Berg River Estuary: Aids to Navigation Pilot Project Workshop

02 March 2021

Berg River Estuary: Aids to Navigation Pilot Project Workshop

Draft Agenda

	Subject	Action
1.	Opening and Welcome	SAMSA
2.	Attendance and Apologies	All
3.	Adoption of the draft Agenda	All
4.	Discussion Items	
4.1	Background, Aids to Navigation required on the Estuary	SAMSA
4.2	Objectives of Pilot Project	All
4.3	Availability of lights, buoys, moorings, sinkers	All
4.4	The Way Forward	All
4.5	Blanking off of Bergrivier Harbour: Western Breakwater, Inner light (Z5641)	All
5.	Closure	SAMSA

SAMSA AtoN Standards

South African Maritime Safety Authority

Ref: SM 6/5/2/1

Date: 2 February 2016

Marine Notice No. 8 of 2016

Standards for Aids to Navigation in South African waters and Inland Waterways

TO ALL REGIONAL MANAGERS, PRINCIPAL OFFICERS, STATE OWNED ENTERPRISES, GOVERNMENT DEPARTMENTS, SOUTH AFRICAN NAVY HYDROGRAPHER, MUNICIPALITIES, AIDS TO NAVIGATION SERVICE PROVIDERS AND OTHER INTERESTED AND AFFECTED PARTIES.

Summary

These Standards apply to the provision, operation and discontinuation of all AtoN, both fixed and floating (buoys), including radionavigation / electronic AtoN, on land and at sea (South African waters, within ports and harbours, private harbours and marinas, etc. and Inland Waterways) in the RSA.

Standards for AtoN

SAMSA, AtoN Competent Authority

Shall ensure safety of navigation by **standardisation**, **harmonisation** and **compliance** of all maritime AtoN in the RSA, on land, at sea and on sheltered (incl. inland) waters

Obtaining the greatest possible uniformity in AtoN by taking into account the appropriate international recommendations and guidelines, in particular the recommendations and guidelines of IALA, e.g. colour, flash characteristics, ranges, Maritime Buoyage System, Availability, qualifications, etc.

Note: SAMSA needs to give prior sanction for:

(i) new AtoN

(ii) the amendments to any AtoN and

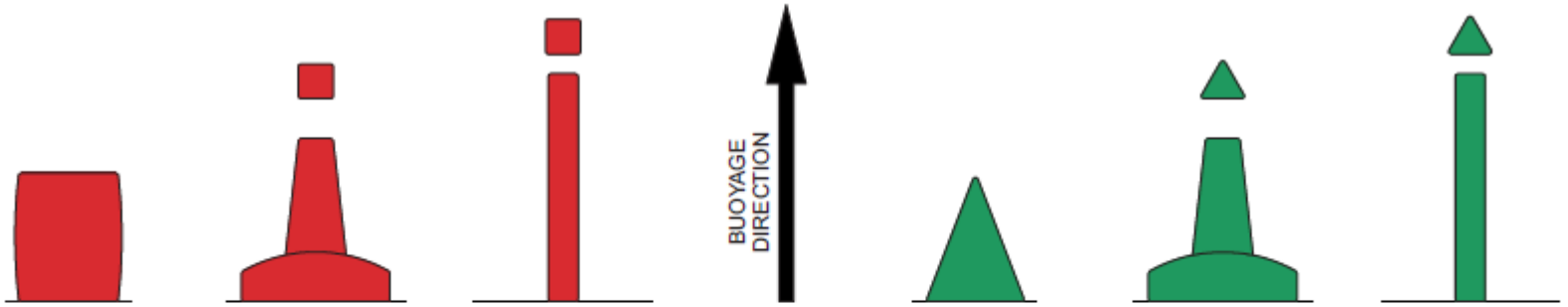
(iii) the discontinuation of any AtoN

In all instances mentioned above, a written case must be submitted to SAMSA for consideration and approval

The latest forms can be obtained from aton@samsa.org.za

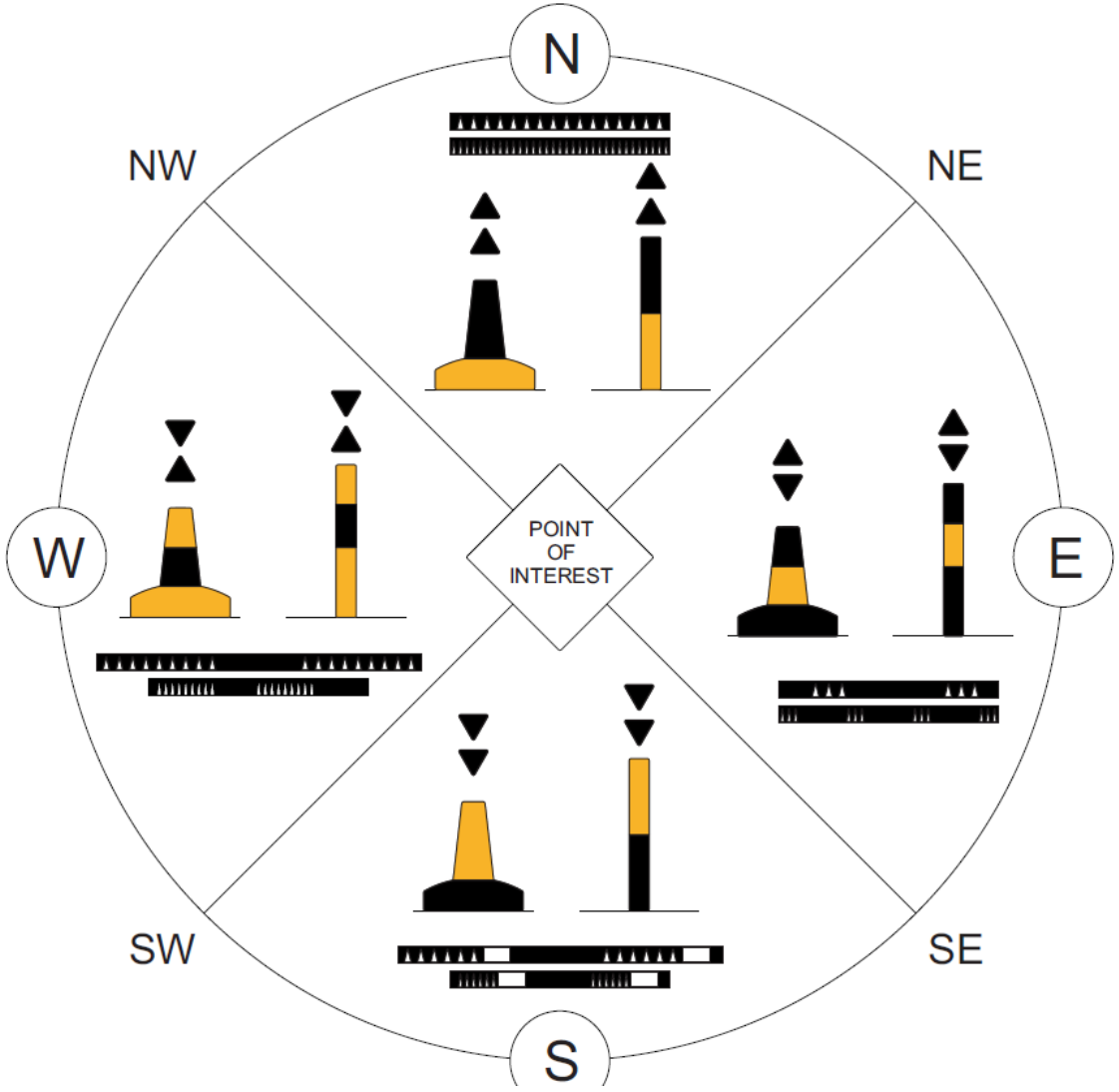
IALA Maritime Buoyage System (MBS)

Lateral Marks used in Region A



	2.4.1 Port hand Marks	2.4.2 Starboard hand Marks
Colour	Red	Green
Shape of buoy	Cylindrical (can), pillar or spar	Conical, pillar or spar
Topmark (if any)	Single red cylinder (can)	Single green cone, point upward
Light (when fitted)		
Colour	Red	Green
Rhythm	Any, other than that described in section 2.4.3.	Any, other than that described in section 2.4.3.

