

WHARF 1 EXTENSION

PORT OF MACKAY

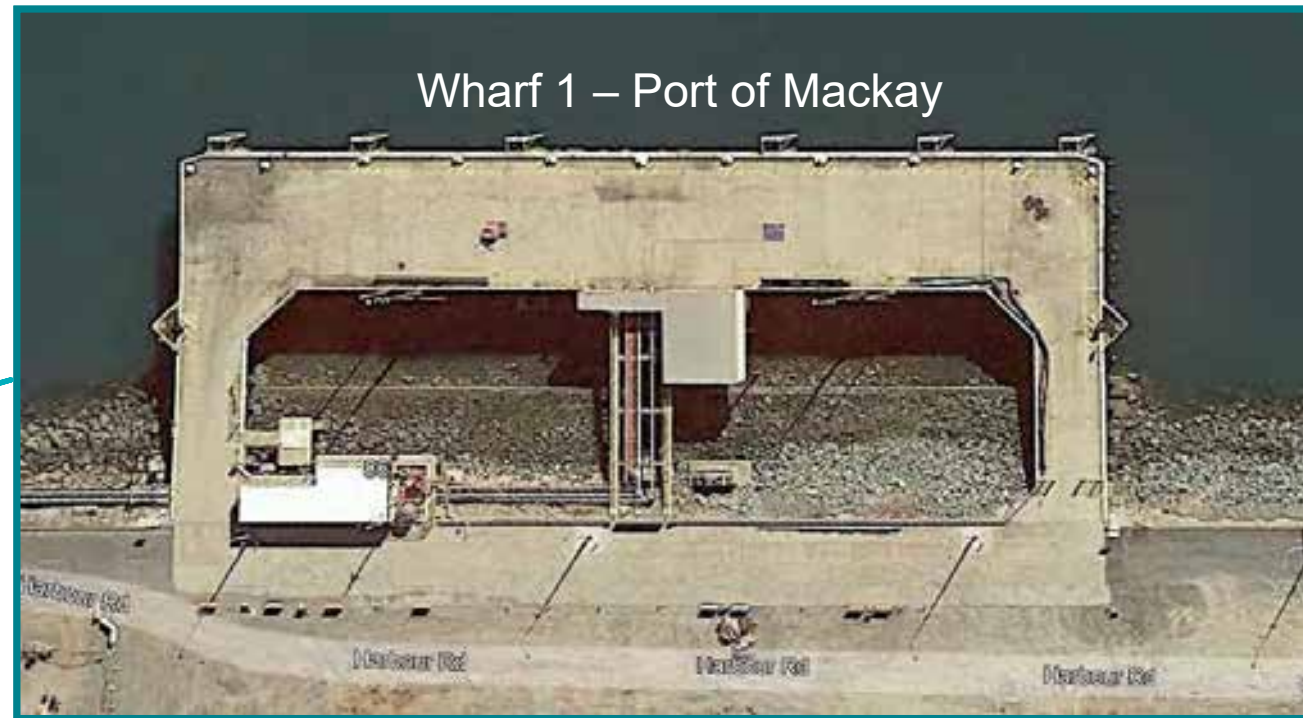
14/03/2022



Wharf 1



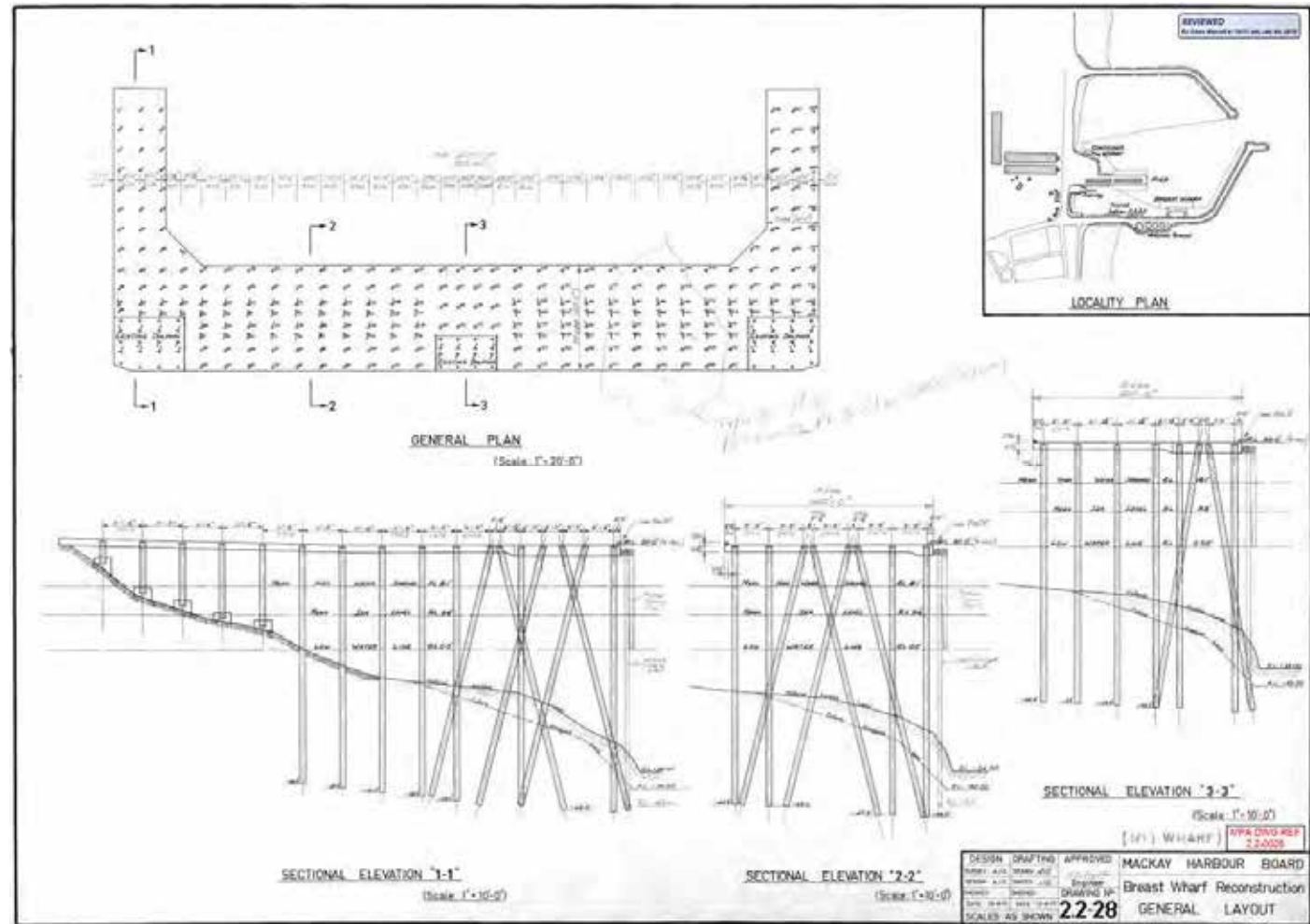
- One of the main wharves
- Constructed 1970's
- 123.6m x 17.6m
- Two approaches – 9m wide



- Fuel Wharf
- Breakbulk cargo
- Serving mining and fuel industries in CQ

Existing wharf

- Deck comprised of 3 dolphins along the quay line built around 1966
- Access bridge supported on spread footings on breakwater slope.

