

NEW PARALLEL RUNWAY DREDGING & RECLAMATION WORKS



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OVERVIEW

This Fact Sheet provides information about the extensive environmental studies undertaken and the environmental management which was put in place to monitor the Dredging and Reclamation works for Brisbane Airport Corporation's New Parallel Runway (NPR) project.

PROJECT UPDATE MARCH 2015

In October 2013 construction of the New Parallel Runway (NPR) progressed to its next important stage – the Dredging and Reclamation works. Sand pumping was completed on 7 December 2014.

THE DREDGE VESSEL

- Brisbane Airport Corporation (BAC) signed a contract with Jan de Nul (Australia) Pty Ltd in October 2013, one of the world's largest and most experienced dredging contractors, to undertake the reclamation works at the 360ha New Parallel Runway site at Brisbane Airport.
- Jan de Nul used the Charles Darwin trailer suction hopper dredge (TSHD), one of the newest in its fleet, to undertake the works.
- The Charles Darwin used powerful suction tubes equipped with a drag head to draw sand from an approved site in Moreton Bay into its 'hopper' for transport ashore.
- Once at its mooring the Charles Darwin pumped a mixture of sand and water through a 4.5 kilometre long pipeline to the reclamation site.
- The site required 11 million cubic metres of sand to raise it above the one-in-100-year flood level.

The preparatory works included construction of:

- A temporary dredge mooring in the Brisbane River;

- A pipeline to the runway site crossing the Luggage Point Waste Water Treatment Plant land and the operational airfield at Brisbane Airport;
- The primary reclamation bund; and
- BMD, the Civil Works contractor, to complete the site clearing.

THE RECLAMATION

- The area filled is approximately 360ha - 3600m long and about 1000m wide and currently sits at around sea level.
- The ground level must be raised by 3m for the NPR to be flood proof and immune from rising sea levels brought about by climate change.
- It also requires raising to integrate seamlessly with the existing runway and taxiway system.
- The underlying soils of the NPR site are very soft and extend to 35m below ground surface.
- The application of a heavy load (eg: sand) forces moisture out of the soil causing the ground level to sink as the earth is consolidated to form a stable foundation for the runway. This is known as 'settlement'. Parts of the site will sink by more than 2m.

1. The Jan de Nul dredge 'Charles Darwin' completed its task of pumping 11 million cubic metres of sand ashore to the reclamation site nearly two months ahead of schedule on 7 December 2014.

About Brisbane Airport: Brisbane Airport (BNE), is the premier gateway to Queensland and the third largest airport in Australia by passenger numbers. Operating 24 hours a day, seven days a week, BNE has two major terminals servicing 28 airlines flying to 41 national and 27 international destinations. More than 22 million passengers travelled through the airport in 2014. BNE was named Capital City Airport of the Year in the 2014 Australian Airports Association National Awards and rated as Australia's No. 1 airport for quality of service 10 years in a row in the Australian Competition and Consumer Commissions' annual survey.



2. The water and sand mix (ratio of 5:1) arrives on site from the dredge site.



3. Wick drains were punched into the soft underlying soil to a depth of over 30 metres to help drain the site.

- Geotechnical investigations have revealed that the soils vary in strength over the NPR footprint. Sand was strategically placed at varying heights, up to a maximum of 8m above ground level over the softest areas, to achieve a suitably uniform ground settlement along its 3600m length.
- Geotechnical modelling has calculated that to raise the surface level by 3m and achieve the necessary settlement within four years, up to 11 million cubic metres of sand would be required.
- To accelerate the settlement process, 330,000 vertical 'wick drains' were inserted into the ground down to 35 metres in the softest parts of the site. This allowed the moisture to be drawn from the soil more quickly than by the action of gravity alone.
- The reclamation design involved more than 10,000km of these wick drains being spaced as close as one metre apart in the softest areas.
- The most significant environmental issues included monitoring of water quality and biodiversity both on and off airport.
- A 24/7 real-time monitoring program was in place once the dredge commenced work to ensure all water quality limits were met throughout the course of the works.
- A previous trial dredging in 2008 conducted at the NPR dredge site demonstrated that no harmful effects occurred in the environmentally sensitive areas either side of the extraction footprint.
- The sand was pumped to the site through the pipeline in a slurry mix of water and sand in a ratio of up to 5:1.
- That means for each load of 30,000m³ of sand, up to 150,000m³ of water was also delivered to the reclamation site for management prior to release.
- The water was taken from the Brisbane River at the mooring location and mixed with the sand for pumping purposes.

Environmental Management

- The dredging was carried out within an area adjacent to the main shipping channel in Moreton Bay.
- BAC had a federally approved Construction Environmental Management Plan (CEMP) in place to manage any impacts as identified in the Environmental Impact Statement and Major Development Plan (EIS/MDP) process. Refer to: www.bne.com.au/corporate/upgrading-your-airport/new-parallel-runway/eismdp
- BAC and its contractor Jan de Nul had dedicated professional environment teams in place to implement the approved CEMP and oversee a range of successfully proven environmental management strategies for both on and off airport land.
- The water was contained on site within the primary reclamation bund and tail-water ponds allowing any sediment to settle out before being released back into the system via the new major drainage channels constructed as part of early civil works.
- Water was not released until established water quality discharge limits were met.
- Dredging and sand pumping operations were completed on 7 December 2014.
- The site will now be allowed to settle for four years to provide a compressed and stable base on which to build.
- The New Parallel Runway is scheduled to be commissioned by 2020.