

Vin Keneally  
Shute Harbour Marina Project  
Vin Keneally Architects  
11 East Terrace  
BEAUMONT SA 5066

Our Reference: 1743L3

12 July 2019

**RE: Preliminary Benthic Habitat Mapping Advice – Shute Harbour Marina**

Dear Vin and Jeff,

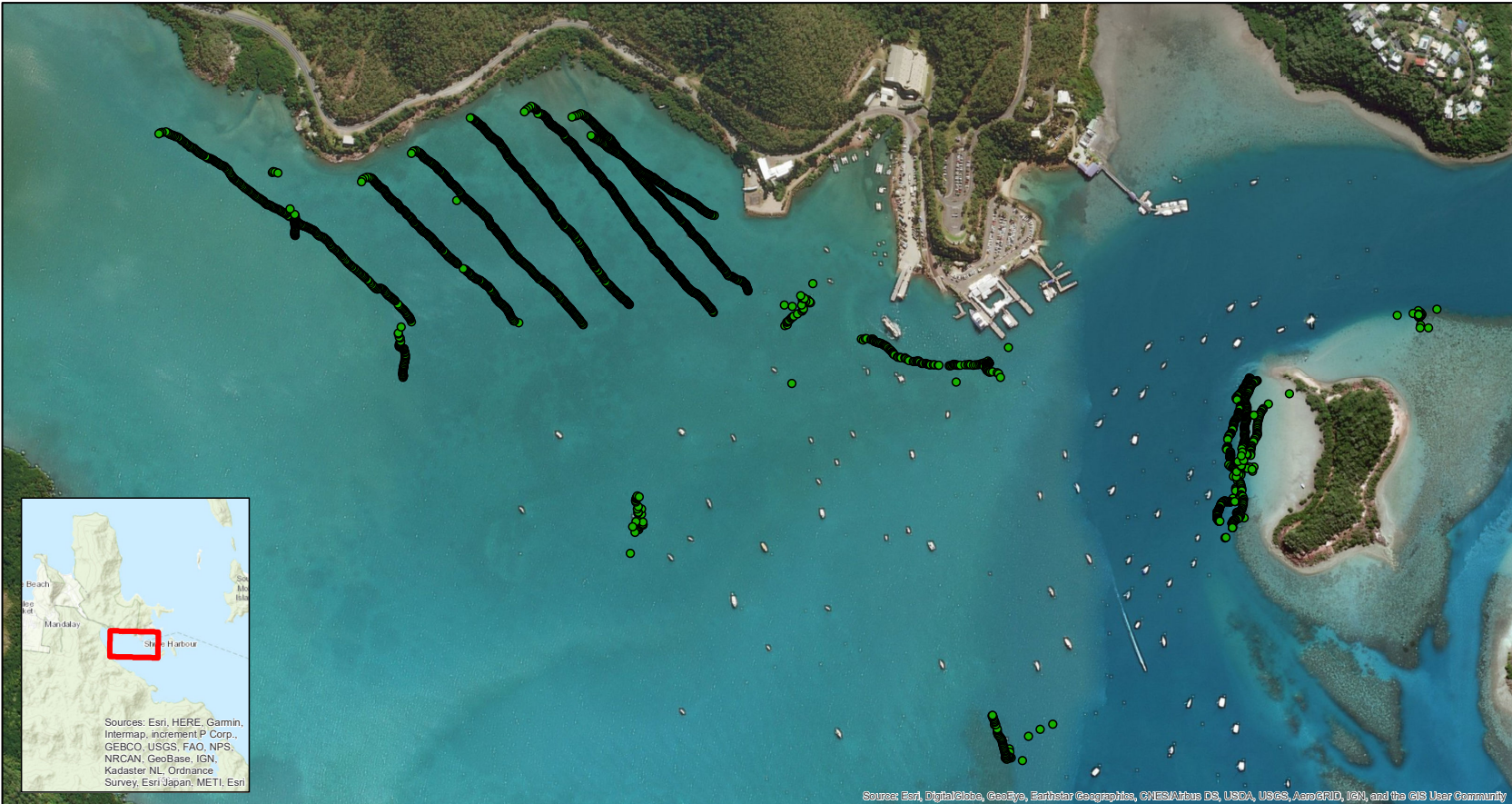
Please find below a brief outline of the mapping methods and preliminary benthic habitat mapping completed in June 2019.

