



Pilbara Ports West – Mooring Handbook



TABLE OF CONTENTS

1.	DEFINITIONS AND ABBREVIATIONS.....	4
2.	PURPOSE	6
2.1	Pilbara Ports West Mooring Requirements.....	6
2.2	Pilbara Port	6
2.3	Disclaimer	7
3.	PREAMBLE.....	7
3.1	Rental Moorings.....	8
4.	PORT OF DAMPIER – WEATHER CONDITIONS	10
5.	INDICATIVE MOORING LOADINGS	12
6.	MOORING DESIGN AND COMPONENTS	13
6.1	General.....	13
6.2	Mooring Classifications	14
6.3	Non-cyclone Moorings	14
6.3.1	Positions	14
6.3.2	Non-Cyclone Mooring Component Requirements	14
6.3.3	Deadweight Anchors.....	14
6.4	Cyclone Moorings	15
6.4.1	Positions	15
7.	RESPONSIBILITIES OF A MOORING OWNER/USER.....	16
7.1	Compliance with Moorings Handbook and Mooring Licence Terms and Conditions.....	16
7.2	Vessel Change on a Mooring	16
7.3	Transfer or Sale of Mooring Ownership.....	16
7.4	Third Party Use of Moorings.....	17
7.5	Annual Mooring Dive Inspection Report	17
7.6	Harbour Master to be Notified of Vessel Movement	19
8.	INSTALLATION PROCEDURE FOR NEW MOORING	19
8.1	Applications	19
8.2	Mooring Installation	19
9.	ANNUAL MOORING LICENCE APPROVAL PROCESS.....	20
9.1	Annual Mooring Dive Inspection Reports	20
9.2	Annual Mooring Dive Inspection Record – 5 th Year Naval Architect Report.....	21
10.	MOORING INSPECTION	23
10.1	Responsibility for Inspection.....	23
10.2	Annual Inspections.....	23
10.3	Inspection Required When a Mooring is Sold or Transferred	23
10.4	Miscellaneous Inspections	23

10.5	Inspection Reports	23
10.6	Deterioration and Non-Compliance of Moorings	23
10.7	Dive Inspectors and Naval Architects/Engineers	24
10.8	Types of Inspections	24
11.	MOORING REMOVAL / RETRIEVAL PROCEDURES	25
12.	REFERENCES	26
13.	APPLICATIONS AVAILABLE IN KLEIN MOORINGS	27
14.	DOCUMENT AMENDMENT TABLE	27
15.	PROCESS OWNER	27

1. DEFINITIONS AND ABBREVIATIONS

DEFINITIONS	
Cyclone Mooring	In the Port of Dampier, a cyclone mooring must have minimum capability of holding a nominated vessel in 30-second gusts, wind speeds of 90 knots (at 10 metres above sea level) for a 50-year return period.
Non-Cyclone Mooring	Moorings other than cyclone moorings, capable of withstanding winds and weather up to 60 knots.
Mooring Designer/Naval Architect/Engineer	Means a person or organisation with appropriate professional qualifications to: prepare the technical specifications of a mooring system including configuration and materials and as-built drawings; review and make recommendations on mooring inspection reports; ensure on-going suitability of mooring systems; and who has been approved by the Harbour Master. The list of the Mooring Dive Inspectors and Naval Architect-Engineers is available at www.pilbaraports.com.au .
Dive Inspector	A person or organisation duly qualified for their range of business and licenced in Western Australia: capable of conducting mooring inspections above or below water; to produce measurements and records suitable for evaluation by a Naval Architect/Engineer; and who has been approved by the Harbour Master. The list of the Mooring Dive Inspectors and Naval Architect-Engineer is available at www.pilbaraports.com.au
Klein Moorings Management System	The moorings in the Ports of Dampier and Ashburton are managed through the Klein Moorings Management System (KMMS).
Mooring Licence	In the Port of Dampier, a mooring licence is issued to use a mooring for the upcoming cyclone season.
Mooring Licence Terms and Conditions	Means the terms and conditions set out in the terms and conditions document as varied from time to time by the Pilbara Ports. The Mooring Licence Terms & Conditions document is available at www.pilbaraports.com.au .
Mooring Requirements	The requirements and other terms contained in this document.
Mooring Owner/User	The mooring owner or user of any mooring or proposed mooring.
Port	The Port of Dampier and Port of Ashburton and the Port of Varanus Island, Western Australia and its seabed and port waters together with all wharves, piers and land that are owned, vested in, occupied by, licenced to or controlled by the Pilbara Ports.
Significant Event	Close passing of a Category 3 cyclone and above; a tsunami of significant proportion or as determined by the Harbour Master.

ABBREVIATIONS	
Pilbara Ports West	The Port of Dampier, the Port of Ashburton and the Port of Varanus Island (and any other port which may come under the jurisdiction of Pilbara Ports in future)
E	East
HAT	Highest Astronomical Tide
LOA	Length Overall
MHWN	Mean High Water Neap
MHWS	Mean High Water Spring
SE	South East
SW	South West
WA	Western Australia

2. PURPOSE

Pilbara Ports strives to develop, maintain and improve an efficient and effective strategy for managing approximately one hundred and eighty moorings which have been deployed within its gazetted waters.

After each cyclone season the results and feedback are correlated and the system is improved to benefit from these inputs.

Pilbara Ports is statutorily obliged to maintain a safe port at all times and the requirements of the Moorings Handbook must be met by all mooring owners.

2.1 Pilbara Ports West Mooring Requirements

This document has been produced to:

- a) meet the Port Authority Regulations 2001;
- b) meet the information needs of the owner, designers, and installers of moorings in Pilbara Ports West operated ports;
- c) provide information with regard to mooring design, installation, maintenance and usage. However, this document in no way absolves companies from their duty of care to their employees, contractors, products, operations or any other obligations they may owe in relation to their employees, contractors, products or operations; and
- d) set rules and procedures that bind all mooring owners.

This document must be read in conjunction with the Pilbara Ports West Mooring Licence Terms and Conditions.

**PILBARA PORTS' PRIORITY IS SAFETY
AND PROTECTION OF THE ENVIRONMENT**

2.2 Pilbara Port

The Pilbara Ports is a State Government agency that operates the Port under the *Port Authorities Act 1999*.

The Pilbara Ports has responsibilities:

- to facilitate trade within and through the Port and plan for future growth and development of the Port;
- for the safe, secure and efficient operation of the Port; and
- to protect the Port environment.

