

Industry Technical Advisory Committee



Australian perspectives
Nick Quinn



AMOSC Membership



Who is AMOSC?

Formed in 1991 as subsidiary of Australian Institute of Petroleum
\$10 million capital cost and \$4.4M annual operating cost provided by 27 industry companies; \$13M subsea capital raised in 2014

Major response equipment

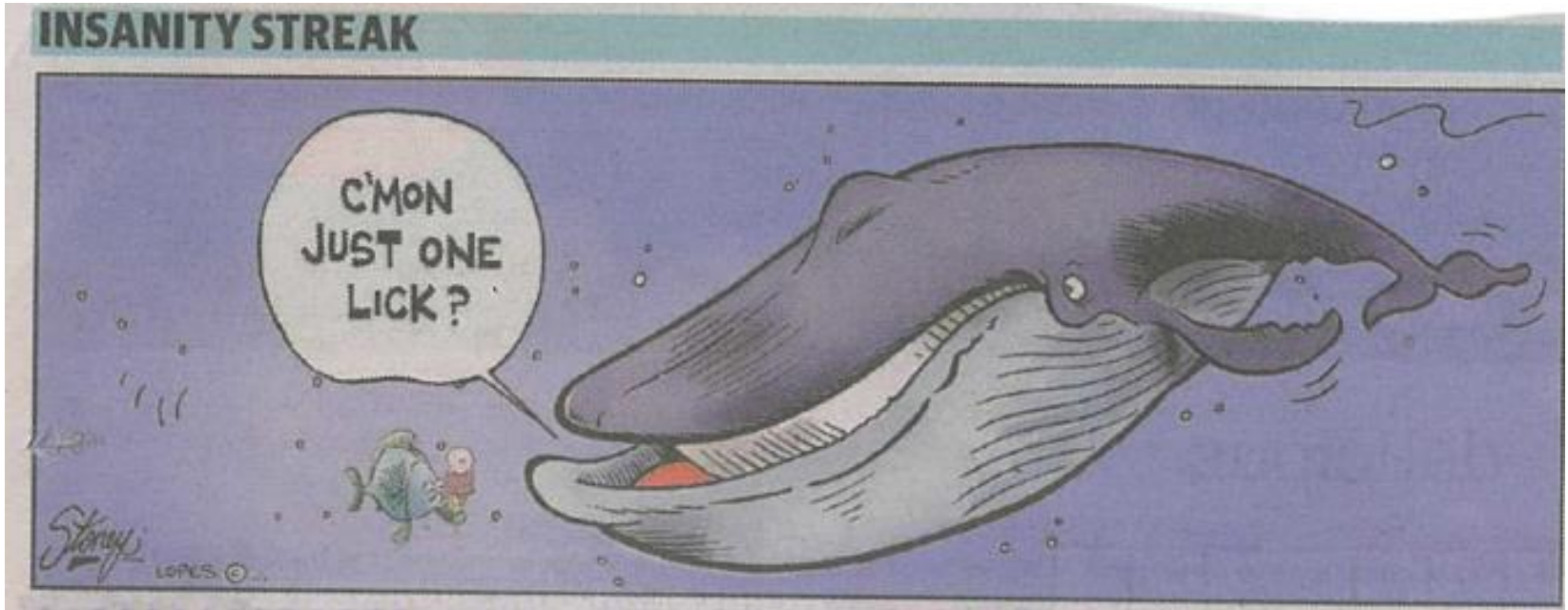
- stockpile and training centre located in Geelong
- 2013 stockpile & office in Fremantle
- stockpiles in Exmouth & Broome
- 2014 stockpile of subsea equipment
- 2015 stockpile of subsea dispersant



AMOSC Western Australian-based Subsea First Response Toolkit (SFRT)



Small recent case study



Gore Bay HFO 380 Spill – Jan 2017

Spill date -Friday 30 December 2016

Spill source - ruptured shoreline pipeline loading HFO as a cargo

Spill size - 1000 to 2000 litres

Spill coverage - around 400m of intertidal zone with 80% moderate coverage



5 days after the spill



Incident Response Action Plan

Incident Objectives

Objective 1 – Ensure no more oil is mobilised in Gore Bay from spill	
	<ol style="list-style-type: none">1. Ensure source is now secured to prevent further spills2. Ensure booming strategy meets the daily cleanup strategy by containing any re-mobilised oil from waterblasting/soft pressure flushing
	<p>Key information:</p> <ul style="list-style-type: none">• Major release of oil was Friday 30 December 2016 – it was a single instantaneous release which was quickly isolated• There has been some remobilisation of oil around the shoreline being cleaned by water blasting and soft pressure flushing• Sorbents have had minimal effect on this MFO• Reclaimed liquid Waste is being transferred into interceptor unit <p>Key Personnel:</p> <ul style="list-style-type: none">• Viva terminal team• Cleanways Ltd <p>Resources Assigned:</p> <ul style="list-style-type: none">• 2 x 4 person team from Cleanways; steam cleaner(s);• 1 x vacuum truck with mantaray skimming head• Viva site supervisor(s) <p>Work Assignments:</p> <ul style="list-style-type: none">• Confirm source of 30 Dec spill is secure• Confirm site of spill has no more oil leaking into the sea• Tag out shoreside pipeline for any further use• Redeploy booms for containment around daily shoreline operation (estimate 100m boom)• Deploy weir/disk/drum skimmer to inside boom – operate when practicable to remove waste <p>Instructions:</p> <ul style="list-style-type: none">• Complete tactical briefings daily for shoreline team(s) at 0730 each morning <p>Communications:</p> <ul style="list-style-type: none">• Viva- James Zarb 0417816002/• Cleanways- Ian Wilson 0422008878• AMOSC Duty Officer – phone 0409 150 393/ Mike Simm (Friday 6th Jan) 0447193740 <p>Safety:</p> <ul style="list-style-type: none">• Viva site induction to be completed or contiuis escort while on site• Intrinsic safety requirements to be met• Complete PTW for all activities.• Return JSA's and sign on sheets to Viva• PPE per Viva minimum requirements or as per JSA• First aid kits in vehicles and identified site specific. Identify trained first aiders.

