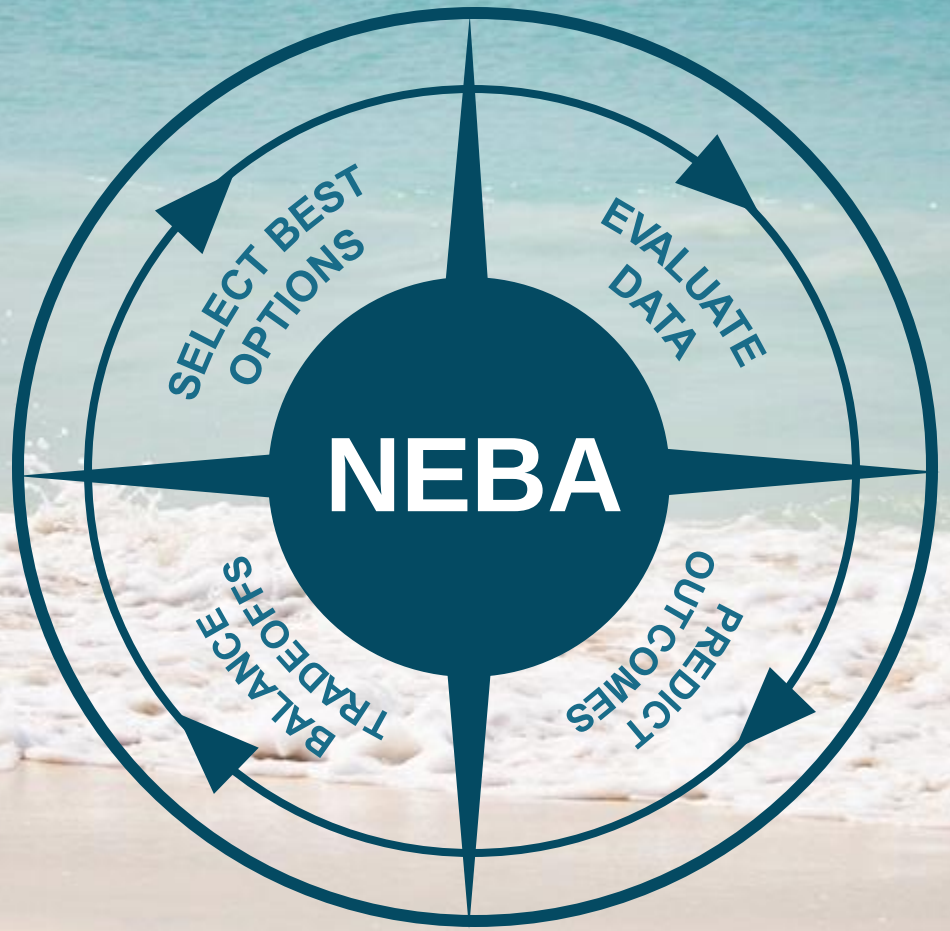
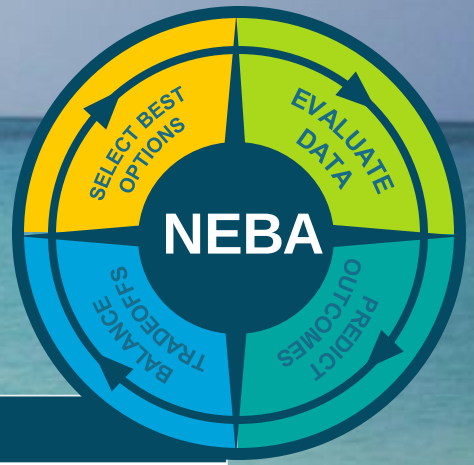
NEBA Considerations Under Covid-19

HOW RESPONSE STRATEGY SELECTION IS INFLUENCED



Oil Spill Response

NEBA Considerations Under Covid-19



1. EVALUATE DATA

Spill volume / trajectory unaffected	*Responder Health – a new "Resource at Risk"*	*Prioritise response techniques that minimize responder headcount; don't rule anything out!*
Update ESI maps with Covid-19 specific / relevant information	*What restrictions are in place for the region/country?*	*Consider use of additional autonomous systems e.g. UAV, AUV etc*

