

4.4.2.1 Condensate

From two of six unit which locates at LNG Jetty 2 with as per following description.

- Loading arm number 1, 2, 3 and 4 for LNG cargo
- Loading arm number 5 and 6 for condensate

4.4.2.2 Manifold

All manifold equipment shall comply with OCIMF Recommendations for Oil Tanker Manifold and Associated Equipment.

4.4.2.3 Connection of Condensate Loading Arm

The loading arm is designed to fit a 10" ASME B16.5 150# RF.WN. FLANGE# vessels shall present a clean 10" flange for connection; the Terminal Operator will connect the loading arm.

Prior to removing the blind flange on the loading arm, the 1" drain upstream of the coupler shall be opened to release any possible over pressure in the arm.

When the loading arm is connected, the Terminal Operator will confirm with the Loading Master that tanker's manifold is shut and that the loading arm pressure test can take place. The Loading Master will advise the terminal CCR when the loading arm.

has been connected; pressure tested, inerted and the vessel is ready to load. The loading arm will be depressurized to atmosphere once the test has been satisfactorily completed.

4.4.2.4 Emergency Shut Down System (ESD)

Once the ship gangway is secure the Terminal operators will place an emergency shutdown (ESD) transmitter nearest at ship's manifold and the transmitter is intrinsically safe type.

Prior to commencement of loading and with a least one loading pump in operation, the Loading Master will demonstrate and

In addition to the mooring load information, the IMMS (Integrated Marine Monitoring System) provide environmental data as follows:

- Tidal data
- Current Speed and Direction
- Wind Speed and Direction
- Air Temperature and Pressure
- Wave Height

The current measuring devices are fitted to MD4 and MD6 of LNG Jetty 2

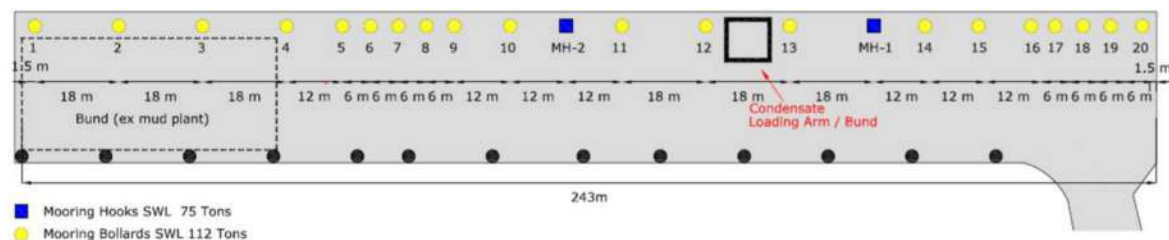
4.5 Combo Dock

The Combo Dock is a multi-functional jetty with berths located to the north and south. The North side is primarily used for the export of condensate but is also used for general cargo, heavy lift, and Platform Supply Vessels. The South side is used for LCT's, Offshore Support Vessels, Offshore Crew Boats, AHT/S, and harbour tugs include import of diesel and refuelling of terminal support vessels.

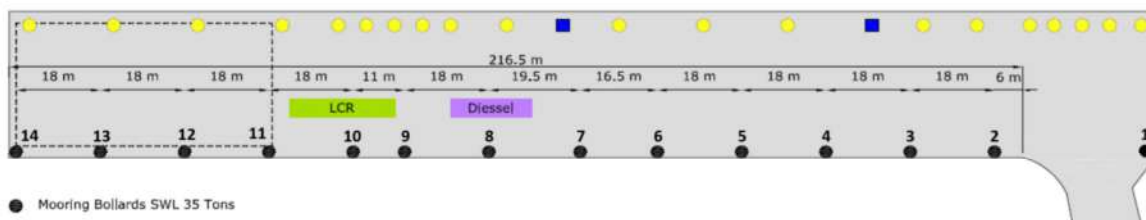
Floating Pontoon is used for crew and small boats.