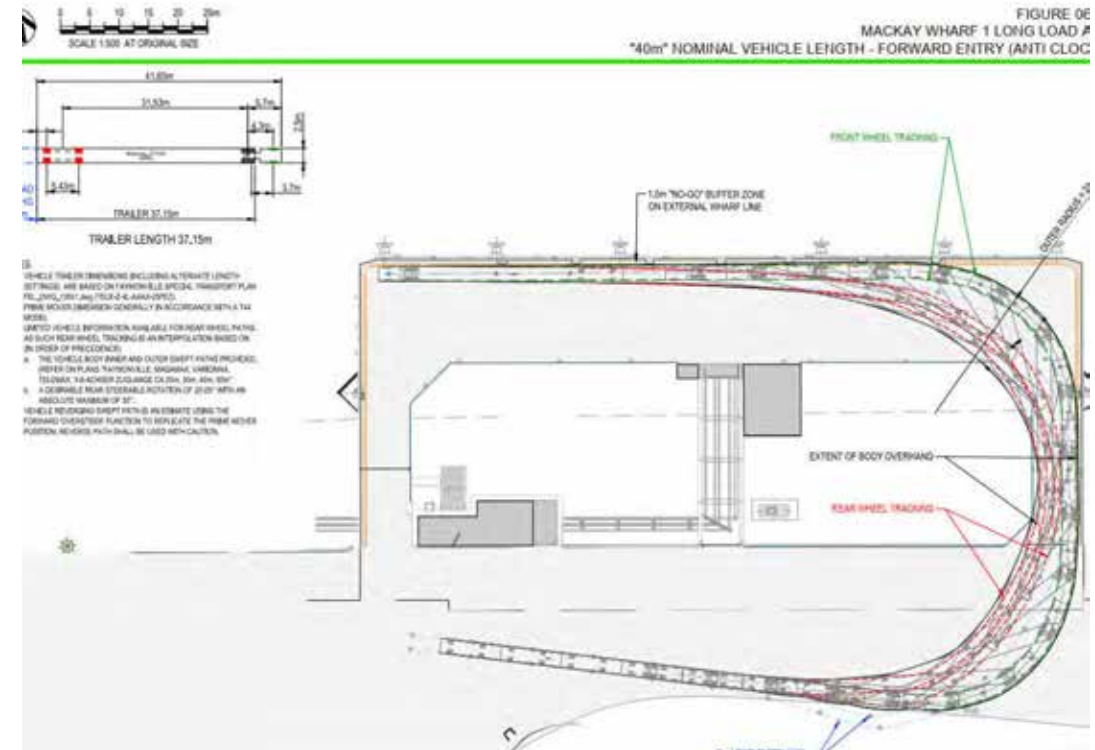
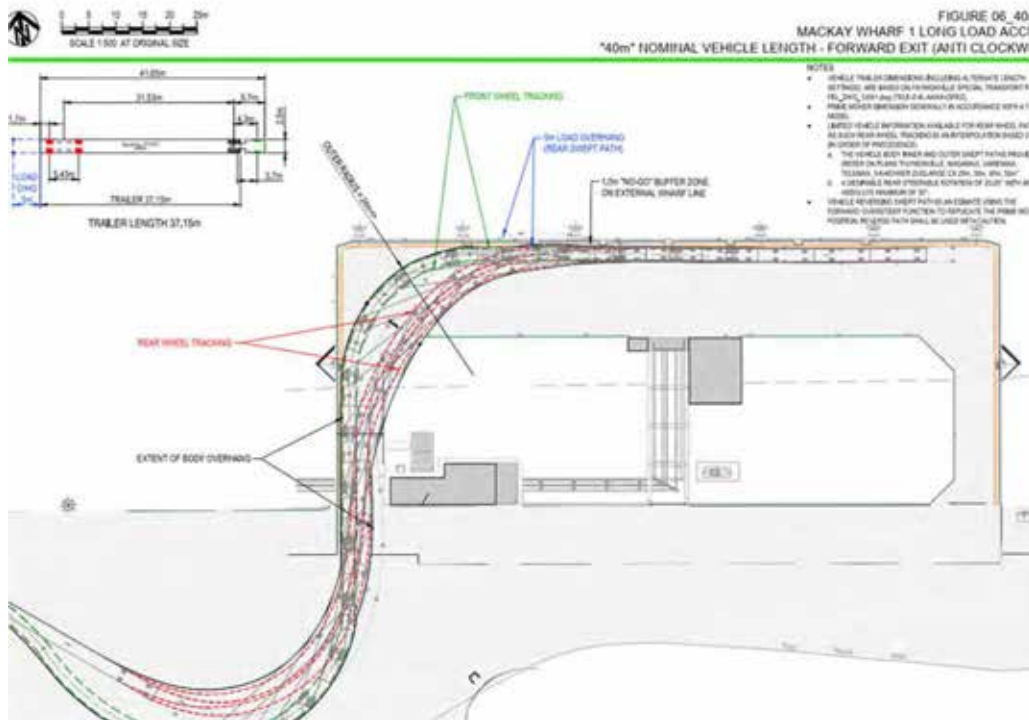