In this role, the Pilbara Ports approves the installation and usage of moorings in the Port and regulates the usage and maintenance of the moorings through its broad mooring licensing regime.

Pilbara Ports Contact Details

Assistant Harbour Master Phone: (08) 9159 6528

Email moorings@pilbaraports.com.au

Web: <http://www.pilbaraports.com.au>

MOF Road, Burrup Peninsula, Dampier, Western Australia 6713

(Postal Address: Locked Bag 5006, Karratha, Western Australia 6714)

2.3 Disclaimer

The information contained in these requirements is believed to be correct at the time of issue; however, the Pilbara Ports does not guarantee the accuracy of the information and accepts no liability for any damage, delay or loss resulting from any such inaccuracy.

3. PREAMBLE

Pilbara Ports West hosts a vast range of recreational and commercial vessels each year in the ports operated, many of which use moorings instead of anchoring within port limits. These moorings may be non-cyclone moorings or heavier construction cyclone moorings utilised for commercial and recreational purposes. All moorings within the Pilbara Ports West operated ports are managed by Pilbara Ports and Pilbara Ports approval is required for the design and installation of a mooring and the use of moorings. Pilbara Ports monitors annual inspections, maintenance and repair of moorings within the Ports. Pilbara Ports aim is to promote fair and equitable public access to moorings and to ensure all moorings are maintained to a high standard.

Each mooring must be capable of holding the assigned vessel and correct guidance and advice from the Naval Architect/Engineer is necessary to safeguard the vessel owner's investment. The Mooring Dive Inspectors and Naval Architect-Engineer List is available on our website for your reference however, Pilbara Ports makes no guarantee of individual company performance or capability.

All mooring licences are of a temporary nature and no person has a property right in any mooring location without an express grant by the Commonwealth or WA State Governments.

3.1 Rental Moorings

Rental moorings are commercial by nature, being owned by individual companies. Pilbara Ports do not own moorings for rental purposes and makes no guarantees for the availability or access to rental moorings. Owners who rent/loan their moorings are required to follow the mooring requirements as set out in this Moorings Handbook and the Mooring Licencing Terms & Conditions.

