

Case Study

# Kooragang Island Coal Export Terminal

# Newcastle NSW

**Market Sector**

INFRASTUCTURE

**Application**

DEEP IMPACT COMPACTION

**Site Conditions**

DREDGED SANDS

LANDPAC

INTELLIGENT GROUND ENGINEERING SOLUTIONS

## Project

The proposed capacity of the NCIG Kooragang Island CET will be 30 Mtpa of coal throughput. This represents the largest single stage development of a new coal terminal of this magnitude in the world. On completion of the CET, the combined coal export capacity from Newcastle's terminals will exceed 132 Mtpa. The project involved dredging of three berths in the south arm of the Hunter River to construct a serviceable port for the export of coal. Dredging was carried out by a joint venture between Dredeco and Boskalis Australia. The 3.5 million $m^3$ of Dredged Sands was re-used as construction fill.

## Soil Conditions

The proposed coal stockpile and reclaimer area is approximately 40Ha in size and is located on dredged fill placed over Quaternary fluvial, estuarine and marine sediments of variable depth and consistency. The upper alluvium comprises layers of very soft/soft clays and very loose/loose silts and sands typically 2 to 4m thick.

Dredged fill was hydraulically placed 3 to 5m depth over the Coal Stockyard area after completion on the Dynamic Replacement. The dredged fill comprised medium to coarse grained Sands.

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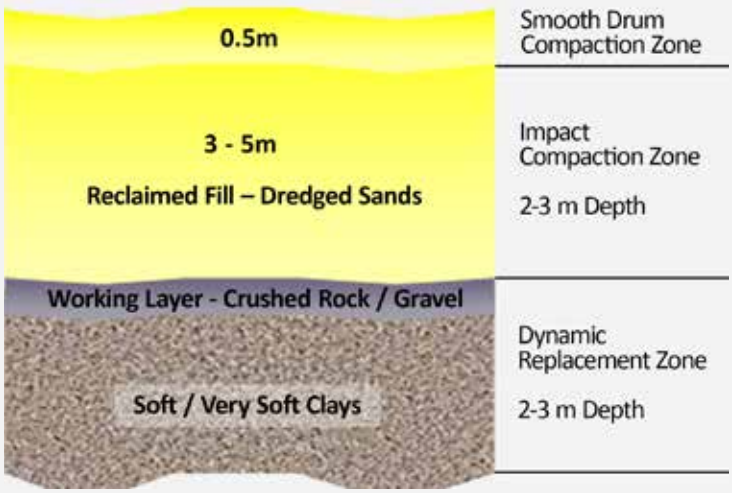
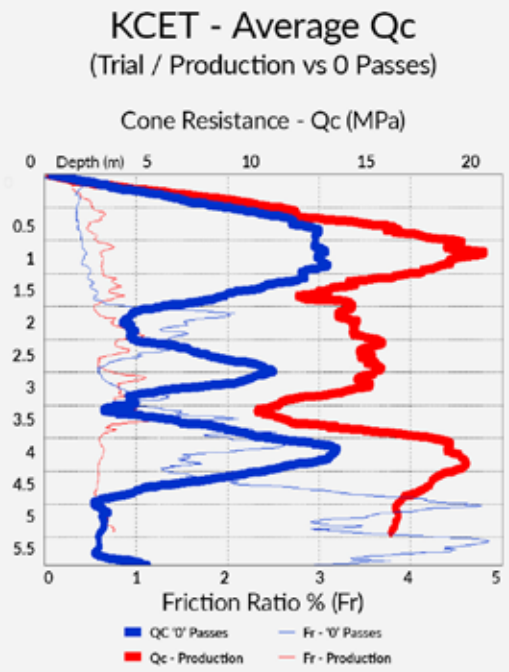
## Ground Improvemnt

Preloading was initially proposed to induce consolidation settlement. However, due to construction programme constraints, alternative ground improvement methods were used. Dynamic Replacement was used to on a triangular grid with columns to around 5 to 6m depth. A crushed rock/gravel layer 300 to 500m thick was placed over the original ground level to facilitate the Dynamic Replacement.




## Dredged Fill Compaction

The Dredged Fill was subject to further compaction after placement with Impact Compaction using Landpac 3-sided 25kJ (135kJ Kinetic Energy) Impact Compactors. A medium density (Approx. CPT Cone Resistance > 5 MPa) was required. A smooth drum roller was applied after the Impact Compaction on the surface to compact the loose 0.3m or so upper level.

**Client: Newcastle Coal Infrastructure Group**

**Principal Contractor: AbiGroup Construction**

**Dredged Fill Compaction (Top 3-5 metres): Landpac**

## Summary

- 3.5 millian m³ of dredged sands used
- 40Ha in size located on dredged fill
- Landpac 3-sided 25kJ (135kJ Kinetic Energy)
- Medium density (Approx. CPT Cone Resistance > 5 MPa) was required

## Get in touch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