GWO
New Ventures

Great Australian Bight

Exploration Drilling Program

Oil Pollution Emergency Plan

(OPEP)

AU000-HS-PLN-600-00002

Revision History

Revision Date	Revision Number	Revision
18 August 2016	0	Issue to NOPSEMA

Document review and acceptance

This OPEP is valid for five years from the date of NOPSEMA acceptance. BP will review this document at least annually (and revise where out of date information is superseded).

This OPEP has been reviewed and accepted by BP. Any material changes to the discharges/emissions of the activity or changes in potential environmental impacts of new activities will be assessed by the BP Crisis and Continuity and Emergency Response Manager, who will determine the level of review required.

As required by Regulation 17 of the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Cth), any significant modification, change or new stage of an existing activity that is not included in an existing EP means that a revision of the EP must be submitted to the National Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) for acceptance.

[redacted]

[redacted] DATE: 18 Aug 2016

Managing Director

Exploration and Production Australia

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Abbreviations and Acronyms

AAUS	Australian Association for Unmanned Systems
ACUO	Australian Certified UAV Operators
ADIOS	Automated Data Inquiry for Oil Spill
AHS	Australian Hydrographic Service
AIIMS	Australasian Inter-Service Incident Management System
ALARP	As Low As Reasonably Practicable
AMBA	Area that May be Affected
AMOSC	Australian Marine Oil Spill Centre
AMSA	Australian Maritime Safety Authority
APASA	Asia-Pacific Applied Science Associates
APPEA	Australian Petroleum Production and Exploration Association
AsPac	Asia Pacific Region (BP)
ASRC	Australian Search and Rescue Centre
ATV	All Terrain Vehicle
BAOAC	Bonn Agreement Oil Appearance Code
BOD	Basis of Design
BoM	Bureau of Meteorology (Commonwealth)
BOP	Blow out preventer
BOSIET	Basic Offshore Safety Induction and Emergency Training
BP-DAPL	BP Developments Australia Pty Ltd
BST	Business Support Team
CAA	Company Authorities AMOSPlan
C&EA	Communications and External Affairs
CCA	Clean Caribbean and Americas
CDA	The Environmental Defence Centres (Brazil)
COP	Common Operating Picture
CRO	Control Room Operator
CST	Country Support Team
Cth	Commonwealth
DDS	Dispersant Delivery System (SSDI)
DER	Department of Environment Regulation
DEWNR	Department of Environment, Water and Natural Resources (SA)
DMP	Department of Mines and Petroleum (WA)
DoE	Department of Environment (Commonwealth)
DOR	Dispersant-to-oil ratio
DOT	Department of Transport (WA)
DP	Dynamic Positioning/Dynamically Positioned
DPaW	Department of Parks and Wildlife (WA)
DPTI	Department of Planning, Transport and Infrastructure (SA)
DSD	Department of State Development (SA)
EP	Environment Plan
EPA	Environment Protection Authority (SA & WA)

EPP	Exploration Permit for Petroleum
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ERP	Emergency Response Plan
ERRV	Emergency response and rescue vessel
ESG	Emergency Support Group
ESI	Environmental Sensitivity Index
EST	Executive Support Team
EU	Environment Unit
FOB	Forward Operating Base
FWAD	Fixed-wing Aerial Dispersant
GAB	Great Australian Bight
GDP	Group Defined Practice
GIS	Geographic information system
GP	Global Practice
GRN	Global Response Network
GRP	Group Recommended Practice
HMA	Hazard Management Agency
HSE	Health, Safety and Environment
HSSE	Health, Safety, Security and Environment
H_2S	Hydrogen sulphide
HUET	Helicopter Underwater Escape Training
IAP	Incident Action Plan
IC	Incident Controller
ICC	Incident Command Centre
ICS	Incident Command System
IMP	Incident Management Plan
IMR	Incident Management Room
IMT	BP Australia Upstream Incident Management Team
IOPP	International Oil Pollution Prevention
IPIECA	International Petroleum Industry Environmental Conservation Association
ISB	In-situ Burning
ITOPF	International Tanker Owners Pollution Federation
KSAT	Kongsberg Satellite Services
LAO	Linear Alpha Olefin
LAT	Lowest Astronomical Tide
LEL	Lower Explosive Limit
LOPC	Loss of Primary Containment
MAC	Mutual Aid Contact
MAR	Major Accident Risk
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto
MDO	Marine Diesel Oil
MEER	Maritime Environmental Emergency Response

MNES	Matter of National Environmental Significance
MODU	Mobile Offshore Drilling Unit
MOP	Marine Oil Pollution
MoU	Memorandum of Understanding
MRT	Mutual Response Team (BP)
MSA	Master Service Agreement
MSRC	Marine Spill Response Corporation
NA	Not applicable
NatPlan	National Plan for Maritime Environmental Emergencies
NEBA	Net Environmental Benefit Analysis
NEMO	National Environmental Maritime Operations
NES	National Environmental Significance
NOAA	National Oceanic and Atmospheric Administration
NOP	Next Operational Period
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority (Commonwealth)
NOPTA	National Offshore Petroleum Titles Administrator
NRT	National Response Team
OCCSF	Offshore Command and Communications Support Facility
OGP	Oil and Gas Producers (association)
OGW	Ocean GreatWhite MODU
OIM	Offshore Installation Manager
OMS	Operating Management System
OMS	Operational Monitoring Studies
OPEP	Oil Pollution Emergency Plan
OPICC	Offshore Petroleum Incident Coordination Committee
OPGGS Act	Offshore Petroleum and Greenhouse Gas Storage Act 2006 (Commonwealth)
OPGGS(E) Regulations	Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009 (Commonwealth)
OPRC 90	International Convention on Oil Pollution Preparedness & Response 1990
OSC	On-scene Commander
OSCA Register	Register of Oil Spill Control Agents
OSCP	Oil Spill Contingency Plan
OSMP	Operational and Scientific Monitoring Plan
OSRL	Oil Spill Response Limited
OSTM	Oil spill trajectory modelling
OWA	Oiled Wildlife Advisor
OWR	Oiled Wildlife Response
OWS	Oily Water Separator
PA	Port Authority
PIC	Person in Charge
PIO	Public Information Officer
PIRSA	Department of Primary Industries and Regions South Australia (SA)
POLREP	Pollution report (AMSA)

POWBONS	Pollution of Waters By Oil and Noxious Substances Act 1987 (WA)
PMS	Planned Maintenance System
PMST	Protected Matters Search Tool
PPE	Personnel Protective Equipment
PSC	Planning Section Chief
PSZ	Petroleum Safety Zone
RCC	Rescue Coordination Centre
RP	Responsible Party – as defined in NatPlan
RFI	Request for Information
ROV	Remote Operated Vehicle
S&OR	Safety and Operational Risk
SA	South Australia
SAMSCAP	South Australian Marine Spill Contingency Action Plan
SAR	Synthetic Aperture Radar
SCAT	Shoreline Clean-up Assessment Technique
SCB	Source Control Branch
SDS	Safety Data Sheet
SFRT	Sub-sea First Response Toolkit
SIMA	Spill Impact Mitigation Analysis (refreshed NEBA)
SIMOPS	Simultaneous Operations
SITREP	Situation Report (AMSA)
SLA	Service Level Agreement
SME	Subject Matter Expert
SMPC	State Marine Pollution Controller
SMPEP	Shipboard Marine Pollution Emergency Plan
SMS	Scientific Monitoring Studies
SOFR	Safety Officer
SRP	Shoreline Response Programme
SSDI	Subsea Dispersant Injection
STR	Shoreline Treatment Recommendation(s)
STS	Ship to Ship Transfer
S&OR	Safety and Operational Risk
SWIS	Subsea Well Intervention Service
TLP	Tension Leg Platform
TRP	Tactical Response Plan
TRT	Tactical Response Team
TSB	Territorial Sea Baseline
UDP	Upstream Defined Practice
VOC	Volatile Organic Carbon
VOO	Vessel of Opportunity
VP	Vice President
WA	Western Australia
WAOWRP	Western Australian Oiled Wildlife Response Plan

WCD	Worst credible discharge
WESTPLAN	State Emergency Management Plan (WA)
WSL	Well Site Leader

Units of Measurement

cP	Centipoise (viscosity)
km	Kilometres
m	metres
m^2	Square metres
m^3	Cubic metres
NM	Nautical mile
psi	Pounds per square inch

1 General Information

1.1 Legal and Administrative Arrangements

BP's GAB drilling activities are bound by the actions and measures outlined in the EP, the OPEP, and supplementary documentation. In addition to these, BP has a number of Group Practices and Group Defined Practices that apply to operations. Deepwater offshore drilling is an activity that is covered by these practices.

1.2 Why this document is important

This Oil Pollution Emergency Plan (OPEP) is important because:

- It describes BP Developments Australia Pty Ltd (BP) emergency response framework and actions to be followed in the event of an oil spill associated with the Great Australian Bight (GAB) exploration drilling program.
- It applies when there is an oil spill from drilling operations using the Ocean GreatWhite (OGW) Mobile Offshore Drilling Unit (MODU) and for incidents that occur within the 500 m Petroleum Safety Zone (PSZ).
- The emergency response actions are commensurate with the assessment of oil spill risk presented in the BP Great Australian Bight Exploration Drilling Program Environment Plan (EP) AU000-HS-PLN-600-00001.
- This OPEP is a statutory requirement that integrates with the Australian oil spill contingency planning framework and complies with applicable Commonwealth and State legal and regulatory requirements.
- It supports the EP in demonstrating the capacity and capability to respond to a hydrocarbon spill in a timely manner and for the duration of the worst credible discharge (WCD) event.
- It is a BP GP 10-90 (Oil Spill Preparedness and Response) requirement.

This plan will ensure that BP meets the requirements contained in:

- Applicable Commonwealth and State statutes, in particular the;
- Offshore Petroleum & Greenhouse Gas Storage Act 2014 and subordinate Regulations (Commonwealth);
- The Protection of Marine Waters (Protection of Pollution from Ships) Act 1987 (SA);
- Pollution of Waters by Oil and Noxious Substances Act, 1987 (POWBONS) (WA) and the;
- Emergency Management Act (WQA – 2005, SA – 2004);
- BP Safety and Operational Risk (S&OR) Health, Safety, Security and Environment (HSSE) practices;
- Operating Management System (OMS) Sub-elements 4.6.1 (Identify Scenarios); 4.6.2 (Implement and Maintain Plans) and 4.6.3 (Validate the plans);
- BP GP 10-90 (Oil Spill Preparedness and Response);
- BP Well Capping Practice 100005; and

- BP Group Essentials 4.1.1 (Develop and maintain an incident response capability).

This OPEP outlines BP's overall spill response strategy and is supported by:

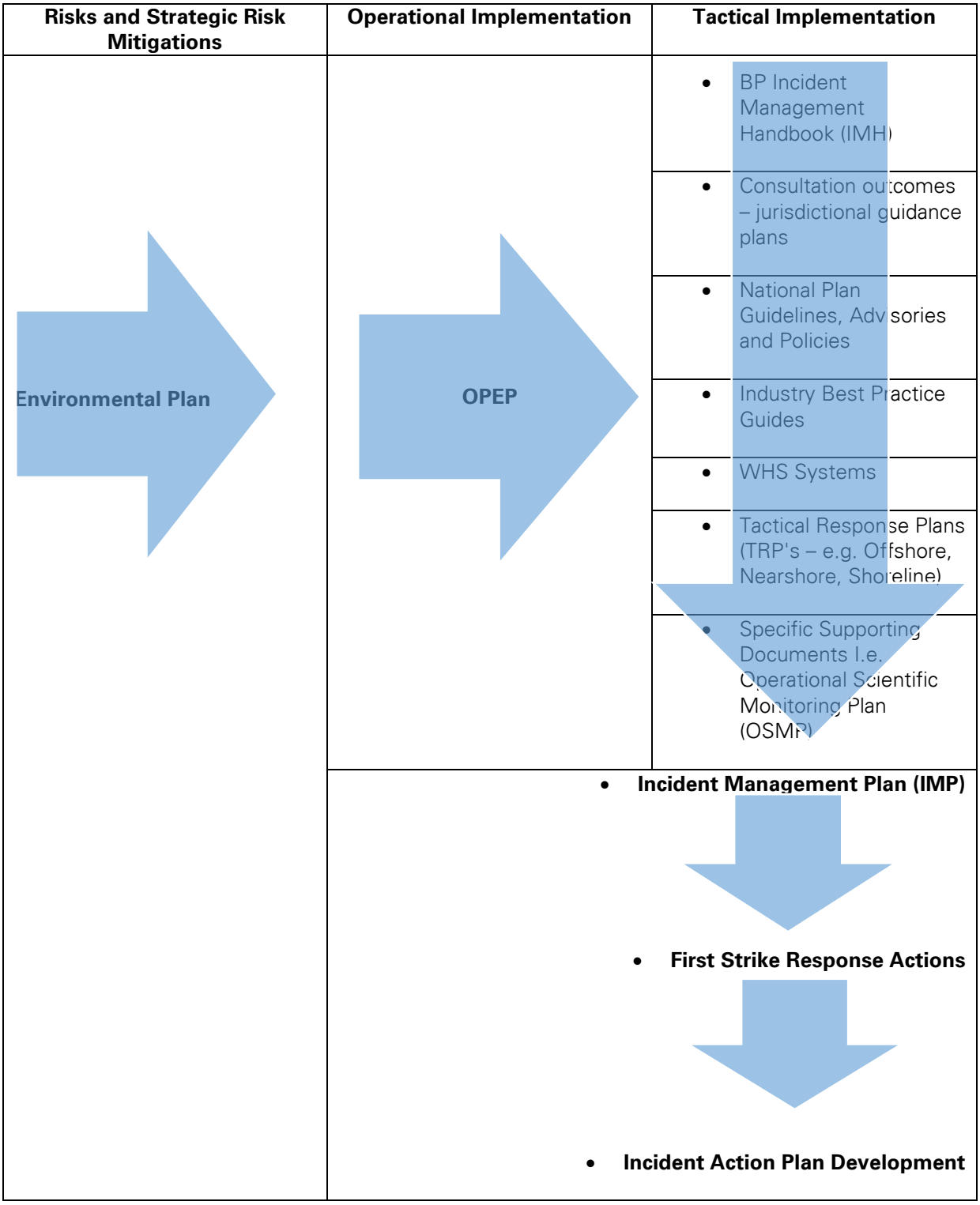
- the BP Great Australian Bight Exploration Drilling Program EP which includes environmental impact assessment of potential spills to the environment and associated performance standards;
- the Operational and Scientific Monitoring Program (OSMP) for monitoring effectiveness of spill response measures and environmental impacts (Appendix to the EP);
- BP Tactical Response Plans (TRP's) for Offshore Dispersant deployment, Offshore Containment & Recovery, Shoreline Protection & Clean-up and Waste Management; and
- BP pre-spill segmentation of GAB Coastline from Albany WA to Beachport SA.

Sitting above the OPEP is the Environment Plan (EP) which outlines the list of possible environmental risks along with the mitigations. The OPEP outlines the overall response, response techniques and the implementation strategy for these mitigations. Sitting beneath the OPEP are a suite of tactical response plans, which guide the specific implementation of tactics in the GAB, or plans that support the implementation of the strategies.

In addition to BP Group Practice documents, oil spill response (OSR) activity will be consistent with industry's global and Australian good practice, for both preparedness and response. The IPEICA Good Practice Series of documentation represents industry's current Global good practice. In Australia, within the auspices of the National Plan there exists a series of guidelines, advisories and other documents that BP will use to guide/direct oil spill response activity.

The relationship between these documents is shown below in figure 1.1:

Figure 1-1



The OPEP is designed to initiate the response with an outline of the actions anticipated during the first 0 – 72 hours. After this time, dynamic Incident Action Planning will have 'taken over' from the staged planning, and enable a response that is customised to the spill of the day, using real time conditions.

1.3 Project Summary

Project Summary

BP, in its capacity as operator of the proposed Great Australian Bight (GAB) Exploration Drilling Program (herein referred to as the 'project'), proposes to drill two exploration wells.

Stromlo-1 within EPP 39 and Whinham-1 in EPP 37 permit areas in the Commonwealth waters of the GAB (herein referred to as the 'drilling area').

The drilling area has water depths ranging between 1,000 and 2,500 m (Lowest Astronomical Tide-LAT). The permit areas range in depth from 500 m at the shallowest point to 4,500 m at its deepest. At the closest point, the drilling area is located approximately 300 NM west of Port Lincoln and 220 NM southwest of Ceduna in South Australia (SA) (table 1-1).

The project is scheduled to commence during 4Q2016 - 1Q2017.

The wells will be drilled using the new build semi-submersible MODU, the Ocean GreatWhite (OGW).

The purpose of the drilling program is to explore for hydrocarbons.

Applicability and Scope of this Oil Pollution Emergency Plan

This OPEP covers BP's petroleum activities associated with the exploration drilling of the Stromlo-1 and Whinham-1 wells within EPP 37 and EPP 39 permit areas in the Commonwealth waters of the Great Australian Bight (GAB) as described in the EP.

This OPEP has been prepared to cover the response to a hydrocarbon release from OGW GAB drilling activity and associated re-supply activities within the 500 m PSZ. It does not supplant the control agency obligations of AMSA or other agencies, but BP offers these measures as '1st strike response' and then as supporting role to these agencies.

This strategy does not cover general supply route or transit of the support vessels or the helicopters during crew change activities unless it is within the 500 m PSZ.

This OPEP does not repeat all of the detailed internal processes that are described in BP's Oil Spill Response Tactics Manual (BP, 2012).

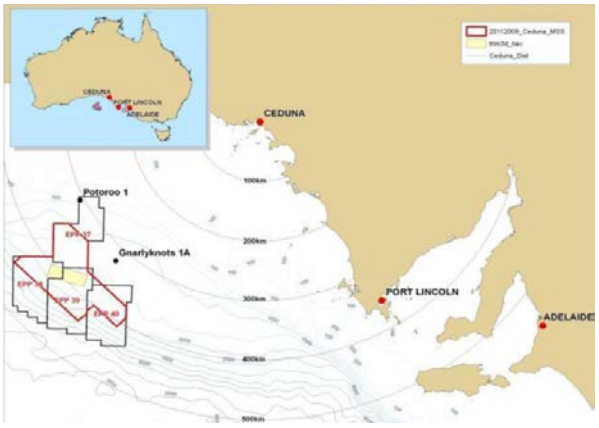
This OPEP supports the details in the tactical response plans developed for the offshore dispersant operation, the offshore containment & recovery operation and the shoreline protection operations

Field Information and Area That May Be Affected (AMBA)

Section 4 of the EP defines the "Area That May Be Affected" (AMBA) by a WCD associated with the proposed drilling activities from the nominal location of the first well.

1.4 Field Information

Table 1-1

GAB Drilling Project	
	
Facility Type	MODU – Ocean GreatWhite
Block Number	EPP 37 (Whinham-1) and EPP 39 (Stromlo-1) permit areas in the Commonwealth waters of the GAB
Title Holder	BP and Statoil ASA are joint Titleholders
Operator	BP
Rig operator	Diamond Offshore General Company (Diamond)
Nearest Installations	There are no oil and gas installations in the GAB.
Water Depth	1, 000-2,500m
Hydrocarbon Types	Unknown – targeting Crude oil, potential for gas/condensate.
Territorial Waters	Australian Commonwealth
Supply base	Port Adelaide
Sailing time ex Supply Base to MODU	Approximately 40 hours
Project helicopter fleet base	Ceduna
Flight time ex Adelaide to Ceduna	Fixed wing: 1.5 hours
Flight time ex Ceduna to MODU	Helicopter: 2 hours

1.5 Spill events

The Level 3 crude oil release, described in detail within section 7 of the EP, has been taken as the base case planning scenario, representing the worst case-requiring the most extensive planning and capability.

The Level 3 gas/condensate and Level 1 and 2 scenarios have been considered in comparison to this base case, to confirm they do not present additional or different response needs. These are also described in detail within section 7 of the EP.

The response planning uses results from both stochastic and deterministic model runs. The stochastic modelling is used to help determine the full geographic area for response. A worst case seasonal deterministic model run is used to help further define various planning criteria and for individual response techniques and capability. However, the full response

strategy is developed using a combination of both stochastic and deterministic model runs, to allow for differences in seasonality and near-shore sensitivities that could be affected.

1.6 Level Three crude oil release from a loss of well control (Stromlo-1)

A level three incident is a spill that has the potential to cause significant impacts, and/or above 500m^3 in volume. Model results in the event of a loss of well control from the Stromlo-1 well indicate that the maximum release rate of oil is no greater than 8,500 m^3 per day (representing unimpeded flow from the well head).

At its maximum flow rate without any subsea mitigations applied, modelling results show that the surface 'expression' (surface slick) will be no greater than 3,400 m^3 of fresh crude each per day taken as 40% of the volumetric flow rate (8,500 m^3/day); see figure 1-2 below. The modelling also indicates that the volume of oil on the sea surface will decrease over time, as entrainment, dispersion and dilution occurs as the oil moves up through the water column. However, as a conservative planning assumption, the figure of 3,400 m^3 of surface oil has been used as the target volume of oil for 'treatment' each day. A summary of surface oil and time to shoreline is presented in table 1-2 (below).

Figure 1-2: Model output showing the percentages of the likely oil fate used for planning purposes

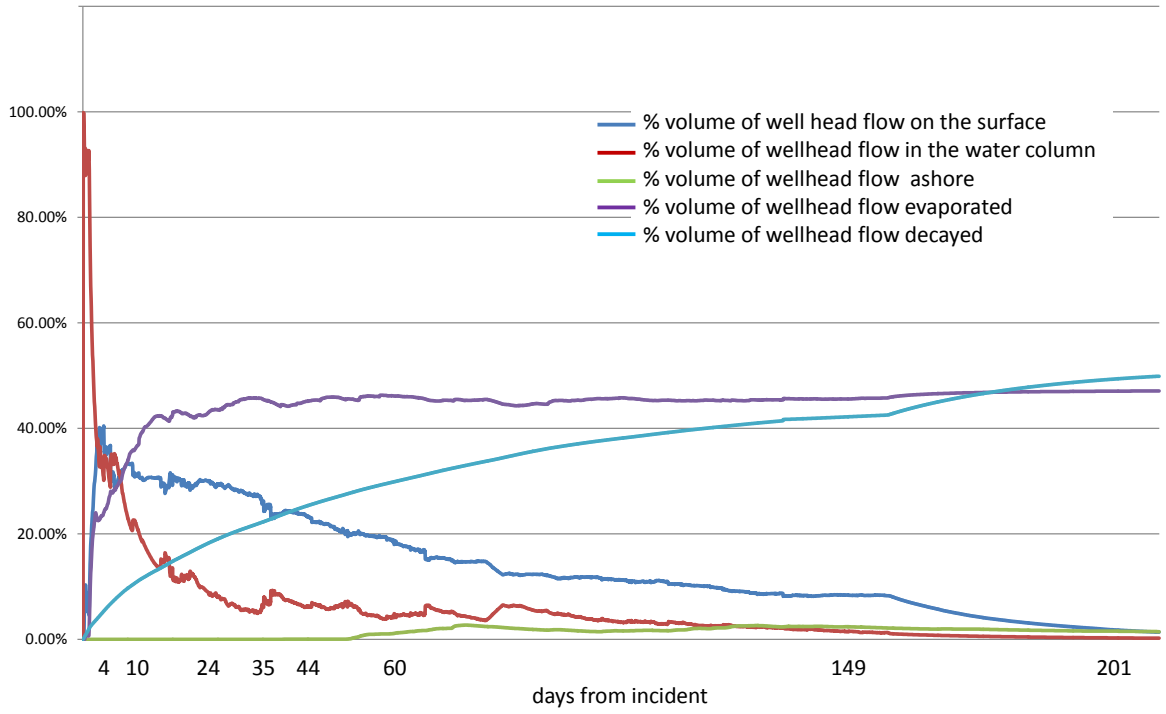


Table 1-2: Modelling outputs; summary of key response features

Feature	Value
First oil to surface	4 hrs
Daily volume of surfacing oil	3,400 m^3
Time to first oil ashore (winter) > 100 g/m^2	9.2 days
Time to first oil ashore (summer) > 100 g/m^2	18.7 days
Time to first oil ashore (transitional) > 100 g/m^2	16.5 days

1.7 Level Three Gas/Condensate release from loss of well control (Whinham-1)

Model results show that the maximum release rate of oil is no greater than 1,810 m^3 per day (representing unimpeded flow from the well head).

The majority of the condensate will naturally be removed from the sea surface by weathering processes. It is predicted that some residual oil will reach the shoreline but this is within the parameters planned for in the Stromlo-1 case outline above in section 1.6.

1.8 Level One and Two Incidents – Smaller crude, SBM, Jet A-1and Diesel

Level one and two spills events are considered to be small or medium size spills (less than 500m^3 and considered to have either no or only relatively minor or impacts). They are described in more detail in the Environment Plan (Section 7), as well as section 4.1 of this document. These spill events include:

- Operational and Maintenance events
- Bulk transfers
- Riser Disconnect
- Vessel Collision

The fluids associated with these include:

- Diesel;
- Jet A-1; and
- SBM

2 Command, control & coordination

2.1 BP's Incident Command System

Globally, BP utilises the Incident Command System (ICS), as the company's preferred incident management system (IMS). As a result, ICS has been adopted as the IMS that BP will use to manage events that arise from the GAB drilling campaign.

Some small changes will be needed to integrate with Australian arrangements, and these have been captured in more detail within this section.

There are a number of advantages to using this system critical for BP to successfully manage level three incidents:

- It offers a standardised and systematic approach to command, control and coordination of BP's (and its contractors and other parties) efforts towards the resolution of an incident or emergency,
- It allows for the easy integration of BP's global Mutual Response Team for level three incidents,
- It includes methods of consultation and coordination for different controlling agencies to come together under a single incident management structure (unified command), and
- It allows for easy upscaling, adoption and flexibility of new response needs as the response changes (i.e. – adaption to requirements for on-water containment & recovery, oiled wildlife response branches, etc.).

The greatest advantage of using the ICS for a level three incident is that it allows for BP to respond to a dynamic, changing scenario in a deliberate, decisive fashion. This allows BP to use the pre-planned oil spill scenarios in this OPEP and select, adapt and vary the spill response options, to an optimal level that reduces the consequences of the spill and reduces/prevents environmental damage, specific to the conditions at the time. More details on the ISC are outlined in section 3.14.

2.2 GAB Command and Control

There are 3 elements that are relevant and specific to the Command and Control aspects for the GAB.

2.2.1 Unity of Command;

This will initially be between BP and Offshore Petroleum Incident Control Committee (OPICC) from the time of the incident until a threat of impact to state waters is noted. Unity of Command enables the response and political aspects of the spill incident to be satisfactorily addressed whilst allowing BP to fulfil its obligations as the control agency

2.2.2 Unified Command

The Unified Command (UC) is an expansion of the ICS organization structure that brings together the "Incident Commanders" of all major organizations that have jurisdictional responsibility for the incident to coordinate an effective response while carrying out their own agencies' jurisdictional responsibilities.

This will be between BP/OPICC; also between BP & relevant state(s) State Marine Pollution Controller (SMPC) from the time that BP interacts with the state agencies to address the impact on state waters. Unified command refers to BP remaining the Control Agency in Commonwealth Waters while the relevant state(s) assume Control Agency for any oil impacts in State Waters

2.2.3 Control

Initially this will be between BP IMT (Perth) and BP Operational base (Adelaide); then from the point when joint action within state waters is required, between relevant state IMT and Shoreline Forward Operating Bases (FOB's) operating to support state shoreline responses and Oiled Wildlife Response (OWR).

These relationships are further described in figure 2.1 below and are determined by the activity required and that the location of the activity that needs to take place i.e. in commonwealth and or state waters. This will ultimately be determined by oil fate, trajectory and weathering. This means that the initial BP and State command and control frameworks can be progressively expanded to give an optimal overall response strategy. This allows the most effective and advantageous response options to be deployed as close to the source of the spill as possible (bearing in mind safety and operational considerations), with supplementary actions radiating out from this location. This approach is known as the 'cone of response' model (see figure 3-1).

2.2.4 Key 'control' assumptions

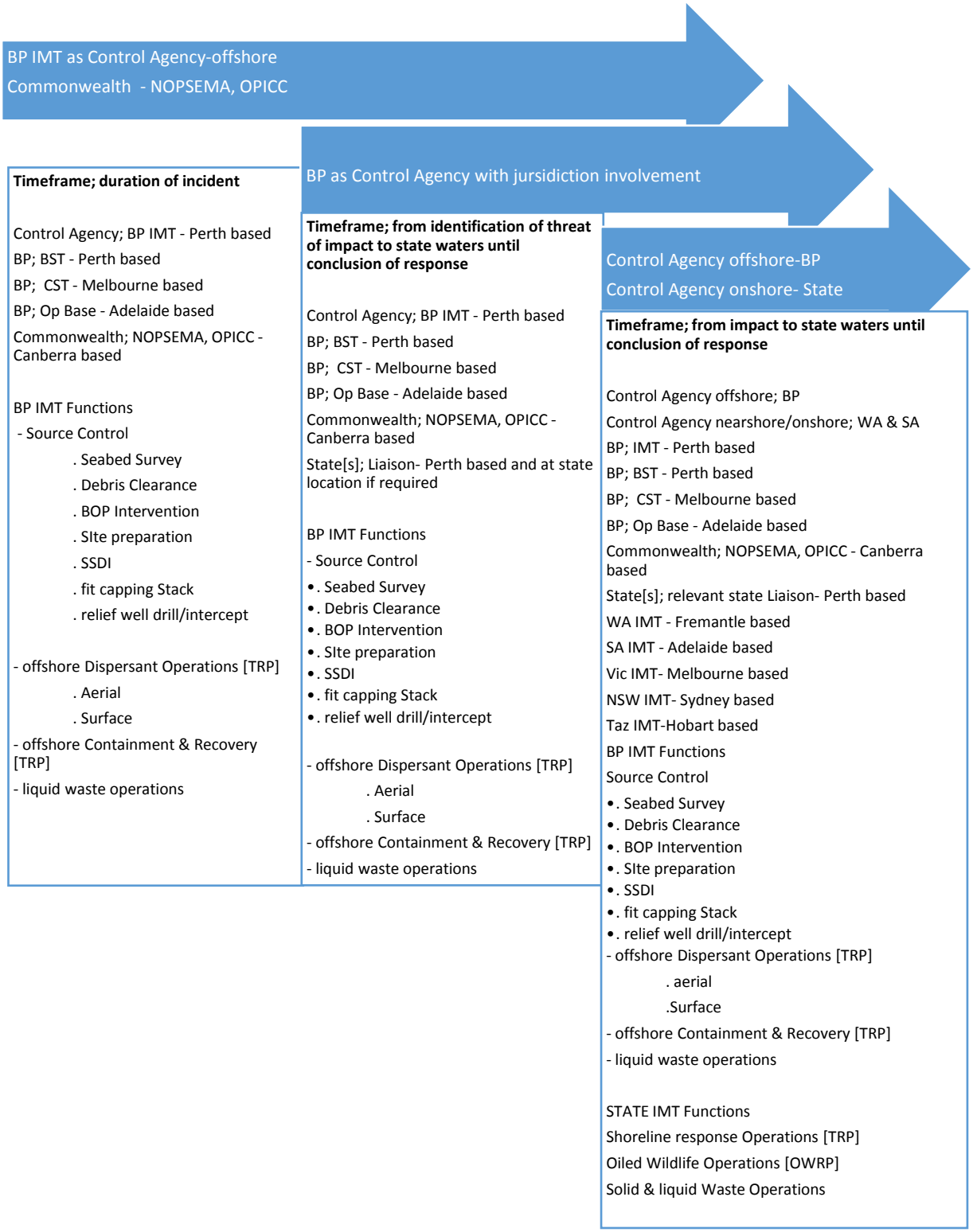
Due to the nature of this particular program, there have been several key assumptions made in order to provide the most informed basis for this plan;

- That the BP Command and Control system (known as the ICS) needs to be able to integrate with the Australian Command, Control and Coordination structure in the specific jurisdiction in which the oil is located or likely to impact.

- That only a Level 3 spill has the potential to impact the GAB shorelines. Different jurisdictions will engage with BP using different command structures.

- That any Level 1 or 2 spills will be addressed by BP as the Control Agency, assuming that there will be no shoreline impact. External parties will be notified as required, and/or in the event of supplementing resources.

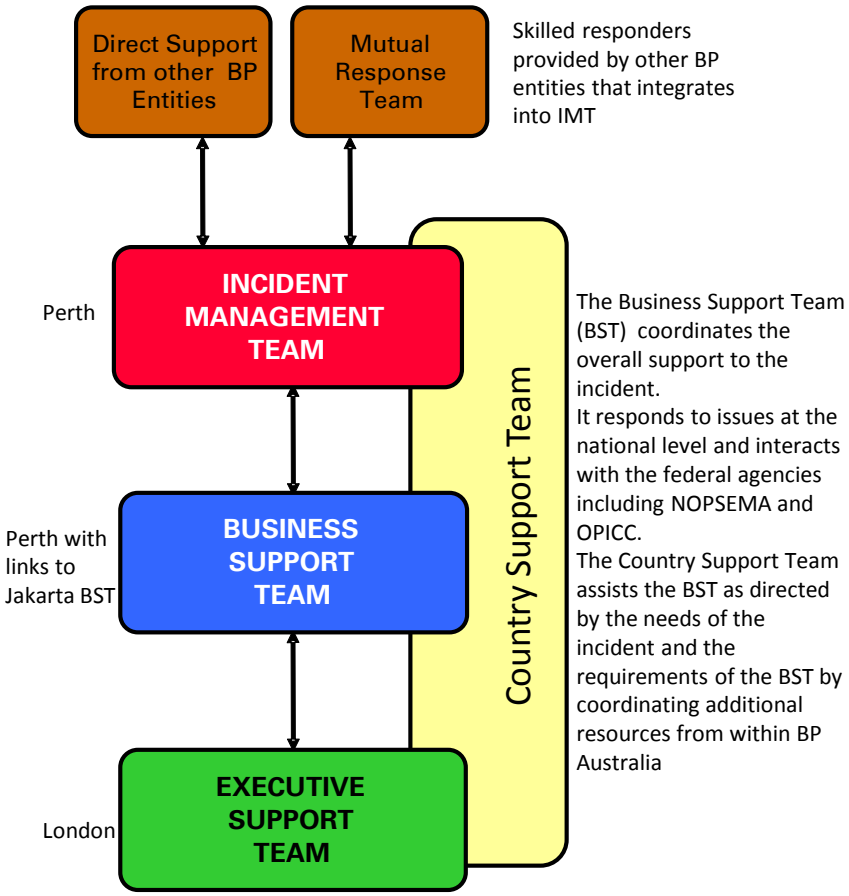
Figure 2.1: A timeline outlining the response structure between BP and the different Authorities (the "event response organisation")



2.3 BP's Tiered response approach

BP's response management system is based on a tiered response structure as illustrated in figure 2.2. The command structure hierarchy encompasses the high-level, internal BP teams that support an incident response. The Incident Management Team (IMT), Business Support Team (BST) and Executive Support Team (EST) form the BP Group's three escalation tiers of its Crisis Management Response System. The EST and BST work with the Country Support Team (CST) to support the IMT in managing the incident response, as needed. Further details of these response arrangements are contained within internal BP Group Defined Practice (GDP 4.6-0001-01 Annex 1 - BP Response Management System).

Fig 2.2: The BP "3 Tier Structure"



In the event of an incident response teams will initially be manned by staff from BP Upstream Australia, as BP maintains in Perth a capability to stand up an IMT within an hour of call out. This team is staffed 24/7, and is drawn from a pool of approximately 50. In addition, BP Upstream will be supported by staff from BP Downstream Australia e.g. Kwinana Refinery, W.A. Kwinana Refinery has an established and experienced IMT, from which BP will initially draw additionally support personnel. Furthermore, BP also has other experienced IMT staff within the Australian Downstream businesses outside of W.A, who in the event of an incident, will support the response.

As required, staff will progressively be supplemented by additional personnel, from with the Asia-Pacific region, and then globally, as outlined in BP's Incident Management Plan. Upon

notification of a level three incident, the IMT will scale appropriately in size and scope (all operational and tactical levels across the maritime, shoreline and aerial domains) to manage the impending work load that a level three incident will require. Additional surge resources can be called upon from the BP Global Mutual Response Team (MRT). The MRT has been established specifically to provide business units working to resolve complex incidents with experienced personnel, familiar with incident response. BP also has access to other in-country resources (e.g. AMOSC), as well as being able to draw upon trained resources from its joint venture partner Statoil. BP also has the ability to access specialised and trusted third party contractors. Further details on the BP MRT, as well as likely numbers are available in section 5.

2.4 Strategic organisation critical interfaces

2.4.1 BP & the Offshore Petroleum Incident Coordination Committee (OPICC)

In the event of an incident, the BP BST Leader will interface with OPICC to enable the following key functions to be met:

- Situational awareness – BP to provide daily situation reports to OPICC based on the ICS 201 (incident briefing) and ICS 209 (mass balance). The SITREP will include past 24 hours spill estimate; previous 24 hours' operational activity and net balance of oil treated/recovered; oil fate update; next operational period planned activity; resources update; logistics update
- Advice - as required by OPICC for ministerial briefings and portfolio department support
- Public communication – BP to provide all media releases to OPICC just prior to release and BP to communicate all notifiable work, health and safety incidents to OPICC immediately on being advised from the response organization
- Coordination – BP to create and maintain a log of all activity requiring governmental support such as immigration of international responders to assist the response; such as seamless transfer of response equipment from international providers into the response effort; and this log is to be discussed daily with OPICC

2.4.2 AMSA

The Australian Marine Safety Authority (AMSA) will coordinate the resources of the National Plan for maritime environmental emergencies on the formal request of the appointed Incident Controller. Notification of AMSA will be through RCC Australia (+**61 62306811**)

2.4.3 BP and NOPSEMA

The BP BST Leader and BP IC will enable positions in the IMT and the response bases for NOPSEMA to act as Observers and Regulator. The BP BST Leader will include CEO NOPSEMA into the daily SITREP's and meet with the CEO within the first 48 hours to discuss progress

2.4.4 BP & WA State Government

The BP IC will initiate communications with WA DoT (as the HMA) as soon as practicable after the spill incident has first been reported. Although we are aware that the WA DoT's

formal involvement may not commence immediately, BP will endeavour to keep WA DoT informed through the daily SITREP's. BP will also look to enable a Liaison Officer position within the Perth IMT for WA DoT to remain involved with the response.

2.4.5 BP & SA State Government

BP will initiate communications with SA Department of Planning, Transport and Infrastructure, as the coastal control agency (DPTI as soon as practicable after the spill incident has first been reported. Although we are aware that the SA DPTI's formal involvement may not commence immediately, BP will endeavour to keep SA DPTI informed through the daily SITREP's. BP will also look to enable a Liaison Officer (LO) position within the Perth IMT for SA DPTI to remain involved with the response. BP is aware that with the trajectory modelling undertaken for a level three incident, SA would likely be the first State impacted by oil within its waters. Engagement with SA therefore remains critical to ensuring SA is properly prepared for the spill impacts and the ICT Leader-to-SMPC liaison will be critical to achieving a successful spill response.

2.4.6 BP & Victoria State Government

BP will initiate communications with the Department of Economic Development, Jobs, Transport and Resources, in their role as the coastal control agency (DEDJTR) as soon as practicable after the spill incident has first been reported. Although BP is aware that the DEDJTR formal involvement may not commence immediately, BP will endeavour to keep the Department informed through the daily SITREP's. BP will also look to enable a Liaison Officer position within the Perth IMT to remain open and involved with the response if required.

2.4.7 BP & New South Wales State Government

BP will initiate communications with Transport for NSW (TfNSW), who are the coastal control agency, as soon as practicable after the spill incident has first been reported. Although we are aware that the NSW's formal involvement may not commence immediately, BP will endeavour to keep TfNSW informed through the daily SITREP's. BP will also look to enable a Liaison Officer position within the Perth IMT for TfNSW to remain involved with the response if required.

2.4.8 BP & Tasmania State Government

BP will initiate communications with the Tasmanian Environment Protection Agency, as the coastal control agency (EPA) as soon as practicable after the spill incident has first been reported. Although we are aware that the Tasmanian EPA's formal involvement may not commence immediately, BP will endeavour to keep the EPA informed through the daily SITREP's. BP will also look to enable a Liaison Officer position within the Perth IMT for the EPA to remain involved with the spill if required.

2.4.9 BP & Global support

BP will activate its internal procedures to move responders from its Australian and global team(s), including MRT resources into Australia. The BP IC will initiate a call-out of all BP Global entities to expand out the response teams. This will be exercised regularly to ensure the notification, activation and mobilisation procedures are effective to move BP international personnel:

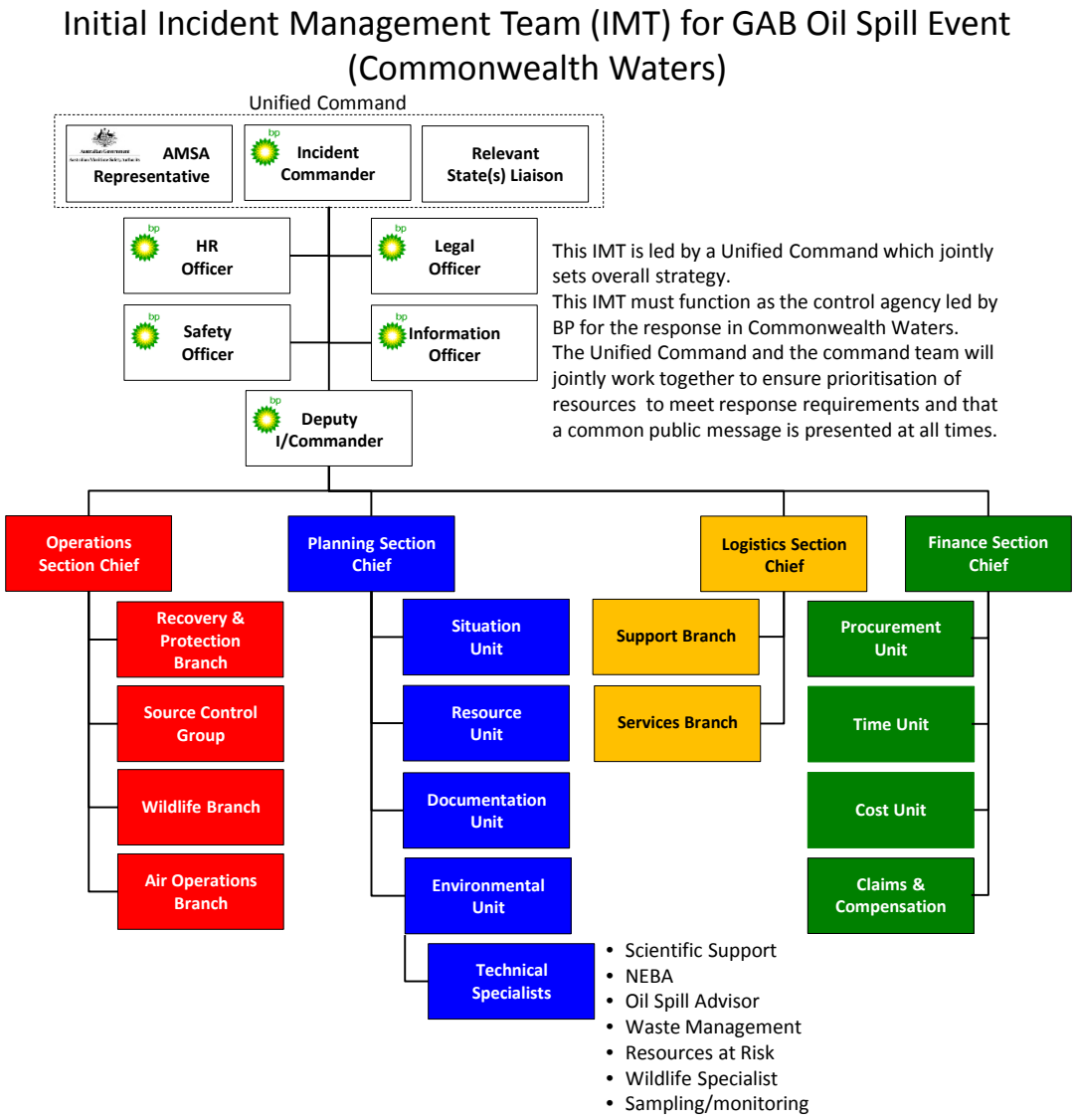
- To immediately provide personnel into either the IMT or the operational bases & tactical teams
- To effect roistered personnel to supplement the initial response teams prior to predicted shoreline oil impacts
- BP Mutual Response Team Resources (supplementary to BP Upstream Australia and other BP Australia entities)

2.5 Command, Control and Coordination – Level Three incidents

2.5.1 Commonwealth Waters Control

BP will be the Control Agency for all petroleum activity, in Commonwealth Waters. BP will initiate the following operational structure for all spill incidents that have the potential to be considered as a level 3 incident and either escalate or de-escalate depending on the size of the spill. See figure 2-4 (below). A level three incident is considered to be a spill that has the potential to cause significant impacts

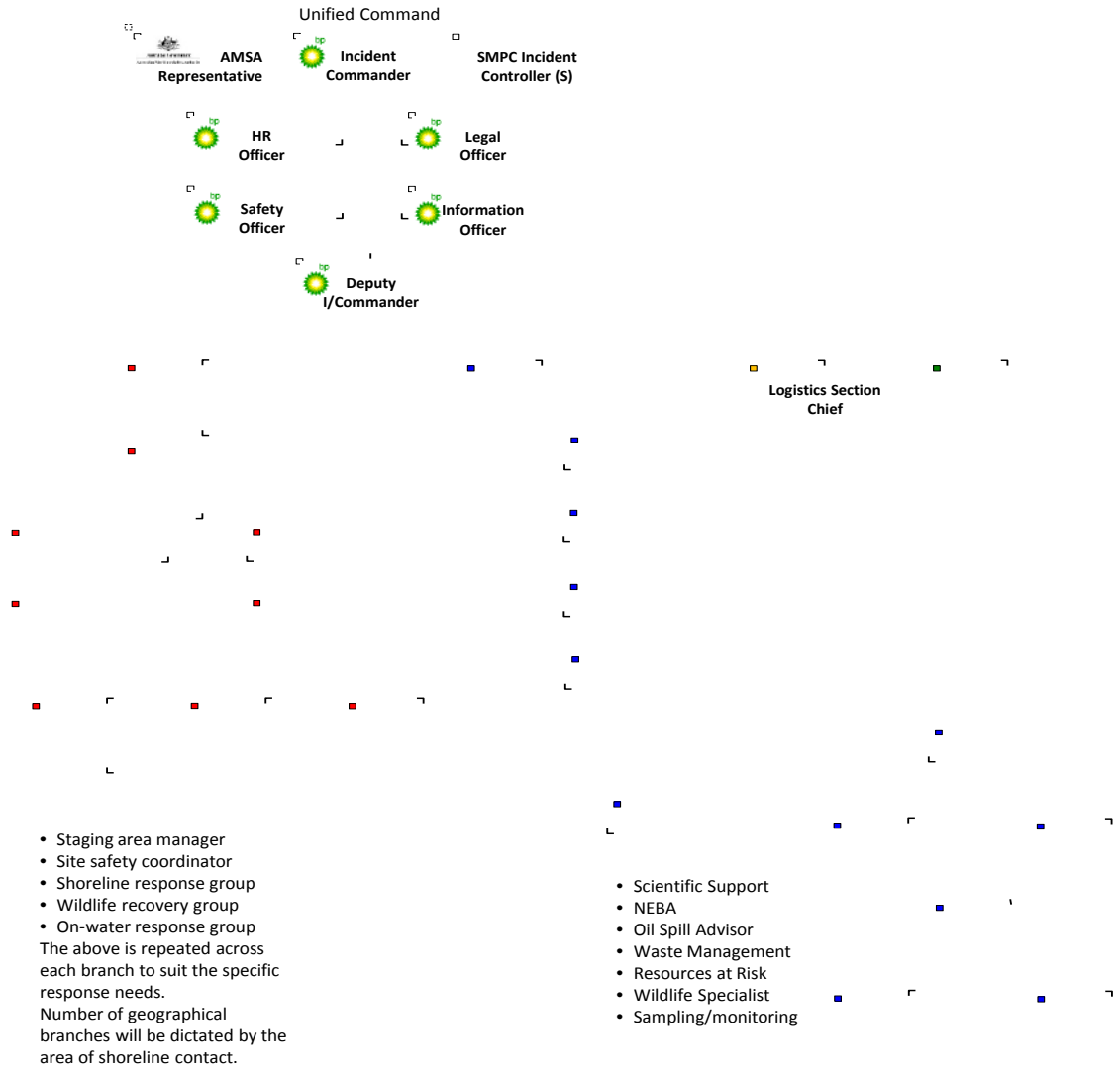
Figure 2-4



2.5.2 State Waters and Shoreline Control

In the event of a level three incident, if oil is predicted to enter State waters BP will establish a unified command (UC). This will expand the IMT as needed to encapsulate each State agency's need to maintain control of their respective area of remit under a common response organisation. The UC as an expansion of the ICS organization structure brings together the "Incident Commanders/Controllers" of BP, the States of WA, SA, Victoria, NSW & Tasmania to coordinate an effective response while carrying each agencies jurisdictional responsibility. The organisational structure (below) allows for integration of the relevant State agency personnel.