Response Objectives

Objective 1 – Ensure no more oil is mobilised in Gore Bay from spill

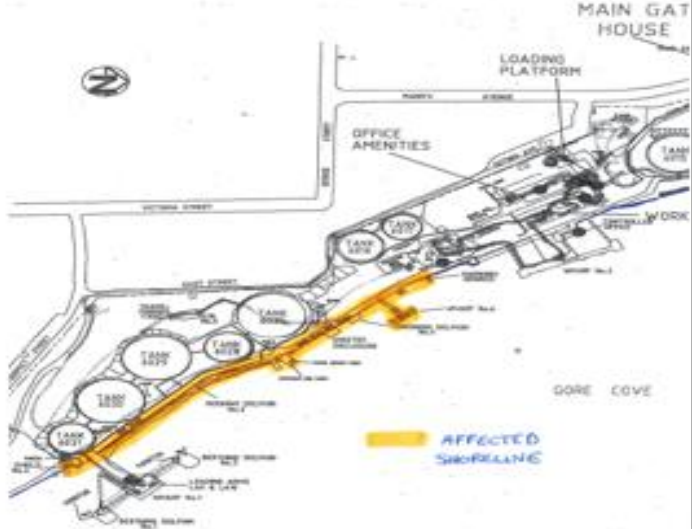
1. Ensure source is now secured to prevent further spills
2. Ensure booming strategy meets the daily cleanup strategy by containing any re-mobilised oil from waterblasting/soft pressure flushing

Objective 2 – Continue shoreline cleanup on 400m of oiled shoreline in Gore Bay

1. Utilise shoreline response team(s) to conduct cleanup operations detailed below daily commencing at 0700 and completing at 1700

End point criteria

Termination Points

End Point criteria to be met for shoreline cleanup on 400m of oiled shoreline in Gore Bay	
End Point Criteria needs to be agreed Viva and NSW EPA	
<p>Key Information:</p> <ul style="list-style-type: none"> - Operational area: Terminal Jetty south to Berry Island Point south – and all Gore bay area to the north of these 2 points 	
	
<p>Stakeholders:</p> <ul style="list-style-type: none"> - Viva - NSW EPA - Sydney Ports Corp - North Sydney Council - NSW Transport - Cleanways - Viva Community liaison Officer 	
<p>Work Assignments:</p> <p>Natural recovery to be monitored on a 3 monthly basis – photographic baseline to be established for 12 months</p>	
<p>End Point Criteria:</p> <ol style="list-style-type: none"> 1. Staining of manmade structures is accepted (wharf, piles) – natural recovery 2. Some staining of rocks permitted – Viva to ensure most (~60%) of stained rocks are cleaned of less viscous oil – then permit natural recovery 3. No oil nor oil residue permitted on sea surface 4. Viva to commence recovery study of affected shoreline communities such as oysters/shellfish – complete and report within 12 months 	

Net Environmental Benefit Analysis

NEBA – Gore Bay MFO Spill

Note: The following NEBA has been prepared for WVA by AMOSC as a response guide. Sensitivities, priority ranking and suitability of response strategies are a guide only and will require validation at the impacted site.

Net Environmental Benefit Assessment (NEBA)

Category	Sensitivity (Part A)	Ranking (Part B)	M & E	Dispersant	C & R	In-situ burn	P & D	Shoreline clean-up		
								Manual	HPHV	LPHV
Ecological	Marine Invertebrates	H	✓	Dispersant application is not a suitable response strategy for this shoreline habitat.	✓	In-situ burning is not a suitable response strategy for this shoreline habitat.	✓	✓	X	✓
	Blivalves – mussels, oysters		✓		✓		✓	X	✓	
	Crustaceans		✓		✓		✓	X	✓	
	Polychaetes		✓		✓		✓	X	✓	
	Echinoderms		✓		✓		✓	X	✓	
	Molluscs		✓		✓		✓	X	✓	
	Shore Birds	M	✓		✓		✓	X	-	
	Fish	L	✓		✓		-	-	-	
	Benthic Habitat – rock/sea ment	L	✓		✓		-	X	X	
	Manmade structure – rock wall	L	✓		✓		✓	✓	✓	
Sociological	Amenity Beaches	L	✓	✓	✓	X	✓			
	Cultural/Heritage Sites	M	✓	✓	*	*	*			
	Recreational Fishing	L	✓	✓	-	-	-			
	Residential/Commercial Waterfront	M	✓	✓	✓	✓	✓			
Economic	Sydney Port	L	✓	✓	-	-	-			
	Commercial Tourism	L	✓	✓	-	-	-			
	Maritime Support	L	✓	✓	-	-	-			
	Ferry Services	L	✓	✓	-	-	-			

MBE = Monitor & Evaluate / CSR = Containment & Recovery/ P&D = Protection & Deflection/ HPHV = High Pressure High Volume Flushing/ LPHV = Low Pressure High Volume Flushing/ * = Requires further consultation/ - = not applicable.

