

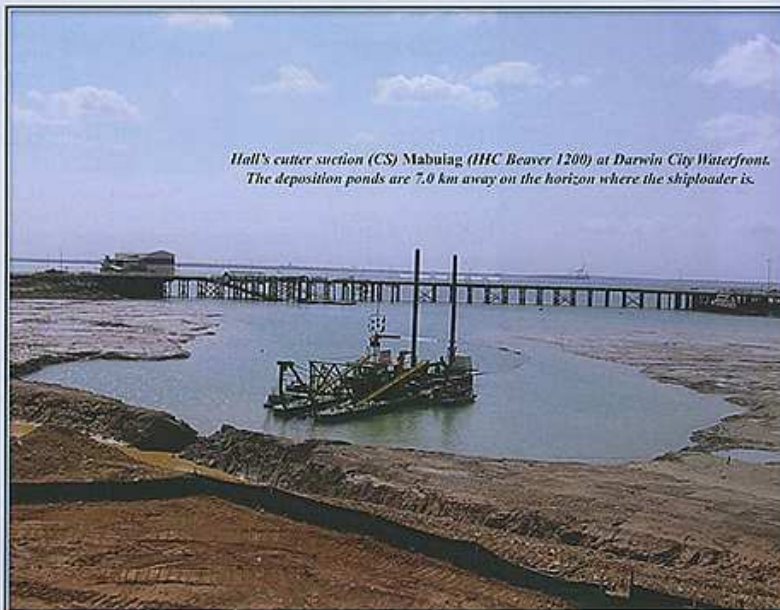
Hall Contracting Completes Tough Project in Darwin



Leading Australian dredging company **Hall Contracting Pty Ltd**, recently completed dredging for the AUSS\$1.0B *Darwin City Waterfront Project*. In what was one of the technically toughest dredging project in Australia in many years, Hall Contracting successfully completed the project on time to allow the main contractor, **Macmahon**, to follow up with the construction of the sea wall and convention center site.

The Project

To enable construction of the new Darwin City Waterfront precinct, which will eventually house a convention center, shops and apartments, the removal of 600,000 m³ of marine sediments were required from the Stokes Hill Wharf Area in Darwin. Due to the highly contaminated nature of this material, the environmental



Hall's cutter suction (CS) Mabuag (IHC Beaver 1200) at Darwin City Waterfront. The deposition ponds are 7.0 km away on the horizon where the shiploader is.

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authorities required it to be pumped 7.0 km to East Arm Port Retention Ponds.

To achieve this, Hall utilized its 16 in. CS dredge *Mabuag (IHC Beaver 1200)* plus three booster pumps at various intervals along the 450 and 400 mm pipeline. Of these three booster pumps, one was land based and the other two were floating boosters.

As the harbor contained a lot of rock and man made materials, Hall installed a purpose built obstruction screen box between the dredge and Booster 1. This screen box prevented obstructions being pumped the full length of the pipeline, drastically reducing the chance of pump blockages in booster pumps. Only 2 blockages occurred in booster pumps during the entire project.

The Logistics

Pipeline used was a mix of poly and welded steel. Pipeline was welded together and towed out to its final position by workboats in long strings. Steel pipeline was laid under the entrance channel to Sadgroves Ck and then across the mudflats in front of Charles Darwin National Park.



The pipeline traversed these mud flats, through two floating booster stations (one of which was Hall's *IHC Beaver 1000 CS dredge Everglade*), to the deposition ponds at East Arm.

Towing pipeline into position

At East Arm, Hall had to cross the railway line which forms the last link in the Trans-Continental Adelaide to Darwin Rail Link. It was vital that this crucial piece of infrastructure was not impeded or damaged for the project. Hall commissioned a design to allow the pipe to traverse the rail line by going through the ballast. This crossing held up well during the entire project and no trains were delayed.