4.5.1 Combo Dock Lay Out

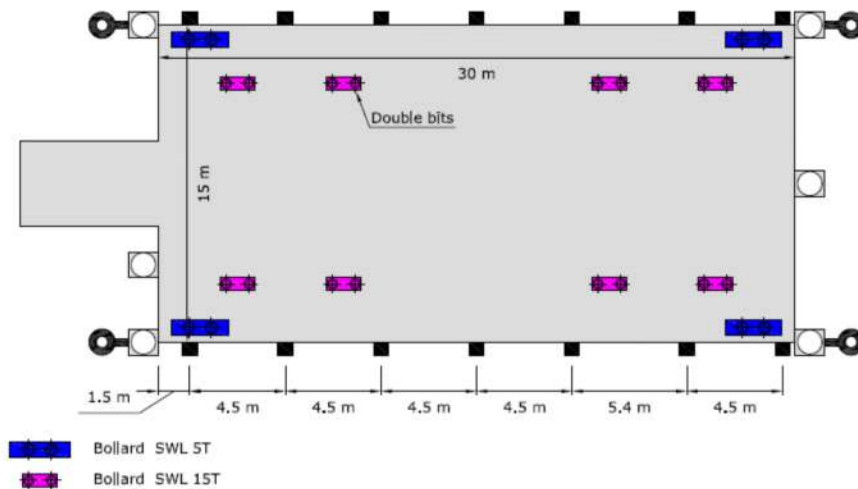
4.5.1.1 North Side



4.5.1.2 South Side



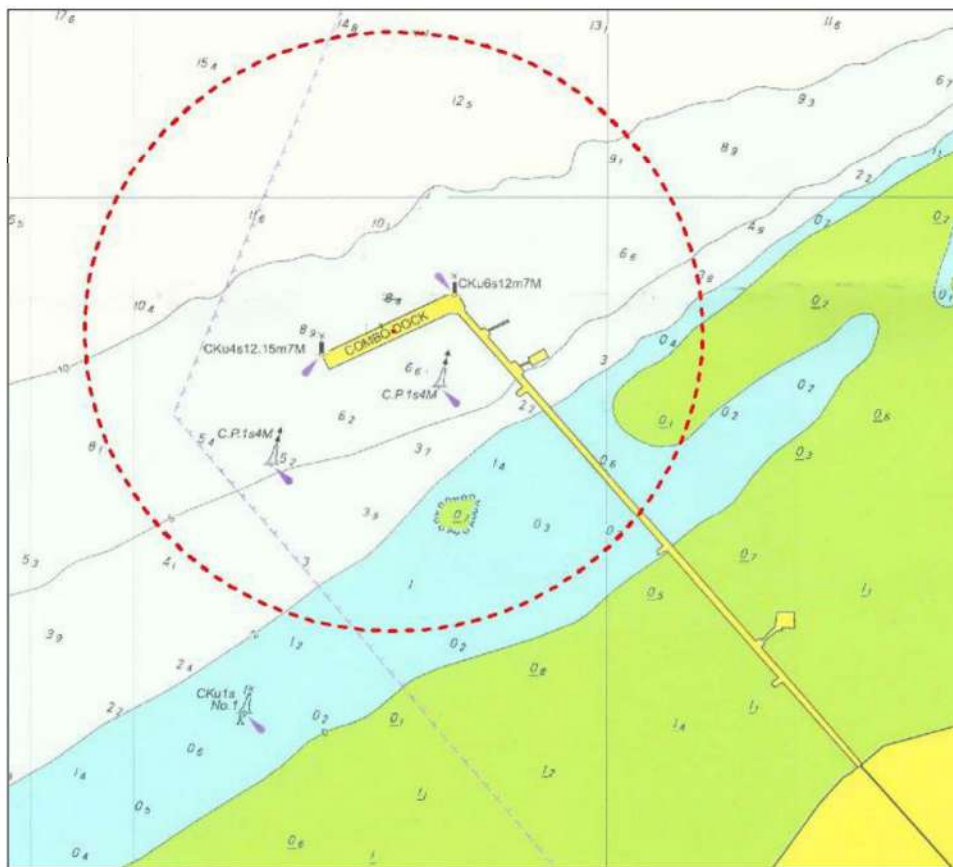
4.5.1.3 Floating Pontoon



The characteristic for Crew Boat is shown in the following table.

