PRELIMINARY ASSESSMENT FOR SIR JOSEPH BANKS GROUP MARINE PARK MARINE PARK LOCAL ADVISORY GROUP TO ASSIST WITH THE MEETING ON THE 12th May 2011

Rapid Assessment on Comprehensive, Adequate and Representative (CAR) Principles for the Sir Joseph Banks Group (Marine Park 6) suggested zoning options

Overview

DENR has undertaken a rapid assessment of the CAR principles for the possible sanctuary zone options for the Sir Joseph Banks Group Marine Park suggested at the MPLAG meeting held on 24th of February 2011.

Community feedback and MPLAG advice has resulted in sanctuary zones suggested at six locations within the marine park, with alternative zones suggested at two of the locations (Zones B and Spilsby (Sp)/Boucat (Bc) Islands).

Using combinations of alternate suggested zones (B1, B2, Bc1, Sp2) with the suggested zones (C1, D3, F1, G1), four zoning options for the marine park were developed (See Figures 1 to 4 below). There are numerous options that could be developed, DENR has chosen 4 alternative combinations as examples of possible zoning options.

This rapid assessment[1] helps to determine if the zoning option meets the core biophysical principles of:

Comprehensive: To be comprehensive, examples of all ecosystems and habitats within the marine park should be included within sanctuary zones.

Adequate: To be adequate, the marine parks system should provide for the maintenance of the ecological viability and integrity of populations, species and communities

Representative: To be representative, the system of sanctuary zones should reflect the biodiversity and variability naturally present in the marine park.

MPLAGs should seek to apply the full suite of 14 design principles in any further zoning advice generated.

Appendix D shows a map and table of the new video drop data collected for advice for the MPLAG to assist in the consideration of including zones B and D. Where possible the new data has been included in the rapid assessment.

Possible zoning options for marine park 6 using combinations of the 8 suggested zones

Figure 1: Zoning Option 1 (6% of marine park) possible zones: B1, C1, D3, F1, G1, Bc1

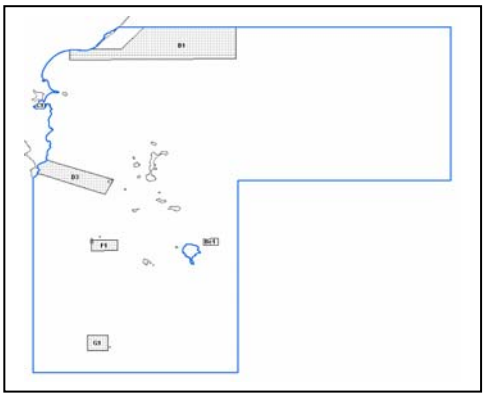
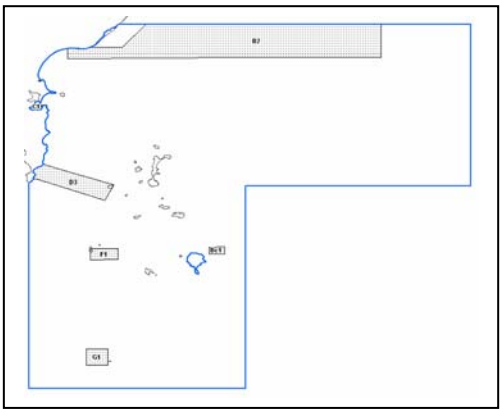


Figure 2: Zoning Option 2 (10% of marine park) possible zones: B2, C1, D3, F1, G1, Bc1



[1] GIS processing formed the basis of the rapid assessments. A number of data layers captured at various scales were used in the analysis, these include layers such as: state and national benthic mapping; coastal shoreline types; and sea lion haul out and breeding locations. Procedures such as intersections, unions, frequency analysis as well as manual measurements were used in this assessment. All information is subject to the scale and accuracy of the data used.