Using the table below, an assessment has been made as to whether the implementation of each strategy is likely to make no change (NC), reduce (✓), or increase (x) the consequences of the oil spill on each particular sensitivity.

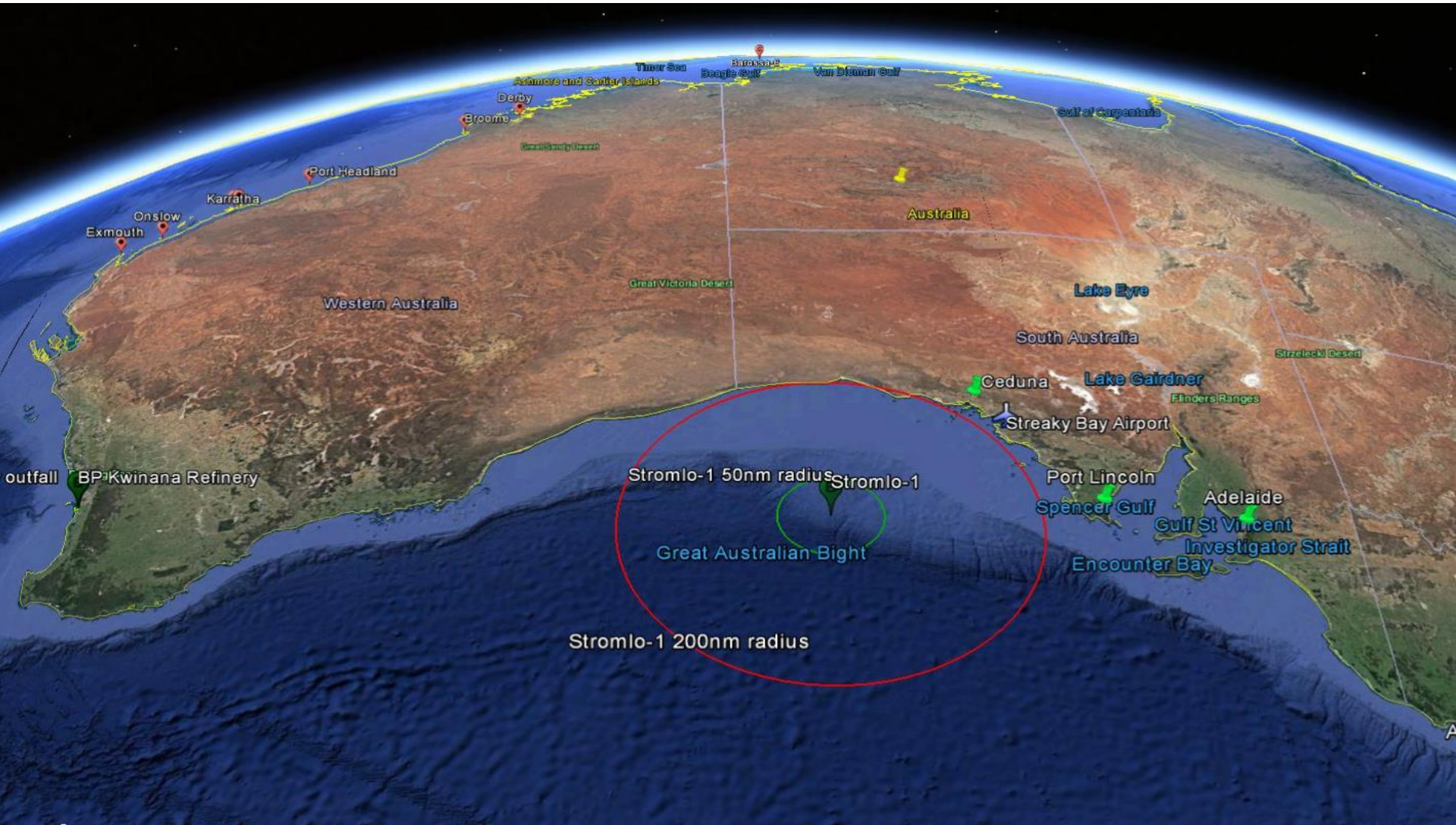
Table 1 - Sensitivity assessment matrix

■ HIGH SENSITIVITY
 ■ MEDIUM SENSITIVITY
 LOW SENSITIVITY

		RECOVERY TIME			
		SLOW			RAPID
		>10 yrs	5 – 10 yrs	2 – 5 yrs	< 1 yr
Potential Impact Rank	Severe	High	High	High	Medium
	Major	High	High	Medium	Low
	Minor	High	Medium	Medium	Low
	Slight	Medium	Low	Low	Low