Figure 2-5
Incident Management Team (IMT) for GAB Oil Spill Event inc State waters



Further expansion of the IMT into other geographical areas and or specific functions is described in the BP Incident Management Handbook.

This structure allows for each jurisdiction – as well as other key agencies – to make consensus decisions and blend resources throughout the organization to create an integrated response team. In respecting each jurisdiction's positions to remain in control of their territorial areas, BP will support other control agencies through the provision of resources, technical advice, systems and other supporting mechanisms through the UC.

This expanded model, which focusses on the UC integration for shoreline planning and responses in waters <3NM from the coast, takes the form shown in figure 2.5 (above). Initial BP Operational Control – focused on offshore response with Shoreline Treatment Programme commencing operations.

2.6 South Australia Arrangements

2.6.1 References;

Emergency Management Act 2004 (SA)

- Protection of Marine Waters (Prevention of Pollution from Ships) Act 1987 (SA) and its associated regulations implemented through the following documents:
- Flinders Ports Emergency Management Plan (FP EMP) 2006
- Flinders Ports Oil Spill Contingency Plan (FP OSCP) 2005
- The South Australian Marine Spill Contingency Action Plan (SAMSCAP).
- Marine Parks Act 2007 (SA)
- Marine Parks (Zoning) Regulations 2012 (SA)

2.6.2 Responsibilities

The DPTI is the nominated SA Control Agency for oil spills in SA State marine and inland waters and will assume overall direction of emergency management activities in an emergency situation. Authority for control carries with it the responsibility for tasking and coordinating other organisations in accordance with the needs of the situation.

The Emergency Management Act 2004 (SA) identifies the SA Police as the coordinating agency for all emergencies. The State Coordinator is the person for the time being holding or acting in the position of Commissioner of Police.

Therefore, the arrangements in SA will be;

- SA Police will become the Coordinating Agency for any spill incident
- DPTI will become the Control Agency for a spill within 3nm
- DPTI provides the SMPC
- DPTI will plan & execute the State arrangements for the incident within 3nm
- DPTI will plan & execute the State shoreline arrangements for the incident within 3nm
- DPTI will integrate the BP resources within its own command structure
- DPTI will integrate the BP technical expertise within its own command structure

BP will support the SA response as required by the SMPC and IC through;

- Tactical Response Plans for coastal/shoreline response (TRP)
- Shoreline Treatment Recommendations (STR) for 6 pre-agreed (with DPTI) categorised shoreline types
- Operational base at Port Adelaide
- Operational Base at Port Lincoln
- Operational base at Adelaide airport
- Operational Base at Ceduna & airport
- Tactical bases as required to support TRP's
- Technical Advice
- Resources
- Logistical support

BP acknowledges that the responsibility for clean-up of a spill associated with its activities remains with BP and in the event of State or Commonwealth assistance all costs incurred will be recoverable.

2.6.3 SA State Plans

The South Australia Marine Spill Contingency Action plan (SAMSCAP) is used as the basis for management of all oil spills outside port limits. This will also include an oil spill within the port limits if assessed as in excess of 10 tonnes, or otherwise agreed between the Flinders Ports Incident Controller and the SMPC.

Flinders Ports OSCP scope focuses on Level 1 marine oil spills (up to 10 tonnes) that occur, or are present, within Port Adelaide and its approaches, as well as the regional ports of Port Giles, Klein Point, Port Lincoln, Port Pirie, Thevenard and Wallaroo. The Flinders Ports OSCP also has in place arrangements for the combating of a spill that may exceed 10 tonnes or will impact on areas outside the Port limits.

2.6.4 Operational Constraints

The Marine Parks Act 2007 (SA) and the Marine Parks (Zoning) Regulations 2012 (SA) prohibit entering or engaging in any activity in a restricted access zone and prohibit certain activities in marine park zones. The regulations do, however, allow for a number of exemptions from prohibitions and restrictions, including for persons acting in the course of emergency. The definition of emergency provided in the regulations includes an event that causes or threatens to cause harm to the environment, so a permit may not be required. If BP is directed by the SMPC or State IC to undertake spill response activities in a marine park zone, BP will only undertake these activities once permit requirements are confirmed.

2.7 Western Australia Arrangements

2.7.1 References

- Emergency Management Act 2005 (WA)
- Pollution of Waters By Oil and Noxious Substances Act 1987 (WA) (POWBONS)
- Western Australian State Emergency Management Plan For Marine Oil Pollution (WESTPLAN MOP)
- Department of Transport Oil Spill Contingency Plan (DOT, Jan 2015) – non offshore spills
- WESTPLAN MOP Offshore Industry Guidance Note issued 03/2016 – Objective A7021285

2.7.2 Responsibilities

The WA Department of Transport (DoT) is the Hazard Management Agency (HMA) for oil spills in WA state waters under the authority delegated by the State Emergency Management Committee (SEMC) in accordance with Section 20(1) of Ref E.

WA DoT has legislative responsibility to coordinate oil spill response in State waters (including Port Authority limits). DoT also has a statutory responsibility to respond to spills of oil from vessels in W.A. waters.

Based on trajectory modelling, the only district (sector) potentially impacted by oil is the Kalgoorlie District, in which Esperance Port is located. Esperance Port Authority is nominated as the "First Response / Responsible Agency" for this district. The "First Response Agency" is required to respond on behalf of DoT to any spill reported in State Waters within their District. DoT will take over the control of such responses when they arrive on-scene.

The WA DoT is the nominated WA Control Agency and HMA for oil spills in state marine and inland waters and will assume overall direction of emergency management activities in an emergency situation. Authority for control carries with it the responsibility for tasking and coordinating other organisations in accordance with the needs of the situation.

While Esperance Port Authority is the First Strike response team, WA DoT will remain the Control Agency within the 3nm State limit. If the likely response for any oiling impacts in WA is greater than 25days, the intention of BP will be to assist the WA teams to prepare for a shoreline response

Therefore, the arrangements in WA will be;

- WA DoT will be the Control Agency for any spill incident
- Esperance Port Authority will be responsible for a first strike response within Kalgoorlie District; but, noting the time for potential State maritime boundary/shoreline impact, BP will position teams into the IMT framework of the WA DoT
- WA DoT provides the SMPC

- WA DoT will plan & execute the State arrangements for the incident within 3nm
- WA DoT will plan & execute the State shoreline arrangements for the incident within 3nm
- WA DoT will integrate the BP resources within its own command structure
- WA DoT will integrate the BP technical expertise within its own command structure

BP will support the WA response as required by the SMPC and IC through;

- Tactical Response Plans for coastal/shoreline response (TRP)
- Shoreline Treatment Recommendations (STR) for 6 categorised shoreline types
- Operational base at Esperance Port
- Tactical bases as required to support TRP's
- Technical Advice
- Resources
- Logistical support

In State Waters; for a Level 1 incident, BP is responsible for appointing an Incident Controller with responsibility for the management of all incident response activities to that marine oil pollution incident.

In State Waters; for a Level 2 and Level 3 incident, the appointment of an Incident Controller will be confirmed in writing by the WA SMPC.

BP acknowledges that the responsibility for clean-up of a spill associated with its activities remains with BP and in the event of State or Commonwealth assistance all costs incurred will be recoverable.

2.8 Victoria Arrangements

2.8.1 References

- Emergency Management Manual Victoria
- Marine (Drug, Alcohol and Pollution Control) Act 1988 and its associated regulations implemented through the following documents:
- Victorian Marine Pollution Contingency Plan (VICPlan)

2.8.2 Responsibilities

The Victorian Government has primary responsibility for the control of oil spills in Victorian State waters (embayment's and coastal waters within 3nm of the coastline). The Victorian Plan for Maritime Environmental Emergencies (VICPLAN) operates within the framework of the Victorian State Emergency Management arrangements and provides for personnel and liaison between various regional authorities responsible for dealing with aspects of marine oil pollution.

VICPLAN is a supporting document to the Emergency Management Manual Victoria (EMMV) and is administered by the Department of Economic Development, Jobs, Transport and Resources (DEDJTR).

VICPLAN operates and integrates with NATPLAN, with the Victorian Wildlife Response Plan for Oil Spills (developed by the Department of Environment and Primary Industries -DEPI), and the plan outlining cooperative arrangements for response to oil spills by Australian oil and associated industries (the AMOSPlan). VICPLAN can be accessed on the Victorian DEDJTR website at:

- *http://www.transport.vic.gov.au/freight/marine-pollution/marine-pollution-contingencyplan*

DEDJTR has issued to oil industry a guidance note detailing the various responsibilities of industry and government in relation to spills coming into State waters.

Therefore the arrangements in VIC will be;

- Victoria Police will be the Coordinating Agency for any spill incident
- DEDJTR becomes the Control Agency for a spill within 3nm
- DEDJTR provides the SMPC and an IC
- DEDJTR will plan & execute the State arrangements for the incident within 3nm
- DEDJTR will plan & execute the State shoreline arrangements for the incident within 3nm
- DEDJTR will integrate the BP resources within its own command structure
- DEDJTR will integrate the BP technical expertise within its own command structure

BP will support the Vic response as required by the SMPC and IC through

- Tactical Response Plans for coastal/shoreline response (TRP)
- Shoreline Treatment Recommendations (STR) for agreed (with DEDJTR) categorised shoreline types
- Aviation, marine and shoreline FOBs as required.
- Technical Advice
- Resources
- Logistical support

2.9 New South Wales Arrangements

2.9.1 References

- Marine Pollution Act, 1987
- Protection of the Environment Operations (General) Regulation 2009,
- NSW State Waters Marine Oil and Chemical Spill Contingency Plan (2012),
- NSW South Coast Marine Oil & Chemical Spill Contingency Plan (2013),

NSW manages marine pollution control incidents within State waters (low water mark seaward to 3nm) in accordance with the NSW State Waters Marine Oil and Chemical Spill Contingency Plan (2012) and subordinate plan, the NSW South Coast Marine Oil & Chemical Spill Contingency Plan (2013) which covers the South Coast region. These responsibilities are split between Transport for NSW (Statutory Responsibilities) and Roads and Maritime Services (Control Agency Responsibilities).

2.9.2 Responsibilities

Therefore, the arrangements in NSW will be;

- NSW Police will be the Coordinating Agency for any spill incident
- Transport for NSW are the Statutory Agency for a spill within 3nm with Roads & Maritime Services (RMS) as the Control Agency (non-port waters)
- TfNSW will provide the SMPC
- Roads and Maritime Services (RMS)provides an IC
- RMS will plan & execute the State arrangements for the incident within 3nm
- RMS will plan & execute the State shoreline arrangements for the incident within 3nm
- RMS will integrate the BP resources within its own command structure
- RMS will integrate the BP technical expertise within its own command structure

BP will support the response as required by the SMPC and IC through:

- Tactical Response Plans for coastal/shoreline response (TRP)
- Shoreline Treatment Recommendations (STR) for agreed (with TfNSW/RMS) categorised shoreline types
- Aviation, marine and shoreline FOBs as required.
- Technical Advice
- Resources
- Logistical support

2.10 Tasmania Arrangements

2.10.1 References:

- Emergency Management Act 2006,
- Environmental Management and Pollution Control Act 1984
- Tasmanian Ports Corporation Act 2005
- Pollution of Waters by Oil and Noxious Substances Act 1987
- Tasmanian Marine Oil Spill Contingency Plan (TASPLAN

The Tasmanian Government has primary responsibility for the control of oil spills, within Tasmanian State waters which either originate or enter Tasmanian waters and have the potential to impact on Tasmanian waters or shorelines.

TASPLAN is integrated with NATPLAN, the Tasports Oil Spill Contingency Plan, the Tasmanian Oiled Wildlife Response Plan (WildPlan) and the Tasmanian Emergency Management Plan (TEMP). TASPLAN is administered by the Tasmanian Environment Protection Authority (EPA) and can be accessed on the EPA website at:

- *http://epa.tas.gov.au/documents/tasplan.pdf*

In accordance with TASPLAN the Tasmanian EPA is the agency responsible for ensuring an adequate spill response plane is prepared and implemented for Tasmania. The respective roles of the EPA and the Tasmanian Ports Corporation Pty Ltd (TASPORTS) as Control Agencies are described in Section 5 of the Deed of Agreements between the Crown (the Department of Primary Industries Parks, Water and Environment), Marine and Safety Tasmania (MAST), and TASPORTS. Within port waters, TASPORTS are the Control Agency. Outside of port waters the Tasmanian EPA is the Control Agency with TASPORTS assisting under the MOU arrangements.

In the event that an incident in Commonwealth waters impacts on Tasmanian state waters, EPA Tasmania will assume Incident Control over the impacted area in state waters. BP will remain responsible for managing the origin of the spill outside Tasmanian coastal waters.

When control of an incident is transferred from BP to Tasmania, BP will remain actively engaged in the state response via a BP Liaison Officer until stood down by the Tasmanian Incident Controller.

2.10.2 Responsibilities

Therefore the arrangements in Tasmania will be;

- EPA will assume Coordinating Agency for any spill incident
- EPA Control Agency for a spill within 3nm
- EPA provides SMPC and an IC
- EPA will plan & execute the State arrangements for the incident within 3nm
- EPA will plan & execute the State shoreline arrangements for the incident within 3nm
- EPA will integrate the BP resources within its own command structure
- EPA will integrate the BP technical expertise within its own command structure

BP will support the Tasmanian response as required by the SMPC and IC through

- Tactical Response Plans for coastal/shoreline response (TRP)
- Shoreline Treatment Recommendations (STR) for agreed (with EPA) categorised shoreline types
- Aviation, marine and shoreline FOBs as required.
- Technical Advice
- Resources
- Logistical support

2.11 Command, Control & Coordination – Level 1 and 2 Incidents

In this circumstance, BP acknowledges it is unlikely for a need to instigate neither Unity of Command nor Unified Command but that communication of a Level 1 or2 spill remains a priority noting the level of interest in the GAB drilling program.

The response for a Level 1 or level 2 spill will most likely not proceed past First Strike activity. This is summarised as;

- Level 1: the use of resources on site such as the support vessel equipped with dispersant, spill tracking buoy and the containment & recovery systems on board. In most circumstances the response to a level 1 incident will be to undertake monitoring and surveillance, while natural weathering takes place to ensure no impact to resources.

- Level 2: as in level 1 plus additional resources from the supply base such as additional dispersant and support vessels and the associated on-board equipment.

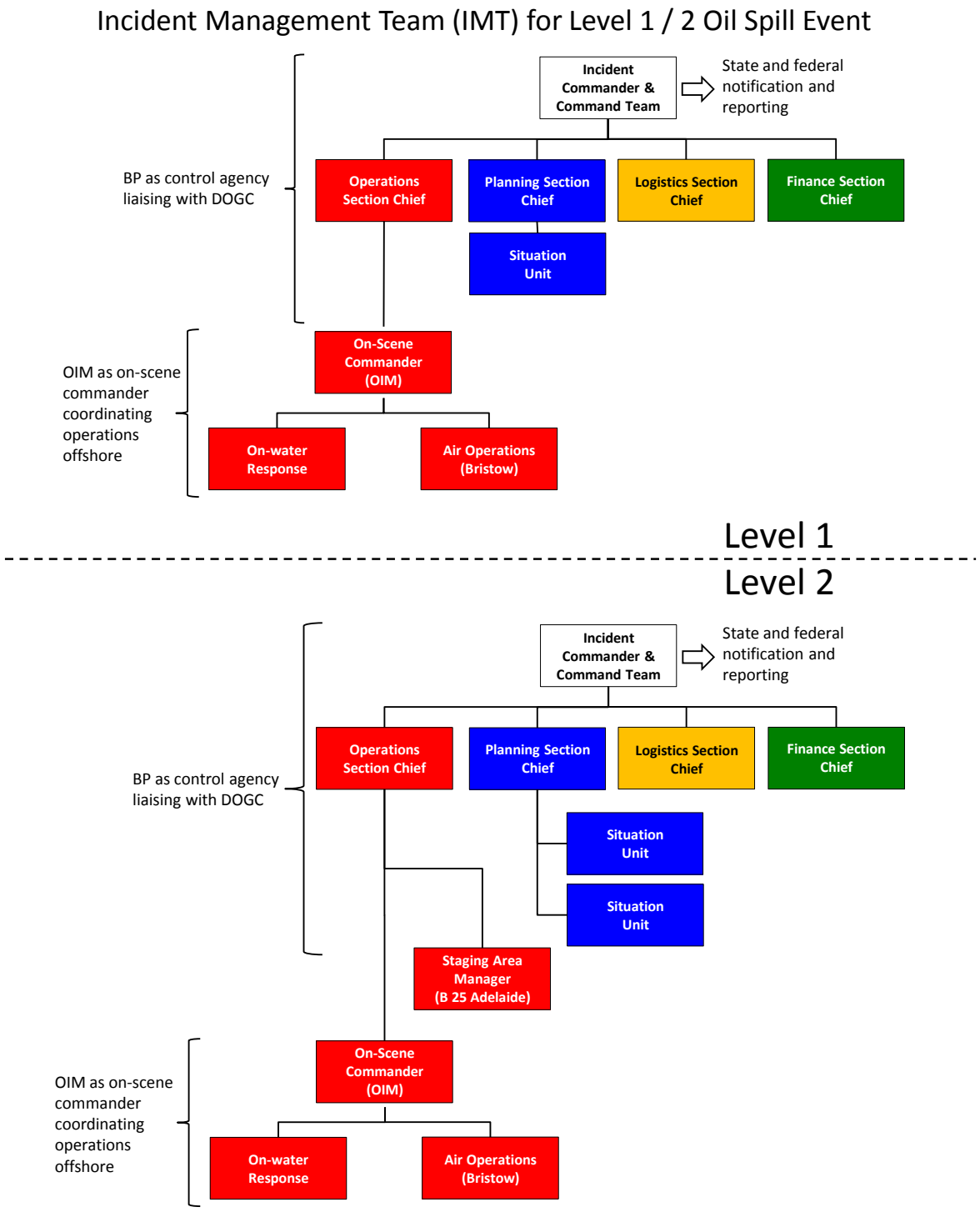
The command and control aspects of level 1 and 2 incidents is shown in the following figure 2-6

First Strike actions are the initial response actions carried out promptly to protect the environment. These are intended to limit the impacts of an incident until such time as other resources can be deployed in support. This capability may vary from location to location.

Initial Control will be between the BP Operational base (Adelaide) and MODU OGW, with the IMT moving to Perth if required.).

Initial Response actions will be undertaken and managed from the OGW or its in-field support vessels.

Figure 2-6



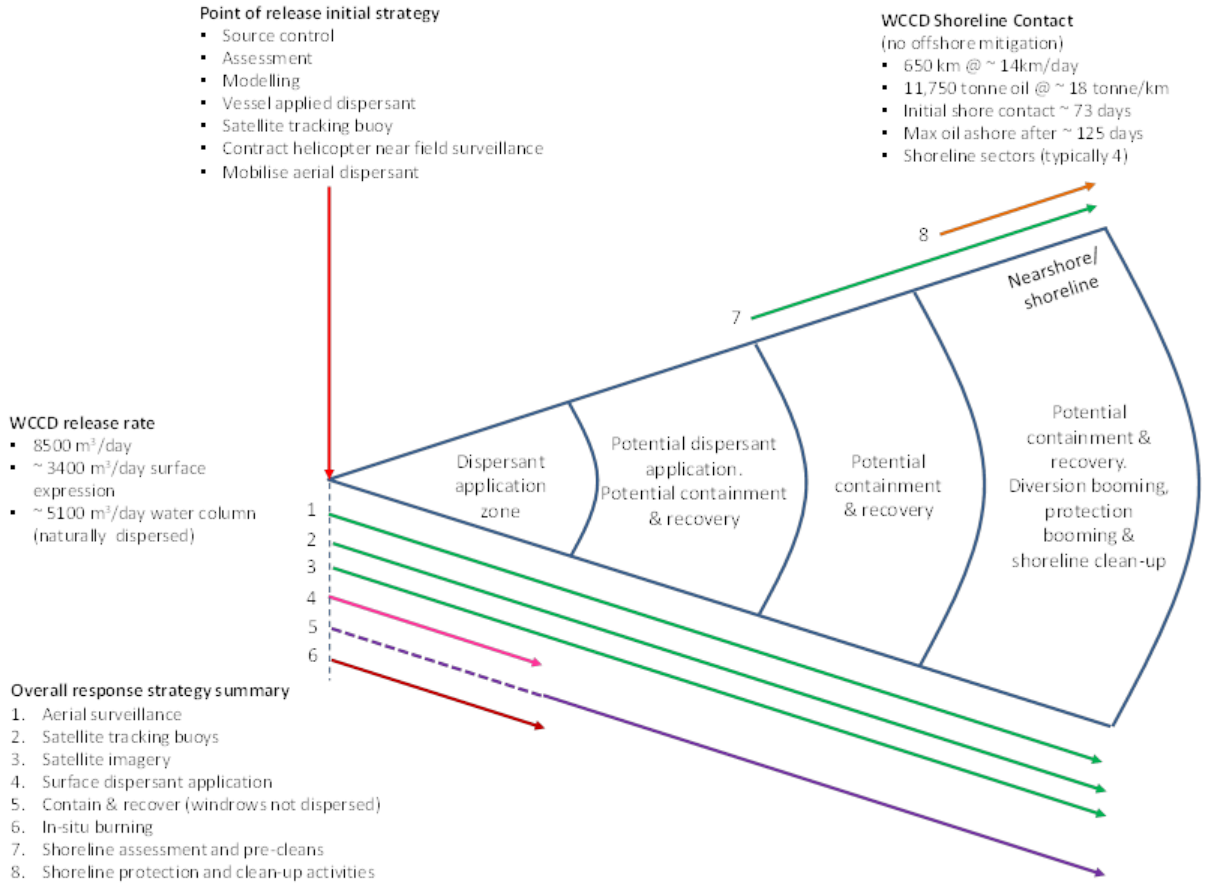
3 Response Strategy

3.1 Response Strategy for the GAB

The combination of different oil spill response techniques that are used in the event of a spill, at defined tier levels and indicative timeframes is known as the overall response strategy. The specific response techniques that compromise the strategy for this OPEP, including how these techniques will be utilised, to locate, assess, remediate, and remove the oil are described in more detail within this section.

The way in which these techniques are utilised, from the source of the spill to the shoreline is known as the "cone of response" (figure 3-1 below). Zoning of the different response techniques allows the most effective overall response strategy to be developed, considering the conditions at the time. Response operations extend in a cone shape out from the source while the bearing of the response area may rotate around the source of the spill depending on oil trajectory.

Figure 3-1: The "cone of response"



A Level Three crude oil well-blow out scenario is anticipated to have the greatest potential for significant environmental, economic or social impact to the AMBA. On this basis, BP has undertaken significant planning to demonstrate that the tactical implementation of each of the strategies (control measures) proposed reduces risk from this event to ALARP. These are described in detail within the Environment Plan.

The aim of the response strategy is to mitigate and minimise impacts to sensitive receptors. The main receptors (described in greater detail within the Environment Plan) that the response strategy is designed to protect are as follows:

Offshore;

- Biologically important areas and species, including Seabirds, Whales and Sea lions;
- Other known aggregation areas of listed marine species (breeding, foraging, resting or migration);
- Key Ecological Features;
- Commonwealth Marine Reserves – given they are enacted under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) to protect the values and sensitivities within the reserve.

Nearshore areas;

- Kangaroo Island, Port Lincoln, Streaky Bay, Elliston to Coffin Bay and the Upper Spencer Gulf.

Shoreline;

- Outlined in detail within section 3.8.

Table 3-1 outlines the variety of oil spill techniques that may be appropriate to use (i.e. can be expected to have a positive environmental benefit) in the event of each of the incident levels. The tactics to implement the strategy may vary between the levels, on the basis of ALARP and operational risk and are also described in greater detail in this section.

Table 3-1

Suite of Spill Response Options					
	Incident Levels				
	1	2	3		
Options			gas/ condensate	Oil	Notes
Source Control (relief well drilling)	🔴	🔴	🟢	🟢	Only drilling scenarios with Blow Out preventer/subsea valve failures.
Surveillance, trajectory estimation, monitoring & evaluation	🟢	🟢	🟢	🟢	All scenarios
Setting exclusions zones	🔴	🟠	🟢	🟢	Consider for significant scenarios only
On-water dispersant spraying (marine & air)	🔴	🟠	🟢	🟢	Crude oil spill only
Subsea dispersant injection	🔴	🔴	🟠	🟠	Relevant to WCD crude only
In-situ Burn	🔴	🔴	🟠	🟢	Potential for Crude oil spill only
Offshore containment and mechanical recovery	🔴	🔴	🟢	🟢	Crude oil spill only
Shoreline protection booming	🔴	🔴	🟢	🟢	Only very large spills will be able to reach the shore.
Shoreline assessment	🔴	🔴	🟢	🟢	
Shoreline clean-up	🔴	🔴	🟢	🟢	
Oiled wildlife response	🟢	🟢	🟢	🟢	Consider for all scenarios; most relevant for shoreline impact scenarios.
Waste management	🔴	🔴	🟠	🟢	Crude oil spill only
Sampling & monitoring	🟢	🟢	🟢	🟢	Consider for all scenarios.

Key:	🔴 - No benefit expected	🟠 - Some benefit in specific circumstances	🟢 - Benefit expected

3.1.1 Key GAB operational factors

The GAB is a dynamic ocean environment. From annual measurements, this rough weather is likely to prohibit safe or effective operations for significant amounts of time. Table 3-2 outlines the likely frequency that each tactic may be used.

Table 3-2: Annualised 'up times' for oil spill response tactics

Offshore Key Tactic "Up-time" as a percentage annually	
In-situ Burn (ISB)	< 10%
Mechanical Containment & Recovery	< 18%
Vessel applied surface dispersant	< 25%
Aerial applied surface dispersant	< 75%
Sub-sea dispersant injection	+95%

(*Data from BP report ROMX0714a, along with annualised weather-rose data from Ceduna BoM station*.

In addition, the permit area is remote, being 220 NM south of Thevenard, 300 NM to the west of Port Lincoln, and 400 NM to the west of Adelaide. Although Thevenard and Port Lincoln are commercial ports they have limited facilities to support the project, and BP has chosen Adelaide to be the marine supply base. This base is two day's steaming time from the permit area. There are no other offshore facilities in adjacent permit areas.

3.1.2 Key Operational Conclusion:

Considering table 3-2 (above), subsea dispersant application can be utilised for the highest frequency of time. Aerial dispersant also can be utilised for a significant period of time. Vessel dispersant application, being more weather dependant is significantly limited in how frequently it can be used, with mechanical containment and recovery, and ISB having considerable 'down time', and expected to be able to be utilised less than 18% of the time or less.

Level Three Incident Planning Conclusions

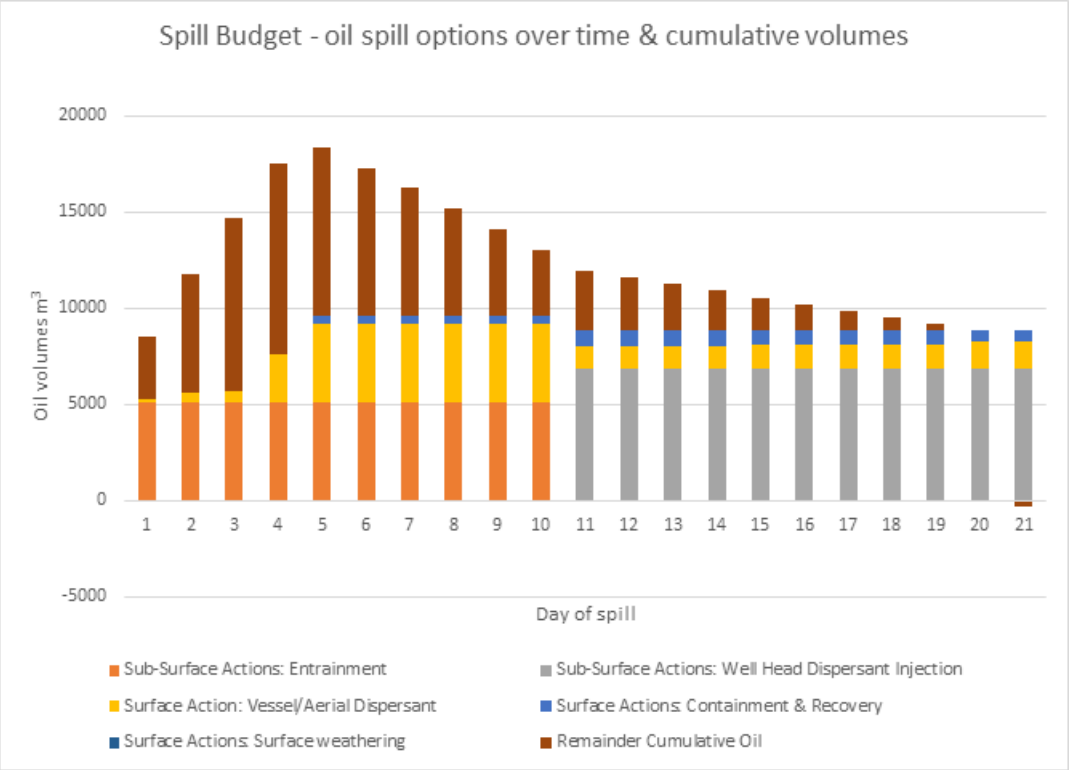
Based on these operational and hydrocarbon assumptions, BP's response to a level three incident is based on the Stromlo-1 'base case' (ref. EP section 7) and will consist of:

- Situational awareness (surveillance and monitoring) from many different platforms
- A focus on mounting a continuous dispersant operation offshore initially using vessels, followed by the use of aerial platforms and then subsea delivery;
- Supplemented by booming tactics (Containment & recovery, ISB) when conditions permit – both offshore and nearshore;
- A shoreline response and waste management strategy planned and executed in conjunction with affected/likely to be affected jurisdictions;
- An oiled wildlife recovery and rehabilitation programme.

Figure 3-2 (below) is a representation of the likely cumulative oil spill budget in the event of a Stromlo-1 loss of well control event, showing how different offshore oil spill response

techniques may be utilised at different times in the response. The term 'cumulative oil' is oil which has yet to be treated and is degrading through natural processes. Day twenty represents the cross over point at which treatment with oil spill response techniques, and daily oil spilt are in equilibrium. This should be viewed as a base case scenario representative of each oil spill response tactic being able to be successfully executed. Refer to section 1 figure 1-2 for surface oil 'base case' determination.

Figure 3-2



This diagram supports decisions and strategies to assess ALARP factors on the overall response required to meet the threat as described in section 7 of the EP. The diagram has been used in a preparedness evaluation to demonstrate effectiveness of response strategies versus gross surface expressions of oil.

3.1.3 Gas / Condensate case (Whinham-1)

In the event of a Whinham-1 well blowout, the response strategy would be based on the Stromlo-1 base case response. However, due to the low persistence of the condensate, (described in detail in the Environment Plan) the resources, personnel and other capabilities needed to implement this strategy would be of the same types, but in equal or significantly lesser quantities, than those needed to implement the Stromlo-1 response strategy. In general terms, the strategy would consist of:

- Surveillance, monitoring and evaluation with a greater reliance on remote sensing capabilities (SAR and infra-red) than compared to a Stromlo-1 oil release
- Source control (as per Stromlo-1)
- Optional, limited and strategic application of surface dispersants, if warranted, and possible use of SSDI mainly for human health and safety benefits

- Limited and strategic use of containment and recovery techniques (including for shoreline protection) using the same prioritization as outlined in Stromlo-1 strategy
- Utilizing a Shoreline Response Program (SRP), as per Stromlo-1 scenario, with greater reliance on the use of manual removal, tilling/surf washing, flushing, and natural recovery
- Oiled wildlife response as per Stromlo-1

.

3.2 Surveillance, modelling and visualisation

Oil Spill Response Option	To gain, and maintain situational awareness, of the oil spill. To allow for the planning and execution of further oil spill response options, and when to cease the response. Collection of important data from a wide variety of sources, and their conversion into useful, well presented information to enable informed decision making during the response.	
Preparedness		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Aerial observation	Master Service Agreement (MSA) with helicopter company (Bristow) and personnel during campaign (Mutual Aid - AMOSC). MOU with AMSA for NatPlan Resources. Aerial Assets of Opportunity lists developed.	MSA AMOSC, Contracts Bristow, MoU AMSA. Aerial Assets of Opportunity list – numbers and details (Ref: TRP).
Vessel observation	MSA PSV provider and register of additional vessel, VoO programme established.	MSA PSV, List of vessels, VoO contract and listing, training to VoO's.
Satellite monitoring	Satellites tasked to commence providing campaign 'imagery'.	SLA with OSRL, intent of service/MSA with KSAT.
Oil Spill Trajectory Modelling	Maintenance of contract for duration of campaign; multiple sources of OSTM.	MSA AMOSC, SLA OSRL, internal MSA with modellers.
Spill Tracking Buoys	Purchase of 4 tracking buoys. Access to additional buoys from AMSOC and OSRL	Maintenance records/tests of buoys. MSA AMOSC, SLA OSRL,
Unmanned Aerial Vehicles	Approach to market and identification of aerial and sea surface providers.	Approach to market details with intent of service.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Aerial observation	Aim to be initiated within 180 minutes of spill being reported. Two x passes per day of spill area from day one of the response. Trained Aerial Observers supplied from day two of the response for all aerial passes. Completed Aerial surveillance report from each flight. Surveillance continues until termination point met for the spill.	IMT log. Aerial Surveillance Reports. Aerial Observer Logs.
Vessel observation	Initiated within 120 minutes of request. Completed vessel surveillance report from each pass.	IMT log. Vessel Surveillance Report.
Satellite monitoring	Aim to be initiated within 120 minutes of request. First images and report received by the IMT within 3 days of request. Second and subsequent images and report received by the IMT within 48 hours of request. Daily image and report until termination point met for the spill.	IMT log. Satellite image and report.
Oil Spill Trajectory Modelling	Oil Spill Modelling requested within 120 minutes of spill. Oil Spill Modelling received within 120 minutes of request. Spill Modelling Continues until spill termination criteria met.	IMT log. Spill Modelling Report and Model.
Spill Tracking Buoys	Tracking buoys deployed within 120 minutes of request by the OIM/Vessel Master/Ops Section Chief/OSC. Tracking buoys data	IMT log. Tracking buoy data.

	monitored and interrogated at least once every 24 hours. Additional tracking buoys requested from AMOSC and OSRL, mobilised in <24 hours of request. Tracking buoys continue until termination criteria are met.	
Unmanned Aerial/Sea Vehicles	UAV request to market actioned in 96 hours of tier three spills being reported. Proposals assessed for viability against spill requirement in <96 hours days of receipt of proposals.	IMT log. Review of proposals received.

3.2.1 Surveillance, Modelling, and Visualisation Response Option

Surveillance is a key response activity that provides good overall situational awareness for Incident Command. It helps to identify, locate, and estimate the size and movement of oil slicks, to direct response operations and observe resources at risk. The surveillance strategy will be implemented as soon as a notification of an incident is received with initially local assets providing the first visual observations from the MODU (if safe to do so), support vessels and tracking buoys for slick movement monitoring will be deployed from the support vessels and MODU. In addition, trajectory modelling will also be instigated in house and APASA via AMOSC; and OSRL.

BP's surveillance strategy consists of two primary tools, 1) visual aerial surveillance and 2) satellite imagery. The combination of visual observation from aircraft and satellite imagery will provide a comprehensive, 24 hr, reliable surveillance capability which can be scaled according to the needs of the response. These assets can be supplemented by other means if the spill scenario requires this such as airborne remote sensing, aerostats (tethered balloons with remote sensing equipment) and Unmanned Aerial Vehicles (UAV/drones). These tools are typically tasked for specific surveillance missions such as monitoring operations or wildlife.

Each of these tools have advantages and disadvantages, and no single tool will provide all surveillance requirements and therefore a suite of surveillance tools will be deployed to provide a 24 hr comprehensive surveillance capability based around aerial visual observation and satellite imagery.

Oil spill trajectory modelling will also be used and will be validated by the surveillance from multiple platforms.

3.2.2 Deployment pathway:

Table 3-3: Surveillance response resource and action

Asset owners/coordinator	Action
Deploy Bristow Helicopters	Use helicopter as platform for Aerial Observation of oil spill.
Request AMOSC	Oil Spill Trajectory Modelling; 3 x Trained Aerial Observers (CG and staff) for Aerial overflights programme.
Contract aircraft of opportunity.	Charter (3) suitable aircraft that can be used as rotating platforms for aerial observation of oil spill.
Request from OSRL.	Request images from satellites of impacted area.
Request from AMSA	S&R aircraft deployed to provide remote sensing data

Primary surveillance tools

BP's two primary surveillance tools are aerial visual observation, using trained observers, and satellite imagery.

Visual Observation

Visual observation with trained observers from aircraft is and continues to be an important and reliable tool to provide situational awareness and guide/monitor response operations both offshore and onshore. Initially, after notification, visual observations will be provided from support vessels and the MODU (if safe to do so) but soon after through aerial support. After notification, aerial surveillance will be mobilised as soon as practicable (<6 hr is the targeted mobilisation time), using BP contracted helicopters, and then moving to contracted fixed wing aircraft operating out of Ceduna respectively.

The key to successful visual observation is the availability of observers, whom will in the first instance be provided by BP (2 hour mobilisation time), with additional trained observers available from AMOSC (12 hour mobilisation time) and OSRL (2 – 5 days mobilisation time). Trained observers will use standard protocols (Bonn agreement oil appearance code) to record their observations in a systematic manner.

Aerial visual surveillance will be carried out twice daily (morning and evening) to provide up to date information to Unified Command, but is flexible to be adjusted to the needs of the response. For safety reasons there are no night time flights.

Aerial Surveillance Response Goal: three fixed wing aircraft on rota per day.

Satellite Surveillance

To supplement the visual observation and to maintain good situational awareness, BP will obtain satellite imagery from their satellite service provider MDA (mobilised via OSRL). MDA will on average deliver a satellite image every other day for a particular area of interest. Table 3-4 provides an example of image acquisition timings. There is a time lag at the outset: while requests are made, satellites are tasked and imagery is acquired, processed and delivered. This lag depends on the time of the incident, time of the request, satellite operator deadlines for requests to be received for satellites tasking etc. – varying from 12-16

hours up to in some cases 24-36 hours. A 'battle-rhythm' can then be established for requesting/receiving imagery to suit IMT needs.

Table 3-4: Overview of satellite imagery acquisition timings for a hypothetical incident for the period 17 – 25 June 2016 for MDA

		Incident occurs	17/06/2016			18/06/2016				19:/06/2016				20/06/2016				21/06/2016				22/06/2016				23/06/2016				24/06/2016				25/06/2016			
	Satellite System	17/06/2016 00:15	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00	00:00	06:00	12:00	18:00
1	RADARSAT-2				R		D																														
2	TERRASAR-X											R			D																						
3	TERRASAR-X													R			D																				
4	RADARSAT-2																				R		D														
5	TERRASAR-X																							R			D										
6	RADARSAT-2																															R		D			

R = request imagery, D = delivery of image to IC.

If the frequency of image delivery is not adding significant value (measured in terms of new information in addition to the Aerial Overflights) to the IMT Common Operating Picture (COP), BP will mobilise additional imagery via KSAT, a satellite monitoring company with whom BP has a Master Service Agreement and therefore could mobilise this additional resource in a relative short time frame.

The satellite imagery is a Synthetic Aperture Radar (SAR) image. The advantage of using SAR imagery as opposed to an optical image for spill response is that it is weather independent and can be utilised day or night. SAR imagery can provide an overview of a large area (up to 500 x 500 km per scene), but is not able to distinguish between slick thicknesses. They do provide an overview of where slicks and assets are located and are therefore very useful in planning aerial surveillance missions and maintaining situational awareness when aerial overflights are not available due to darkness and adverse weather conditions.

The drawback of optical images is that cloud cover will obscure any image, which can be a significant problem in the Great Australian Bight. However, optical satellites can provide complementary images and are useful for example for baseline imagery, shoreline oiling conditions and impact assessments.

Secondary surveillance tools

In the event of a level 3 incident additional resources will be required. BP's surveillance assets can be supplemented with other resources as outlined below.

Airborne Remote Sensing

In the event of a level three incident, BP will request that AMSA deploy one of its SAR aircraft to carry out regular surveillance flights, and provide this feed back to the BP IMT.

AMSA maintains a fleet of 4 dedicated SAR aircraft. These aircraft are equipped with a range of remote sensing equipment useful for surveillance, including, search radar, forward looking Infra-red Radar (FLIR), satellite communications and mission management systems.

If AMSA aircraft are unavailable, BP will consider commercial companies, based in Australia and US, who provide aerial remote sensing. These can be contracted in by BP on a relatively short notice. Companies in both locations use hyperspectral sensors to map areas of interest.

Aerostats

In the event of a level three incident, BP will trial Aerostats (tethered balloons) or equivalents for extended (week two) offshore containment and recovery operations. They can provide real time information and are very suitable for monitoring containment and recovery operations and in-situ Burn (ISB) offshore. They are currently used by some major spill response organisations such as NOFO in Norway and MSRC in the US.

There are a number of commercial organisations that can provide off the shelf aerostats and therefore they can be relatively easily mobilised to site if deemed necessary. They could for example replace spotter aircraft for monitoring offshore operations and free up these aircraft for other missions on large incidents.

Unmanned Aerial Vehicles

Unmanned Aerial Vehicles (UAV) or drones are now frequently used by the industry, for example, for routine pipeline and flare stack and under deck inspections, although rotary UAV's have relatively short flying times of only up to 20 min. However, they may usefully be utilised during a response for shoreline surveys in areas that are difficult to access or with sensitive wildlife such as seal colonies or bird breeding areas or providing a quick assessment of shoreline oiling conditions to plan deployment of SCAT teams.

