

**PULAU BUKOM - SHELL (OS)**

<b>JETTY</b>	<b>DEPTH A/S(m)</b>	<b>APPROACH DEPTH(m)</b>	<b>MIN LOA (m)</b>	<b>MAX LOA (m)</b>	<b>MAX DISPL (tons)</b>	<b>REMARKS</b>
1E	11.2	15.1	-	110	10,000	
1W	11.2	15.1	-	105	10,000	
2	9.2	15.1	-	170	54,000	
3	11.3	15.1	-	170	50,000	
4	11.6	15.1	-	190	44,000	
5	12.9	15.1	70	190	55,000	
6	16.5	15.1	120	275	193,000	
7	13.5	15.1	90	245	100,000	High spot of 12.4m located 0.8c NW 1st Bukom Bn
8	16.6	15.1	90	275	180,000	Berthing speed of up to 0.15m/s at a berthing angle of 6 degrees.
9	13.0	15.1	-	190	65,000	
10	15.7	15.1	70	265	150,000	
10A	3.0	-	-	-	-	The use of anchor is prohibited
10B	5.6	-	-	60	2,000	The use of anchor is prohibited
11	5.5	7.6	-	120	8,000	Vsl > 70m LOA, 2 tugs for un/berthing
12	13.0	15.1	-	120	10,000	
13	10.9	10.5	98	155	21,500	Ethylene Berth; See General Info item 9.
OSPJ	10.4	10.3		206	72,000	
OSSBM	24.0	22.8	240	345	355,000	"Swing Radius" 457m

Note : The maximum length may be increased depending on the jetty occupancy at the adjacent wharves.

## **GENERAL INFORMATION**

1. The least depth between 2<sup>nd</sup> and 3<sup>rd</sup> Bukom Beacons is 14.3m-0.8 cables South-East of 2<sup>nd</sup> Bukom Bn. (Note location of high spot of 11.6m -1.1 cables South-East of 4<sup>TH</sup> the Bukom Bn and 12.4 located 0.8c NW 1st Bukom Bn).
  2. Counter current can be expected when the predicted maximum East-going stream (Ebb Tide) in the Western Anchorage is  $\geq 1.0$  knot. It is predicted to commence from about 2 to 3 hrs before the time of the predicted maximum Ebb Tide and continues till the time of the next slack water.
  3. The safe approach to jetties along eastern edge of Pulau Bukom during East-going (Ebb Tide) stream and West-going (Flood Tide) stream are on page 8 and 9.
  4. The fenders at OS#9 protrude 1.5m from the wharf face and is not visible at certain heights of tide.
  5. The number of mooring boats attending to vessels berthing at Shell Terminal are as follows:
    - a) One Mooring Boat
      - i) Vessels LOA  $\leq 100$ m
    - b) Two Mooring Boats
      - i) Vessels LOA  $> 100$ m
    - c) In circumstances where two mooring boats are required e.g. inclement weather conditions, vessels with slow reaction engines, etc 2 mooring boats could be requested.
  6. Mooring arrangements as required by Marine Officer (Shell Bukom):
    - a) For vessels  $> 5000$  GRT, the minimum mooring requirement would be 2 lines, 2 backsprings and 2 breastlines for each end.
    - b) Whenever possible, mixing of wire and rope should be avoided. If combination mooring lines have to be used, they should be restricted, where possible, to headlines and sternlines.
- Caution: Beware of underwater marine cables and pipelines in the approach of Berth 11, 12 & 13.
7. No berthing of vessel above the maximum displacement.

8. VLCCs anchoring at ATRAF on the EBB tide should be programmed for a tidal strength  $\leq$  1knot. 1 big tug should be in attendance.
9. One tug is recommended to assist for berthing and unberthing of vessels at OS11, due to underwater cables in the area. Pilots may, on consultation with the master, request for additional tug, if necessary.
10. All gas/chemical carriers to OS13 to be assisted by 2 tugs, regardless of bow thrusters' condition.
11. Communication: Pilot Walkie talkie P03  
VHF Channel 19 (Bukom Operation)

## **PILOTAGE GUIDELINES**

### **1. BERTHING (DAY)**

#### **a) Flood Tide**

- |      |                                     |  |
|------|-------------------------------------|--|
| i)   | OSSBM                               | Programmed with at least 3 hours of west-going stream. |
| ii)  | OS1 to OS10, OS11, OS12, OS13& OSPJ | No restriction.  |
| iii) | OS10A, B                            | Tidal strength $\leq$ 0.5 knot.                        |