Figure 3: Zoning Option 3 (6% of marine park) possible zones: B1, C1, D3, F1, G1, Sp2

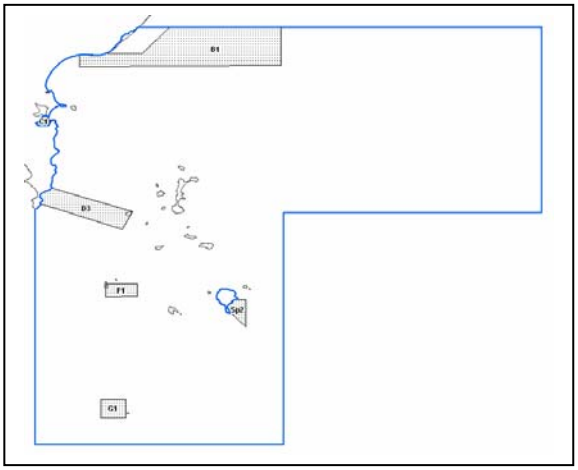
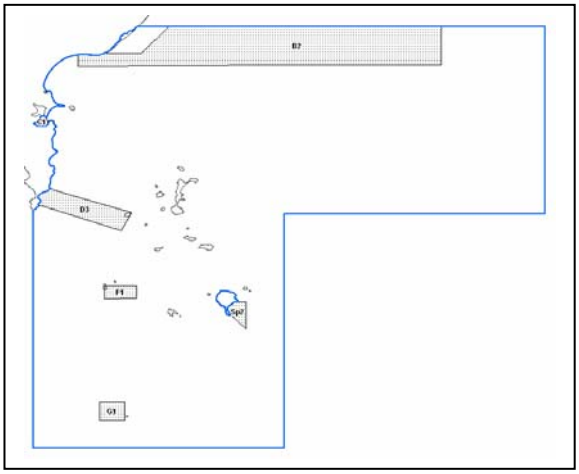


Figure 4: Zoning Option 4 (10% of marine park) possible zones: B2, C1, D3, F1, G1, Sp2



How to use this document

The rapid assessment shows the range of environmental values/features which are included in MPLAG zoning options, and which are omitted. It also shows those features which are well represented and those which are under-represented. **For each under-represented feature, the maps in Appendix C show alternative locations where the feature is found.**

The rapid assessment also considers whether each possible sanctuary zone is of an adequate size to be effective. **It is better to have fewer, larger sanctuary zones than many smaller ones**.

Comprehensiveness

Each option was assessed for the inclusion of examples of shoreline types and seafloor (benthic) habitats in the suggested sanctuary zones.

All four suggested zoning options include an example of the shoreline and benthic habitats located within this marine park. The shoreline and benthic habitats included are:

- ✓ Rocky reef
- ✓ Seagrass
- ✓ Soft-bottom habitat
- ✓ Unmapped habitat
- ✓ Bedrock platform
- ✓ Coarse sand beach
- ✓ Mangrove
- ✓ Saltmarsh
- ✓ Rhodolith and invertebrate communities

Representativeness

Each option was assessed against the proportion of environmental values[1] represented in the suggested sanctuary zones. To consider the full diversity and variability of the coastal and marine features, this assessment included benthic habitat types at different depths, shoreline types at different exposures and a range of other ecologically important features. Each zoning option was assessed for the proportion (as a %) of environmental values represented in the suggested sanctuary zones. Proportions were broken into 4 categories: >20%, between 10% and 19%, <10% and 0%. A comparison of the environmental values represented as a proportion of their availability within the park for each option can be seen in Table 1.