In Australia there are two Industry associations that represent a large number of commercial UAV suppliers: Australian Certified UAV Operators Inc. (ACUO) and the Australian Association for Unmanned Systems (AAUS). They have useful information on commercial providers, listing their contact details and services they provide.

The OSMP (Appendix 8.5) outlines the surveillance, tracking and monitoring strategies and decision making criteria for the spill scenarios described in the GAB Drilling EP.

For the Tier Three activation checklist refer to section 4 of this document
For the operational deployment of aerial overflights, please refer to the Air Ops Plan; OSRL Handbook; IPEICA Aerial Observation of Oil Spills at Sea.

3.3 Source Control: Relief Well drilling, Sub-Sea Interventions and SSDI

Oil Spill Response Option	Subsea interventions to limit and stop the release of oil from the source.	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Subsea first response toolkit	Maintain the SFRT access contract during drilling activity. Track and maintain sufficient dispersant supply for 35 days during the drilling campaign.	SFRT Contract. Contract with SFRT Technical Adviser. Dispersant supply contract, MOU or information (AMOSC, AMSA, OSRL GDS, Dasic)
Capping Stack	Maintain Capping Stack Contract. Capping stack vessel (heavy lift with heave compensation) identified.	OSRL (SWIS) contract. Vessel identified and active log maintained.
Relief Well Drilling	Prior to drilling a specific relief well plan will be in place. Potential MODU suitable for task have been identified.	Relief well plan. MODU log maintained by drilling team.

Response (what will we do? In what time frame and how much)		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
WC&I Team	WC&I initiated within 24 hrs of loss of well control.	IMT log.
Subsea First Response Toolkit	SFRT mobilised to site by day 10	IMT log.
Net Environmental Benefit Analysis	NEBA completed in regards to subsea dispersant use. SSDI NEBA part of the incident plan.	IMT log. IAP incl. NEBA.
Relief Well Drilling MODU	MODU for relief well drilling to be onsite as defined in the relief well plan Relief well drilled within 149 days of loss of well control.	IMT log. Relief well drilled.
Relief Well Basis of Design (BOD) and Plan	Relief well drilled in accordance with the plan.	IMT log.

Deployment pathway:

Table 3-5: Source control response resource and action

Asset owners/coordinator	Action
Capping and SSDI	Mobilise resources as per Capping & Containment Plan
Relief Well	Mobilise resources as per Relief Well plan

3.3.1 Source Controls and Sub-Sea Interventions Response Option

Subsea interventions include a number of options designed to disperse, limit, and control the release of oil at the source of a loss of well control event. These include installation of a capping stack, subsea dispersant injection (SSDI) and drilling of a relief well. All options would be implemented concurrently. (Note – SSDI is detailed separately in section 3.5 below)

A Sub-sea First Response Toolkit (SFRT) of specialised equipment is located in Perth, and managed by AMOSC, for immediate mobilisation at the onset of a subsea well control event. This equipment and tooling enables an initial response to a subsea blowout, enabling the survey of the debris field; debris removal; ROV BOP Intervention; site preparation and, in conjunction with a vessel-deployed dispersant delivery solution, the subsea application of dispersant. Additional SFRT equipment is also available to BP via OSRL and is located in Brazil and Norway.

The equipment is supplied in offshore rated containers with a subsea Blow Out Preventer (BOP) accumulator and deployment racks for the flying leads (BP's current Subsea Containment Response plan does not rely on the use of this accumulator system).

Capping stacks provide a means of choking back and potentially stopping flow, establishing a barrier and the subsequent ability to pump heavier kill fluid. The GAB Capping and Subsea Containment Response Plan (doc ref AU000-UZ-PLN-600-00001) outlines the plan for capping and containing a well in the event of a subsea well blowout. This plan focuses on planning several key subsea containment response elements:

- **First response and BOP intervention:** Survey of seabed and intervention on the rig BOP to establish control and ultimately shut in the well via a Remotely Operated Vehicle (ROV).
- **Subsea Capping Stack Deployment:** Mobilisation, installation and operation of suitable Subsea Capping Stack to establish well barriers.
- **Establishment of Subsea dispersant delivery:** Mobilisation, installation and operation of suitable hardware to allow pumping of suitable dispersant chemicals at the source.

BP has access to a number of capping stacks suitable for use on the deep water wells to be drilled for this project. These capping stacks are available to BP through its membership of OSRL. Details regarding well capping capabilities are summarised in section 5 of this OPEP.

For the GAB project, BP have identified OSRL's 10k psi capping stack, based in Singapore as the primary option. The mobilisation and deployment logistics for this equipment are outlined in section 3.5.1 and section 5 of this OPEP. BP also has access to specialist

knowledge and additional equipment from the BP Global Subsea Containment Response Team based in Houston.

BP's internal standard (outlined in Upstream Practice, Capping and Containment Response System for Emergency Well Capping Operation 10005), specifies that the BP Capping and Containment Response Team will mobilise and deploy cap and containment equipment and tools as soon as possible, and within 35 days.

While capping and containment and SSDI would be used to reduce and control a release from a loss of well control event, the primary, permanent control option is the drilling of a relief well. A Relief Well Basis of Design (BOD) and Plan specific to each of BP's GAB wells will be developed before starting drilling operations. The plan will describe the technical and logistical feasibility of drilling a relief well for a given planned exploration well. The plan will also include information on how to mobilise the IMT and links to relevant documents and specialised contractors.

The relief well plan determines that the relief will be completed within 149 days of a loss of well control event.
For the operational deployment of relief well drilling and subsea interventions, please refer to the separate Capping & Containment and Relief Well Drilling plans:

- AU000-HS-PLN-600-00006 Subsea Containment Response Plan: Great Australian Bight
- AU000-DR-BOD-600-00009 Whinham-1 Relief Well Planning Document-rev B01
- AU000-DR-BOD-600-00001 Stromlo-1 Relief Well Plan and BoP RevB01

3.4 Surface Chemical Dispersants

Oil Spill Response Option	Offshore surface dispersant – vessel and aircraft	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Aerial dispersant spraying platforms - small	Maintain access to FWADC throughout the campaign. Access to agricultural aircraft in addition to that provided for by the FWADC.	AMOSC MSA. MoU/Agreement with AMSA/BP. MOU with Aerotech 1st Response.
Dispersant spraying platforms - large	Maintain access to OSRL dispersant aircraft (2 x 727, 1 x L100) throughout the campaign.	OSRL SLA.
Air attack platforms (chase and command aircraft)	Aerial Assets of Opportunity lists developed.	List of suppliers developed.
Air attack supervisors.	Access to the NatPlan AAS pool.	AMSA MoU.
Dispersant supply and dispersant spraying equipment	Access to the NatPlan dispersant and equipment supply. Access to AMOSC dispersant and equipment supply. Access to OSRL GDS and equipment supply. Commercial providers of dispersant ('just in time manufacture') identified. Global air charters identified who can move stock to meet TRP.	AMSA MoU. AMOSC MSA. OSRL SLA. List of dispersant providers developed. List of global air charters (managed by OSRL for GDS).
Surface Dispersant Tactical Response Plan	Plan drafted.	Surface Dispersant Tactical Response Plan in place.
Air Operations Plan	Plan drafted.	Air Operations Plan in place.

Response (what will we do? In what time frame and how much)		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Surface Dispersant Tactical Response Plan	Aim to activate the TRP within 120 minutes of IMT.	IMT log. IAP reflects use of the TRP.
Dispersant Field Effectives Test on PSV.	Deployed within 30 minutes of formal request. Results passed to the IMT <30 minutes after test.	IMT log. Vessel log.
Dispersant benefits/dis-benefits established	NEBA completed prior to operational spraying of dispersant onto the oil. Results of NEBA socialised	IMT log. IAP.

	with relevant state SMPCs, AMSA (Commonwealth), NOPSEMA (Commonwealth) and DoE (Commonwealth). NEBA validated during each operational period (To consider – spill trajectory, eco-toxicity data, entrained oil monitoring results, water sampling results, feedback from jurisdictions and Commonwealth).	
Air Operations Plan	Air Ops plans used concurrently with Dispersant TRP.	IMT log. Battle rhythm and other documents in the Air Operations Plan used.
Aerial dispersant spraying platforms - small Air attack supervisors.	FWADC - to AMSA via AMOSC –aim to be initiated within 180 minutes of request. FWADC JSOP commenced after FWADC activated. Spray runs deployed as per TRP.	IMT log. FWADC JSOP used.
Dispersant supply	(As above AMSA MoU) AMOSC call-out commences dispersant mobilisation in <180 minutes. OSRL call-out in < 180 minutes for GDS stockpiles. Global air charter contracted <24 hours to move GDS.	IMT log. AMOSC/BP Service Contract executed. OSRL/BP service contract executed. BP/Air charter contract.
Dispersant spraying platforms - large	OSRL activated within 180 minutes. Spray runs deployed as per TRP.	IMT log. OSRL/BP service contract executed.
Air attack platforms	LSC commences sourcing aircraft within 180 minutes. (Ref: TRP)	IMT log.
Dispersant effectiveness monitoring	OSMP activities to being within 24 hours; this would commence with visual observations and in-field testing. Dispersant/oil ratio adjusted for optimal dispersion. NEBA completed prior to dispersant spraying. daily Dispersant spraying continues until termination	IMT log. Effective log keep (volumes sprayed, locations, etc.).

	points are met.	
Monitoring needs to be executed concurrently with this dispersant plan – ref to BP's OSMP program.		

3.4.1 Surface Dispersant Response Option

The surface application of dispersants is likely to be an effective response tool on hydrocarbons, as long as they can be applied to fresh oil and during the dispersant "window of opportunity". The effectiveness of the dispersant will be confirmed before application by the use of in-field testing.

To maximise success, dispersants will be applied as close to the source as practicable, as soon as possible, by aircraft and surface vessels (daylight hours). The vessels will be limited by sea state and safe effective operational limits while the aircraft are restricted to good visibility and airspace control around the wellhead.

Dispersant effectiveness is limited as the oil "weathers". This is characterised by a rise in viscosity, a loss of more volatile components, and oil becoming emulsified. Older oil that has not been treated through the hours of darkness will be treated during the first dispersant runs of the next day. These logistical and spatial challenges mean that despite best efforts, there is a risk that some oil will become weathered /emulsified before it can be treated with dispersants. The effectiveness of treating older oil will be assessed during the first 3-4 days of the dispersant strategy being trialled and regularly afterwards.

BP has planned and sourced dispersant stockpiles, suppliers, and aerial/sea platforms sufficient in numbers and capability to deliver dispersant for the planned worst case of oil on the water surface (3,400m^3). Initial application would be by PSVs on site, each carrying 15 m^3 of dispersant, an estimated two-to-three-day supply per vessel, allowing sufficient time for re-supply to be mobilised from port. By day five, when aerial dispersant application would be fully deployed, surface vessel application would move to the fringes of the slick, focusing on isolated patches of non-dispersed oil.

In the first instance following a spill, BP contracted PSV's will be utilised to apply dispersants. Once the decision to spray has been made, additional supplies of dispersants will be mobilised to the spill site to replace those already used by the PSV's. In addition, the aerial dispersant application strategy will be initialised, with aerial platforms taking over from the vessels. Vessels applying dispersants will then move to the farthest edges of the slick, and focus on patches of oil. Assuming vessel 1 is a PSV with 15 m^3 dispersants on-board, it will need to reload after 3 days of operations. There is a new vessel on day 4 since there are 3 vessels in total and this will resupply dispersants to the site. The capability requirements are justified in section 7 of the EP.

Deployment pathway:

Table 3-6: Surface dispersant response resource and action

Asset owners/coordinator	Action
Request from AMSA	All available (6) aircraft under the FWADC for deployment to Ceduna, and an additional (3) aircraft from the secondary pool.

	Air Attack supervisors (3). All OSCA Dispersant to Ceduna.
Request from OSRL	All available (3) large dispersant spraying aircraft for deployment to Adelaide. GDS Mobilisation to Adelaide.
Deploy Bristow Helicopters	Use helicopter as Air Attack platform until suitable fixed wing aircraft can be charted.
Contract aircraft of opportunity.	Charter (3) suitable aircraft that can be used as rotating platforms for Air Attack Supervisors.
Deploy from BP or VoO's	All available PSVs and/or VoO's (4) to undertake surface spraying form vessel mounted systems.
Request from AMOSC	50m^3 OSCA dispersant mobilised to Ceduna. 100m^3 OSCA dispersant mobilised to Adelaide. Core group personnel – forward operating base LO.

Dispersant supply & demand (for both surface application and SSDI)

BP has elected to use only those dispersants under the National Plan for Maritime Environmental Emergencies, Oil Spill Control Agents listing (OSCA) listing. This list can be found at *http://amsa.gov.au/environment/maritime-environmental-emergencies/national-plan/General-Information/control-agents/register/index.asp* and currently includes:

- Dasic Slickgone NS
- Dasic Slickgone EW
- Total Finasol OSR 52
- Total Finasol OSR 51

Significant stockpiles of these types of dispersant are available in Australia and within the industry held Global Dispersant Stockpile strategically located around the globe.
Dasic's agent in Australia has confirmed that dispersants may be able to be manufactured on-demand (at between 50 m^3 – 100m^3 per day) to meet ongoing dispersant needs and transported from the UK. This is contingent on the availability of feedstock's to purchase at the time.

Finasol OSR-52 can be manufactured at approximately 150 m^3 – 200m^3 per week.

There is also existing dispersant stock which was available for National Plan use prior to April 2014 which has 'grandfathered' approval to be used in any spill response including industry and governments stockpiles. BP may access these stocks if required.

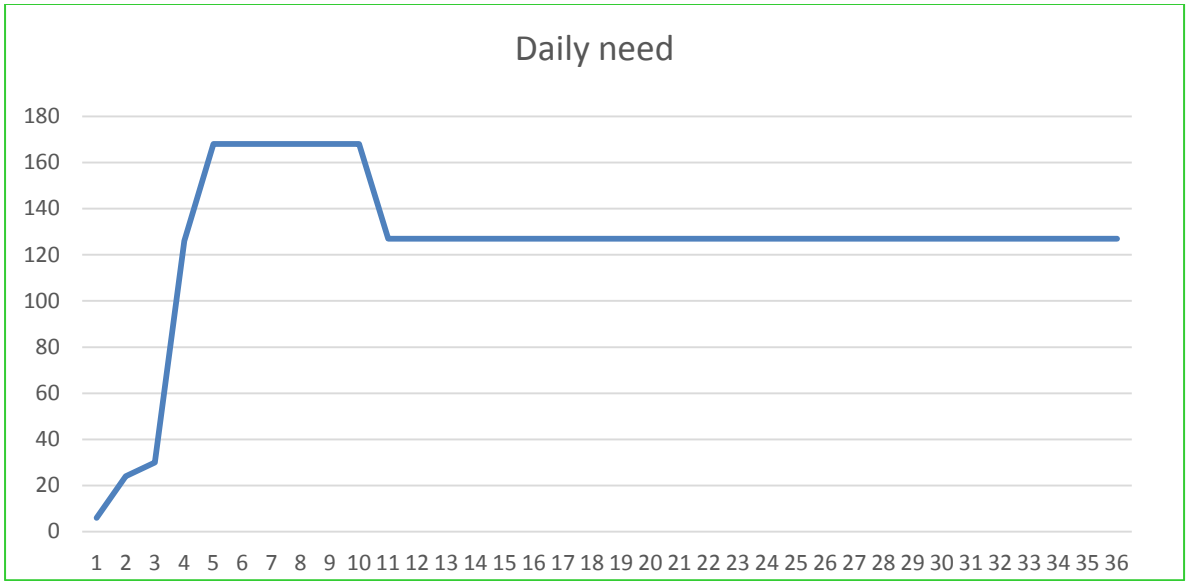
As the dispersant plan is ramped up and more assets come on line and into the field, dispersant demand will increase before then reducing back down as dispersant application shifts from surface to subsurface.

The chart below indicates the aggregated daily dispersant demand (in m^3) across vessels, and dispersant aircraft, as well as for SSDI, to be brought 'on-line' on or around day 10. (See 3.5 below for details on SSDI). Demand is based on a dispersant-to-oil ration (DOR) of 1:20 for surface dispersant use, and 1:100 for SSDI. This is for a WCD only. It is unlikely that a

Level one spill will require dispersant spraying other than on safety grounds. Level two spills may require the use of dispersants, although this will be determined at the time. Figure 3-3 (below), illustrates that a contingency has been included in the planning, should a limited surface slick still appear, even though SSDI has been put in place.

The spike at day five shows greater dispersant application use, to meet and sustain the requirements for the increased number of vessel and aircraft dispersant strike teams.

Figure 3-3: Maximum Predicted Daily Dispersant Need (m^3) with SSDI 'online' at day ten



Dispersant use in this scenario ceases at day 35, which is the latest time by which cap and containment can be successfully applied to the wellhead. At this point, total dispersant consumed has not exceeded 4200m^3, which is less than the combined total of the AMSA, AMOSC and Global Dispersant Stockpiles volumes, all of which are 'OSCA' listed dispersants. Dispersant use peaks at 168m^3 per day for days 5 – 10, during which time the surface application assets are on site, and immediately prior to the implementation of SSDI.

Existing stockpiles can last until at least until day 35 at the above consumption rates. A first contingency of stock is to manufacture OSCA dispersant which can be done at the rate of 50 – 100m^3 per day in the UK, and a further 150m^3 in France per week, and then air freighted to Australia. A second contingency of stock is to increase the envelope of dispersants that are available on the OSCA register for use in Australian waters, thereby allowing the Industry's global dispersant stockpile (GDS) as well as the AMOSC and BP supplies of Corexit 9500A to be used.

All options are available to BP in the event of ongoing dispersant operations and provide continuity of supply for ongoing operations.

Should SSDI take longer to implement than approximately 10 days, existing OSCA approved dispersant stockpile contingencies allow surface dispersant application to continue at the rate of 168m^3 per day up to day 25, after which contingencies will need to be actioned.

Dispersant Delivery Systems

Dispersant delivery system staging in the event of a level three response is illustrated below in figure 3-4. This shows dispersant use peaking at day nine before SSDI comes 'on-line' with a commensurate reduction in the other dispersant delivery systems. Delivery systems can be interchanged – for example the L100 or 727 platforms can act as substitutes for the smaller air tractor aircraft beyond day 10 if these are found to be operationally more suitable for the response. Table 3-7 below shows the vessel and aircraft daily needs and targets for surface application.

Figure 3-4: How the Dispersant Delivery Systems (DDS) will stage into a level three incident – (SSDI coming 'online' at day ten)

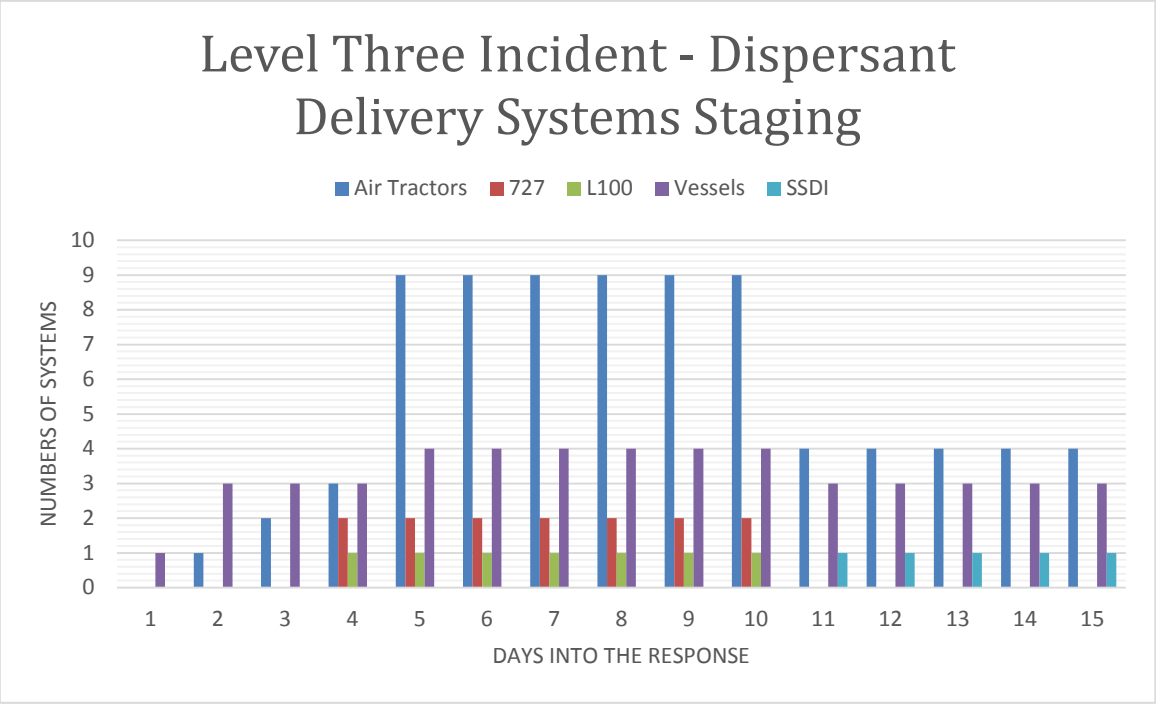


Table 3-7: Vessel and Aircraft daily targets – maximum coverage of slick

	Vessels	Small Aircraft	Large Aircraft
Approx. targeted daily area of fresh oil	15%	32%	53%
Daily net Oil treated	480m³	1080m^3	1800m^3
Minimum daily dispersant required	24m³	54 m^3	90m^3
Number of platforms to deliver minimum daily dispersant required	Four	Nine (six under contract; another three from the market)	Three
Platform Provider	BP contracted vessels VoO's	AMSA & Aerotech 1st Response	OSRL

Additional information	Vessel spraying 0.5m³ per hour during daylight hours (~12hrs). Each vessel applying approx. 6m³ per 24hr period. Diluted dispersant application.	Two sorties per day, per aircraft. Each aircraft has a ~3m^3 capacity. Neat application of dispersant.	Two sorties per day, per aircraft. Each aircraft min 15m^3 capacity. Neat application of dispersant.

The protocol for monitoring and sampling for dispersant effectiveness, as well as fate and transport of the dispersed oil, is outlined in the OSMP.

For details on the activation of the tier three dispersant stockpiles refer to section 4 of this document. A separate, more detailed TRP (Surface Dispersant Tactical Response Plan) has also been written, which gives more information of the operational deployment of dispersant field operations.

3.5 Sub-Surface Chemical Dispersants

Oil Spill Response Option	Subsea dispersant injection	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
SFRT Dispersant Delivery System (DDS) hose system via CRS	Maintain throughout the campaign.	AMOSC MSA. BP owned CRS equipment
Vessel suitable for SSDI	Vessel suitable for SSDI identified and contracted	Contract in place
Dispersant supply	Access to the NatPlan dispersant supply. Access to AMOSC dispersant supply. Access to OSRL GDS. Commercial providers of dispersant ('just in time manufacture') identified. Global air charters identified who can move stock to meet TRP.	AMSA MoU. AMOSC MSA. OSRL SLA. List of dispersant providers developed. List of global air charters via OSRL.
SSDI Tactical Response Plan (Capping & Containment Plan)	Plan drafted.	SSDI as a key component of the Capping & Containment Plan

Response (what will we do? In what time frame and how much)		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
WC&I Team	WC&I initiated within 24 hours of loss of well control.	IMT log.
Source Control Branch stood up	Within 24 hours of the incident occurring SC branch initiated under the ICS structure.	IMT log. Date stamped organisation structure.
Subsea First Response Toolkit DDS	SFRT mobilised to site by day 10 SSDI dispersant mobilised to site by day 10. OTA Insurance Contract	IMT log. Executed contract with AMOSC. Proof of OTA engagement (contract note, SLA, or other substitute document). Proof of insurance.
Net Environmental Benefit Analysis - Dispersant benefits/dis-benefits established	NEBA completed in regards to subsea dispersant use. SSDI NEBA part of the incident plan. Results of NEBA socialised with relevant state(s) SMPCs, AMSA	IMT log. IAP incl. NEBA.

	(Commonwealth), NOPSEMA (Commonwealth) and DoE (Commonwealth).	
Dispersant supply	(As above AMSA MoU) AMOSC call-out commences dispersant mobilisation in <24 hours. OSRL call-out commences dispersant mobilisations in < 24 hours for GDS stockpiles. Global air charter contracted <24 hours to move GDS.	IMT log. AMOSC/BP Service Contract executed. OSRL/BP service contract executed. Air charter contract via OSRL for GDS.
Dispersant effectiveness monitoring	OSMP activities within 24 hours commencing with field test kits and visual observations. Dispersant/oil ratio adjusted for optimal dispersion. NEBA completed prior to dispersant spraying. daily	IMT log. IAP
Monitoring needs to be executed concurrently with this dispersant plan. Details of this are included in the OSMP.		

3.5.1 Subsurface Dispersant Response Option

In the event that the incident arises from damage to the subsea riser, chemical dispersants will be injected at the oil release site using the AMOSC Sub Sea First Response Toolkit (SFRT). Dispersant supply chains are as per the surface dispersant routes.

The SFRT of specialised equipment is located in Fremantle WA for immediate mobilisation at the onset of a subsea well control event. Dispersant Delivery System (DDS) system equipment and tooling enables an initial response to a subsea blowout, enabling clearance of debris, survey of the site and preparation for installing a capping stack. Equipment for the deployment of SSDI is included as part of the SFRT.

Subsea dispersant injection (SSDI) has been demonstrated through the Deepwater Horizon Oil Spill to be the most effective and efficient form of dispersant application as it can prevent or minimise the volume of oil reaching the sea surface. SSDI will also likely help to mitigate the level of VOCs on the surface, thus resulting in a safer environment for responders.

Details regarding the scope of SSDI operations, an assessment of its environmental impacts, a process that identifies the capability required, ALARP evaluations and an evaluation of impacts and risk associated with implementation, are provided in Section 7 of the EP.

Oil spill trajectory modelling (OSTM) indicates there is substantial benefit in undertaking SSDI. These simulations show that SSDI helps to reduce not only the amount and footprint of oil reaching the surface but also the thickness, viscosity and emulsification of oil once it

reaches the surface. The use of SSDI has the potential to be a feasible response tactic for the duration of the release due to the temperature of the released crude oil (76.6 °C) and maintaining a low viscosity thus rendering the released oil amenable to dispersion by the products detailed in this plan.

Subsea dispersant application has a number of advantages over surface application. These include the ability to sustain its application up to 24 hours a day; in the event of severe weather evacuation, a subsea bladder may be used to continue dispersant operations and that the sea state has nil impact on effectiveness. SSDI can also be done at a much lower application rate than surface application, with a starting dispersant to oil ratio (DOR) of 1:100 or lower. The DOR will be adjusted based on field observations and measurements of the degradation of the oil

3.5.2 Deployment pathway:

Table 3-8: SSDI response resources and actions

Asset owners/coordinator	Action
Mobilise from AMOSC	SFRT equipment (TA, insurance and contract note) Dispersant from SFRT stockpile
Mobilise from OSRL	OSCA approved GDS move to Adelaide
Request from vessel contractor	Vessel identified as the SSDI platform
Mobilise from CRS	Dispersant Delivery System (DDS)

Platforms for Delivery

The SFRT requires a stable platform for the delivery of the Dispersant Delivery System (DDS). BP will execute this by sourcing a vessel which can maintain an underwater ROV and the ability to hold chemical tanks containing dispersant on the back deck of the vessel of a significant capacity (approx. 1000m^3).

Alternatively, and assuming failure of the BOP, the MODU Ocean GreatWhite may also be used for this purpose, as the dispersant delivery platform for the SSDI operation. Both options have been worked as part of the Source Control plan for the dispersant application subsurface.

For details on dispersant supply and demand refer to section 3.4 of this OPEP.

The protocol for monitoring and sampling for dispersant effectiveness, as well as fate and transport of the dispersed oil, is outlined in the OSMP.

For details on the activation of the tier three dispersant stockpiles refer to section 4 of this document.

For the operational deployment of relief well drilling and subsea interventions, refer to the separate Capping & Containment and Relief Well Drilling Plans.

- AU000-HS-PLN-600-00006 Subsea Containment Response Plan: Great Australian Bight
- AU000-DR-BOD-600-00009 Whinham-1 Relief Well Planning Document-rev B01
- AU000-DR-BOD-600-00001 Stromlo-1 Relief Well Plan and BoP RevB01

3.6 Containment and Recovery

Oil Spill Response Option	At-sea containment & recovery	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Three contracted vessels	BP's contracted PSV's capable of carrying OSR equipment for an immediate response. Pre-screening, development and maintenance of a register of suitable wet charter VoO's. Training of VoO crews.	VoO register. VoO MoU and contracts. MoU/Agreement with fishing fleets.
Equipment Supply	Access to the NatPlan equipment supply. Access to AMOSC equipment supply. Access to BP's equipment at berth 25 in the Port of Adelaide. Access to OSRL equipment supply.	AMSA MoU. AMOSC MSA. OSRL SLA. List of global air charters.
Temporary Waste Storage Equipment and Arrangements	Maintain access to waste transport equipment, personnel, transport and disposal facilities (liquid and bulk).	Approach to market on the availability of national waste management services.
Waste Tactical Response Plan	Plan Drafted	Waste TRP
C & R Tactical Response Plan	Plan Drafted.	C&R TRP

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
C & R Tactical Response Plan	C&R TRP to be implemented in less than <180 minutes of notification.	IMT Log. Reporting forms included the TRP. ICS Daily log (209) – reports estimated oil collected. (mass balance/oil budget)
	C&R Strike Teams commencing sweeping of oil in <72 hours of C&R TRP	

	implementation. C&R Strike Teams continue operations until termination criteria are met.	
Net Environmental Benefit Analysis - C&R benefits/dis-benefits established	NEBA completed prior to C&R Operations commencing. Results of NEBA socialised with DPTI (SA), DoT (WA), AMSA (Commonwealth), NOPSEMA (Commonwealth) and DoE (Commonwealth).	IMT log. IAP incl. NEBA.

3.6.1 Containment and Recovery Response Option

For areas of the slick that cannot be effectively treated by dispersants, and for ongoing protracted spills that threaten shorelines, BP will execute mechanical containment & recovery operations. The 'up time' and ultimate success of this option will, in a large part, be dictated by the weather and sea state conditions in the GAB. The capability requirements are justified in section 7 of the EP.

3.6.2 Deployment pathway (offshore) 2 x strike teams:

Table 3-9: Mechanical C&R response resources and actions

Asset owners/coordinator	Action
Deploy from BP PSVs and VoO's. (1st strike team)	All available PSVs and/or VoO's (4 vessels in total) to undertake C&R operations.
Contract aircraft of opportunity.	Charter (3) suitable aircraft that can be used as rotating platforms for oil surveillance.
Request from AMOSC (for subsequent strike teams)	4 x reels Ro-Boom and two x mechanical skimmers. 8 x core group operational personnel for deployment with equipment. 3 x aerial observers from CG, Mutual Aid or AMOSC staff.

Offshore

Offshore containment and recovery operations will focus on areas and windrows of highest oil concentrations that are not already being treated by dispersants from planes or vessels.

The basic building block of the Offshore Containment and Recovery Operation is the Enhanced Recovery and Containment Strike Team. A Strike Team is comprised of two vessels towing an open ended configuration of containment boom working ahead of two more vessels operating a J-sweep formation with an oil recovery skimmer on the trailing

vessel. Strike teams will be guided by a spotter plane to areas of highest oil concentrations. Therefore, each Strike Team requires a minimum of 4 vessels, 4 lengths of Offshore Containment Boom (200m per length), an oil recovery (Skimmer) system, the associated ancillary equipment, and waste storage capacity.

A guide to the minimum requirements in terms of vessels, equipment, and personnel to establish one Strike Team to conduct Offshore Mechanical Containment and Recovery is provided in Table 3-10 below. PSVs will be available to conduct dispersant and/or C&R activities, as prioritised by Incident Control at the time of a response

Strike Team – Offshore Enhanced Containment and Recovery

Table 3.10: Optimum Requirements – Offshore Mechanical Containment and Recovery Strike Team

Lead Pair	**Containment with Open Ended 'V shape' Boom Formation**	
	Tow Vessel	Designated Survey Class A (Unlimited domestic operations – greater than 200nm from coast) or Class B (Offshore operations within 200nm or other limits as specified by the local Marine Safety Agency) Room to accommodate up to 2 additional POB 2 x Trained Responders Ability to maintain operations for 14+ days Standard Marine/VHF Communications
	Boom Deployment / Recovery Vessel	Designated Survey Class A (Unlimited domestic operations – greater than 200nm from coast) or Class B (Offshore operations within 200nm or other limits as specified by the local Marine Safety Agency) Ability to maintain operations for 14+ days Room to accommodate up 8 to 10 additional POB 4 x Trained Responders 4 to 6 x Additional Support Personnel 2 x 200m offshore boom, secured to deck ready to deploy, with 6 to 10m between the reel and the transom 2 x 20m chain to create open boom end connection via top and bottom tow bridle connections Open stern (Roller stern preferable) and clear transom VHF and Sat communications capability
Following Pair	**Containment and Recovery in J-Sweep Formation**	
	Tow Vessel	Designated Survey Class A (Unlimited domestic operations – greater than 200nm from coast) or Class B (Offshore operations within 200nm or other limits as specified by the local Marine Safety Agency) Ability to maintain operations for 14+ days Room to accommodate up to 2 additional POB 2 x Trained Responders Standard Marine/VHF Communications
	Boom and Skimmer Deployment / Recovery Vessel	Designated Survey Class A (Unlimited domestic operations – greater than 200nm from coast) or Class B (Offshore operations within 200nm or other limits as specified by the local Marine Safety Agency) Ability to maintain operations for 14+ days Room to accommodate up 8 to 10 additional POB 4 x Trained Responders 4 to 6 x Additional Support Personnel 2 x 200m offshore boom, secured to deck ready to deploy, with 6 to 10m between the reels and the transom Open stern and clear transom

		Recovery System Skimmer Ancillary equipment (Transfer hoses, hydraulic hoses, power pack, etc.) Temporary Waste Storage Vessel tankage plus deck bladders or similar to minimum of 1000m^3 Deck crane with safe Working Load Limit minimum 2 Tonnes at full extension. Allows launch and recovery of oil skimmer at extended reach VHF and Sat communications capability

In the event that available vessels are limited, the Strike Team may be reduced to two vessels conducting Containment and Recovery utilizing a J-Sweep formation.

Figure 3-5: Task Force – Graphical representation of Offshore Containment & Recovery

Pairs of vessels conducting Containment and Recovery, or 'enhanced' containment operations must be suitably matched (Horsepower, functional deck space per pair, ocean going capability) to ensure functionality. Although PSVs will be available to conduct either dispersant and/or C&R activities, the Incident Control will prioritise their best use at the time of a response"

Task Force – Offshore Enhanced Containment and Recovery

Multiple Strike Teams may be formed into a Task Force and assigned to specific operating sector as per the Incident Action Plan. Each Containment and Recovery Task Force will be made up of some or all of the following elements (see Fig 3-5):

- One or more Offshore Containment & Recovery Strike Teams
- Aerial surveillance/support

- Offshore Command and Communication Support Facility (OCCSF)
- Tanker or storage vessel (more details within Waste Management section (3.11)

Timing for First Strike Offshore Containment and Recovery is dependent on availability of Vessels of Opportunity (VoO). BP will have three PSVs contracted to the project and as such a minimum of one VoO will need to be sourced and directed to the location of the spill to be able to provide a complete Enhanced Containment and Recovery Strike Team. Escalation of response will require equipment and vessels from external resources.

First Strike Response Offshore Containment and Recovery using a U/J-Sweep formation (of 400m total length) can be undertaken using available (in-field) assets. In the event of executing this option, BP has enough equipment to field one U/J-sweep Containment and Recovery Strike Team using vessels already on contract.

Nearshore

Oil that is not successfully treated closer to the source by a combination of SSDI and on-water dispersants and containment & recovery operations will continue to weather and move under the influence of currents and prevailing winds towards various parts of the GAB coastline. Despite the limitations on containment & recovery operations in open water conditions, given the very high sensitivity of this area, a collection of strike team vessels would be mobilised and operated in U/J configurations to seek to collect as much floating weathered oil patches and clumps as possible.

BP will prioritise near-shore containment and recovery strike teams to areas which have high concentrations of marine sensitivities, and where shoreline operations will be difficult or not possible due to the coastline type.

These areas are to the west of Kangaroo Island, Port Lincoln, Streaky Bay, Elliston to Coffin Bay and the Upper Spencer Gulf. BP will seek to establish up to 10 Nearshore Containment and Recovery Strike Teams in these areas, further details of which are described in section 7 of the Environment Plan.

Each strike team would consist of two vessels, drawn from the VoO program, with capabilities as outlined in the "U/J-Sweep" description in Table 3-10 above. As with offshore operations, multiple strike teams will be formed into Task Forces, supported by spotter aircraft and storage capabilities.

3.6.3 Deployment pathway (nearshore) 10 x strike teams:

Table 3-11: Near-shore response resource and action

Asset owners/coordinator	Action
Deploy VoO's.	20 x available VoO's (pairs of vessels) to undertake C&R operations (weather appropriate).
Contract aircraft of opportunity.	Charter suitable FW aircraft that can be used as rotating platforms for oil surveillance.
Request from AMOSC	8 Ro-boom (1500) reels

booms	or 1000 metre near shore boom (dependent on weather) 6 x nearshore skimmers. 10 x core group personnel
Request from AMSA additional booms and skimmers	4 x offshore boom reels or 200 metres near boom (dependent on weather) 4 x nearshore skimmers.

Containment Potential for Enhanced Containment and Recovery:

Where sufficient vessels are available, the enhanced containment and recovery configuration can be used. Lead vessels tow 100m of boom connected together in 'U/J' shape with the open face an estimated 30%* of total boom length. Total encounter width is approximately 140m.

Oil thickness on the water is estimated based on the Bonn Agreement Codes for Discontinuous True Colour (50µm) through to Continuous True Oil Colour (200µm). Typical oil thickness encountered on water varies but is estimated at 0.1mm (100µm) for Capacity Reasoning.

The encounter rate of 0.75 knots (1,389m/hr) is based on the maximum velocity relative to oil on the water at which the containment booms remain effective.

* = estimated Capacity Reasoning

Table 3-12: Volumetric Containment Potential

	Enhanced Containment Potential per Strike Team	
	Minimum	Maximum
Oil Thickness	50µm	200µm
	= 140m x 50um x 1x10-6□m x 1,389m/hr	= 140m x 200um x 1x10-6□m x 1,389m/hr
Recoverable Volume	9.72 m^3/hr	38.89 m^3/hr

Recovery Potential:

The numbers above represent theoretical containment potential. Actual recovery will be affected by numerous factors, including skimmer capacity and efficiency ('recovered oil' vs 'recovered oil+ water'), pump capacity, sea state, emulsification and viscosity of the oil, etc. All of these factors will tend to reduce the actual amount of oil recovered. Increasing the

length of boom to enhance the oil encounter rate will not necessarily increase efficiency of oil recovery because of the numerous factors mentioned above that will influence the actual achievable recovery rates. Additionally, while night operations may be able to be performed in theory using infrared capability to see the oil, operational efficiency would be greatly reduced, along with an increase in safety-related issues. Therefore, for conservative planning purposes, an 8-hour daylight-only operating period is assumed. Using this assumption, the theoretical recovery would range from 78 m^3/day of oil to 311m^3/day per Strike Team.

Table 3-13: Volumetric Recovery Potential

Operational Unit	Operational Period	Volume Recovered	
		Minimum	Maximum
Strike Team	8 hrs	78 m^3	311 m^3

Given that offshore containment and recovery activity will be focused on those areas of oil not already treated by dispersants, and the inherent limitations of the technique due to weather, sea-state and logistical constraints, BP has determined that a realistic and sufficient target will be to mobilise 2 Enhanced Containment and Recovery Strike Teams. Each Strike Team would consist of four offshore surveyed vessels (up to 8 vessels in total. These vessel numbers are based on utilising the BP support vessels for this purpose and contracting vessels of opportunity from Port Lincoln and surrounding areas. This would provide a theoretical daily recovery potential of 156-622 m^3 per day (for two teams).

Temporary Waste Storage Capacity

Maximum recovery rates are unlikely to be achieved in the environmental conditions expected in the GAB. Achievement of greater than the minimum expected recovery rates would necessitate that the vessel offload before containment and recovery operations can continue.

Table 3-14: Temporary Waste Storage

Containment and Recovery Area of Operation	Minimum Recovery Rate (Per strike team)	Expected Duration of vessel operational period	Required Volume of Waste Storage
Offshore	78 m^3/day	14	1000m^3
Nearshore	78 m^3/day	5	500m^3

Liquid wastes generated offshore will be transferred to tankers in Ship to Ship (StS) operations. Refer to waste management section of the OPEP for further details.

For specific details on the implementation strategy for Containment and Recovery, refer to the C&R TRP.

3.7 In-situ Burning (ISB)

Oil Spill Response Option	Removal of surface oil by controlled burning, employing fire resistant booms.	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Vessel 3 x PSVs VoO programme	BP's contracted PSV's available for an immediate response. Pre-screening, development and maintenance of a register of suitable wet charter VoO's. Training of VoO crews.	VoO register. VoO MoU and contracts. MoU/Agreement with fishing fleets.
Equipment Supply	Access to OSRL equipment supply.	OSRL SLA. Global air charter list form OSRL.
Technical Knowledge	OSRL ISB Strike Team	OSRL MSA

Response (what will we do? In what time frame and how much)		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
In-Situ Burning (ISB) Operational Plan	ISB Operations Plan to be in place	IMT Log. ICS Daily log - ICS log (Mass balance/oil budget)
	ISB Strike Teams commencing sweeping and burning of oil in <72 hours of ISB Operations Plan implementation.	
	ISB Strike Teams continue operations until termination criteria are met.	
Net Environmental Benefit Analysis - ISB benefits established	NEBA completed prior to ISB operations commencing. Results of NEBA socialised with DPTI (SA), DoT (WA), AMSA (Commonwealth), NOPSEMA (Commonwealth) and DoE (Commonwealth).	IMT log. IAP incl. NEBA.

3.7.1 In-Situ Burning Response Option

BP will consider the use of In-situ burning (ISB) of fresh crude oil particularly if a demonstrable benefit can be shown over the utilisation of vessels which would otherwise be employed for Containment and Recovery, or Dispersant operations.

However, due to the nature of the predicted crude oil type and its weathering properties, ISB is likely to have very limited practical application for the GAB exploration drilling

campaign. When combined with the likely high degree of 'down time' due to the weather and se-state experienced in the GAB, the reality is that it is unlikely that ISB will be used. Nonetheless, BP will consider this technique for a Level Three oil spill.

3.7.2 Deployment pathway

Table 3-15: ISB response resource and action

Asset owners/coordinator	Action
Deploy from VoO's fleets.	2 x VoO's per strike team; a separate ignition/safety vessel for each ISB task force or single strike teams.
Request from OSRL	Request up to 4 x fire boom sets as needed. (1 x located in Singapore, 3 x located in Southampton) ISB strike team leader, with ISB operations personnel

Operational Implementation

ISB involves corralling and containing oil within fire-resistant booms to thicken the oil layer to sustain combustion before igniting. It has the potential as an effective counter-measure in reducing or preventing oil from impacting the shoreline by offering the potential to convert large quantities of product into primary combustion products with a small percentage of other unburned and residual by-products.

It provides for:

- Quick, highly-efficient removal of large volumes of oil from land or water surface,
- Reduced oiling of coastline and marine sensitivities,
- Reduced oil storage and disposal needs, and
- Reduced exposure of people to oil.

For GAB operations, a strike team will comprise two vessels towing the boom, a smaller roving vessel specifically for igniting operation, and a command or safety vessel to monitor and control operations and confirm safe conditions at all times. The roving, command and safety support resources can be shared across multiple burn team operations.

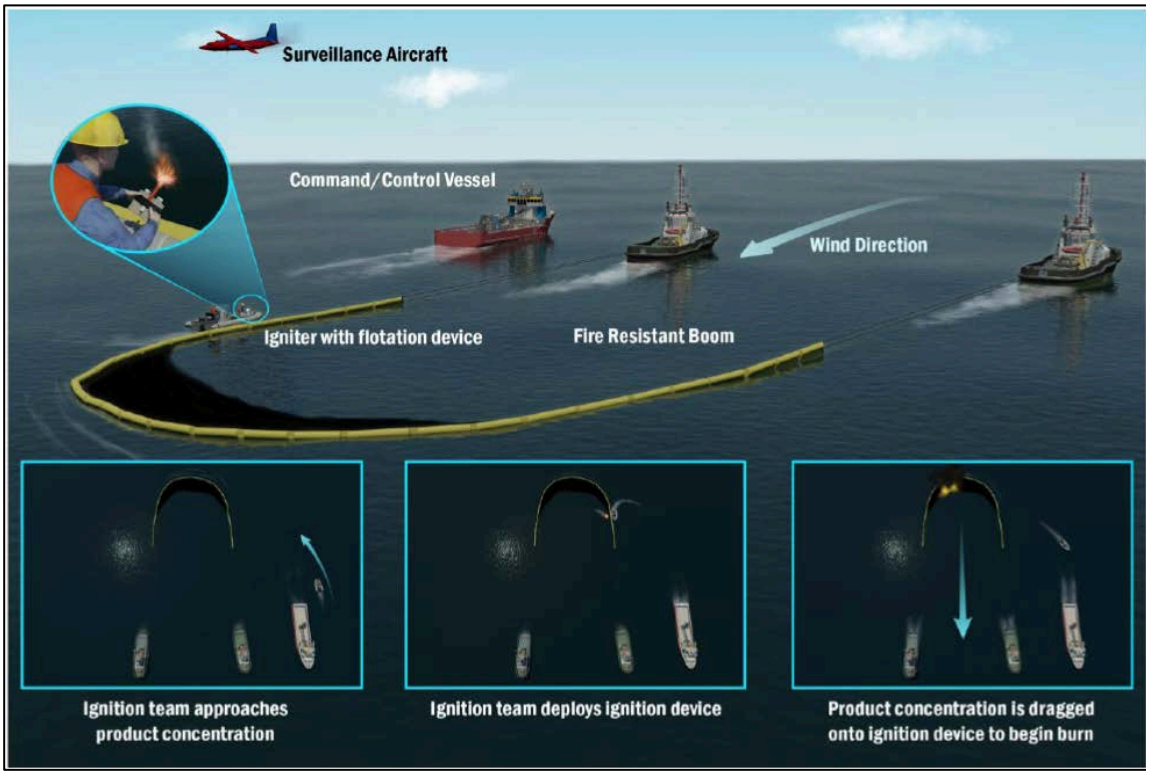
Details regarding the scope of ISB operations, an assessment of its environmental impacts, a process that identifies the capability required, ALARP evaluations and an evaluation of impacts and risk associated with implementation, are provided in Section 7 of the EP.