Vessel		Characteristic	Remarks
Displacement Tonnage	MD (t)	850	
Overall Length	LOA (m)	45	
Beam	B (m)	8	
Moulded Depth	D (m)	4	
Max. Draught	D max (m)	2.5	
Approaching velocity	V (m/sec)	0.25	
Approaching angle	θ (degree)	0 ~ 10°	

4.5.2 500 Meter Zone of Combo Dock

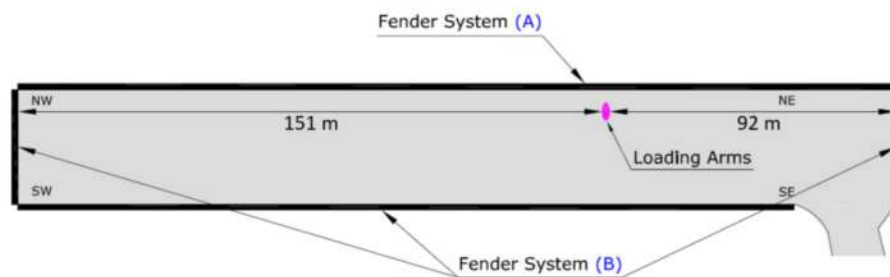


500-meter zone of Combo Dock

4.5.3 Combo Jetty Data

Item	Description
Position	Lat: 02° 26' 06" S / Long: 133° 06' 48" E
UKC	Min 10% draught maintained whilst alongside
Loading arms	1 x 10"
Vapor return	No
Normal Max loading rate	1200 m3/hour
Shore Gangway	Yes – removable by shore crane
Monitoring Load Monitoring System	No
Capstans	Yes – Integral to hook set
Capstans SWL	4 Tons (nominally hauling 2 tons @30m/second)
Bollard SWL	112 Tons (North) – 20 nos.
	35 Tons (South) – 13 + 1 nos.

4.5.4 Fender Layout and Design Vessels



Fender Layout at Combo Dock

Item	Unit	Condensate Tanker		Heavy Lift	General Cargo		Support Vessel
		Design Basis	Mooring Analysis		Small 6000 DWT	Large 10000 DWT	
DT	Tons	18,000	18,000	19,800	8,966	14,800	3,500
DWT	Tons	-	-	14,000	6,000	10,000	2,000
Max LOA	m	146.4 SCM 75	146.4	150.0	116.4	137.0	72
Max LBP	m	140.0	140.0	137.0	109.0	129.0	-
Breadth	m	-	-	32.0	17.7	20.5	20
Water Depth	m	11.5	13.8	13.0	9.0	11.6	7.3
Max Loaded draught	m	8.5	8.5	8.0	7.0	8.3	6.0
Ballast Draught	m	-	5.3	4.0	-	-	-
Approaching velocity	cm/s	2~4	2~4	2~4	2~4	2~4	2~4
Approaching angle	°	0-10	0-10	0-10	0-10	0-10	0-5
Berth Location		FENDER SYSTEM A					FENDER SYSTEM B

Design Vessels for Combo Dock

Glossary:

DT = Displacement Tonnage
DWT = Deadweight Tonnage
LOA = Length Overall
LBP = Length between Perpendiculars

Note:

- All berthing configuration at North and South side of Combo Dock Head will be determined through approved Terminal Compatibility and Acceptance (TCA).
- Detail of Combo Jetty Head Fendering System General Arrangement Type-A are attached on Appendix 18.26.