Table 1 Environmental values represented within the possible zoning options as a proportion of their availability within the park

✓✓✓ Environmental values that are represented at a level ≥20%
✓✓ Environmental values that are represented between 10-19%
✓ Environmental values that are represented at a level <10%
× Environmental values that are not represented (0%)

Environmental Value	Option 1	Option 2	Option 3	Option 4
Coastal shorebird sites	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Seagrass (0 to -10m)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Bedrock platform (exposed)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Bedrock platform (sheltered)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Coarse sand beach (moderate)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Mangroves (sheltered)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Emergent land	✓✓✓	✓✓✓	×	×
Australian sea lion (haul out)	×	×	✓✓✓	✓✓✓
Offshore islands	✓✓	✓✓	✓✓	✓✓
Sea bird sites	✓✓	✓✓	✓✓	✓✓
Unmapped (-10 to -30m)	✓✓	✓✓	✓✓	✓✓
Bedrock platform (moderate)	✓✓	✓✓	✓✓	✓✓
Rocky reef (0 to -10m)	✓	✓	✓	✓
Rocky reef (-10 to -30m)	✓	✓	✓	✓
Seagrass (0 to -10m)	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Seagrass (-10 to -30m)	✓	✓	✓	✓
Soft bottom habitat (0 to -10m)	✓	✓	✓	✓
Soft bottom habitat (-10 to -30m)	✓	✓	✓	✓
Unmapped habitat (0-10m)	✓	✓	✓	✓
Surveyed reef fish sites	✓	✓	✓	✓
Unmapped habitat (30 -50m)	×	×	×	×
Rhodolith and invertebrate communities	✓	✓✓✓	✓	✓✓✓
Algae on sandy bottom	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Australian sea lions (breeding)	×	×	×	×
Cosema endangered macroalgae	×	×	×	×

Note:

- A more detailed assessment of environmental values and the percentage included in each zoning option can be viewed in Appendix A.
- Environmental values included within each suggested individual zone can be viewed in Appendix B.
- The locations of environmental values that are not included or are under represented are shown in Appendix C.
- Currently DENR only has point information on the rhodolith and invertebrate communities. There are four locations within the video runs the habitats have been identified. As there is no %/area to analyse, three ticks has been given if the option picks up all locations and 1 tick if it picks up one location.
- In addition algae on sandy bottom have been identified in one location. Three ticks have been given if this habitat was picked up in the option.

Adequacy

Each of the suggested zones was measured for their approximate lengths (from coast to offshore or longitudinal lengths) and widths (coastline or latitudinal lengths), these are shown in Table 1. The total area of each of the four options was then calculated, as shown in Table 2.

Note: The guideline is that a zone should include whole habitats or areas with minimum linear dimensions of 7-10 km (or 5km where State waters are limited to 3 nautical miles). Smaller dimensions are likely to have a value but not for all organisms.

Table 2. Approximate length, width and size of each suggested zone.

Zone	From the coast to offshore (or length) (km)	Coastline along shore (or width) (km)	Size of zone (km^2)
B1	22	6	103
B2	41	6	212
C1	2	1	2
D3	11	3	31
F1	4	2	7
G1	3	3	8
Bc1	2	1	2
Sp2	3	2	5

Note: size is not necessarily length x width, it will vary because of the shape of the zones and because the numbers have been rounded to the nearest whole number.

Areas of alternative Options 1, 2, 3, 4
Four alternative zoning options were developed using different combinations of the individual zones suggested at each of the six locations.

A comparison of the total area (km^2) of each of the zoning options and the percentage sanctuary zones in each option can be seen in Table 2.

Table 3. Comparison of the total area and percentage of sanctuary zones in each zoning option (areas and % rounded to the nearest whole number).
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Suggested zoning option	Total area of sanctuary zones (km^2)	% of sanctuary zones located in the marine park
1	154	6
2	262	10
3	157	6
4	265	10

The total area of the Sir Joseph Banks Group Marine Park is approximately 2, 627 km^2.

Comparing the four zoning options

- Zoning Options 2 and 4 include 10% sanctuary zones within the marine park compared to Options 1 and 3 which has 6%.
- Options 2 and 4 include additional unmapped habitats; with 17% unmapped (10-30m) and 4% (30-50m) (compared to 10% and 0% respectively in Options 1 and 3).
- Zoning Options 1 and 2 included 4% more coastal wader sites and 6% more offshore islands compared to Options 3 and 4.
- No emergent land is included in either Option 3 or 4.
- Zoning Options 1 and 2 include 17% offshore islands in sanctuary zones compared to 11% in Options 3 and 4.

