prior to running mooring lines.
- Pilot to ensure ship personnel positioning the vessel (at the manifold) is aware of the shore positioning mark.
- Tugs may be utilised to manoeuvre the vessel into its final mooring position.

5.0 Execution of Passage Plan – Expectations

5.1 Notes for Master and Bridge Team

- Prior to arriving at the PBG 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 Port or Pilots prior to the vessel arriving at the PBG.
- 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 Notice to Mariners, including any applicable Temporary Notices to Mariners that may be in force. Additionally, the vessel is 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 chart AUS 65 and the relevant ENC cells.
- In accordance with the *GOR-COP-0174 - Gorgon - Barrow Island Terminal Regulations* any deficiencies that may affect the vessel's operating performance are to be reported in the appropriate ETA notice. Any deficiencies that occur after the 24-hour ETA is sent are to be reported to Pilots at the first available opportunity.
- 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 position, course and speed when first arriving on the bridge and at any stage during the passage.
- Anchors are to be cleared away and ready for letting go prior to the Pilot boarding.
- An MPX involving the Pilot, Master and Bridge Team, will be conducted after the Pilot has arrived on the bridge and verified the ship's position. 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 always have the conduct of the vessel 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 into 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.
- The Pilot will ensure tug numbering and communication protocols are explained fully.
- The Pilot is to ensure all navigation hazards (e.g. no-go zones) are clearly marked on the chartlet.
- In order to adhere to Port of Barrow Island UKC requirements the Pilots will complete either:
    a. *GOR-COP-0254 - Gorgon – UKC Calculation Sheet – LNG Carriers,*
    b. *GOR-COP-0253 - Gorgon – UKC Calculation Sheet – Condensate Carriers*

  This calculation may result in the transit being tidally restricted.
- If for any reason prior to commencing the transit, there is a need to deviate from the passage plan, a revised passage plan will be formulated and agreed between the Pilot and Master. Identified hazards and supporting mitigation/controls will be noted in the MPX and the PS shall be informed prior to executing the revised plan.
- The Pilot shall inform the Port Superintendent if the vessel's machinery, steering gear or bridge equipment is unserviceable or operating in a restricted capacity. The Pilot and PS will discuss mitigation strategies and will determine if the vessel can enter Port Limits. Identified hazards and supporting mitigation/controls will be noted in the MPX
- The PPU is a mandatory piece of equipment for the conduct of pilotage operations at the Gorgon Marine Terminal. If the PPU does not function as is normally expected, the Pilot is to inform the PS at the first available opportunity and the transit delayed, if possible, until a spare PPU can be delivered to the vessel.

Any unplanned deviation from the agreed passage plan must be fully briefed to the Bridge Team and the Pilot should make every opportunity to return to the passage plan as soon as possible.

6.0 References

Ref. No.	Description	Document ID
1	Gorgon - Barrow Island Terminal Regulations (BITR)	GOR-COP-0174
2	Gorgon - UKC Calculation Sheet - Condensate Carriers	GOR-COP-0253
3	Gorgon - UKC Calculation Sheet - LNG Carriers	GOR-COP-0254