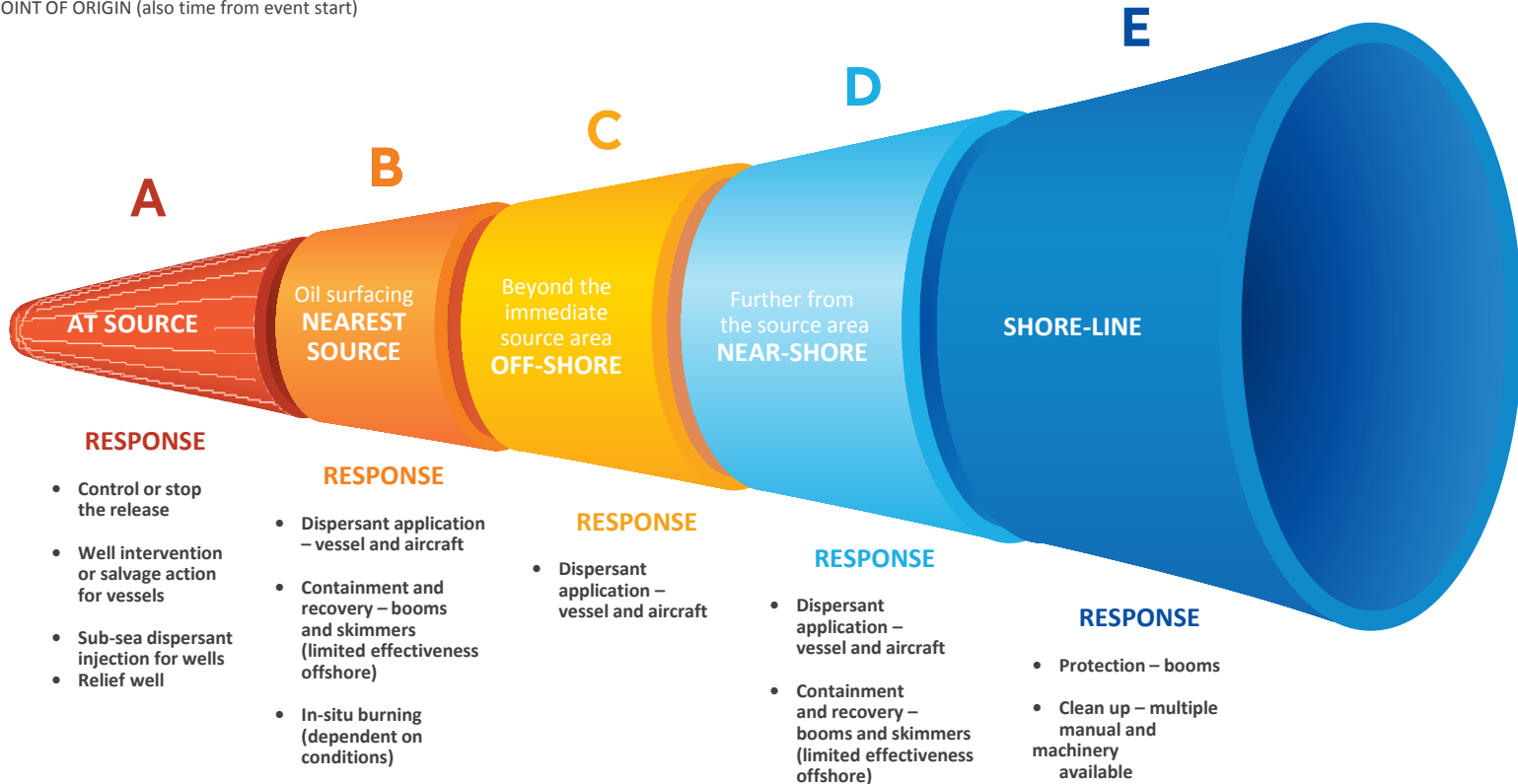
The Great Australian Bight (Bite.. Bitten..)





RESPONSE CONTINUUM

POINT OF ORIGIN (also time from event start)



