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Brunswick Terminal Station Rebuild: A Civil Case Study

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Construction is nearing completion for the rebuild of the Brunswick Terminal Station (BTS), a project aimed at increasing security and reliability of electrical supply to Melbourne's CBD. The project includes replacement of 220 kV switchgear, installation of new 220 kV/ 66 kV transformers, and the addition of a new 66 kV gas insulated switchgear (GIS) room. Civil aspects of the project were required to cater for the new electrical infrastructure as well as consideration of significant site constraints.

BTS is located within a residential area and is adjacent to a waterway. These factors, together with complicated topology, drove the civil design of the rebuild. Constraints also included maximum build heights, underlying geotechnical conditions, underground utilities and a requirement to minimise electrical supply outages.

The resulting civil design was a combination of innovative solutions, practical designs and a number of compromises to accommodate restrictions and provide a fully functioning 220 kV/ 66 kV terminal station. An example of this is the use of BIM/ 3D modelling which drove collaboration between disciplines and stakeholders, and led to the design of a combination oil containment, treatment, and stormwater detention tank as an integral structural component of an architecturally designed retaining wall.

This paper will be a case study of the BTS rebuild from a civil engineering perspective. It will describe the constraints encountered, ultimate design outcomes, and lessons learned.

Key Words: civil, structural, terminal station, BIM

References: AECOM Australia Pty Ltd. (16 July 2013). Z709 Brunswick Terminal Station Rebuild Civil Detailed Design Report. Baker, J., Howard, K., Keane, S., Lo, N., So, J.