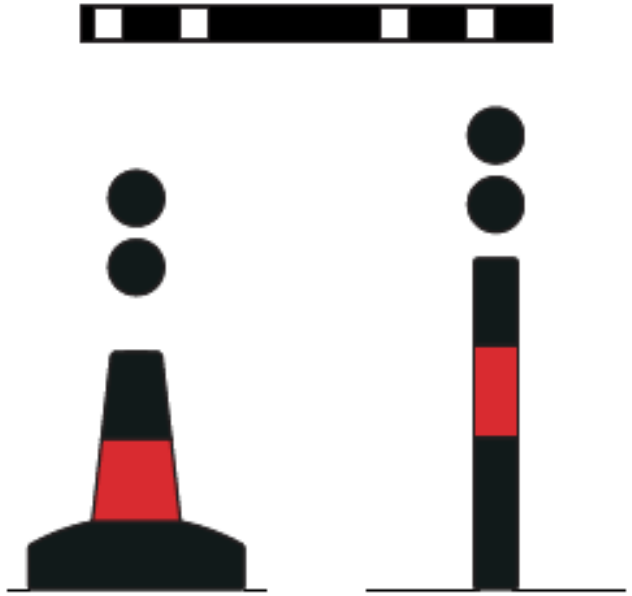
IALA Maritime Buoyage System (MBS).



A cardinal mark indicates where the best and safest water may be found and shows where the mariner has safe passage

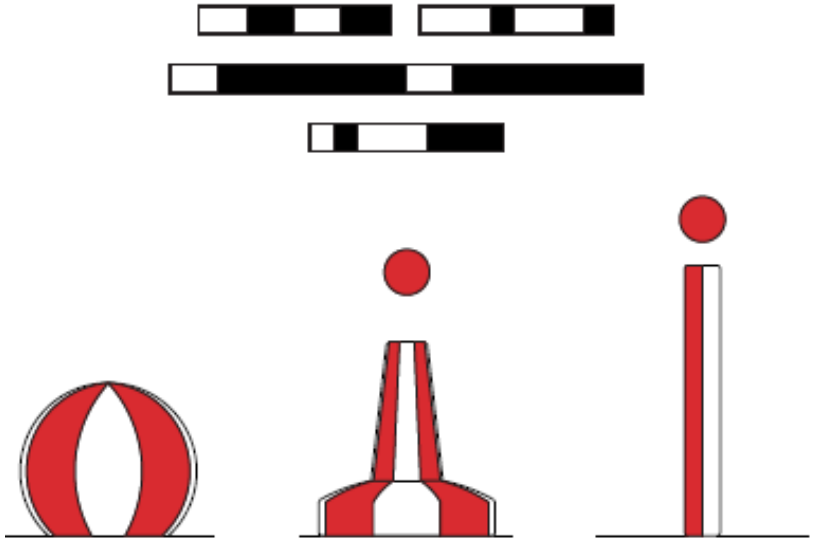
IALA Maritime Buoyage System (MBS)..

Isolated Danger Marks



Isolated danger marks designate an isolated danger of limited extent which has navigable water all round it, for example an isolated shoal, island, rock or wreck.

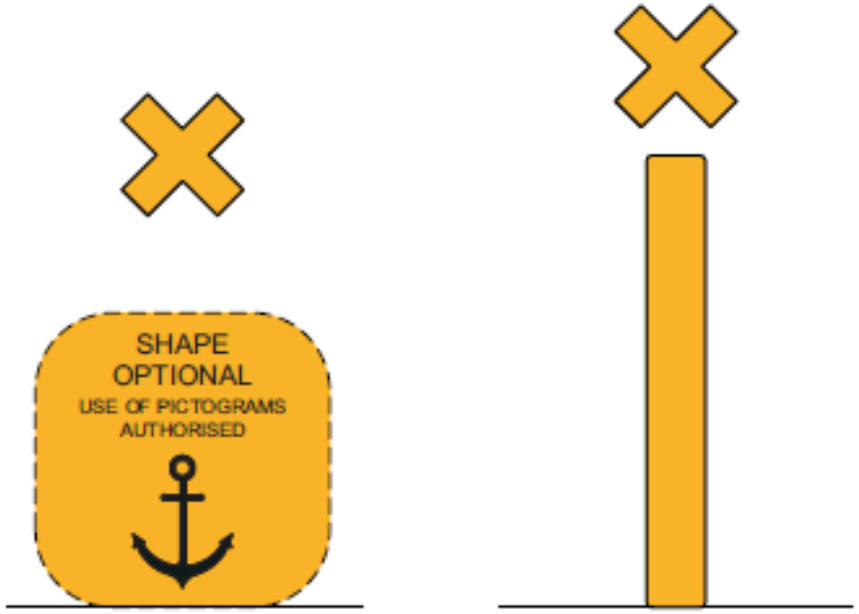
Safe Water Marks



Safe water marks indicate that there is navigable water all around the mark for example mid channel buoy.

IALA Maritime Buoyage System (MBS)...

Special Marks

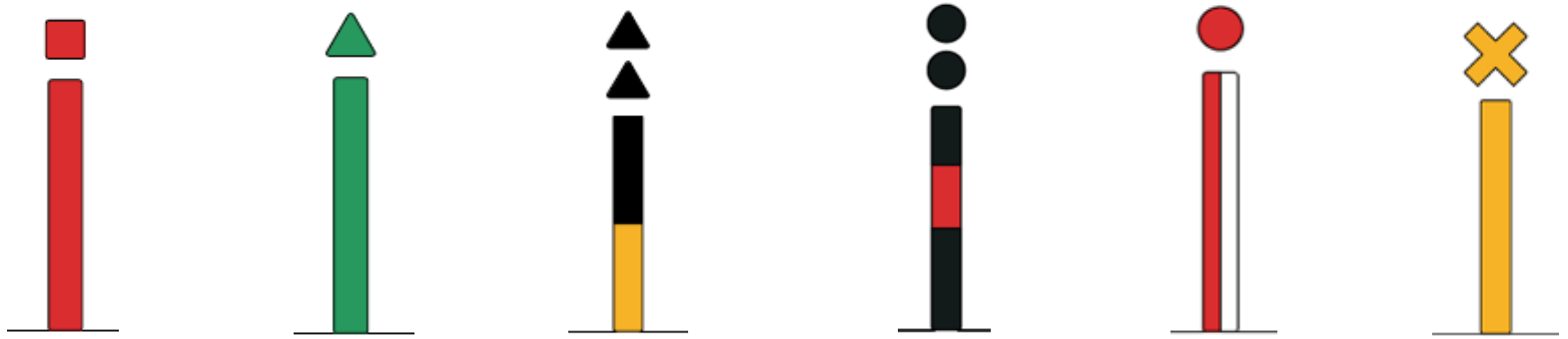


	Description
Colour	Yellow
Shape of buoy	Optional, but not conflicting with lateral marks
Top-mark (if any)	Single yellow "X" shape
Light (when fitted)	
Colour	Yellow
Rhythm	Any, other than those reserved for cardinal, isolated danger and safe water marks.
Pictogram	The use of pictograms is authorized, as defined by a competent authority.

Special marks indicate a special area or feature. They can also be used to indicate skiing areas, sailing areas, etc.

IALA Maritime Buoyage System (MBS)....