Appendix A

Table 4. A comparison of the environmental values represented and percentage included in each zoning option (values rounded to the nearest whole number).

Environmental Value	Option 1 Total in all Zones (%)	Option 2 Total in all Zones (%)	Option 3 Total in all Zones (%)	Option 4 Total in all Zones (%)
Ecological Importance				
Australian Sealions (breeding)	0	0	0	0
Australian Sealions (haulout)	0	0	20	20
Coastal Shorebird Sites	25	25	21	21
Cosema Endangered Macroalgae	0	0	0	0
Emergent Land	33	33	0	0
Offshore Islands	17	17	11	11
Surveyed Reef Fish Sites	9	9	9	9
Sea Bird Sites	17	17	17	17
Underwater Habitats Habitat				
Rocky Reef (0 to -10m)	5	5	5	5
Rocky Reef (-10 to -30m)	1	1	1	1
Seagrass (0 to -10m)	23	23	23	23
Seagrass (-10 to -30m)	3	3	3	3
Soft-bottom habitat (0 to -10m)	7	7	7	7
Soft-bottom habitat (-10m to -30m)	2	2	2	2
Unmapped (0 to -10m)	6	6	5	5
Unmapped (-10 to -30m)	10	17	10	17
Unmapped (-30 to -50m)	0	4	0	4
Total	**6**	**10**	**6**	**10**
Shoreline Habitats				
Bedrock Platform (Exposed)	77	77	77	77
Bedrock Platform (Moderate)	12	12	12	12
Bedrock Platform (Sheltered)	30	30	30	30
Coarse Sand Beach (Moderate)	26	26	26	26
Coarse Sand Beach (Sheltered)	8	8	8	8
Mangrove (Sheltered)	90	90	90	90
Saltmarsh (Sheltered)	22	22	22	22
Total	**21**	**21**	**21**	**21**

Environmental values represented
Represented ≥20%
Represented between 10-19%
Represented <10%
Not Represented 0%

Note: Rhodolith and invertebrate communities are present in all four Options with Options 2 and 4 representing a greater number of video point data than Options 1 and 3.

Algae on sand is present in all four options.

Appendix B Table 5. Environmental values represented in each suggested zone (values rounded to the nearest whole number).

Ecological Importance	Units	B1	B2	C1	D3	F1	G1	Bc1	Sp2	Total in marine park (count)
Australian Sealions (breeding)	Count									4
Australian Sealions (haulout)	Count								1	5
Coastal Wader Bird Sites	Count	1	1	58	8	15	7	15		424
Cosema Endangered Macroalgae	Count									1
Emergent Land	Count							1		3
Offshore Islands	Count				1	1		1		18
Surveyed Reef Fish Sites	Count				1					11
Sea Bird Sites	Count				6		3			52

Underwater Habitats		B1	B2	C1	D3	F1	G1	Bc1	Sp2	Total in marine park (km^2)
Rocky Reef (0 to -10m)	Km^2	1	1		1	<1		1	2	48
Rocky Reef (-10 to -30m)	Km^2									35
Seagrass (0 to -10m)	Km^2	13	13	1	4					79
Seagrass (-10 to -30m)	Km^2	2	2		1		6			332
Soft bottom habitat (0 to -10m)	Km^2	<1	<1	<1	<1					14
Soft bottom habitat (-10 to -30m)	Km^2						2			130
Unmapped habitat (0 to -10m)	Km^2	7	7		<1	1		1	1	173
Unmapped habitat (-10 to -30m)	Km^2	80	160		23	6			2	1,145
Unmapped habitat (-30 to -50m)	Km^2		29						<1	661
Total		**103**	**212**	**2**	**31**	**7**	**8**	**2**	**5**	**2,534**