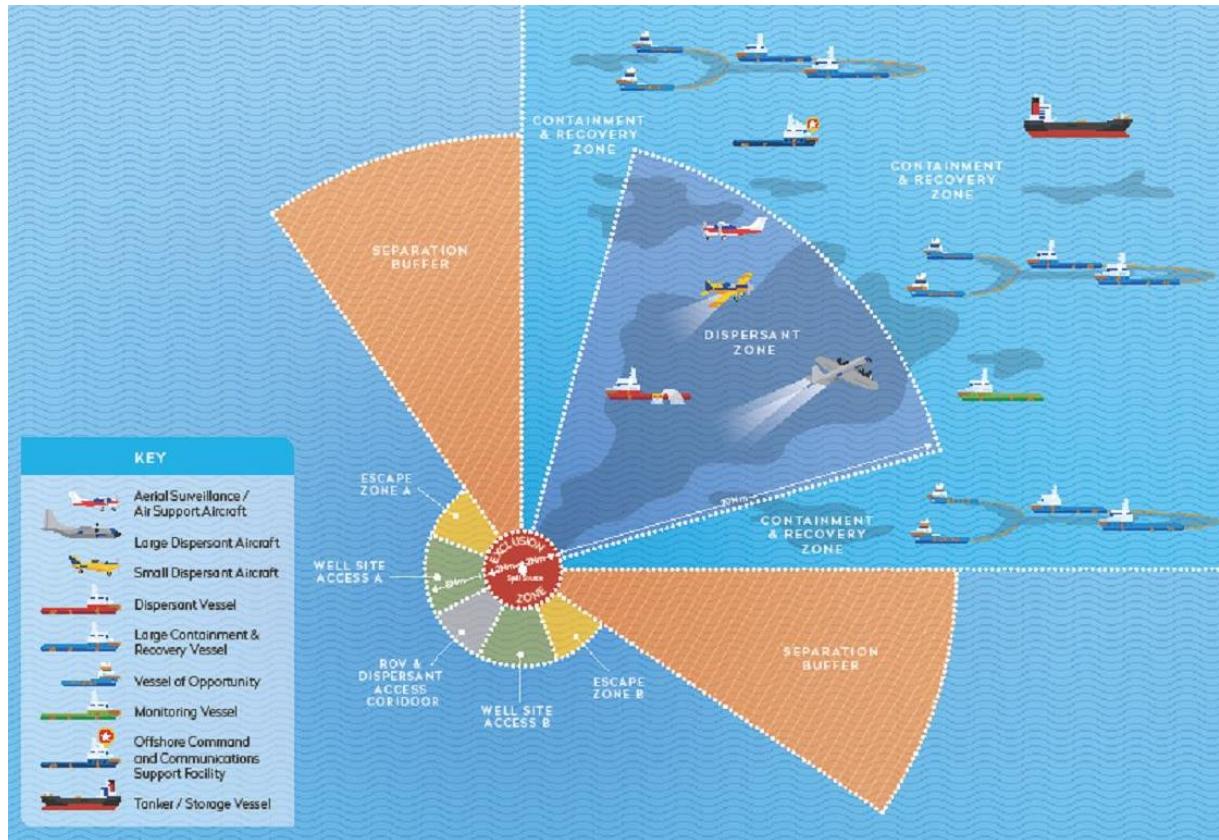
Tiered preparedness & response



- Response resource planning
- Offshore C&R
- Dispersant Application



Response Approach Pattern

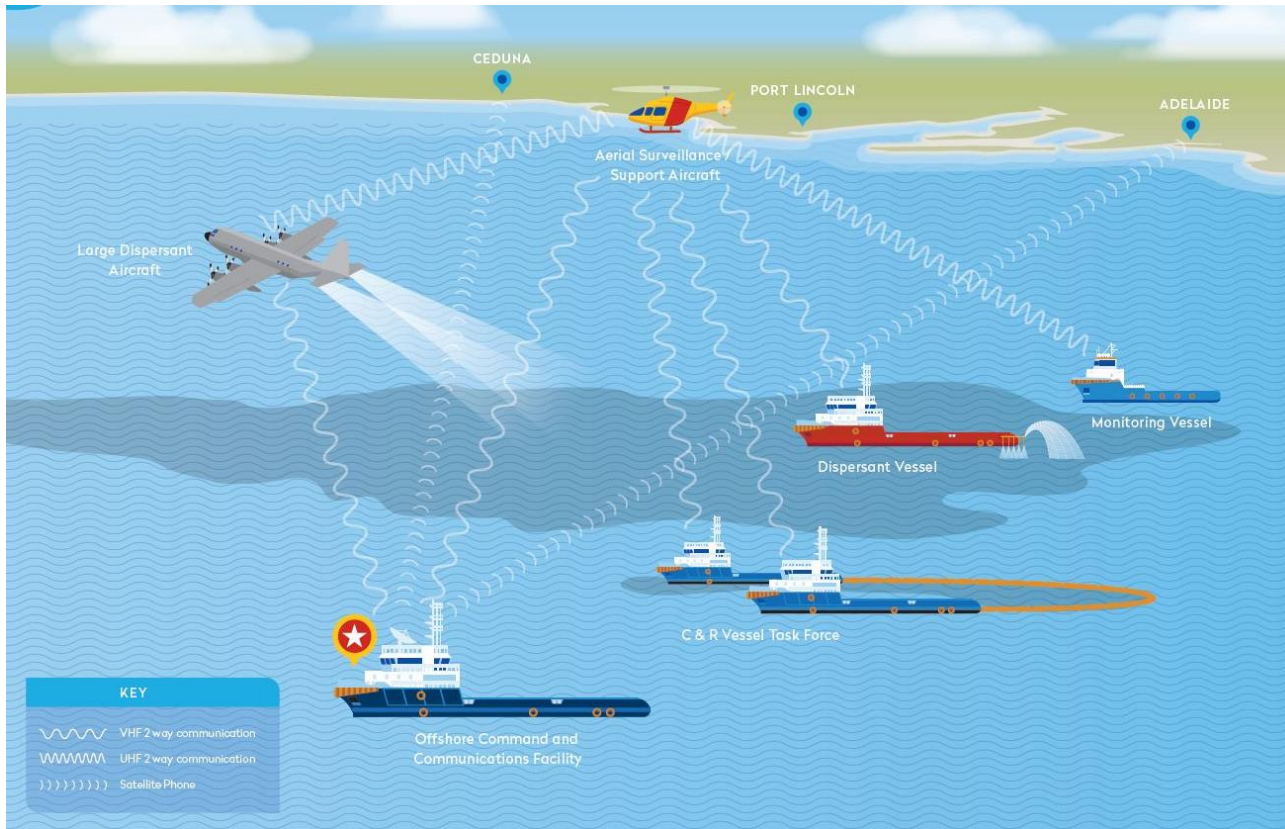


Zoned areas of response activity:

- Source Control
- C&R
- Dispersant (Vessel)
- Dispersant (Aircraft)
- OSMP
- Waste