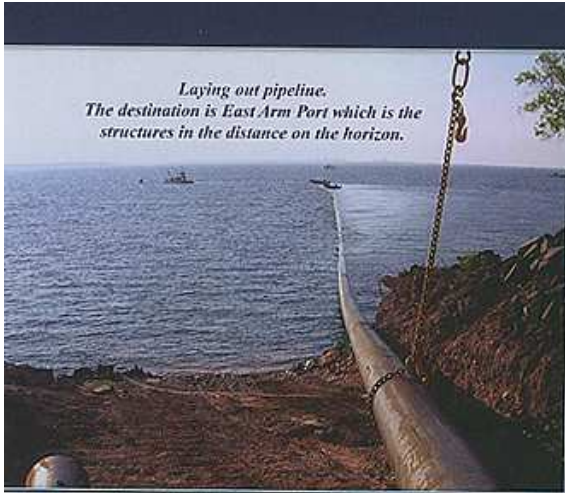
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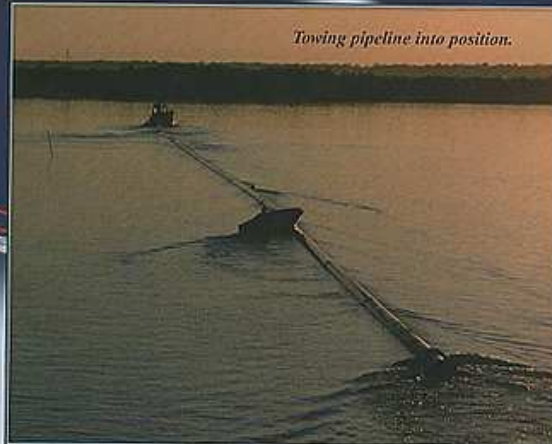
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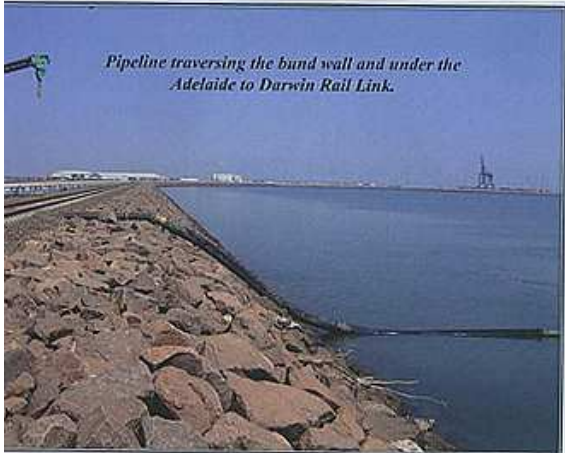
7 cutter suction dredgers
Including 30" CSD "Scorpio"



*Laying out pipeline.
The destination is East Arm Port which is the
structures in the distance on the horizon.*



Towing pipeline into position.



*Pipeline traversing the bund wall and under the
Adelaide to Darwin Rail Link.*



*The Royal Australian Army bomb disposal crew removing small UXO
from the obstruction strainer, watched by Aaron Bruce of Hall.*

Dredging Bombs

It is a little known fact that Darwin Harbor was more heavily bombed by the Japanese in World War II than Pearl Harbor was. As a result, there was a high probability of encountering unexploded ordnance (UXO).

Prior to dredging of the area, a special UXO consultant was engaged to conduct a magnetometer survey of the area. This survey pinpointed up to 170 potential UXO's ranging in size from 60 kg to 250 kg aircraft bombs. This information was uploaded onto the GPS dredge control system so that the dredge could accurately remove overlying sediments without touching each UXO, so that it could be removed with a floating excavator. The cutterhead was immobilised for this part of the project and a water injection unit used to disturb material instead.

The exercise uncovered a number of smaller munitions, but most of the potential larger bombs turned out to be drums and other metal objects.

Upon completion of the UXO clearance, full sealed dredging commenced. Operations continued on a 24 hr, seven day per week basis until its completion in May

2006.

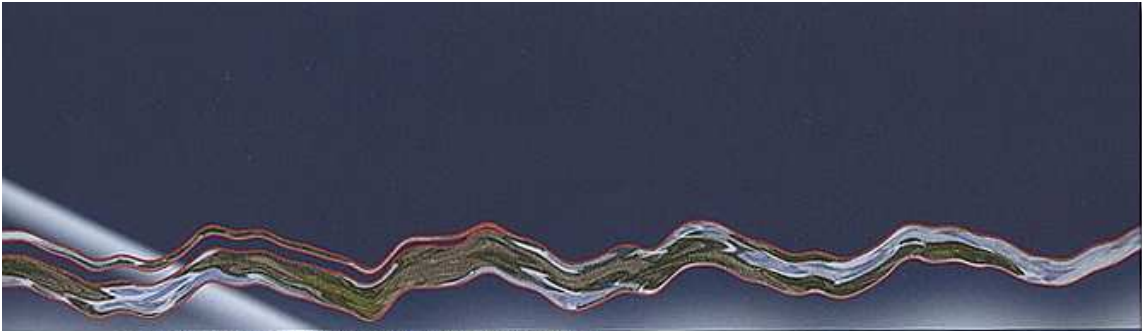
Pumping 7.0 km

Hall's Dredge Operations Manager Mark McCurdy said that the biggest challenge on this project was ensuring availability of equipment. With a dredge, obstruction strainer, and three remote booster stations on the same line, just one breakdown meant total shut down of operations. A focus on preventative maintenance resulted in Hall achieving excellent availability.

Start up and shut down was carefully coordinated by the dredge master and each operator on the booster stations, to ensure no blockage in the pipeline.

The successful completion of the project is a testament to the skill and dedication of Hall's dredging crews and equipment.

Hall operates seven cutter suction (CS) dredges, including an 800 mm IHC *Beaver 4000 Scorpio* which has just completed five separate projects in Papua New Guinea for the World Bank and PNG Harbours Ltd. www.hall-contracting.com.au ☉



An example of material obtained from the obstruction strainer.



Hall's CS Mabuag (IHC Beaver 1200) at Darwin City Waterfront.

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