Desilting Solutions

Spoil Management in confined areas :- Case studies

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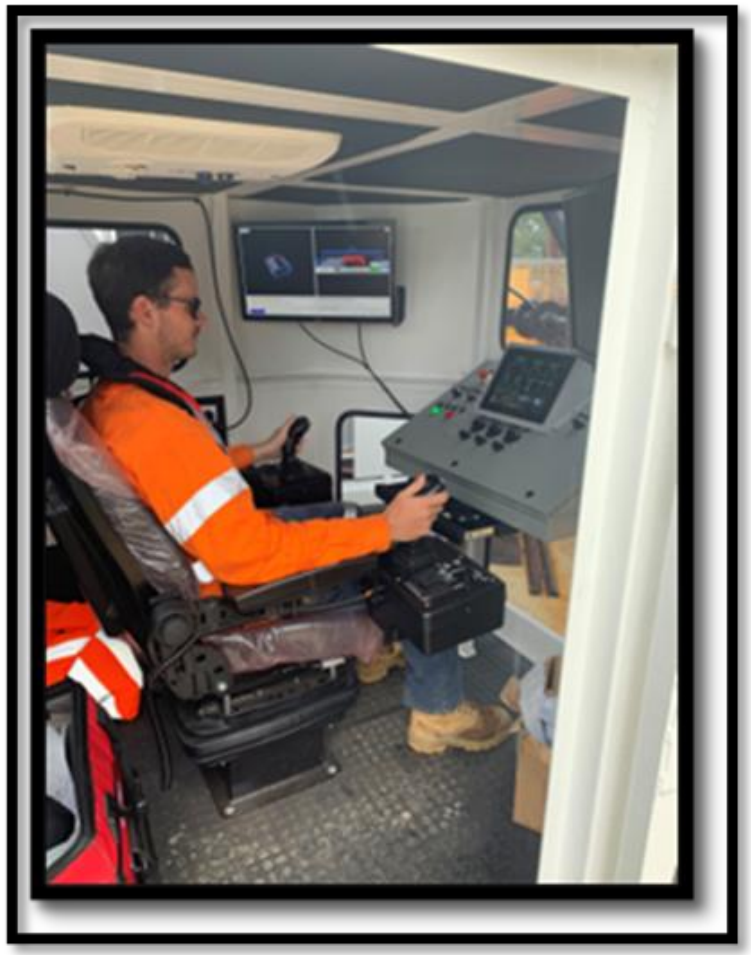
Background

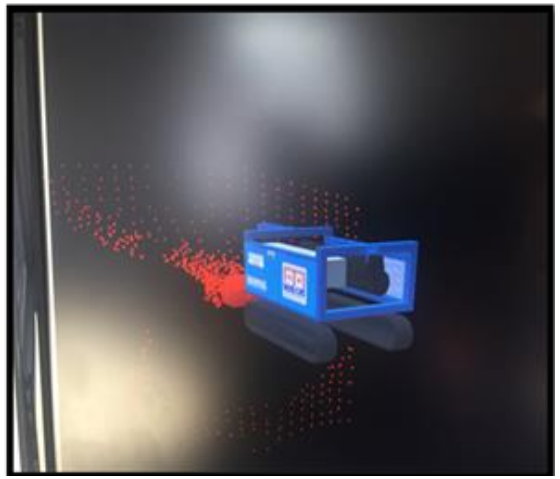
- Desilting Solutions was established after the 2011 floods.
- Major stormwater infrastructure was heavily silted up with variable sediment including:
  - Fine slurry to coarse aggregates and rocks
- Current technology was unable to readily clean the pipework as it was constantly under water.
- ROV was needed which had to have:
  - Unmanned capability.
  - Extended reach (300m)
  - Navigation in turbid water (sonar, lights and CCTV)
  - Capable of excavating a wide range of sediment.
- Spoil Management was a critical component.

The solution Remote controlled submersible robotic dredge (ROV)



ROV Capabilities

- Fully submersible to 20m deep.
- Remote operated from command centre.
- Easily manoeuvrable via two on-board sonar systems, one 3D sonar in the front and one 2D at the back for navigation in poor visibility for manoeuvring in tight submerged areas and through openings in tanks and pipelines.
- Real time CCTV with lights to navigate in clear water.
- Discharge rate of 1600 litre per minute
- Real time monitoring of slurry composition and discharge rates
- Eliminates the need for personal to work in confined spaces.
- Excavate a wide variety of organic and inorganic materials
- Easily transportable



Desilting Process & capability

Desilting Solutions Capability:

- Culverts
- Pipes
- Tailings dams
- Sewage Treatment Plants
- Lined ponds
- Detailed dredging in ports and other water bodies