- MBS also applies to fixed AtoN
- Fixed AtoN can be used in place of buoys where circumstances allow



Lateral Marks

Cardinal Marks: all 4 quadrants

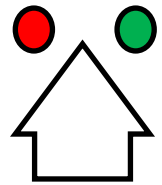
Isolated Danger Mark

Safe Water Mark

Special Mark

System of Marks					
AtoN Type	**Side View**			**Symbology**	**Short Description**
	Floating (Pillar / Spar)		**Fixed**		
Starboard Hand Mark (SH)					Keep to the Port Side (Keep Left)
Port Hand Mark (PH)					Keep to the Starboard Side (Keep Right)
Safe Water Mark (SW)					Navigable water all around the Buoy (Deepest / Safest)
Isolated Danger Mark (ID)					Isolated danger of limited extent with navigable water all around it
Special Mark (SM)					Mainly used in conjunction with the Demarcation Marks

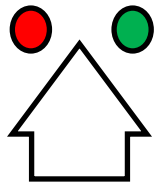
Also applies when fixed; located in water



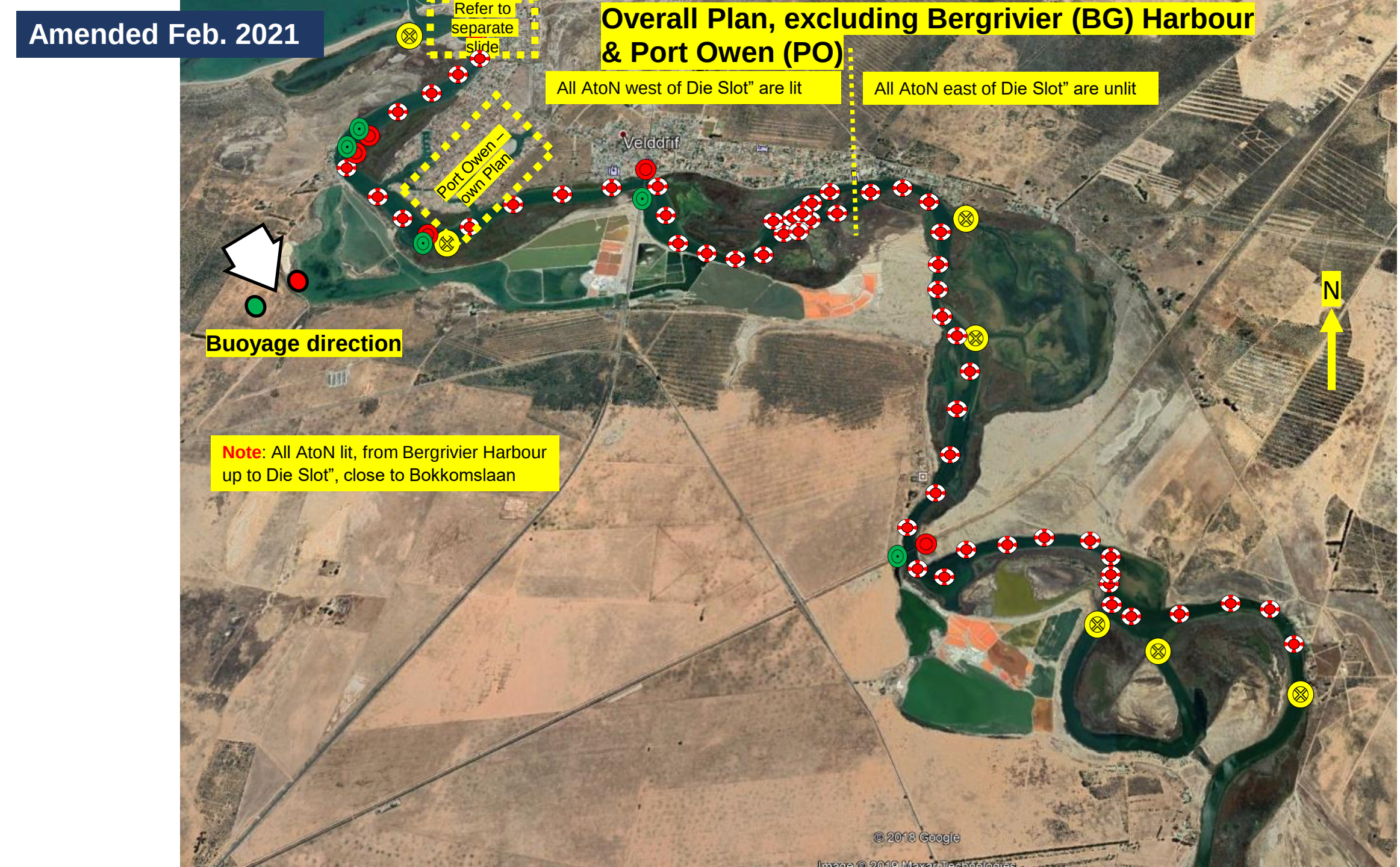
Indicate buoyage direction

System of Marks				
AtoN Type	**Side View**		**Symbology**	**Short Description**
	Floating	**Fixed**		
North Cardinal Mark (NC)				Safe passage on Northern Side (Danger Area South)
East Cardinal Mark (EC)				Safe passage on Eastern Side (Danger Area West)
South Cardinal Mark (SC)				Safe passage on Southern Side (Danger Area North)
West Cardinal Mark Buoy (WC)				Safe passage on Western Side (Danger Area East)

Also applies when fixed; located in water



Indicate buoyage direction


Amended Feb. 2021
Overall Plan, excluding Bergrivier (BG) Harbour & Port Owen (PO)
Refer to separate slide
All AtoN west of Die Slot" are lit
All AtoN east of Die Slot" are unlit
Velddrif
Port Owen – own Plan
Buoyage direction
Note: All AtoN lit, from Bergrivier Harbour up to Die Slot", close to Bokkomslaan
N
© 2018 Google

Amended Feb. 2021

AtoN Plan - Section 1


AtoN Plan - Section 2
Velddrif
Markings on Bridge pillars
N
All AtoN west of Die Slot" are lit
All AtoN east of Die Slot" are unlit
BG-PH10
BG-SW16
BG-SH10
BG-SW17
BG-SW18
BG-SW19
BG-SW20
BG-SW21
BG-SW22
BG-SW23
BG-SW24
BG-SW25
BG-SW26
BG-SW27
BG-SW28
BG-SW29
BG-SW30
BG-SW31
BG-SW32
BG-SW33
BG-SM10
BG-SW34