Shoreline Habitats		B1	B2	C1	D3	F1	G1	Bc1	Sp2	Total in marine park (km)
Bedrock Platform (Exposed)	km				1					1
Bedrock Platform (Moderate)	km				<1					2
Bedrock Platform (Sheltered)	km				1					2
Coarse Sand Beach (Moderate)	km	2	2		2					13
Coarse Sand Beach (Sheltered)	km	1	1	1						23
Mangrove (Sheltered)	km			7						7
Saltmarsh (Sheltered)	km			<1						1
Total		**3**	**3**	**7**	**4**					**50**

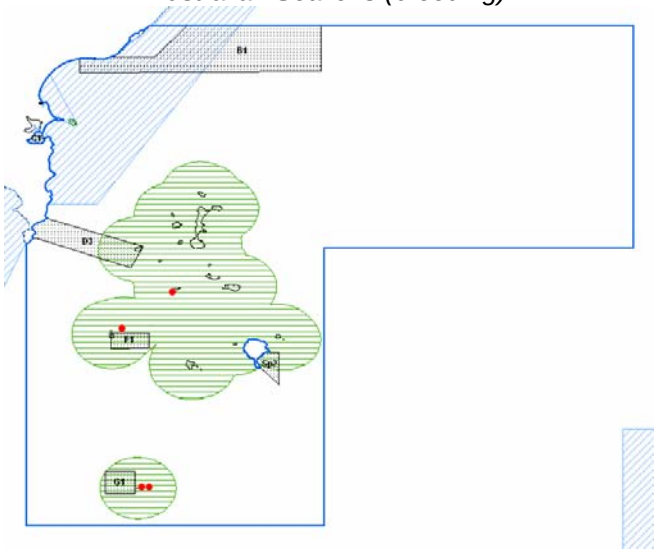
Note: Rhodolith and invertebrate communities are present in two of the zones – D3 and B2
Algae on sandy bottom is present in D3

Appendix C Location of the environmental values <10% represented.

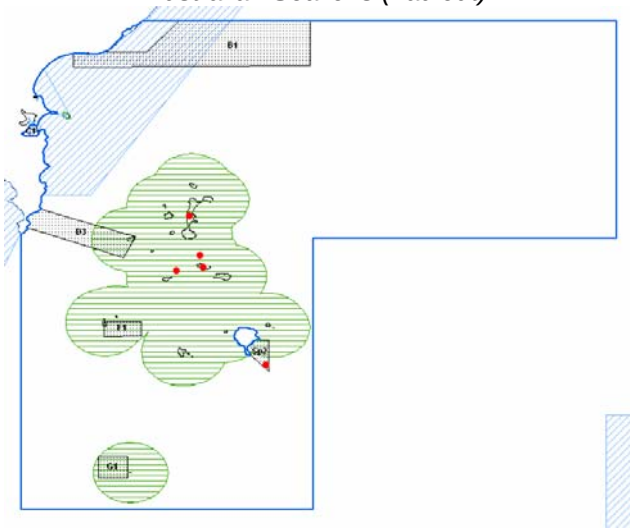
Environmental values that have <10% representation are shown in red, identifying where they could be represented within the marine park.