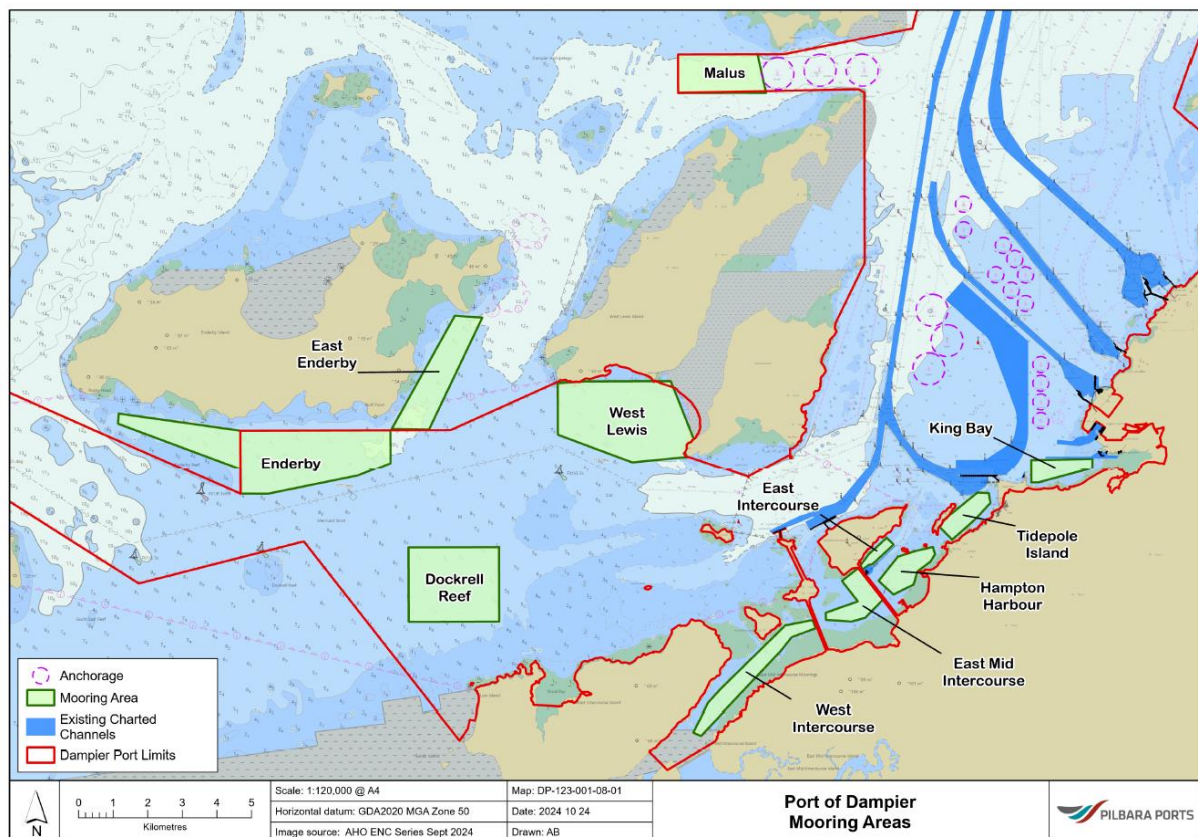


Figure 1 - Mooring Areas Port of Dampier

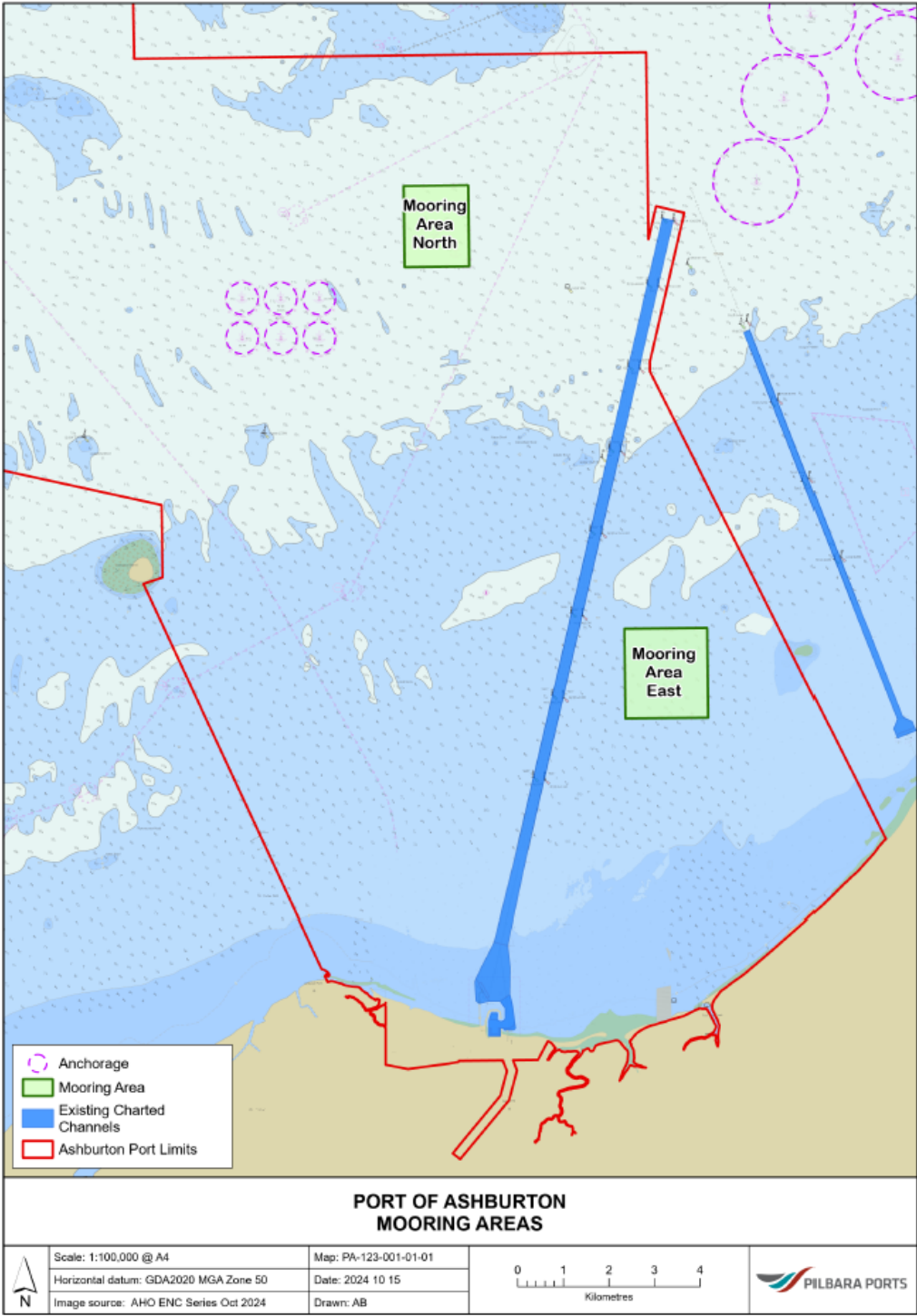


Figure 2 - Mooring Areas Port of Ashburton

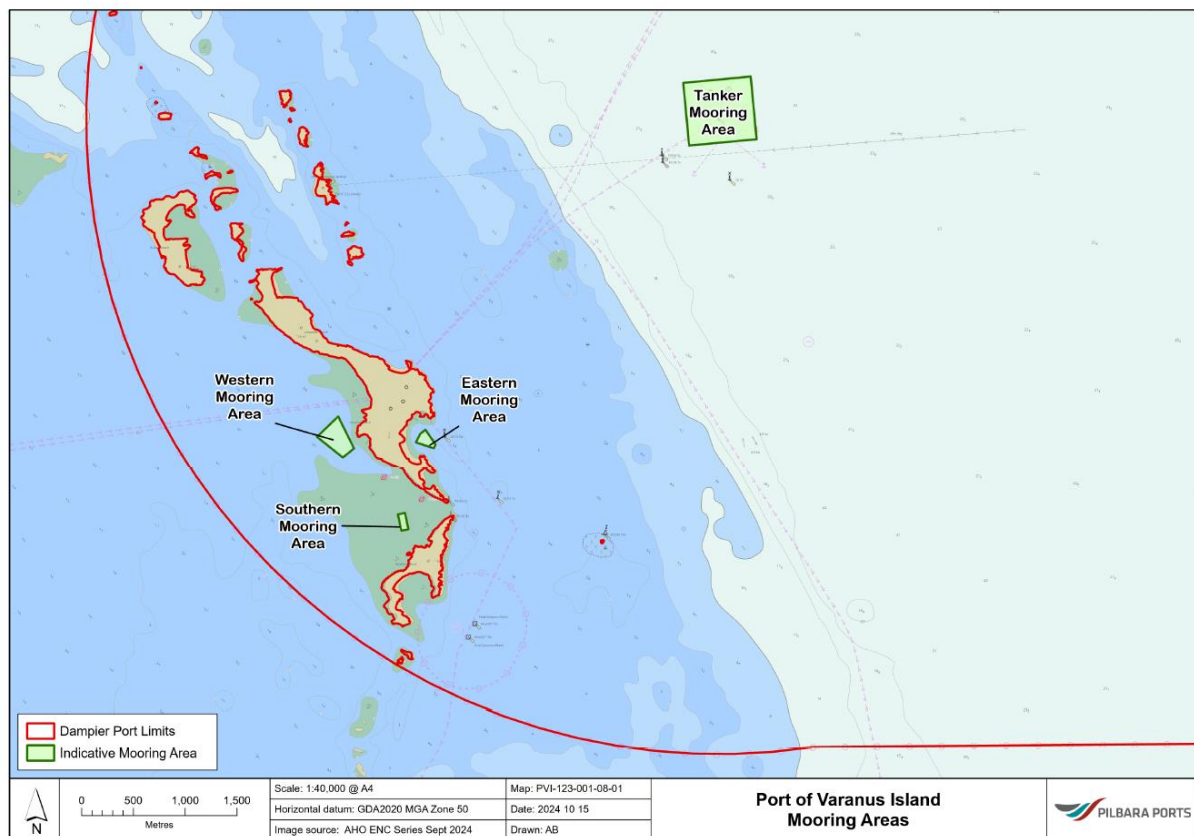


Figure 3 - Mooring Areas Port of Varanus Island

4. PORT OF DAMPIER – WEATHER CONDITIONS

The Port of Dampier is centred at 20° 30.00' S and 116° 45.00' E and lies within Australia's cyclone belt. Between three and five cyclones might typically approach the Pilbara Coast during the season (November to May) and winds over 100 knots can be experienced along with associated sea conditions. In 2005-06 Dampier directly experienced a record number of six cyclones. In 2020 the eye of Cyclone Damien moved over Karratha with wind speeds exceeding 108 knots (200kms per hour), causing 14 vessels to run aground or sink in Dampier Port waters. Typically, during November to May the winds blow in excess of 20 knots from the SW and winds over 60 knots might be experienced during seasonal tropical non-cyclones. The SW winds might blow strongly and continuously for 3-5 days.

