

Tidal Lagoon Swansea Bay

Shipping and Navigation Hazard Workshop

30th April 2013

1100 - 1600

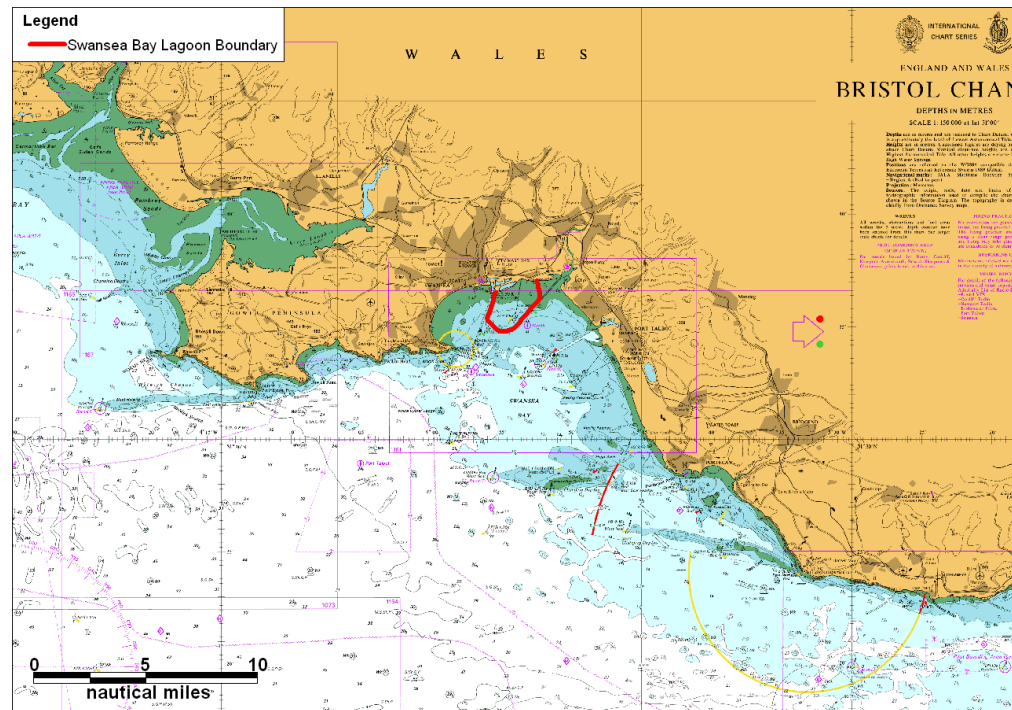


Agenda

1100 – 1130	Overview of project
1130 – 1200	Baseline data and hazard workshop overview
1200 – 1300	Work groups – hazard identification, causes, consequences and mitigations
1300 – 1330	Lunch
1330 – 1530	Work groups – hazard identification, causes, consequences and mitigations
1530 – 1600	Discussion and close out

Introduction

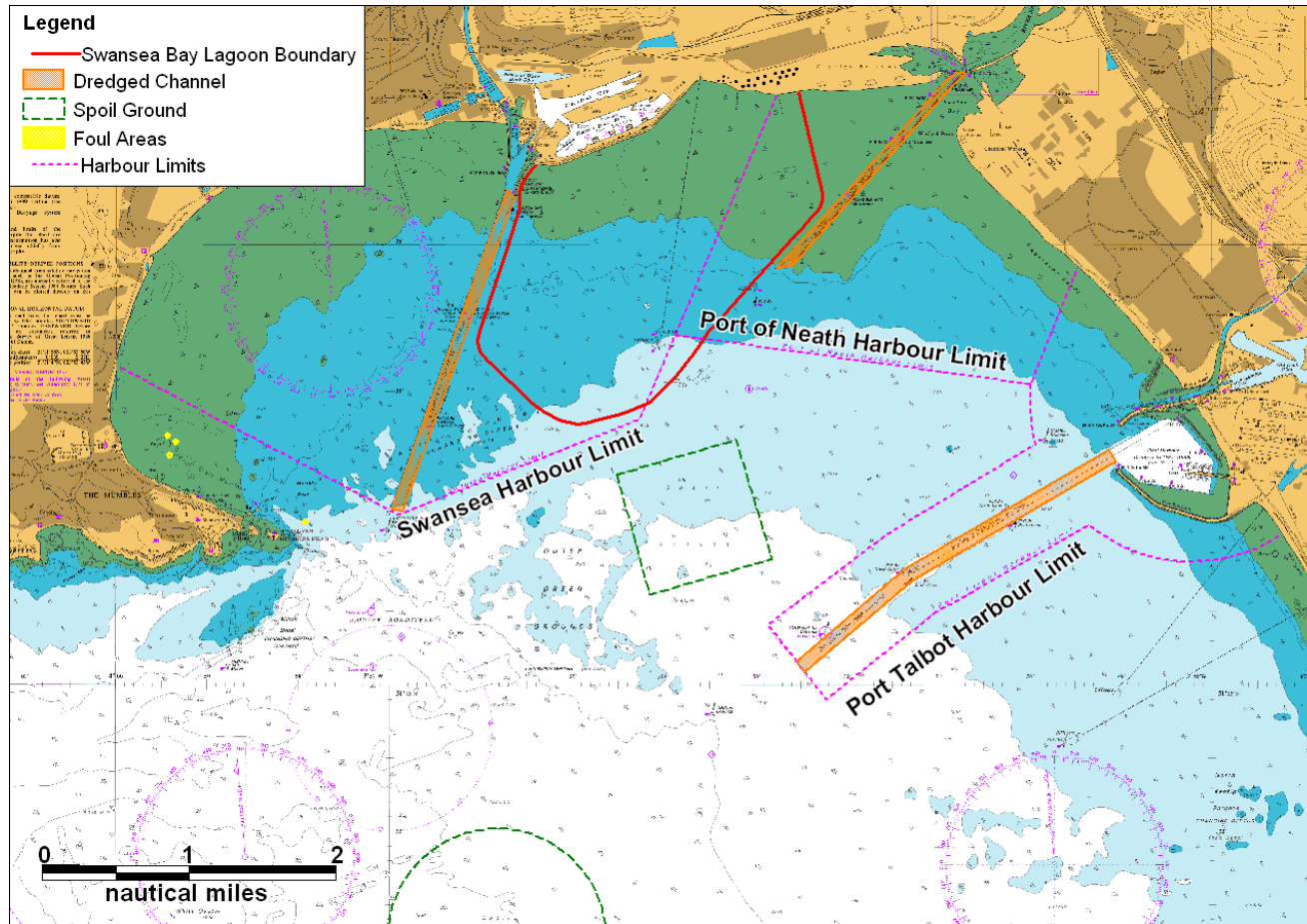
- Current proposals to build a tidal lagoon in Swansea Bay, on the South Wales coast.
- Capable of generating over 400,000 MWh/year.
- Anatec are currently working with Tidal Lagoon Swansea Bay on the shipping and navigation aspect of the project.