Communication and support



- Aerial surveillance
- C&R vessels
- C&R support aircraft
- Dispersant aircraft
- Spotter aircraft
- Dispersant vessel
- Offshore Command and Communications
- FOB
- Shoreline
- IMT



Shoreline Tactical Response Planning

8,500km Coastline



Remote with limited existing capability/capacity



Great Australian Bight



Sectorisation & Segmentation

Consideration:

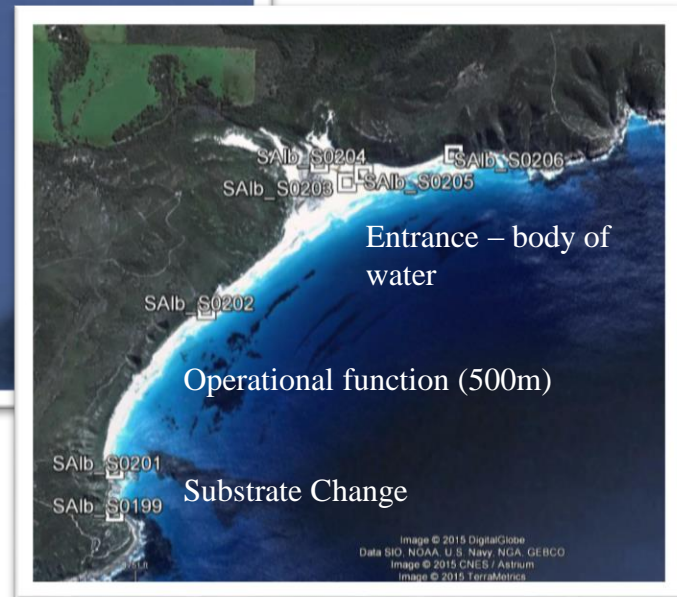
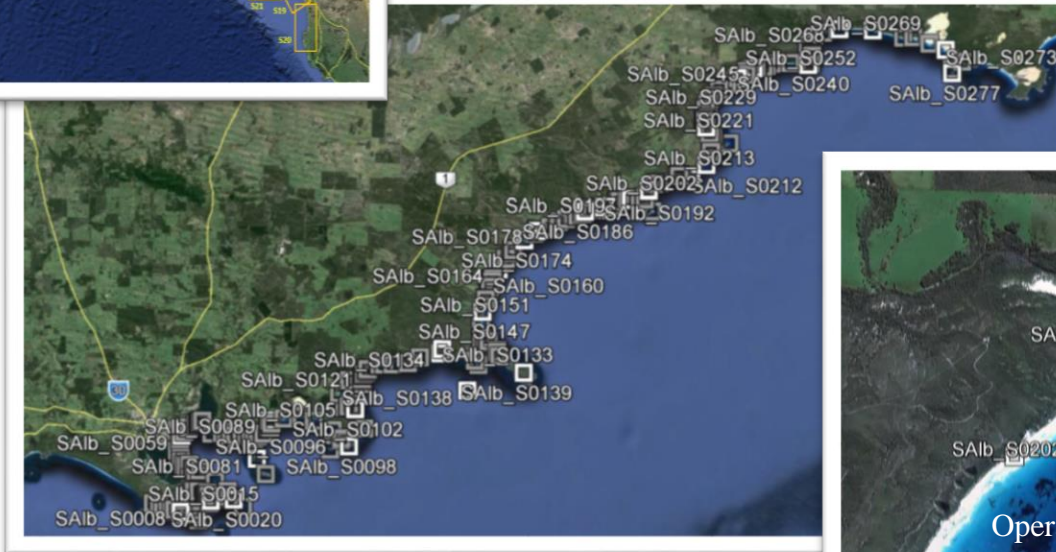
- substrate type,
- sensitive receptors (ecological, sociological and economic),
- population,
- access and egress,
- proximity to key sites, distance between segments and bodies of water (embayment's, estuaries, rivers).



Segmentation



Substrate type
Sensitive receptors (ecological, sociological and economic)
Population
Access
Distance from key sites and between segments
Bodies of water (embayment's, estuaries, rivers)



Shoreline Tactical Response Plans

1. Site Description/Access

Vector | 12 streaky bay
Segment Reference | SSB_50236 to SSB_50291
Coordinates | 33° 12' 901" S 134° 40' 216" E

VENUS BAY – GERMEIN ISLAND
OIL SPILL TACTICAL RESPONSE PLAN
South Australia

SITE INFORMATION

SITE LOCATION

SITE DESCRIPTION

Venus Bay is a coastal town on the western side of the Eyre Peninsula, 230km north west of Port Lincoln. The small township of Venus Bay is just inside the entrance, and a smaller township, Port Kenny, is well inside the bay. Venus Bay consist of numerous tidal flats, shallow lagoons, mangroves, islands and a number of deep channels that carry water in and out of the bay on a 12hr cycle. The entrance and nearby coast is exposed with towering cliffs and large sea swells. Inside the bay is flat and relatively sheltered. Germein Island is a small island (approx. 1.3x1.6km) situated just to the north of the entrance to Venus Bay. A flat, sandy island with extensive marsh and mangrove habitat.

SITE ACCESS

Access to Venus Bay Wharf is all weather sealed road, by Flinders Highway to Venus Bay Rd, on to Matson Terrace. Further access to the boom deployment site is via vessel only, launched at the Venus Bay foreshore/boat ramp next to the Wharf. Access is through public roads and public facilities.

