

**Table 4 Seagrass (Total (above+below ground Biomass))**

	<b>DATA OPTION 1: Quickbird 2</b>	<b>DATA OPTION 2: Airborne hyper-spectral data</b>
<b><i>Spatial Dimensions</i></b>		
<b>Area to cover</b>	12 km x 12 km per scene	Up to 1000 km <sup>2</sup>
<b>Mapping unit</b>	068m panchromatic 4.0 m multi-spectral	0.5m – 5m
<b>Positional accuracy</b>	Dependent on georeferencing process	Dependent on Geo-referencing process
<b><i>Temporal Dimensions</i></b>		
<b>When</b>	Approx 10.45 am	User defined
<b>How often</b>	Minimum every 4 days	User defined (can be < 1 day)
<b>Variable to map</b>	Benthic (species, cover, biomass)	Benthic (species, cover , biomass)
<b>Environmental / Sensor Restrictions</b>	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top.  Not possible for turbid water  Clouds, strong winds and breaking waves.	For sub-tidal vegetation to depth limited by water clarity. Inter-tidal and supra-tidal vegetation can have water on top.  Not possible for turbid water  Strong winds, breaking waves
<b>Processing technique (Output)</b>	Image classification or feature detection using segmentation and classification  Empirical model built using field survey data to estimate biomass from image pixel values.  (Vegetation type map and target features) Note: The ability to map specific targets will depend on their growth form, percent cover, substrate colour	Image classification or feature detection using segmentation and classification  Empirical model built using field survey data to estimate biomass from image pixel values.  (Vegetation type map and target features) Note: The ability to map specific targets will depend on their growth form, percent cover, substrate colour and extent.

	and extent.	
<b>Resources – Hardware and Software</b>	PC Image processing software GIS with image classification module (e.g. ARCGIS Image Analyst)	PC Image processing software with Hyper-spectral analysis capabilities, including sub-pixel mapping techniques.
<b>Resource – Personnel</b>	Trained in image classification Experience with high spatial resolution data Knowledge of area to be mapped	Trained in hyper-spectral data processing. Knowledge of area to be mapped
<b>References:</b> Note these are some example references	(Phinn et al., 2008)	(Brando 2004; Phinn et al., 2008)

Phinn, S., C. Roelfsema, A. Dekker, V. Brando and J. Anstee (2008). "Mapping seagrass species, cover and biomass in shallow waters: An assessment of satellite multi-spectral and airborne hyper-spectral imaging systems in Moreton Bay (Australia)." Remote Sensing of Environment 112: 3413-3425.

Brando, V., Dekker, A., Phinn, S.R., and Roelfsema, C. (2004). Mapping and Monitoring Coastal Environments Using Remote Sensing. Catchment to Reef: Water Quality Issues in the Great Barrier Reef Region, Townsville, Australia, CRC Reef Research Centre.