### **Assessment of Sensitive Receptor Habitats**

Assessment of the extent and coverage of sensitive receptors (coral reefs, macroalgae, seagrass, mangroves) within the development area, and at a minimum of two comparative locations was completed in June 2019.

Extent of habitat during baseline assessments was mapped using georeferenced towed surface-view video camera and pole camera footage of the sea bed (Figure 1). The presence and percent coverage of seagrass, macroalgae and coral was determined using geo-referenced photo-quadrat methods taken using a drop camera. The percent coverage will be determined in at least 10 georeferenced photos where seagrass is present using a stratified random allocation of points over the photos. This is still to be completed; however, we have provided a preliminary habitat map below based on expert qualitative assessment of presence/absence of various habitat components (Figure 2). Where seagrass was present, the density of seagrass seeds ( $m^{-2}$ ) in surface sediment was also assessed by collecting replicate grab samples (minimum of three replicate grabs) at sites adjacent to the proposed development site and nearby comparative sites. These sample for seagrass seed density are yet to be processed. The samples were wet sieved in the field and the 500 $\mu$ m and 1mm fraction will be assessed under a dissecting microscope for the presence of seagrass seeds. Seeds will be photographed, and the number of each type counted and recorded for each sample.

Assessment of the percent coverage of coral and macroalgae will be completed using a similar method to above, with a minimum of 10 replicate photos collected from a consistent depth at sites with coral adjacent to the development area (where identified in broad scale habitat mapping), and at comparative sites further south and east (Site S1 and S6), using a drop camera and georeferenced photo-quadrats.



