Case Study

MTU Diesel Detroit

Hazelmere, Perth

Market Sector

INDUSTRIAL DEVELOPMENT

Application

DEEP IMPACT COMPACTION

Site Conditions

UN-ENGINEERED IN-SITU SAND

LANDPAC
INTELLIGENT GROUND ENGINEERING SOLUTIONS

Project

The proposed development consists of 4.8ha and the construction of a maintenance facility and estate road for MTU Detroit Diesel. The purpose of Impact Compaction was to achieve 150kPa bearing capacity for the upper level foundations and provide a suitable sub-grade in the pavement areas for the placement of engineered fill in accordance with AS3798-2007 to design levels.

Soil Conditions

The reported sub-surface consists 0-0.3m of top soil underlain by In-situ Sands with some silt to 2-6m depth with a loose Sand layer at 1.5-2.5m depth. The Sand is underlain by medium to high plasticity medium to very stiff impermeable Clay, which was reported as shallower toward the north eastern boundary. The water table was between 1.5-1.7m below the surface level and a perched water table was present depending on season and rainfall.

Client: Goodmans

Engineering Consultant: Alan. L. Wright & Assoc.

Main Contractor: CIP

Ground Engineering Contractor: Landpac

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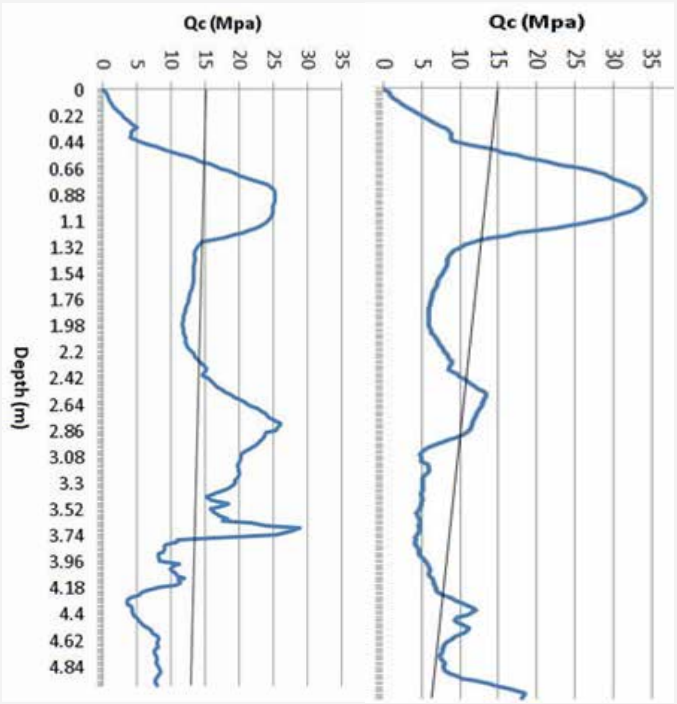
Monitoring & Verification / QA

TCIS (Settlement) and CIR (soil response) monitoring together with the use of DCP Testing was carried out to monitor the works throughout. To evaluate the post high energy impact compaction site sub-surface conditions, 35 piezocone penetration tests (CPT's) were pushed in a depth ranging from 2.5-8 metres. Random DCP tests were done in locations where the CIR showed weaker areas and then verified further by CPT testing. Post construction settlements were calculated for the use of upper level pad footings for a minimum bearing capacity of 150kPa and up to a proportioned 200kPa. The floor slab settlements were predicted for a UDL of 25kPa. The settlement has been predicted to settlement as the load is applied an no long term settlement has been predicted for the proposed structures. Due to the inconsistent nature of the material in various locations five CBR tests were carried out.



Construction

The proposed development consisted of maintenance facility which included the construction of a wharehouse & multiple cranes, truck wash bays/inspection pits, engine test room, large heavy duty pavement areas and an estate road gaining access from Bushmead Road.

Summary

- Impact Compaction primary method on site
- Minimum density load of 80% to 2.5m depth
- Loose sands to a medium density from 2.5-5m
- Water table was between 1.5-1.7m below the surface level

Get in touch

1300 237 045

info@landpac.com.au

www.landpac.com.au

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