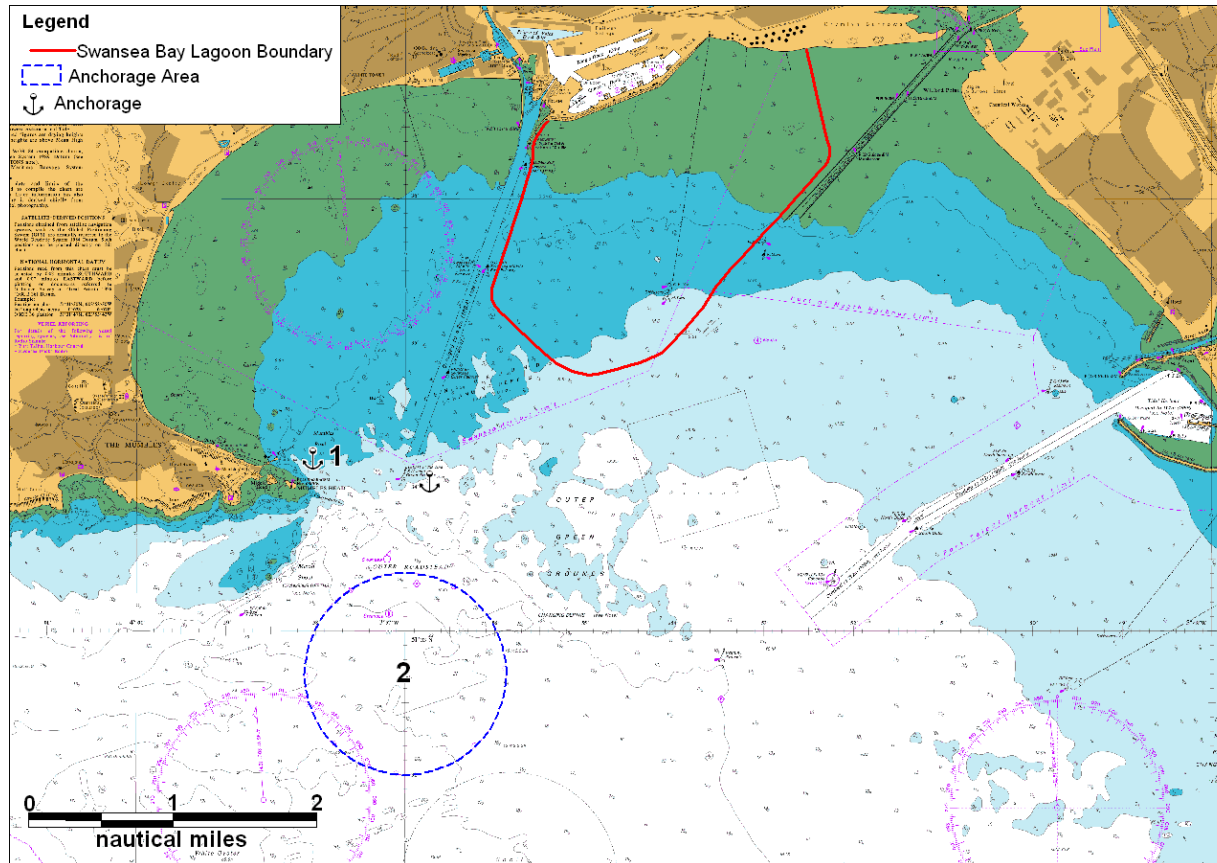
Baseline Environment

- Navigational Features
- Anchorage Areas
- Aids to Navigation
- AIS Vessel Tracks
- Daily Number of Vessels
- Busiest Day
- Vessel Length
- Vessel Draught
- Anchored Vessels
- Recreational Overview
- Fishing Vessel Overview