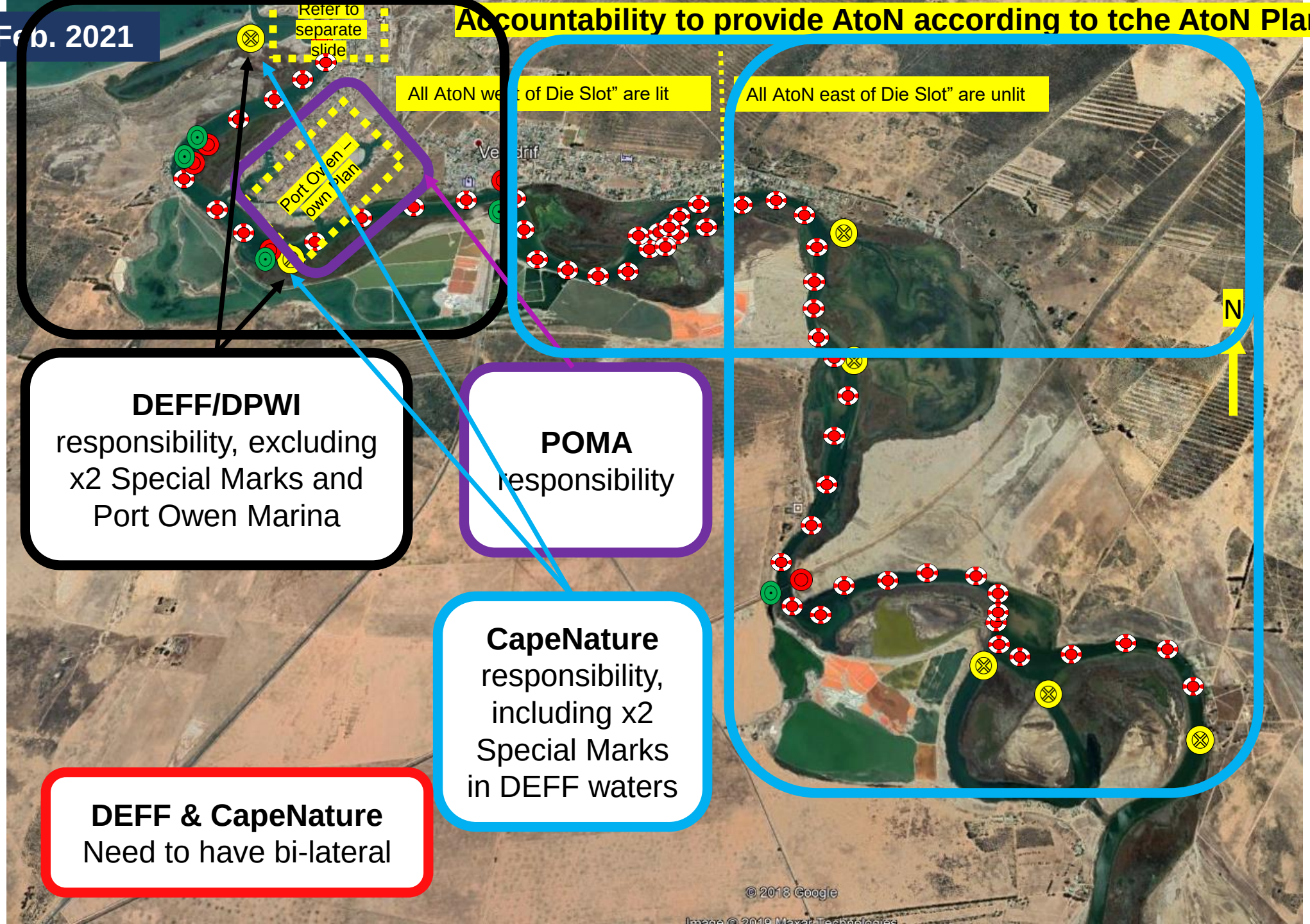
Port Owen AtoN Plan

Note: All AtoN lit

Summary	
Description	**Total**
Total AtoN (all lit)	19
Port Hand Marks	x5 in water x3 on land
Starboard Hand Marks	x4 in water x4 on land
Special Marks	3

Amended Feb. 2021

Accountability to provide AtoN according to tche AtoN Plan



DEFF/DPWI
responsibility, excluding x2 Special Marks and Port Owen Marina

POMA
responsibility

CapeNature
responsibility, including x2 Special Marks in DEFF waters

DEFF & CapeNature
Need to have bi-lateral

Background

1. SAMSA approved a request from Port Owen Yacht Club (POYC) on 22 December 2020 to deploy 6 temporary buoys on the Berg River Estuary, close to the Port Owen Marina to help mitigate the risks of navigating the river between the Port Owen Holding Jetty and the Port Owen Marina during the holidays

   In the sanction to POYC to provide the temporary AtoN, SAMSA noted that, amongst others, no topmarks and lights are fitted due to the temporary measure of the AtoN, the colour of the temporary buoys do not completely comply having orange buoy bodies

   This in itself is a danger of navigation.

   The stability of the buoys are also questionable

2. In January 2021 POYC requested the temporary buoys to be employed until permanent buoys are deployed

3. Although SAMSA agrees that temporary AtoN are better than none, should SAMSA allow the temporary buoys to be in place for a longer period, this may set a precedent which could result in the AtoN are never standardised and harmonised, which in itself is irresponsible and dangerous, and is quite the opposite to what SAMSA has to achieve as per its AtoN Standards.

Background .

Temporary buoys and moorings being assembled

Background ..

Temporary buoys employed

Note: (a) No topmarks

(b) Not fitted with lights

(c) Colour not compliant, having orange buoy bodies

(d) Stability?

Background ...

Local design used many years ago on the Bergrivier Estuary – locally manufactured

Background …

4. Standardised and Harmonised AtoN
5. Compliance to SAMSA AtoN Standards: colour, shape, size, characteristics, ranges, availability, etc.
6. AtoN specialised field
7. AtoN not usually available off-the-shelf
8. Quality important (durability, stability – upright & colour)
9. Limited experience on type of AtoN on an “open estuary” - affected by tidal changes (fast water)
10. Three institutions involved: DEFF/DPWI, CapeNature & POMA
11. Specification(s) required
12. Deployment
13. Spares
14. Maintenance and repairs
15. This led to the proposal to use the opportunity for a Pilot Project

Objective of Pilot Project

1. Three institutions are to provide AtoN on the Berg River Estuary, i.e. Department of Environment, Forestry and Fisheries (DEFF, West of the Carinus bridge - noting that the Department of Public Works and Infrastructure (DPWI) may also be involved), CapeNature (from the Carinus bridge, eastwards, and with a few AtoN west of the Carinus bridge to indicate the zoning borders) and Port Owen Marina Authority (POMA – within Port Owen Marina).
2. Combine efforts during which various AtoN options could be considered and tested for the Berg River Estuary and Port Owen Marina, both for floating and fixed (located in the water) AtoN.
3. The aim would be to determine what is available on the market, both local and international, do some research, development, designs/prototypes, and testing to determine what type of buoys/poles and lights would be best suited for the local circumstances, looking at viable local manufacturing/supplier possibilities, the costing, etc.
4. Compile a common specification(s) that all three institutions could consider using to budget, procure and deploy the relevant AtoN. This could then also be used at other estuaries.

Typical equipment

Self-contained LED lights

1.2NM

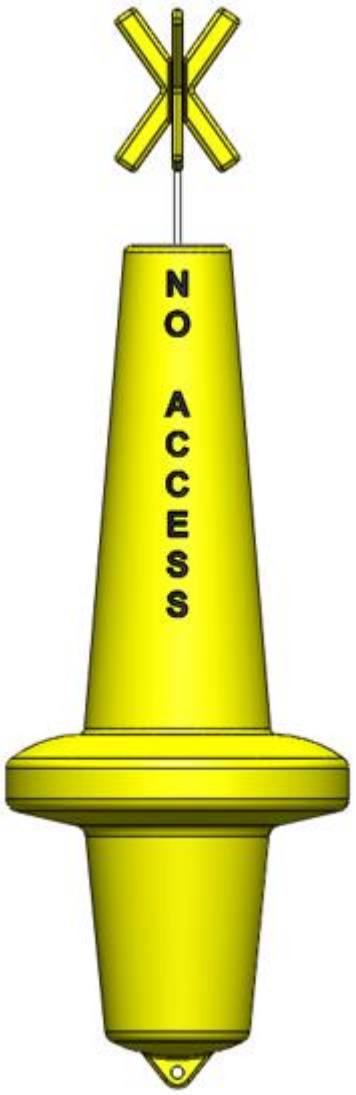
Cannot be synchronised

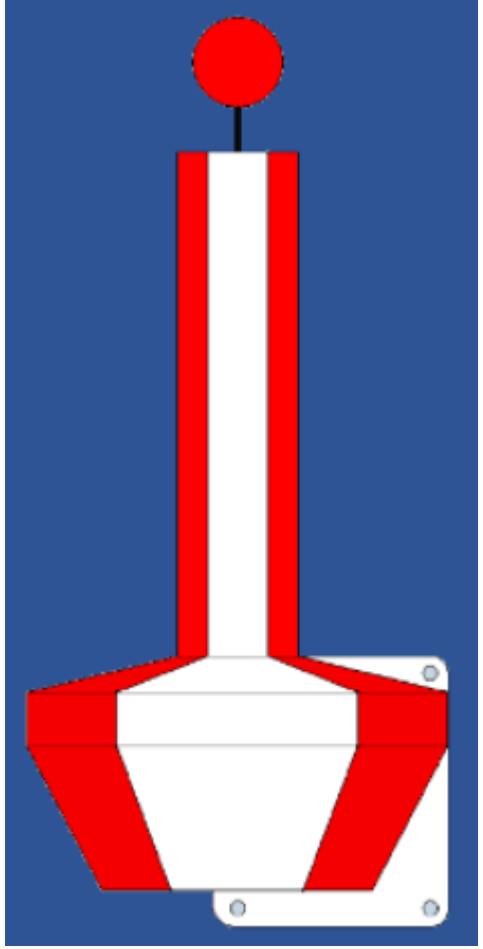
2-3NM

Can be synchronised

Typical equipment .