Need for extension (widening)



- Constraints handling extra-long loads
- Commercial demand for facility that can handle extra-long loads
- Green energy projects
- Port infrastructure enhancement

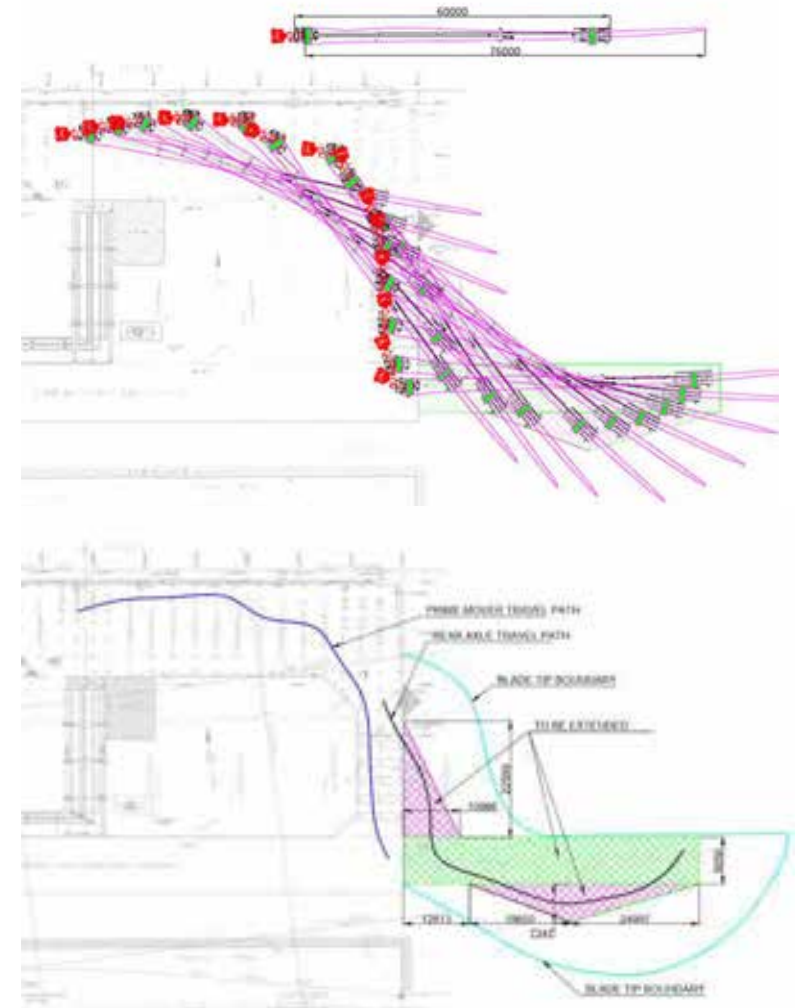
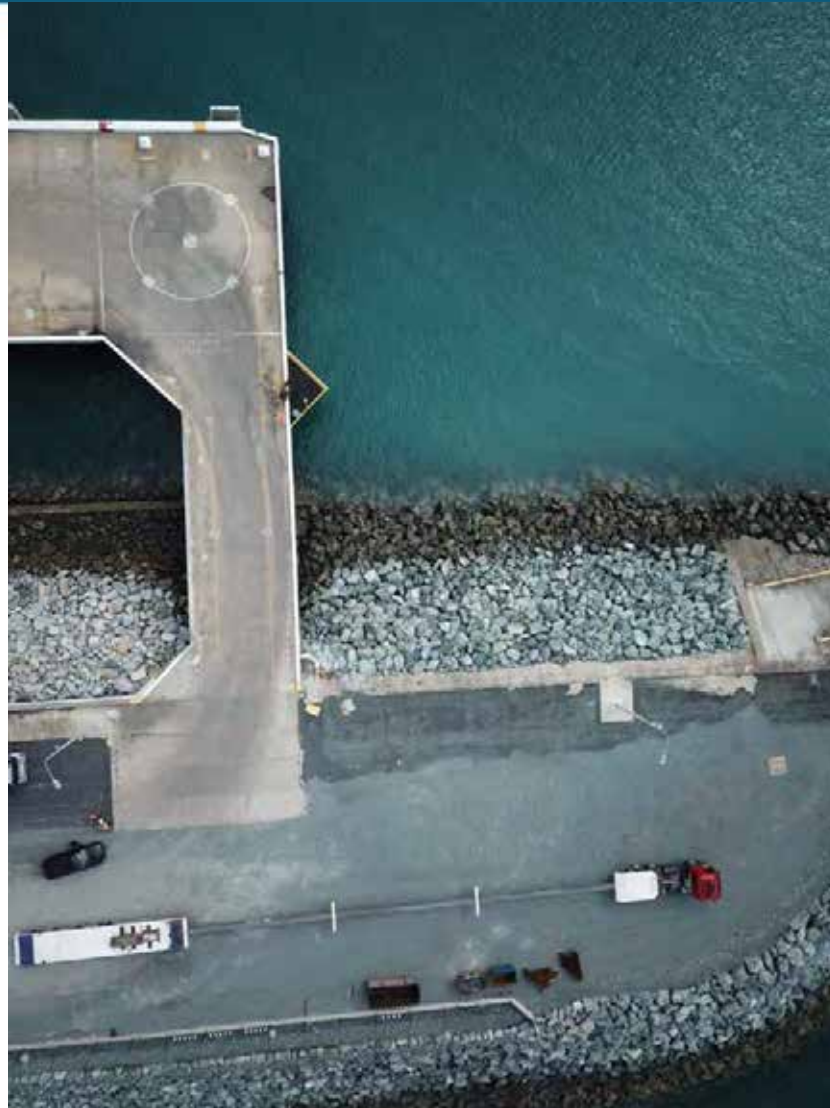
Other options – inner wedge to deck



