

Table 2 The remotely sensed variable BENTHIC (SPECIES, DENSITY, BIOMASS)

and the listing of data types, processing requirements and costs for mapping and monitoring this variable using several suitable types of remotely sensed data. MMU: Minimum mapping unit; GRE: Ground resolution element

	DATA OPTION 1: Quickbird	DATA OPTION 2: Airborne hyperspectral data
<i>Spatial Dimensions</i>		
Area to cover	12km x 12km per scene	Up to 1000km ²
Mapping unit	068m panchromatic 4.0m multi-spectral	0.5m – 5m
Positional accuracy	Dependent on georeferencing process	Dependent on Georeferencing process
<i>Temporal Dimensions</i>		
When	Approx 10.45am	User defined
How often	Minimum every 4 days	User defined (can be < 1 day)
Variable to map	Benthic (species, density, biomass)	Benthic (species, density, biomass)
Environmental Restrictions	For sub-tidal vegetation to < 5m, inter-tidal and supra tidal vegetation Not possible for coral species	For sub-tidal vegetation to < 5m Strong winds, breaking waves
Processing technique (Output)	Image classification or feature detection using segmentation and classification (Vegetation type map and target features) Note: The ability to map specific targets will depend on their growth form and extent.	Image classification or feature detection (Vegetation type map and target features) Note: The ability to map specific targets will depend on their growth form and extent.
Resources – Hardware and Software	PC Image processing software GIS with image classification module (e.g. Arc-View Image Analyst)	PC Image processing software with Hyperspectral analysis capabilities, including sub-pixel mapping techniques.
Resource – Personnel	Trained in image classification Experience with high	Trained in hyperspectral data processing. Knowledge of area to be

	spatial resolution data Knowledge of area to be mapped	mapped
Estimated task and times	<p>Image pre-processing (1 day)</p> <p>Image classification to cover types (8 days per scene)</p> <p>Field/Photo verification for a select number of sample sites: (8 days)</p> <p>Map output production: (2 days)</p> <p>Total = 19 days per scene</p>	<p>Image pre-processing (1 day)</p> <p>Image mapping to Benthic Types (10 days per site)</p> <p>Field/Photo verification for a select number of sample sites: (4 days)</p> <p>Map output production: (2 days)</p> <p>Total = 17 days per site</p>
Estimated Cost Note that these are estimates are flexible	<p>Data acquisition: Image data = \$4500 Ancillary data (topo sheets)= \$200</p> <p>Processing = 19 days of technical officer at \$875/day= \$16625</p> <p>Total = \$21325</p> <p>Note: This assumes software have been purchased</p>	<p>Data acquisition: Image data = \$20000</p> <p>Processing = 17 days of technical officer @ \$875/day= \$14875</p> <p>Total = \$34875</p> <p>Note: This assumes software have been purchased</p>