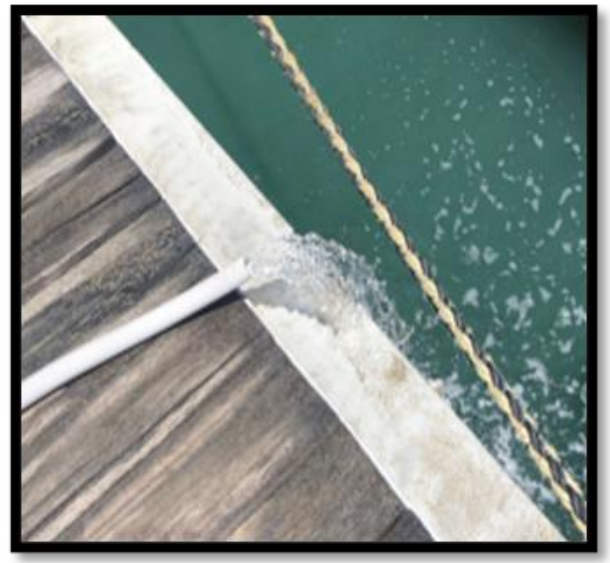
Typical confined access space

Confined space entry

Polymer dosing

- Desilting Solutions provides polymer dosing solutions for all types of sediment in both fresh water and saltwater environments.
- Ongoing effluent analysis provides an environmentally safe and cost-effective process.
- Furthermore, Desilting Solutions can also provide solutions for heavy metal and PFAS removal.

Sediment processing



Solids disposal

Disposal techniques mainly include excavator and tippers with solid spoil representing over 80% of the dredged material:

- Excavator and tippers are low cost and easily available
- Low water content means spoil costs are kept to the absolute minimum.
- Lower water content is achievable with time.

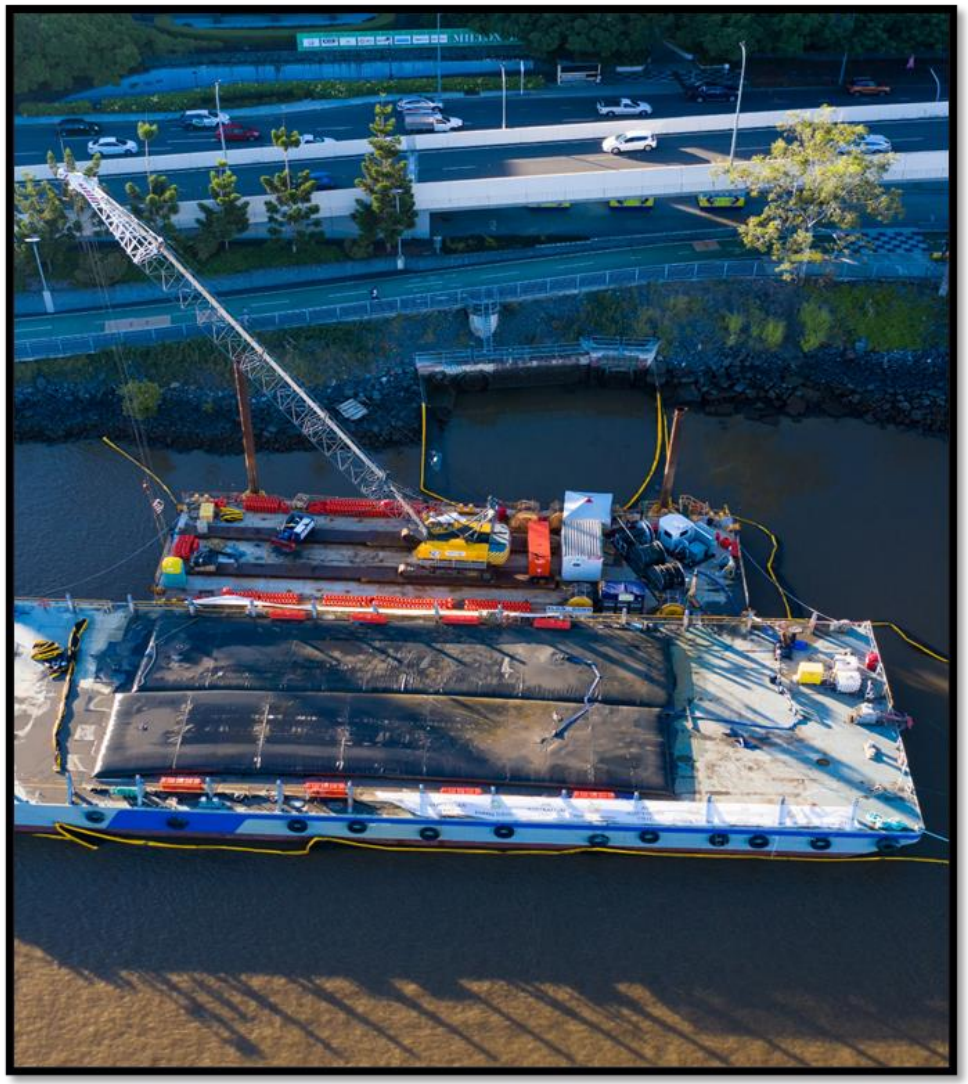
Case study 1: Spoil management for 5,000,000 litres of slurry