Weathered crude oil can be expected to achieve a burn rate of approximately 160 litres/m^2 per hour (*M. Fingas-International Spill Control Organisation #392 July 2013*); assuming the oil has been successfully contained within a fire-resistant boom such as HydroFire Boom. Weathering and emulsification of oil will inhibit the burn process.

A key to a successful burn is concentrating the oil so that the surface layer will sustain combustion.

The diagram below (3-6), illustrates how pairs of vessels towing fire resistant boom, corral and concentrate oil into the pocket of the boom, prior to an ignition source being applied.

Figure 3-6: Graphical representation of the ISB Task force



Due to the sea-state and weather conditions it is unlikely that ISB will be effective or deployable for more than 10% of the time.

In the event that conditions permit ISB, BP will utilise pairs of VoO's or PSVs that meet the following requirements:

- Designated Survey Class A (Unlimited domestic operations – greater than 200NM from coast) or Class B (Offshore operations within 200NM or other limits as specified by the local Marine Safety Agency)
- Ability to maintain operations for 14+ days
- Room to accommodate up 8 additional POB, including 2 x trained responders
- 2 x 200m pyro boom/fire boom, secured to deck ready to deploy, with 6 to 10m between the reels and the transom
- Open stern and clear transom
- Ancillary equipment (Transfer hoses, hydraulic hoses, power pack, etc.)
- VHF and Sat communications capability

As with a traditional containment boom, the encounter rate for a fire boom is dependent on:

- The speed at which the boom is towed (i.e. tow speeds usually need to be maintained below about 0.4 ms^{-1} (0.75 knots) to avoid oil loss); and

- The sweep width (i.e. the distance between the openings in the boom).
- Air contamination from smoke and possible production of viscous residues can limit the application of this strategy. Short-term effects must be measured against the potential to prevent long-term effects on ecosystems, wildlife, and shorelines.

In the event that ISB is considered an appropriate response tactic in the GAB, expertise from OSRL and BP global resources are available to develop an ISB plan and supervise the operation.

Given that ISB would be used strategically on areas of oil not being treated by dispersants or containment and recovery operations, the number of fire-boom systems utilised would be expected to be limited to between 3 and 4, on a best endeavours process tied to VoO's and the other response options that were being put in place at the time.

ISB will only be considered for use in Commonwealth Waters, well away from shoreline and in particular population centres.

3.8 Shoreline Protection

Oil Spill Response Option	Shorelines protection and deflection to minimise impact of oil on shoreline sensitivities including inland water ways.	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Shoreline protection and deflection TRPs	TRPs drafted for sensitive, accessible areas of the GAB where shoreline could be impacted.	TRPs in place
WestPlan MOP	WestPlan MOP in place and details HMA responsibilities for the DoT.	Plan in place.
SAMSCAP	SAMSCAP in place and details control agency responsibilities for DPTI.	Plan in place.
Equipment Supply	Maintenance of access to protection and deflection equipment through AMOSC, NatPlan, BP, Mutual Aid and OSRL	AMSA MoU AMOSC MSA OSRL MSA.
Vessels	Pre-screening, development and maintenance of a register of suitable wet charter VoO's. Training of VoO crews.	VoO register. VoO MoU and contracts. MoU/Agreement with fishing fleets.
Human Resources	Maintenance of access to competent personnel to implement shoreline protection measures through AMOSC, NatPlan, BP, Mutual Aid and OSRL.	AMSA MoU AMOSC MSA OSRL MSA.
	Maintenance of access to unskilled labour pools.	Approach to market (national) on the availability of unskilled labourers.
Temporary Waste Storage Equipment and Arrangements	Maintain access to waste transport equipment, personnel, transport and disposal facilities (liquid and bulk).	Approach to market on the availability of national waste management services.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Shoreline protection and deflection TRPs	TRPs implemented on the basis of OSTM indicating that oil is headed/could be headed towards that shoreline.	IMT Log. Unified/Unity of Command across the implementation of the shoreline TRP's
	Relevant state control agencies engaged and confirm TRP's to be implemented.	
	TRPs implemented no later 72 hours prior to trajectory of oil making the shore.	
	TRPs to be implemented until such time as the termination criteria have been met.	
Net Environmental Benefit Analysis - TRP benefits/dis-benefits established	NEBA conducted prior to TRP operations commencing. NEBA to be undertaken with relevant state(s) agency. Results of the NEBA to be circulated and socialised with AMSA (Commonwealth), NOPSEMA (Commonwealth) and DoE (Commonwealth).	IMT log. IAP incl. NEBA.
Areas and sites of significance for Indigenous Australians are considered in planning and execution of shoreline responses	Cultural/heritage advice sought and considered as part of identification of resources at risk and NEBA processes. Cultural/heritage advisor appointed to the IMT (as LO and/or within the Environmental Unit)	IMT log. Time dated organisational structure.
Equipment Supply	Once TRPs have been activated, protection and deflection equipment ordered and obtained through AMOSC, NatPlan, BP, Mutual Aid and OSRL	AMSA MoU AMOSC Service Contract OSRL MSA.
Vessels	Once TRPs have been activated, wet charter VoO's and contracted.	VoO contracts. Terms and Conditions under the fishing fleets MoU adhere to.
Human Resources	Trained operations staff ordered and obtained through AMOSC, NatPlan, BP, Mutual Aid and OSRL.	AMSA MoU AMOSC MSA OSRL MSA.
	Unskilled labour ordered and obtained through national providers.	IMT log,
Temporary Waste Storage Equipment and Arrangements	Veolia, Toxfree, regional operators contacted to provided waste transport equipment, and disposal facilities (liquid and bulk).	Veolia, Toxfree, regional operators contracted/MoU to BP.

3.8.1 Shoreline Protection and Deflection Response Options

Under the direction of the relevant State Government control agency, BP will pre-deploy shoreline protection oil spill response options to reduce the impact of oil on sensitive receptors along shoreline.

BP's oil spill trajectory modelling has indicated that areas of the Western Australian and South Australian coastlines could be affected by a WCD spill from the GAB drilling activity (more details on the AMBA and the areas of WA and SA potentially impacted are in section 7 of the EP).

Although these are very low likelihood events, as a measure to reduce potential impacts, BP has prepared a "Shoreline Protection and Clean Up Tactical Response Plan". It includes site-specific tactical response plans for areas of the coastline that are of the highest priority. Actual response tactics implemented for shoreline and near shore environments will be subject to a NEBA and be specific to the sensitivity of the impacted shoreline and conditions of the time.

3.8.2 Deployment pathway

Table 3-16: Shoreline protection response resource and action

Asset owners/coordinator	Action
BP/AMOSC	Use OSTM to determine potential span of shoreline oiling.
BP/Shoreline control agency	Engage with the control agency either through a LO, or as an integral part of a unified command incident management team to inform of potential span of shoreline oiling.
BP/IMT, either as part of the unified command or providing support to the control agency)	Take direction from/work with shoreline control agency (s) to determine which Shoreline TRP's are to be implemented & to commence Shoreline Treatment Programme.
	Using Shoreline Equipment Spreadsheet (for TRPs), determine the quantity of: • Nearshore and shoreline boom required, • Ancillaries to establish those boom sets, • Skimming systems or vacuum trucks, • Decontamination equipment, and • Personnel (specialised and unskilled). Then, from the Tier One, Two and Three sources request those resources to move to lay down areas/deployment sites.

Drivers

The maximum oil ashore in the 'worst' run (winter season) is estimated at 28,500 m^3 of oil coming into contact with the coastline. The modelling results do not take into consideration any of the offshore mitigation techniques and as such offer a bounding definition of the potential absolute worst case probabilities and impacts.

The earliest beaching time modelled was 9 ½ days. This lead time allows for the mobilisation of protection and clean-up resources from regional, national and international sources prior to oil stranding on a shoreline.

After a spill has occurred, and once the general bearing of the slick has been reliably identified (through oil spill trajectory modelling, over flights and satellite imagery), the appropriate shoreline protection TRPs can be actioned.

Shoreline responses require significant human logistics support. The Shoreline Protection TRP has adopted the following approach to logistics support:

- Establish that a township (and its surrounding area) have capacity to house responders, and if services are available for these responder. (i.e. accommodation providers, supermarkets, restaurants)
- Establish the support and ancillary services available in the same area.
- Scope a number of providers of 'fly-camps' who have the capability to establish 50, 100 and 500 person temporary accommodation and messing facilities as 'surge' capacity.

Methodology

As outlined in the GAB Exploration Drilling EP (Section 7), BP has identified the following key coastal areas as areas of high sensitivity in the event of a large hydrocarbon spill;

- Kangaroo Island
- Port Lincoln
- Streaky Bay
- Elliston to Coffin bay
- Upper Spencer Gulf

In addition to these there are many other sensitive areas. The scale of the coastline in which the above and other sensitive areas are located is extensive. The shoreline type, key sensitive receptors and access/egress all vary significantly and, subsequently, so do the suitability of shoreline response options. Noting this, to develop site specific TRPs BP has used cumulative sensitivity mapping prepared by Environmental Resource Management (ERM) for BP in conjunction with GIS analysis and site visits to further identify sites of 'high priority' for shoreline response.

The following criteria were used to identify sites of high priority and to guide the development of Primary and Secondary Tactical Response Plans.

Table 3-17 Tactical Response Plan – Site Selection Criteria.

Identified sensitivities to protect.	Response is logistically feasible.	Response is achievable with good chance of success.
Area of high sensitivity and/or long recovery time; or	Accessible by existing roads, tracks or vessels (Min. 4wd drive and pedestrian access)	No more than 5 boom sets of 250m each required (<1.25km booming)

Area of high cultural, local or national significance; and		Potential for calm water
Where the use of this area will be significantly affected by the presence of oil.		Probability of current flows being slow enough.

Site Specific Tactical Response Plans

Site Specific Tactical Response Plans (TRPs) have been prepared for sites along the coastline from Albany in WA to Beachport, SA including Kangaroo Island.
Three types of shoreline protection sites have been identified: – 1) Primary Sites; 2) Secondary Sites, and 3) Tertiary Sites.

3.8.3 Primary Sites

A total of 62 sites have been identified as meeting the criteria in Table 3-17 (above) and therefore are considered 'High Priority' for shoreline response. Primary TRPs have been developed for each and include the following information:

- TRP Reference – sector, segment(s), coordinates,
- Site Details - site location image, site description, site access, site constraints, main sensitivities and facilities/services,
- Response Information – response tasks, rationale, site reference and response checklist,
- Site Setup – schematic illustrating site zoning, control, waste and decontamination,
- Concept of Operations - guide to response deployment including boom placement, anchoring and oil recovery (where appropriate),
- Tactical Assignments – response tasking and considerations, response personnel and communications,
- Resources – inventory of personnel, oil spill equipment, vehicles/vessels, and site support resources required, and
- Personnel and Emergency Information – to be populated prior to implementation.

For each TRP there is a tactical response layer for Google Earth Pro which identifies the TRP site and response operations – see section 4 for details.

All references to booming operations in the TRPs and the Google Earth Pro outputs are for illustrative purposes only. Situational Awareness and response specific conditions will determine the appropriate angle and anchoring system required on the day.

A listing of the Primary Site TRPs can be found in Table 3.18.

3.8.4 Secondary Sites

Secondary sites are sites which partially meet the criteria – typically they are seasonal or ephemeral in nature; their current status indicates they are not significantly at risk to the impact of oil, however conditions could change, which would require immediate attention

for shoreline response planning. A total of 45 sites have been identified as Secondary sites for shoreline TRPs. Secondary TRPs have been developed for each, focusing on site details and response initiation, and include the following information:

- TRP Reference – sector, segment(s), coordinates,
- Site Details - site location image, site description, site access, main sensitivities and facilities/services,
- Site Reference – site reference image,
- Response – site response justification, response initiation tasks, actions required, site assessment checklist and local information.

For each TRP there is a tactical response layer for Google Earth Pro which identifies the TRP site – see section 4 for details.

Secondary Site TRPs are listed in Table 3.19.

3.8.5 Tertiary Sites

Nine sites located across Sector 15 – Upper Spencer Gulf and Sector 18 – Adelaide have been identified as areas with highly sensitive shoreline. The sites are complex in nature, they are highly sensitive wetland habitats and access is heavily restricted. Consequently, they do not fit within the criteria for a primary or secondary TRP.

During a response, Situational awareness is the primary objective to confirm the presence of, or the potential for oil impact to these areas. Offshore and nearshore containment and recovery should then be conducted to reduce the potential for shoreline oiling.

Similar to the Primary and Secondary site TRPs, Table 3.20 lists the Tertiary sites for which site specific guides have been developed to assist with a response to these nine sites:

3.8.6 Sites of Cultural/Heritage Significance

South Australia and Western Australia have a rich and varied Indigenous heritage. There are sites along the GAB that are important for social, spiritual, historical and commemorative purposes. Access to data identifying the location and reasoning behind these areas is limited due to both the cultural sensitivity of the sites and the incomplete nature of the jurisdictional mapping available.

Prior to the implementation of any of the tactical response plans or shoreline clean-up options outlined in this document, a cultural/heritage advisor with specific knowledge of a given region will be identified and incorporated into the planning process of the IMT. This input is critical with respect to the NEBA process that will inform the implementation of the Shoreline TRPs.

Table - 3-18: Shoreline Sites with Primary Tactical Response Plans.

	Sector Reference	TRP No.	TRP Name	Latitude	Longitude
Western Australia	Sector 1 Albany	S1-1	Princess Royal Harbour	35° 2.623'S	117° 54.655'E
		S1-2	Oyster Harbour Entrance	34° 59.918'S	117° 56.962'E
		S1-3	Waychinicup River Entrance	34° 53.657'S	118° 19.953'E
	Sector 2 Hopetoun	-	No High Priority Sites in this sector.		
	Sector 3 Esperance	S3-1	Bandy Creek Boat Harbour	33° 50.160'S	121° 55.946'E
	Sector 4 Eastern Recherche	S4-1	Jorndee Creek Entrance	33° 56.033'S	123° 19.554'E
	Sector 5 Point Dempster	-	No High Priority Sites in this sector.		
	Sector 6 Twilight	-			
	Sector 7 Red Rocks Point	-			
	Sector 8 Eucla	-			
	Sector 9 GAB Marine National Park	-			
	Sector 10 Fowlers Bay	-			
South Australia	Sector 11 Ceduna	S11-1	Davenport Creek	32° 11.117'S	133° 30.069'E
		S11-2	Tourville Bay – West	32° 8.885'S	133° 25.261'E
		S11-3	Tourville Bay – North	32° 6.765'S	133° 29.145'E
		S11-4	Tourville Bay – East	32° 8.517'S	133° 31.177'E
		S11-5	Denial Bay Mangroves	32° 5.576'S	133° 37.548'E
		S11-6	Laura Bay	32° 14.699'S	133° 48.791'E
		S11-7	Smoky Bay – Jetty Rd Deflection	32° 22.682'S	133° 55.970'E
		S11-8	Smoky Bay – South Inlet	32° 25.134'S	133° 56.270'E
		S11-9	Smoky Bay – West Inlet A	32° 25.114'S	133° 54.582'E
		S11-10	Smoky Bay – West Inlet B	32° 24.169'S	133° 54.002'E

	S11-11	Eyre Island Wetland	32° 21.941'S	133° 49.845'E
Sector 12 Streaky Bay	S12-1	Acraman Creek Conservation Park	32° 27.775'S	134° 5.012'E
	S12-2	Streaky Bay Deflection Site 1	32° 44.736'S	134° 14.739'E
	S12-3	Streaky Bay Deflection Site 2	32° 45.663'S	134° 13.955'E
	S12-4	Streaky Bay Head	32° 47.625'S	134° 11.807'E
	S12-5	Streaky Bay Wetland - South	32° 44.796'S	134° 12.000'E
	S12-6	Streaky Bay Wetland - North	32° 43.710'S	134° 11.544'E
	S12-7	Streaky Bay Entrance	32° 43.330'S	134° 10.999'E
	S12-8	Baird Bay Narrows	33° 8.963'S	134° 21.580'E
	S12-9	Venus Bay – North Head	33° 13.164'S	134° 39.740'E
	S12-10	Venus Bay - Germein Island	33° 12.901'S	134° 40.716'E
	S12-11	Venus Bay – Wetland	33° 13.845'S	134° 42.616'E
	S12-12	Venus Bay Wharf	33° 13.808'S	134° 40.419'E
Sector 13 Elliston – Coffin Bay	S13-1	Little Douglas Bay Entrance	34° 31.766'S	135° 23.121'E
	S13-2	Mount Dutton Bay 1	34° 35.734'S	135° 24.680'E
	S13-3	Mount Dutton Bay 2	34° 34.979'S	135° 24.624'E
	S13-4	Mount Dutton Bay 3	34° 32.548'S	135° 25.037'E
	S13-5	Yangie Bay Entrance	34° 38.123'S	135° 24.207'E
	S13-6	Little Douglas West	34° 32.246'S	135° 18.323'E
	S13-7	Point Longnose	34° 31.396'S	135° 18.906'E
Sector 14 Port Lincoln	S14-1	Murrays Point Selina Wetlands	34° 45.052'S	135° 51.313'E
	S14-2	Lincoln Cove Marina	34° 44.527'S	135° 52.617'E
	S14-3	Tod River Mouth	34° 35.527'S	135° 54.175'E
	S14-4	Tumby Bay – Second Creek	34° 25.434'S	136° 6.661'E
	S14-	Tumby Bay Marina	34°	136°

	5		23.280'S	6.527'E
	S14-6	Arno Bay Creek Mouth	33° 55.648'S	136° 34.319E
	S14-7	Cowell Franklin Harbour Conservation Park South Head	33° 44.066'S	136° 57.573'E
	S14-8	Cowell Franklin Harbour Conservation Park North Channel	33° 42.241'S	136° 58.637'E
	S14-9	Cowell Franklin Harbour Conservation Park North Head	33° 43.093'S	136° 59.358'E
Sector 15 Upper Spencer Gulf	S15-1	Port Augusta River	32° 34.214'S	137° 45.969'E
	S15-2	Mambray Creek	32° 51.314'S	137° 54.831'E
	S15-3	Port Pirie River	33° 9.878'S	138° 0.845'E
	S15-4	River Broughton	33° 15.554'S	137° 50.457'E
Sector 16 Eastern Spencer Gulf	S16-1	Fisherman Bay	33° 33.114'S	137° 56.482'E
	S16-2	Port Broughton	33° 35.723'S	137° 55.390'E
	S16-3	Cooper Cove Marina	33° 55.309'S	137° 37.494'E
Sector 17 Yorke Peninsula	S17-1	Coobowie Salt Swamp Creek	35° 3.183'S	137° 43.673'E
	S17-2	Port Vincent Marina	34° 45.960'S	137° 51.847'E
Sector 18 Adelaide	S18-1	Gulf Point Marina	34° 47.721'S	138° 28.987'E
	S18-2	Patawalonga Lake Entrance	34° 58.497'S	138° 30.595'E
	S18-3	Onkaparinga River Mouth	35° 9.894'S	138° 28.155'E
Sector 19 Victor Harbour	S19-1	Murray River Mouth Entrance	35° 33.432'S	138° 53.020'E
Sector 20 Robe - Bridgeport	S20-1	Maria Creek Entrance	37° 9.655'S	139° 45.060'E
	S20-2	Lake Butler Marina	36° 49.320'S	139° 51.037'E
Sector 21 Kangaroo Island	S21-1	Bay of Shoals	35° 38.149'S	137° 34.410'E
	S21-2	Pelican Lagoon Entrance	35° 47.119'S	137° 46.513'E
	S21-3	Cygnet River	35° 41.297'S	137° 36.272'E

Table - 3-19: Shoreline Sites with Secondary Tactical Response Plans.

	Sector Reference	TRP No.	TRP Name	Latitude	Longitude
Western Australia	Sector 1 Albany	S1-4	Kybra Rd Inlet	34° 52.566'S	118° 23.785'E
		S1-5	Beaufort Inlet	34° 28.213'S	118° 54.129'E
		S1-6	Sandalwood Rd Inlet	34° 32.318'S	118° 45.716'E
		S1-7	Cheyne Inlet	34° 36.245'S	118° 45.331'E
		S1-8	Cordinup River Inlet	34° 42.131'S	118° 33.591'E
		S1-9	Bluff Creek Inlet	34° 49.495'S	118° 24.059'E
		S1-10	Normans Beach Inlet	34° 55.431'S	118° 13.000'E
		S1-11	Bettys Beach Inlet	34° 55.798'S	118° 12.548'E
		S1-12	Taylor Inlet	34° 59.866'S	118° 3.757'E
	Sector 2 Hopetoun	S2-1	Gordon Inlet Entrance - (main)	34° 17.352'S	119° 29.999'E
		S2-2	Gordon Inlet Entrance - (south)	34° 18.562'S	119° 29.944'E
		S2-3	Hamersley River Entrance	33° 57.945'S	119° 54.427'E
		S2-4	Culham Inlet	33° 55.329'S	120° 2.798'E
		S2-5	Dempster Inlet	34° 4.678'S	119° 40.097'E
		S2-6	Fitzgerald River Entrance	34° 6.299'S	119° 37.665'E
		S2-7	St Mary River Entrance	34° 9.781'S	119° 34.579'E
		S2-8	Boondalup River Entrance	34° 12.778'S	119° 32.398'E
		S2-9	Bremer River Entrance	34° 23.510'S	119° 23.763'E
		S2-10	Dillon Bay River Entrance	34° 26.688'S	119° 18.515'E
	Sector 3 Esperance	S3-2	Stokes Inlet	33° 51.206'S	121° 8.138'E
		S3-3	Barker Inlet	33° 49.147'S	121° 21.031'E
		S3-4	Lucky Bay Rd Inlet 1	33° 57.539'S	122° 16.467'E
		S3-5	Lucky Bay Rd Inlet 2	33°	122°

			56.745'S	17.613'E
	S3-6	Frenchman Peak Creek inlet	33° 58.534'S	122° 7.084'E
	S3-7	Cape Le Grand Beach Inlet	33° 57.136'S	122° 6.491'E
	S3-8	Torradup River Entrance	33° 51.618'S	121° 0.940'E
	S3-9	Oldfield River Entrance	33° 53.164'S	120° 47.220'E
Sector 4 Eastern Recherche	S4-2	Alexander River Entrance	33° 52.592'S	122° 46.242'E
	S4-3	Poison Creek Entrance	33° 54.267'S	123° 21.126'E
	S4-4	Thomas River Entrance	33° 51.401'S	123° 0.910'E
	S4-5	Blackboy Creek Entrance	33° 53.249'S	122° 54.661'E
	S4-6	Mungliginup Creek Entrance	33° 53.253'S	122° 39.638'E
	S4-7	Duke Creek Entrance	33° 54.592'S	122° 35.687'E
	S4-8	Victory Harbour Creek Entrance	33° 56.199'S	122° 30.198'E
Sector 5 Point Dempster	-	No Secondary Sites in this sector .		
Sector 6 Twilight	-			
Sector 7 Red Rocks Point	-			
Sector 8 Eucla	-			
Sector 9 GAB Marine National Park	-			
Sector 10 Fowlers Bay	-			
Sector 11 Ceduna	-			
Sector 12 Streaky Bay	-			
Sector 13 Elliston – Coffin Bay	-			
Sector 14 Port Lincoln	-			
Sector 15 Upper Spencer Gulf	S15-5	Fitzgerald Bay River Mouth	32° 54.490'S	137° 45.347'E
Sector 16 Eastern Spencer Gulf	-	No Secondary Sites in this sector. .		
Sector 17 Yorke Peninsula	-			
Sector 18 Adelaide	-			

South Australia

Sector 19 Victor Harbour	S19-2	Waitpinga Creek Entrance	35° 37.989'E	138° 29.699'E
	S19-3	Hindmarsh River Mouth	35° 32.621'S	138° 37.887'E
	S19-4	Inman River Mouth	35° 33.722'S	138° 36.709'E
Sector 20 Robe – Bridgeport	-	No Secondary Sites in this sector – see section X for response details.		
Sector 21 Kangaroo Island	S21-4	Hanson Bay River Entrance	36° 1.020'S	136° 51.193'E
	S21-5	Middle River Mouth	35° 39.941'S	137° 4.498'E
	S21-6	Stun'sail Boom River Mouth	36° 1.116'S	137° 1.029'E
	S21-7	Harriet River Entrance	35° 59.102'S	137° 10.727'E
	S21-8	Eleanor River Entrance	35° 58.460'S	137° 12.095'E
	S21-9	Wilson River Entrance	35° 51.831'S	137° 56.157'E
	S21-10	Chapman River Entrance	35° 47.273'S	138° 4.201'E

Diagram 3-7: Sector 15 – Upper Spencer Gulf & Sector 18 - Adelaide

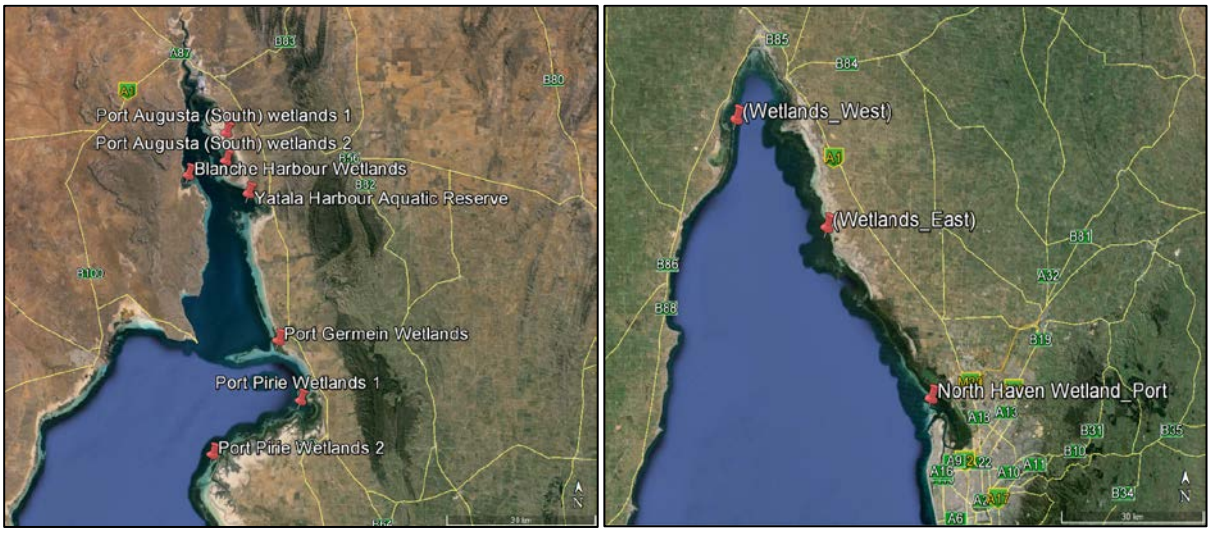


Table 3-20: Shoreline Sites with Tertiary Site Specific Guides.

	Sector Reference	TRP Name	Latitude	Longitude
Western Australia	Sector 15 Upper Spencer Gulf	Port Augusta Wetlands	32° 40.412'S	137° 51.105'E
		Blanche Harbour Wetlands	32° 42.893'S	137° 45.628'E
		Yatala Harbour Aquatic Reserve	32° 44.876'S	137° 53.391'E
		Port Germein Wetlands	33° 0.775'S	137° 57.278'E
		Port Pirie Wetlands	33° 9.947'S	137° 52.329'E
	Sector 18 - Adelaide	Wetlands West and East	34° 16.482'S 34° 27.500'S	138° 1.982'E 138° 14.290'E
		North Haven Wetlands	34° 44.898'S	138° 28.667'E

3.8.7 Resourcing for TRPs

BP has undertaken an assurance process around the provisioning required to implement the TRPs.

For each plan, a detailed inventory of the required human resources, oil spill response equipment, transportation platforms and ancillary equipment has been compiled to implement that TRP.

Then, using worse case deterministic seasonal runs, 'stress testing' was undertaken with theoretical oil spills along the Western Australian and South Australia Coastlines, to stand up large numbers of these TRPs simultaneously, as could be required for a level three incident.

The length of boom required, ancillary equipment, human resources and other required equipment was tallied. This was then compared to tier one, tier two and tier three resources available to BP to implement the plans, and the timeframes for resources to arrive in Australia/moved to potentially affected shorelines; and be used to affect the TRPs.

This process has allowed BP to put in place measures to countenance an unskilled labour gap, along with work on housing and logistics for the workforce that would need to be in place.

3.8.8 Logistics for Temporary Workforce

BP has produced logistics profiles that detail some of the key services and support available within townships along the GAB, with a view to confirming that it could support a surge workforce in the event of a large scale shoreline response.
This information snap shot includes:

- A number of accommodation providers,
- availability of retail outlets for the purchase of food and personal items,

- restaurants/catering services,
- potential staging areas,
- potential field FOB's or ICCs,
- health providers,
- air and sea ports, and
- the latitude and longitude of the nearest TRPs – primary and secondary – along with driving times from the nearest supporting township.

These profiles have sufficient information for the logistics section of the IMT to commence making arrangements for a shoreline workforce to move out and live on site for an extended period of time. Also, that basic equipment servicing and resupply could take place from that location.

This information would be supplemented by business as usual arrangements within BP or other control agencies where third party accommodation or other providers seek and book arrangements on behalf of the principle.

As the Shoreline Control/Hazard Management Agencies, the jurisdictions have also been requested to provide to BP for compilation the likely FOB's/ICCs that could be used.

Surge accommodation resources

In the even that accommodation and ancillary town services are unavailable or insufficient for spill response purposes (i.e. – peak holiday season) then a number of staging areas have been identified that could double up to accommodate temporary 'fly camps'.

Fly camps are generally self-contained, in that quarters are established for sleeping, bathing and messing, and that laundry and basic water treatment are able to be provided on site. Local storm water, sewerage and waste facility chains need to be relied upon, and freshwater, diesel fuel resupply /electricity provided for inputs. The operators of the camps must work closely with local municipalities to ensure permitting; sanitation and security are addressed to the local communities' concerns. To this end some camps rely on meals provided by local providers, others a mixed 'walk up model', some have local laundry rather than their services to maximise the engagement with local commercial providers of these services.

Several providers of fly camps in Australia have confirmed their ability and interest to establish such facilities along the GAB at short notice. These are shown below in table 3-21.

Table 3-21: Fly-camp provision

McMahon Services	
Contact: [redacted] 26 Duncan Road Dry Creek, South Australia	Details: 8x 60 man camps available for immediate deployment. Two days to house 'first responders'. 60 person camp established within 5 days.

5094 T: [redacted] M: [redacted] E: [redacted]	Accommodation units are a combination of single rooms with ensuite and single rooms serviced by separate ablution blocks.
Black Diamond Group	
Contact: [redacted] 1048 Beaudesert Rd, Coopers Plains, Queensland 4108 M: [redacted] E: [redacted]	Details: 60 and 80 man camps available for immediate deployment. Rapid Deployment camps can be set up in 24hrs.

3.8.9 Consultation on the TRPs with State Agencies

The respective Shoreline Control/Hazard Management Agencies of South Australia and Western Australia were extensively consulted during development of the TRPs. This consultation included:

- Concurrence from the jurisdictions on the sites that were chosen for primary, secondary and tertiary TRPs, and the methodology for this selection;
- Agreement as to the tactics selected for these sites;
- Participation in the 'stress testing element' which included using the State's resources to implement the TRPs; and
- That the State has primacy with regards to putting in place oil spill response measures for Shorelines – BP's role is to assist the jurisdiction with resourcing, technical know-how and industry good practise.

For specific details on the implementation strategy for Shoreline Protection measures, refer to the Shoreline Tactical Response Plan; and the 1st strike checklist that can be found at section 4 of this plan.

3.9 Shoreline Assessment and Clean-Up

Oil Spill Response Option	A shoreline response programme will be implemented by BP, either under the auspices of the relevant state governments control agency or working directly with them. The programme will systematically collect information on the location, nature and the degree of oiling in order to implement the most appropriate Shoreline Treatment Recommendation (STR).	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Coastline between Albany – Beachport has been sectored and pre-segmented	Sectors and Segments exist.	Sectors and Segment used.
Shoreline Types Pre-identified and Shoreline Treatment Recommendations drafted	Industry good practice used to classify shoreline types, shoreline treatment recommendations drafted.	Data exists.
WestPlan MOP	Plan details the legal obligations of the State.	Plan exists.
SAMSCRAP	Plan details the legal obligations of the State.	Plan exists.
Equipment Supply	Maintenance of access to shoreline response clean-up equipment through AMOSC, NatPlan, BP, Mutual Aid and OSRL	AMSA MoU AMOSC MSA OSRL SLA. BP inventory list
Human Resources - trained	Maintenance of access to competent personnel to assess and implement shoreline clean up measures through AMOSC, NatPlan, BP, Mutual Aid and OSRL	AMSA MoU AMOSC MSA OSRL SLA. BP established network of experienced contractors. BP MRT.
Human Resources – unskilled labour pools	Maintain access to pools of unskilled human resources who can undertake shoreline clean-up.	Market approach to labour hire companies on number of personnel who could be deployed to a spill site.
Temporary Waste Storage Equipment and Arrangements	Maintain access to waste transport equipment, personnel, transport and disposal facilities (liquid and bulk).	Approach to market on the availability of national waste management services.
Logistics suitable to house temporary shoreline clean-up work force	Maintain access to logistics support for temporary workforce	Approach to market for fly camps operators for remote site support. Profiles developed for GAB townships of local suppliers of logistics for a temporary work force.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Assessment of shoreline types, conditions, and oiling	Shoreline Clean-up Assessment Techniques (SCAT) process established within IMT (see detailed definition below) SCAT teams will assess shorelines for oiling and sensitivity prior to operations commencing.	IMT Log SCAT maps
Engagement with the shoreline control agencies	Relevant state(s) control agencies engaged and confirm STR tactics, and the STRs to be implemented. Clean up strategies will be implemented under the direction of the relevant state agencies.	
Net Environmental Benefit Analysis - STR benefits/dis-benefits established	NEBA completed by controlling agencies/hazard management agencies prior to shoreline operations commencing. Results of NEBA socialised with relevant state(s) SMPCs, AMSA (Commonwealth), NOPSEMA (Commonwealth) and DoE (Commonwealth).	IMT log. IAP incl. NEBA.
Shoreline Treatment Recommendations	STRs developed, agreed, and passed onto the State Control agencies with shoreline responsibility.	IMT Log. Unified/Unity of Command across the implementation of the shoreline clean-up sites. Invocation of the National Plan Guidance NP-GUI-022 and 023
Shoreline Clean-up	Shoreline Clean-up responsibility passed to DoT and DPTI for implementation.	
Monitor progress and effectiveness of shoreline clean-up operations	SCAT/Operations Liaison established	IMT Log
Shorelines assessed as meeting termination end points	SCAT team to use NP-GUI-025 process for shoreline sign off. SCAT team to comprise technical specialists agreed to by Shoreline	IMT Log NP-GUI-025 templates

	Control/Hazard Management Agencies	
Equipment Supply	Once STR's have been activated, equipment ordered and obtained through AMOSC, NatPlan, BP, Mutual Aid and OSRL	AMSA MoU AMOSC Service Contract OSRL SLA.
Human Resources	Trained operations staff ordered and obtained through AMOSC, NatPlan, BP, Mutual Aid and OSRL. At least one member of each Shoreline Clean-up Team shall be qualified to an IMO1 level or equivalent.	AMSA MoU AMOSC MSA OSRL SLA. BP established network of experienced contractors. BP MRT.
Human Resources – unskilled labour pools	Unskilled human resources called through labour hire companies.	Contracts/MoU with labour hire companies.
Temporary Waste Storage Equipment and Arrangements	Veolia, Toxfree, regional operators contacted to provided waste transport equipment, and disposal facilities (liquid and bulk).	Veolia, Toxfree, regional operators contracted/MoU to BP.
Logistics suitable to house temporary shoreline clean-up work force	Block/bulk bookings for anticipated workforce established for the estimated duration of the spill.	IMT log. Fly camps operators contracted to BP. Hotelier and other providers contracted to BP/parties to BP.

3.9.1 Shoreline Response Program (SRP)

Under the direction of the relevant State Government control agency(s), BP will work with that agency to establish and support a Shoreline Response Programme (SRP). The SRP is a framework to manage the full range of shoreline clean-up-related activities including survey, assessment, decision-making, clean-up and final completion. This offers a proven, consistent and systematic approach with stakeholder involvement being a fundamental aspect of the activities.

Organisationally, the SRP resides logically within the Environmental Unit of the IMT Planning Section. The SRP should be established as soon as shoreline impacts are determined to be likely, and occur concurrently with shoreline response activities including pre-cleaning and protection and recovery, led by Operations.

There are three distinct phases to a SRP.

1. *Assessment and STRs*

Utilising the Shoreline Clean-up Assessment Technique (SCAT) methodology, the aim is to visit each segment of shoreline with appropriate stakeholders, initially focusing on those segments most likely to be impacted. An assessment is made as to the nature and the

degree of oiling, sensitivity of the shoreline, and any specific constraints (e.g. logistical, environmental, and cultural) that might affect clean-up operations.

SCAT Field teams should include, as appropriate:

- Representatives from State authorities and relevant land managers.
- BP representatives trained in SCAT processes and oil spill response or Clean-up.
- Technical experts on the environmental and socio-economic sensitivities that have been or may be impacted.
- Representatives with designated responsibility for the environmental and socioeconomic sensitivities that may be impacted.

Working with appropriate stakeholders and using the SCAT data, a "shoreline treatment advisory group" will select and/or develop Shoreline Treatment Recommendations (STRs) for each segment of shoreline. Key considerations when recommending shoreline treatment options include obtaining a net environmental benefit, and minimising the risk of further damage to habitats and resources from clean-up efforts. STRs will typically involve multiple phases of clean-up, with target endpoints established for each phase.

Once the STRs are agreed, appropriate approvals are documented and only then are the STR instructions issued to the Operations teams

To assist with the planning process, the shorelines in Western Australia and South Australia have been grouped into eight general types as indicated in figure 3-8, while table 3-24 provides some general guidance as to which clean-up techniques might be used on which types of shoreline. Finally, additional information – when/where best used, constraints etc. – is presented in Table 3-25. This information was used to help generate the "generic" STRs found in the GAB Shoreline Protection and Clean Up Plan.

2. *Clean-up and Monitoring*

Once a STR has been developed and approved, it is issued to Operations to be executed under the management structure of the Shoreline Response Branch. Again, working under the direction of the relevant State Control Agency, this involves the drafting of a ICS Field Order (204), acquiring the human, equipment and other resources to execute the Field Orders, then the management by the IMT and oversight of these operational orders.

Clean up of shorelines would be undertaken in line with the jointly agreed STR's, and in a phased manner, with primary/bulk oil being removed first, before secondary and fine cleaning commences. In some locations, until the well is capped and the chances of further shoreline oiling have substantially reduced, only primary clean-up might be undertaken, recognising that repeated cleaning activity could generate additional impacts on some shoreline types.

To ensure that the Operations team clearly understands the STR, its intent, and specific conditions or constraints, the SCAT/Operations Liaison role is utilised. This role provides a critical linkage to interpret STR intent, support clean-up activities in field and to confirm the STR is being implemented appropriately, achieving the intended outcomes (or needs adjusting in a defined way) and when end-points may be reached. SCAT survey teams may also re-visit areas being cleaned to monitor progress and assess success

3. *Assessment and Sign off*

The Operations teams and SCAT-Operations Liaison signal when the pre-agreed end points are being reached. At this point SCAT teams carry out a new survey to assess conditions and produce a shoreline inspection report (SIR). The SIR is assessed to confirm either that the clean-up has met its intended goals and that a shoreline segment's conditions are acceptable to sign-off, or recommendations are made for specific further work, before the SIR sign off process is repeated until suitable conclusion.

Stakeholder Engagement

It is important to emphasise that the SRP program activity is carried out in a collaborative way with relevant authorities and other designated stakeholders. Recommendations for clean-up (STR's) are jointly agreed between all parties. It is only when agreement is reached by stakeholders that the STR issued for implementation by Operations.

Implementation

To expedite the implementation of the SRP, BP has:

- pre-sectored and pre-segmented the GAB coastline from Albany to Beachport,
- reviewed the GAB coastline and identified the general shoreline types that exist in the AMBA,
- estimated the approx. percentage and kilometres equivalent of each type of shoreline in the AMBA,
- drafted generic Shoreline Treatment Recommendations for these shoreline types,
- confirmed the approximate numbers of trained and unskilled surge human resources pool,
- estimated the logistics support for an indicative human resources pool, and
- confirmed a liquid and bulk solid waste chain that would be implemented in the event of a spill.

When implemented effectively, the SRP is the framework to:

- Provide an organisational capability within the Unified Command for shoreline clean-up decision-making
- integrate and coordinate the relevant State Governments Control agency(s), BP, other Regulators and other stakeholders appropriately into the survey, decision-making and sign-off processes
- deliver expert field surveys to establish verified oiling conditions and manage records/data for wider IMT purposes
- develop sound Shoreline Treatment Recommendations (STRs) along with appropriate constraints for individual shoreline-specific sensitivities
- Monitor the progress and effectiveness of shoreline treatments, working closely with the Operations teams in-field
- provide a convergent approach and documented process to achieving clean-up end-points and ultimately sign-off

3.9.2 Shoreline Response in Areas of Limited Accessibilty

There is a significant stretch of coastline between Sector 5 to Sector 10 that consists of limestone cliffs with very limited accessibility. As outlined in the Shoreline Treatment Recommendation Guide (in the Shoreline Response Tactical Response Plan - TRP) for Rocky platform/ Cliff face, should oil impact these areas, it is very likely to be held offshore by waves reflecting off the steep, hard cliff surface. Any oil that is deposited will be rapidly removed from the high energy environment.

The following response techniques are therefore recommended for sites within the five sectors listed above:

- Visual monitoring of pre-impacted and/or impacted coastline,
- Natural recovery of impacted coastline,
- Chemical dispersion,
- Offshore and/or nearshore containment and recovery to reduce potential for impacted coastline to and to reduce oil exposure to key sensitive receptors.

Resourcing

As per the resource requirements to implement Shoreline Protection, BP has undertaken assurance around the provisioning required to implement large scale shoreline clean up in the GAB.

BP has detailed a base case inventory of the human resources and major oil spill response equipment needed to implement a shoreline clean-up response based on a worse-case deterministic modelling run for a theoretical oil spill along the Western Australian and South Australia Coastlines. Based on the modelling output, the length of each major shoreline type that might be impacted was estimated and a shoreline clean-up technique (i.e. manual clean-up, flooding, etc.) assigned to a percentage of each type of impacted shoreline.

Then, applying data obtained from published materials, such as the ExxonMobil Oil Spill Response Field Manual, the resources needed to implement the selected technique, per kilometre or unit of impacted shoreline, was determined. The result of this calculation provides an estimate as to the total resources needed to implement the selected techniques across the entire amount of shoreline that could be oiled. This was then modified to reflect the maximum clean-up efforts that might occur at any one time (noting that not all shoreline will be oiled at once) to stand up hundreds of kilometres of STRs, as could be required for a level three incident, to derive an estimate of the resources needed.

The resources required has been tallied, and this data compared to known tier one, tier two and tier three resources available to BP to implement a STR, the timeframes for resources to arrive in Australia/moved to potentially affected shorelines; and be used to affect the operational Plans.

On the basis of the work done by BP, there exist sufficient resources in the current tier one, two and three supplies to meet predicated demand for a shoreline clean up in the GAB.

Worst case shoreline loading summary from modelling

For planning purposes, modelling has been undertaken to estimate the volumes of oil potentially impacting the shroleine in three different seasons (Summer, Winter and the Transitional). This is shown in table 3-22. The worse-case seasonal run (winter season) represented is 28,566 m^3. Taking the 209 day model run less the shortest time to shoreline contact, the oil contacts the shoreline over a 200 day time-frame. This gives an average daily stranding of approximately 143m^3 per day. This oil is spread across an area of around 3,433 km of shoreline.

Within this 3,433 km of shoreline, 747km is modelled to have loadings of greater than 1000g/m^2 based on the ITOPF criteria, this aligns with BP's threshold for active intervention.Table 3-23 shows the planned shoreline clean-up thresholds. However, this is based on conservative assumptions, and these numbers are for planning purposes only. Actual clean up actions will be determined at the time of the incident, and will depend on a number of factors such as the shoreline type and advice from the regulatory authorities and other relevant stakeholders.