During May to November the winds typically blow from E-SE, increasing in strength from the early morning and easing by late afternoon or early evening. Morning winds may exceed 30 knots. Sea conditions within the harbour after prolonged SW winds can produce seas to 1.5 metres through Mermaid Strait and whenever a cyclone is in the vicinity of the coast a 'fetch' from the north can create seas to 2 metres through Mermaid Sound. During past cyclones, red alert phase seas to 9 metres have been encountered in Mermaid Sound. Tidal surges are possible in conjunction with any cyclone.

Accordingly, mooring owners in the region should familiarise themselves with the risks associated with mooring vessels during adverse weather, including risks to the vessel and to personnel and responsibilities towards other vessels moored in the vicinity.

Table 1 and Table 2 show Significant Wave Heights and Indicative Tidal Heights respectively.

Table 1 - Significant Wave Heights

1. Location	2. Significant Wave Height (Metres)
Southern Mermaid Sound	3.0 to 4.5
Hampton Harbour	1.5 to 3.0
Mermaid Strait (South of West Lewis Island)	2.0 to 4.0
NOTE: Maximum cyclone waves may be 1.6 – 2.0 times higher than significant wave height	

Table 2 - Indicative Tidal Heights

3. Description	4. Level to Chart Datum CD 5. (metres)	6. Level to Australian Height Datum AHD (metres)
HAT	5.22	2.51
MHWS	4.55	1.84
MHWN	3.22	0.51
NOTE: – Non-cyclone Surge + Wind may add 3.5 metres to Sea Heights		

5. INDICATIVE MOORING LOADINGS

Pilbara Ports commissioned an engineering consultancy group to prepare a mooring report and design assessment (report) based on previous tropical cyclone analysis plus mooring assessments undertaken by several operators in the region.

In the report, Table 3 provides a range of indicative loadings for various vessel sizes and mooring locations. These indicative figures are shown for general guidance only and PP does not warrant the accuracy of any of the information contained in Table 3 or elsewhere in the report.

The 300-tonne mooring force for the large vessels illustrates the high loadings that might occur due to a combination of low tide, shallow water depths, high winds and near breaking wave conditions.

Table 3 - Indicative Vessel Loadings on Moorings

7. Vessel Size	8. Cyclone Mooring Location	9. Approximate Return Period (Years)	10. Total Mooring Force (Tonnes)
Small Vessel 10 metre LOA, 10 tonne displacement	Hampton Harbour	50	3-8
Medium Vessel 18 metre LOA, 25 tonne displacement	Hampton Harbour	50	10-15
Large Vessels 30-35 metre LOA, 500-800 tonne displacement	West Lewis Island	10-50	50-300
Small Ship 60-75 metre LOA, 2000 tonne displacement	West Lewis Island	25-100	40-70 (Wind Only) Total loadings not available (but would be expected to exceed 250-500 tonnes)

Other factors that might significantly influence actual mooring behaviour and loadings include:

- type of seabed anchorage (such as embedment anchor, drag anchor, spread mooring)
- mooring configuration (such as chain and mass, clump weights, hawsers and buoys)
- vessel behaviour (such as wind, length, displacement, response amplitude)
- method of analysis (such as dynamic, static, frequency or time-domain numerical modelling).

Mooring owners must engage a Naval Architect/Engineer to perform inquiries and calculations for mooring parameters and loadings to suit their specific vessel characteristics, mooring location and risk assessment.

6. MOORING DESIGN AND COMPONENTS

6.1 General

All moorings are to be designed, installed, used and maintained according to the design specifications of the Naval Architect/Engineers and Pilbara Ports mooring requirements.

The Pilbara Ports mooring requirements include:

- Moorings must be designed for a nominated vessel or class of vessel and certified by a Naval Architect/Engineer. The as-built drawing must include a permissible design wear table.
- Recreational non-cyclone moorings must comply with
- Table 4. Recreational craft mooring buoys must be more than 300 millimetres in diameter and bright in colour.
- Commercial moorings buoys must be bright in colour.
- Mooring owners must ensure that their allocated mooring number is on the mooring, positioned where it will always be clearly legible and if possible, away from marine growth, bird droppings and tackle chaffing areas.
- Moorings must have visibility aids to avert collision between moving craft and moorings, positioned at all four quadrants where it will be clearly visible. As a minimum retro reflective material or "cats eyes" must be fitted to all moorings in all quadrants. Moorings with lights should also have retro reflective material or "cat's eyes" in case of a light failure.
- Specifications for moorings may not be varied without certification from a Naval Architect/Engineer, and an updated as-built drawing and permissible wear table must be provided. Any specification amendments must be approved by the Harbour Master.
- **Hawsers are the responsibility of the vessel owners and need to meet the Naval Architect/Engineer requirements.**
- Owners must inspect and maintain the hawser on a regular basis.
- Moorings must not have a hawser secured to the mooring riser chain.
- Hawsers must not be left floating free from moorings to prevent damage to other craft. Should a hawser need to remain on the buoy, it should be shortened and made visible, with a Norwegian buoy attached to the end.

Failure to comply with these requirements or the Mooring Licence Terms and Conditions may result in the suspension, termination or non-renewal of a Mooring Licence, the removal of a mooring, a fine being levied against the mooring owner, or other legal action against the mooring owner.

6.2 Mooring Classifications

Moorings within the Dampier Archipelago typically fall into five classifications:

- Recreational craft non-cyclone moorings;
- Commercial craft non-cyclone moorings;
- Recreational craft non-cyclone moorings for vessels less than 12 metres;
- Recreational craft cyclone moorings for vessels greater than 12 metres;
and
- Commercial craft cyclone moorings.