Milton Drain – Brisbane CBD – 350m of 3000mm diameter pipe

Management – Brisbane river end

Issues:

- No real estate other than river
- Stability risks associated with barge and river traffic
- GeoTube stability on barge was untested
- Environmental risk with effluent and the entire operation was visible to general public.



Management - Suncorp Stadium site

Challenges:

- Small footprint – lack of real estate
- Managing inflows – Tube capacity
- Tube stability – existing x-section
- Return water management

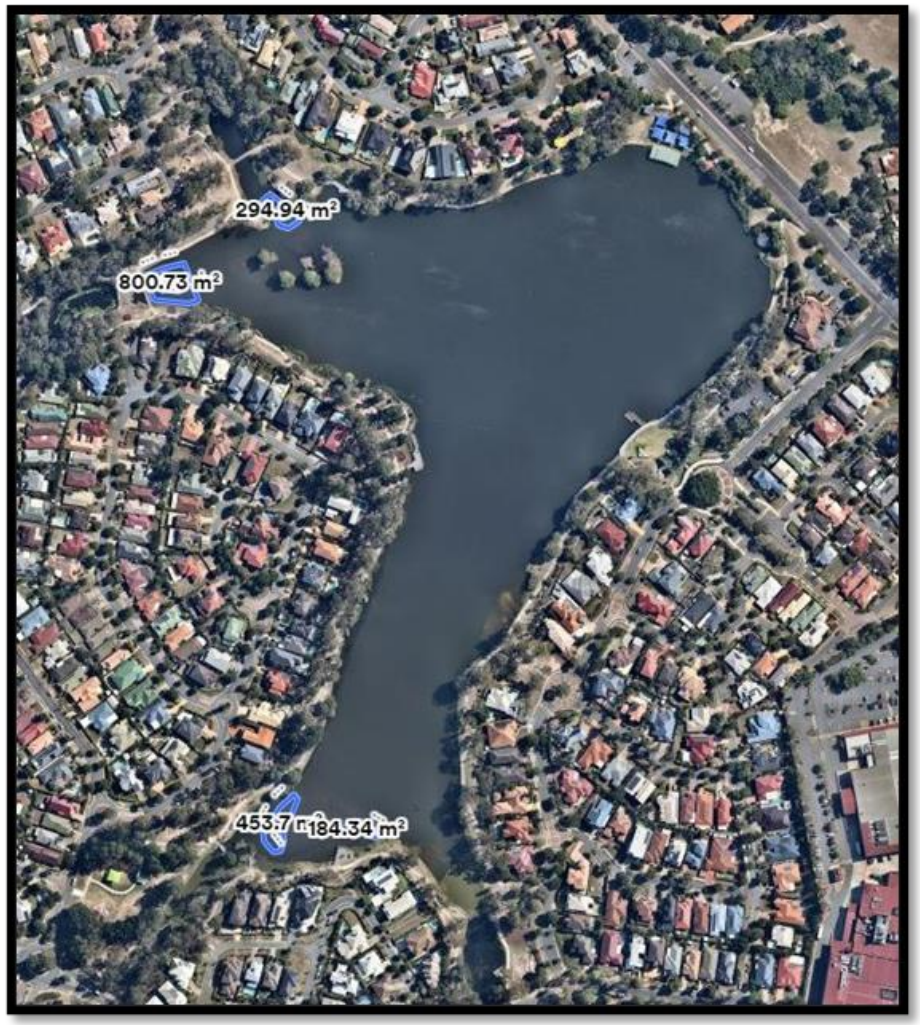
GeoTube outcome

Huge success in terms of:

- No environmental incidents
- No safety incidents
- Barge stability management by staff during works
- Floc dosing and solids separation managed precisely.
- 5,000,000 litres of slurry to 1,800 t solid spoil.