Navigational Features

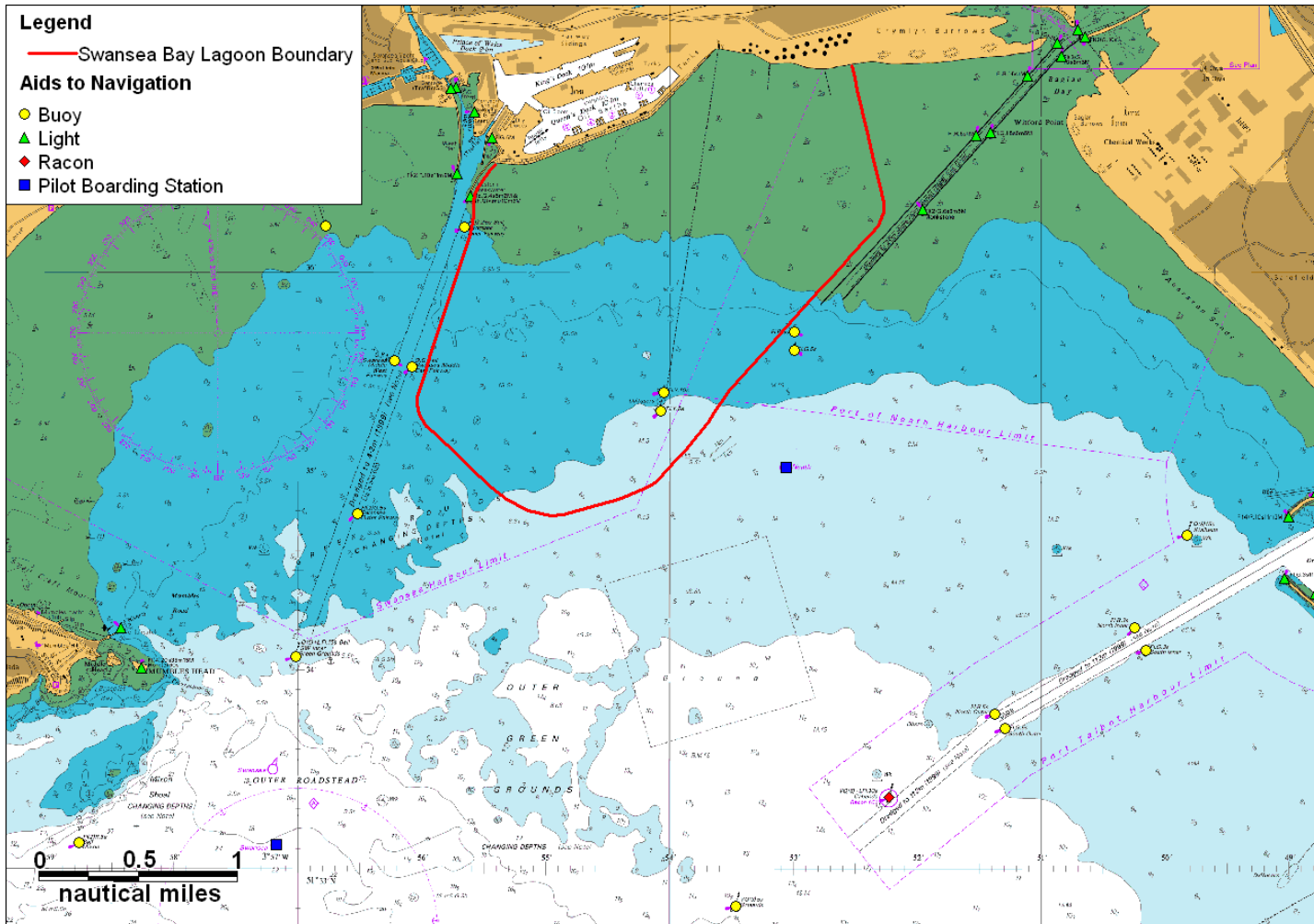


Anchorage Areas

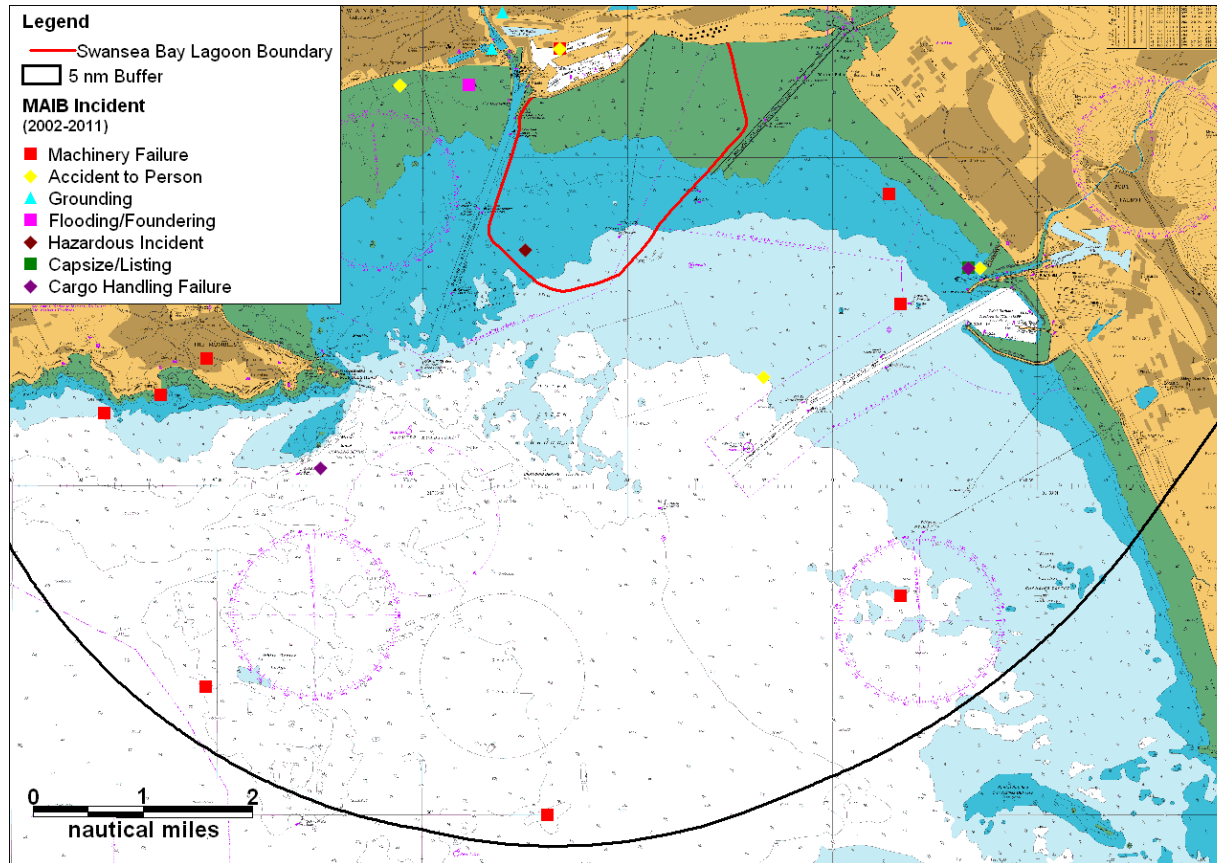


1. Mumbles Road: This anchorage is suitable for vessels of light draught and lies NE of Mumbles Head.
2. Outer Roadstead: This anchorage area is normally used by vessels awaiting entry to Port of Swansea or Port Talbot Old Dock.

Aids to Navigation



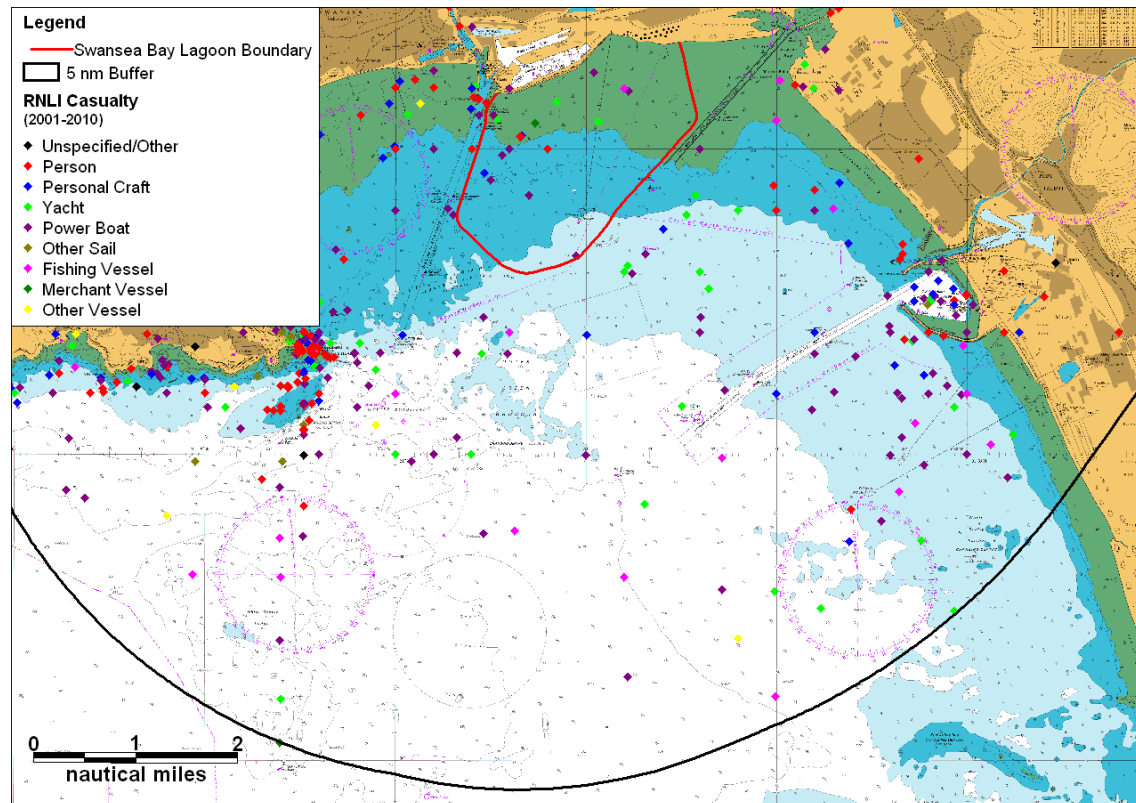
Maritime Incidents – MAIB



MAIB Incidents (2002-2011)

- A total of 24 unique incidents involving 25 vessels were reported within 5nm buffer.
- One incident (a hazardous incident involving a fish catching/processing vessel) was recorded within the lagoon boundary on 27th October 2006.

