

Australia's Biofouling Management Requirements: Lessons Learnt from Undertaking Vessel Inspections for Invasive Marine Species

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- Overview of the various Biofouling Management Requirements in Australia
- Undertaking vessel inspections for Invasive Marine Species (IMS)
 - Vessel types
 - Types of inspections
 - When and where the inspections occur
 - Methods for undertaking an inspection
 - Methods for treating vessels
 - Key lessons learnt

Department of Agriculture, Fisheries and Forestry (DAFF Biosecurity)

- Have been developing biofouling management requirements since 2005
- *Quarantine Act 1902, Proclamation 1998 and Regulations 2000* can act upon quarantinable pest = biofouling pests
- New *Biosecurity Act* likely to have similar powers, but no specific biofouling powers
- *Biosecurity Act* designed to accommodate domestic ballast water management

Biofouling Management – Northern Territory



Department of Primary Industry and Fisheries

- *Fisheries Act 2011* and *Fisheries Regulations 2012*
- Schedule 1 (44 aquatic pests)
- All yachts seeking entry into Darwin marinas must complete an on arrival questionnaire
 - If necessary, in-water inspection
 - If found contaminated, immediate treatment (local slipways)
 - All internal seawater systems treated using 1% detergent for 14 hours

Biofouling Management – Western Australia



Department of Fisheries (DoF)

- *Fish Resource Management Act 1994 (FRMA) and Regulations 1995 (FRMR)*
- *FRMR Regulation 176* – no “non endemic fish species” = any biofouling species
- *Environmental Protection Act 1986* - Minister for Environment has set Ministerial Conditions for all new port expansion and oil and gas development projects
- All vessels/infrastructure must pose a “low risk” of introducing Invasive Marine Species



Woodside Energy Ltd

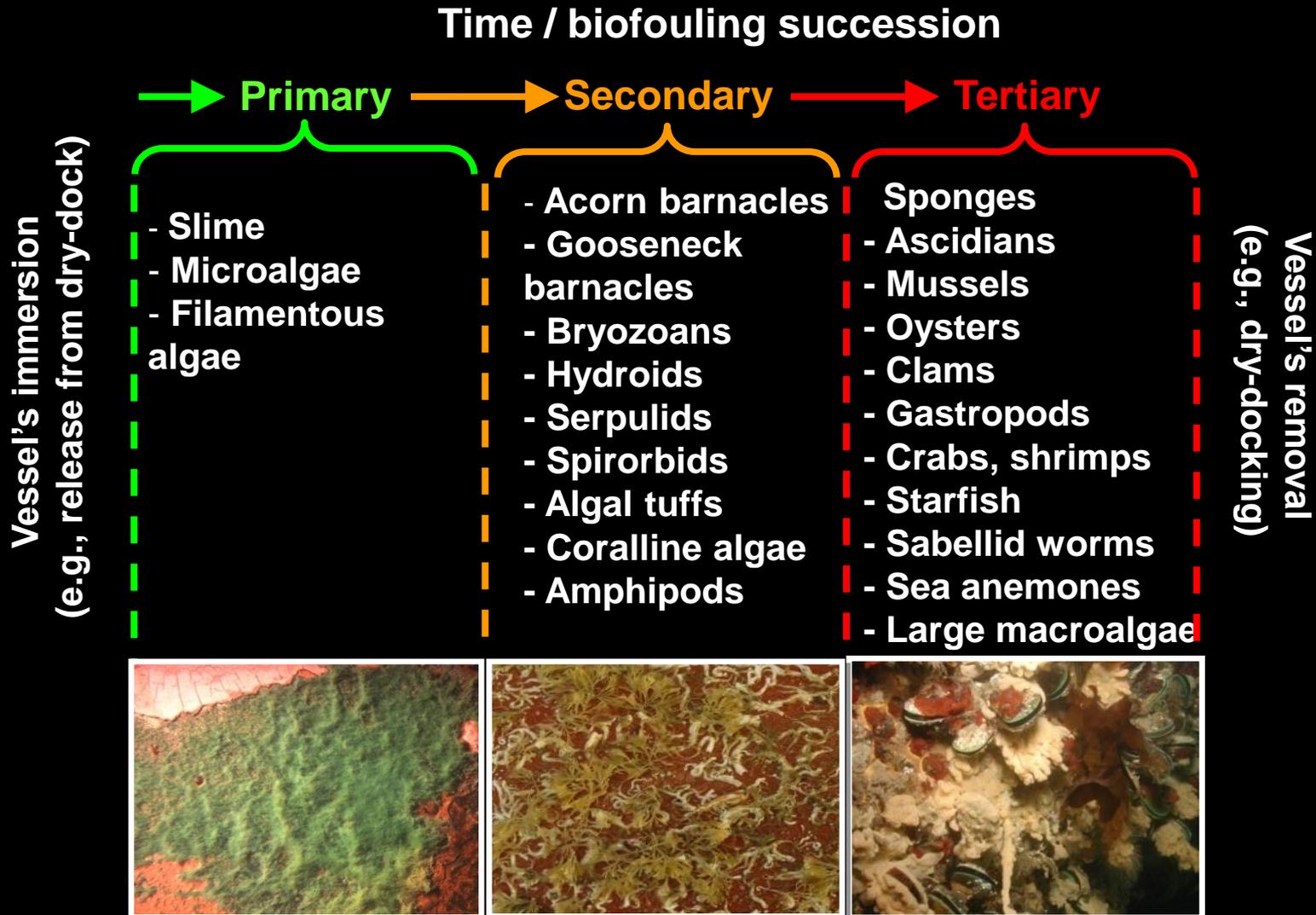
- Introduced Marine Species Management Plan
- Invasive Marine Species Management Area (12 nm and < 50 m depth)
- 56 Target Invasive Marine Species of Concern
- Questionnaire
- Risk based approach using their Vessel or Rig Risk Assessment Score Sheet (VRASS or RRASS)