6.3 Non-cyclone Moorings

6.3.1 Positions

Non-cyclone mooring locations:

- Hampton Harbour mooring area
- Tide Pole Island mooring area
- King Bay mooring area
- Port of Ashburton moorings
- Port of Varanus Island moorings

6.3.2 Non-Cyclone Mooring Component Requirements

Table 4 - Non-Cyclone Mooring Component Specifications

11. Vessel 12. Length 13. (m)	14. Mushroom 15. Anchor/wheel 16. (kg)	17. Concrete Block 18. (weight in water) 19. (kg)	20. Chain Size 21. (mm)	22. Hardware Size 23. (mm)	24. Line Size 25. (mm)
5.0 – 6.0	70	230	13	13	13
6.0 - 7.5	115	450	13	13	16
7.5 - 8.5	160	900	16	16	20
8.5 - 9.5	N/A	1400	19	20	22
9.5 - 12.0	N/A	1800	26	26	26
Over 12.0	Seek advice from Mooring Designer/Naval Architect/Engineer				

6.3.3 Deadweight Anchors

Deadweight anchors such as wagon wheels and concrete blocks (clumps) become lodged in the seabed over time, providing a degree of suction resistance in any bottom material with cohesive properties. Thus, a deadweight anchor is not likely to break free from its set like a mushroom anchor. (An anchor is “set” when it becomes buried in the seabed over

time.) Figure 1 and Figure 2 illustrate railway wheels and concrete block anchors respectively.

Railway wheels of 320 to 400 kilograms are used extensively in single or group lots for Hampton Harbour non-cyclone moorings.

The holding power of a concrete block anchor is approximately 1:2. In other words, a properly designed concrete anchor provides up to 50 per cent of its weight in air. For example, to provide a holding power of 900 kilograms in water, a concrete anchor would weigh 1640 kilograms in air (displacement factor of 0.55). A square-block concrete anchor is designed with the base dimensions greater than the anchor's height for a low centre of gravity to reduce transverse leverage.



Figure 1 - Railway Wheels

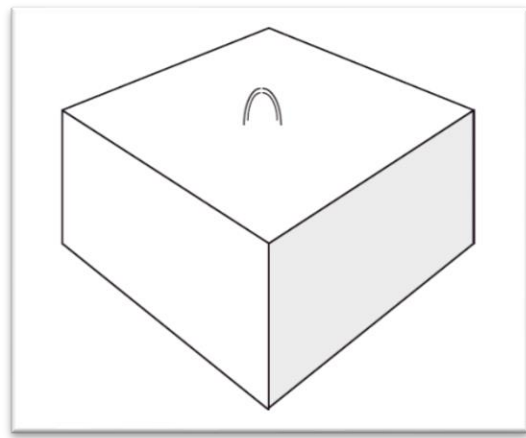


Figure 2 - Concrete Block Anchor

6.4 Cyclone Moorings

6.4.1 Positions

Cyclone mooring locations:

- Causeway mooring area
- Dockrell Reef mooring area
- West Lewis Island mooring area
- Malus Channel mooring area
- Hampton Harbour mooring area
- Enderby Island mooring area
- West Mid Intercourse mooring area
- Withnell Bay mooring area

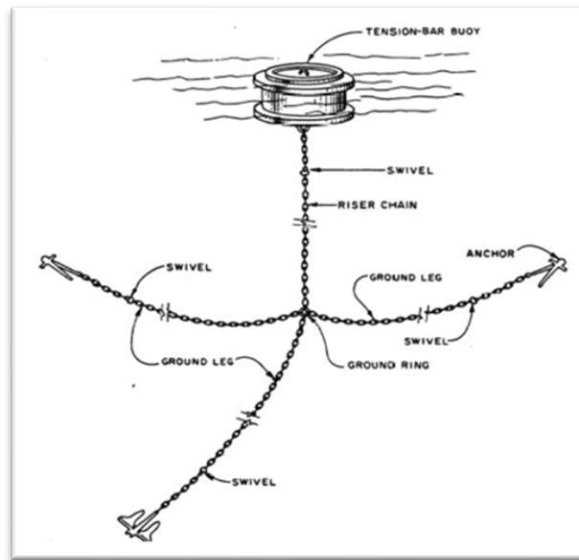


Figure 3 - Admiralty Style Mooring – Typical Cyclone Mooring Layout

7. RESPONSIBILITIES OF A MOORING OWNER/USER

7.1 Compliance with Moorings Handbook and Mooring Licence Terms and Conditions

Mooring owner/users must comply with the Moorings Handbook and the Mooring Licence Terms and Conditions.

7.2 Vessel Change on a Mooring

Mooring owners must seek approval from Pilbara Ports for vessel changes on a mooring prior to the new vessel occupying the mooring.

The mooring will require vessel analysis showing suitability by a Naval Architect/Engineer.

7.3 Transfer or Sale of Mooring Ownership

Mooring owner/purchaser must seek approval from Pilbara Ports for the transfer or sale of a mooring. No recreational or commercial mooring or location may be sold, transferred, rented, swapped, assigned, relocated or bartered except as permitted by the relevant Mooring Licence or these mooring requirements and Mooring Licence Terms and Conditions.

The holder of a recreational mooring may transfer their mooring to an immediate family member with the approval of the Harbour Master.

The mooring change in vessel that may occur with the transfer or sale of a mooring, will require a vessel analysis showing suitability by a Naval Architect/Engineer.

The transfer/sale of a mooring does not guarantee the purchaser the existing location of the mooring. The purchaser is required to contact Pilbara Ports to

discuss their requirements for the mooring and an alternative location maybe identified.

To transfer a mooring to a new owner in the system, the mooring must be licenced for the current season.

7.4 Third Party Use of Moorings

Mooring owners may rent or loan their licenced mooring and must seek approval from Pilbara Ports prior to renting the mooring. A vessel analysis is required from a Naval Architect/Engineer to ensure the moorings suitability for the new vessel.

A third-party use application must be completed in the Klein system and approved by Pilbara Ports prior to use. The mooring responsibility remains with the mooring owner.

The mooring licence remains in the name of the mooring owner with the third-party vessel listed on the mooring licence.

7.5 Annual Mooring Dive Inspection Report

Mooring owners are required to complete an Annual Mooring Dive Inspection Report from 1 May each year and submit the Report to Pilbara Ports by 1 October. Should a mooring not be licenced by 1 November each year, Pilbara Ports may decide not to renew the licence with the mooring owner OR the mooring owner may be requested by Pilbara Ports, to remove the mooring at the owner's expense.

