

Case Study

Australian Marine Complex Henderson, WA

Market Sector

INFRASTRUCTURE



Application

DEEP IMPACT COMPACTION



Site Conditions

**DREDGED SPOIL RECLAMATION
AREA**



LANDPAC

INTELLIGENT GROUND ENGINEERING SOLUTIONS

Project

The Ground Improvement works at the Australian Marine Complex, Perth was required for the re-classification of the dredged spoil into Class 'A' in accordance with AS2870 from a Class 'P'. The 7.2Ha development was not known and could be residential, commercial/industrial.

Soil Conditions

Dredged hydraulically placed fill consisted of random sub layers comprising sandy gravel (with cobbles and boulders), sand and silts and clays whose depths, order and thickness varied across the site as results of the fill method. control the particle size required for the construction of the layerworks conventionally. The fill ranged from 1.5m—3.2m depth overlying lightly compacted fill and limestone. The fill had been classified as compressible. The water table was 3m below the working platform.



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Geotechnical Solution

The most economical option in order to meet the sites performance criteria was by means of Impact Compaction. Impact Compaction was carried out using one of Landpac's 135kJ machines in the dredged spoil.

Monitoring & Verification/QA

The Impact Compaction works were monitored with Landpac's (CIS)-Settlement Monitoring System and (CIR)-Soil Response System. The CIR post compaction illustrated that the sub-grade had achieved a relatively uniform stiffness across the site. CPT testing was conducted and a mechanical cone used predominantly as this provided better penetration into the coarse grained fill particles.

An electronic cone was also used to assess the nature of clay and silt lenses present in the fill as it provided engineers with more accurate settlement predictions.

The 49 CPT tests confirmed that cone resistance values achieved were >10 MPa in the in-situ dredged Sand Gravel and Sand spoil and values <10 MPa were limited to the Silty/Clay materials.

Construction

Satisfactory compaction was achieved for the use of high level footings for the potential construction of steel framed, precast panel clad, industrial buildings with floor slabs-on-ground.

Client: AMC

Engineering Consultant: Landcorp

Main Contractor: GHD

Ground Engineering Contractor: Landpac



Summary

- ✓ Spoil reclassified to AS2870 Class 'A'
- ✓ Achieved Uniform sub-grade stiffness
- ✓ Target <10 MPa cone resistance met
- ✓ Compaction suitable for high-level footings

Get in touch

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