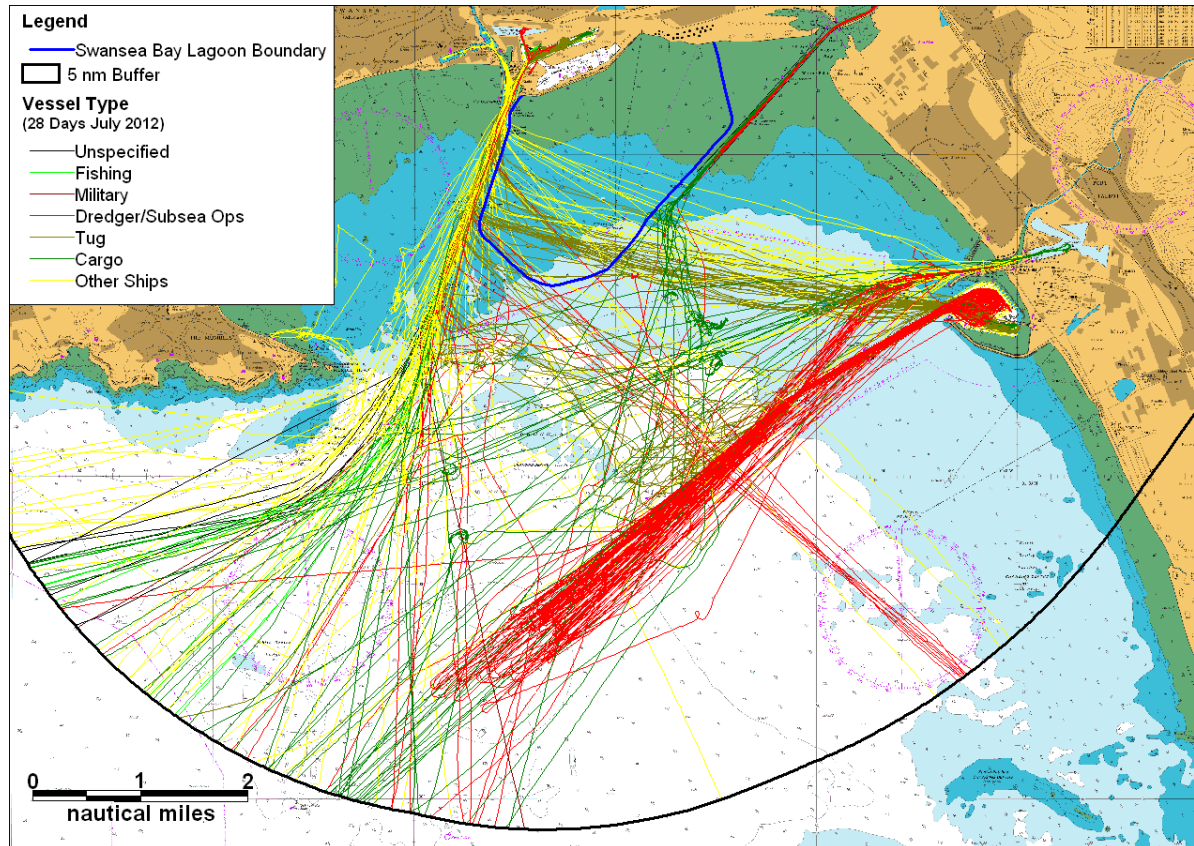
Maritime Incidents – RNLI



RNLI Incidents (2001-2010)

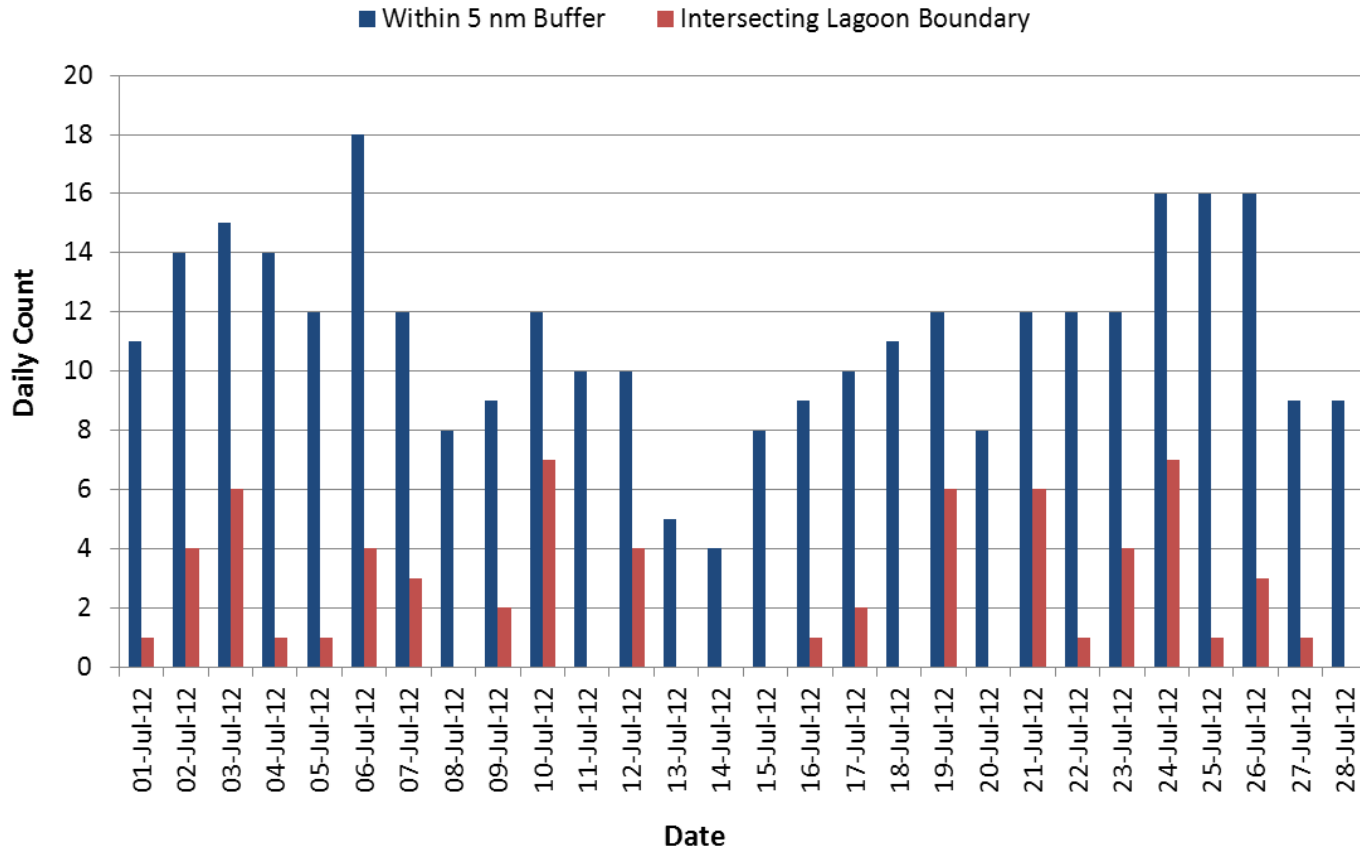
- The main reported causes were person in danger (48%) and machinery failure (28%)
- The majority of casualties within the lagoon boundary were persons (33%) and power boats (33%)
- The vast majority of incidents within the 5 nm buffer were responded to by the ILBs from either Mumbles (65%) or Port Talbot (20%) or the ALB from Mumbles (13%)

AIS Data – 28 Days July 2012



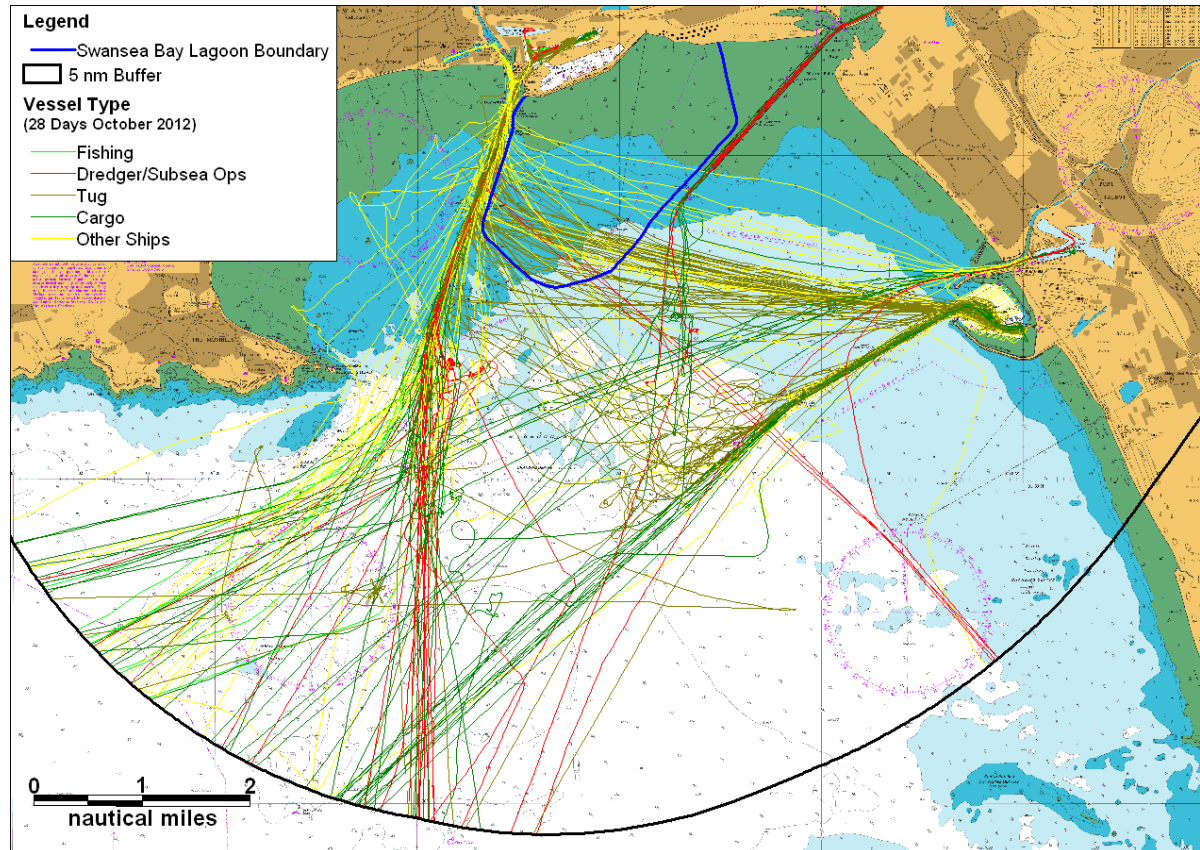
The majority of vessels were cargo vessels (30%), dredgers (23%) and tugs (22%).