Note: maps are best viewed in colour

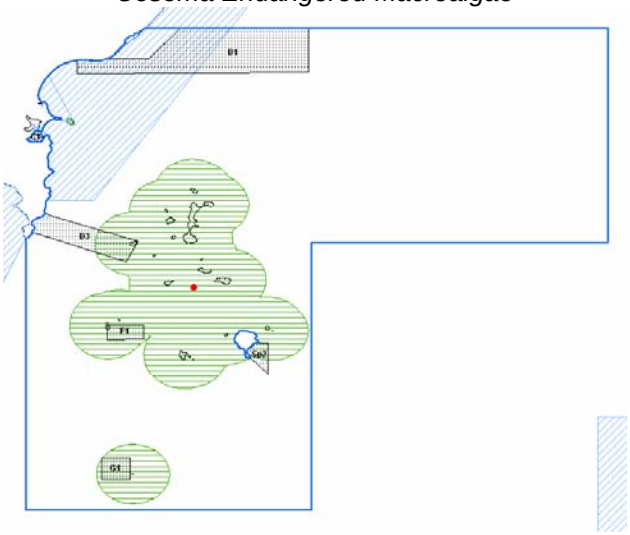
Australian Sealions (breeding)



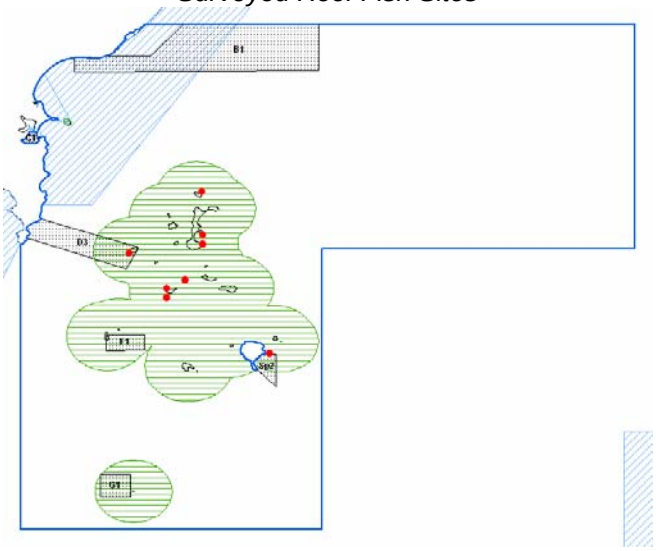
Australian Sealions (haulout)



