

**Table 39 Riparian – Bank slope**

	<b>DATA OPTION 1: Airborne Laser Scanning</b>	<b>DATA OPTION 2: Radarsat, TerrsarX or ALOS Palsar</b>
<b><i>Spatial Dimensions</i></b>		
<b>Area to cover</b>	Can be up to 1000km <sup>2</sup> or more	Up to 3600 km <sup>2</sup>
<b>Mapping unit</b>	0.5m to 10m	5m -60mm
<b>Positional accuracy</b>	Within 5m or less dependent on GPS base station used	Dependent on geo-referencing process
<b><i>Temporal Dimensions</i></b>		
<b>When</b>	User controlled	Approx 11 am
<b>How often</b>	User controlled	Minimum every 4 days
<b>Variable to map</b>	Ground elevation (terrain)	Ground elevation (terrain)
<b>Environmental Restrictions</b>	Cloud cover	Scale to map Incidence angle/topography Vegetation
<b>Processing technique</b>	Streambed mapping (object-based image analysis)	Radar data processing and calibration
<b>(Output)</b>	Ground and canopy return extraction, interpolation and ground and canopy mapping (projected plant cover) over streambed.  Raster or image surface of vegetation overhang	Streambank classification Slope determined by the gradient of the ground height.  Slope estimates / DEM
<b>Resources – Hardware and Software</b>	PC Image processing software GIS with image analysis capabilities.	PC Image processing software with radar image analysis capabilities, including sub-pixel mapping techniques.
<b>Resource – Personnel</b>	Trained and experienced in ALS mapping and object-based image analysis. Knowledge of area to be	Trained in radar data processing. Knowledge of area to be mapped
<b>References:</b> Note these are some example references	Arroyo et al. (2010) Johansen et al. (2010)	

Arroyo, L. A., Johansen, K., Armston, J. and Phinn, S. (2010). "Integration of LiDAR and QuickBird imagery for mapping riparian biophysical parameters and land cover types in Australian tropical savannas." Forest Ecology and Management, 259(3), 598-606.

Johansen, K., Arroyo, L. A., Armston, J., Phinn, S. and Witte, C. (2010). "Mapping riparian condition indicators in a sub-tropical savanna environment from discrete return LiDAR data using object-based image analysis." Ecological Indicators, 10(4), 796-807.