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# Integrated resistivity and magnetic survey for subsurface dyke geometry, Wahawa, Sri Lanka

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Present study utilizes integrated resistivity and magnetic surveys to investigate the subsurface dolerite dyke at Wahawa, Sri Lanka aiming to characterize its geometry and structural relationships with respect to the country rock. Mini Sting resistivity meter was used in 2D profiling with Schumberger array. AGI Earthimager software was applied for that data interpretations. GSM-19v Overhauser magnetometer was used in the identification of magnetic variations along the desired survey lines that are parallel and perpendicular. Variations of the corrected magnetic flux were clearly visible across the boundaries of the dyke which dropped the values compared to the besides' rocks identifying as hornblende biotite migmatite and granitic gneiss. The negative anomaly of the dolerites may be due to the lower susceptibility of the minerals, fine grained texture, high fracture intensity or indicating the reverse magnetism during its formation period. Though hornblend biotite migmatites show positive anomaly, granitic gneiss indicates lower negative anomaly may be representing its lower susceptibility. Average width of the dyke is about 40-50 m bearing sharp contacts in boundaries. Resistivity surveys confirm the average width which shows high resistivity values for dolerites along the survey line with compared to the surrounding rocks. 2D image of the resistivity results indicate the vertical extensions of the dyke are more than the maximum reachable levels (40 m) of the present investigation. Deep fractures are noted in hornblend biotite migmatite rock which is positioned in the west direction of the northwest-southeast extending dyke. Further sounding surveys are recommending concerning the cross cutting fracture depths to recognize the pressure head controlling deep ground water flow conditions from the central highlands. This will help in diagnosing a relationship for the strengthen of the water temperature in hot springs in eastern part of the dyke in the absence of deep ground water dilutions.

***Keywords:*** *Dolerite dyke, magnetic anomalies, resistivity survey, Wahawa*