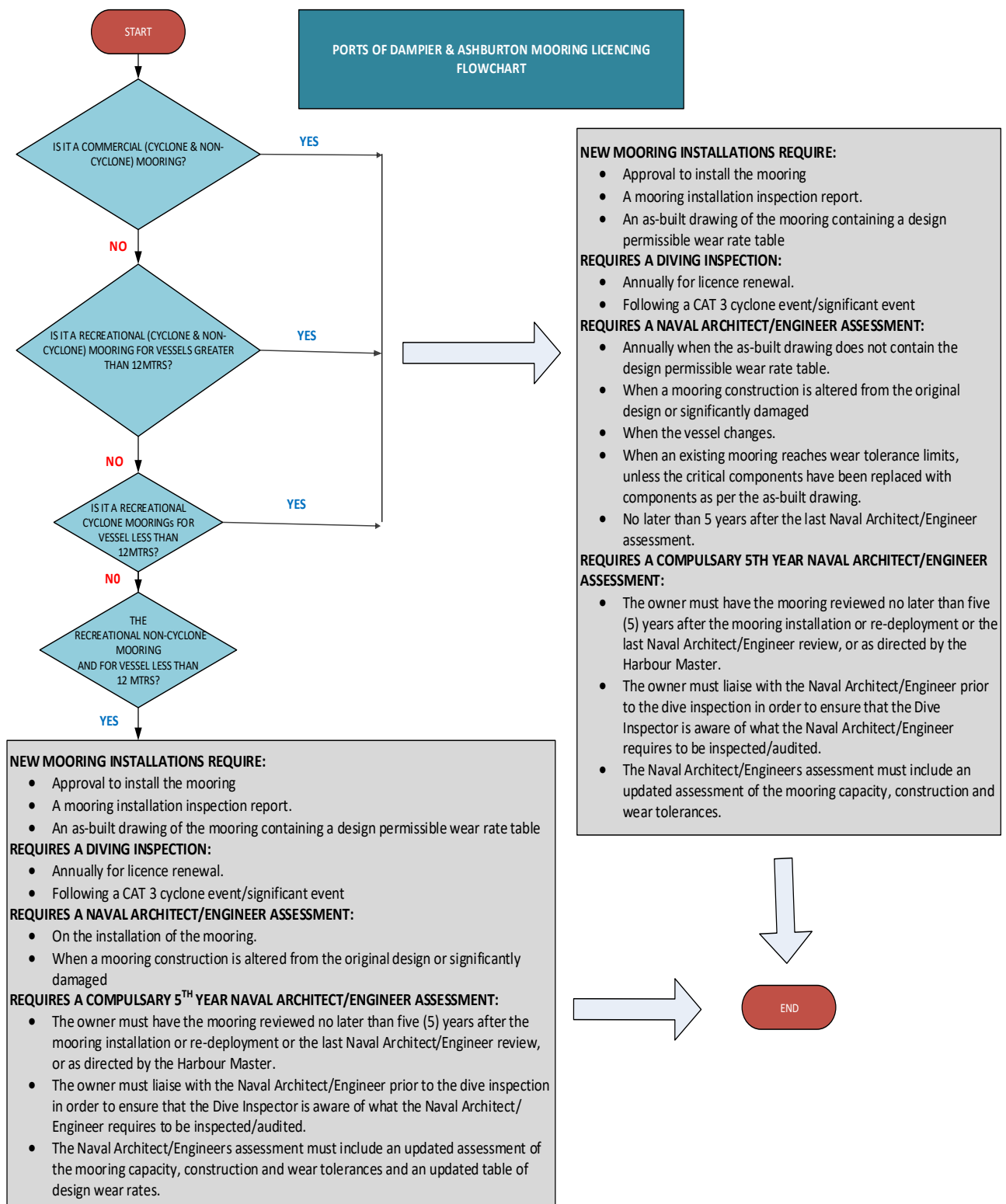


Figure 4 - Mooring Licencing Flow Chart

7.6 Harbour Master to be Notified of Vessel Movement

Mooring owner/users or vessel operators are to notify Pilbara Ports West via relevant port communications (Dampier VTS, Ashburton VTS or Varanus Island Port Control) on their designated working VHF Channels or telephone 08 9159 6556 when a vessel is secured to or removed from a mooring.

8. INSTALLATION PROCEDURE FOR NEW MOORING

8.1 Applications

In the first instance, contact the Pilbara Ports Assistant Harbour Master to establish the requirements for the mooring and a potential location. Applications are managed via the Klein Moorings Management System. Login details can be obtained from the Assistant Harbour Master

- Fees payable for all mooring applications can be found on the Pilbara Ports website www.pilbaraports.com.au.
- No mooring shall be placed in the Port unless permitted by the Harbour Master and compliant with these mooring requirements and the Mooring Licence Terms and Conditions. A mooring set without prior authorisation of the Harbour Master may be removed immediately by the Harbour Master at the mooring owner's expense.
- Approved applications for the installation of a new mooring will be valid for three (3) months from the date of approval. Approved moorings not deployed within this time frame will be considered void and a new application will need to be submitted.

8.2 Mooring Installation

- Upon installation, the mooring must be inspected by a Dive Inspector for structural integrity, disposition on the seabed. The Dive Inspectors report the results via KMMS and will upload photographs of all components and specified configuration.
- Mooring buoys should be clearly marked with the mooring number and have appropriate aids for visibility using lights, or at a minimum, retro reflective material or cats' eyes on every quadrant as pictured below.
- On receipt of the dive inspector's results, the mooring owner must forward the completed installation report to the naval architect/engineer for review and certification for use.



Figure 5 - Mooring buoy marked with mooring number

Mooring Installation/ Relocation Procedure Flow Chart

1	Please ensure that you have read the Terms and Conditions of owning a mooring that is located in Port waters. The relevant documentation can be found at https://www.pilbaraports.com.au/Port-of-Dampier/Port-Operations/Moorings
2	Seek clarification from Pilbara Ports on your preferred mooring location prior to <i>Applying for... a new Install</i> application in the Klein Moorings Management System (KMMS). Once the location is approved, confirm with your Naval Architect/Engineer that the mooring design is suitable for your vessel, in the Pilbara Ports approved location. Obtain a preliminary drawing containing a table of permissible wear rates and attach it to the application.
3	On the approval of the application to install a mooring, Pilbara Ports will issue an invoice for the application fee through KMMS.
4	The Mooring Owner can then engage a mooring installer to install the mooring as per the Naval Architect's preliminary drawing. Installation/Relocation must occur within three months of the application being approved.
5	Once installed, a dive inspection is required. Upload the Installation report, along with any component certifications into the documents section of KMMS. Forward the application to Pilbara Ports for uploading the component information into the KMMS for the dive inspectors' reference and completion.
6	The Dive Inspector will conduct an in-water inspection (as per the Mooring Dive Inspection Standards and Deliverables) and complete the mooring components list, inclusive of photos. The completed Installation report should be forwarded to the Mooring Owner for review.
7	When the Mooring Owner is satisfied that all the information is complete, forward the application to the Naval Architect/Engineer for review and <i>certification for use</i> .
8	The Naval Architect/Engineer will provide a <i>certification for use</i> of the mooring and update the preliminary drawing to an as-built drawing including a table of permissible wear rates of the mooring.
9	The Mooring Owner then completes the <i>owner declaration</i> in the application and forwards it to Pilbara Ports for approval.
10	Once approved, Pilbara Ports will issue an annual mooring licence and a tax invoice for the licencing fee through the KMMS.
11	Each year the mooring will require an annual mooring dive inspection between May and October. Any mooring components that exceed the permissible wear rates, as prescribed by the Naval Architect/Engineer, will require replacing or further review by the Engineer. The annual inspection is to be submitted to Pilbara Ports prior to 1 October.