Daily Count – 28 Days July 2012



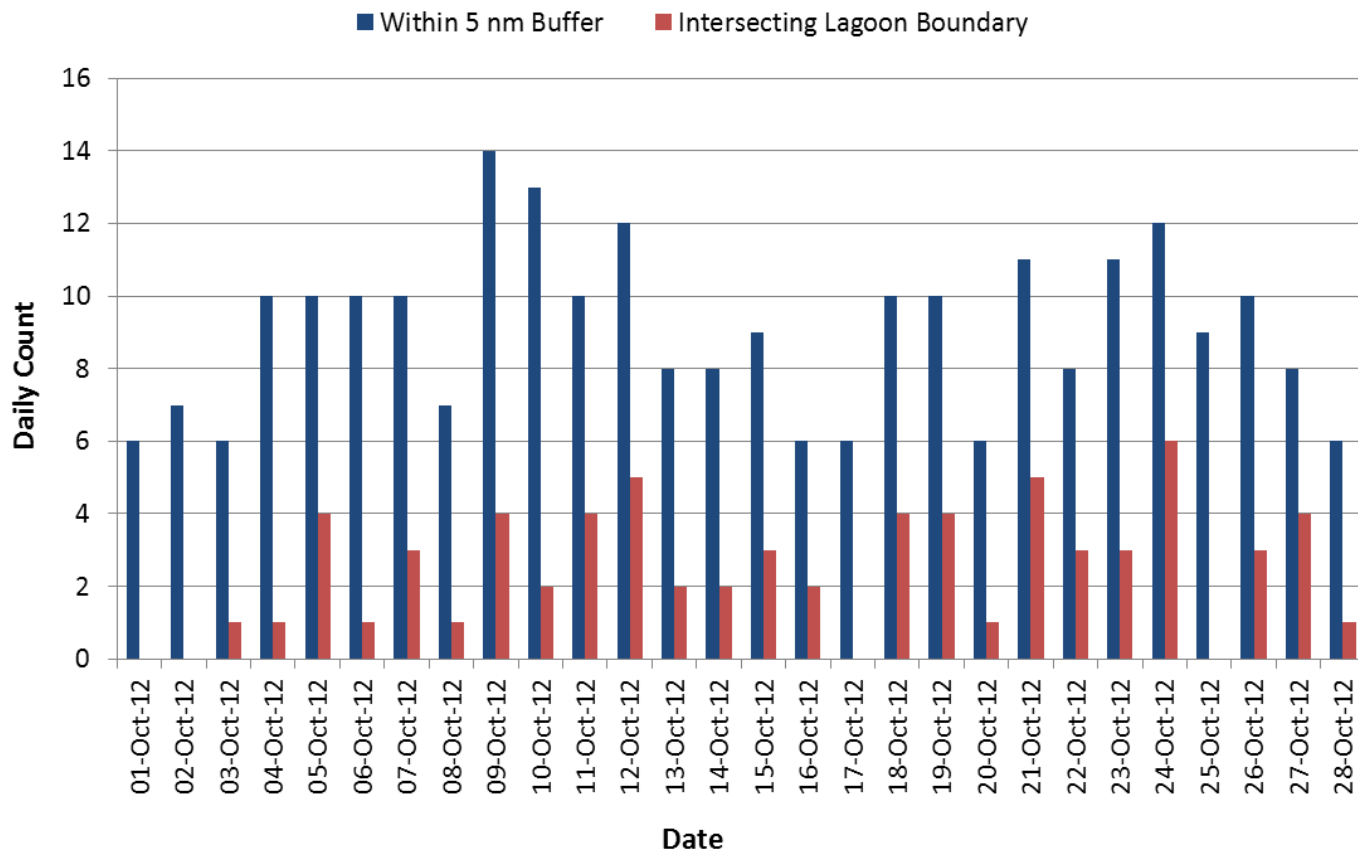
- Average of 11 unique vessels per day passing within 5 nm buffer
- Average of 2 unique vessels per day intersecting lagoon boundary (tugs and pilot vessels)

AIS Data – 28 Days October 2012



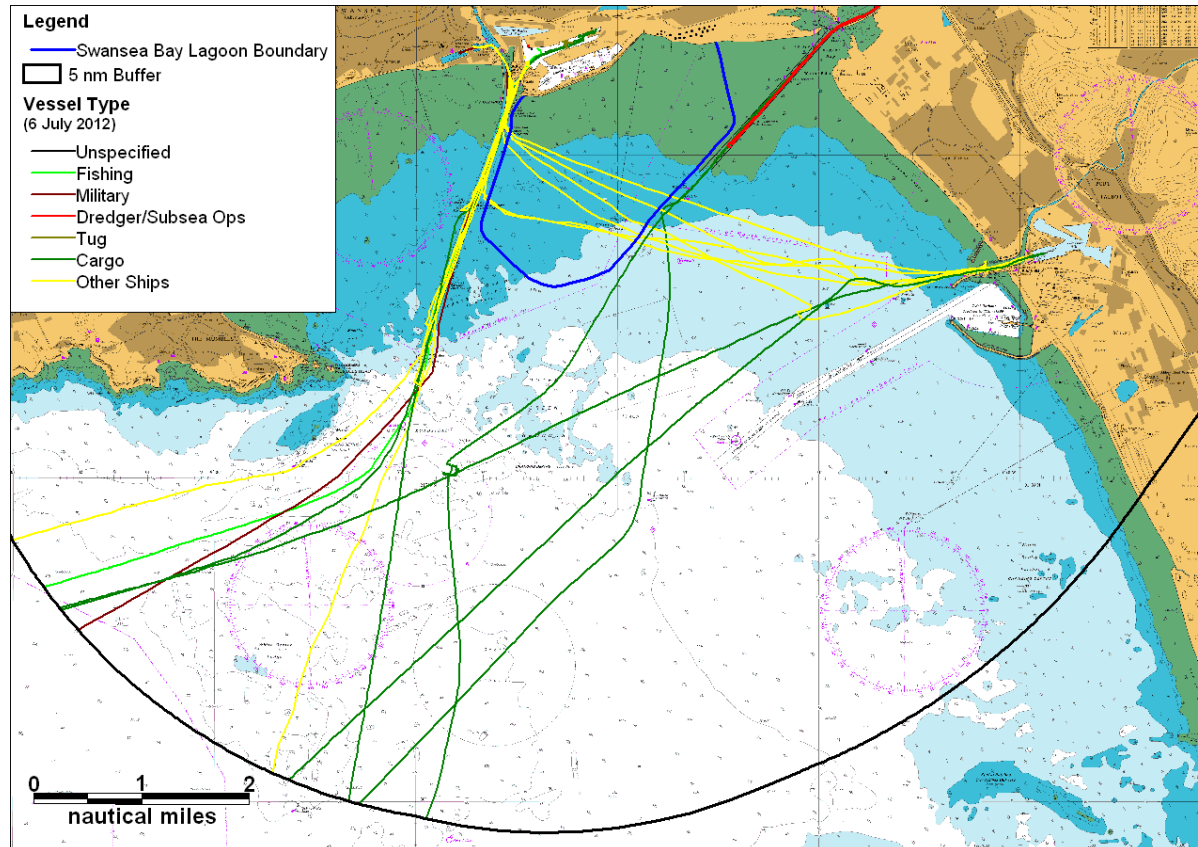
The majority of vessels were tugs (34%), cargo vessels (30%) and dredgers (25%).

