HERTHA ROAD SANITARY LANDFILL

DYNAMIC COMPACTION

Owner: Main Roads

Specialist Contractor: GFWA

THE PROJECT

The fourth stage of Mitchell Freeway from Hutton Street in Osborne Park to Delawney Street in Balcatta is located in the then undeveloped swamp land, and the connection from the Freeway to Cedric Street is constructed across the then called Hertha Swamp Road which was used for many years as a waste disposal site by City of Stirling.

Sanitary landfills generally consist of non-uniform mixtures of waste including paper products, food wastes, garden wastes and building rubble. Embankments over landfills are characterised by long term total settlements associated with decay of putrescibles and collapse of voids, and differential settlements due to the heterogeneity of the fill material and thicknesses.

In order to minimise ground settlements in Cedric Street connection a trial ground improvement Dynamic Compaction programme was proposed in two areas that consisted of approximately 9 m of landfill followed by 2 m of peat.

THE ROLE OF GFWA

GFWA was awarded the contract for performing the Dynamic Compaction trial and the following additional ground treatment in the remainder of Cedric Street connection.

In this project a 14 ton pounder was dropped in free fall from approximately 10 m in two deep compaction phases and from 5 m in the ironing phase. The grid spacing and number of pounder drops per print location is more in deep treatment phases. In ironing, lesser energy is used in a tighter grid for compacting the shallower layers.

Measurement of peak particle velocity during dynamic compaction was in accordance with expectation and considerably less than what is allowed by standards.

Dynamic Compaction was able to induce settlements of approximately 0.7 to 0.85 m. Comparison of ground settlement rate under treated zones and areas that were not treated showed that the rate in the treated zones was reduced by approximately 50%.

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