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- Gorgon Project
- Barrow Island – A Class Nature Reserve
- Three Marine Quarantine Management Zones
 - Quarantine Reporting Zone (beyond 2.5 kms)
 - Quarantine Limited Access Zone (bw 2.5 and 500 m)
 - Quarantine Controlled Access Zone (within 500 m)
- Vessels visiting two inner zones must be free of secondary biofouling

The biofouling process - Simplistic



- WA Department of Fisheries have endorsed ~10 IMS inspectors
- All inspectors have research background or experience with marine pests and/or scientific/commercial diving experience
- Collectively, IMS inspectors have >75 years experience
- National Accredited Biofouling Inspectors Course
- Since 2006, IMS inspectors have inspected 1,800 -2,000 vessels
- Mining, oil and gas related infrastructure

Vessel Inspections – Vessel types



Inspection Types



1). Dry - (vessel maintenance facilities, heavy-lift vessels)



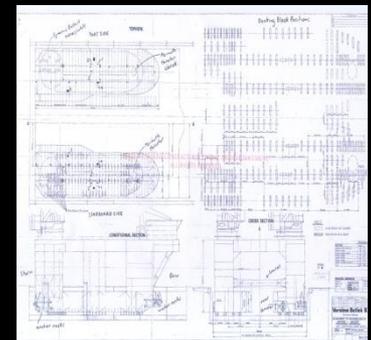
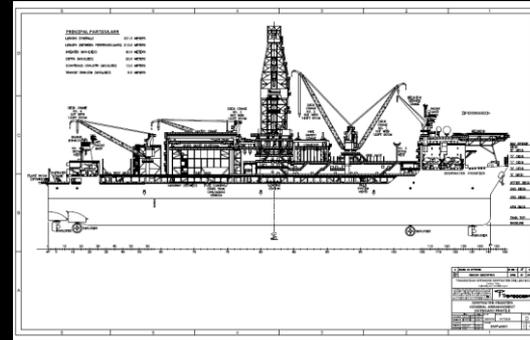
2). Wet - (commercial divers and Remotely Operated Vehicles)



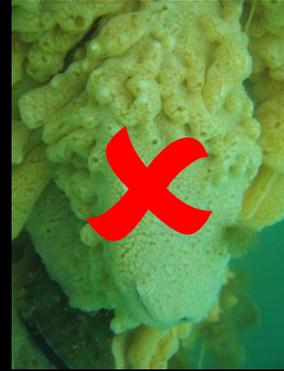
Vessel Inspections



- Pre-inspection risk assessment
 - Biofouling standard
 - Voyage and maintenance history (since previous coating application)
 - Vessel type/design
 - Marine Growth Prevention System (present?)