#### **b) Ebb Tide**

- |      |                     |   |
|------|---------------------|---|
| i)   | OSSBM               | No berthing.  |
| ii)  | OS1 to OS9 and OS12 | <p>When no counter current exists and OS#10 occupied by vessel <math>&gt;</math> 10,000 GT - vessels' displacements restricted to <math>\leq</math> 25,000 tons.</p> <p>When no counter current exists and OS#10 occupied by vessel <math>\leq</math> 10,000 GT – generally no restriction.</p> <p>When counter current exists - vessels' displacement restricted to <math>\leq</math> 25,000</p> |
| iii) | OS10                | <p>When no counter current exists – No restriction.</p> <p>When counter current exists - vessels' displacements restricted to <math>\leq</math> 25,000 tons.</p>  |

- iv) OS10A, OS10B & OS13 No restriction.
- v) OS11 Tidal strength  $\leq$  0.5 knot.

## 2. UNBERTHING (DAY)

### a) Flood Tide

- i) OSSBM, OSPJ No restriction.  
  
Port A/S
- ii) OS1 to OS9  
OS10A, B  
OS11, OS12 & OS13 No restriction.
- iii) OS10  
Draft >11.0m or  
displacement >40,000 tons Tidal strength  $\leq$ 1.0 knot.

#### Starboard A/S

- iv) OS1 to OS10,  
OS11A & B OS12 No restriction.
- v) OS10A, B Tidal strength  $\leq$  1.0 knot.  
(assisting big tug to provide  
towline).

### b) Ebb Tide

- i) OSSBM No unberthing if draft is  
> 15.0m.  
  
Port A/S
- ii) OS1 to OS10  
OS10A, B,  
OS12, OS13, OSPJ No restriction.
- iii) OS11 No restriction [1 big tug  
recommended when tidal strength  
> 1.0 knot (Selat Sinki)]

#### Starboard A/S

- iv) OS1 to OS10  
OS11

	OS12, OS13, OSPJ	No restriction.
v)	OS10A, B	Tidal strength $\leq$ 1.0 knot (assisting big tug to provide towline)
<b>3.</b>	<b>BERTHING (NIGHT)</b>	
a)	<b><u>Flood Tide</u></b>	
i)	OSSBM	Programmed with at least 3 hours of west-going stream.
ii)	OS1 to OS10 OS11A and B and OS12, OS13, OSPJ	No restriction.
iii)	OS10A, B	Tidal strength $\leq$ 0.5 knot.
b)	<b><u>Ebb Tide</u></b>	
i)	OSSBM	No berthing.
ii)	OS1 to OS8	When no counter current exists and OS#10 occupied by vessel > 10,000 GT – vessels' displacements restricted to $\leq$ 25,000 tons.  When counter current exists - vessels' displacement restricted to $\leq$ 25,000 or ( $\leq$ 26,000 tons for Shell 'H' class vessels)
iii)	OS9 and OS12	When no counter current exists and OS 10 occupied by vessel > 10,000 GT- vessels' displacements restricted to $\leq$ 25,000 tons.  When counter current exists - vessels' displacements restricted to $\leq$ 12,000 tons.
iv)	OS10	When no counter current exists - no restriction.  When counter current exists - vessels' displacements restricted to $\leq$ 25,000 tons.
v)	OS10A, B, OS13 & OSPJ	No restriction.

vi) OS11 Tidal strength  $\leq$  0.5 knots

#### 4. UNBERTHING (NIGHT)

##### a) Flood Tide

i) OSSBM, OS13, OSPJ No restriction.

##### Port A/S

ii) OS1 to OS9  
OS10A,B  
OS11A & B  
OS12 No restriction.

iii) OS10  
Draft >11.0m  
or displacement > 40,000 tons. Tidal strength  $\leq$  1.0 knot.

##### Starboard A/S

iv) OS1 to OS10  
OS11A ,B and OS12 No restriction.

v) OS10A, B  
Tidal strength < 0.5 knot  
(assisting big tug to provide  
towline)

##### b) Ebb Tide

i) OSSBM No unberthing if draft is  
> 15.0m.

ii) OS13, OSPJ No restriction.

##### Port A/S

ii) OS1 to OS10  
OS10A, B and OS12 No restriction.

iii) OS11 No restriction [1 big tug  
recommended when tidal strength  
>1.0 knot (Selat Sinki)

##### Starboard A/S

v) OS1 to OS10, OS12 No restriction

- vi) OS10A, B Tidal strength  $\leq$  0.5 knot. (assisting big tug to provide towline)
- vii) OS11 No restriction.
- viii) OS7 & 8 Vessels > 10,000 GT should whenever practicable exit between Second and Third Bukom Beacon or via Bukom #10.

