Investigation & Verification of Airborne *Lidar* Error Based on Land Cover and Slope Variability

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In this study, airborne *lidar* (ALS) errors investigation & verification was performed toward point cloud using 6566 bore holes as reference, where conventional ground survey methods were use to collects its coordinates. By subtract both data then will be afford the errors. Afterward, verification were conducted to produce 12,5mx12,5m raster grid correctors using spatial interpolation (*IDW* and *kriging*) and surface fitting (*Polynomial*-n) mathematical models. Finally, barely point cloud *lidar* will be applied to determine mine volume and its effectiveness compare to initial estimated volume.

The result present that, als error value following land cover and slope variability, whereas error increased and accuracy decreased among high density vegetation and steep slope. The calculation of average error and accuracy were; (a) open area (-0.034 m ± 0.186 m), (b) shrubs (-0.2m ± 0.37 m), (c) low-density forest (-0.307 m ± 0.481 m), (d) forest medium density (-0.299 m ± 0.914 m), (e) high density forest (-0.458 m ± 0.54 m), (f) flat (-0.341 m ± 0.470 m), (g) slightly (-0.405 m ± 0.537 m), (h) moderate-steep (-0.383 m ± 0.597 m) and (i) steep (-0.357m ± 0.718 m).

The most optimal verification models present that *Kriging-land cover* dataset model supplied the best result on accuracy and volume calculation, whereas the calculation of mine volume managed to increase the effectiveness reaches 94%.

Keywords: investigation, verification, verification models, mine volume and effectiveness.