SITE CONSTRAINTS

- Shallow water – boating hazards
- Large tides (regularly greater than >1 metre)
- Fast flowing current (>1 knot) through the entrance
- Nil mobile phone reception – satellite phone required
- Foreshore Wharf used with other user groups (E.g. – fishing, surfing, boating, swimming)

LEGEND

- Anchor
- Rope
- 3 Star Picket Anchor
- Boom
- Boom Connector
- SSB Shore Seal Boom
- NSB Nearshore Boom
- Oil Recovery area
- TRP Site

2. Response Planning

SHORELINE PROTECTION & CLEAN UP – RESPONSE INFORMATION

RESPONSE TASKS	RATIONALE BEHIND RESPONSE DECISION
First Task: Method: Pre-clean of Venus Bay – Germein Island shoreline to reduce potential for oilied waste. Manual removal of natural debris to above the high tide area	The entrance to Venus Bay is too wide and exposed to boom. Deflection booming as indicated – as part of a combined tactical plan – could be used to effectively deflect oil towards the shoreline, reducing the potential for impact to both environmental and socio-economic sensitivities surrounding the area. In addition, nearshore recovery of oil in the channel is recommended to reduce shoreline impact within Venus Bay. Access is via vessel only – all responders, equipment and waste will need to be supported by vessel operations.
Second Task: Method: Deflection booming to reduce impact of oil inside Venus Bay. Establish deflection booming at the site identified in this TRP.	
Third Task: Method: Collection of oil at the deflection booming site. Use an oil recovery skimmer from a vessel to collect oil in the boom and an oil recovery vessel to collect floating oil in the channel.	
Fourth Task: Method: Conduct assessment of the impacted Venus Bay – North Head shoreline. Task SCAT team to conduct assessment of the area.	
SITE REFERENCE	RESPONSE CHECKLIST – see page 6 for detail

LEGEND

- Marine Sanctuary Zone
- Site Setup
- Response Operations
- TRP Site

Safety

- Conduct site safety briefing/prestart meeting daily
- Initiate on site log-in/log-out procedures for all personnel
- Use air monitoring equipment as required
- Maintain appropriate site control with barrier tape, cones and personnel
- Use appropriate levels of PPE taking into account all hazards including environmental (heat, water, etc.)
- Continually assess and evaluate hazards and adjust controls accordingly

Environmental

- Minimise secondary contamination by,
 - defining access paths
 - minimising work area footprint
- Minimise disruption to wildlife by avoiding excessive noise
- Minimising unnecessary vehicle movement

NOTE: Access to several sites in Venus Bay is via vessel only. The location of these sites supports the use of Venus Bay Wharf as the main port of operations, particularly for site control and the launching of rebooms. This Site Setup image is therefore replicated across the following TRPs: Venus Bay North Head, Germein Island and Venus Bay – Wetland.

1. High Priority Sites

(Groundtruthed)

3. Concept of Operation

4. Site Setup

1. Shoreline Type



1. Manmade structures (Jetties, piers, sea walls etc.)



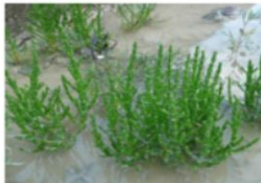
Rocky shore (sheltered)



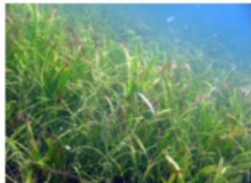
Rocky platform/ Cliff face (exposed)



Sandy beach (mixed sand/shell)



Tidal flats (mud/sand) and Vegetative salt/brackish marsh



Shallow seagrass



Reef (rocky/coral)



Mangroves

	Manmade structures (Jetties, piers, sea walls etc.)	Rocky shore (sheltered)	Rocky platform/ Cliff face (exposed)	Sandy beach (mixed sand/shell)	Tidal flats (mud/sand) and Vegetative salt/brackish marsh	Shallow seagrass	Reef (rocky/coral)	Mangroves
Natural Recovery	●	●	●	●	●	●	●	●
Manual Oil Removal		●		●	●	●	●	●
Mechanical Oil Removal				●	●	●	●	●
Barrier (Onshore/Nearshore boom)		●		●	●	●	●	●
Sorbents		●		●	●	●	●	●
Vacuum	●	●		●	●	●	●	●
Sediment Tiling				●	●	●	●	●
Debris Removal				●	●	●	●	●
Vegetation Removal				●	●	●	●	●
Flooding	●	●		●	●	●	●	●
Low-Pressure, Ambient-Water Flushing	●	●		●	●	●	●	●
High-Pressure, Ambient-Water Flushing	●	●		●	●	●	●	●
Hot-Water Flushing	●	●		●	●	●	●	●
Chemical Dispersants	●	●		●	●	●	●	●

2. Response Recommendations

2. Other sites?

Shoreline Treatment Recommendations

3. STR/Type

Oiled Areas for Treatment:

Description:

- Solid, man-made structures such as seawalls, **groyves**, piers, jetties, port facilities and residential marinas.
- Constructed of concrete, wood, or metal.
- Built to protect the shore from erosion by waves, boat wakes, and currents.

Predicted oil behaviour:

- Oil is likely to adhere to dry, rough surfaces but does not adhere to wet substrates.
- Persistent, weathered oil would remain as a patchy band at or above the high tide line.



Clean up Recommendations:

Tactical;

The following response strategies are recommended.