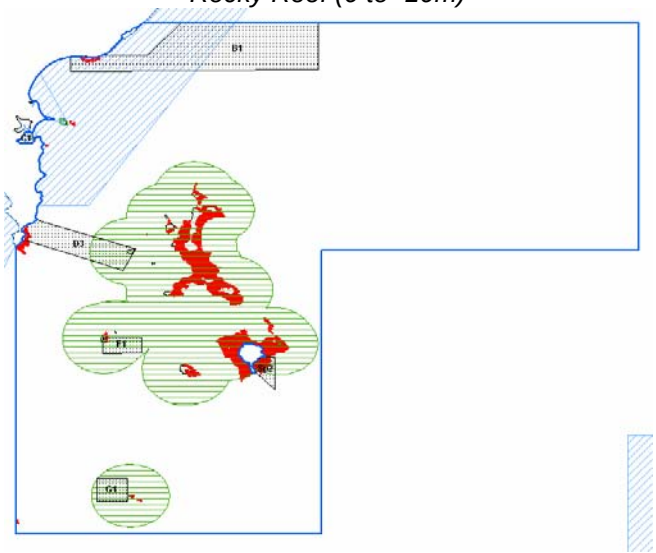
Cosema Endangered Macroalgae



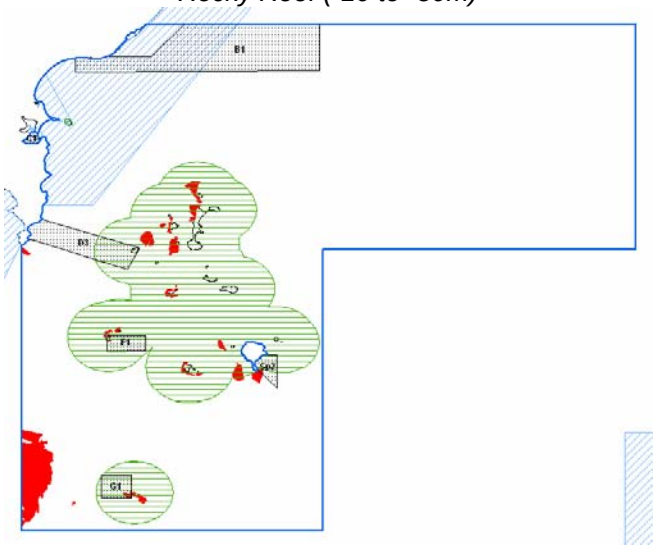
Surveyed Reef Fish Sites



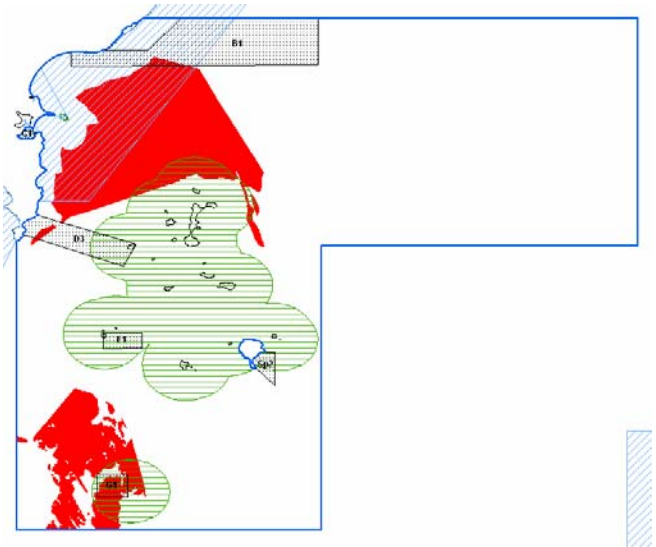
Rocky Reef (0 to -10m)



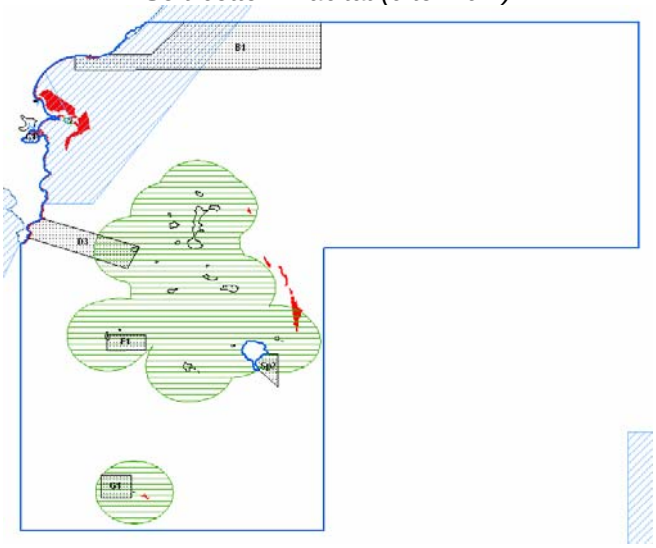
Rocky Reef (-10 to -30m)



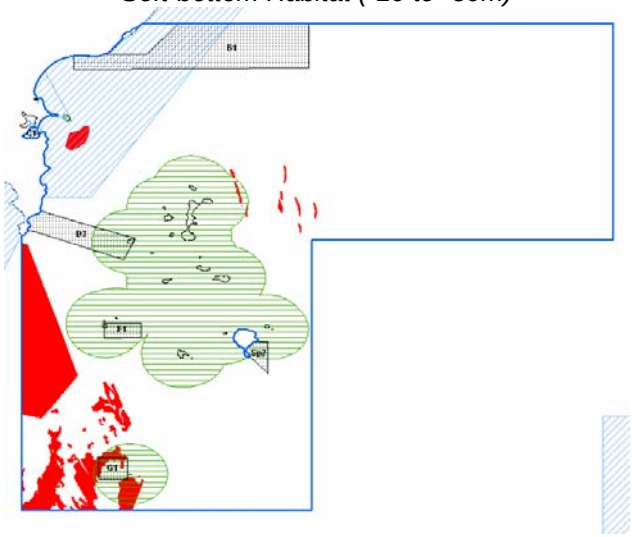
Seagrass (-10 to -30m)