- Helps only with wider loads
- Extra-long loads beyond 40m will impinge on the vessel at the quay line

Extension works - Design

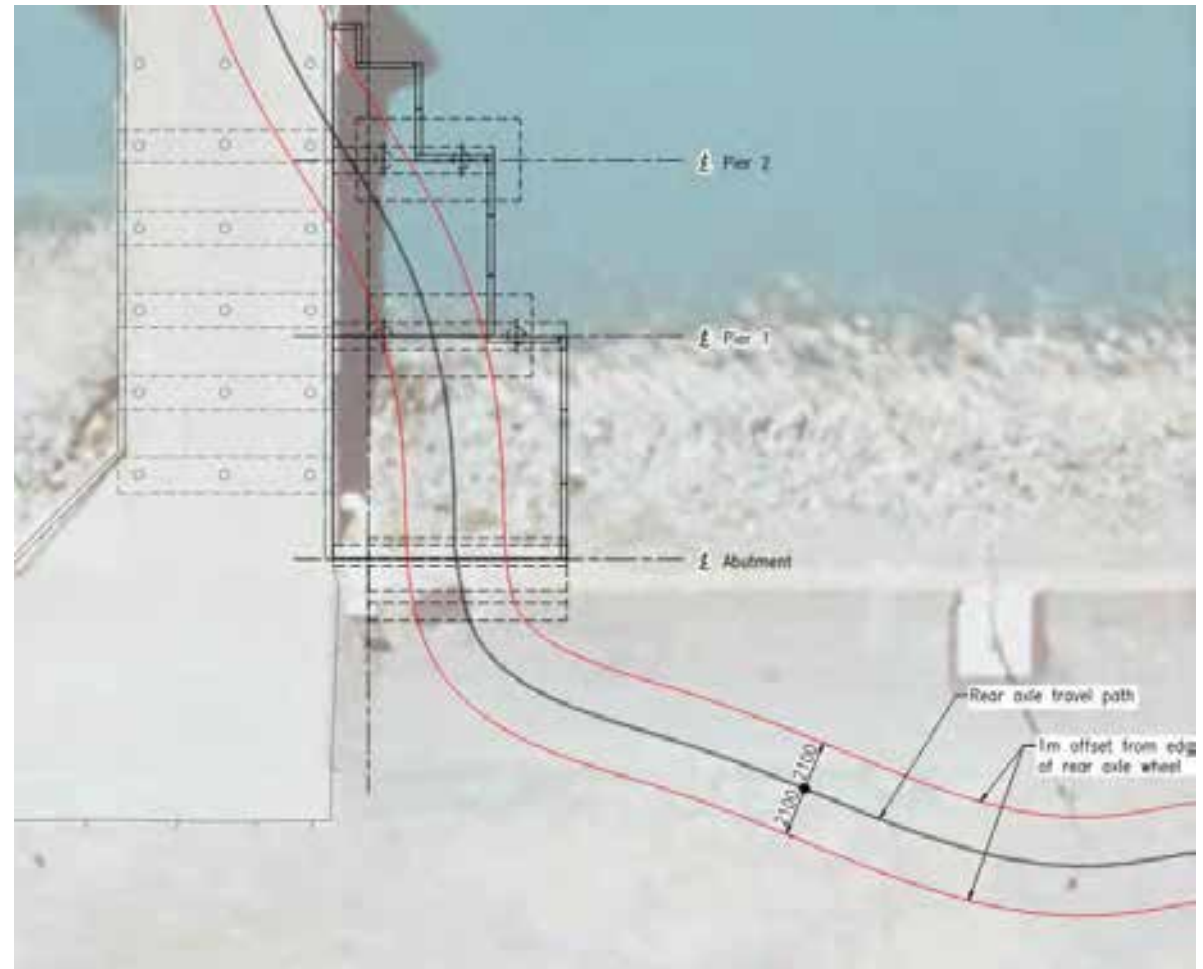
- Design Vehicle –
60m TIIGER
Extender DF3T3TE
- Design Loads -
TIIGER + transient
loads of 20kPa over
the deck area.



Extension works – Design (Contd..)