9. ANNUAL MOORING LICENCE APPROVAL PROCESS

9.1 Annual Mooring Dive Inspection Reports

(As per the Port Authorities Regulations 2001)

A mooring owner must arrange for an annual mooring dive inspection with a Pilbara Ports approved dive inspection company between 1 May and 1 October each year.

The annual inspection is managed through the Klein Moorings Management System (KMMS). Login details can be obtained from the Assistant Harbour Master

The Annual Mooring Dive Inspection should:

- Provide the inspection details of your mooring. i.e. inspection and review type, licences season, nominated inspection company and architect/engineer
- contain all vessel specifications
- contain jpg photos of the inspected mooring components
- demonstrate that the permissible design wear rates have not been exceeded
- show that maintenance has been completed as per Section 8 (maintenance report with photos attached)
- show that no alterations have been made to the mooring outside of its design specification
- should there be vessel or mooring changes an analysis and certification for use of the mooring is required by the architect/engineer
- contain a previous naval architect certification for use that is no greater than five years old.

Approval for the issue of an annual mooring licence is granted by the Harbour Master.

Once approved, the Owner will receive a tax invoice via KMMS.

All mooring licences expire on 31 October each year. Should a mooring not be inspected, and the report not submitted to the Pilbara Ports, your mooring will be ineligible for use. If requested by Pilbara Ports, the mooring owner must remove the mooring at the Owner's expense.

9.2 Annual Mooring Dive Inspection Record – 5th Year Naval Architect Report

All moorings must have a review by a Naval Architect/Engineer every five years.

The Naval Architect/Engineer should be consulted prior to the annual dive inspection and they will advise the mooring owner as to what need to be inspected/audited for review. Should the mooring require an uplift or major maintenance, please contact the Pilbara Ports Assistant Harbour Master. The Naval Architect/Engineer will complete the Certification for Use on your annual inspection.

Annual Mooring Dive Inspection Flow Chart

Each year all moorings require an annual mooring dive inspection conducted between May and October. Any mooring components that exceed the permissible wear rates, as prescribed by the Naval Architect/Engineer, will require replacing or further review by the Engineer. Every 5th year the Mooring Owner must have their mooring reviewed by a Naval Architect/Engineer. The Inspector will be required to carry out the inspection according to the Naval

Architect/Engineer requirements. The annual inspection is to be submitted to Pilbara Ports prior to the 1 October.

1	The Mooring Owner is required to log into the Klein Moorings Management System (KMMS) and <i>Apply for...</i> an Annual Inspection Refer to the Klein On-line Moorings Management – Owner’s Manual.
2	The Mooring Owner can include a purchase order number (if applicable) and complete the Inspection Details. Select an Inspection Company and Engineering Company if required to inspect the mooring. It is recommended that you contact the companies to discuss your inspection requirements prior to completing the application. Submit the application to the Inspector.
3	Every 5 th year the Mooring Owner must have their mooring reviewed by a Naval Architect/Engineer.
4	The Inspector is to complete the moorings component inspection record by populating the component measurements and upload photos of the components inspected. Once completed, finalise the application by editing the inspection results and recording maintenance required/completed etc. The Inspector will submit the completed application to the Mooring Owner. Refer to the Klein On-line Moorings Management – Inspectors Manual.
5	The Mooring Owner must replace and/or make repairs on any components that have exceeded the wear rates, to ensure compliance with mooring requirements. Please ensure a maintenance report is uploaded or your annual inspection component record updated for review.
6	The Mooring Owner may need to forward the inspection report to the Engineer for review. E.g. Change in mooring components, review of drawing, and change of vessels. Refer to the Klein On-line Moorings Management – Engineers Manual.
7	The Mooring Owner then completes the <i>owner declaration</i> in the application and submits it to PP for approval.
8	Once approved, Pilbara Ports will issue an annual mooring licence and a tax invoice for the licencing fee through the KMMS.

10. MOORING INSPECTION

10.1 Responsibility for Inspection

The mooring owner is solely responsible for the inspection, care, use and maintenance of all mooring components and the cost of their replacement.

The mooring owner must arrange and pay for all inspections required by these mooring requirements and Mooring Licence Terms and Conditions.

10.2 Annual Inspections

The frequency and scheduling of the different types of inspections shall be determined by the mooring owner and the Harbour Master, taking into account inputs such as: mooring type, location, usage, previous mooring reports and climatic events.

As a minimum, each mooring must be inspected by a Dive Inspector annually or after any significant event as determined by the Harbour Master

10.3 Inspection Required When a Mooring is Sold or Transferred

When a mooring is sold or otherwise transferred, the purchaser must:

- a) arrange for a naval architect/engineer to carry out a mooring analysis to ensure that the mooring is suitable for the intended vessel; and
- b) ensure a copy of the analysis is uploaded to the Sale/Transfer application submitted to Pilbara Ports.

10.4 Miscellaneous Inspections

An additional inspection may be required where a mooring:

- a) is intended to be configured differently;
- b) has been dragged or the position of the mooring has changed significantly from previous inspection; or
- c) a significant event has occurred, as determined by the Harbour Master.

10.5 Inspection Reports

- a) Following any mooring inspection, the Dive Inspector must submit the Mooring Inspection results to the Mooring Owner.
- b) The Mooring Owner must provide the Mooring Inspection to Pilbara Ports together with evidence of any maintenance work, and inclusive of current photographs. Annual Inspection must be submitted to Pilbara Ports before 1 October each year.

10.6 Deterioration and Non-Compliance of Moorings

- a) If excessive deterioration is observed by the Dive Inspector, the mooring is not to be used until all worn components are replaced with equivalent items as per

the as-built drawing. Mooring Owners are to forward maintenance details as part of an inspection report to the Mooring Officer.