The remainder of the oiled shorelines are expected to have loadings that fall into low or very low levels. Shoreline with these loadings may be assessed as requiring clean-up, natural attenuation, or scientific monitoring of the degradation of the oil. This will depend on the potential for this oil to impact that shoreline and the sensitives that it comprises, and advice will be taken from relevant stakeholders.

Table 3-22: Summary table of shoreline loadings

Shoreline statistics	Summer			Transitional			Winter		
	Low (film/ stain)	Moderate (coat)	High (cover)	Low (film/ stain)	Moderate (coat)	High (cover)	Low (film/ stain)	Moderate (coat)	High (cover)
Probability of contact to any shoreline (%)	100	100	100	100	100	100	100	100	100
Absolute minimum time to shore (days)	18.7	18.8	22.8	16.5	16.5	21.0	9.2	10.0	14.5
Maximum volume of crude ashore m^3	22,523			25,142			28,566		
Average volume of crude ashore m^3	12,270			16,669			15,306		
Maximum length of shoreline contacted (km) at the low threshold	3,022			3,447			3,433		
Average length of shoreline contacted (km) at the low threshold	2,006			2,452			2,162		

Table 3-23: Shoreline clean-up thresholds

Threshold (g/m^2)	Description	Appearance	Implication
<100	Very low	Oil stain	Clean-up of beaches and natural areas best left to natural attenuation and coastal processes alone. Some cleaning of discrete areas (e.g. jetties and hard structures) where there are agreed priorities or drivers to intervene.
100-1,000	Low	Oil film /very patchy.	Low potential for remobilisation

		Average thickness < 1mm	Minimum thickness that can be cleaned up, which does not inhibit the potential for recovery - AMSA foreshore assessment guidelines. Agreement on clean up method to be agreed with Stakeholders
1,000-10,000	Moderate	Moderate coat, broken oiling. Average thickness ~ 1mm	Some potential for remobilisation Manual collection possible
>10,000	Heavy	Heavy, unbroken oiling. Average thickness < 1cm	High potential for oil to re-mobilise Priority for clean up Manual or mechanical collection possible

Figure 3-8: Shoreline Types within the Great Australian Bight

Eight shoreline types have been identified along the Great Australian Bight, these include:

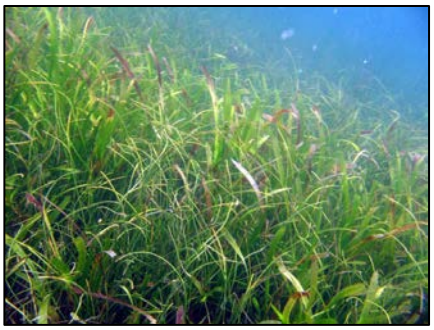
Manmade structures (Jetties, piers, sea walls etc.)

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

Table 3-24: The suitability of different response techniques on different shorelines

SCAT teams will use the following matrix of the eight shoreline types present and the twelve shoreline clean-up techniques available for shoreline response on the GAB coastline.

A three tiered criteria has been used to identify preferred and possible techniques and those to avoid in order to minimise secondary damage.

Criteria: ***Preferred-*** ● ***Possible-*** ● ***Avoid-*** ●

	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	●	●		●	●	●	●	●

3.9.3 Shoreline Treatment Recommendation Guide – Additional Information

The following table provides additional information to assist with planning decisions around the use of individual shoreline clean-up techniques. Key elements including objective, description, and applicable habitat types, when to use, biological constraints, environmental effects and waste generation have been provided for each of the twelve shoreline clean-up techniques.

Table 3-25: Additional Information to support Shoreline Treatment Recommendation Guide. Note. This table is based on the information provided in the NOAA Shoreline Assessment Manual.

	Objective	Description	Applicable Habitat Types	When to Use	Biological Constraints	Environmental Effects	Waste Generation
Natural Recovery	No stranded oil is removed in order to minimise impact to the environment, or because no there is no effective/safe method for clean-up.	Oil is left in place to degrade naturally. Monitoring of the contaminated area may be required.	Manmade Structures Rocky Shore Sandy Beach Tidal Flats Shallow Seagrass Reef Mangroves	When natural removal rates are fast (high evaporation, high energy coastline), when the degree of oiling is light or when clean-up actions will do more harm than natural recovery.	Natural recovery may be inappropriate for area used by high numbers of mobile animals (birds, marine mammals) or endangered species.	Same as from the oil alone.	None.
Manual Oil Removal	Removal of oil with hand tools and manual labour.	Removal of surface oil using hands, rakes, shovels, buckets, scrapers, sorbents, etc., and placing in containers. Includes underwater recovery of submerged oil by	Preferred: Rocky Shore Sandy Beach Possible: Tidal Flats Mangroves	Light to moderate oiling conditions for stranded oil. Submerged heavy oils that have formed semi-solid/solid masses on the bottom.	Foot traffic over sensitive areas (wetlands, tidal pools, etc.) should be restricted or prevented. Shoreline access may need to be restricted/closed at times (i.e. during bird nesting/ turtle hatching).	Minimal, if surface disturbance by responders and waste generation is controlled.	Collection of oil mixed with sand. Oily wastewater following decontamination. Oiled personal protective gear. All must be properly treated and/or disposed.

		divers.			Permission to work in culturally significant sites.		
Mechanical Oil Removal	Removal of oil from shorelines using mechanical equipment.	Oil is collected using equipment such as graders, bulldozers, dredges, beach cleaners, etc. Requires systems for temporary storage, transport and treatment/disposal of collected material.	Possible: Sandy Beach	When large amounts of oiled materials must be removed. Care should be taken to remove sediments only to the depth of oil penetration. Excessive sediment removal will cause erosion and significantly increase waste volume.	Use of heavy equipment in sensitive habitats (i.e. wetlands, soft substrates) should be restricted. Permission requested for use in culturally significant areas. Site area must be controlled to prevent physical disturbance to adjacent, unoiled areas. The noise generated by the mechanical equipment may present a constraint as well.	May be detrimental if excessive sediments are removed without replacement. Organisms in the sediment will be affected, although the need to remove oil may make this response method the best overall alternative. Re-suspension of exposed oil and fine-grained, oil sediments can affect adjacent bodies of water.	Can generate large quantities of contaminated sediment debris that requires treatment and/or disposal.
Sorbents	Removal of surface oil by absorption by oleophilic material placed at the waterline.	Sorbent material (boom, pads, snares) is placed on the floating oil or water surface, allowing it to absorb oil or is used to wipe or dab stranded oil. Recovery of all sorbent material is mandatory - they need to be firmly anchored in areas	Preferred: Rocky shore Possible: Tidal Flats Shallow Seagrass Mangroves	When oil is free-floating in small rocky pools, or stranded on shore. As a secondary treatment method after gross oil removal and in sensitive areas where access is restricted (i.e. mangroves). Note. Heavy oil will only coat the surface –	Access for deploying and retrieving sorbents should not adversely affect wildlife. Application is soft or sensitive habitats will require deployment by boat or use of walking boards. Sorbent material left in place too long can break apart and present an	Physical disturbance of habitat during deployment and retrieval.	All sorbent material must be collected and disposed appropriately. Caution should be taken to prevent overuse and the generation of large amounts of lightly oiled sorbents.

		exposed to wave action/currents, to prevent stranding on the shoreline.		therefore requires a large surface area to be effective.	ingestion hazard to wildlife.		
Vacuum	Removal of oil pooled on a shoreline substrate or sub-tidal sediments.	Vacuum unit is attached via a flexible hose to a suction head that recovers free oil. May be mounted on vessels for water-based operations, on trucks driven to recovery areas, or hand-carried to remote sites.	Preferred: Rocky shore Possible: Manmade Structures Sandy Beach Tidal Flats Shallow Seagrass Mangroves	When oil is stranded on the substrate, pooled against a shoreline, concentrated in rocky trenches or trapped in vegetation. May be used in combination with low-pressure flushing to lift the oil off the substrate and vegetation.	Restrictions should be established for areas where foot traffic and equipment operation may be damaging, such as soft substrates.	Minimal, if foot and vehicle traffic are controlled and minimal substrate/vegetation is damaged or removed. Site restrictions and procedures should be developed and implemented.	Collected oil and or oil/water mix will need to be stored temporarily prior to treatment/disposal. Large amounts of water are often recovered, requiring separation and treatment.
Debris Removal	Removal of debris in path of spill prior to oiling and to remove contaminated debris from the shoreline and water surface.	Manual or mechanical removal of debris (seaweed, driftwood, wreckage, trash) from the shore or water surface.	Possible: Sandy Beach Tidal Flats Mangroves	When debris is heavily contaminated and provides a potential source of secondary oil release and/or contamination for other resources that use the area such as birds and small mammals. Removal of non-oiled debris (beach wrack) may be considered to reduce potential oiled waste; or likely clogging of	Foot traffic over sensitive areas (wetlands, spawning grounds) must be restricted/controlled. Debris may be a habitat and an important source of prey (i.e. shorebirds feeding in wrack on beaches).	Physical disruption of substrate.	Potential to generate large volumes of contaminated debris. Waste disposal options should be less restrictive for debris collected pre-spill.

				recovery skimmers; or if it is likely to cause safety problems for responders.			
Vegetation Removal	To remove portions of oiled vegetation or oil trapped in vegetation to prevent oiling of wildlife or secondary oil releases.	Oiled vegetation is cut (weed trimmers, blades), picked or raked up and bagged for disposal.	Possible: Tidal Flats Mangroves	When the risk of oiled vegetation contaminating wildlife is greater than the value of the vegetation that is to be cut, and there is no less-destructive method that removes or reduces the risk to acceptable levels. Also, to remove thick oil residues under the oiled vegetation.	Cutting only the oiled portions of the plants and leaving roots and stems (as much as possible) will reduce impact to plants. Operations must be strictly monitored to minimise the degree of root destruction and mixing oil deeper into the sediments.	Vegetation removal/unnecessary trampling will destroy habitat for many animals. Cut areas will have reduced plant growth and, in some instances, plants may be killed. Along exposed sections of shoreline, the vegetation may not recover, resulting in erosion and habitat loss.	Cut portions of oiled plants must be collected and disposed of properly.
Sediment Tiling	To break up oily sediments and surface oil deposits, increasing their surface area, and bringing deeper subsurface oil layers to the surface, enhancing the rate of degradation	Oil sediments are mixed (i.e. rototilled) using mechanical equipment or manual tools. Along beaches, oiled sediments may be pushed to the lower intertidal zone to enhance natural clean-up by wave activity (surf washing). On gravel beaches,	Possible: Sandy Beach Sedimentary substrate that can support mechanical equipment or foot traffic and hand tiling.	On sand to gravel beaches with subsurface oil where sediment removal is not feasible (due to erosion, transportation or disposal problems). On sand beaches where the sediment is stained or lightly oiled. May be appropriate for sites where the oil is stranded above	Avoid use on shores near sensitive wildlife habitats, such as fish-spawning areas or bird-nesting and adjacent to sub-tidal habitats such as shellfish beds, seagrass, or coral reefs.	Mixing of oil into sediments could further expose organisms that live below the original layer of oil. Repeated reworking could delay re-establishing of these organisms. Re-mobilised oil and oily suspended sediments from treated sites could contaminate adjacent waterbodies and	None.

	by aeration. Also, to increase the rate sediment re-working by wave action.	the process may be aided with high-volume flushing.		the normal high waterline, so that the sediments can be reworked by wave action.		shorelines.	
Flooding	To lift and wash oil stranded on land to the water's edge for collection.	A perforated hose is placed above the oiled shore. Sea water is pumped through the hose at low pressure and flows downwards to the water where any released oil is collected by booms and recovered by skimmers or vacuum. On porous sediments, water flows through the substrate, pushing loose oil ahead of it. On saturated, fine-grained sediments, the technique will lift and flush the oil.	Preferred: Sandy Beach Possible: Manmade Structures Rocky shore Tidal Flats Shallow Seagrass	In heavily oiled areas when the oil is still fluid and adheres loosely to the substrate, and where oil has penetrated into gravel sediments. Can be used with other washing techniques (i.e. low or high-pressure flushing).	Care should be taken to recover oil where nearshore habitats contain rich biological communities. Not appropriate for soft, muddy substrates.	Habitat may by physically disturbed by foot traffic during operations and smothered by sediments washing. If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Oiled sediment may be transported to nearshore areas, contaminating them and burying benthic organisms.	Depends on the effectiveness of the collection method.
Low-Pressure, Ambient-Water	Removal of fluid oil that has adhered to the	Ambient-temperature water (sea water) is sprayed at low	Preferred: Sandy Beach Possible:	Where fluid oil is stranded onshore or floating on shallow intertidal	May need to restrict use so that the oil/water effluent does not drain	If containment methods are not sufficient, oil and oiled sediments may	Depends on the effectiveness of the collection method.

Flushing	substrate or man-made structures, pooled on the surface, or become trapped in vegetation.	pressure (<72 kilopascals (kpa)) from a hand-held hose, to lift oil from the substrate and float it to the water's edge for recovery by skimmers, vacuum or sorbents. Can be conducted from barges or flat-bottom vessels with long-reach spray systems. Usually used with a flooding systems to prevent released oil from re-adhering to the substrate downstream of the treatment area.	Manmade Structures Rocky shore Tidal Flats Shallow Seagrass	areas.	across sensitive intertidal habitats, and the mobilised sediments do not affect rich sub-tidal communities. Use from boats will reduce the need for foot traffic in soft substrates and vegetation. Flushed oil must be recovered to prevent further oiling of adjacent areas.	be flushed into adjacent areas. Flooding may cause sediment loss and erosion of the shoreline and shallow rooted vegetation. Some trampling of substrate and attached biota may occur.	
High-Pressure, Ambient-Water Flushing	To remove oil that has adhered to hard substrates or man-made structures.	Similar to low-pressure flushing, except that water pressure is 720-7,200 kpa. High-pressure spray will more effectively remove sticky or viscous oils.	Preferred: Manmade Structures	When low-pressure flushing is not effective at removing adhered oil, which must be removed to prevent continued oil release or for aesthetic reasons. When a directed water jet can	May need to restrict flushing so that the oil does not drain across sensitive habitat. Flushed oil must be recovered to prevent further oiling of adjacent areas. Should not be used directly on attached algae nor	All attached animals and plants in the direct spray zone will be removed, even when used properly. If containment methods are not sufficient, oil and oiled sediments may be flushed into adjacent areas.	Depends on the effectiveness of the collection method

				remove oil from hard to reach sites.	rich, intertidal areas.	Some trampling of substrate and attached biota may occur. Inappropriate use may drive oil deeper into the substrate or erode fine sediments from shorelines.	
Hot-Water Flushing	To mobilise weathered and viscous oil strongly adhered to surfaces.	Hot water (32°C up to 77 °C) is sprayed with hand-held wands at low (<72 kpa) pressure/high (>720kpa) pressure – where appropriate. Requires immediate use of a vacuum/sorbents or used with a flooding system, using booms and a skimmer/vacuum for collection.	Possible: Manmade Structures	Low-pressure flushing where heavy, relatively fresh oil is stranded onshore. High-pressure flushing on heavily weathered oil that is not affected by low-pressure flushing.	Use should be restricted so that the oil/water effluent does not drain across habitats sensitive to exposure by oil, oily sediments and hot water. Should not be used directly on attached algae nor rich, intertidal areas. Released oil must be recovered to prevent further oiling of adjacent habitats.	All attached animals and plants in the direct spray zone will be removed, even when used properly. Oiled sediment may be transported to shallow nearshore areas, contaminating them and burying benthic organisms.	Depends on the effectiveness of the collection method

Further details
Additional detail on the implementation of SCAT, BP's Shoreline Response Program, organizational arrangements and associated references are available in the BP's Response Tactics Manual Section 5.5.1 and the Shoreline Protection & Clean-up TRP.

BP has consulted with relevant State authorities and land managers regarding shoreline response roles and responsibilities. The relevant State authority will assume the role of IC for any event that impacts shorelines or state waters (within 3 nautical miles from shore). BP will support the response as described in Section 2.

For specific details on the implementation strategy for Shoreline Protection measures, please refer to the Shoreline Tactical Response Plan (TRP); and the 1st strike checklist that can be found at section 4 of this plan. The BP Shoreline Response Program document flow and SCAT Templates are contained in the Shoreline TRP;

3.10 Oiled Wildlife Response

Oil Spill Response Option	Equipment and expertise to locate, capture and rehabilitate oiled wildlife.	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
BP GAB Interim Oiled wildlife Response Plan (including WA South Coast). SA Oiled Wildlife Response plan. WA Oiled Wildlife Response plan.	Maintenance of access to oiled wildlife response equipment and personnel.	AMSA MoU AMOSC Service Contract OSRL SLA.
	Maintenance of access to VoO.	VoO register. VoO MoU and contracts. MoU/Agreement with fishing fleets.
	Maintenance of access to oiled wildlife personnel through recruitment agencies and the National /Global OWR network.	Wildlife Volunteers General / Specialist. Trained personnel databases or lists.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
BP GAB Interim Oiled Wildlife Response Plan	AMOSC OWR third party contracts stood up. AMOSC equipment deployed. AMSA and NatPlan equipment deployed as needed. OSRL equipment deployed as needed. All wildlife response operations will be undertaken under the auspices of that jurisdictions OWR control agency.	AMSA MoU AMOSC Service Contract OSRL Service Contract. IMT Log.

SA Oiled Wildlife Response Plan	Notification to Dept. Environmental, Water and Natural Resources (DEWNR) Oiled Wildlife Advisor and State ESC of assessment of oiled wildlife event. All decisions to escalate/deescalate an OWR response made in conjunction with the DEWNR OWR Advisor. The IMT Environmental Unit leader shall monitor and record the actions under the response to ensure that the requirements of the SA are met. Termination Criteria and Demobilisation of the OWR shall be guided by the parameters established by the Wildlife Division Coordinator set at the beginning of the response, in consultation with the State OWR Advisor and ESC.	IMT Log.
WA Oiled Wildlife Response Plan	Notification to DPaW Oiled Wildlife Advisor and State ESC of assessment of oiled wildlife event. All decisions to escalate/deescalate an OWR response made in conjunction with the DPaW OWR Advisor. The IMT Environmental Unit leader shall monitor and record the actions under the response to ensure that the requirements of the WA OWRP are met. Termination Criteria and Demobilisation of the OWR shall be guided by the parameters established by the Wildlife Division Coordinator set at the beginning of the response, in consultation with the State OWR Advisors and ESC.	Incident log. IAP.

3.10.1 Oiled Wildlife Response Option

For an oil spill from GAB operations, BP will assess if there is a threat to wildlife from the spilt hydrocarbon and – under the direction of the relevant Jurisdictional Wildlife Control Agency – implement actions to reduce the consequences of the spill. BP have written a specific wildlife plan, that outlines in more detail the approach to be taken with oiled wildlife response (GAB Oiled Wildlife Response Plan – IGOWRP). This document will detail the relationships between BP and the relevant State agency's that may be involved in a wildlife response. An example of the document is included later in this section.

The response actions will include supporting the wildlife control agency through:

- The interim GAB OWR plan by drafting and providing that plan to these agencies,
- provisioning of equipment – current and surge requirements,
- embedding specialised human resources drawn from third party contractors (national, regional and international) into that agency,

- just in time training so that surge human resources can be provided from known unskilled labour pools and volunteer organisations,
- establishing temporary oiled wildlife response facilities/rehabilitation centres, and
- providing the agency with other support as agreed.

3.10.2 Deployment pathway

Table 3-26: Available OWR resource actions

Asset owners/coordinator	Action
Relevant Jurisdictional OWR Control Agency	Engage with the OWR control agency either through a LO, or as an integral part of a unified command incident management team to inform of potential span of shoreline oiling. Using the GAB IOWRP identify potential Fauna communities that could be oiled.
BP	Confirm with the OWR Control Agency resource requirements for the OWR facility; people and other requirements.
Request from AMOSC	OWR wash facility (s) (from Fremantle and Geelong) Activation of DwyerTech contract for establishment of OWR centre and ongoing maintenance of that centre (s). As needed – OWR 'industry team' from CG and industry mutual aid. As need – request for assistance to third parties – Philip Island Nature Park, BluePlanet Marine, Massey University, SANCOBB and International Bird Rescue.
Request from AMSA (NatPlan)	OWR wash facility (s) (over flow as needed). As needed – NRT members OWR
Request from OSRL	OWR wash facility (s) (over flow as needed). As needed – Sea Alarm OWR personnel and coordination of the Global Oiled Wildlife Response Network for any available HR capacity to (Timeline – this will be able to be quantified in early 2017).

Note:

Oiled Wildlife Control (the oversight of the treatment and rehabilitation of oiled animals) within the response AMBA is strictly a function of the WA and SA Governments. It is also the position of the Australian Government that it will defer activities to the nearest jurisdiction to be under their control.

This has been confirmed in consultation by BP with the Department of Parks and Wildlife (WA - DPAW), the Department of Environment, Water and Natural Resources (SA - DEWNR) and the Department of the Environment (Australian Gov.).

Like much of the world's OWR regime, Australia's OWR regime is under-developed, and suffers from long term chronic under investment by the state governments who hold the responsibility to respond to these incidents. OWR planning which entails the bringing together and synergising of species distribution, impact analysis, likely locations for treatment centres, and the required trained and semi-skilled human resources which would be required to be deployed is either missing or incomplete for large regions of Australia.

This is the case for the Great Australian Bight, with no systemic OWR programme by either WA or SA, for the response AMBA.

BP acknowledges that DPAW is developing a maturing regime for responding to an OWR incident – this is relationship based and has been developed by AMOSC on behalf of the Australian oil and gas industry. Industry funding has been used to deploy resources to DPAW to assist that agency draft a (1) State OWR Plan and (2) regional specific plans. The current snap shot of this planning can be found below.
BP acknowledges that the SA regime is less advanced than that in WA, and requires further development from the ground up. This is being pursued on behalf of the Australian oil/gas industry through AMOSC and DEWNR/DPTI. Currently SA has no regional plans for OWR and has agreed in principle to finalise a state based OWR by the end of August 2016. Once the state based plan is finalised, then SA will be able to commence the development of regional specific plans.

BP acknowledges that the national system for OWR is inherent within the National Plan and that is continuing to be developed nationally by National Plan stakeholders from all jurisdictions.

Oiled Wildlife Capability Statement

In terms of the OWR capacity, AMOSC has been assisting other members to create their OWR capacity since 2012. This assistance has been based on the strong AMOSC relationships with major international OWR providers who remain in full support of AMOSC led initiatives in the OWR sector. AMOSC also sourced and organised the equipment and training of WA based industry personnel when generalised training was provided for OWR. AMOSC has been working collaboratively with the Department of Parks and Wildlife in Western Australia (WA) to develop Oiled Wildlife Response Plans (OWRP) and long-term role specific training for the state and regional areas.

The current OWR capacity is detailed below.

Table 3-27. Current Australian Industry OWR Capacity

Plans	West Australia State Plan – Live. Testing / verification during exercise Westwind 2015. Scheduled for review, revision and re-issue Q4 2016 – Q1 2017 Pilbara Region – Live. Testing / verification during Exercise Westwind

	2015. Scheduled for review, revision and re-issue Q4 2016 – Q1 2017 Kimberley Region – Draft. Scheduled for finalisation and issue Q4 2016 Swan Region – In development. Scheduled for issue Q4 2016 – Q1 2017 South Coast Region – In development. Scheduled for issue Q4 2016 – Q1 2017 South Australia State Plan (Including GAB Region) – Final Draft, scheduled for issue Q3 2016
Equipment	1 x AMOSC owned OWR container is positioned in Fremantle on a response footing 1 x AMOSC owned OWR container is positioned in Geelong on a response footing 3 x National Plan OWR containers in Dampier, Darwin, Townsville available through National Plan request 1 x NSW Maritime OWR container in Sydney available through National Plan request 4 x AMOSC OWR box kits located in Broome, Exmouth, Fremantle and Geelong 2 x National Plan & DPaW OWR Box/Trailer Kits in Dampier and Freemantle
People	AMOSC; 1 x FTE for OWR development AMOSC OWR Industry Team; 10 trained to Level 2-4 (DPaW training) AMOSC holding call off contracts (on behalf of industry) with; A facilities management group – DwyerTECH NZ; availability within 24 hours of call off AMOSC developed relationships with; Blue Planet Marine; capacity 10-20 OWR responders Massey University; capacity 4-6 OWR responders International Bird Rescue; capacity 4 OWR responders AMOSC developing relationships with; Phillip Island National Parks; capacity 20-40 OWR responders
Training/Exercises	Training; 2016; OWR facility management masterclass with AMOSC/DPaW at Spillcon 2016 – 13 personnel 2016; AMOSC/DPaW/Perth Zoo/Murdoch University OWR Management Training course – 19 personnel 2015; AMOSC/DPaW/Perth Zoo/Murdoch University OWR Field Training Course – 11 personnel 2013; AMOSC/Massey University OWR Management training – 22 personnel Exercises; 2016; full deployment of OWR container plus AMOSC and DwyerTECH

	attended Ex Bunker Oil, Phillip Island Nature Parks (PINP), Victoria 2015; full activation/deployment and response in Exmouth for Exercise Westwind 2014; full deployment of OWR container plus AMOSC plus DwyerTECH attended Exercise Penguino, PINP
Aid – Mutual & International	AMOSPlan - AMOSC member company mutual aid includes; Chevron ~10 personnel National Plan (mutual aid) State/NRT personnel. Precise numbers to be determined >100 Personnel

Table 3-28: BP Tier Three OWR Resources

Equipment	2 x Container with OWR equipment at OSRL in Southampton ready for deployment.
People	2 x Oiled wildlife response experts from Sea Alarm. Mobilised via OSRL 10 – 15 experienced OWR experts from the Global Oiled Wildlife Response Network. Can be mobilised via Sea Alarm. This number is expected to grow or will grow but definite numbers beyond these can at the moment not be guaranteed.

Implementation of OWR in the GAB

In the absence of an OWR programme for the Great Australian Bight, and while WA and SA are working towards their own state and regional specific OWR plans, BP has commissioned AMOSC to develop an Interim GAB Oiled Wildlife Response Plan (IGOWRP).

This plan has been developed in close consultation with these jurisdictions, with the intent that can be used by the relevant jurisdictional OWR Control Agencies until such time as it can be subsumed/replaced by their own regional specific OWR plans. Implementation of the IGOWRP will be done using the resources listed in the capability statement above.

The plan:

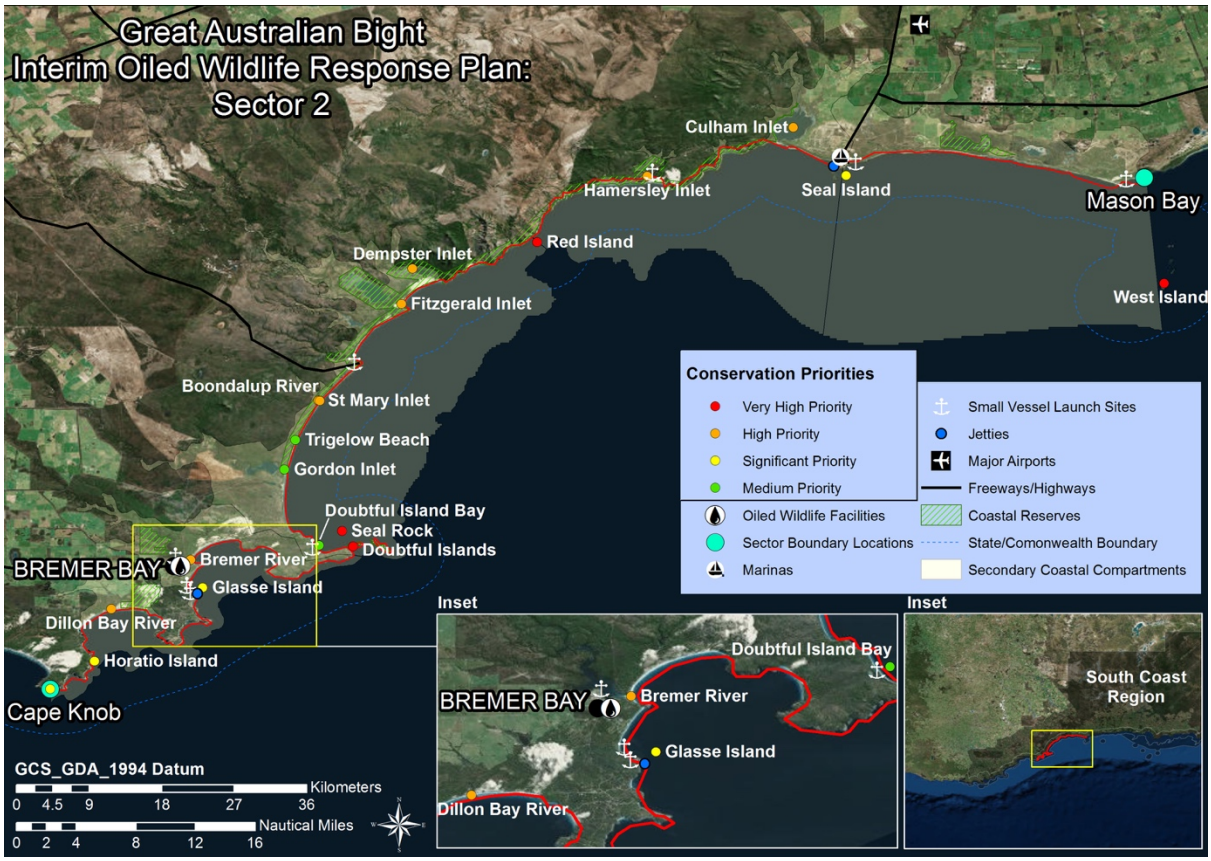
- Outlines the sensitive fauna receptors/habitats in BP's response AMBA between Bald Head (Albany, Western Australia) to Cape Banks in South Australia. (what they are, how they are sensitive);
- Maps these receptors and nearby reception areas/lay down areas that can be used to establish an OWR facility for treatment, washing and rehabilitation ;
- Identifies the providers of local, state based and national technical (human) resources that will be deployed to the GAB in the event of activation by BP/Jurisdiction OWR Agencies;
- Identifies recognised on the job training to quickly train and 'upskill' a temporary hired unskilled labour force or volunteer groups,
- Identifies the providers of local, state based and national equipment/staging area resources that will be deployed to the GAB in the event of activation by BP/Jurisdiction OWR Agencies;
- Identifies the Recommended Response Strategies prior to/after oiling of the fauna in each sector using the resources detailed in the plan.

The team implementing the IGOWRP will be a multi-agency/organisational, multi-discipline branch under the Operations section of the IMT, working under the UC. This team will report to an Oiled Wildlife Coordinator, the appointment of which is the responsibility of the relevant jurisdictional control agency. The operator/s implementing the SAOWRP, WAOWRP and the GABIOWRP would need to be an appropriately trained and experienced environmental specialist/s, within a role in the IMT such as the Environment Unit Leader (EUL) or OWR Advisor. Refer to the BP Interim GAB Oiled Wildlife Response Plan (IGOWRP) for further details on GAB OWR arrangements.

IGOWRP Sample Extract

A sample extract of the IGOWRP can be found below. These details are being replicated across the GAB in the response AMBA, within each sector:

Figure 3-9: SECTOR 2: Cape Knob to Mason Bay (CC 227 to 224)



A.2.1 Terrestrial Overview

Rocky headlands interspersed with sandy bays in the west near Bremer Bay. Most tenure resides with the Shire of Jerramungup. Centrally located in the sector lies the Fitzgerald River National Park which is managed by DPAW. The eastern portion of the sector approaching Masons Bay there is intensive broad acre and grazing agricultural operations.

A.2.2 Marine Overview

This sector includes the scenic and bio diverse Bremer Bay and Doubtful Islands which have been identified by the Marine Reserves Working Group as an area deserving protection by their recommendation for the West Australian Government to gazette a Marine Park. The Doubtful Islands have also been identified as an 'Established Large Coastal Aggregation Area' for the Southern Right Whale. Further offshore of Bremer Bay (35 km) lies the Bremer Canyon (Commonwealth National Marine Park) where deep water upwelling supports a diversity of marine life including protected mega fauna such as Southern Right Whales, Great White Sharks and Orcas. This sector features 10 (ten) seasonally and periodically open estuarine systems. The biodiversity of this sector is second most bio diverse (second only to Recherchéé Archipelago near Esperance) in the WA portion of the AMBA.

Table 3-29: Environmental Values of Sector 2

Coastal Compartment	Coastal Area unit	Tenure	Species susceptible to oiling	Priority
Cape Knob to Point Hood (227)	Dillon Bay River Entrance	NP	Wetland: Periodically open estuarine system supporting salt marsh fauna, shore birds and waders. See TRP for this Site.	High
	Cape Knob	UCL	Pinnipeds: NZFS haul out colony on mainland. Possibly breeding colony	Significant
	Horatio Island	UCL	Pinnipeds: Haul out site for ASL and NZFS	Significant
	Glassy Island	NR-A	Pinnipeds : Haul out sites for ASL and NZF	Significant
	Bremer River Entrance	SR	Wetland: Seasonally open estuarine system supporting salt marsh fauna, shore birds and waders.	High
	Doubtful Islands (including Seal Rock)	NR – A	Birds: A JAMBA Buffer has been established on West Island to protect migratory birds & breeding Bridled Terns. Penguins on middle Doubtful Island (<30 pairs) Pinnipeds: ASL breeding on Middle Doubtful Island (2011). Haul out and breeding areas on all three islands.	Very High
	Doubtful Island Bay	SW	Cetaceans: Calving area for Southern Right Whales	Medium
Point Hood to Red Island (226)	Glass Island Nature Reserve	NR - A	Birds: Fairy Tern and Crested Terns nesting colonies.	Significant
	Gordon Inlet Entrance	NP	Birds: Hooded dotterel. Likely other shorebirds. Data deficient area.	Medium
	Boondalup River Entrance	NP	Wetland: Periodically open estuarine system supporting salt marsh fauna, shore birds and waders. Data deficient. See TRP.	High
	Trigallow Beach	NP	Birds: Recorded sightings of Common Sandpiper (IA), Red Necked Stint (IA), White Bellied Sea Eagle (IA), Wandering	Medium

			Albatross (T) and a variety of shorebirds.	
	St Mary Inlet	NP	Wetland: Periodically open estuarine system supporting salt marsh fauna, shore birds and waders. Data deficient. See TRP for this Site.	High
	Fitzgerald River Entrance	NP	Wetland: Seasonally open estuarine system supporting salt marsh fauna, shore birds and waders and Hooded Plovers. See TRP for this Site	High
	Dempster Inlet	NP	Wetland: Seasonally open estuarine system supporting salt marsh fauna, shore birds and waders. See TRP. Birds: A variety of shorebirds, especially following opening of inlet in late winter/early spring.	High
	Red Island	NR – A	Pinnipeds: ASL haul out site (<10) & NZFS haul out site (<10). Bird: Cape Barron Goose (most westerly island they present on)	Significant
Red Island to Mary Ann Point (225)	Hammersley River Entrance	NP	Wetland: Periodically open estuarine system supporting salt marsh fauna, shore birds and waders. See TRP for this Site.	High
	Culham Inlet	NP	Wetland: This inlet supports a diversity of invertebrates, sea grass and shore birds. It rarely breaches.	Medium
Mary Ann Point to Mason Bay (224)	Seal Island	SR	Pinnipeds: NZFS routinely haul out here throughout the year. Directly south of Hopetoun townsite.	Significant
	West Island	NR – A	Pinnipeds: NZFS reportedly breed on the island from November to January. ASL reside on the NW corner of the island year around (1997-2004 Dataset).	Very High

A.2.4 Recommended Response Strategies

A.2.4.1 Prevention

If approved by IC and the State Oiled Wildlife Commander:

- Auditory hazing may be effective for shorebirds where pre-emptive capture or baiting proves difficult. Hazing may be effective on adult pinnipeds.

- Tactical Response Plans have been developed to mitigate the ingress of oil into the wetland systems in this sector.
- Booming the mouth of the inlets which have been identified as open may prevent oiling of shorebirds and habitat that frequent these wetlands.

A.2.4.2 Personnel Deployment

Field teams in this area will be deployed from Albany by road to Bremer Bay. Access to remote sites in the east of the sector are best accessed by 4WD and ATV's. Weather dependent, small craft are the best method of accessing the Doubtful Islands (moderately sheltered) and the eastern portion of the sector. Coastal Area Units east of Gordon Inlet are heavily exposed to southerly swell. There is a marina located in Bremer Bay operated by the Department of Transport and dirt airstrip (3937 feet) 5 km west of the town site for transport of OWR equipment.

A.2.4.3 Wildlife Reconnaissance and Wildlife Recovery

Field reconnaissance and wildlife recovery in this operational area will typically be conducted on foot in rocky areas, by 4wd and ATV in sandy areas and by boat for the offshore islands and islets. Initial aerial reconnaissance will be highly beneficial to identify concentrations of wildlife that can then be targeted by foot or boat. Trigallow Beach can be driven on by 4WD with low tyre pressures. Coastal access east of Fitzgerald River and west of Hammersley Inlet is mostly by foot/boat. Bridled Terns (*Onychoprion anaethetus*) breed in summer in this area when there is a 20% probability of oiling above the minimum threshold.

A.2.4.4 Logistics Options for Facility Establishment

Staging sites will be opportunistically established at existing beach access points across the sector (multiple access points are available). The tenure to the east of Bremer Bay is exclusively DPAW. Oiled wildlife can be transported from staging sites by 4wd, ATV or small craft to the designated Oiled Wildlife Holding Facility in Bremer Bay. From there oiled wildlife can be sent to the Treatment Facility in Albany if deemed necessary.

Bremer Bay Marine is an excellent staging area providing ample lie down area, sheltered access and toilets.

Table 3-30: Staging Sites for Sector 2

Site Purpose	Location	Contact
Staging Sites	Bremer Bay Marina	Department of Transport Albany (08) 9892 7312
Holding Facility	Bremer Bay	See Oiled Wildlife Facilities in Section 5
Treatment Facility	Albany	See Oiled Wildlife Facilities in Section 5

NOTE: It may be possible to establish an Oiled Wildlife Holding Facility in Hopetoun. If the OWR event extends into Sector 3 and an Oiled Wildlife Facility is established in Hopetoun it is better to transport Oiled Wildlife from Coastal Area Units Hammerseley River Entrance and Culham Inlet to Hopetoun Oiled Wildlife Facility as there is better road access (than going to Bremer Bay).

A.2.4.5 Equipment

The nearest First Strike OWR Equipment stockpile for this operational area is located in Fremantle. The second closest and more extensive kit is located in Karratha. For further detail see Section 3 and Table 3 for equipment locations.

Section 6.3.10 of the EP provides details of the following:

- Scope of wildlife protection and response operations
- Assessment of environmental impacts
- Preliminary NEBA
- Assessment of the effectiveness of the response technique
- Capacity for implementation and,
- Risk assessment.

Due to the window of opportunity before wildlife within state jurisdiction are likely to be impacted by oil, priority oiled wildlife response areas will be determined with the state once spill-specific conditions and potential impact areas have been identified.

Details regarding the scope of wildlife protection and response operations, an assessment of its environmental impacts, a preliminary NEBA, assessment of the effectiveness of the response technique, capacity for implementation, together with a risk assessment, are provided in the EP.

3.11 Waste Management

Oil Spill Response Enabling Activity	Equipment and expertise for transportation, segregation, quantification, storage and final disposition of wastes	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
BP GAB Waste Tactical Response Plan	TRP in place.	TRP in place
SAMSCAP	SAMSCAP	SAMSCAP
WestPlan MOP Appendix H	WestPlan MOP Appendix H	WestPlan MOP Appendix H
Temporary Waste Storage Equipment and Arrangements	Maintain access to waste transport equipment, personnel, transport and disposal facilities (liquid and bulk).	Approach to market on the availability of national and regional waste management services.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
IMT stands up Disposal Group	Disposal Group Stood up concurrent with waste generating strategies– On-water and Shoreline. Waste Management Coordinator Appointed within 24 hours of notice.	IMT log and time stamped organisation chart.
Execution of BP GAB Waste Tactical Response Plan	Plan executed concurrently with Offshore Containment and Recovery, Dispersant and/or Shoreline Operations.	IMT log
	Liquid waste stream management is executed concurrently with the C&R operations.	Ongoing tanker charter and operations for waste STS established by BP IMT, via BP shipping in the CST.
	Solid waste stream management is stood up prior to the stranding of oils on shorelines.	Temporary and final storage locations notified and stood up.
		Contracts/MoU's established with waste management third parties (to stand up) prior to oil coming <3NM of the coastline.
	All decisions to escalate/deescalate the waste elements of the	IMT log

	response shall be made in conjunction with DEPTI and Dot.	
	All wastes shall be tracked from the point of generation/origin, to temporary storage locations, to the point of final disposal.	IMT log Chain of custody documentation.
	Demobilisation of the waste management TRP done in consultation with the I/Cs of the control agencies of the affected jurisdictions.	IMT log Paper documentation records.
Execution of the SAMSCAP	All SA Shoreline waste operations shall be managed under the control and direction of the DPTI. The management of the solids waste stream shall be licensed/approved by the EPA.	IMT log
Execution of the WestPlan MOP Appendix H	All waste operations shall be managed under the control and direction of the DoT/DER. The management of the solids waste stream shall be licensed/approved by the DER.	IMT log

3.11.1 Waste Management Spill Response Enabling Activity

BP has mapped the waste management chain that needs to be implemented, seeking to ensure that the final waste disposal options have sufficient capacity to accept and treat the potential waste streams that could be generated by the oil spill.

3.11.2 Deployment pathway

Table 3.31: Waste management resource actions

Asset owners/coordinator	Action
Relevant Jurisdictional Waste Control Agency	Shorelines Engage with the waste licensing agency either through a LO, or as an integral part of a unified command incident management team to inform of potential span of shoreline oiling. Using the GAB Waste Management TRP, identify and agree on pre-identified potential temporary storage sites and nearest 'final waste storage' solutions.
BP	Shorelines Confirm appointment from TPI, or Toxfree, or Veolia, Waste Management Coordinator to oversight the establishment of the waste management chain. Confirm with local sites contractual arrangements for receipt of waste. Confirm with final waste storage site operators contractual arrangements to receive wastes. If appropriate for that location, confirm with TPI thermal treatment plant immediate deployment availability. Waste Management Coordinator to work with waste licensing agency to confirm emergency permitting arrangements (SA or WA) to execute the above. Liquid wastes Request from BP shipping manager (Australia) tanker that can be used to STS of offshore liquid wastes. Request from BP shipping manager (Australia) drafting and execution of an STS plan, suitable for GAB.
Request from AMOSC	All available temporary storage to sites identified by STR as requiring cleaning.
Request from AMSA (NatPlan)	All available temporary storage to sites identified by STR as requiring cleaning.
Request from OSRL	All available temporary storage to sites identified by STR as requiring cleaning.

An ongoing loss of well control event from a drilling incident would result in significant amounts of oil being released into the marine environment. Once at surface, weather

permitting, offshore strategies will be put in place including the use of surface dispersant, containment and recovery. Even with these strategies in place, there is the possibility of oil stranding on the shorelines, and an oiled wildlife response.

A very conservative, although unlikely, planning stance assumes that none of the offshore strategies will be effective, that significant volumes of oil have come ashore, and that the oil is recoverable from shorelines that will generate significant 'bulked' waste. Worst-case modelling results indicate that the volume of stranded oil in this case could exceed 28,000 tonnes. In reality, as offshore oil spill response mitigations come 'on-line', this will reduce the amount of potential oil coming ashore, but in turn create other waste streams, in particular recovery of oil and oily liquids form containment and recovery operations..
On this basis, this plan considers that the two primary waste streams will be an oil/water liquid stream (collected predominately offshore from vessel operations) and an oil/solids stream, (collected from the shorelines).

- Oil/water liquid wastes will be;
  - For offshore/nearshore operations, either
    - Transferred directly offshore from a ship to ship transfer to tankers of opportunity chartered to BP for oil spill response purposes. This chartered tanker will then steam to one of BP's refineries in Australasia – Kwinana, Singapore, or Marsden Point in New Zealand – where the recovered hydrocarbon will be processed.
    - The recovery vessel will transport the waste for temporary storage to the BP Marine Base, located at the Port of Adelaide. From here it will either be moved by land to an Australian refinery, sorted and shipped by sea to a refinery, or disposed of within the state.
  - For very close to the shore/shoreline operations,
  - VoO's will mobilise to ports and transfer to road tankers, which will then drive to Kwinana to processes the liquid oil.
  - Liquid oil directly recovered from shoreline operations, transferred to road tankers, which will then drive to Kwinana to processes the liquid oil.
  - Liquid oil directly recovered from shoreline operations, transferred to road tankers, which will then drive to the BP marine base in Adelaide to be transferred onto a waiting tanker (then treated as per Ai above)
- Oil/solid wastes collected from shorelines will be collected and transferred from that shoreline to a;
  - Landfill – existing sites, or,
  - Landfill – custom/proposed sites, or
  - Land farming (tilling and biodegradation) or
  - Thermal treatment, or
  - A combination of the options above.

For solid wastes that are treated terrestrially, engagement with the EPA in SA and the DER WA during the establishment of these waste streams is required to certify and license the cradle to grave processes of waste management generated by the spill.
A number of owner/operators of existing and potential landfills, and thermal treatment plants have been approached to validate their capacity to treat the bounding volumes of waste that could be generated by the spill.