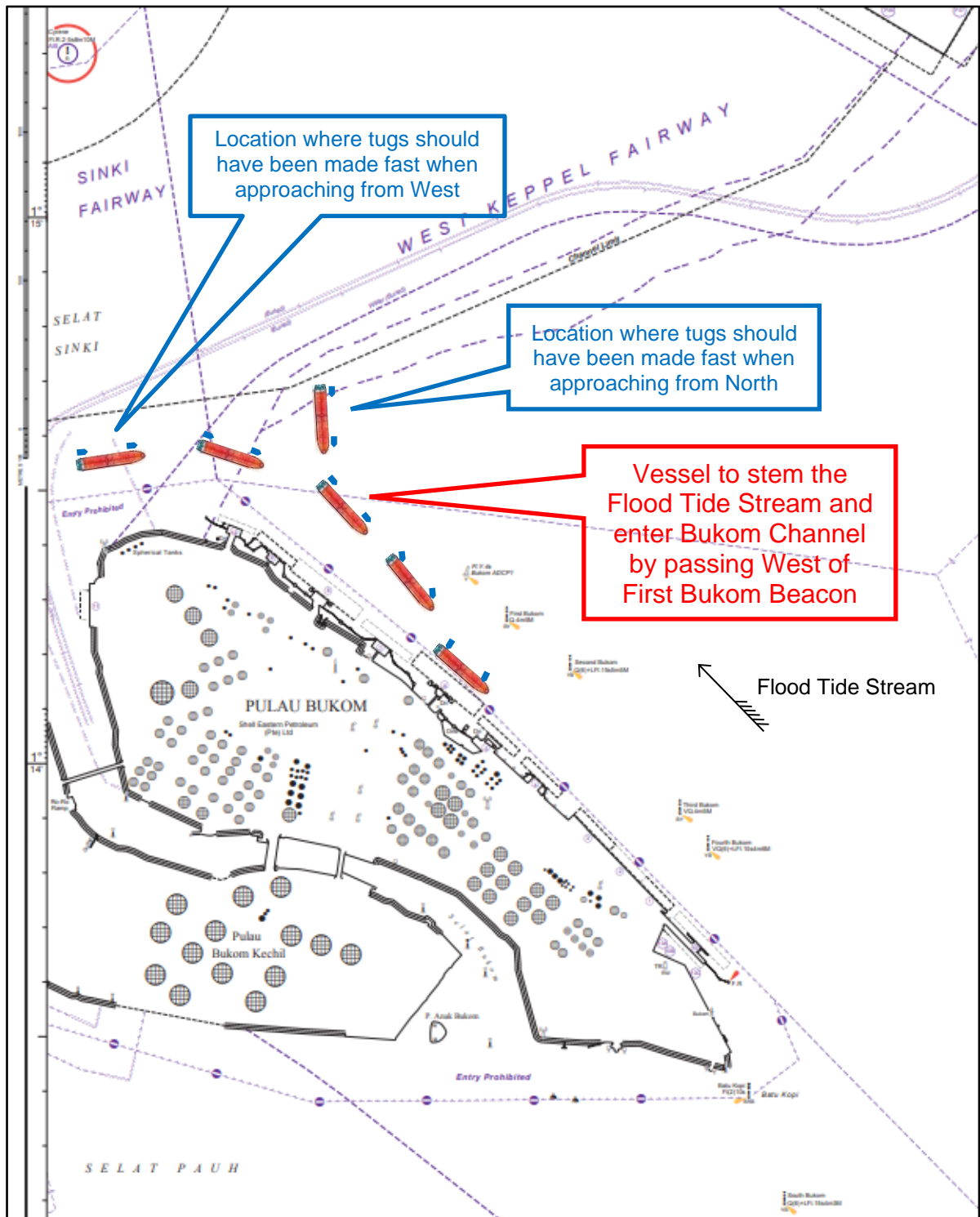
**TUG ASSIGNMENT GUIDELINES**

<b>LENGTH OVERALL OF VESSEL (LOA)</b>	<b>NUMBER OF TUGS</b>	<b>REMARKS</b>
Up to 100 metres	1 small tug	A vessel equipped with a suitable bow/stern thruster(s), in good working condition, may dispense with the need for a tug in that position.
101 to 152 metres	2 small tugs	
153 to 180 metres	2 medium tugs	
181 to 220 metres	2 medium tugs	
221 to 280 metres	2 big tugs	
281 metres and above	4 big tugs	

Generally, for movements at Shell's Single Buoy Mooring (SBM) and its berths at Pulau Bukom the Terminal should be consulted for their tug recommendation/requirement.

# SAFE APPROACH

## Flood Tide





# Ebb Tide