2. PREDICT OUTCOMES

No Intervention case should consider Covid-19 presence as default	*Consider the use of emerging techniques to increase encounter rate e.g. herders, ISB to reduce shoreline impact and hence responders numbers on beaches. Apply higher engagement of digital technologies for surveillance, sampling and monitoring.*	*The addition of this new risk coupled with the clear priority for protection of people prompts the consideration of novel techniques e.g. nearshore dispersant use in appropriate setting*
The protection of people always takes highest priority	*Evaluate risk to Responder Health as highest priority*	*Modelling outputs unaffected*

HOW RESPONSE STRATEGY SELECTION IS INFLUENCED

3. BALANCE TRADEOFFS

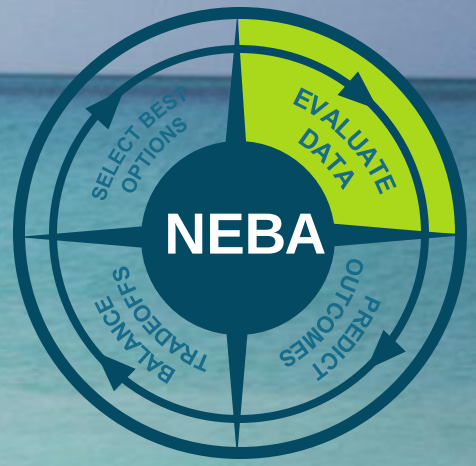
Covid-19 mitigation techniques (quarantine, bubbles, testing) to allow safe inclusion of specialist international resources to complement in-country capability	*Use hierarchy of controls to eliminate techniques that produce an overly high risk to human health*	*Use digital collaborative tools for stakeholder engagement tasks*	*Gain unanimous consensus that health risk is a top priority*
Favour the overall strategy that reduces health risk to Covid-19 exposure but balances environmental impact mitigation	*Use Alternative Response Technologies that reduce exposure risks*	*Remain more flexible than normal due to temporal /spatial changes in infection incidence*	

4. SELECT BEST OPTIONS

Ensure a clear Covid-19 justification of the chosen strategy is front and centre	*Select the option that reduces the overall risk of Covid-19 to human health to ALARP*	*Develop a justified technical case then weigh against any regulatory limitations*

NEBA Considerations Under Covid-19

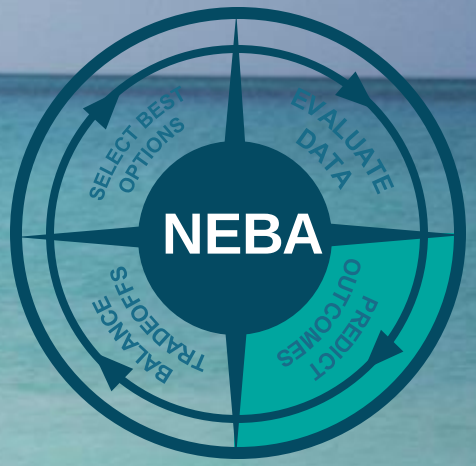
HOW RESPONSE STRATEGY SELECTION IS INFLUENCED



1. EVALUATE DATA		
Spill volume / trajectory unaffected	*Responder Health – a new "Resource at Risk"*	*Prioritise response techniques that minimize responder headcount; don't rule anything out!*
Update ESI maps with Covid-19 specific / relevant information	*What restrictions are in place for the region/country?*	*Consider use of additional autonomous systems e.g. UAV, AUV etc*

NEBA Considerations Under Covid-19

HOW RESPONSE STRATEGY SELECTION IS INFLUENCED

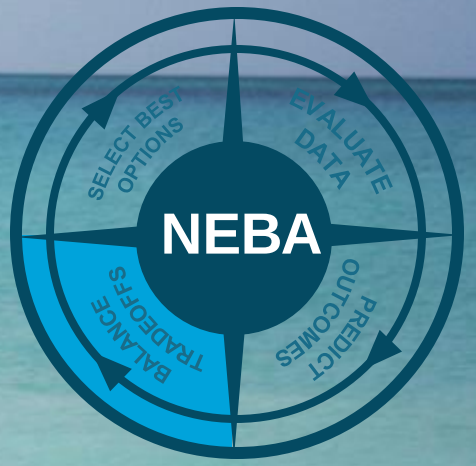


2. PREDICT OUTCOMES

No Intervention case should consider Covid-19 presence as default	*Consider the use of emerging techniques to increase encounter rate e.g. herders, ISB to reduce shoreline impact and hence responders numbers on beaches. Apply higher engagement of digital technologies for surveillance, sampling and monitoring.*	*The addition of this new risk coupled with the clear priority for protection of people prompts the consideration of novel techniques e.g. nearshore dispersant use in appropriate setting*
The protection of people always takes highest priority PEAR	*Evaluate risk to Responder Health as highest priority*	*Modelling outputs unaffected*