1). Targeted IMS of concern



2). Level of biofouling

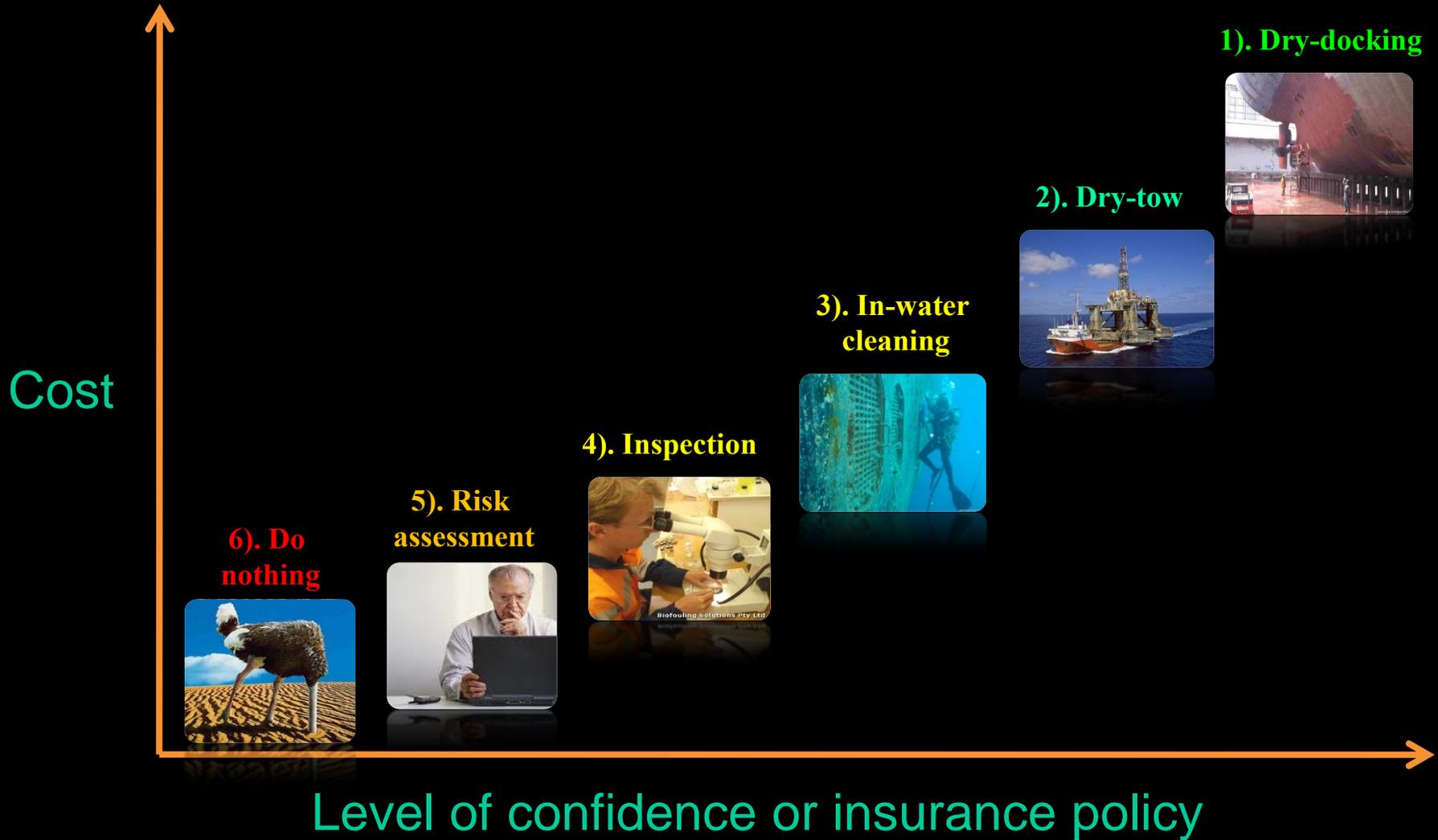
Primary (Algae)



Secondary or tertiary (invertebrates)