- b) If the permissible design wear rates of a mooring are exceeded, the mooring is not to be used until all worn components are replaced and details of maintenance forwarded to the Assistant Harbour Master.
- c) If the Dive Inspector determines the mooring components do not conform to as-built standards and specifications, Pilbara Ports may suspend the relevant mooring licence. The Mooring Owner must remove the assigned vessel from the mooring immediately after receiving notification from Pilbara Ports. A mooring Owner's failure to remove the vessel may result in the immediate termination of the mooring licence by Pilbara Ports.
- d) Further, if the nonconformity specified by Pilbara Ports is not rectified within fourteen (14) days after notification has been given by Pilbara Ports, Pilbara Ports may deem the mooring to be a dangerous thing as defined in the Port Authorities Act 1999, and the licence for that mooring may be revoked. The mooring owner may be required to remove the mooring in its entirety.

10.7 Dive Inspectors and Naval Architects/Engineers

Companies wishing to conduct inspections or provide Naval Architect/Engineering services should contact the Pilbara Ports in writing, listing qualifications and providing current insurance documentation by 1 May each year.

10.8 Types of Inspections

Three types of mooring inspections are conducted at Dampier and Ashburton – in water, partial raising and shore inspections:

- **In water inspections** are conducted by divers without removing the mooring to examine the anchors, chains and fittings for wear, corrosion and marine growth fouling and to check that shackle pins are not loose. The subsequent report should contain recommendations for work required.
- **Partial raising inspections** involve bringing the mooring buoy and chain components on-board a vessel for inspection. This is required for major works, e.g. repositioning, chain replacement, clearing marine growth, end-for-ending chain etc.
- **Shore inspections** involve complete removal of the mooring to a shore location for a detailed inspection of all components. This operation might be required for change of ownership, repositioning the mooring, or for assessment following an insurance claim. Redeployment will require a mooring installation report to be submitted for approval.

Mooring designs are not to include a under buoy hawser as shown in figure 7.

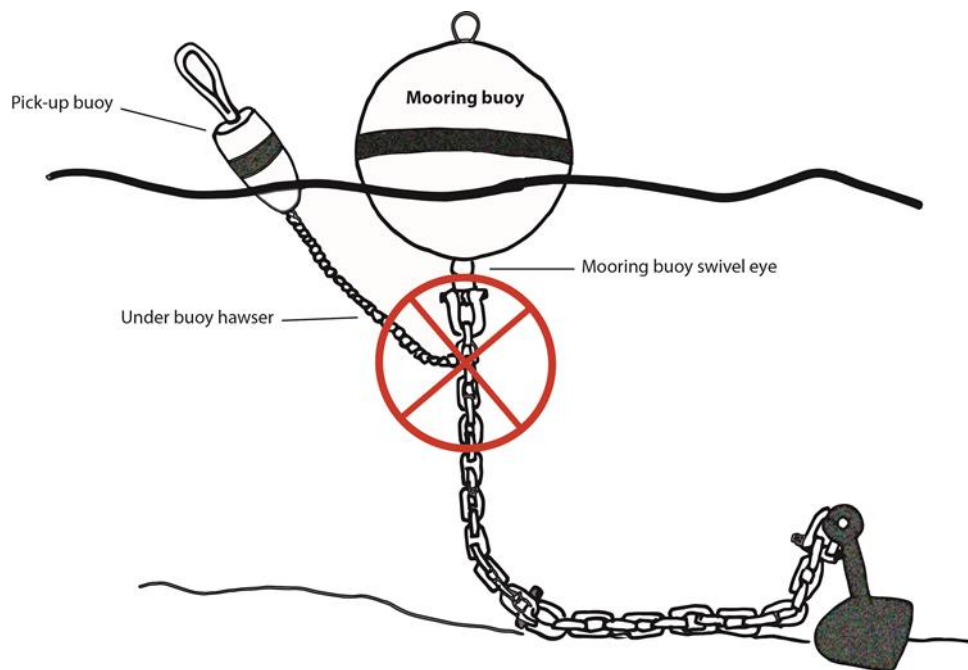


Figure 7 - Un-acceptable mooring design

11. MOORING REMOVAL / RETRIEVAL PROCEDURES

When a mooring is to be removed the mooring owner needs to follow the below steps:

- Any mooring(s) scheduled for removal need to be approved by Pilbara Ports.
- Once the owner has been granted approval, they must contact a removal company. The companies which are used for mooring installation may be contacted for mooring removal purposes.
- The owner must advise Pilbara Ports via email moorings@pilbaraports.com.au of the details prior to removal including removal company, removal vessel, date and time of scheduled removal.
- The owner must obtain a removal report with photos from the removal company declaring that all components have been removed from the seabed/ port waters.
- Once Pilbara Ports receive this report, the status of that mooring will be changed to **Retrieved** in Klein System.

12. REFERENCES

[Port Authorities Act 1999](#)

[Port Authorities Regulations 2001](#)

Ports of Dampier and Ashburton Mooring Licence Terms and Conditions

Mooring Dive Inspectors and Naval Architect/Engineer List

Ports of Dampier and Ashburton Mooring Dive Inspection Standards and Deliverables

Schedule of Fees

13. APPLICATIONS AVAILABLE IN KLEIN MOORINGS

The following applications are available in KMMS:

Apply For...

- Mooring Installation
- Annual Inspection
- Change of vessel / add vessel
- Third Party Use
- Miscellaneous Dive Inspection
- Sale/Transfer
- Change Contact

14. DOCUMENT AMENDMENT TABLE

Version	Prepared By	Date	Amendment
5	Michelle Boyce	07/10/2015	Document amendment table and footer added.
6	Michelle Boyce	04/11/2015	Version number updated
7	Donna Banks	27/01/2016	Review to align with Klein
8	Donna Banks	01/04/2016	Mooring Dive Inspection Standards and Deliverables
9	Judith van Manen	23/05/2018	Revised and updated
10	Gemma Singleton	19/03/2020	Revised and updated
11	Gemma Singleton	28/05/2024	Revised and suggested updates
12	Prashanta Kaushik	03/10/2024	Revised and suggested updates
13	Sydney Keremelevich Gemma Singleton, Prashanta Kaushik	18/02/2025	Updated Logo and cover page, accepted changes made

15. PROCESS OWNER

The Assistant Harbour Master responsible for this External Document.

Date approved: 04/05/2020

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