Spar

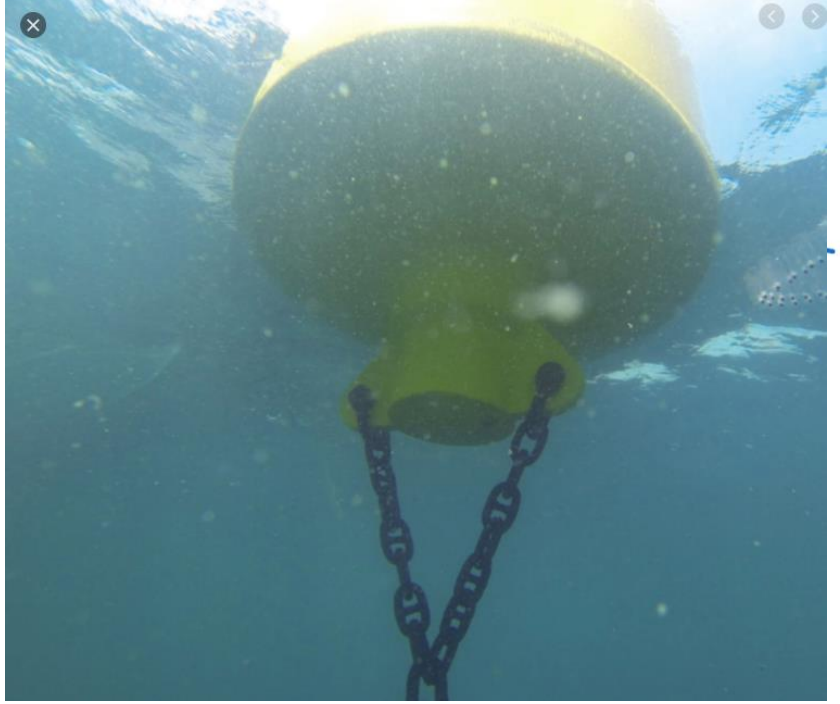


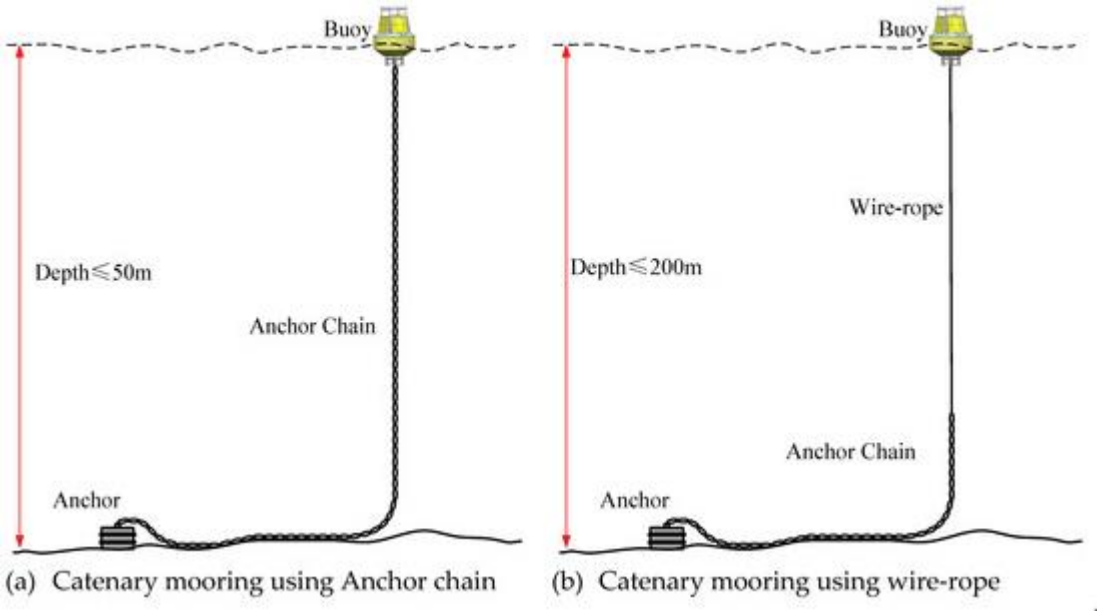


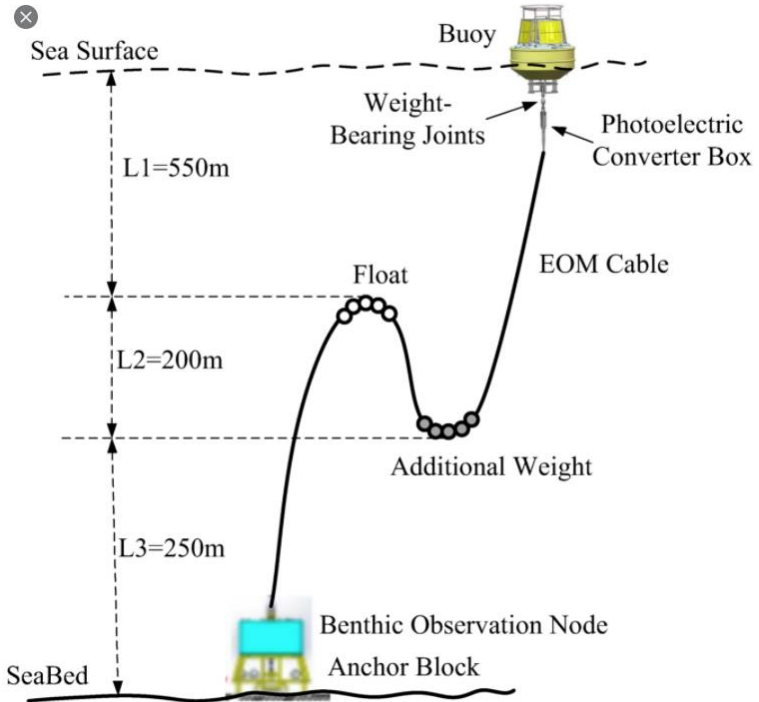
Fast water

Multiple mooring eyes and counterweight mooring points to facilitate correct operation over varying water depths and speeds

Typical equipment ..