Management options



Vessel Inspections - Protocol



- Toolbox meeting
- Voyage Log Book Validation



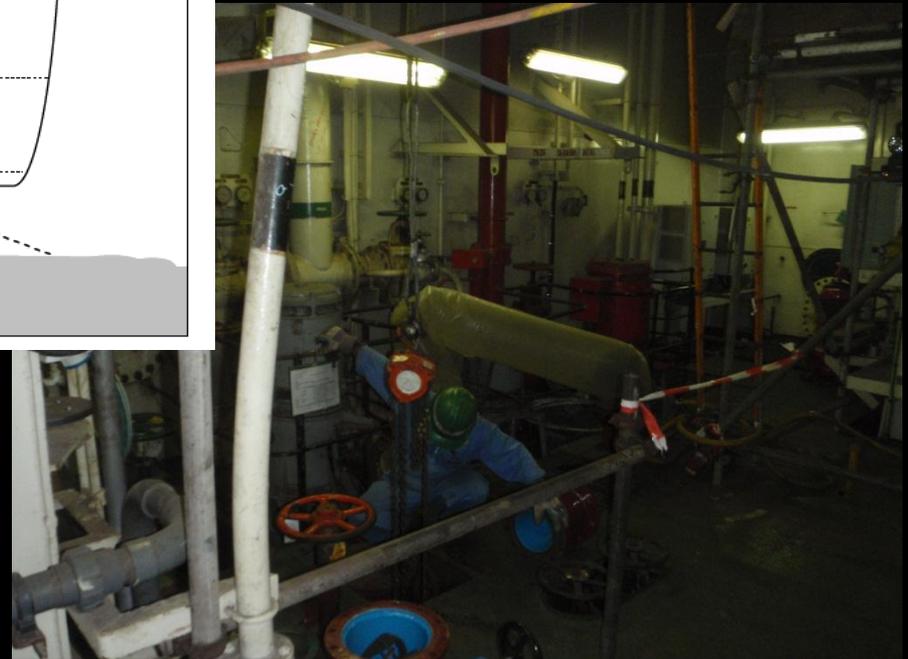
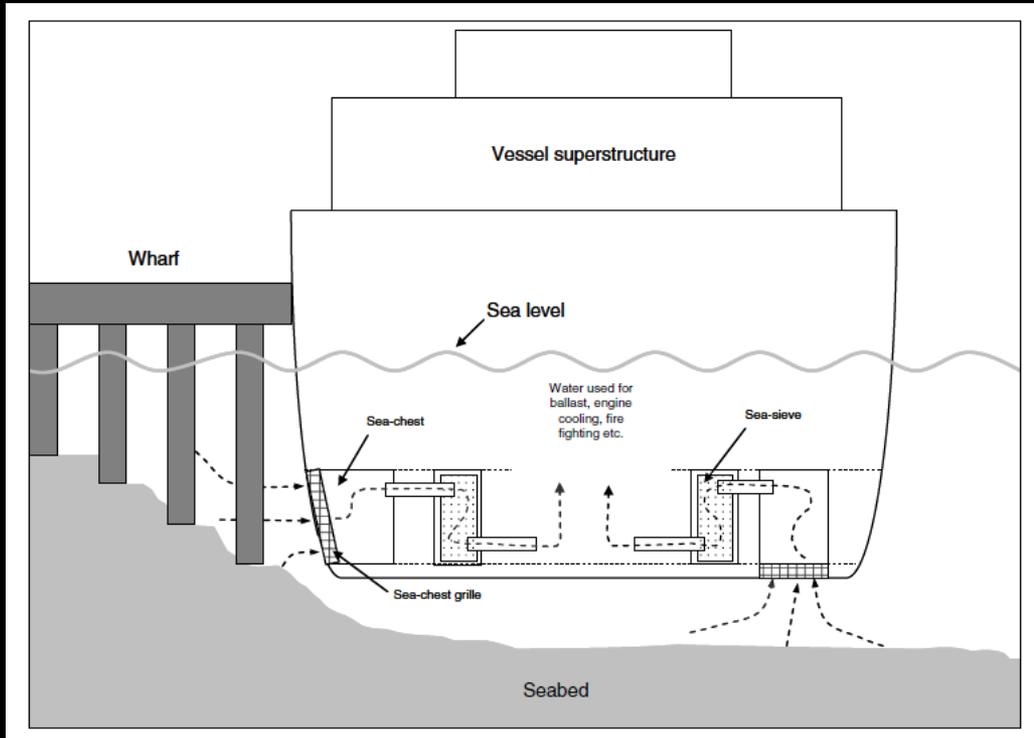
Topside Inspections