Note. The following recommendations are made in addition to potential on-water response options that are likely to be occurring simultaneously. These include - offshore dispersant application and on-water containment and recovery.

● Preferred ● Possible

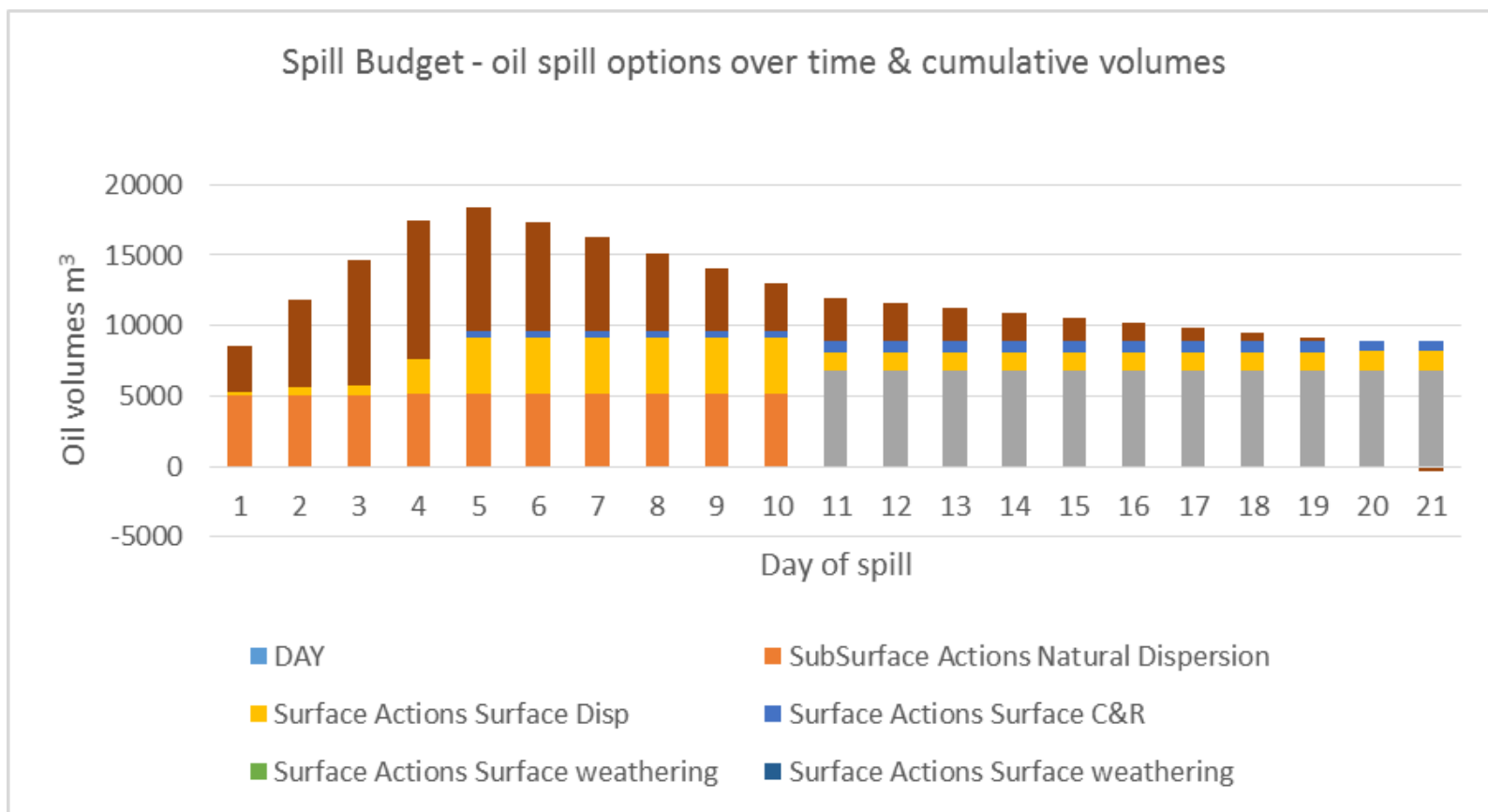
Natural Recovery	●	Allow tidal action to flush stranded oil off any manmade structures. Oil will continue to weather, degrading and gradually reducing in volume and toxicity. Natural recovery is appropriate in situations where alternative clean up techniques would cause more harm than benefit, or where access is restricted.
Vacuum	●	Vacuums can be used to remove pooled and/or surface oil from impacted structures. Vacuum equipment ranges from small portable units to large vacuum trucks.
Flooding	●	Flooding and high/low-pressure, ambient-temperature flushing can be used to flush trapped oil out to open water for collection using booms and recovery systems. Considerations should be given to tidal currents (flush on a falling tide) and wind (an onshore wind will push any released oil back onto the shoreline).
Low-Pressure, Ambient-Water Flushing	●	
High-Pressure, Ambient-Water Flushing	●	
Hot-Water Flushing	●	

Waste

💧 What do you do with 500,000m³ of solid waste?



ALARP model





SPILLCON

20 – 24 May 2019
Perth, Australia

Proudly organised by Australia's key government and industry agencies responsible for Australia's marine environmental protection arrangements, the Australian Institute of Petroleum and the Australian Maritime Safety Authority invite you to attend the international oil spill conference for the Asia-Pacific region, Spillcon 2019.

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