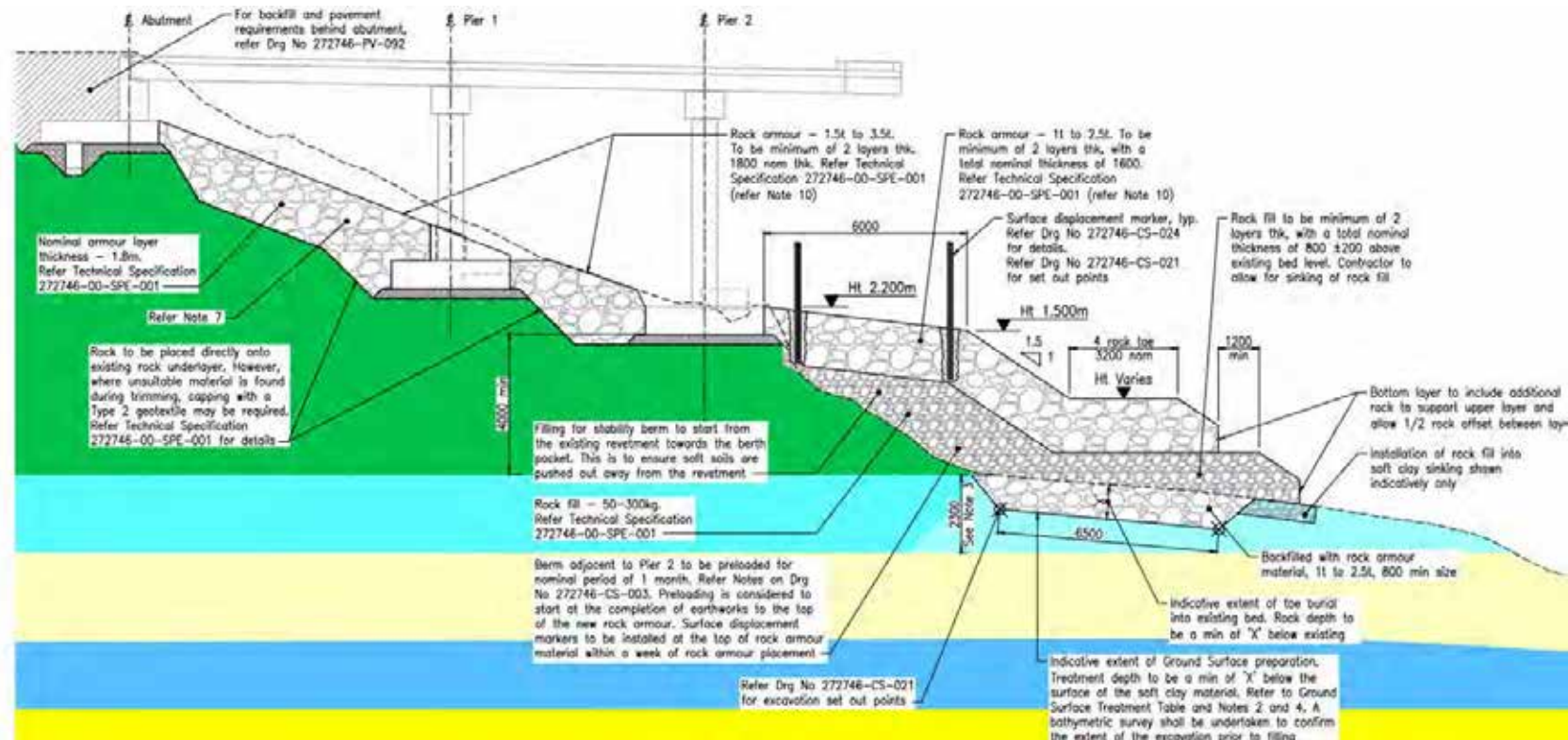
Design constraints

- Partial knowledge of ground conditions & breakwater make up
- Exposed location
- Adjacent to existing structure
- Clay layer at the toe - global stability of the new structure
- Berth pocket



Extension works – Design (Contd..)

- RC deck, Column and shallow pad foundation utilizing 2 spans and a short cantilever.
- Section sizes
 - 596mm x 500mm RC precast deck units;
 - 200mm topping slab;
 - 1150mm x 800mm RC headstock 750mm diameter RC columns;
 - 3500mm x 800mm deep RC footings.
- Replace the clay layer with rocks
- Stability berm with monitoring for movements / settlement.



Wharf 1 Extension work – Cross section

Extension works – Construction

Details

- Construction works awarded Oct 2020
- 25 weeks duration
- Land based methodology

Constraints

- Port operations to continue
- Site within mooring lines snap back zone
- Works in tidal and submerged zones
- Shipping schedule
- Deep excavation adjacent to the existing footings
- Cyclone season
- Monitoring period - one month