3.11.3 Waste Methodology

Oil spill specific waste is anticipated to come in waves, commensurate with the predicated outcomes of certain strategies being stood up. The below table (3-32) outline how these waves of waste could be generated over time:

Table 3-32: The types of wastes (assuming 149 day relief well drilling)

Days	Processes	Effects on waste (with lag)
0 – 9	Fresh oil continues to surface then weather.	Liquids collected at sea.
9 – 149	Fresh oil continues to surface then weather, shoreline stranding and re-stranding.	Liquids collected at sea; Oil/solids collected from shorelines.
149+	No further fresh oil. Shoreline stranding and re-stranding.	Oil/solids collected from shorelines.

Identifying 'bounding volumes' of waste that could be generated from worst case scenarios are speculative and likely to be inaccurate; the implementation of spill response strategies flows over and has a positive cumulative effect on one another.

Nonetheless, the below table outlines what some of these 'bounding volumes' could be. It is based on a worst case discharge from the wellhead, without capping or relief drilling for 149 days, or the implementation of spill response strategies.

Table 3-33: 'Bounding volumes' of waste by stream.

Stream	Quantity	Discussion
Oil/Solids	28,500m^3 oil, potentially 285,000 bulk tonnes over 149+ days.	This is the greatest shoreline contact in any of the scenarios within BP's stochastic modelling. It is during the winter season. However, of the coastlines that comprise the GAB, only 40% are sandy beaches where this volume of waste has the potential to be generated. The remainder are comprised of rocky cliffs (such as between eastings 1250-1270 where little shoreline impact could be expected, and no safe or effective shoreline response could be executed) or mangrove, and marshland type areas. It is therefore a theoretical amount only.
Oil/water	256,800 – 1,026,750 m^3 for the duration for the discharge.	This is a theoretical potential volume of recovering oil using booms and skimmers in ideal conditions with a large fleet of dedicated vessels. However, (1) the weather conditions in the Great Australian Bight will prohibit any containment and recovery operations for an average of 80%+ of the year (Average wave heights >3meters), (2) the numbers of vessel needed to execute this operation are not available for contract in Australian waters and (3) oil spill response practise suggests that 'name plate' pumping capacity are theoretical figures only.

		By way of comparison, the total amount of oil recovered using this method for the Deepwater Gulf of Mexico Spill was around 150,000m^3.

Notes to table:

Oil/solids:

- Worse-case discharge, highest shoreline loadings during the summer season is 28,000 tonnes.
- The 'bulk tonnes' is a 'bulking factor' applied to this oil coming ashore which represents emulsified oil mixed with sand, rock, seaweed, flotsam and other debris that it comes into contact with. The bulking factor that has been applied is 10:1, based on National Plan Guidance (Management and disposal of oil spill debris)

Oil/water:

- Based on all available tier one, and tier two equipment deployment.
- 22 x Enhanced C&R strike teams, each with four offshore surveyed vessels.
- Each team recovering between 78m^3 – 311m^3 of oil for each 24 hour period (8 hours of operations).
- Potential volumes of oil should VoO's become available are for between 1712m^3 – 6,845m^3 of recovered liquids per day, with all teams operating in ideal conditions.

More likely waste streams generated by the spill are looking at loadings on the shoreline where oil has the potential to be recovered, and re-assessing the likely volumes of the waste from these shorelines. In addition, scoping a realistic an on-water recovery operation that considers the available vessels in Australasia and large amount of down time due to unfavourable weather (80%+ annually due to adverse loadings on boom sets from unfavourable weather conditions).

Table 3-34: 'Credible volumes' of waste by stream

Stream	Quantity	Discussion
Oil/Solids	28,5000 m^3 predicted to strand Estimated to be bulked to ~285,000 m^3 of waste	The winter season modelling presents the greatest potential for shoreline clean up as contact is with the beaches and coastlines of the Eyre and Yoke Peninsulas, Kangaroo Island, then to Western Australia on the shorelines east of Esperance.
Oil/water	23,244 – 92,678m^3 oil over 149 days.	This is a more likely (yet still highly improbably) volume of oiled water that could be recovered using booms and skimmers in the Great Australian Bight. It assumes availability of appropriate VoO's and periods of stable weather that allow for some booming and skimming operations.

Notes to table:

Oil/Solids

- The 'bulk tonnes' is a 'bulking factor' applied to this oil coming ashore which represents emulsified oil mixed with sand, rock, seaweed, flotsam and other debris that it comes into contact with. The bulking factor that has been applied is 10:1, based on National Plan Guidance (Management and disposal of oil spill debris).

Oil/liquids

- Based on tier one and tier two equipment deployment.
- 2 x enhanced C&R strike teams, each with four offshore surveyed vessels (8 in total).
- Vessel numbers based using the BP support vessels and potential vessels of opportunity from Port Lincoln and surrounding areas.
- Each team recovering between 78m^3 – 311m^3 of oil for each 24 hour period (8 hours of operations).
- Potential volumes of oil should VoO's become available are for between 156m^3 - 622m^3 of recovered liquids per day, with both teams operating in ideal conditions.
- Annual time where conditions make it possible to available to operate in the GAB is <20% across the year.

Highest shoreline loading modelling runs are from the winter season. Highest loadings are shorelines to the east of the permit area (Kangaroo Island, the Southern Eyre and Yorke Peninsulas), and between Esperance and the cliff faces of the Great Australian Bight in Western Australia. Of these, the South Australia shores are the ones most likely to generate significant volumes of wastes.

3.11.4 Tanker/Storage Vessel

Once Containment and Recovery vessels recover sufficient waste oil/water to reach temporary waste storage capacity on board they will need to offload before they are able to continue recovery operations. The following options exist for offloading:

- Tanker to be based offshore in GAB with Ship to Ship (StS) transfer capability. Vessels offload in the field to tanker. Once tanker reaches capacity it sails for Kwinana or another of BP's refineries in Asia-Pacific. Operation involves an elevated level of risk due to hose handling and operations between moving vessels at sea.
- Tanker in Port Adelaide. Vessels return to port and offload. Once tanker reaches capacity it sails for Kwinana or another of BP's refineries in Asia-Pacific. Operation involves a lower level of risk due to hose handling and operations while in static port conditions.
- No tanker. Vessels return to port and offload to temporary storage or direct to tanker truck. Tanker trucks transport waste by road to designated local facility or to other refineries. Operation involves a level of risk due to a higher number of individual operations while in static port conditions.

For options 1 or 2 above, a tanker of no less than 35,000 DWT be either (1) spot charted by BP Shipping for the purpose of waste recovery and transfer or (2) a BP shipping tanker directed to undertake this function.

Options 2 and 3 will involve significant loss of time for the C&R operation, as vessels transit backwards and forward to the port.

Tanker Market

BP Shipping has a fleet in excess of 150 tankers worldwide, of which 109 are time chartered, and 45 of its own fleet. Within its own fleet, there are 34 of BP's own vessels that would be suitable for the GAB StS operations. These include:

Table 3-35: The BP Tanker fleet

Class	Number in Fleet	DWT
Bird Class	12	80-120,000
E Class	5	35-37,000
Virtue Class	12	45-79,999
V Class	2	161,000
R Class	2	109,000
Mariner Class	1	45,000

BP Shipping has indicated that, due to the nature of the Australian petroleum industry (As net importers of refined products) BP typically has between 3 – 6 vessels under BP charter within Australian waters at any one time.

In addition, tankers discharge finished products at the Adelaide bulk liquid terminal of periods of once every forty eight hours to meet demand from the South Australian market.

As such, a suitable tanker can be sourced at the time of spill, which will be appropriate to implement the StS option for GAB Oil Spill response operations.

3.11.5 Shoreline temporary storage

Shoreline temporary storage sites need to be established alongside shoreline access points. For each site, standardised setups based on estimated shoreline loadings and volumes

p/day to be moved through that location. The shoreline TRPs have identified as part of the site setup how this could occur.

Additional longer term temporary storage sites have been identified in Shoreline Logistics Profiles and the waste management sites listed in Section Five of this OPEP.

The Waste management TRP also notes the practises that will need to be implemented on the shoreline to reduce waste, segregate the types of wastes that may be generated, and the tracking of waste types from generation to final disposal.

Regional temporary storage

Along the GAB coastline, most towns have small transfer stations or former land fill sites that have been changed into waste transfer stations. These sites have a base level of permitting which will allow them to be used in emergency conditions as primary temporary storage sites.

Refer to section 5 of this document for this list of sites and contact details.

3.11.6 Final waste disposal options

Final waste disposal takes the form of three options – the landfills listed in section 5, along with two additional options below:

Enduring Storage Sites

Tellus Holdings Pty ('Tellus' – *www.tellusholdings.com*) offer two waste permanent waste isolation sites, both of which are in final stages of environmental approval. Both of these sites are engineered to receive wastes that are considered Class 4/5 (western seaboard) and Cat C to A (eastern seaboard). This allows both sites to accept any of the wastes that could be generated from the spill, and both sites have the potential to accept the total bounding volumes of solid waste from the spill.

The sites are within the excavated areas of a (1) salt mine and (2) a clay mine, which provide top and bottom impermeable layers that seal and encapsulate wastes infinitum.

Table 3-36: Waste management sites

Storage Site Type	Site Address	Waste Volumes
Chandler Salt Mine (South of Alice Springs, NT)	Access via Maryville Station, Maryvale Road, Titjikala, NT	>360,000 tonnes p/annum
Sandy Ridge Clay Mine, (Mt Walton East, WA)	Access via Mt Walton East Road, from the Great Eastern Hwy in Booradin, WA.	>100,000 tonnes p/annum

Upon receipt and then storage of waste Tellus will also offer to BP/Jurisdictions a Permanent Isolation Certificate that formerly receipts ownership of that waste with Tellus. Tellus have confirmed their capability and capacity to accept wastes as described above, subject to approval from the jurisdictional authorities to proceed.

Thermal Treatment Plants

TransPacific Industries (TPI) operate a range of different sized thermal treatment plants (TTPs), which use heat to remove organic containments from soils, and therefore produce a low hazard/nil hazard clean fill. This fill can be (1) returned to site, (2) placed in a low level landfill or (3) used for an industrial or residential construction purposes.

TTPs are portable, so can be shifted to an industrial area close to the waste generation point. They rely on large volumes of natural gas to operate (between 7 – 50 Gj/hr of operation), and produce atmospheric and noise emissions. Each plant will take between 8-12 weeks to mobilise and then setup.

Table 3-37: Thermal treatment sites

Thermal Treatment Plant Type	Types of wastes	Waste Volumes (treatment p/day, 12 hour shift)
'Baby' mobile direct fired desorption	Highly recalcitrant organic contaminants: dioxins and furans, PCBs, PAHs, heavy fuel oil such as hydrocarbons >C35, creosote and coal gasification waste.	Up to 60 tonnes
Co-current/Current direct fired desorption		Up to 360 tonnes

TPI have confirmed that they operate a number of TTPs that would be available for use, subject to these facilities being released from other contractual commitments.

3.12 Air Operations

Oil Spill Response Enabling Activity	Execution of concurrent aerial operations	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Aerial Operations Plan	Plan has been drafted.	Plan is in place

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Aerial Operations Planning	Implementation of plan concurrent with any aerial operations.	IMT log. Aviation log.

3.12.1 Deployment pathway

Table 3-38: Response resource actions

Asset owners/coordinator	**Action**
BP IMT	Using section 5 (table 5-23) to request medium term lease contract for the provision of 3 fixed wing aircraft suitable for ongoing overflight missions for GAB oil spill, to operate out of Ceduna. Appoint an Air Operations branch director.

The concept of operations for Aircraft Command and Control Planning requires:

- Clear separation of smaller and larger aircraft operating from Ceduna and Adelaide respectively,
- Offshore coordination of aviation assets provided for by a technical human resources working in the offshore command post,
- Clarity of missions and tasks for each aviation asset.

International assets such as OSRL heavy ADC aircraft require Civil Aviation Safety Authority Approval to operate within Australia.

The preferred aircraft and capabilities to execute the aerial response assumes that the initial response will be provided by a Twin Turbine Aircraft with 5+ hours of endurance (King Air or similar aircraft) for Reconnaissance, Observation and Air Attack Supervision and a number of Single Engine Air Tanker Aircraft configured with an Aerial Dispersant Capability (ADC).

To support the ADC operation the provision of a Search and Rescue capability is required. Helicopter SAR from Ceduna to provide support to the ADC operations overwater is required to retrieve any crew forced to ditch offshore, and a SAR vessel positioned between the Spill area and Ceduna to act as a safe ditching point in the event of an inflight emergency in a single engine aircraft is also required.

Task organisation will be through the Incident Management Team with the establishment of an Aviation Branch within the Operations Section. The Aviation Branch Director will assume overall control of aviation assets, while the Aviation Co-coordinator and Dispersant Operations Coordinator will direct the their respective Air Assets in adherence with any applicable SIMOPS protocols.

Aerial Operations being conducted will most likely include Surveillance to establish and monitor the spill location and behaviour, operational support to direct containment and recovery efforts, implementation and monitoring for effectiveness of the Aerial Dispersant Capability, SAR, as well as general logistical support and transport. Aerial Dispersant support will focus on the Application of Aerial Dispersant through the use of contracted AMSA aircraft and if required Large ADC Aircraft from OSRL.

SAR and Logistics aircraft will be employed as required to support the Incident Management Team, and ADC operations.

Single Engine ADC aircraft and SAR Helicopter support will be employed from Ceduna as the closest suitable operating base from the area, existing SAR rotary wing aircraft and crew transfer aircraft will also be tasked from Ceduna. If Large ADC aircraft are deployed they will operate from Adelaide Airport as the Ceduna base runway is unsuitable for large aircraft operations.

Two types of fixed wing aircraft have been identified as being preferred for the tasking of (1) aerial surveillance and (2) providing a platform for Air Attack Supervisors engaged in air dispersant tasks. Both types of aircraft can operate from Ceduna Airport, and have range sufficient to travel to the spill site then linger on target for several hours. These details can be found in the provisioning section of this OPEP.

A BP GAB specific Air Operations Plan has been developed

3.13 Vessels of Opportunity Program

Oil Spill Response Enabling Activity	Offshore and nearshore surveyed vessels that can be wet leased by BP to provide platforms for oil repose options	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
VoO Program Development	Register of suitable vessels developed. Terms of potential engagement negotiated with vessel owners. Maintenance of best endeavours access to suitable numbers of suitable (surveyed) vessels. Basic safety and operations training undertaken by BP with representative vessel operators.	Register of vessels. In-principle agreement between fleets of vessels and BP on terms of engagement.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
VoO Program Implementation	VoO program activated concurrently with offshore and nearshore oil spill response options. Numbers of vessels requested and operating areas are confirmed by vessel operators. Operational deployments and swings meet requirements C&R mission lengths (Ref: TRP).	IMT log.

3.13.1 Vessels of Opportunity

A variety of marine activities will need to be undertaken to mitigate, monitor or manage a significant oil spill.

This includes:

- Dispersant application and monitoring
- Safety vessel (for small aircraft dispersant operations)
- Surveillance and monitoring
- Wildlife response

- Containment & recovery
- In-situ burning
- on-site coordination for other marine and aerial operations
- Operational & scientific monitoring programs
- Shoreline tactical response plan implementation

Given that BP will have a maximum of 3 PSVs, additional vessels will need to be chartered for the purpose of the surge oil spill activities.

Vessels are currently being sourced and registered from a range of fleets around Australia and from South East Asia. These include:

- Tuna Fleet (South Australia)
- Sardine Fleet (South Australia)
- Prawn Fleet(South Australia)
- Oyster Fleet (South Australia)
- Dive Boats (South Australia)
- Charter Boats (South Australia)
- PSVs (Australian/SE Asia)
- Barges (Australian/SE Asia)

For the Australian fishing fleets located on the Eyre Peninsula, BP's VoO program will include signing an MoU with that industry's representative body, keeping a detailed list of the vessel that work in the fleet, their owners, and vessels statistics, and providing some basic level of training to a sample of the fleet.

BP also has access to vessel chartering services (tankers) via BP Shipping and contact arrangements for tugs and other support craft. See section 5.14 "Provisioning for oil spills".

In addition to the above BP can access the Clarksons Platou (Offshore) brokering report for spot charter offshore vessels. See section 5.14 "Provisioning for oil spill".

3.14 BP's Incident Management System (ICS)

Oil Spill Response Enabling Activity	Extended activation of an incident management system (IMS) – BP's ICS system	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Incident Control System	Role specific ICS aide memoirs, incident command centre locations pre-identified, IMHs in place, COP technology or dashboard support established, incident management plan ,	Emergency preparedness dashboard reporting

Oil Spill Management - competent human resources to implement IMT functions	Access to BP ANZ 24/7 roster of people trained as a member of the IMT. Access to BP MRT - global staff trained in ICS for IMT roles. Access to AMOSC, AMOSC CG, Industry Mutual Aid, AMSA NatPlan, OSRL, and other OSRO trained human resources.	Emergency preparedness dashboard reporting. AMSA MoU AMOSC Service Contract OSRL MSA.

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Incident Management Plan (IMP) activated	IMP call out activated and staff onsite.	As per the IMP call out timeframe of the IMT.

3.14.1 Incident Management System (ICS) - Spill Response Enabling Option

One of the core processes at the heart of ICS is the response planning cycle (the planning 'P'), whereby the incident management team undergo a deep dive process of information evaluation, goal setting, actions setting, plan writing and (later) plan evaluation.

The response planning cycle is outlined in greater detail below. The planning cycle will be used by BP for all level incidents until the incident is successfully resolved.

Response Planning Cycle

The Operational Planning Cycle is initiated for complex, long duration emergency responses when the facility response plan or initial Incident Briefing form (ICS 201) is not sufficient to address the incident issues. The goal is to develop an Incident Action Plan (IAP) which will achieve a proactive response by providing guidance to the tactical responders for the next operational period (NOP).

Considerations for transitioning to the proactive phase include:

- Does the entity have enough IMT personnel or the correct personnel on-scene to begin the proactive phase?
- Are the necessary management systems in place and functioning to allow the IMT to advance into proactive planning?
  - Communications management systems – is communication with all field elements possible?
  - Information management system – method for gathering field information, verifying and releasing to PIC/Liaison?
  - Resource management system – accountability for every person and piece major tactical equipment and their assignment?
- Does the team have good situational awareness of the situation?

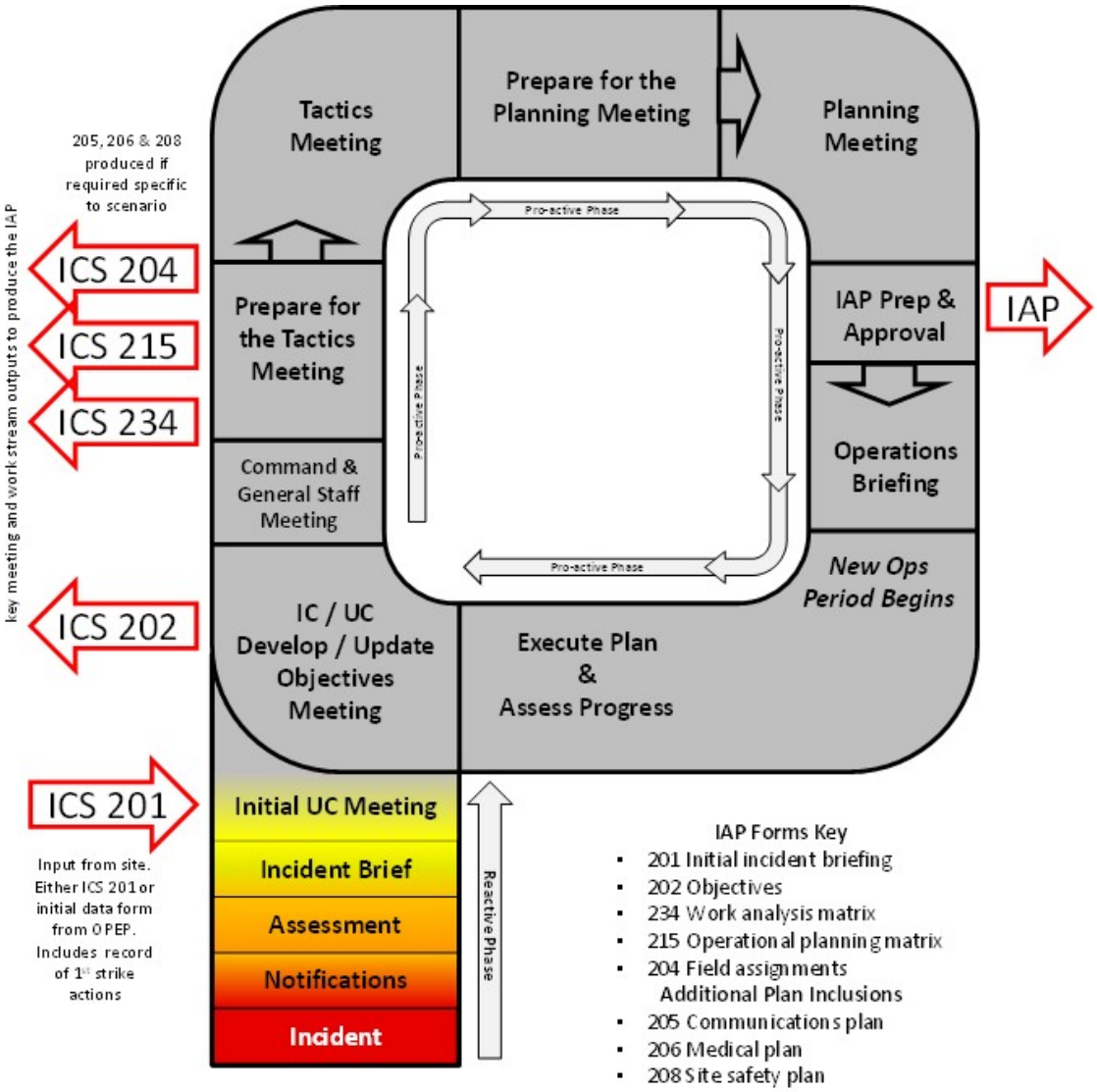
- Has the incident potential been fully assessed?

BP's IMH summarises the IAP development process by focusing on the final product of each cycle stage:

- IC/UC Objectives Meeting: establish objectives and priorities (ICS 202)
- Prepare for Tactics/Tactics Meeting: Document strategies and tactics to meet assigned objectives (ICS 234). Develop a draft Operational Planning Worksheet (ICS 215).
- Prepare for Planning Meeting: Logistics, Operations and Planning verifies acquisition of resources identified in Draft ICS 215.
- Planning Meeting: Present next operational period (NOP) plan, ICS 234 and ICS 215 (if necessary), to Unified Command for approval. Develop work assignments (ICS 204).
- IAP Preparation: Planning manages preparation of formal IAP.
- IAP Approval: finalise and approve plan.
- When translated to the proactive planning cycle the key inputs are shown in as per the below diagram and 'ideal' timetable.

As a part of the ICS, the Planning P (figure 3-10, below) is included;

Figure 3-10: The ICS Planning "P"



3.15 Simultaneous Operations

Oil Spill Response Enabling Activity	Offshore Coordination, Simultaneous Operations and Exclusion Zones	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Air Operations Plan	Plan has been drafted.	For all level 3 incidents
Adoption of ICS	ICS used across	For all incidents

Response		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
Offshore Command & Communications Support Facility	Vessel or platform that is situated in the field	IMT log. Arrival of dedicated vessel/platform for this purpose.
Aerial Operations Planning	Implementation of plan	IMT log. Aviation log.
Exclusion zones	Request from BP to CASA and AMSA to establish exclusion zones concurrent with implementation of oil spill response strategies.	IMT log.

Offshore Command and Communications Support Facility (Offshore Incident Command Post –OCCSF)

Due to the distance offshore and complex nature of any expected response in the GAB, a base for the On Scene Commander as per BP ICS structure will be required. This will be the Offshore Command and Communication Support Facility (OCCSF) and will be a large, offshore certified vessel. This would otherwise be known as an Incident Command Post, but is located offshore.

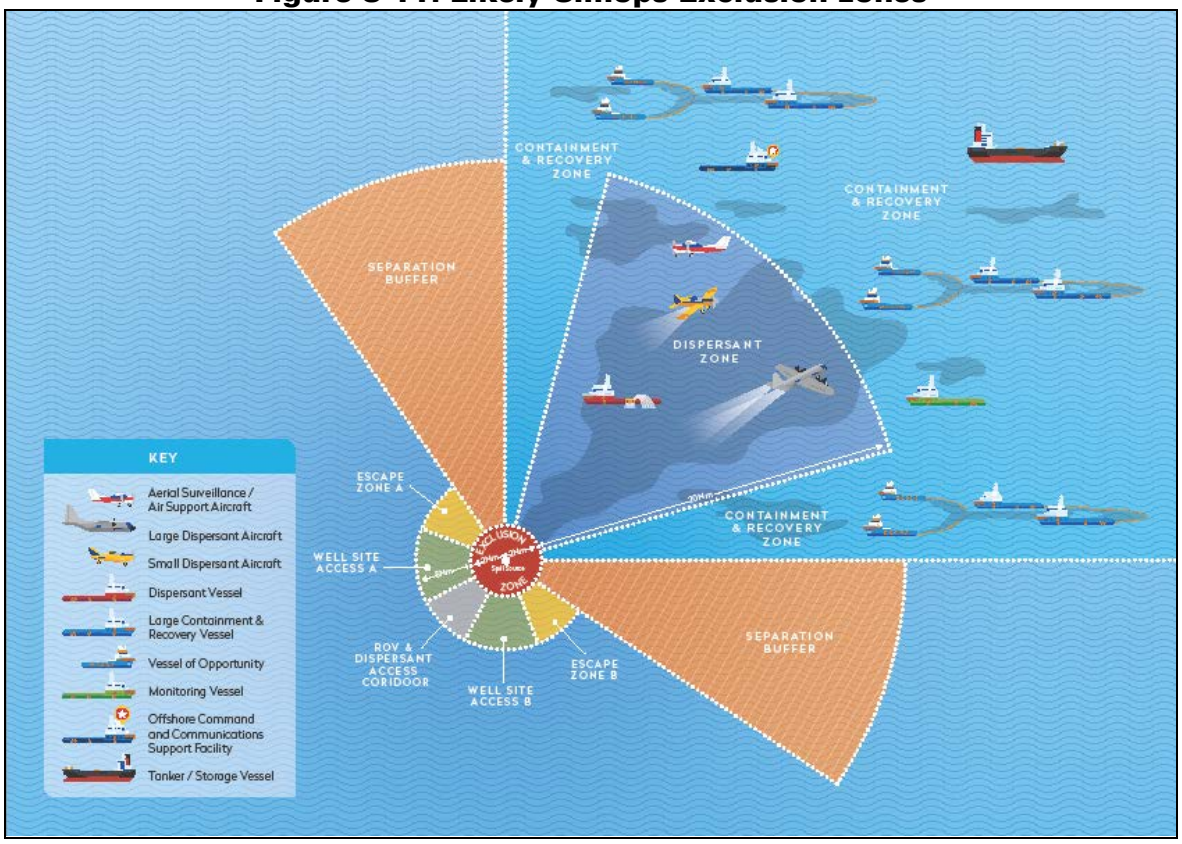
This facility shall act as a command and communications base all offshore activities. This would include aircraft, vessels and personnel conducting any number of operations, including: vessels and ROVs conducting subsea operations or relief well drilling, vessels and aircraft supporting on-water operations, such as containment and recovery and dispersant application, aircraft conducting surveillance, resupply and logistical support vessels, etc. Staff on-board this vessel must have the specific skills sets to handle approaching aircraft; operate as a central point of intelligence for in field oil slick movement and dispersant effectiveness operations; to relay to operational assets movement required.

The selected OCCSF will require X-band and S-band radars for at sea (well-site) vessel tracking and aviation tracking requirements and HF/VHF/UHF radio coverage in an operations room configuration.

GMDSS will also be available within the 'Operations Room'.

Whilst planning and tasking are completed by the Incident Management Team (IMT) and delivered by the Incident Action Plan, control of activities within the offshore application zones including any conflict resolution between SimOps will take place on board the OCCSF. The On-Scene commander on the OCCSF will be using a wagon wheel concept as below to de-conflict oil spill repose options:

Figure 3-11: Likely Simops Exclusion zones



Exclusion Zones

Aerial and marine exclusion zones will be established for two reasons. The first of these is to grant full geographical access control to the IMT, maximising other oil spill response operations using platforms in the area. Secondly, to prevent secondary contamination and pollution of these vessels and areas that they transit through the AMBA.

Exclusion zones will be established by contacting the Civil Aviation Safety Authority and requesting that a NOTAMs be put in place. The second will be by contacting the Australian Maritime Safety Authority and requesting the same for marine operations.

3.16 Choosing Oil Spill Options – Net Environmental Benefit Analysis

Oil Spill Response Enabling Activity	The process of NEBA is one by which the benefits and dis-benefits of an oil spill response option are assessed. This allows the IMT to make an informed decision as to whether that option should be implemented as part of the response.	
Preparedness – assurance and proof of capability		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
NEBA process developed	Process in place.	NEBA training rolled out to Environment Unit Lead
NEBA conducted as part of EP	completed	EP

Response (what will we do? In what time frame and how much)		
Control Measures/Tactics to be used	Performance Standard	Measurement Criterion
NEBA process used for all spill response options	NEBA to be utilised during the major exercise Prior to implementation of a spill response option, an Operational NEBA review will be led by the Environmental Unit Lead. Response Options will only be implemented if they will likely result in a net environmental benefit. NEBA is to be based on real time data of oil types, volumes and likely trajectory, and the sensitivities that the oil could encounter on its trajectory. NEBA will be undertaken in conjunction with subject matter experts particular to that sensitivity with the potential to be affected.	Post exercise report IMT log. IAP appendix with NEBA attached.

3.16.1 Preliminary Net Environmental Benefit Analysis (NEBA)

The potential environmental impacts associated with each of the proposed response strategies has been described in the Section 7 of the EP. In planning a response, consideration of these response strategy impacts against the direct impacts of the hydrocarbon spill on the receptors is undertaken via a Net Environmental Benefit Analysis (NEBA) process, as outlined in the IPIECA industry good practice guide.

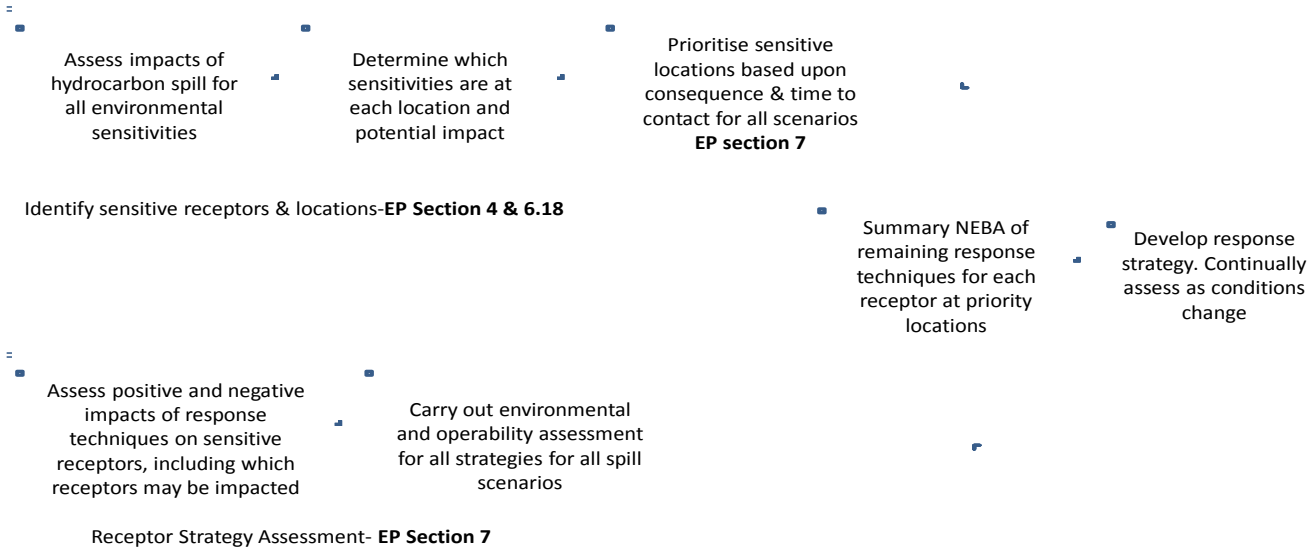
This NEBA process involves identification of sensitive receptors potentially at risk of impact, and their key locations, then consider the positive and negative environmental impacts for each of the proposed response strategies.

This enables identification of the most appropriate operationally viable strategies for each sensitive receptor location, and these strategies to be validated and adjusted as conditions evolve.

The NEBA process is described in the figure 3-12, and will be adopted in the event of a spill in accordance with the OPEP.

A appropriate NEBA, based on the spill scenario modelling, will be undertaken in preparation of the drilling program and oil spill response exercises.

Figure 3-12 Preliminary NEBA process



4 Response Initial Actions – Level Three WCD or >500m³

4.1 Response Level Assessment Checklists

Step One: Incident Assessment:

Assess response level:

Table 4-1: Overall Response Level Indication

Level 3	Level 2	Level 1
An incident likely to have a wide ranging impact on the public, the environment, and BP. May require the mobilisation of external state, national or international resources to bring the situation under control.	An incident that cannot be controlled by the use of the MODU resources alone and requires external support and resources to combat the situation; or An incident that can be controlled by the MODU but which may have an adverse impact on the public or the environment.	An incident which is likely to have no adverse impact on the public or the environment. Control of the incident will be through the use of resources normally available at the MODU or vessel concerned without the need to mobilise the BP IMT or seek external assistance.

In the following table:

- Selection of any answer in Level 3 indicates a Level 3 response should be undertaken.
- Selection of any answer in Level 2, with no affirmative response in Level 3, indicates that Level 2 response options should be considered.
- A Level 1 response is considered appropriate only if no response options are selected in any other column.

Table 4-2: Specific Response Level Determination

Response Level Indication	Level 3	Level 2	Level 1
Spill Details			
Release Volume	> 500m^3	5m^3 – 500m^3	< 5m^3
Continuous release	Yes	No	No
Hydrocarbon has high persistent component	Yes	Yes	No
Resolution likely to take	> 2 wks	48hrs to 2 wks	< 48hrs
Spill Impact			
Actual or potential threat to, or loss of, life	Yes	No	No
Adverse impact on public or environmental sensitivities	Yes	Possible	No
Oil will reach the shoreline	Yes	No	No
Media coverage likely	International	National	local
Likely Resources Required			
International resources required, International agencies and government involved	Yes	Possibly	No
Regional (Australia wide) resources required, multiple agencies involved	Yes	Yes	No
BP resources on hand will be sufficient	No	No	Yes

Figure 4-1: Criteria for level 3

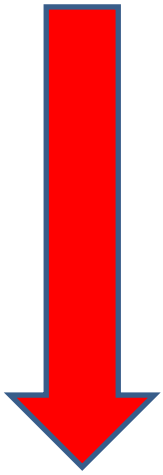
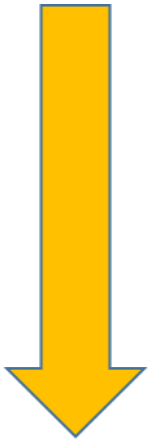
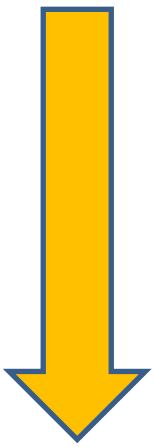
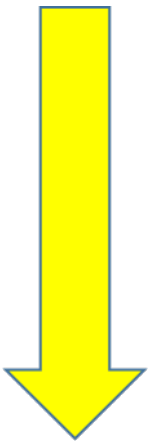
Level Three Criteria		
Features	**Yes?**	**No?**
• Loss of well integrity • Actual or potentially serious threat to life, property, industry • Major spill beyond site vicinity. • As a guide – spills above 500 m³ (>7,000 bbl.) • Any shoreline environmental impact • Level 2 resources overwhelmed, requiring international assistance • Level 3 resources to be mobilised. • Significant impact on local communities. • International media attention • An incident which has a wide ranging impact on BP and may require the mobilisation of external state, national or international resources to bring the situation under control.		
LEVEL THREE INCIDENT - (IMT Immediate activation) Refer to Checklist One for further actions		**Check Level Two Criteria**

Figure 4-2: Criteria for level 2 incident

Level Two Criteria		
Features	**Yes?**	**No?**
All spills between 5 and 500 m³ (36–7,000 bbl.) • Danger of fire or explosion. • Non continuous release. • Concentrated oil accumulating in close proximity to the site or vessel. • Very unlikely to impact shorelines • Diesel, SBM or hydraulic oils • Small crude spills • An incident that cannot be controlled by the use of the MODU resources alone and requires external support and resources to combat the situation; or • An incident that can be controlled by the MODU but which may have an adverse effect on the public or the environment.		

LEVEL TWO INCIDENT - (IMT Immediate activation) Refer to Checklist Two of this section for further actions	**Check Level One Criteria**

Figure 4-3: Criteria for level 1 Incident

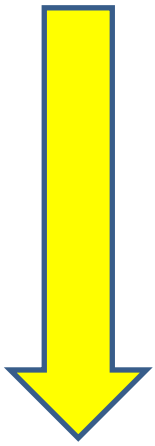
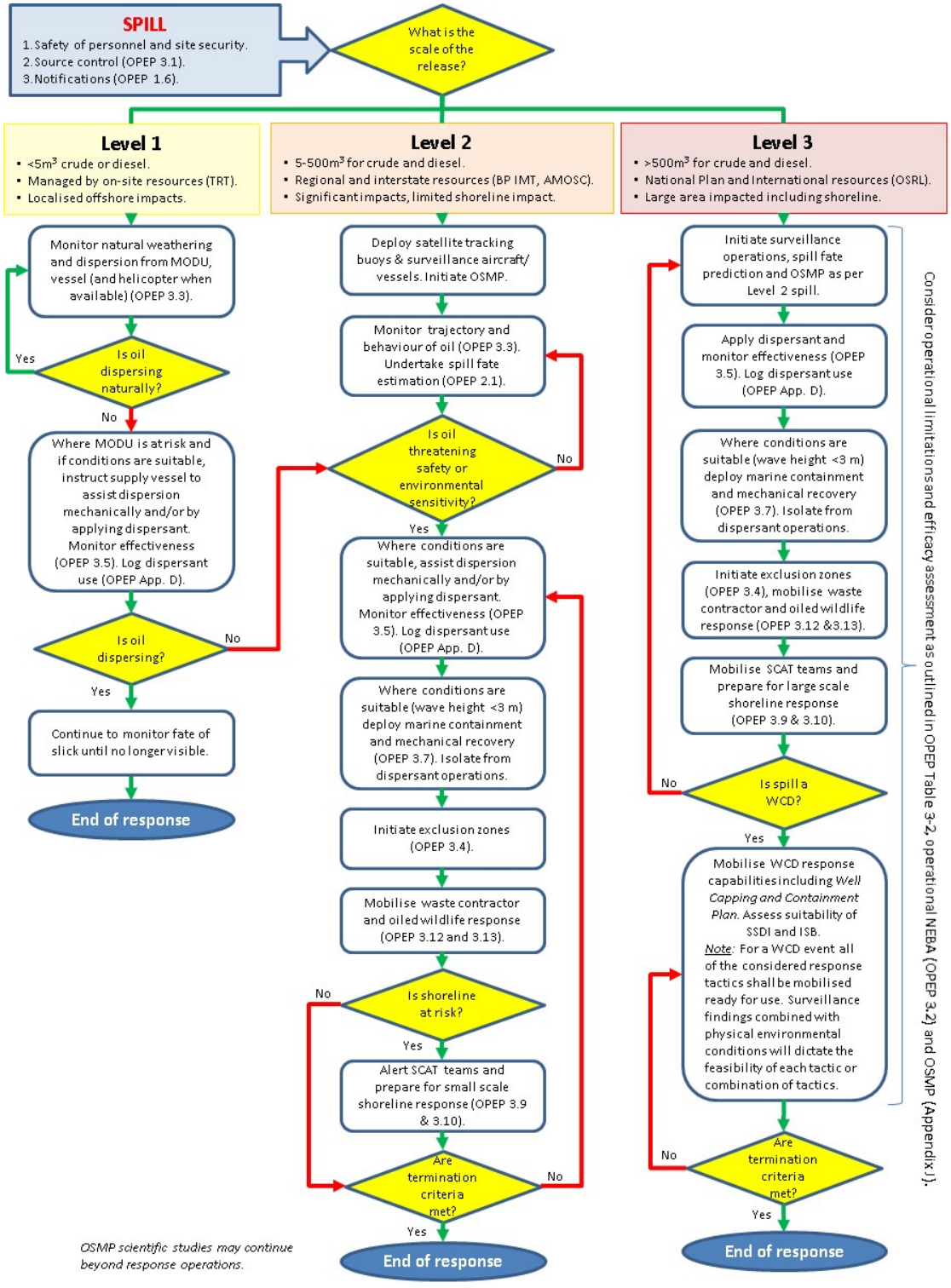
Level One Criteria	
Features	**Yes?**
As a guide only – spills up to 5 m³ (0–36 bbl.)	
• Oil is contained within the incident site.	
• Spill occurs within immediate site proximity.	
• Discharge in excess of permitted oil in water (OIW) content (15 ppm).	
• Able to respond to the spill immediately.	
• As a guide only – spills up to 5 m³ (0–36 bbl.)	
• Oil is contained within the incident site.	
• An incident which will not have an adverse effect on the public or the environment which can be controlled by the use of resources normally available at the MODU or vessel concerned without the need to mobilise the BP IMT or seek other external assistance.	
LEVEL ONE INCIDENT - (IMT leader informed) Refer to Checklist Two of this section for further actions	

Figure 4-4: Incident level decision tree



Checklist One

Level 3 Response Actions Offshore				
Immediate Response Actions: Leading into an operational Incident Action Plan (IAP)	**Initiated by**	**Action completed**	**Additional Detail**	**Performance target**
Oil Spill is Reported		✓		
Undertake Assessment – spill has been reported, safety issues are satisfactorily addressed			OIM to complete all immediate safety actions with MODU before commencing the environmental damage assessment	
1. Assessment				
Assessment data required • What is it? • Where is it? • How big is it? • Is the source contained? • Where is it going? • What is in the way? • What is happening to it? • What is the Worst Credible Scenario? • What can we do about it?	OIM		OIM or delegate to complete assessment; report to BP IMT via WSL • what type of oil and how was this spilled? • where is the slick now and is it a continuous release or a 'one-off'? • estimate in length x width and if possible, thickness by colour of oil? • what is your estimate of the source? • what is the heading of the slick? • have all vessels been alerted to remain clear of the slick? • what is the weather doing – does the weather have an effect on the slick • estimate the worst case for the oil spilled • take the actions to; – assess severity of spill, – confirm what level of spill this is,	Within 20 minutes and; Confirm level of spill within

			– take the actions as required by this OPEP	30 minutes
2. Notifications				
Issue POLREP to AMSA	OIM		02 6230 6811 mdo@amsa.gov.au	immediate
Notify BP IMT via Well Site Leader (WSL)	OIM		0457 520 047	As soon as practicable
Alert support vessel	OIM		VHF channel 12	immediate
Alert supply base	OIM		08 8202 6410	As soon as practicable
Alert Bristow helicopters	OIM		08 9475 1704	As soon as practicable
3. **Response Actions; following assessment**				
Launch tracking buoy (support vessel)	OIM		Deploy into leading edge of slick if safe to do so	Immediate
Make ready support vessel dispersant spray system	OIM		Each vessel is equipped with dispersant and dispersant spray system	As soon as practicable
Mobilise additional support vessel	OIM		Each vessel is equipped with dispersant and tracking buoy	As soon as practicable
Mobilise helicopter for aerial surveillance	OIM		Consider hours of darkness	As soon as practicable
Hand over to IMT once formed	OIM		Ensure ICS 201 is completed on handover	
Level 3 IMT Response Actions				
Immediate Response Actions: Leading into an operational Incident Action Plan (IAP)	**Initiated by**	**Action completed**	**Additional Detail**	**Performance target**
1. Assessment				
Obtain situations awareness from OIM	IC		Report to IMT I/C via Wells Manager	Within 60 minutes of call-out
Evaluate ICS 201 / report from offshore	IC			
Instigate trajectory modelling	PSC		AMOSC holds contract with APASA	
2. Notifications				
Notify BP internal	PIO		VP BP DAPL	
External Government Agencies	PIO		AMSA - 02 6230 6811	Within 2 hours

			NOPSEMA – 08 6461 7090 OPICC – when formed NOPTA – 08 6424 5300 Federal Dept. of Environment – 02 6274 1372 WA SMPC – 08 8248 3505 (if likely State water impact) SA SMPC – 0419 960 621 (if likely State water impact) Victoria SMPC - NSW SMPC Tasmania SMPC	Within 2 hours (or as soon as practicable Written Report within 7 days Within 2 hours Within 2 hours Within 2 hours Within 2 hours Within 2 hours
Response Agencies	LOGS		AMOSC - 0438 379 328 OSRL – +65 6266 1566 (Singpaore) +44 2380 331 551 (UK)	As soon as required As soon as required
3. First Strike Response Actions; following assessment				
Dispersant				
Initiate vessel dispersant application	OPS		Initiate and approve in-field vessel dispersant. Ref Dispersant TRP Report / assess effectiveness of dispersant Initiate VoO program for additional vessels	Within 1 hour of notification Visual observation from field Within 4 hours
Mobilise AMSA dispersant resources (via AMOSC - 0438 379 328)	LOGS		4 x AFEDO Spray Set 144m^3 Slickgone NS 100m^3 Slickgone EW Nat Plan responders	As per dispersant TRP
Initiate aerial dispersant application	OPS		Activate FWDAC via AMOSC Produce air operations plan for IAP & Complete ICS 220 air ops schedule Assist with FWADC safety plan (AMSA/AMOSC)	Within 1 hour of notification Circulated prior to first sortie ICS 220 approved JSOPs as per dispersant TRP
Mobilise dispersant to airports	LOGS		FWADC requirements to Ceduna: coordinate with AMOSC Large a/c requirements to Adelaide: coordinate with AMOSC	Within 1 hour of notification
Establish air ops base at Ceduna	OPS		Appoint team leader for air ops base Assign team members to air ops base	Within 1 hour of notification
Mobilise resources to Ceduna	LOGS		Mobilise AMOSC resources 150m^3 Slickgone NS (sourced from Geelong & Hamilton Hill WA) 1 x Dispersant Transfer Pump 2 x Core Group 2 x Aerial Observer	Follow dispersant TRP