Daily Count – 28 Days October 2012



- Average of 9 unique vessels per day passing within 5 nm buffer
- Average of 3 unique vessels per day intersecting lagoon boundary (tugs and pilot vessels)

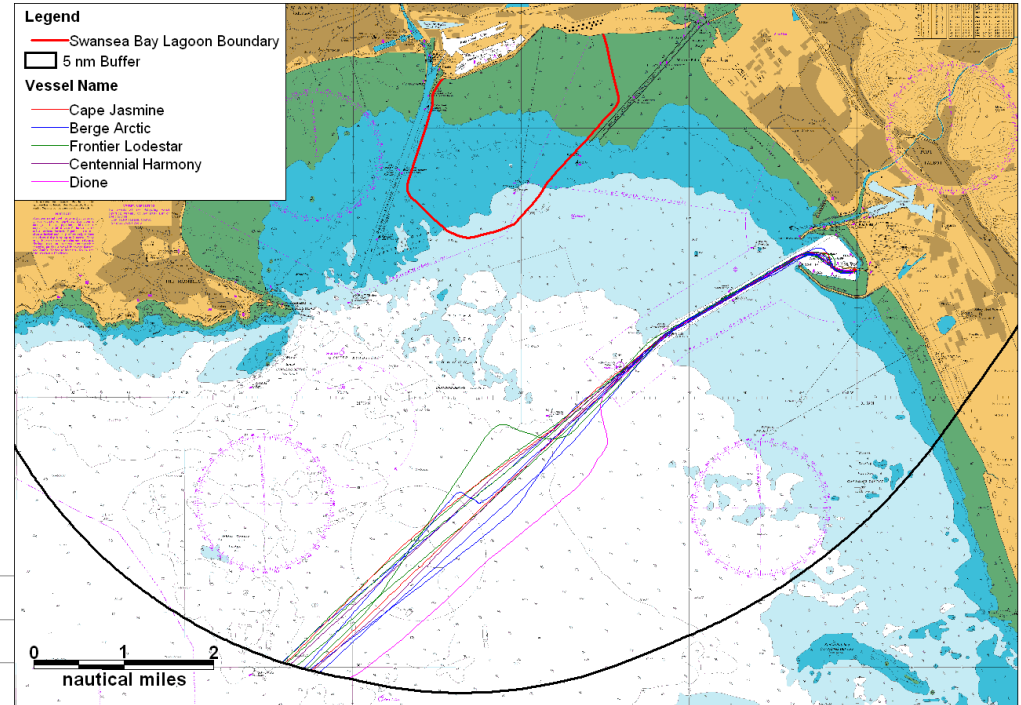
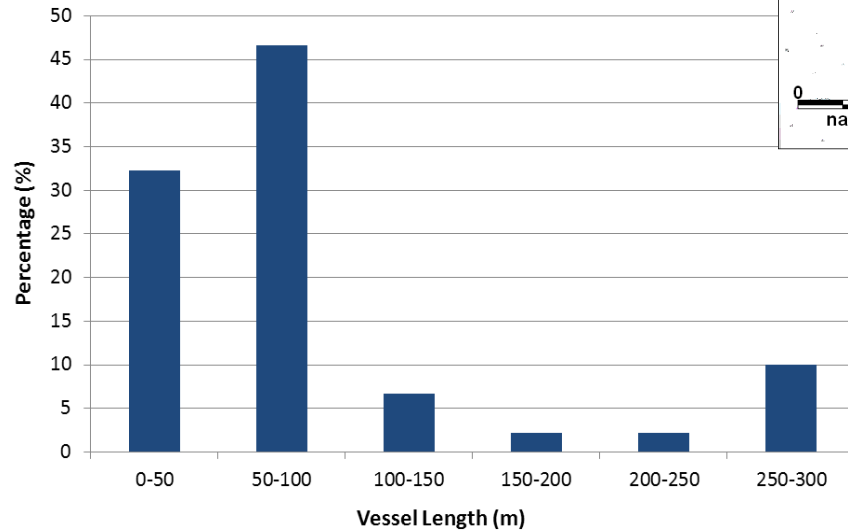
Busiest Day



- Busiest day in 56 day period was 6th July 2012
 - 18 unique vessels recorded on this day

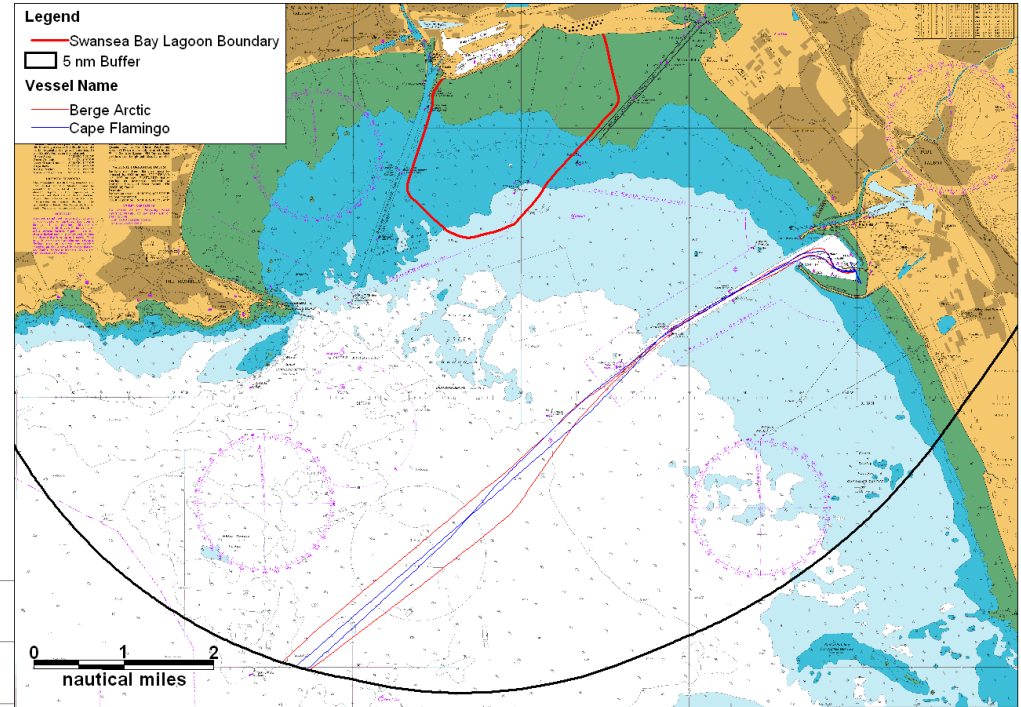
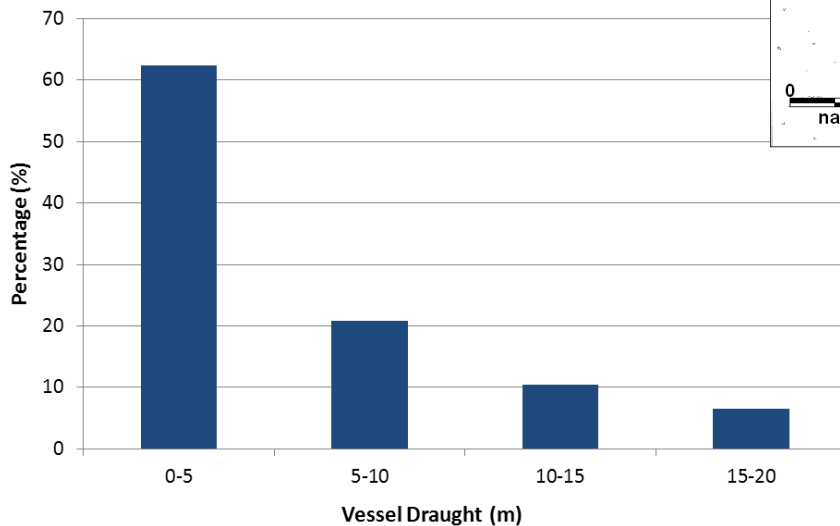
Vessel Length