NEBA Considerations Under Covid-19

HOW RESPONSE STRATEGY SELECTION IS INFLUENCED

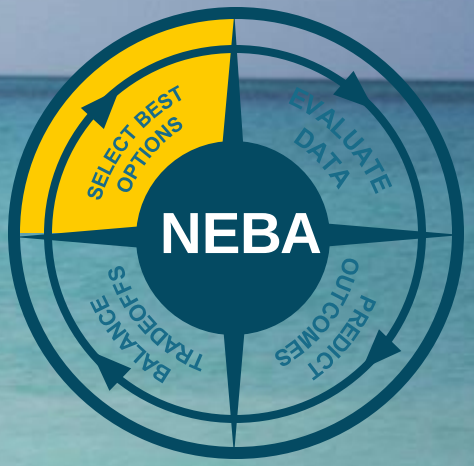


3. BALANCE TRADEOFFS

Covid-19 mitigation techniques (quarantine, bubbles, testing) to allow safe inclusion of specialist international resources to complement in-country capability	*Use hierarchy of controls to eliminate techniques that produce an overly high risk to human health*	*Use digital collaborative tools for stakeholder engagement tasks*
		Gain unanimous consensus that health risk is a top priority
Favour the overall strategy that reduces health risk to Covid-19 exposure but balances environmental impact mitigation	*Use Alternative Response Technologies that reduce exposure risks*	*Remain more flexible than normal due to temporal /spatial changes in infection incidence*

NEBA Considerations Under Covid-19

HOW RESPONSE STRATEGY SELECTION IS INFLUENCED



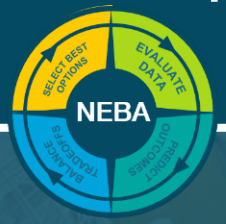
4. SELECT BEST OPTIONS

Ensure a clear Covid-19 justification of the chosen strategy is front and centre	*Select the option that reduces the overall risk of Covid-19 to human health to ALARP*	*Develop a justified technical case then weigh against any regulatory limitations*

NEBA Considerations Under Covid-19

CRUDE OIL CARGO RELEASE NEARSHORE

1000 tonnes of medium crude oil, 1.5km offshore from an environmentally sensitive coastline, 15m water depth, shoreline impact predicted < 1 day



Non Covid-19		Covid-19 Active
Dispersant application not typically used in shallow water environments	*Dispersant application*	*Targeted dispersant application operations to reduce impact on specific sites*
Containment and Recovery operations as default	*Containment & Recovery operations*	*Consider increased C&R operations utilising enhanced recovery operations*
Slow uptake due to default of familiar techniques	*Alternative technologies*	*Consider greater application of Herder and ISB techniques to reduce personal demand if feasible*
Multiple shoreline assessment (SCAT) teams deployed to survey	*Shoreline assessment teams*	*Restrict shoreline assessment teams – consider digital solutions e.g. UAVs*
Shoreline protection over large range of locations	*Shoreline protection*	*Highly targeted shoreline protection to most vulnerable / sensitive areas*
Large volume of shoreline clean up operations	*Shoreline clean up*	*Restricted with COVID mitigation techniques applied. Volunteer management challenges.*

NEBA Considerations Under Covid-19

OIL IMPACTED SHORELINE

5km sandy shoreline		
Pre Covid-19		**Covid-19 Active**
Large number of assessment teams across multiple segments	***Assessment methods***	*Reduce assessment team numbers; Consider alternative assessment methods e.g. UAVs, canine SCAT for buried oil*
Shoreline protection for higher sensitivity locations	***Shoreline protection techniques***	*Highly targeted shoreline protection to most vulnerable / sensitive areas – leverage all local capacity*
Differing levels of mechanical removal techniques employed usually *High level of manual removal with large responder numbers to manage* *Large number of logistics to support shoreline operations*	***Mechanical and manual removal operations***	*Potential increased mechanical techniques to reduce need for large manual recovery teams* *Simplified and reduced range of manual removal teams / techniques under strict Covid-19 controls and responder team "bubbles"* *Higher level of pre-impact debris removal* *Consider greater use of low intervention operations such as sediment relocation operations*