Extension works – Construction



Geotechnical investigation



Access ramp and platform

Extension works – Construction



Stability berm completed and monitoring markers installed



Excavation for Pier 1

Extension works – Construction



Excavation near existing structure



Extension works – Construction



Extension works – Construction



Rockworks completed

Extension works – Construction



Span 1 Deck units installed

Extension works – Construction



Span 2 Deck units installed

Extension works – Construction



Deck Slab Concreting

Extension works – Construction

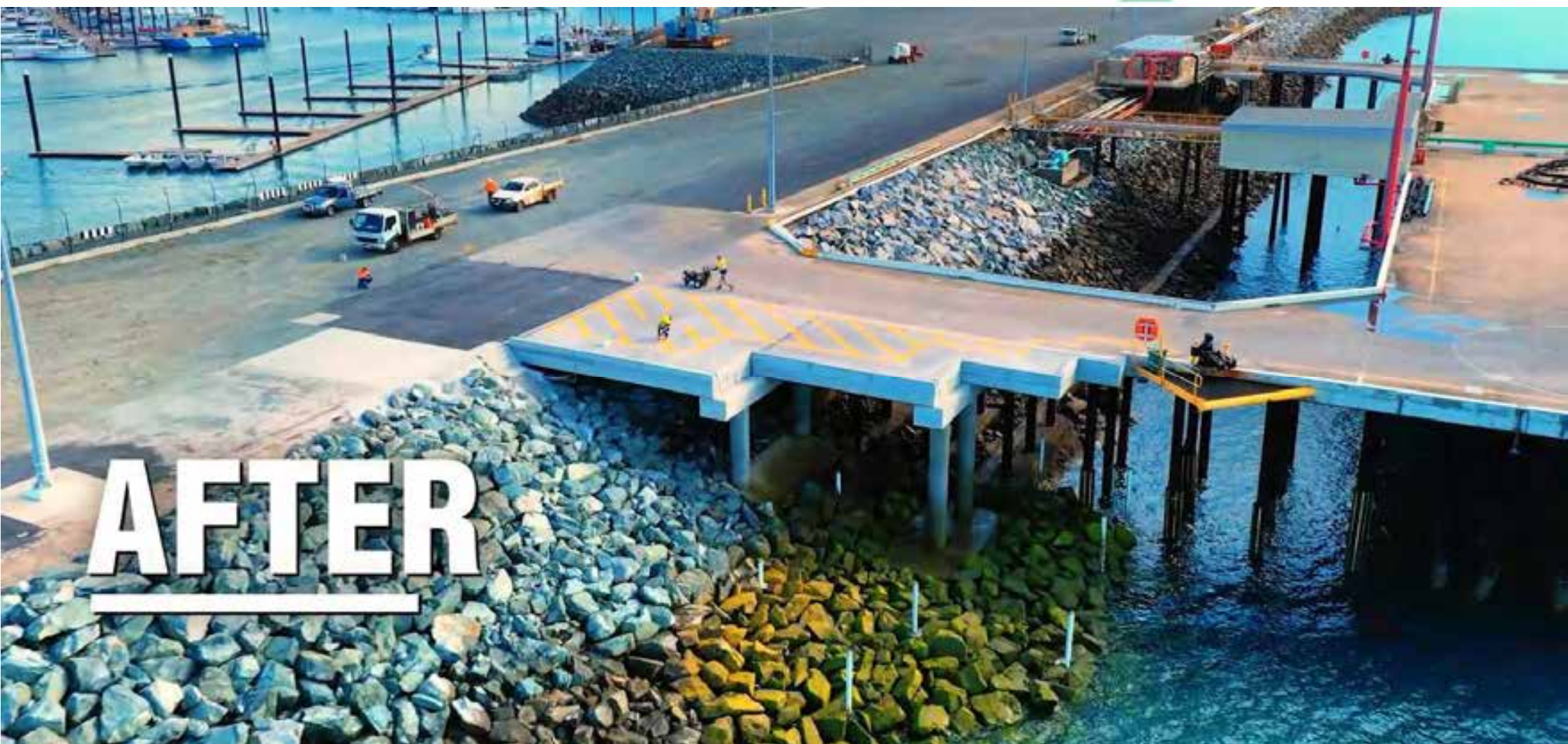
Line marking



Extension works – Construction



Extension works – Construction



Extension works



Benefits

Enable Wharf to handle extra-long loads up to 95m

Project quick facts

- Overall project cost \$2.4m
- completion – July 2021
- extension of eastern access bridge by 120m²
- 27 deck units
- 2,280t rock
- 95m³ of concrete
- 60 vessels on berth during the project
- 30 local jobs from 15 local business