- The majority of vessels (47%) were between 50 m and 100 m in length
- The longest vessels recorded were 292 m
- 5 vessels recorded at this length in 56 days

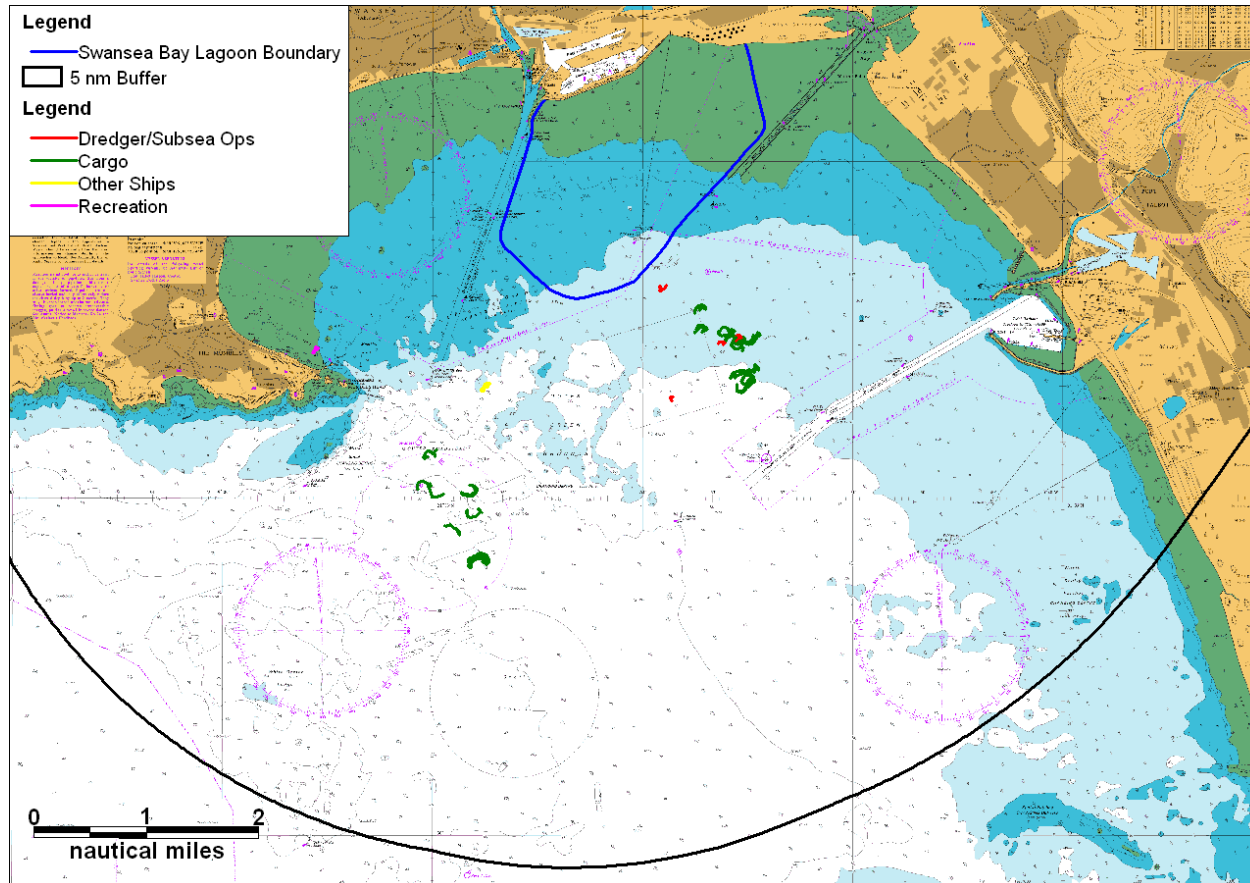


Vessel Draught

- The majority of vessels (62%) had a draught between 0 m and 5 m
- The deepest draught recorded was 17 m
- 2 vessels recorded with this draught in 56 days



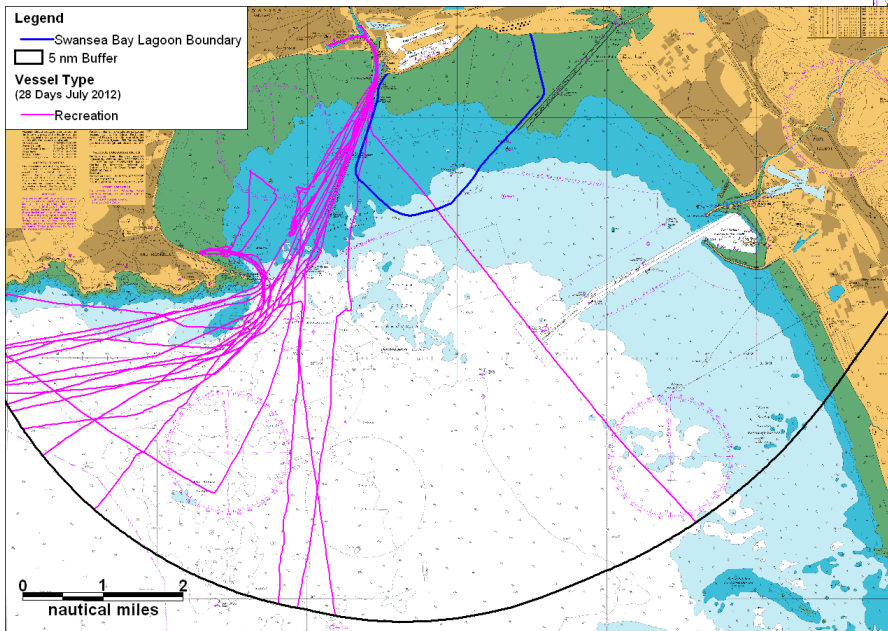
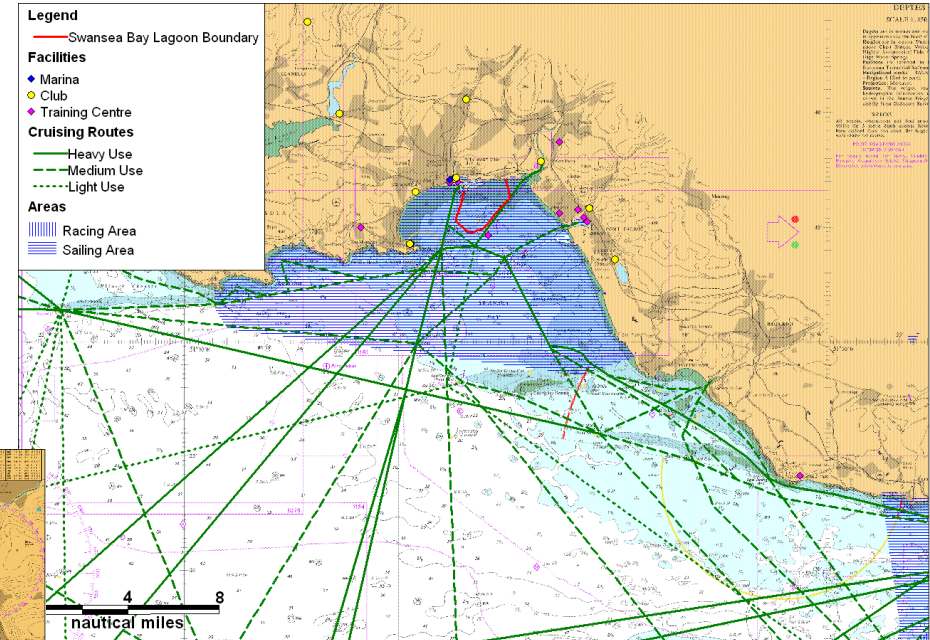
Anchored Vessels