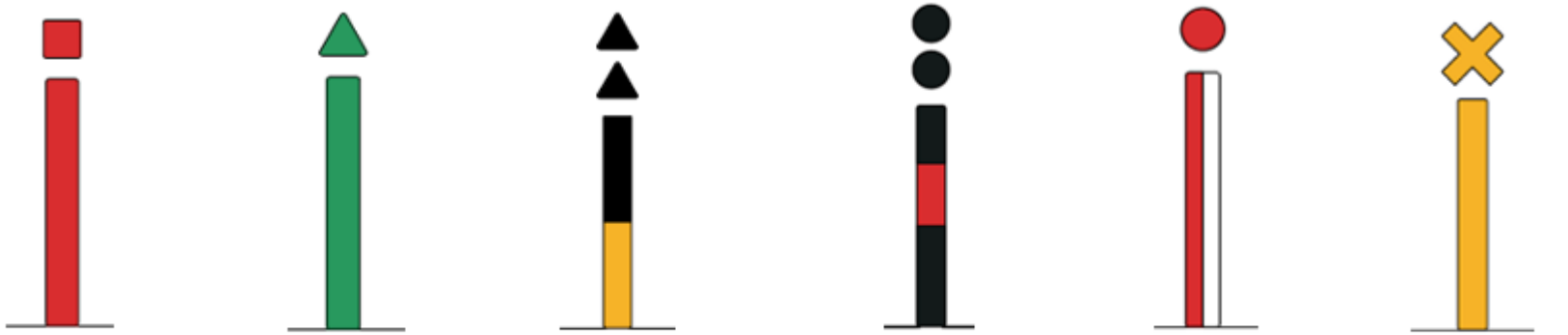




Typical equipment ...

Fixed wooden/ PVC pole

Fit with daymark (attach “fins/collar” to represent the correct colour and to increase conspicuity) and topmark to reflect the required Mark



Lateral Marks

Cardinal Marks: all 4 quadrants

Isolated Danger Mark

Safe Water Mark

Special Mark

Thinking

1. Floating (buoy) vs fixed (pole) (in the water) / wood/PVC, or ?
2. Stability during tidal changes/current - tail tube/fast water/spar
3. Mooring composition:
   (a) Chain: short link/long link, size?
   (b) SS/nylon rope/Synthetic mooring?)
   (c) Sinkers: Concrete / metal / mass / heli-coil?
   (d) Shackles & swivels
4. Top Marks
5. Use same buoy body, fit with interchangeable top section – perhaps not feasible for small buoys?
6. Lit & unlit AtoN required
   (a) Lights – need to be able to be synchronised
7. How can POYC buoys be modified to comply – lit and/or unlit?
8. Other designs that could be considered
9. Local availability, or need to import? Agents in SA?
10. Funding, or in-kind support required for R&D, trials, etc.

Other considerations

11. Autonomy ≤4 Days??
12. Current: in between tides 3 knots
13. Vertical divergence - ≤7-10°
14. Dredging – only in POM
15. Depth at low- & high tide?
16. Seabed composition – mud/sand/rocky?
17. Installation of AtoN?
18. Public Awareness
19. Vandalism
20. Reporting failures/availability
21. Maintenance & repairs?

Other ideas/considerations??

Funding

Phased-in approach

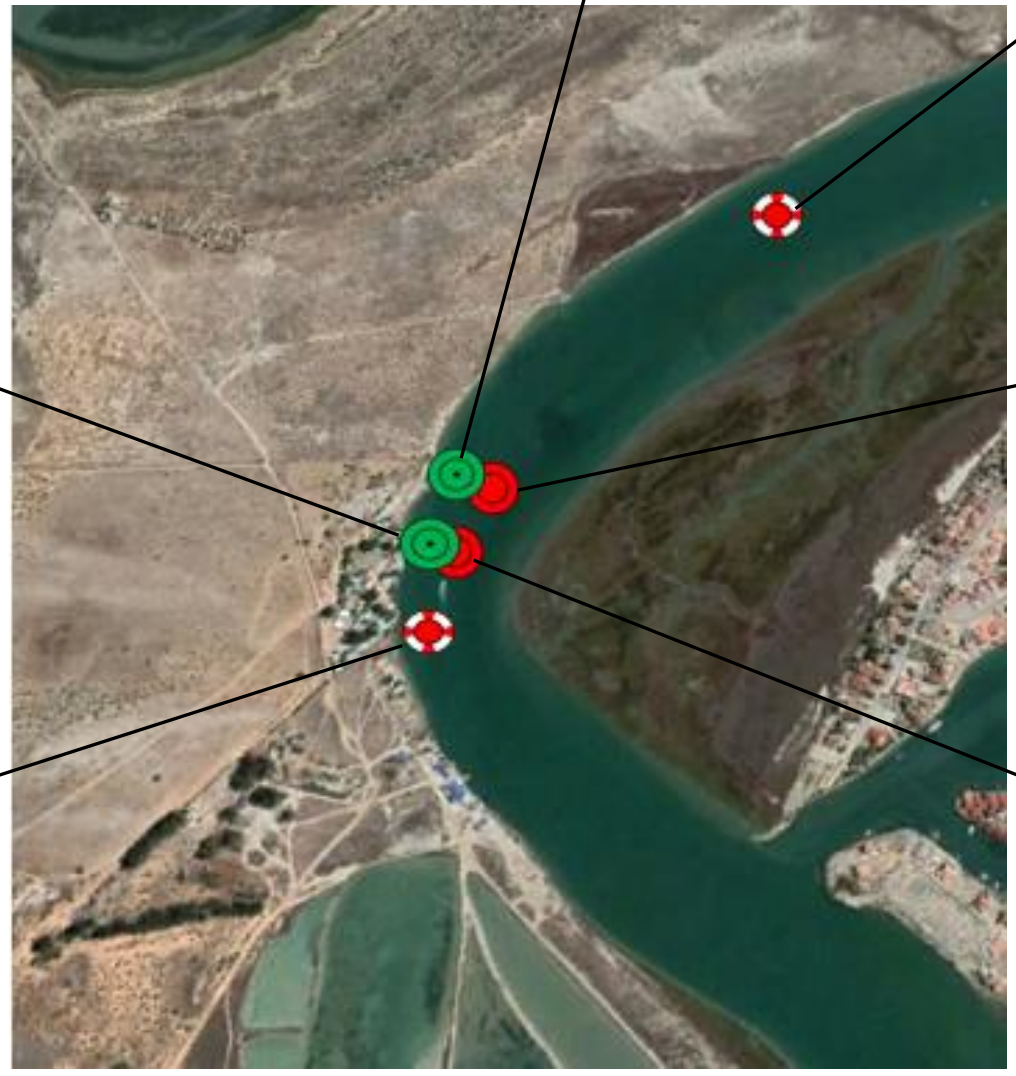
The Way Forward (as discussed at workshop)

Pilot Project & ensuring compliance

Adapt current SH buoy / spar? to be compliant (unlit)
POYC

Solid Pole, with topmark, and reflecting a Safe Water Mark (collar) (unlit)
POYC/POMA??

Fast water Starboard Hand Mark buoy with topmark (lit)
Nautibuoys & M-RAD (James)??