4.5.5 Mooring Hooks

The North side of the Combo Dock has 2 sets of mooring hooks **MH-1 and MH-2** complete with capstans; the remainder of the facility (North and South side) is fitted with bollards. Positions of MH1 & MH2 refer to diagram in section 4.4.1.1. North Side

The SWL of the mooring hooks is 75 tonnes; the SWL of the bollards on the north side is 112 tonnes; the hooks can be released individually locally using the manual release handle or 'push button' control only.

4.5.6 Bollards

Bollard SWL	Quantity
112 Ton (North)	20
35 Ton (South)	13 + 1

4.5.7 Tide Gauge Board

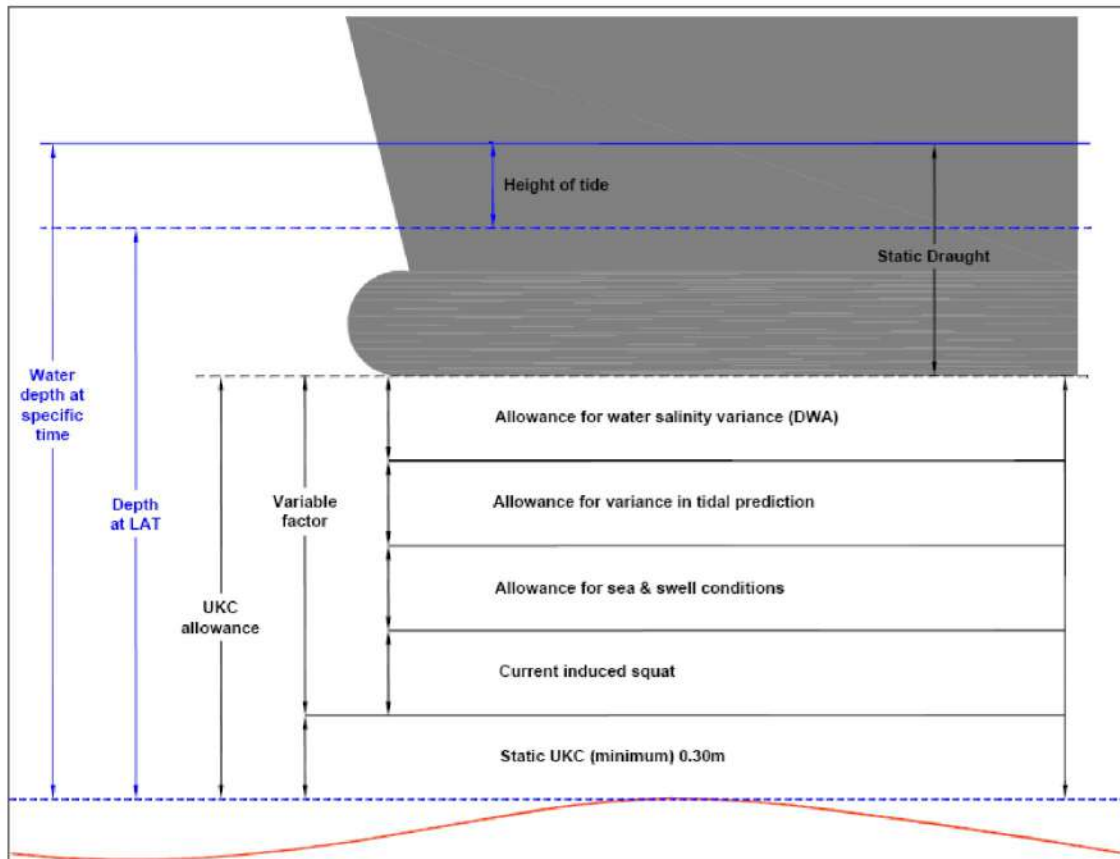
A tide gauge board is a device for measuring the change in sea level relative to a datum.

The visual height measure of the water level to a height reference surface has giving the information of the level of the tide which can be directly read.