- Immersible equipment



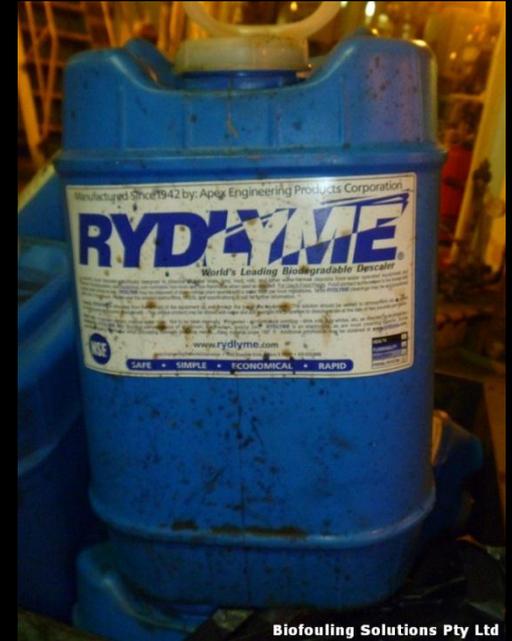
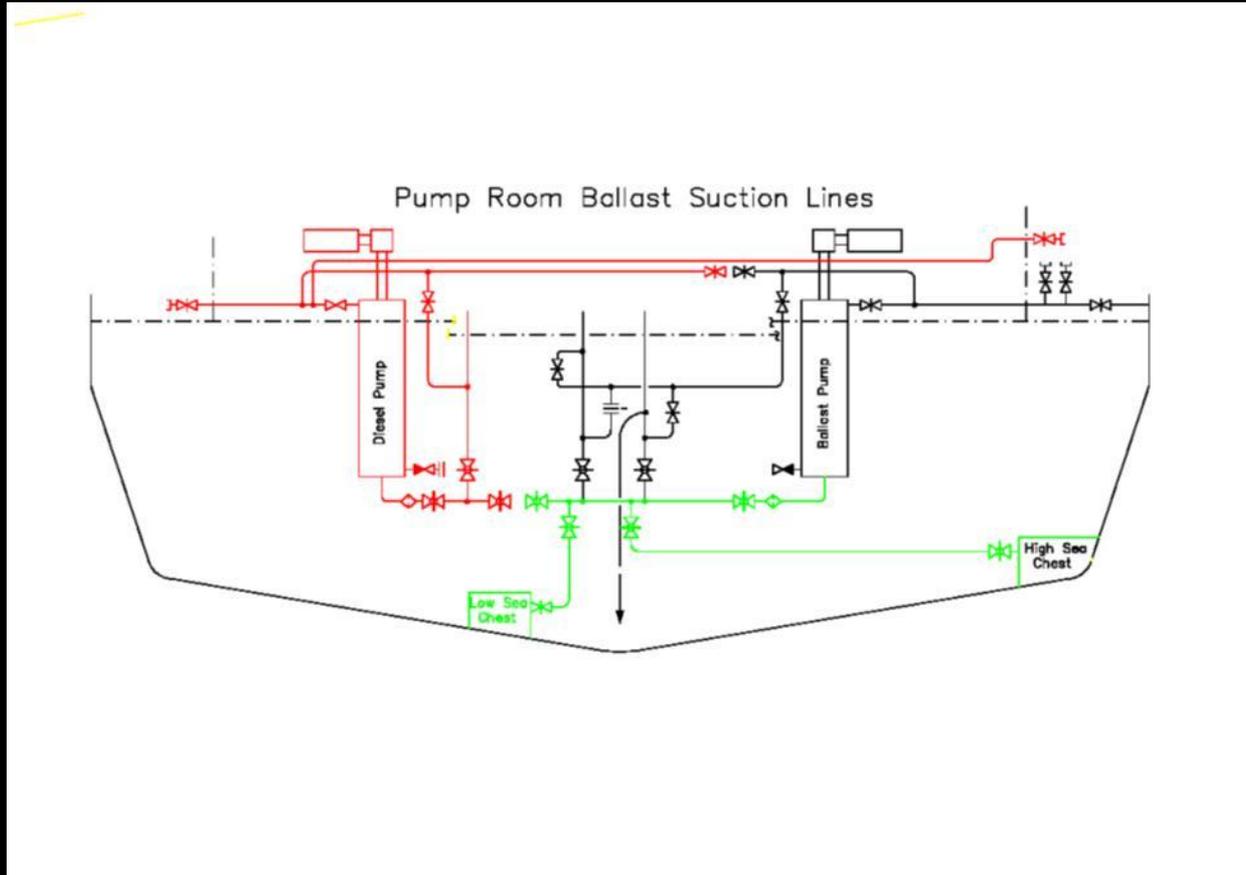
Internal Seawater System Inspections



