Estimating, measuring and monitoring changes in carbon storage using a range of integrated remote sensing techniques is only part of the Sustainable Development that is achieved by Carbon Sequestration projects.

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SUMMARY

While forest, plant and soil-based Carbon Sequestration contributes significantly to Australia's efforts in reducing it's net Green House Gas emissions, it only accounts for a part of the overall contribution to Sustainable Development that is achieved. The use of satellite imagery including Synthetic Aperture Radar helps us understand at scale where vegetation exists. Coupling this with targeted Aerial or mobile LiDAR, aerial imagery (3 or 4 Band) and Artificial Intelligence enables us, with a reasonable level of accurately, to determine the height of vegetation well beyond the extent of aerial or mobile LiDAR coverage. This information can then be used to determine areas that are representative of the various vegetation units that extend across the Area of Interest (AOI). This can subsequently be used to identify target areas for on ground field survey. On the ground survey using a combination of mobile LiDAR, 360-degree imagery, soil sampling and ecological ground survey techniques provides detailed characterisation of current vegetation, coverage and density, soil carbon content information, along with the information required to undertake detailed assessment of carbon storage of targeted areas within the AOI. Aerial LiDAR coverage of the whole AOI enables detailed assessment of existing Carbon Storage from the representative target field survey sites to be accurately extrapolated to the whole AOI providing accurate and repeatable estimates of carbon storage. This minimises the risk of potential overestimation or underestimation of carbon storage whilst at the same time providing a sound basis for future non-subjective assessment and comparison of changes in carbon storage over time. In addition to this, the information collected provides a detailed, time stamped benchmark of the stratigraphy, structure and biodiversity of the vegetation communities across the AOI, detail about bushfire fuel loads and landform composition, terrain and ground contours across the site. This rich body of information can be used to inform a range of management plans for the site including water management, soil management, biodiversity management, rehabilitation, farming and land management. This presentation will present a range of case studies and examples demonstrating

the value, utility and Sustainable Development contribution that can be achieved from the geospatial information used in assessing carbon sequestration.