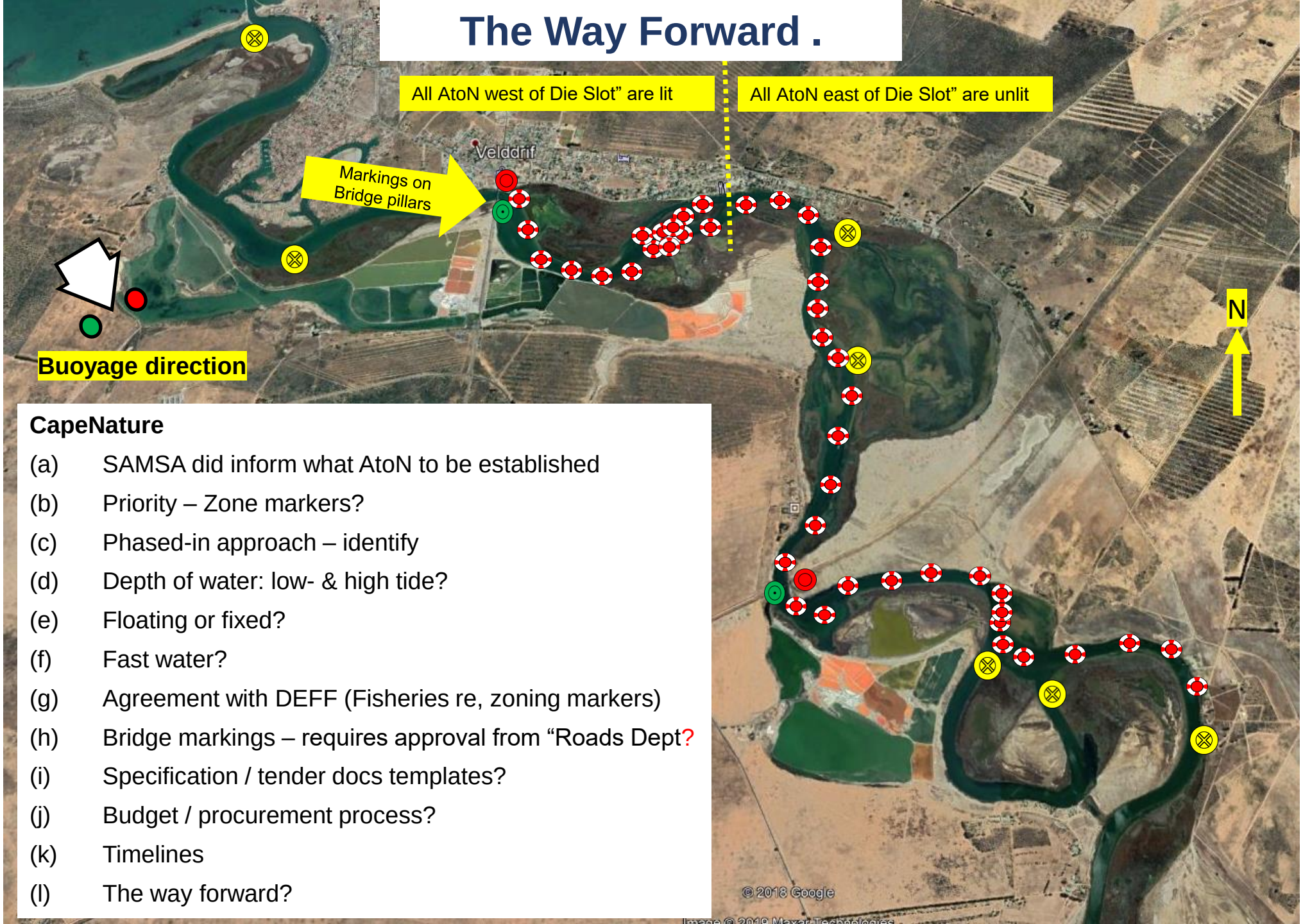


Adapt current PH buoy to be compliant (unlit)
POYC

Safe Water Mark buoy, with topmark (unlit) – perhaps one of the local ones that was used earlier
POYC/POMA??

Solid Pole, with topmark, and reflecting a Porthand Mark (collar)
(lit – M-RAD (James)
POYC/POMA??
Seabed conditions; not able to fit pole??

The Way Forward .



CapeNature

(a) SAMSA did inform what AtoN to be established

(b) Priority – Zone markers?

(c) Phased-in approach – identify

(d) Depth of water: low- & high tide?

(e) Floating or fixed?

(f) Fast water?

(g) Agreement with DEFF (Fisheries re, zoning markers)

(h) Bridge markings – requires approval from "Roads Dept?

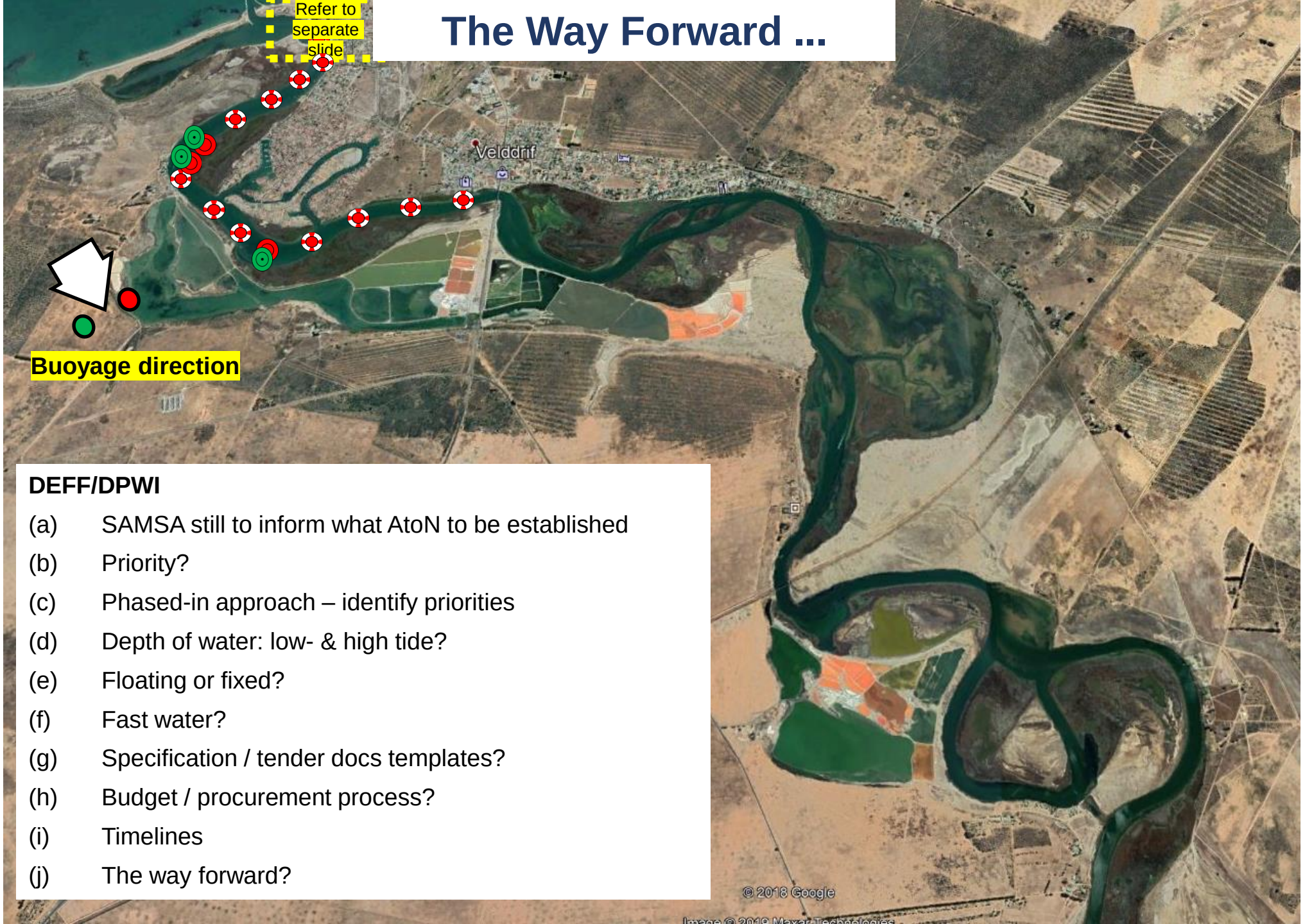
(i) Specification / tender docs templates?

(j) Budget / procurement process?

(k) Timelines

(l) The way forward?

The Way Forward ...



DEFF/DPWI

(a) SAMSA still to inform what AtoN to be established

(b) Priority?

(c) Phased-in approach – identify priorities

(d) Depth of water: low- & high tide?

(e) Floating or fixed?

(f) Fast water?

(g) Specification / tender docs templates?

(h) Budget / procurement process?

(i) Timelines

(j) The way forward?