Internal Seawater System Inspections



Internal Seawater System Treatments



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External hull Inspections



- In-water

- Location

- Water clarity
- Currents
- Vessel traffic

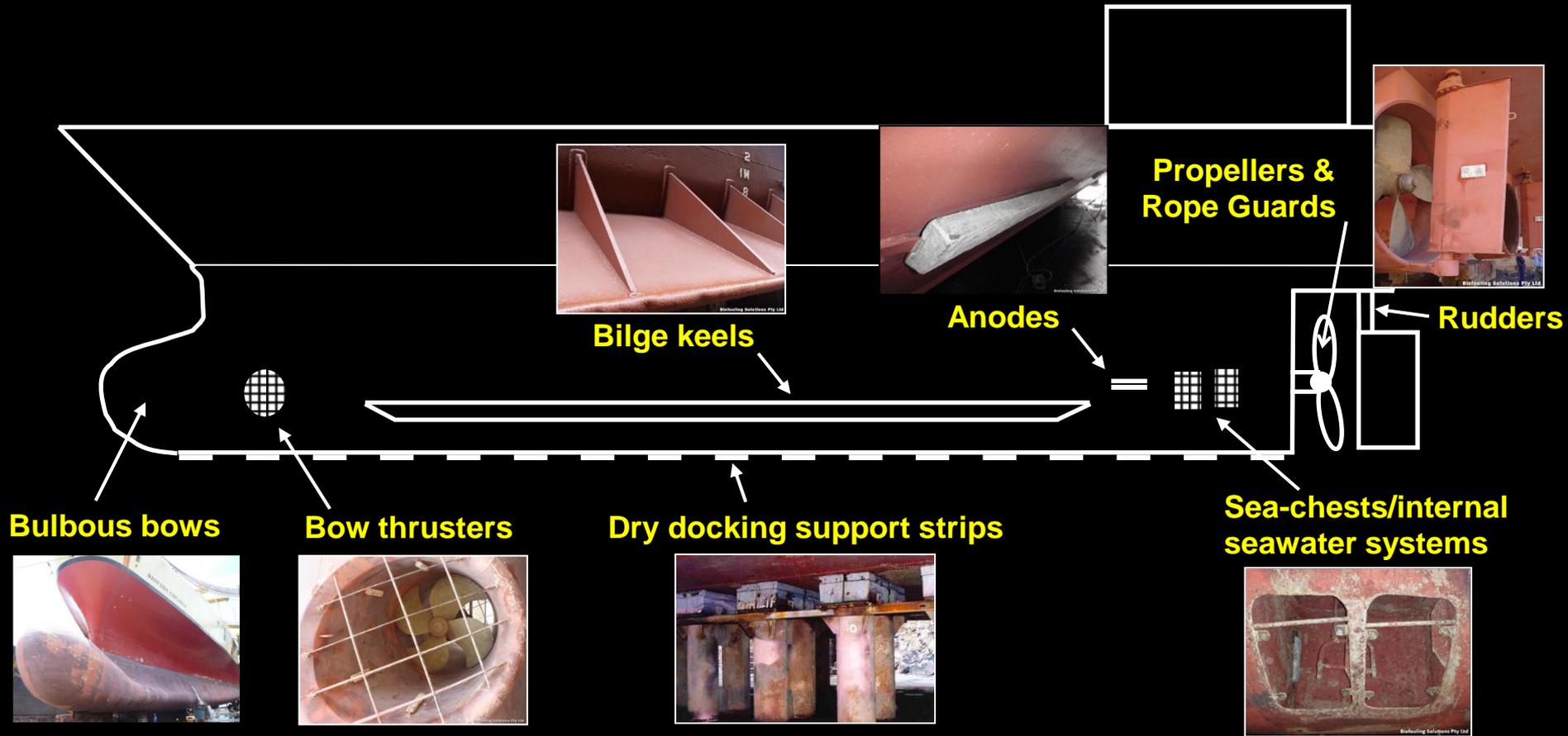
- Competent Commercial Divers/ROV operators