			1 x TO (Air Ops Planning) Then 54m³ batches to Ceduna per day (From Day 6 – light aircraft operations 1 x Dispersant Transfer Pump Mobilise AMSA resources Manage the FWAD Contract 1 x air base operations liaison 2 x Air Attack Supervisor Mobilise aerial observation a/c 3 x twin engine a/c: work with aviation specialist	
Establish air ops base at Adelaide	OPS		Appoint team leader for air ops base Assign team members to air ops base	Within 1 hour of notification
Mobilise resources to Adelaide	LOGS		Mobilise AMOSC resources 150m^3 dispersant (sourced via AMOSC & GDS) 1 x Dispersant Transfer Pump 2 x Core Group 2 x Aerial Observer Then 54m³ batches to Ceduna per day (From Day 6 – light aircraft operations 1 x Dispersant Transfer Pump Mobilise OSRL a/c resources Aircraft; 2 x 727 Aircraft; 1 x Lockheed L-100 Aircraft; Flight crews to cover 10hr/day for up to 14 days 1 x Liaison Officer for IMT 90m³ batches to Adelaide per day (From Day 4 – for large aircraft operations) Mobilise aerial observation a/c 3 x twin engine a/c: work with aviation specialist	Follow dispersant TRP
Containment & Recovery				
Establish Marine ops base at berth 25	OPS		Appoint team leader for air ops base Assign team members to air ops base	Within 1 hour of notification
	LOGS		Activate PSV#1 & PSV #2 for C&R operations – weather permitting Mobilise PSV #3 and PSV #4 BP GAB Supply base to coordinate load-out of PSV #3 and PSV #4 with Containment & Recovery equipment Coordinate deployment to conduct C&R' operations with PSV #1 &	Within 1 hour of notification As detailed in C&R TRP

			PSV #2 – Advise Adelaide Operations base of plan Mobilise AMOSC Resources All available offshore boom (16 reels RoBoom 1500mm x 200m ea.) All available brush skimmers All ancillary equipment to support C&R offshore operations 2 x AFEDO Spray Set 2 x Vikospray Systems 1 x Boom Vane Dispersant Spray System 2 x TO 8 x Core Group Mobilise OSRL - Mobilise marine response equipment and personnel to Port Adelaide Operations base for marine operational taskings	
Establish Marine ops base at Port Lincoln if required	OPS		Appoint team leader for air ops base Assign team members to air ops base	Within 1 hour of notification
Commence VoO program	LOGS		Activate VoO program as per plan Mobilise resources as per Ops requirement	
In-situ Burning (if appropriate)				
Source and mobilise ISB capability	LOGS		Activate OSRL – request ISB booms/equipment from Singapore/UK Initiate BP Brazil transfer of fire boom to Adelaide	
Oiled Wildlife Response				
Initiate oiled wildlife response program	OPS		Activate OWR plan and personnel – use AMOSC to coordinate NOTE; oiled wildlife response to actual wildlife reports would not be expected for several days Establish expected region of impact and initiate response as per Oiled Wildlife Response Plan	Within 12 hours of notification Within 72 hours- onsite locations established as treatment centres
Waste Management				
Initiate waste management program	LOGS		Based on expected region of impact, initiate Waste Management Tactical Response Plan For offshore waste stream – liquid waste only	Within 24 hours- ref Waste TRP

Checklist Two

Level 1 or 2 Response							
Strategy	Oil Type: Drilling Mud	Oil Type: Diesel/Jet A-1	Oil Type: Crude Oil	Actions	Initiated by	Completed	Additional details
Monitor & Evaluate						✓	
Spill is reported to the OIM via Rig control room. Actions are for OIM or delegate.				What is it? Where is it? How big is it? Is the source contained? Where is it going? What is in the way? What is happening to it? What is the Worst Credible Scenario? What can we do about it?	OIM		As soon as reasonably practicable complete an ICS 201 and forward it to the BP IMT duty incident commander.
				Complete notifications	OIM		As per section 8.1
				Gain situational awareness Vessel reports Deploy tracking buoy, if appropriate to spill size & type Aerial observation (via Bristow) if appropriate	OIM		
Dispersant Application							
Dispersant is only appropriate for crude oil. Can be used to disperse crude oil to reduce VOCs that present a safety risk.				Following assessment conduct test spray via PSV	OIM		As required
				Initiate first strike dispersant from support PSV	OIM		
				Report actions to BP IMT duty incident commander	OIM		
Oiled Wildlife Response							
				Observe and log any visible wildlife, assess potential for oiling	OIM		Appoint observers

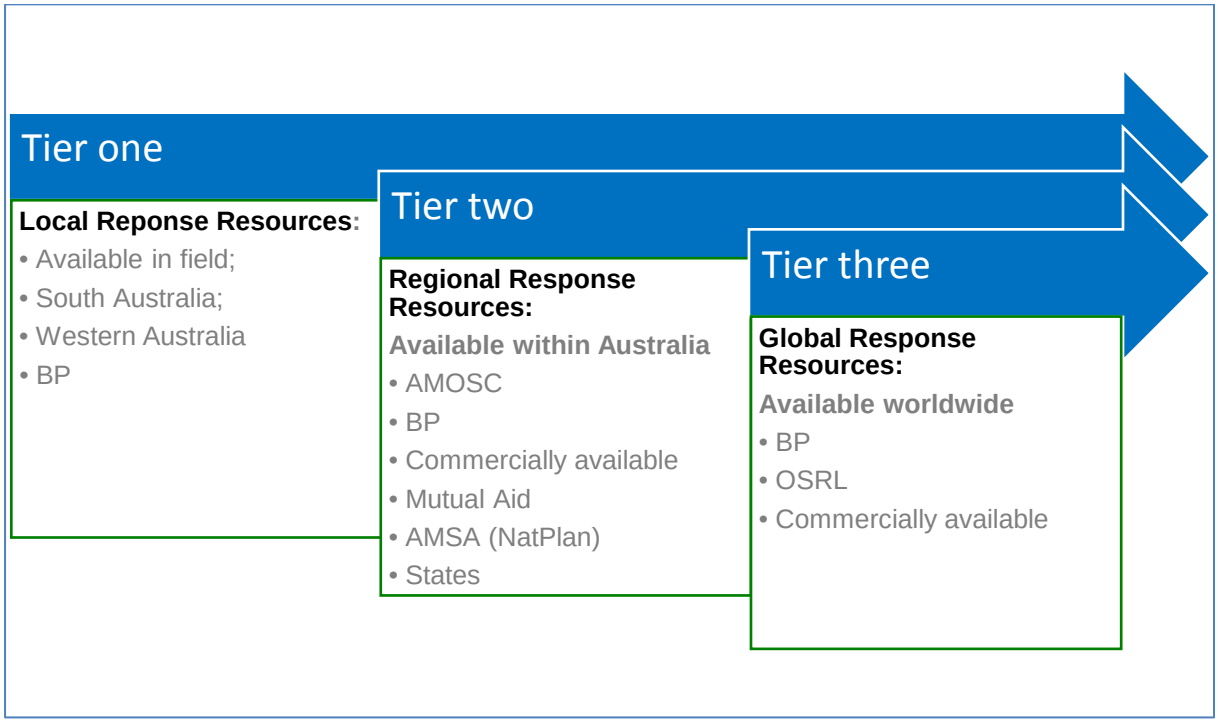
	Report to BP IMT duty incident commander	OIM		
	Mobilise oiled wildlife response plan	IMT		

5 Provisioning of Oil Spill Response Options

5.1 General – Providers of Equipment, Technical services and Human Resources

Logistical and support arrangements for the supply of equipment and resources will operate in a tiered approach as outlined in the below Figure 5-1:

Figure 5-1: The Tiered Response Arrangements



BP Response Personnel

BP maintains in Perth a capability to stand up an IMT within an hour of call out. This team is staffed 24/7, and is drawn from a pool of 50 trained responders. Additionally support will be given from the BP businesses within Australia, primarily at a first instance personnel from Kwinana Refinery, W.A. Kwinana Refinery has an established and experienced IMT. BP also has other experienced IMT staff wihin the Australian Downstream businesses outside of W.A, who in the event of a incident, will support the response, as part of their Federal behaviour commitment. If required, staff will progressively be supplemented by additional personnel, from with the Asia-Pacific region, and then globally,as outlined in BP's Incident Management Plan. Upon notification of a level three incident, the IMT will scale appropriately in size and scope

Upon notification of a level three incident, this team will grow in size and scope (all operation and tactical levels across the maritime, shoreline and aerial domains) to manage the impeding work load that a level three incident will require. Should additional personnel be required to supplement the Perth IMT, BP has access to additional people, initially through the BP Mutual Response Team.

The BP Mutual Response team (MRT), is a global organisation of BP staff and trusted contractors, who in the event of an incident, may be mobilised to assist any BP business meet the response priorities of People, Environment, Property and Reputation. In the event of an incident, the Perth IMT Incident Commander will identify specific roles that are required, which will be requested via the Perth IMT logistics section to the global response management team.

The global response manager will advise the IMT Logistics section which specific MRT resources can be deployed. Additionally, the global response manager will notify the IMT Logistics section when the MRT is close to becoming fully utilised; communicating the potential need to invoke additional resource needs.
In addition, BP can also draw on additional personnel from:

- AMOSC
- AMOSC Core Group
- Australian Industry Mutual Aid
- National Plan National Response Team members and
- Private contractors and other Not for Profit third parties.

Approximate numbers of the BP MRT responders and their skills sets/role setting can be found in table 5-1:

Table 5-1: BP MRT resources (supplementary to BP upstream Australia and other BP Australia Entities). These numbers are subject to change and are monitored by the BP Group C&CM team.

	IMT Role	Western Hemisphere	Europe, Middle East, Africa	Asia Pacific / Australia
Command Staff	Deputy Incident Controller	8	10	8
	HR Officer	2	4	
	Information Office	6	8	2
	Legal/Law Officer	5		
	Liaison Officer	3	1	1
	Safety Officer	10	2	7
	Security Officer	1	1	2
Finance Section	Finance Section Chief			1
	Deputy Section Chief	1		
	Finance, Cost /Accounting	2	1	2
	Finance Procurement Unit	1		1
	Compensation/Claims Unit	1		1
	Finance Section Staff		1	
Logistics Section	Logistics Section Chief	1	2	
	Deputy Section Chief	2		1
	Service Branch Director	4		
	Support Branch Director	4	2	
	Vessel Support Unit Lead		1	
	Logistics Section Staff		8	
Operations Section	Ops Section Chief	4	7	2
	Deputy Section Chief	2	1	
	Recovery & Protection Branch Director			1
	Air Operations Branch Director	3	1	
	ER Branch Director	3	2	
	Fire Specialist		1	
	Salvage Branch Director	3		
	Site Safety Officer	7	1	
	Staging Area Manager	4	1	2
	Operations Section Staff		8	
Planning Section	Planning Section Chief	5	5	1
	Deputy Section Chief	8	1	
	Situation Unit Lead	11	22	
	Demobilisation Unit Lead	1		
	Documentation Unit	7		3
	Environment Unit Lead	5	4	1
	Environment Unit Staff	1	2	
	Resource Unit Lead	6	1	
	Industrial Hygiene Unit		1	1
	Field Observer		1	
	Planning Section Staff	1	9	2

	IMT Role	Western Hemisphere	Europe, Middle East, Africa	Asia Pacific / Australia
	MRT trained, unassigned	59	70	37
	Regional Totals	183	180	79

Tier 1 – Local Response Resources

BP available resources consist of the stockpiles of oil spill equipment and assets on the OGW and vessels within the permit area.

Tier 2 – Regional Response Resources

These resources include the equipment from the BP Stockpile in Adelaide, as well as those from the States of Western Australia and South Australia.

Mobilisation of supplementary tier two equipment via AMOSC provides access to the nationwide AMOSC equipment stockpiles, and AMOSC member company mutual aid. BP will also link to the AMSA National Plan equipment stockpiles, which can also link into jurisdictional equipment stockpiles. Figure 5-2 shows the locations of stockpiles.

Section 5 provides a detailed list of national resources available through BP, AMOSC, AMSA, and the National Plan arrangements.

Figure 5-2: Australian Tier 2 Response Resourcing

BP GAB Supply Base, Adelaide
BP GAB Supply Base, Adelaide will hold a stockpile of shoreline protection and clean-up equipment and resources. BP's equipment stockpile in Adelaide is listed below (table 5-2). These will be supplemented with equipment from:

AMSA
BP have access to AMSA equipment Australia wide through AMOSC and the National Plan. AMSA maintain significant stockpiles of equipment in Adelaide, Brisbane, Dampier, Darwin, Devonport, Fremantle, Melbourne, Sydney, and Townsville. A full inventory of AMSA equipment is available from the AMSA website:
www.amsa.gov.au

AMOSC
BP have access to AMOSC equipment and resources Australia wide. Mobilisation time to Adelaide for the bulk of the equipment, based in Geelong, is approximately 14 hrs. Additional equipment in Fremantle, Exmouth and Broome can be mobilised to BP Adelaide in approximately 36, 51, 47 hrs respectively. This includes an allowance of 4hrs for truck availability/sourcing and loading. A full inventory of AMOSC equipment is available from the AMOSC website *http://www.amosc.com.au/equipment.php*

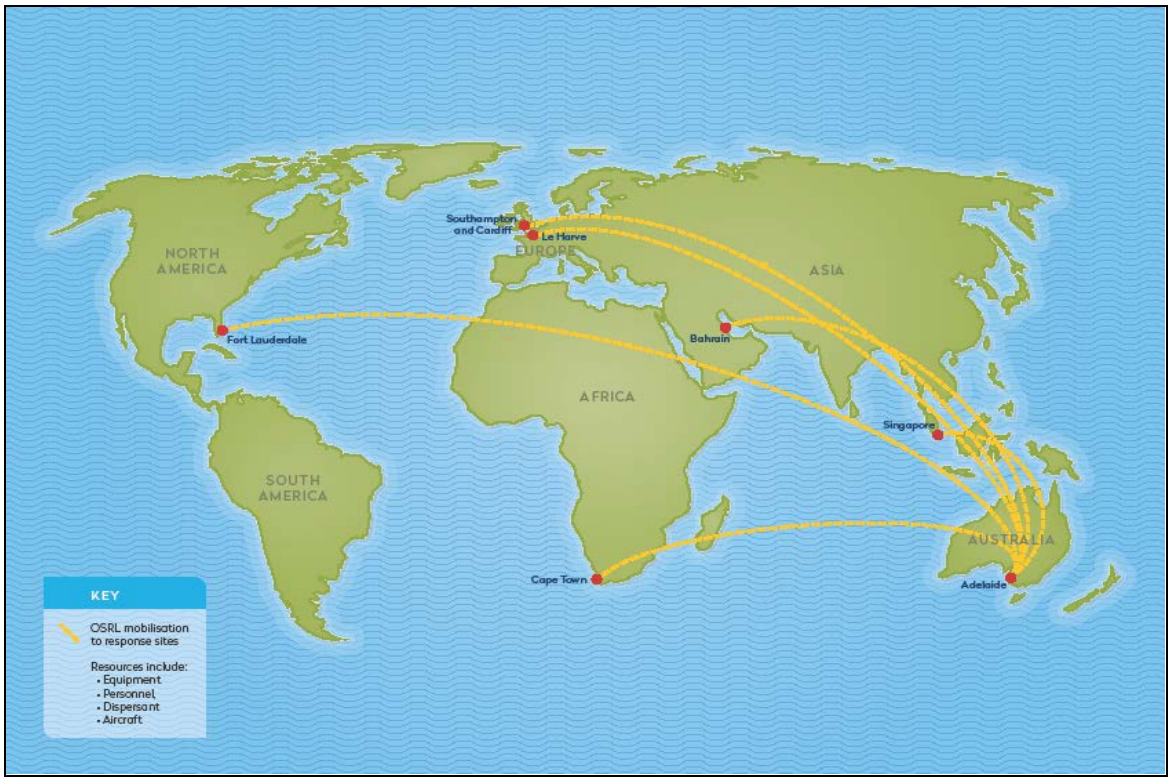
Table 5-2: BP supply base OSR equipment

Equipment or Package	number / quantity	Notes
Dispersant Dasic Slickgone NS or Dasic Slickgone EW	50m^3	In 1m^3 IBCs
Vessel mounted dispersant equipment sets	6	Ayles Fernie BS 100 AFEDO sets
Marine Resource Protection Solid floatation boom (500m) system	2	Self-contained containerised unit comprising 500m boom, anchors + moorings and bridles
Shoreline Packages	4	Boom (500m) Oil recovery skimmer > 10m^3 hr^{-1} (viscous oil capable) Temporary storage tank minimum 9m^3
Satellite Tracking Buoys (iSphere)	4	1 for storage on the OGW 3 for deployment via PSV
Liquid transfer system (viscous oil capable)	2	For shoreline transfer or vessel unloading
Offshore containment & recovery systems	4	200m offshore rated boom (RoBoom 2000) Oil recovery skimmer rated > 50m^3 hr^{-1} (viscous oil capable) All ancillaries, power-packs, hoses, tow bridles etc…

Tier 3 – Global Response Resources

When national resources are insufficient to meet the requirements of the incident, additional resources, personnel and equipment shall be sourced internationally from Oil Spill Response Ltd, through the Singapore base, and then from its other bases around the world to Adelaide. If needed, additional BP global resources from other BP businesses can be mobilised to Adelaide as well. Figure 5-3 provides an overview of the main tier three response bases around the globe. Furthermore, BP has access to the Global Response Network, via OSRL.

Figure 5-3: Main locations of OSRL Tier 3 Response bases around the globe



OSRL

From the BP global Tier 3 response contractor (OSRL) BP can access 50% of the available stock. To this end the figures quoted for OSRL are representative of 50% of the total stockholding. A full inventory of OSRL equipment is available from the OSRL website: *http://www.oilspillresponse.com/activate-us/response-equipment*

Mobilisation times for OSRL from the UK to Adelaide are between 3-5 days and from the Singapore base between 2-4 days.

Table 5-3: Non-BP Australian based resources

	Unskilled Labour	Shoreline Team Leader	Equipment Operators	IMT – team members	IMT – section chiefs/section	IC or IC Advisor	Aerial Surveillance	Oiled Wildlife – Mgt./ Coordn.	Oiled wildlife – Field
AMOSC staff1	-	10	6	7	4	3	6	2	2
AMOSC Contractors	-	3	3	3	3	1	0	2	2
AMOSC CG2	124	101	101	26	-	-	6	-	-
OWR Team3	-	-	-	-	-	-	-	20	22
BP – DAPL	-	-	-	25	20	5	-	-	-
AMSA – NRT4	-		35	28	28	-	7	-	-
AMSA – NRST4	TBA					-			100 (est.)
WA – SRT5	TBA					-			(as per OWR Team)
SA – SRT5	TBA		6	TBA					
OSRL	-	TBA	TBA	18	TBC	-	TBC	TBC	-
Third Party6	10 - 15,000	-	-	-	-	-	-	-	-

Notes to table:
1 – AMOSC staff are able to support OSR across a variety of operational and management functions.
2 – AMOSC CG are all required to undertake base training in operations, before progressing to more advanced management or controller roles. Refer to AMSOC CG policy for further information. CG are able to support a variety of OSR functions.
3 – This group comprises DPAW and AMOSC (industry) OWR trained personnel, along with industry mutual aid.
4 – This number is not verified by AMSA. It represents the minimum commitment per jurisdiction required under the inter-government agreement. NRST are additional roles that are filled by discretion by the jurisdictions.
5 – There is overlap between SRT resources and the NRT resources. These numbers are being sourced.
6 – Labour hire companies are providing national estimates of personnel who could be deployed into the spill.

5.2 Resourcing by Response Option

This section details the arrangements in place to source/acquire the primary pieces of oil spill response equipment required to implement the oil spill response options for a level three incident.
In most instances, detailed call outs, procedures and contracts reside in other documents, i.e. TRP's and enabling documents. The three major oil spill response organisations (OSRO's) that will be mobilised immediately in the event of a level three incident are AMOSC, AMSA and OSRL. Their contact details for mobilisation of resources are provided in Table 5-4.

Table 5-4: Mobilisation contact details of the major response providers AMOSC, OSRL and AMSA

AMOSC	AMOSC can be activated by calling: 24 hour emergency phone **0438 379 328** The following "Company Authorities AMOSPlan" (CAA) are authorised to mobilise AMOSC resources on behalf of BP: • VP BP Australia Upstream • VP GWO New Ventures • BP Incident Controller • BP Business Support Team Leader
OSRL	OSRL can be activated by calling: • SINGAPORE **+65 6266 1566** • UK **+ 44 (0) 23 8033 1551** Mobilisation Authorisation and Notification Forms can be downloaded from: *http://www.oilspillresponse.com/activate-us/activation-procedures*
AMSA	AMSA will coordinate the provision of NatPlan oil spill response equipment to BP. Phone: **02-6230 6811 (24/7)** Email: **mdo@amsa.gov.au**

5.3 Surveillance, Modelling & Visualisation

Table 5-5: Surveillance and Modelling resources with contacts

Resource – type, kind and #	***Owner***	***Contact Details***
Oil Spill Trajectory Modelling	BP – In-house	Via Australia CCM
Oil Spill Trajectory Modelling	APASA ASA via AMOSC	**0438 379 328**
Oil Spill Trajectory modelling	Via OSRL	**+ 44 (0)2380 331551** (UK) **+65 6266 1566** (Singapore)
3 dedicated Fixed Wing Aircraft for surveillance overflight	Multiple owners – source from the market (Ref: Dispersant TRP Contact List and section 5.13 of this document)	
3 Trained Aerial Observer	Via AMOSC	**0438 379 328**
Further Trained Aerial Observers	Via OSRL	**+ 44 (0)2380 331551** (UK) **+65 6266 1566 (**Singapore)
Oil Spill Tracking Buoys	Via AMOSC	**0438 379 328**
Satellite Surveillance	Via OSRL MDA	As per table5-3 and 57 Auriga Dr #201, Ottawa, ON K2E, Canada Email:**info@mdacorporation.com** Phone: **+1 613 727 1087**
Satellite Surveillance	KSAT	Prestvannveien 38, P.O. Box 6180, Langnes N-9291, Tromso, Norway Email: **ksat@ksat.no** Phone: **+47 77 60 02 50**
Remote Sensing aircraft	Via AMSA HYVISTA Ocean Imaging	Section 8.1.4 Unit 2 / 5-7 Inglewood Pl, Baulkham Hills NSW 2153, Australia Email**: hvc@hyvista.com** Phone: **1300 498 478** 13976 West Bowles Ave, suite 100, Littleton Colorado 80127, USA Email: **info@oceani.com** Phone: **+1 303 948 5272**
Aerostats	OWLS Surveillance Ltd. Maritime Robotics Inland-Gulf Maritime	Komoko House, Unit 1 Yeoman Park, Test Lane, Southampton SO16 9JX, UK Email: **enquiries@owls-surveillance.com** Phone:**+44 (0)2381 290 040** Brattorkaia 11, 7010 Trondheim, Norway Email: **info@maritimerobotics.com** Phone: **+47 73 40 1900** 3496 Halls Mill Road, Mobile, Al

		36693, USA Email: **info@inland-gulf.com** Phone: **+1 04 392 6710**
UAV	Australian Certified UAV Operators Inc. (ACUO) Australian Association for Unmanned Systems	Queensland, Australia Email: secretary@acuo.org.au Web; www.acuo.org.au Phone: **97 232 132 361** 22-24 Boronia Road, Brisbane Airport, QLD 4008, Australia Email: [redacted] Web: *www.aaus.org.au*

5.4 Source Control and Sub Sea Interventions

Refer to the Well Containment Plan for detail on mobilisation of resources.

Table 5-6: Source control and Sub sea intervention assets with contacts

Resource	***Owner/Contracts Holders***	***Contact Details***
Relief well drilling MODU	BP	Via CRS
Capping Stack	OSRL	**+ 44 (0)2380 331551** (UK) **+65 6266 1566** (Singapore)
SFRT x1	AMOSC	**0438 379 328**
SFRT vessel x 1	Contracted to BP	Via CRS
Dispersant Delivery System	BP owned	Via CRS
Relief Well Tubular	BP owned	Via CRS
Water Monitoring Equipment	BP owned	Via CRS

5.5 Surface Chemical Dispersants

Refer to Tactical Response Plan for precise details on mobilisation of resources. The major resources are listed below

Table 5-7: Surface Dispersant Capacity

Resource	***Owner/Contracts Holders***	***Contact Details***
Dispersant – 150m^3	AMOSC	**0438 379 328**
Dispersant – 249 m^3	AMSA	section 8.1.4
Dispersant – 4000 m^3	OSRL	**+ 44 2380 331551** (UK) **+65 6266 1566** (Singapore)
Dispersant – ongoing manufacture 50 - 100 m^3 /day	Dasic	Dasic International Limited Winchester Hill, Romsey, SO51 7YD, United Kingdom Email: **info@dasicinter.com**, **sales@dasicinter.com** Phone: **+44 1794 512 419**

Dispersant – ongoing manufacture 100 m^3 p/week	Total Special Fluids	24 Cours Michelet LA D, 92069, Paris La-Defense, France Contact via OSRL
Aircraft – AT802 x 6	AMSA	section 8.1.4
Aircraft – AT802 x 3	Coordinated by Aerotech 1st Response	Aerotech 1st Response 16 College Road, Kent Town, SA 5067 T: (**08) 8132 0999**| F: **(08) 8132 0399** | M: **0419 854 893** | E: **1stresponse@aerotech.net.au** | W: *www.aerotech.net.au*
Aircraft 727 x 2, L100 x 1	OSRL	**+ 44 2380 331551** (UK) **+65 6266 1566** (Singapore)
3 x PSVs	BP	Internal request
Additional vessels	VoO programme	Ref to VoO programme fleet details. section 5.14
Vessel Dispersant Spray System x 3	BP	Internal request
Vessel Dispersant Spray System x 5	AMOSC	**0438 379 328**
Vessel Dispersant Spray System x 10	AMSA	**02-6230 6811 (24/7)**

5.6 Sub-Surface Chemical Dispersants

Refer to Wells Plan for detailed Sub Sea Intervention mobilisation of resources.

Table 5-8: Sub-surface dispersant Capacity

Resource	***Owner/Contracts Holders***	***Contact Details***
Dispersant – 750m^3	AMOSC	Section 8.1.4
Dispersant – 249 m^3	AMSA	
Dispersant – 4,000 m^3	OSRL	
Dispersant – ongoing manufacture 50 - 100 m^3 /day	Dasic	Dasic International Limited Winchester Hill, Romsey, SO51 7YD, United Kingdom Email: **info@dasicinter.com, sales@dasicinter.com** Phone: **+44 1794 512 419**
Dispersant – ongoing manufacture 100-150 m^3 /week	Total Fluids	24 Cours Michelet LA D, 92069, Paris La-Defense, France
Dispersant Effectiveness Monitoring Kit	BP CRS team (Houston)	BP Internal
Dispersant Delivery System (DDS)	BP CRS team (Houston)	BP Internal

5.7 Containment and Recovery

Refer to Tactical Response Plan for details on mobilisation of resources.

Table 5-9: Containment & recovery capacity

Resource	***Owner/Contracts Holders***	***Contact Details***
Three PSVs	BP contracted vessels	Via BP Supply Base Adelaide 08 8202 6410
Additional vessels	VoO. Details in section on VoO program below	
1 tanker	BP Shipping	BP internal
Offshore Boom Reels x 4	BP	section 8.1.4
Offshore Boom Reels x 17	AMOSC	
Offshore Boom Reels x 133	OSRL	
Offshore Boom Reels x 41	AMSA	
Heavy/offshore skimmers x 4	BP	
Heavy/offshore skimmers x 6	AMOSC	
Heavy/offshore skimmers x 31	OSRL	
Heavy/offshore skimmers x 22	AMSA	
Nearshore boom 1,000m	BP	
Nearshore boom 5,700m	AMOSC	
Nearshore boom 5,430m	OSRL	
Nearshore boom 19,650m *Subtotal – 31,780m*	AMSA	
Current Buster 4 x 7 Current Buster 2 x 1 Current Buster 2 x 7	AMOSC AMOSC OSRL	
Nearshore skimmers x 4	BP	
Nearshore skimmers x 6	AMOSC	
Nearshore skimmers x 27	AMSA	
Nearshore skimming barge x 1	AMOSC	
Nearshore skimming barge x 6	AMSA	

5.8 In-Situ Burning (ISB)

Table 5-10: ISB capacity

Resource – type, kind and #	***Owner***	***Contact Details***
Pyro-Boom x 4 sets	OSRL	**+ 44 (0)2380 331551**
ISB Strike Team	OSRL	**+ 44 (0)2380 331551**
VoO suitable for offshore	Various – VoO register has details	

5.9 Shore Line Protection (TRP)

Refer to Tactical Response Plan for details on mobilisation of resources.

Table 5-11 Shoreline protection capacity

Resource – type, kind and #	***Owner***	***Contact Details***
Shore seal boom – 2,000m	BP	section 8.1.4
Shore seal boom – 2,100m	AMOSC	
Shore seal boom – 8,200m	AMSA	
Shore seal boom – 2,150m *Subtotal – 14,450m*	OSRL	
Near shore boom (*see table 5.8, section 5.7*)		

Table 5-12: Shoreline Protection skimmer capacity

Oil Recovery Skimmers			
	Disc/Brush	Rope Mop	Vac Unit
AMOSC	6	4	4
AMSA	27	11	8
OSRL	17	7	14
BP	4	0	0
Total	37	16	12

5.10 Shoreline Assessment & Clean-up

Table 5-13: Shoreline Assessment & Clean-up Capacity

SHORELINE FLUSHING KITS	***Location***	***Number of Units***	***Supplier***	***Contact Details***
Kind				
Shoreline Flushing Kit	Fremantle	1	AMOSC	**0438 379 328**
Shoreline Flushing Kit	Geelong	1	AMOSC	

Table 5-14: Waste Temporary storage capacity

TEMPORARY STORAGE	***Location***	***Units***	***Total Capacity (m3)***	***Supplier***	***Contact Details***
Vikotank	Broome	1	13	AMOSC	**0438 379 328**
IBC – 1000 litre	Exmouth	3	3	AMOSC	
IBC – 1000 litre metal	Exmouth	10	10	AMOSC	
Fastank 9000	Exmouth	1	9	AMOSC	
Bladder Tank	Fremantle	3	75	AMOSC	
Fastank 2000	Fremantle	1	10	AMOSC	
Fastank 3	Fremantle	1	3	AMOSC	
Lamor Temporary Storage Tank	Fremantle	1	11	AMOSC	
Fastank 2000	Geelong	3	30	AMOSC	
Fastank 3	Geelong	1	3	AMOSC	
IBC – 1000 litre	Geelong	11	11	AMOSC	
Vikotank	Geelong	1	13	AMOSC	
STUCTURFLEX Flexidam, 10T	Adelaide	2	20	AMSA	
STUCTURFLEX Flexidam, 10T	Brisbane	1	10	AMSA	

Table 5-15: Boom anchoring resources

ANCHORS AND ANCHOR KITS	***Location***	***Number of Anchors***	***Supplier***	***Contact Details***
Kind				
Zooom Boom Anchor Kit (Including Ropes and Floats)	Exmouth	8	AMOSC	**0438 379 328**
Zooom Boom Anchor Kit (Including Ropes and Floats)	Fremantle	4	AMOSC	
Zooom Boom Anchor Kit (Including Ropes and Floats)	Geelong	30	AMOSC	
Zooom Boom Anchor Kit (Including Ropes and Floats)	Broome	10	AMOSC	
2 x 15kg Anchor Kit	Adelaide	8	AMSA	
2 x 15kg Anchor Kit	Brisbane	8	AMSA	
1 x 30kg Anchor Kit	Brisbane	4	AMSA	
2 x 15kg Anchor Kit	Dampier	8	AMSA	
2 x 15kg Anchor Kit	Darwin	8	AMSA	
1 x 30kg Anchor Kit	Darwin	8	AMSA	
2 x 15kg Anchor Kit	Devonport	12	AMSA	
2 x 15kg Anchor Kit	Fremantle	8	AMSA	
2 x 15kg Anchor Kit	Melbourne	8	AMSA	

1 x 30kg Anchor Kit	Melbourne	4	AMSA	
1 x 15kg Anchor Kit	Sydney	4	AMSA	
1 x 30kg Anchor Kit	Sydney	4	AMSA	
Near Shore/Shoreline Anchor	Singapore	200	OSRL	

Table 5-16: Ancillaries

DEPLOYMENT ANCILLARIES Kind	***Location***	***Units***	***Supplier***	***Contact Details***
Air Blower	Exmouth	1	AMOSC	**0438 379 328**
Air Blower	Fremantle	4	AMOSC	
Air Blower	Geelong	3	AMOSC	
Air Blower	Broome	1	AMOSC	
Water Pump, Honda	Exmouth	1	AMOSC	
Water Pump, Honda	Fremantle	5	AMOSC	
Water Pump, Honda	Geelong	4	AMOSC	
Water Pump, Honda	Broome	1	AMOSC	

5.11 Oiled Wildlife Response

Refer to Oiled Wildlife Response Plan for greater detail on the resources available. The resources listed below are those that can be reliably mobilised through AMOSC and BP. It is expected that the International OWR capacity will be growing over the coming years, once the Global Oiled Wildlife Response System (GOWRS) will become operational from 2017 onwards. The GOWRS is an international co-operative effort of 10 experienced global oiled wildlife response organisations, who are working together to provide a systematic and standardised approach to wildlife response with an ever expanding group of experienced volunteers who can be mobilised to an incident.

Table 5-17: OWR resources

Equipment	2 x AMOSC owned OWR container 4 x AMOSC OWR box kits located in Broome, Exmouth, Fremantle and Geelong	Via AMOSC
	3 x National Plan OWR containers in Dampier, Darwin, Townsville 2 x National Plan & DPaW OWR Box/Trailer Kits in Dampier and Freemantle 1 x NSW Maritime OWR container in Sydney	Via AMSA
	2 x Container with OWR equipment at OSRL in Southampton ready for deployment	Via OSRL
People	AMOSC; 1 x FTE for OWR development AMOSC OWR Industry Team; 10 trained to Level 2-4 (DPaW training) NatPLan OWR personnel >100 personnel	Via AMOSC

	AMOSC holding call off contracts (on behalf of industry) with; A facilities management group – DwyerTECH NZ; availability within 24 hours of call off AMOSC developed relationships with; Blue Planet Marine; capacity 10-20 OWR responders Massey University; capacity 4-6 OWR responders International Bird Rescue; capacity 4 OWR responders AMOSC developing relationships with; Phillip Island National Parks; capacity 20-40 OWR responders	
Aid – Mutual & International	OSRL. 2 x Oiled wildlife response experts from Sea Alarm. Mobilised via OSRL 10 – 15 experienced OWR experts from GOWRS mobilised via Sea Alarm.	Via OSRL

5.12 Waste Management

Refer to Tactical Response Plan for detail on mobilisation of resources.

Table 5-18: Vacuum trucks

				10 - 14kls Rigid Vac Tanker	**20kls semi Vacuum Tanker**	**25kl Tanker Trailer**	**50kls Road Train**
	Contact	Details	location				
Cleanaway	National	131339	Perth	10	2	3	2
		131339	Adelaide	4	1		
Veolia	WA State Office	(08) 9418 9300	Perth	2			1
	WA State Office	(08) 9418 9300	Bunbury	2			
	SA State Office	(08) 8260 2122	Adelaide				
	SA State Office	(08) 8260 2122	Ceduna	2		2	
McMahon	SA Head Office	(08) 8203 3100	Perth	10			

Table 5-19: Temporary storage

					Standard Skip Bins (m3)												Roll Off and Hook load Bins (m3)						
Company	**Contact**	**Work Phone**	**Mobile**	**Trucks**	**Total Bins**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**12**		**Total Bins**	**7**	**15**	**18**	**20**	**30**	**33**
Perth																							
Veolia	WA State Office	(08) 9418 9300		7	200	x	x	x	x	x	x	x	x				50		x		x	x	
Sector 1 - Albany																							
Warren Blackwood Waste	[redacted]		[redacted]	11	500		x	x	x	x		x		x			40		x		x		x
Sector 2 - Hopetoun																							
Warren Blackwood Waste	[redacted]		[redacted]	11	500		x	x	x	x		x		x			40		x		x		x
Sector 3 - Esperance																							
Bin Skip Waste and Recycle		(08) 6317 0208		1	12	x	x	x	x														
Warren Blackwood Waste	[redacted]		[redacted]	3	30	x	x		x								20		x		x		
Sector 4 to Sector 10 - Eastern Recherche to Fowler [No significant supply]																							
Sector 11 - Ceduna																							
Ceduna Skip Bins	[redacted]	(08) 8625 3527	[redacted]	2	34	x	x	x															
Sector 12 - Streaky Bay [No significant supply]																							
Sector 13 - Elliston/Coffin Bay [No significant supply]																							
Sector 14 - Port Lincoln																							

Megabin Services	[redacted]		[redacted]	1	25		25																
Lincoln Skips	[redacted]		[redacted]	1	32	x	x	x															
Sector 15 - Upper Spencer Gulf																							
Whyalla Mini Bins		(08) 8645 4990	[redacted]	2	120	x		x		x			x										
Sector 16 - Eastern Spencer Gulf																							
JJ's Skip Hire	[redacted]	(08) 9642 2266		2	32		x	x	x	x	x		x	x	x		2		x	x	x	x	
Sector 17 - Yorke Peninsula [No significant supply]																							
Sector 18 - Adelaide																							
Fluro Skip Bins	[redacted]		[redacted]	3	100	x	x	x	-	x	x												
Just Skips	[redacted]	(08) 8255 6677		6	500			x		x			x										
Mega Skip Bins			[redacted]	3	100	x	x	x		x			x										
Mr Clean-up	[redacted]	(08) 8281 8000		10	442	200	50	50	50	50		10	20	7	5		36						
Veolia	SA State Office	(08) 8260 2122		25	500	x	x	x	x	x	x	x	x				40			x			
Sector 19 - Victor Harbour																							
Coastal Waste	[redacted]	(08) 8552 7115		3	200	x	x	x		x	x		x	x									

Sector 20 - Robe - Bridgeport																							
Clean Up Bins	[redacted]	(08) 8358 3255	[redacted]	4	200	x	x	x	x	x	x	x	x										
Sector 21 - Kangaroo Island																							
K.I. Skips	[redacted]		[redacted]	2	37	x		x															

Table 5-20: Long term Storage Sites for waste disposal:

Storage Site Type	Site Address	Waste Volumes
Chandler Salt Mine (South of Alice Springs, NT)	Access via Maryville Station, Maryvale Road, Titjikala, NT	>360,000 tonnes p/annum
Sandy Ridge Clay Mine, (Mt Walton East, WA)	Access via Mt Walton East Road, from the Great Eastern Hwy in Booradin, WA.	>100,000 tonnes p/annum

Table 5-21: Landfill Storage Sites Suitable for waste disposal and temporary storage:

Key	Description	Potential	
	Major Waste Facility, including Hazardous Waste	Temporary Storage and Final disposal	
	Major Waste facility	Temporary Storage and Final disposal	
	Landfill	Temporary Storage and Final disposal	
	Transfer Station	Temporary Storage only	
Quick Ref	**Waste Management Facilities**	**Approx. capacity (if known)**	**Type of wastes**
	Major Facilities - Western Australia		
	Western Resource Recovery - Perth	50k megalitres pa	Major Hazardous Waste Facility
	Veolia/Transpacific		
	113 Ewing Street		
	Welshpool, WA 6106		
	(08) 9351 1350, 1800 774557 (1800 SPILLS)		
	Western Resource Recovery - Kalgoorlie	10k megalitres pa	Major Hazardous Waste Facility
	Veolia/Transpacific		
	Lot 221 Goldfields Highway		
	South Boulder, WA 6432		
	(08) 9093 0633, 1800 774557 (1800 SPILLS)		
	Sector 1 - Albany		
	Hanrahan Road Waste Minimisation Facility		Landfill

			
	Hanrahan Rd		
	Albany WA 6330		
	(08) 9842 1916		
	City of Albany - Albany Refuse Site	Class II	Putrescible landfill site
	Maxwell Street		
	Albany WA 6330		
	(08) 9841 9333		
	Cleanaway Solid Waste Services		
	Lot 167, Cumming Road		Landfill
	Albany, WA 6330		
	(08) 9841 2467		
	Sector 2 - Hopetoun		
	Hopetoun Waste Transfer Station		Transfer Station only
	Hopetoun Rd - Ravensthorpe Rd		
	Hopetoun, WA 6348		
	(08) 9839 0000		
	Sector 3 - Esperance		
	Wylie Bay Waste Facility		Landfill and Recyclables Transfer
	10km from town on Wylie Bay Rd		
	Wylie Bay , Esperance WA 6450		
	(08) 9070 7594, (08) 9071 0666		
	Sector 4 - Eastern Recherche to Sector 10 - Fowler		
	No significant facilities – residential facilities only.		
	Sector 11 - Ceduna		
	Ceduna Waste and Recycling Centre		Landfill and Recyclables Transfer
	336 The Trading Stock Route		
	Ceduna, SA 5690		
	(08) 8626 9135		
	Sector 12 - Streaky Bay		
	Streaky Bay Waste Transfer and Resource Recovery Centre		Transfer Station only

	Flinders Highway		
	Streaky Bay, SA 5680		
	(08) 8626 1001		
	Sector 13 - Elliston/Coffin Bay		
	Venus Bay Waste Site		Transfer Station only
	District Council of Elliston		
	(08) 8687 9177		
	Elliston Waste Transfer Station		Transfer Station only
	District Council of Elliston		
	(08) 8687 9177		
	Coffin Bay Waste Transfer Station		Transfer Station only
	District Council Of Lower Eyre Peninsula		
	(08) 8676 2106		
	Sector 14 - Port Lincoln		
	Veolia Resource Recovery Centre		Transfer Station Only
	Hassell Road		
	Port Lincoln, SA 5606		
	(08) 8682 3860, 0418 227 234		
	Eyre Waste Management Facility		Landfill and Recyclables Transfer
	1763 Butler Centre Road		
	Butler, SA, 5605		
	(08) 86 88 22 35		
	Sector 15 - Upper Spencer Gulf		
	Whyalla Mount Laura Waste and Resources Recovery Centre		Landfill and Recyclables Transfer
	Iron Knob Rd		
	Whyalla, SA 5600		
	(08) 8640 3444		
	Port Germein Transfer Station		Transfer Station Only
	Havers Avenue		
	Port Germein, SA 5495		
	(08) 8666 2014		

	Port Pirie Resource Recovery Centre		Transfer Station Only
	245 Three Chain Road		
	Port Pirie, SA 5540		
	(08) 8633 9666		
	Port Augusta Resource Recovery Centre		Transfer Station Only
	59 Footner Rd		
	Stirling North, SA 5710		
	(08) 8643 6975		
	Sector 16 - Eastern Spencer Gulf		
	Copper Coast Resource Recovery Centre		Transfer Station Only
	Magazine Rd		
	Wallaroo, SA 5556		
	(08) 8828 1200 (District Council Admin)		
	Port Broughton Waste Disposal Site		Transfer Station Only
	Dale Road		
	Dale, SA 5522		
	(08) 8635 2107		
	Sector 17 - Yorke Peninsula [No significant supply]		
	Veolia Yorke Peninsula Service Centre		
	18 Bluff Road		
	Minlaton, SA 5575		
	13 13 35		
	Ramsey Transfer Station	small	Transfer Station Only
	Dump Rd		
	Port Vincent, SA 5581		
	(08) 8832 0000		
	Sector 18 - Adelaide		
	Southern Region Waste Authority Landfill	> 160k tonnes / year	Major waste facility
	112 Bakewell Drive		
	Seaford Heights, SA 5169		
	(08) 8386 0273		

	Integrated Waste Services		Major waste facility
	Corner Hines Rd and Wingfield Rd		
	Wingfield, SA 5013		
	(08) 8348 5100		
	Wingfield Waste & Recycling Centre		Major waste facility
	412 Hanson Road North		
	Dry Creek, SA 5094		
	(08) 8345 4318		
	Northern Adelaide Waste Management Authority		Major waste facility
	Gate 3, Bellchambers Road,		
	Edinburgh North, SA 5113		
	1800 111 004, (08) 8259 2100		
	Sector 19 - Victor Harbour		
	Fluerieu Regional Waste Authority		Includes Victor Harbour, Goolwa, Yankalilla, and Kangaroo Island
	[redacted]		
	[redacted]		
	Goolwa Waste and Recycling Depot		Transfer Station Only
	Goolwa to Victor Harbour Rd		
	Goolwa, SA 5214		
	(08) 8555 7260		
	Yankalilla Waste and Recycling Depot		Transfer Station Only
	Lot 2 Victor Harbour Rd		
	Yankalilla, SA 5203		
	0409 674 982		
	Sector 20 - Robe - Bridgeport		
	Robe Waste Transfer Station		Transfer Station Only
	Evans Cave Rd		
	Robe, SA 5276		
	(08) 8768 2003		
	Kingston Transfer Station		Transfer Station Only
	Adam Rd		

	Kingston SE, SA 5275		
	(08) 8767 2033		
	Sector 21 - Kangaroo Island		
	Kangaroo Island Waste and Recycling Depot		Transfer Station Only
	5km from Kingscote on North Coast Rd		
	Kingscote, SA 5223		
	(08) 8553 4514		

Table 5-22: Thermal Treatment Plants:

Thermal Treatment Plant Type	***Types of wastes***	***Waste Volumes (treatment p/day, 12 hour shift)***	***Transpacific Industries***
'Baby' mobile direct fired desorption	Highly recalcitrant organic contaminants: dioxins and furans, PCBs, PAHs, heavy fuel oil such as hydrocarbons >C35, creosote and coal gasification waste.	Up to 60 tonnes	
Co-current/Current direct fired desorption		Up to 360 tonnes	

Table 5-23: Offshore Waste storage BP's Shipping fleet

Class	***Number in Fleet***	***Internal request – BP Shipping Manager (Melbourne)***
Bird Class	12	
E Class	5	
Virtue Class	12	
V Class	2	
R Class	2	
Mariner Class	1	

5.13 Aerial Operations

Aviation Platforms of Opportunity
The surface dispersant TRP identifies two types of aircraft that would be suitable for extended operations over a tier three oil spill from GAB drilling. The table below provides on overview of available aircraft.