AtoN in Bergrivier Harbour

Feedback from POYC members received:

1. Western Breakwater Head light (white flashing light)

Should be green – 7NM

2. Support structures of the Western- and Eastern Breakwater Heads

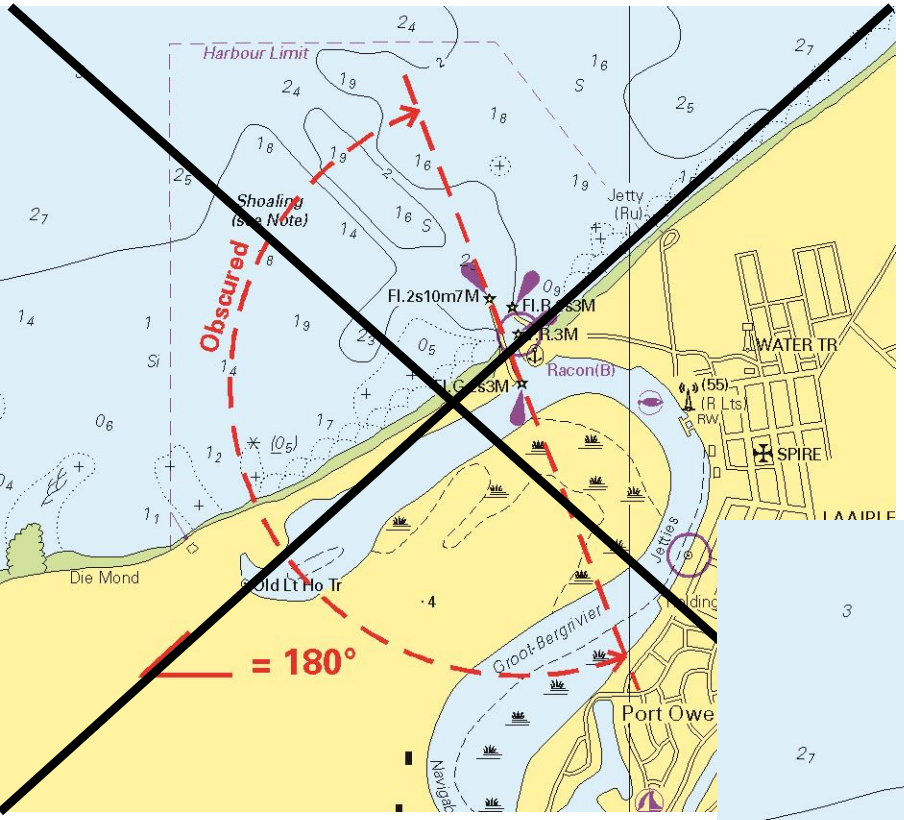
Both entrance light structures to reflect the relevant Port and Starboard Hand colours

3. **Western Breakwater, Inner light (Z5641)**

Should be blanked off

Any other institutions/stakeholders to provide input?

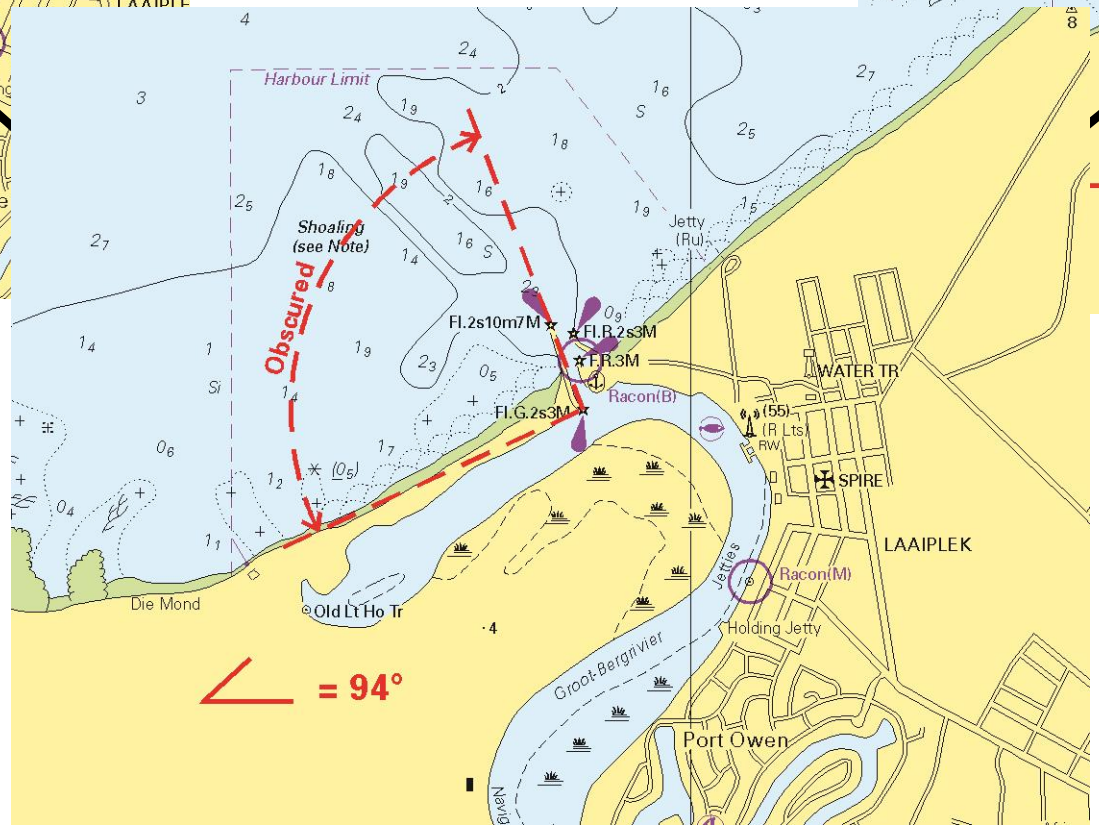
Bergrivier Harbour: Western Breakwater, Inner light (Z5641)



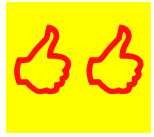
Option 1

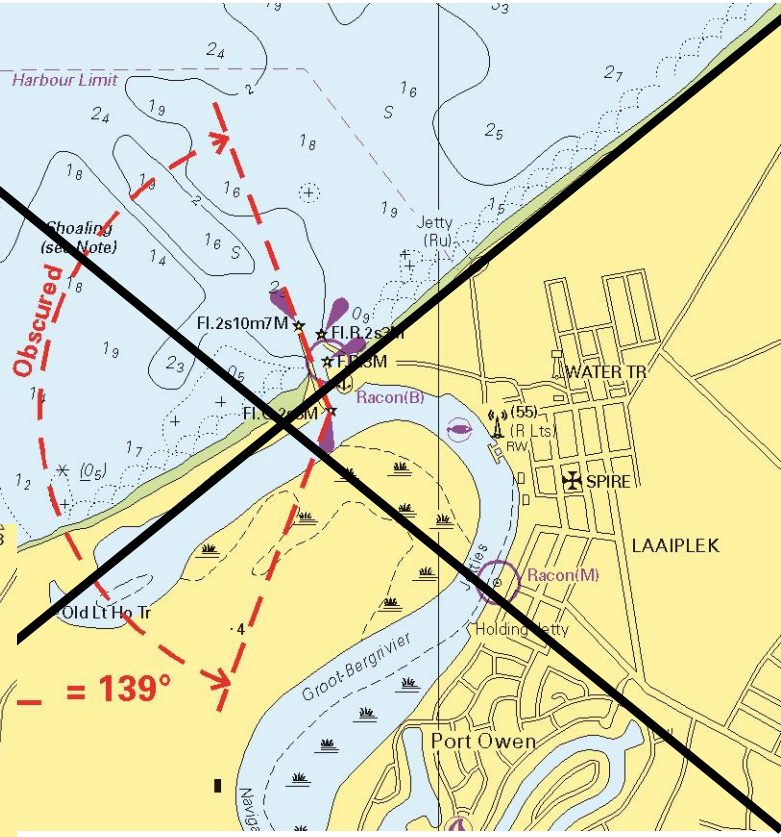
To be blanked off – which option??

Option 3



Option 3





Option 2

The End