- CCTV, photos and samples

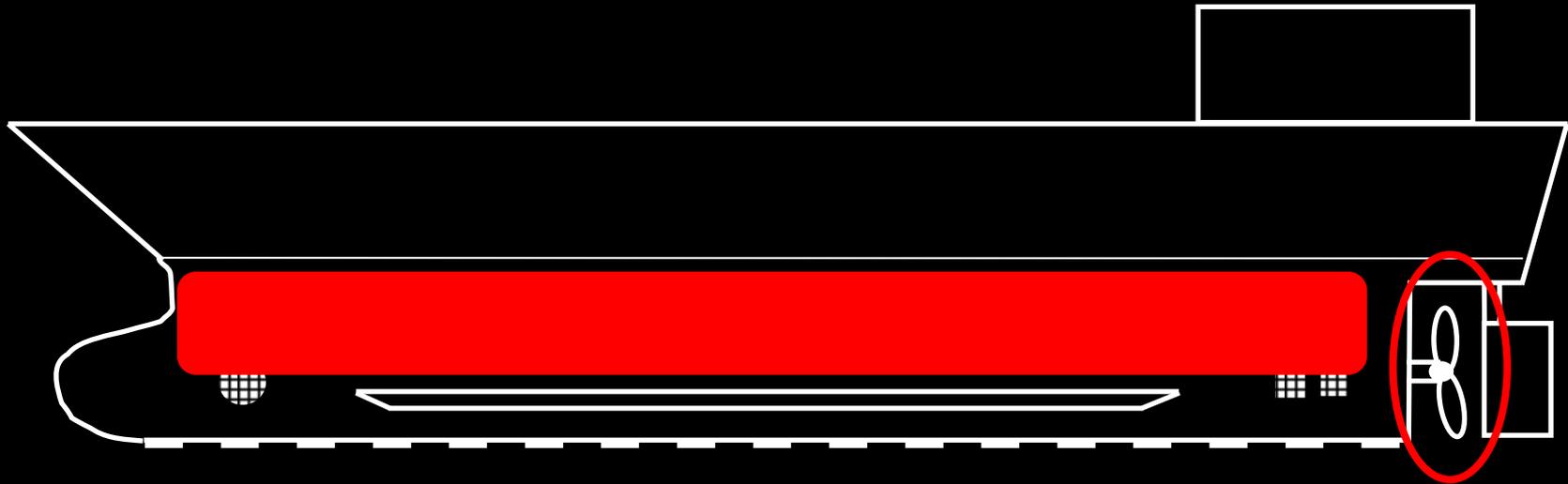
- Inspection confidence rating



External hull Inspections



In-water cleaning



External hull Inspections



- Dry Inspections

- Can thoroughly access all hull locations
- Can thoroughly clean/treat all hull locations



- Key points

- Since 2006, >35 vessels have been denied entry into Australia
- IMS of concern detected on 16-25% of vessels
- Mostly *Perna viridis*, *P. perna* and *Mytilopsis sallei*
- Significant behavioural change
- Industry adopting 7 day departure rule, although we have detected secondary biofouling settlement on non-toxic surfaces on vessels after dry-docking in Singapore within 5 days

- Key points continued....
 - Adoption of various Biofouling Guidelines Biofouling and Management Plans
 - Which is better - Target species approach or level of biofouling approach?
 - Target species approach provides industry with more flexibility, but changing for inspectors
 - Level of biofouling approach provides industry with only two expensive options (constant in-water cleaning and/or dry-docking), but easy for inspectors/regulators

Thank you



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