Case study 2: Spoil management for targeted dredging in Forest Lake, Queensland

Forest Lake estimated quantity – 520m3



Spoil Management

Challenges:

- Walking track around the lake could not be closed for any length of time.
- Site was highly visible to residents and walkers.
- Very small footprint – limited GeoTube size and production rates
- Stability risks associated available GeoTube sites.
- Environmental risk with effluent.

GeoTube outcome

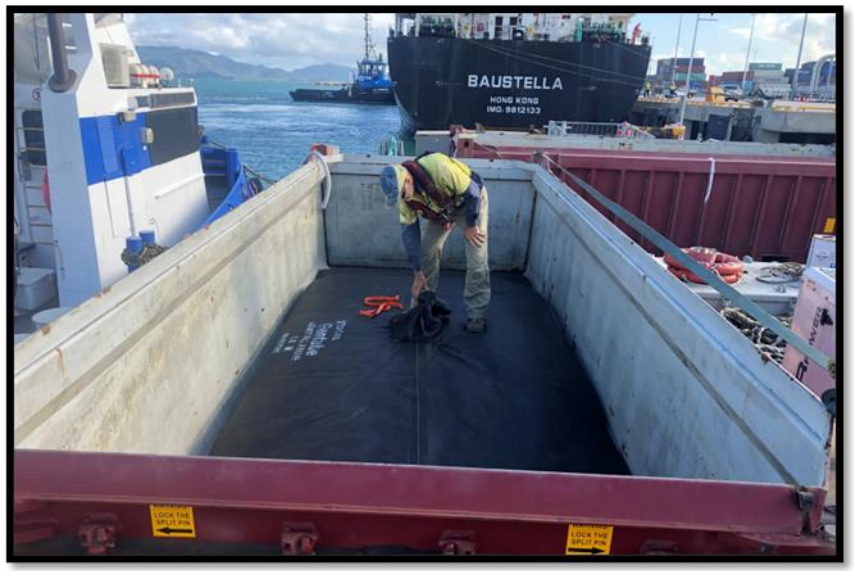
Huge success in terms of:

- No environmental incidents.
- No safety incidents.
- Successful outcomes in terms of residents perceptions.
- Solids separation was achieved without floc and the use of double silt curtains.
- 900t of material removed from both locations.

Case study 3: Modular spoil management for targeted dredging in Port o9f Townsville

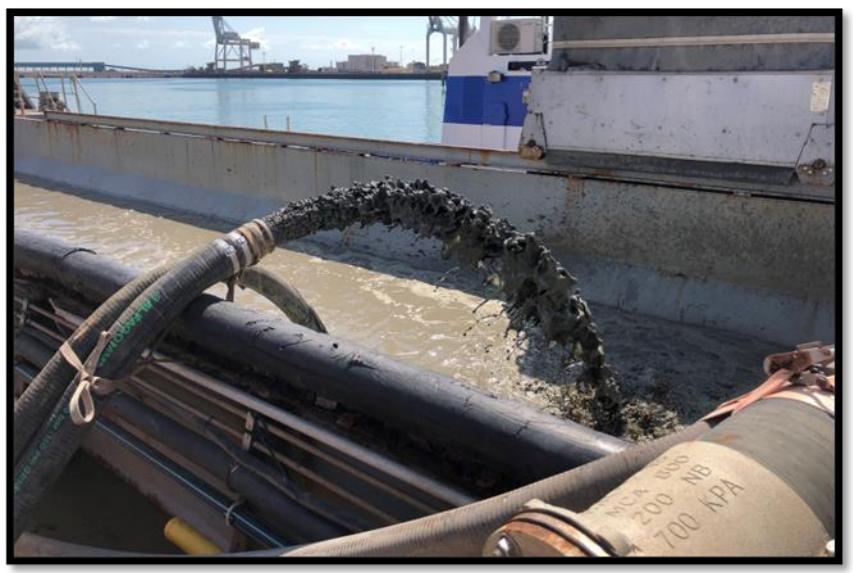
Townsville Port volume estimate – 1000m3

Containerised GeoTube Spoil Management



Challenges:

- Environmentally sensitive area.
- Use of multiple containers to facilitate off-loading from wharf
- Use of small GeoTubes for solids management
- Economics: GeoTubes vs traditional dredging into hopper barge
- Working windows determined by shipping schedule.



GeoTube outcome

Huge success in terms of:

- No environmental incidents.
- No safety incidents.
- Small footprint , and effluent clarity
- Current spoil techniques with hopper barge were more economical as infrastructure was already in place.
- Dredge was more suitable to recovery of contaminated materials due to ability to precisely target areas.
- Useful in terms of polluter pays and associated contaminated spoil management.

Desilting Solutions

Thank you – Any questions?