

**School of Geography and the Environment**

**MSc and MPhil Dissertation**

**Coversheet**

**Candidate Name:** Anjali Theagarajah

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## **Abstract**

Polokwane is the economic hub of the Limpopo province, and is undergoing rapid urbanisation and industrial growth, resulting in stress on its limited water resources. Artificial recharge of effluent from the Polokwane wastewater treatment works (WWTW) is an important source of recharge to the aquifers which augment surface water for Polokwane's supply.

The Polokwane WWTW was found to be releasing substandard effluent, as mentioned in previous research. However, groundwater quality is generally within recommended guidelines. Spatial patterns of groundwater quality parameters allude to attenuation processes of dilution, sorption, biodegradation and redox reactions, which aid in water quality mediation. Possible arsenic mobilisation in the subsurface, as well as evidence of the emerging organic contaminants sulfamethoxazole and caffeine being found in effluent water however are points of concern with this scheme. Hence, improved monitoring and maintenance are essential to the sustainability of the artificial recharge, which will prove to be increasingly important in the face of climate change and increasing population demands.