Table 5-24: Overview of available aircraft for offshore operations

Aircraft Type	***Main Features***
Fairchild Swearingen Metro liner or Fairchild Aerospace Metro 23	Endurance: approximately 5 hours Max cruising speed: 473km/h, Long range cruising speed: 450km/h. Range with 15 passengers and reserves at max cruising speed 1,100km (Metro II), 2,065km (Metro 23) Operating Limitations Metro II - Empty 3380kg, MTOW 5670kg. Metro 23 - Empty 4309kg, MTOW 7484kg.

Registration	**Type**	**Owner**	**Location**	**Contact**
VH-ANA	Metro 23	Air North	Darwin	1800 627474
VH-ANW	Metro 23	Air North		
VH-ANY	Metro 23	Air North		
VH-KGX	Metro II	CASAIR	Jandakot	08 6399 4300
VH-NGX	Metro II	CASAIR		
VH-OGX	Metro II	CASAIR		
VH-WGX	Metro II	CASAIR		
VH-ZGX	Metro II	CASAIR		
VH-VEK	Metro 23	Vee H Aviation	Canberra	1300 441 000
VH-VEU	Metro 23	Vee H Aviation	Canberra	
VH-SSV	Metro II	Fifo Jet	Archerfield	04 3873 7787
VH-CHN	Metro 23	Hardy Aviation	Darwin	08 8927 8111
VH-HVH	Metro 23	Hardy Aviation		
VH-MKS	Metro II	Hardy Aviation		
VH-TFG	Metro III	Hardy Aviation		
VH-TGD	Metro III	Hardy Aviation		
VH-TWL	Metro 23	Hardy Aviation		
VH-OYB	Metro 23	Pearl Aviation	Darwin	08 8920 6609
VH-OYG	Metro 23	Pearl Aviation		
VH-OYI	Metro 23	Pearl Aviation		
VH-OYN	Metro 23	Pearl Aviation		
VH-HWR	Metro 23	Sharp Airlines	Essendon	1300 55 66 94
VH-MYI	Metro 23	Sharp Airlines	Essendon	

Table 5-25: Aircraft capacity

Aircraft Type		***Main Features***		
Beechcraft King Air		Endurance: approximately 5.6 hours Max cruising speed 491km/h, Range 1775 NM (3,287 Km) Operating Limitations Empty weight 3,809, MTOW 5,352kg		
Registration	***Type***	***Owner***	***Location***	***Contact***
VH-LOA	King Air 200	Air South Charter	Adelaide	08 8234 3244
VH-ZMO	King Air 200	Australasian Jet	Essendon	03 9379 6999
VH-ZMP	King Air 200	Australasian Jet		
VH-ZMW	King Air 200	Australasian Jet		
VH-ITA	King Air 200	Awesome Flight Services	Perth	08 6189 0700
VH-LOA	King Air 200	Awesome Flight Services	Perth	
VH-SKU	King Air 200	Barrier Aviation	Cairns	04 2873 9759
VH-MWX	King Air 200	Broome Air Services	Broome	08 9192 6100
VH-URU	King Air 200	Corporate Aircraft Charter	Adelaide	08 8234 4423
VH-ODI	King Air 200	Dick Lang's Bush Pilots	Adelaide	08 8264 7200
VH-HLJ	King Air 200	Hinterland Aviation	Cairns	1300 359 428
VH-XCB	King Air 200	Jandakot Flight Services	Jandakot	08 9417 2258
VH-KFE	King Air 200	Karratha Flying Services	Karratha	08 9144 2444
VH-KFH	King Air 200	Karratha Flying Services		
VH-KFX	King Air 200	Karratha Flying Services		
VH-KQB	King Air 200	Kestrel Aviation	Mangalore	03 5796 2373
VH-ZOK	King Air 200	Kirkhope Aviation	Moorabbin	1300 206 130
VH-ITA	King Air 200	Maroomba Airlines	Perth	08 9478 3850
VH-MQZ	King Air 200	Maroomba Airlines		
VH-PFJ	King Air 200	Pacific Flight Services	Bankstown	02 9791 0055
VH-PFK	King Air 200	Pacific Flight Services		
VH-LAB	King Air 200	Pacific Flight Services		
VH-FII	King Air 200	Pearl Aviation	Darwin	08 8920 6609
VH-NTH	King Air 200	Pearl Aviation		
VH-OYD	King Air 200	Pearl Aviation		
VH-OYE	King Air 200	Pearl Aviation		
VH-OYH	King Air 200	Pearl Aviation		
VH-OYT	King Air 200	Pearl Aviation		
VH-TLX	King Air 200	Pearl Aviation		
VH-FIX	King Air 200	Pearl Aviation		
VH-FIY	King Air 200	Pearl Aviation		
VH-FIZ	King Air 200	Pearl Aviation		
VH-VAD	King Air 200	Pel-Air Aviation	Mascot	02 9667 7700
VH-VAE	King Air 200	Pel-Air Aviation		

VH-VAH	King Air 200	Pel-Air Aviation		
VH-VAI	King Air 200	Pel-Air Aviation		
VH-MWQ	King Air 200	SeaAir Pacific	Brisbane	1300 473 247
VF-MWF	King Air 200	Silver City Air Charter	Broken Hill	08 8088 5702
VH-CWO	King Air 200	Star Aviation	Perth	08 9477 4402
VH-LKF	King Air 200	Star Aviation		
VH-LKR	King Air 200	Star Aviation		
VH-XDB	King Air 200	Star Aviation		
VH-SBM	King Air 200	West Wing Aviation	Townsville	07 4721 5151
VH-VCB	King Air 200	West Wing Aviation		
VH-XDV	King Air 200	West Wing Aviation		
VH-XDW	King Air 200	West Wing Aviation		

5.14 Vessels of Opportunity Programme

A vessel of opportunity register is currently being developed by BP and further details of how this programme will be initiated in the event of an incident will be added. However, the fishing fleets of Port Lincoln have been engaged in the process, and BP are currently in the process of undertaking the development of a vessel registry. Port Lincoln vessels already identified are listed in table 5-26. Clarksons Platou are ship brokers who will be contacted should additional PSV's and VoO's be required (table 5-27)

Table 5-26: A summary of available Port Lincoln vessels

Type	number	class
Tuna purse-seine	3	3B
Tuna / Sardine purse-seine	6	3B
Tuna tow / feed	16	3B
Tuna tow / prawn	1	3B
Tune barge feed/harvest	3	2C or 3C
Tuna dive	10	2C or 3C
Tuna fast boat	1	2C or 3C
Tuna feed	2	2C or 3C
Tuna feed /tow/ kingfish	2	2C or 3C
Sardine purse-seine	6	3C
Crayfish	9	3C
Mussel	4	2 or 3D
Kingfish	2	2 or 3D
Prawn	3	3C or 3B

Tabl 5-27: Contact details for Clarksons Platou (Offshore) Ship-brokers

Clarksons Platou Offshore: AUS / NZ Broker Contact

Broker for AUS/NZ Vessels

[redacted]

Clarksons Platou Offshore Ltd.
City Wharf, Shiprow
Aberdeen
AB11 5BY
offshore.aberdeen@clarksons.com

Clarksons Platou Asia Pte. Ltd
29-01, Asia Square Tower 2
12 Marina View
Singapore, 018961
offshore.singapore@clarksons.com

Table 5-28: GAB Vessels of Opportunity & Work of Opportunity

Vessel Type	Category & Coastal Distance	Command	Safety	Transport	Wildlife Transport	Survey, Surveillance On site Coordination	Subsurface Assessment	Environmental Sampling	Decon.	Training	Oil Recovery	Booming	Shoreline Protection	Waste Mngmt./ Storage	Debris Recovery	SAR	Dispersant Application	Re-Supply
Commercial																		
Tuna Fleet	3B Ext. >200 NM	X	X	X		X	X	X		X	X	X		X		X	X	X
Sardine Fleet	3C <200 NM	X	X	X	X	X	X	X		X	X	X		X		X	X	X
Prawn Fleet	3C <200 NM	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X
Oyster Fleet	4C 30 NM	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Small Craft Fleet	4E Coastal	X	X	X	X	X	X	X		X		X	X		X			X
Charter Boats	4C 30 NM	X	X	X	X	X	X	X		X		X	X	X	X			X
Dive Boats	4C 30NM	X	X	X	X	X	X	X		X		X		X				X
Spot Market																		
PSVs	2A Offshore	X	X	X	X	X	X	X	X		X	X		X	X	X		X
Barges	4E Coastal								X		X			X				
Vessels w/cranes	2A >200 NM					X	X	X			X	X		X	X	X		X
Vessels w/cranes	2B <200 NM					X	X	X			X	X		X	X			X
Private																		
Charter Boats	4D 30NM	X	X	X	X	X	X	X		X		X	X		X			X
Sightseeing Boats	4D 30NM	X	X	X	X	X	X	X		X		X	X		X			X

Table 5-29: GAB Vessels of Opportunity (Commercial Towage & Support)

Contact Name	Contact Number	Website	Notes
Svitzer	61 4 1022 1069	http://svitzer.com/where-we-operate	BP Australia has a commercial contract with Svitzer to provide towage and lines-work where they operate. Svitzer has all the major tugs operating in Spencer Gulf / Adelaide / Melbourne / Geelong / Westernport / Albany / Fremantle
Teekay Shipping	61 4 3976 3739	http://teekay.com/australia	BP Australia has a commercial contract with Teekay for BP Marine barges in Fremantle and Dampier. Teekay is constructing 3 ISVs vessels to support Shell's Prelude FLNG project off Broome.
Korevaar	61 3 9397 6678	http://www.korevaar.com.au/	BP Australia has a contract with Korevaar for a BP Marine bunker barge in Brisbane. Website has a list of available tugs (4) bunker barges and (4) pontoons
Mackenzie Marine & Towage	61 0429 958 441	http://mackenziemarineandtowage.com.au/mackenzies_tug_service.php	Operate the tugs in Esperance.
Smit	61 412 824 631	http://smitlamnalco.com	Smit has major tugs operating in Brisbane / Gladstone / Townsville
LW Marine	61 3 9681 7791 61 409 255 797	geelong@bigpond.com	LW Marine supply lines boats in Geelong / Westernport Bay. LW Marine supply pollution standby services for Esso at Westernport Bay.
Tasports	61 3 6380 3075	http://www.tasports.com.au/shipping_and_towage	Operate tugs in all major Tasmanian Ports / King Island / Flinders Island, along with pilots, pilot boats, work and line boats.
NSW Towage	61 3 5521 7253	inquiries@nwst.com.au	Operate the tugs in Portland, Victoria

6 Training and Exercises

6.1 Introduction

Training & Exercises are conducted regularly in order to improve and evaluate BP capability to execute one or more portions of its response plans. They can be used to improve both individual skills and the overall emergency management system.
A comprehensive program is made up of progressively more complex and demanding situations, each one building on the previous; culminating into an exercise that is as close to reality as possible to measure the capabilities of the team.

6.2 BP DAPL GAB Training Program

The following is an outline of the general training content and objectives for the GAB programme, along with a training matrix identifying which roles will receive which training. Attendance will be tracked by the IMT coordinator and a comprehensive database maintained.

Step 1:

- Initial training:
- Incident Management Team Introduction (IMT Intro)
- Incident Management Systems Fundamentals (IMS Fundamentals)

Step 2:

- Duty IMT formation and General Knowledge
- Five IMTs were formed with standard duty responsibilities on a 5-week rotation.

Step 3:

- Development of training phases.
- Training phases are based on a combination of "Duty IMTs", objectives and availability.
- Each phase includes specific objectives that must be trained / communicated to all IMTs.
- Each phase lasts a period of 3 weeks to ensure all personnel attend a session:

Week 1	Duty IMT 1 and 2
Week 2	Duty IMT 3 and 4
Week 3	Duty IMT 5 and "stragglers" or make-up attendees

Step 4:

Scheduling of training phases:

• Phase 1	30 June	–	14 July
• Phase 2	21 July	–	4 Aug
• Phase 3	11 Aug	–	25 Aug
• Phase 4	1 Sep	–	15 Sep

Step 5:

Objectives of training phases:

- Phase 1 Notification, Team Call-out, Incident Management Room (IMR) set up, Initial actions.
- Phase 2 Verification of Phase 1. Clarity of reactive stage of response.

Section specific Training

- Phase 3 Coached reactive stage of response introduction to pro-active stages. Session time extended. Section Specific Training with increased awareness and heightened understanding of responsibilities.
- Phase 4 Monitored exercise (½ to 1-day). Hot-wash.

Table 6-1: The IMT & BST Training Matrix

	Incident Commander	Operations Section Chief	Planning Section Chief	Situation Unit Lead	Logistics Section Chief	Finance Section Chief	Human Resources Officer	Legal / Law Officer	Information Officer	BST Leader
IMT Introduction	X	X	X	X	X	X	X	X	X	X
IMS Fundamentals	X	X	X	X	X	X	X	X	X	X
Business Support Team	X							X	X	X
IMT Section Modules	X	X	X	X	X	X	X	X	X	
IMO Level 2 oil spill training	X	X	X		X	X				X
IMT scenario based desk top	X	X	X	X	X	X	X	X	X	

6.3 Exercises

Following is a listing of the types of exercises that will be conducted as part of the GAB drilling programme, along with a matrix identifying which teams/groups will participate in each exercise

- *Shoreline TRP stress test*: conducted with key state agencies during 1Q2016 to test planning assumptions made in the shoreline tactical response plans

- *BP DAPL IMT*: Scenario based team training ongoing as per previous schedule

- *Coached Planning Workshop*: Refresher workshop for the BP DAPL IMT to support the previous incident management training delivered in 4Q2015 and 1Q2016.

- *Major Incident Desktop*: Exercise designed to test the emergency incident and oil spill response plans for the GAB project using a level 3 oil spill event offshore. This exercise will include the interactions with BP Group and the State and Federal Government agencies.

- *Cross Jurisdiction Workshop*: Using the major incident desktop exercise output, this workshop is to assist the potentially affected states gain an understanding of the nature and scale of a major event that could affect multiple jurisdictions whilst interacting with an oil industry response system.

- *Support Vessel OSR Equipment Training*: Designed to ensure that the contracted support vessels for the GAB project have sufficient information and training to execute an oil spill response role related to the project.

- *VoO OSR Equipment Training*: Designed to ensure vessels of opportunity that have been pre-identified via an MOU for the GAB project have sufficient information and training to execute an oil spill response role related to the project.

- *Aerial Observation of Oil Spills*: Designed to ensure that the contracted helicopter crews and the fixed wing crew transfer aircraft crews for the GAB project have sufficient information and training to be able to report visual observations of oil on the sea surface using the BAOAC process.

Table 6-2: Emergency drill and exercise program matrix

	DoT (WA)	DPTI (SA)	BP DAPL IMT	BP Australia CST	BP Group MRT	AMSA	Support Vessel Crews	VoO Crews	Rotary Wing Aircrew
Shoreline TRP stress test	X	X							
BP DAPL IMT mobilisation & Initial Response			X						
IMT coached workshop, planning cycle			X						
Major response desk-top exercise	X	X	X	X	X	X			
Cross jurisdiction workshop	X	X				X			
Vessel Containment & Recovery							X	X	
Vessel dispersant application							X	X	
Aerial observation of oil spills									X

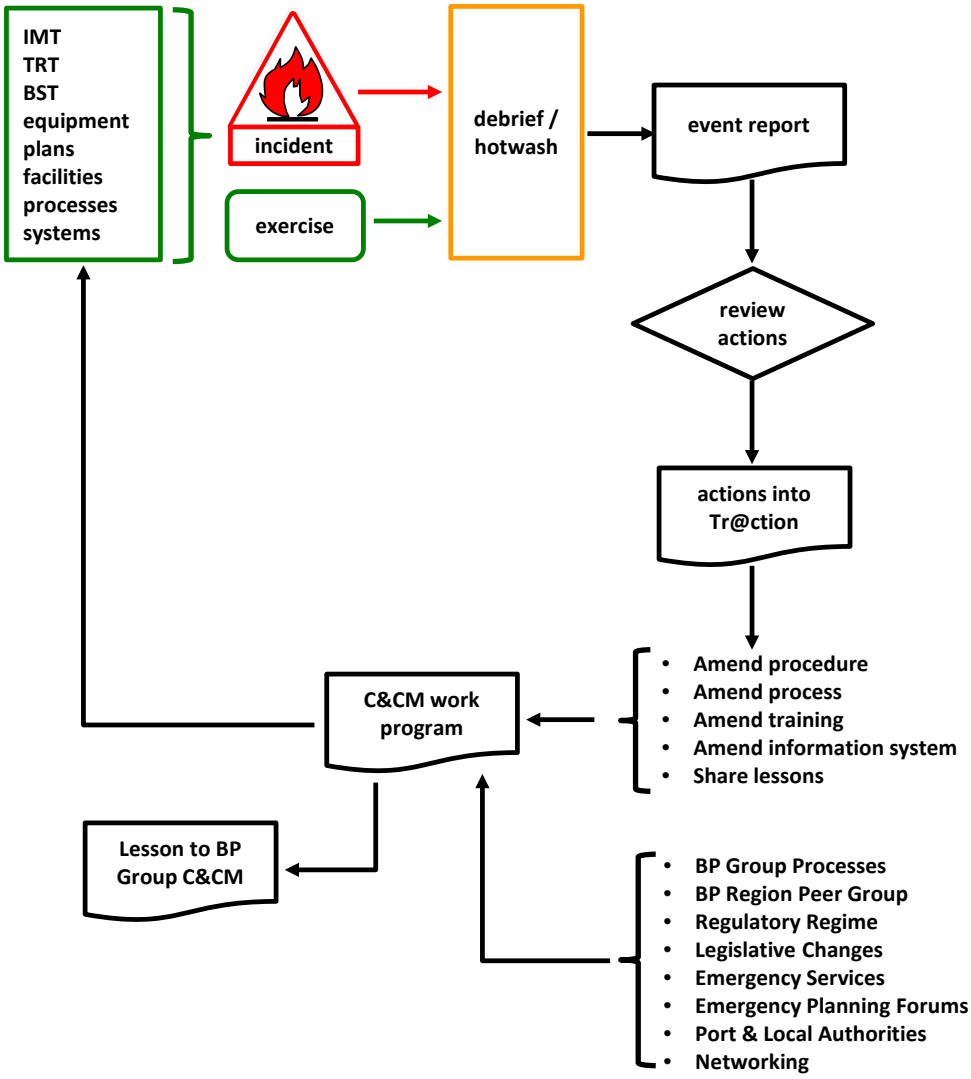
6.4 Lessons Learned (Hot Wash)

For training and exercises to be useful and to continuously improve, it must be accompanied by:

- Clear objectives i.e. what is the purpose of the exercise and what aspects are being tested
- A process for evaluating the exercise against the agreed objectives.
- An appropriate process for addressing recommendations arising from the exercise.

The process for identifying and addressing recommendations following an exercise is described in figure 6-1 below. The same process applies to an actual incident.
Following each exercise a hot-wash will be conducted and opportunities to improve shall be identified, noted and the action to incorporate changes to plans recorded in 'Tr@ction' (BP's Incident reporting & safety management database) with an identified individual, clearly articulated actions and a completion time.

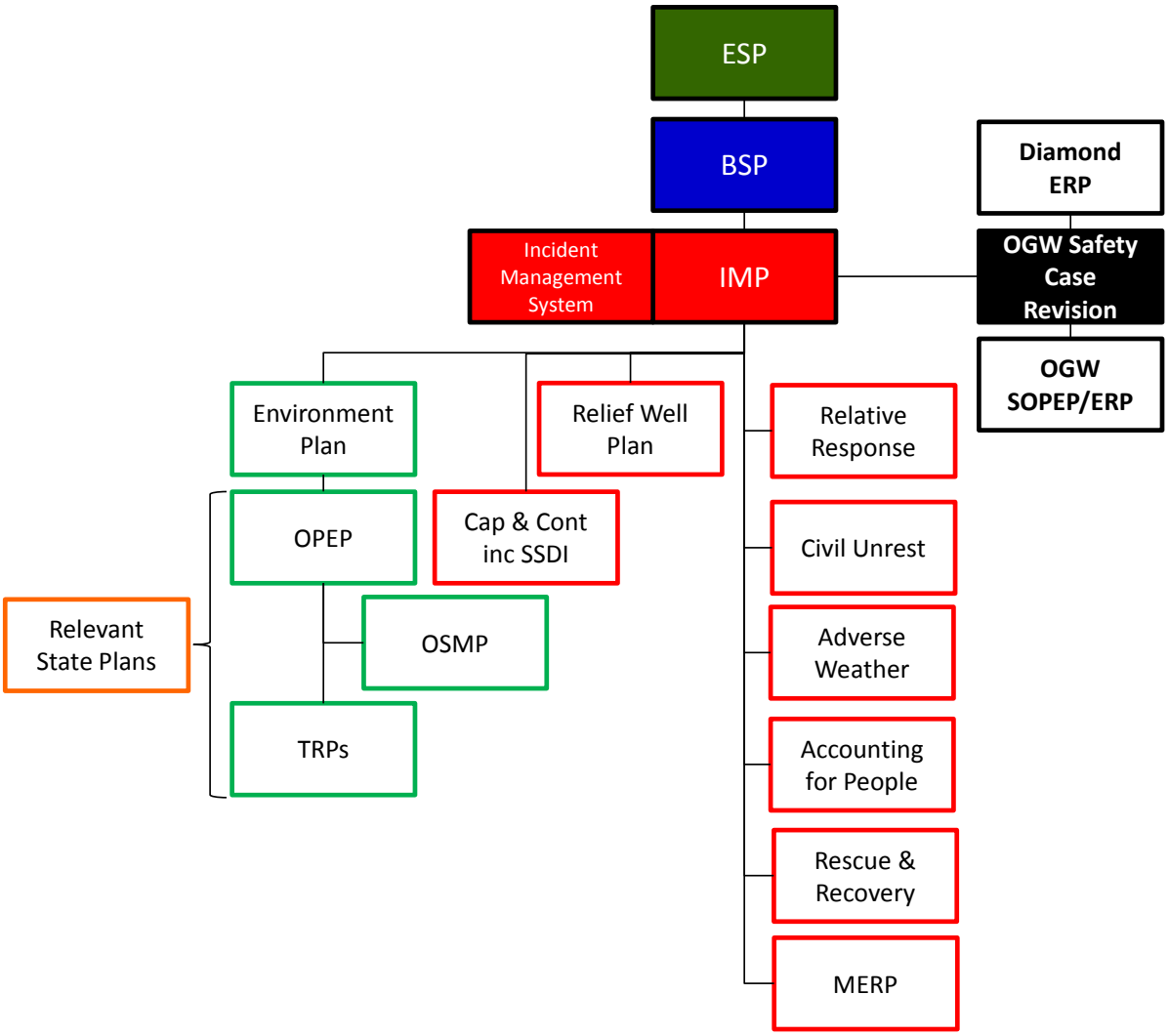
Figure 6-1: Incorporating lessons and recommendations from exercises and incidents



7 Linked Plans and References

BP's HSSE Management System and Elements of Operating are described in more detail within section 9 of the EP (Implementation Strategy).
A suite of other related plans and magment documents exist which support an overall response.The oil spill response management arrangements outlined in this OPEP reflect the ICS response organisation structures and associated documentation. How all these plans and documents are related, linked and interface with BP is shown below.

Figure 7-1: A graphical representation of the relationship between all emergency plans and documents



In addition to these external documents, implementation of the OPEP will rely on the use of a number of other processes and procedures, which are outlined in a range of other industry and

Table 7-1: External references

Global Good Practise – IPEICA series:

- Aerial Observation of Oil Spills at Sea
- Dispersants – Surface Application
- In-Situ Burning of Oil Spills (when available)
- The Use of Decanting During Offshore Oil Spill Recovery Operations
- Oil Spill Waste Minimization & Management
- Dispersants – Subsea Application
- At-Sea Monitoring for Surface Dispersant Effectiveness
- At Sea Containment & Recovery
- A Guide to Oiled Shoreline Assessment Surveys
- Oiled Wildlife Preparedness and Response

Ref: *www.oilspillresponseproject.org*

OSRL Guidance

- OSRL – Aerial Surveillance Field Guide
- OSRL – Waste Management Field Guide

Ref: *www.oilspillresponse.com/technical-library*

Australian National Plan practices guides, good practice and advisories

- Coordination of Cross-Border Incidents
- Discharge of oily water during a maritime emergency response
- Deployment of National Plan equipment
- Activation of the Fixed Wing Aerial Dispersant Capability
- Volunteer Management
- The Register of Oil Spill Control Agents
- Management & Disposal of Oil Spill Debris
- Deployment of National Response Team Members
- Australian Government Coordination Arrangements for Maritime Environmental Emergencies
- Communication Plan

Ref: *www.amsa.gov.au/environment/national-plan/Supporting-Documents/*

BP will also engage strategically with the Offshore Petroleum Incident Coordination Committee. This engagement will be undertaken to ensure coordination of BP and government activities.

8 Appendices

8.1 Notifications and Contacts

8.1.1 Federal Agencies

NOPSEMA

As per the risk assessment presented in Section 6 of the EP, for the GAB project, the only oil spill incident that has the potential to cause moderate to significant environmental damage and is therefore a reportable environmental incident for the purposes of the OPGGS (E) regulations is a well blowout. However, BP will undertake to notify NOPSEMA of any Level 2 or Level 3 incident.
Incidents are to be reported verbally (or by email if phone contact is not possible) to NOPSEMA within 2 hours or as soon as practicable.

Phone: **08-6461 7090**
Email: *submissions@nopsema.gov.au*

AMSA

The National Plan specifies that AMSA is an immediate point of contact in the event of a spill arising from field operations in Commonwealth Waters.
BP is required to report all spills to AMSA and follow up with a POLREP within 2 hours.

Phone: **02-6230 6811 or 1800 641 792 (both 24hours)**
Email: *mdo@amsa.gov.au*

NOPTA

The National Offshore Petroleum Titles Authority (NOPTA) will be advised of a significant incident. The written incident report must also be provided to NOPTA the within 7 days of providing a written report to NOPSEMA.

Phone: **08 6424 5300 (or 5302)**
Email: *info@nopta.gov.au*

DOE

The DOE is to be notified where there is potential for a significant impact on a Matter of National Environmental Significance.

Phone: **(02) 6274 1372 or free call 1800 110 395**
Email: compliance@environment.gov.au

8.1.2 South Australia Agencies

SA SMPC is to be notified as per the following requirements of the Protection of Marine Waters (Prevention of Pollution from Ships) Regulations 2013 (SA):

Phone: **08 8248 3505**

Other SA organisations that should be made aware of a significant spill event that has the potential to affect state waters include:

SA DSD as the Department of the responsible State Minister: DSD is to be notified and a copy of the written NOPSEMA report must also be provided.
Phone: **08-8463 6666**
Email: *dsd.engineering@sa.gov.au*

PIRSA FishWatch:
Ph: **1800 065 522** (24/7)

SA EPA: Confirm with SMPC whether the EPA has been notified by the SMPC or whether direct notification is required. Provide details of the caller, the incident, date and time of incident, location and source of pollution.
Phone**: 08-8204 2004 or 1800 623 445**
Email: *apainfo@epa.sa.gov.au*

DEWNR (Coast Protection Board):
Phone: **08-8124 4928**
Email: *DEWRcoastprotectionboard@sa.gov.au*

Flinders Ports:
Phone: **08 8447 0611**
Email: *flindersports@flindersports.com.au*

8.1.3 Western Australia Agencies

In the event that a spill has any potential to enter WA State waters, the WA MEER is to be notified as soon as reasonably practicable (within 2 hours of spill occurring) via the 24 hour reporting number. The duty officer will then advise whether a pollution report (POLREP) and/or situation report (SITREP) are required.
24 hour reporting number: (**08) 9480 9924**

Other WA organisations that should be notified of a significant spill event that has the potential to affect state waters include:

Department of Fisheries
Phone: **0433 151 567**
Email: *environment@fish.wa.gov.au*

Depratment of Mines and Petroleum (DMP)
Phone: **0419 960 621 (24/7**)
Email: *petroleum.environment@dmp.wa.gov.au*

Esperance Port Authority:
Phone: **0428 712 111**
Email: *admin@epsl.com.au*

8.1.4 Contacts Table

Federal Agencies	
NOPSEMA	**08 6461 7090**
NOPTA	**08 6424 5302**
AMSA	**02 6230 6811**
DoE	**1800 110 395**
South Australia	
SMPC	**08 8248 3505**
DSD	**08 8463 6666**
DPTI	**0418 806 054**
PIRSA	**1800 065 522**
DEWNR	**0417 801 094**
Flinders Ports	**08 8447 0611**
Western Australia	
DMP	**0419 960 621**
MEER	**08 9480 9924**
DoT	**08 9480 9924**
DER	**1300 784 782**
DPW	**08 9219 9108**
DoF	**0433 151 567**
Esperance Port Authority	**0428 712 111**
Tasmania	
Environment Protection Agency	**1800 005 171**
Victoria	
Department of Economic Development, Jobs, Transport and Resources	**03 9208 3404**
New South Wales	
Transport for New South Wales	**02 9962 9074**

Key Oil Spill Response Organisations (OSROs)	
OSRL	**+ 44 2380 331551 (UK)** **+ 65 6266 1566 (Singapore)**
AMOSC	**0438 379 328**

8.2 Aerial Observation; Spill Release Size Estimation

Release Size Estimation Guide					
If the source/quantity is unknown then a visual estimation can be attained based on the relationship between observed hydrocarbon colour and its thickness using Bonn Agreement Oil Appearance Code. Observations can be taken from the MODU, support vessel, crew change helicopter or dedicated aerial surveillance aircraft.					
Step 1:	**Total area: estimate total size of the area as a square or rectangle (in km^2).**				
	Average Width (km)		Average Length (km)		
Total Area =		X		=	km^2
Step 2:	**Hydrocarbon release area: Assess the area affected by the slick in km^2 calculated as a % of the total area (i.e. 90% of 20 km^2 = 18 km^2)**				
Hydrocarbon Release Area (Estimated)		km2			

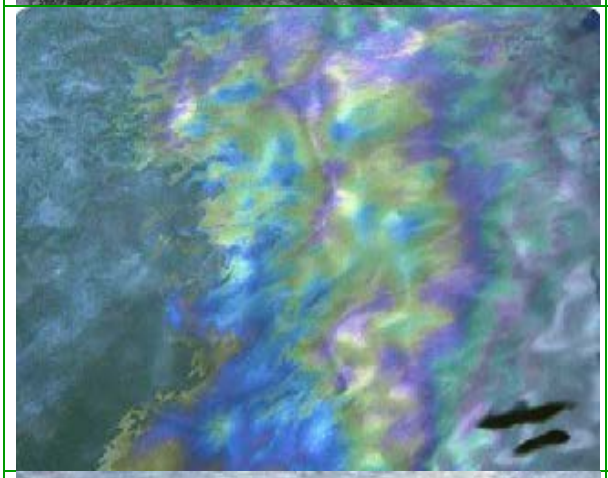
Step 3:	**Calculate area by colour: Estimate the area covered by each colour of hydrocarbon as a % of area affected in km^2 (i.e. 60% Silvery, 40% Metallic = 10.8km^2 and 7.2km^2 respectively)**				
Colour	Code	Minimum (m^3/km^2)	Maximum (m^3/km^2)	Step 3	
				% of Area Affected	Area Covered (km^2)
Oil Sheen Silvery	1	0.04	0.3		
Oil Sheen Rainbow	2	0.3	5.0		
Oil Sheen Metallic	3	5.0	50		
Discontinuous True	4	50	200		
Continuous True	5	200	>200		
Calculation for Area Covered: This should be calculated for each code to give Area Covered by Colour km^2 = Area/100 x % of Area Covered.					

Step 4:	**Calculate quantity by colour: Multiply the area covered by each colour (Min and Max) by the appropriate quantity of hydrocarbon in the table (i.e. 10.8 km2 x 0.04 and 0.3 for Silvery and 7.2 km^2 x 5 and 50 for Metallic).**		
Colour	Step 3 (as above)	Step 4	
	Area Covered km^2	Minimum Volume (m^3)	Maximum Volume (m^3)
Oil Sheen Silvery			
Oil Sheen Rainbow			
Oil Sheen Metallic			
Discontinuous True			
Continuous True			

Step 5:	**Total quantity: Add all the quantity by colour figures to get total quantity of hydrocarbon/m3.**	
Total Volume (m^3)	Minimum Volume (m^3)	Maximum Volume (m^3)

Step 6:	**Conversion: If necessary you can covert m3 to tonnes by multiplying total quantity in m^3 by the Specific Gravity (SG) of the released hydrocarbon.**	
Total Volume in Tonnes (m^3 x specific gravity (SG)	Minimum Volume (m^3)	Maximum Volume (m^3)

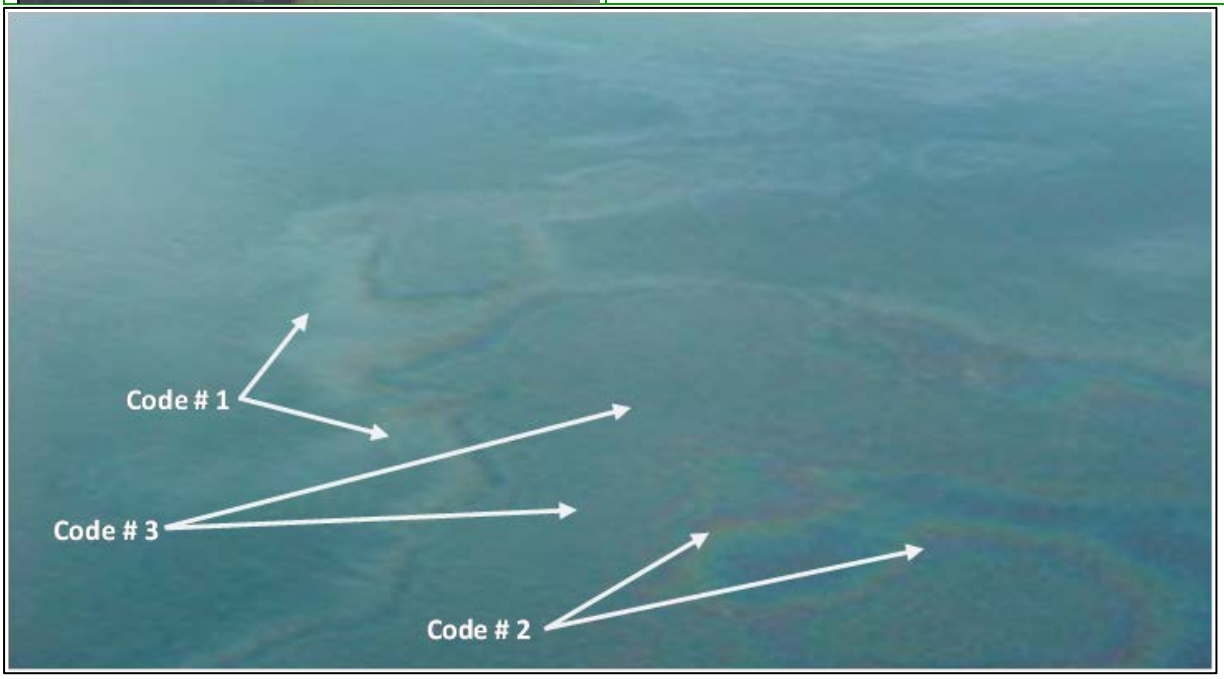
8.3 Bonn Agreement Oil Appearance Code

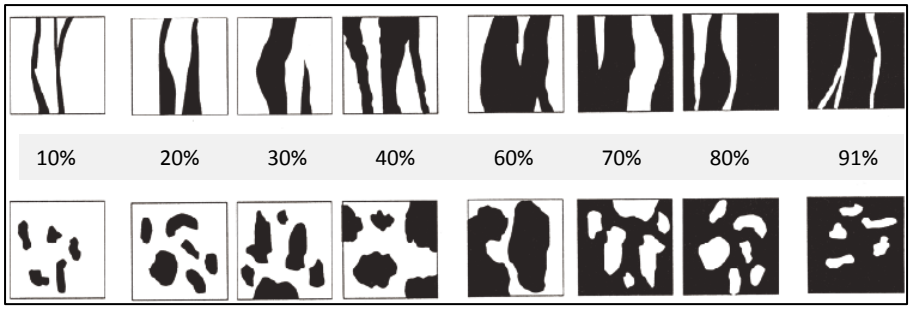
Image	Code
	• **Code 1 Oil Sheen Silvery (< 0.3µm)** The very thin films of oil reflect the incoming light better than the surrounding water and can be seen as a silvery or grey sheen. Above a certain height or angle of view the observed film may disappear. % Of Area Affected_____%
	• **Code 2 Oil Sheen Rainbow (0.3µm to 5.0µm)** Rainbow oil appearance is caused by an optical effect and independent of oil type. Depending on angle of view and layer thickness, the distinctive colours will be diffuse or very bright. Bad light conditions may cause the colours to appear duller. A level layer of oil in the rainbow region will show different colours through the slick because of the change in angle of view. Therefore if rainbow is present, a range of colours will be visible. % Of Area Affected_____%
	• **Code 3 Oil Sheen Metallic (5.0µm to 50µm)** Although a range of colours can be observed (eg blue, purple, red and greenish) the colours will not be similar to 'rainbow'. Metallic will appear as a quite homogeneous colour that can be blue, brown, purple or another colour. The 'metallic' appearance is the common factor and has been identified as a mirror effect, dependent on light and sky conditions. For example blue can be observed in blue-sky conditions. % Of Area Affected_____%
	• **Code 4 Discontinuous True Colours (50µm to 200µm)** For oil slicks thicker than 50µm the true colour will gradually dominate the colour that is observed. Brown oils will appear brown, black oils will appear black. The broken nature of the colour, due to thinner areas within the slick, is described as discontinuous. Discontinuous should not be mistaken for 'coverage'. Discontinuous implies true colour variations and not non-polluted areas. % Of Area Affected_____%

- **Code 5 True Colours (>200µm)**

The true colour of the specific oil is the dominant effect in this category. A more homogenous colour can be observed with no discontinuity as described in Code 4. This category is strongly oil type dependent and colours may be more diffuse in overcast conditions.

% Of Area Affected_____%





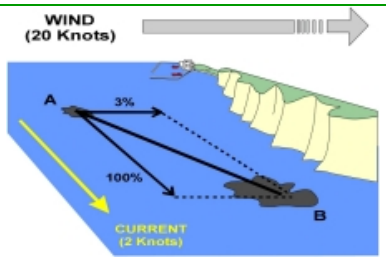
8.4 Manual Spill Trajectory Estimation Technique

Initiation Criteria	**At level 2 spill or greater. To be initiated by the OIM.**

Manual Calculation of Surface Release Trajectory

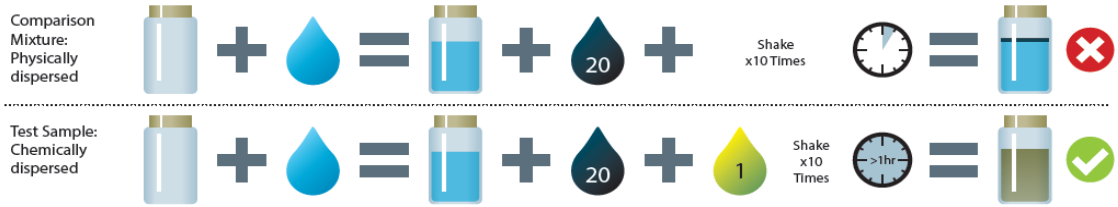
A hydrocarbon slick on the sea surface will move under the influences of:
Wind speed/direction at 3% of the speed and the direction the wind is blowing from,
Current speed and direction at 100% of the current speed and in the direction of the current flow.
Estimating slick movement may be done manually by 'vector' addition using an estimate of current and wind effect. Use the below table to plot the track of the hydrocarbon. A template to record details is available in Appendix D.

Latitude	Enter the latitude of the release when first reported.
Longitude	Enter the longitude of the release when first reported.
Wind	Enter the wind bearing and speed.
Tide	Enter the tide bearing and speed.
Elapsed	Calculate 3% wind speed, tidal bearing and speed over 8-hour elapsed period.
Plot	After calculating wind and tidal bearings for each hour to a maximum of 8 hours, calculate new latitude and longitude position of slick to a maximum of 8 hours.



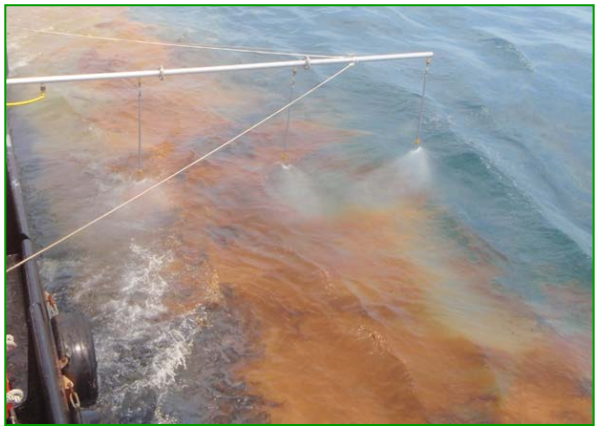
Spill moves from point A to B under the influences of the wind and surface current

8.5 Dispersant Efficiency Field Test

1	Conduct basic field dispersant effectiveness test – Test the amenability of the released hydrocarbon to dispersants following the sampling of the slick. This should be done as quickly as possible after taking the sample. Tools required: 2 x clear glass containers (with lids) Plastic bottles are not adequate as the oil will adhere to the plastic and affect your results. Seawater Dispersant (small quantity) Oil (same that has been released, or potentially released) Pipette (optional) The test should be carried out as follows (instructions below cover one control sample for comparison and one test sample): Take one glass jar and fill 3/4 with seawater. Add 20 drops of oil to the water using the pipette, or if not available gently pour a small amount to cover the water surface to about 1 mm thickness. Cap the jar and shake the oil and water mixture lightly about 10 times. The oil and water should not mix very well and the droplets should rise to the surface quickly leaving the water fairly clear. This is your comparison mixture. Take the second clean jar and repeat Steps 1 to 3, but also add one drop of your dispersant to the mixture before shaking. This is your test sample. The oil and water mixture should now mix to form a cloudy mixture in the jar, with very small droplets that rise to the surface very slowly (longer than an hour) if left undisturbed. Compare your comparison mixture with the test sample. If the dispersant is effective you should see a marked increase in water cloudiness and less surface oiling. The greater the difference the more effective the dispersant has been.  Pictures and text courtesy of Vessel Dispersant Application Field Guide, (OSRL, Version 1, 2011).
2	Determine window of opportunity – Confirm the extent of sea-surface oiling on which dispersant will be effective (crude/dispersant effectiveness timeframe) i.e. within XX hours or XX kilometres from the release point).
3	Identify spray parameters – Undertake calculations to select correct pumping rate and vessel/aircraft speed in relation to nozzle size (delivery rate) and effective swath width of the equipment. Commence spraying operations with a DOR of 1:20. Note: Recommended DOR is 1:20 i.e. 20 m^3 of crude oil should be dispersed by 1 m^3 of dispersant. This ratio may need to be revised depending upon the condition of the crude oil, the dispersant being used, and type of application equipment on board the support vessel.
4	Conduct a test spray – Identify a patch of continuous true coloured oil as defined in the BAOAC. Prepare vessel for spraying operations, enter the slick at the

	recommended speed and commence spraying at a consistent rate. Observe hydrocarbon/dispersant interaction – During spraying operations look for evidence of dispersion. If dispersion is achieved it will produce a grey or coffee coloured plume in the water. The dispersion will vary in colour between dark and light brown. There may also be noticeable movement of oil from the surface into the water column. A milky white plume in the water close to the surface indicates the dispersant is not being effective and spraying is to stop. Inform the OIM/IMT.
5	Further observation – Once the test spray run is complete, further evaluate efficacy as per OSMP Operational Monitoring Study 4.
6	Report findings – Document findings and report to the OIM and Onshore IMT for discussion with regulatory authorities. Only commence spraying once further approval has been sanctioned through IMT.

Example of where dispersion has been achieved (grey or coffee coloured):



Example of where dispersant application has been ineffective (milky white coloured):