- No vessels recorded at anchor within the lagoon boundary
- Closest vessel (dredger) was approx. 0.2 nm from lagoon boundary

Recreational Overview

- One heavy use cruising route on eastern side of lagoon boundary
- Heavy use route headed into Swansea to the west of the boundary and a medium use route to the south
- Located within a general sailing area

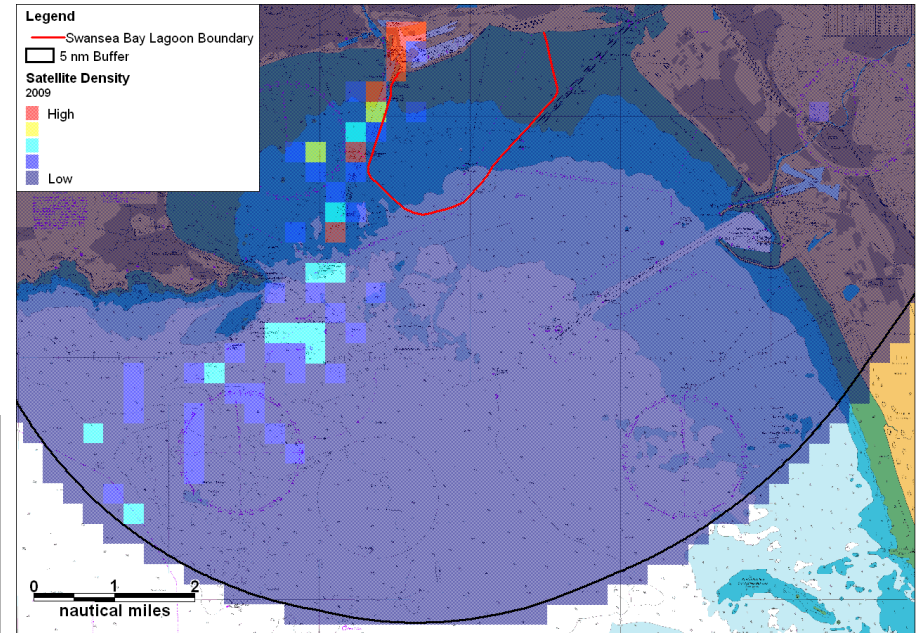
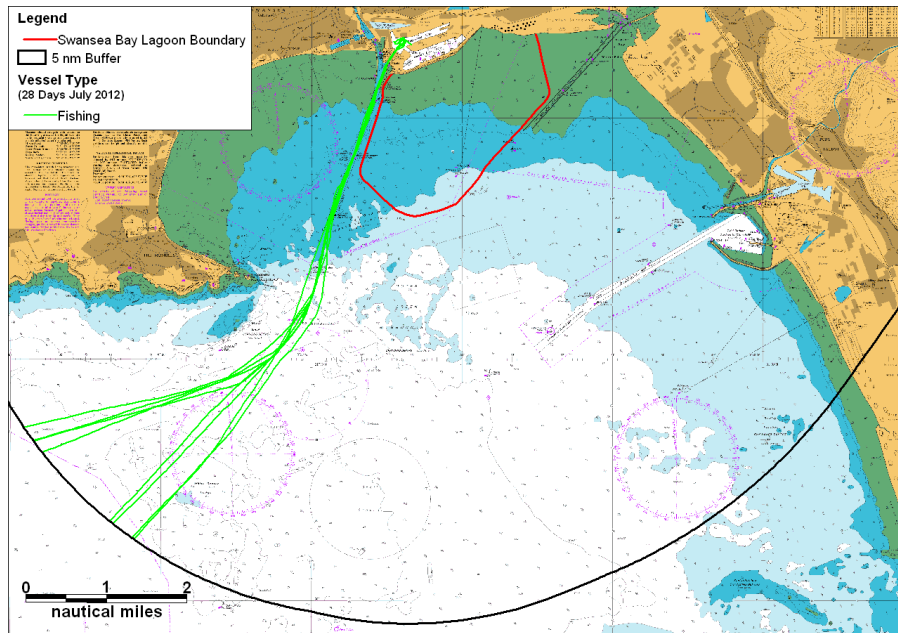


28 Days July 2012

- Recreational vessels with AIS recorded to the west of lagoon boundary.
- Very few recreational vessels identified in winter data.

Fishing Vessel Overview

- Satellite data converted to vessel density grid.
- Fishing vessels 15m length +.
- High and medium density areas generally due to vessels in port/transiting to port rather than fishing.



- Fishing vessels recorded on AIS to west of lagoon boundary.
- Similar levels between summer and winter data.
- Average fishing vessel length 32m.
- Beam trawlers main vessel type recorded on AIS.

Hazard Workshop Overview

- The purpose of today's workshop is to gain local knowledge from stakeholders about the shipping and navigation aspects of the development
- Brainstorming exercise in groups to identify relevant potential shipping and navigation hazards – as well as causes, consequences and suggested mitigations to reduce the impact
- This will cover all relevant receptors – commercial vessels, fishing vessels, recreational craft, tugs, pilot vessels etc



Swansea Bay Tidal Lagoon

Hazard Identification



Receptor	Hazard	Causes	Consequences	Mitigations

Post Workshop Process

- The hazard log will be populated based on the information gathered during today's workshop
 - Hazard title
 - Hazard detail
 - Phase (construction, O&M, decommissioning)
 - Industry standard risk reduction measures
 - Possible causes
 - Most likely consequences
 - Most likely risk ranking
 - Worst case consequences
 - Worst case risk ranking
 - Additional risk reduction measures

Upon completion of the hazard log, it will be sent out to all hazard workshop invitees and attendees for their review. Your involvement in this process would be greatly appreciated.

Severity of Consequences

<u>Rank</u>	<u>People</u>	<u>Property</u>	<u>Environment</u>	<u>Business</u>
Catastrophic	Multiple fatalities	Extensive damage to infrastructure or vessel	Extensive environmental damage	Major international business, operation or reputation impacts
Major	Single fatality	Major damage to infrastructure or vessel	Major environmental damage	Major national business, operation or reputation impacts
Moderate	Serious injury to vessel crew member	Moderate damage to infrastructure or vessel	Moderate environmental damage	Considerable business, operation or reputation impacts
Minor	Minor injury to vessel crew member	Minor damage to infrastructure or vessel	Minor environmental damage	Minor business, operation or reputation impacts
Negligible	No significant harm to people	No significant damage to infrastructure or vessel	No significant harm to environment	No significant business, operation or reputation impacts

Frequency of Occurrence

<u>Rank</u>	<u>Description</u>
1	Extremely Unlikely
2	Unlikely
3	Reasonably Probable
4	Likely
5	Extremely Likely

Risk Matrix

Severity of Consequence	Catastrophic					
	Major					
	Moderate					
	Minor					
	Negligible					
		Extremely Unlikely	Unlikely	Reasonably Probable	Likely	Extremely Likely
		Frequency of Occurrence				
Unacceptable (high risk)		Risk mitigation or design modification required				
Tolerable (intermediate risk)		Risk acceptable with suitable and sufficient mitigation measures and monitoring in place				
Broadly Acceptable (low risk)		Risk acceptable with no additional mitigation measures or monitoring required above industry standard risk reduction measures				

Post workshop note: this matrix has been changed slightly following stakeholder feedback after the workshop. The revised matrix used in the hazard ranking can be found in Tab 2 of the Hazard Log Spreadsheet.