The tide gauge board is fitted on Combo Dock.

4.5.8 Maximum Draught at Combo Dock

Draught alongside is dependent upon the height of tide; with a maximum of 7.70 meters – see below calculation for maximum draught alongside.



Calculation for Maximum Draught Alongside

Combo Dock	
Minimum water depth (published at LAT) – fixed	8.50m
Static UKC – fixed	- 0.30m
*Current induced squat	- 0.20m
**Allowance for sea & swell conditions	- 0.20m
***Allowance for variance in tidal prediction	- 0.10m
****Allowance for water salinity variance (DWA)	- 0.00m
*****Minimum LW (48-hour berthing window)	0.0m
MAXIMUM DRAUGHT ALONGSIDE ON LW = 0.0m	7.70m

- * From vessel data based on 4.0 knot current
 ** Based on experience
 *** Based on experience
 **** Calculated by $DWA = \frac{FWA}{25} \times \text{density of dock water}$
 ***** Predicted lowest LW height of tide (HOT) for berthing window alongside

The maximum draught alongside should be calculated for every vessel berthing at the Combo Dock; records shall be maintained.

4.6 Bulk Offloading Facility (BOF)

Bulk Offloading Facility (BOF) is designed for the vessel with max tonnage is 5000 DWT and water depth -2.3 m LWS.

The following coordinate is.

- 02°26'50,15"LS
- 133°06'49,75"BT

BOF consists of the following items/equipment such as:

- Finger Pier 1 and 2 @ (80 x 20.5) sqm
- Pontoon (30 x 30) sqm
- Platform (65 x 10.3) sqm

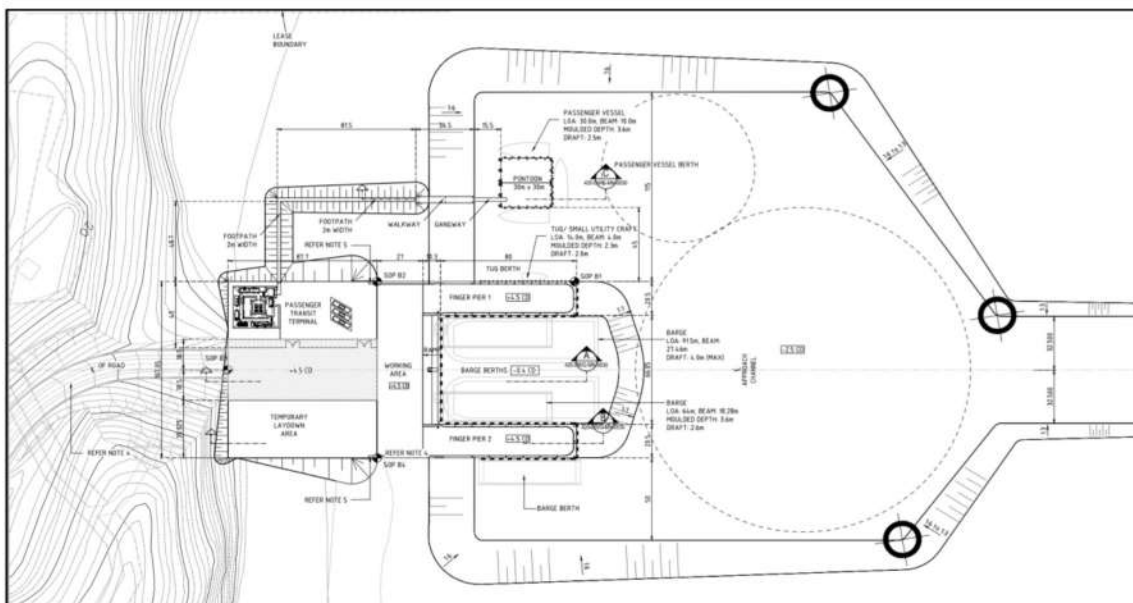


Figure Bulk Offloading Facility – General Arrangement