Department of Electrical Power Engineering

Postgraduate Research Template

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	Student Name /	Lizwe Dube	**Start Date**	July 2016	**Supervisor**	Mr E.R. Bussy (MSc Electrical)
	Title of Project	An Investigation to determine the Effectivenessof Impressed Current Cathodic Protection System on Underground Steel Engen Refinery Transferlines System	**Compl etion**	December 2019	**Co-Supervisor(s)**	Prof Mark Walker (PhDMechanical)
	Program of Study (M Eng. / D Eng.)					
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The main objectives of this study are to determine the effectiveness of the impressed current cathodic protection system in protecting Refinery underground steel pipelines from external corrosion and control stray current.

By performing DC stray current, anode groundbed performance tests, and Instant "OFF" pipe-to-soil polarisation surveys, it contributed in gauging the Transferlines coating status, anode groundbed status, defects locations and entry points of stray current.

Different types of field surveys and simulations were performed such as pipe-to-electrolyte or soil "ON" spot potential, DC stray current, Close Interval Potential (CIPS), Direct Current Voltage Gradient, Transformer Rectifier Unit performance, soil resistivity, AC interference, anode groundbed performance, Instant OFF pipe-to-soil potential and etc.

The investigation to determine the effectiveness of impressed current cathodic protection on protecting Engen underground steel Transferlines.

This will contribute to avoid catastrophic Transferlines failures to be proactive in identifying anodic areas or locations in order to have a roadmap planning for Transferlines repairs or replacement Engen Refinery has underground steel Transferlines that were installed early 1960's.

These surveys also contributed to making effective conclusions and recommendations for the organisation to have a safe, reliable Engen steel underground Transferlines system.