**Legend**

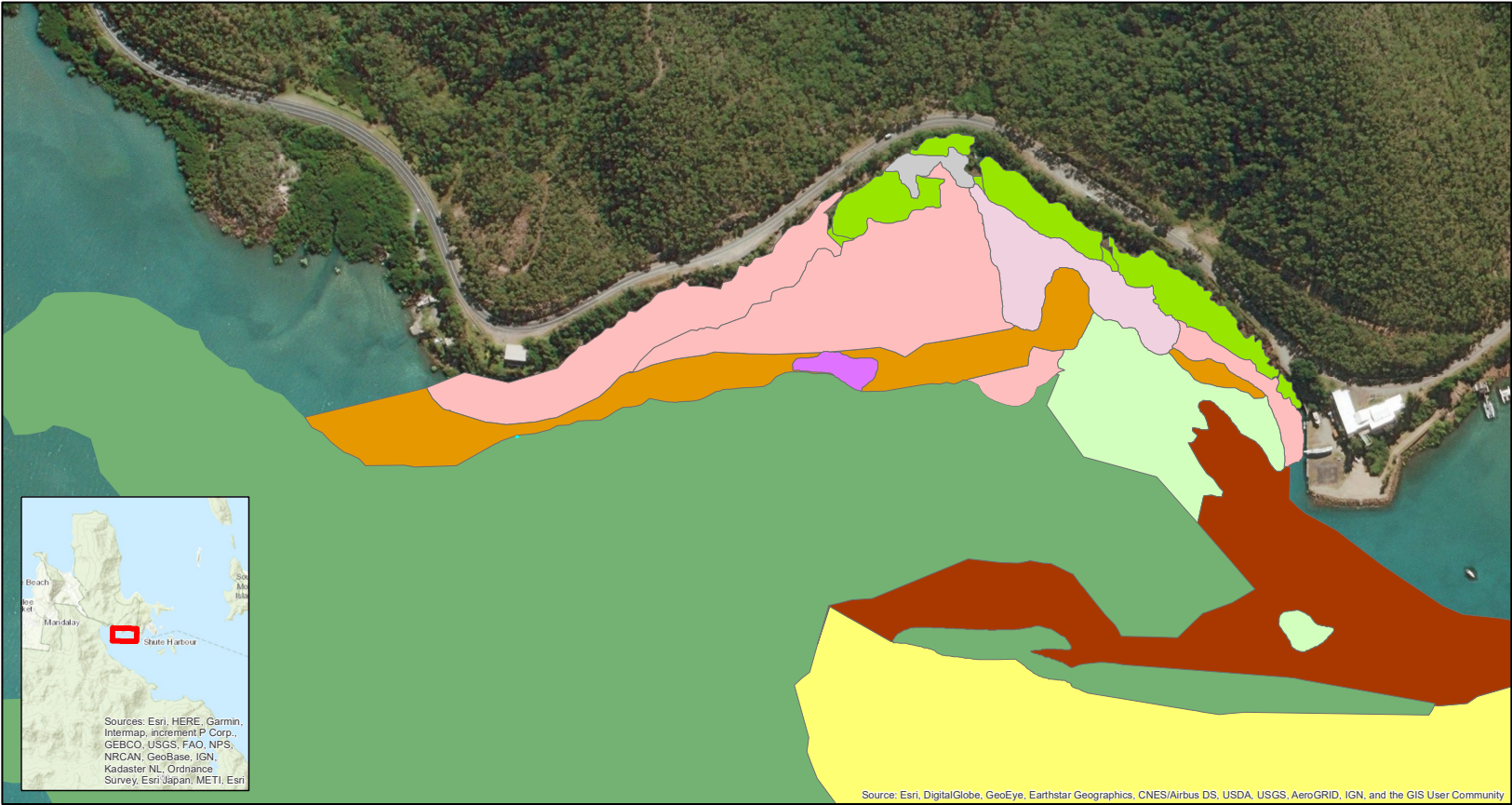
- Habitat Photo Assessment Point

**Habitat assessment points**  
Project Reference: 1743 Author: SW  
Datum: GDA 1994  
Units: Meter

Plan to illustrate location of survey effort. Plan not to be used for construction. Data Sources: © State of Queensland (Department of Natural Resources and Mines) 2015. © ESRI  
© Ecological Service Professionals Pty Ltd. (ESP). All care has been taken to ensure the accuracy of data. However, ESP make no representations or warranties about the accuracy, reliability or suitability and disclaims all liability for expenses, damages and costs incurred due to the data being incomplete or inaccurate.

0 50 100 200 300  
Metres

Figure 1 Habitat assessment points



Legend	
Habitat Category	
	Macroalgae
	Dead Mangroves
	Macroalgae/Rubble
	Mangroves
	Macroalgae/Mud
	Seagrass
	Mud/Sparse Macroalgae
	Seagrass Mixed
	Sand / Sparse Macroalgae
	Seagrass Sparse
	Oyster Aggregation/Rock Rubble
	Inshore Reef
	Rock Rubble
	Macroalgae / Coral

**Preliminary Map of Benthic Habitats**  
Project Reference: 1743 Author: SW  
Datum: GDA 1994  
Units: Meter

0 50 100 200 300  
Metres

Plan to illustrate location of survey effort. Plan not to be used for construction. Data Sources: © State of Queensland (Department of Natural Resources and Mines) 2015. © ESRI © Ecological Service Professionals Pty Ltd. (ESP). All care has been taken to ensure the accuracy of data. However, ESP make no representations or warranties about the accuracy, reliability or suitability and disclaims all liability for expenses, damages and costs incurred due to the data being incomplete or inaccurate.

Figure 2 Preliminary map of benthic habitats

A full description of the habitat categories assessed will be included in our report once complete; however, we have provided photo examples of several habitat categories below. We can provide a .kmz file with georeferenced photos suitable to be opened in google earth including preliminary habitat assessment categories if required. The seagrass mapped within the development area and adjacent parts of Shute bay was generally sparse (<10% coverage) and consisted primarily of *Halophila* spp. with occasional small patches of *Zostera muelleri* and *Halodule uninervis*. A moderately dense (~20-30% coverage) mixed seagrass bed was found west of Repair Island around REMP Site 5.



Figure 3 Sparse seagrass (*Halophila ovalis*) growing in the development area



Figure 4 Macroalgae and hard coral in the development area



Figure 5 Intertidal rubble banks looking east across the development area

We are planning to complete the assessment of photos and update mapping with seagrass coverage categories in the coming weeks. An additional pre-construction survey will be completed in November 2019 to assess presence and coverage of seagrass and density of seagrass seeds in accordance with the REMP. If you have any questions about the attached, please let me know.

Regards,

A handwritten signature in black ink, appearing to read 'Simon Walker', written over a white background.

Dr Simon Walker

Principal Ecologist

Ecological Service Professionals Pty Ltd