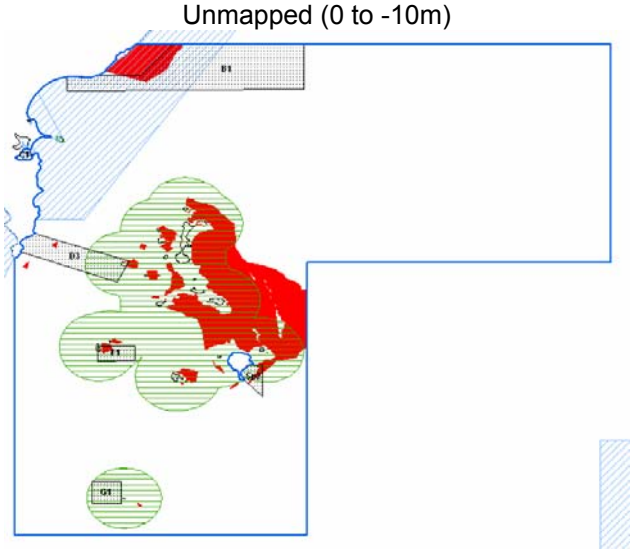
Soft-bottom Habitat (0 to -10m)



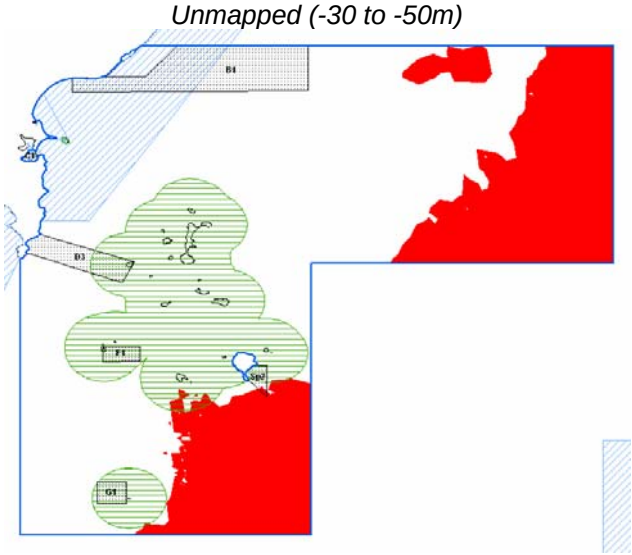
Soft-bottom Habitat (-10 to -30m)



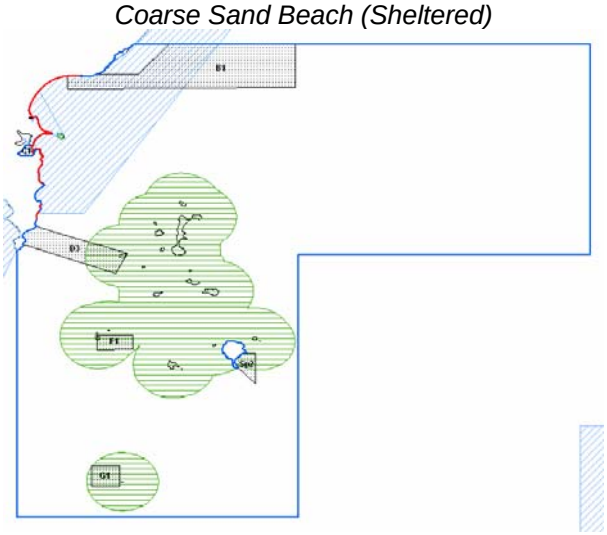
Unmapped (0 to -10m)



Unmapped (-30 to -50m)

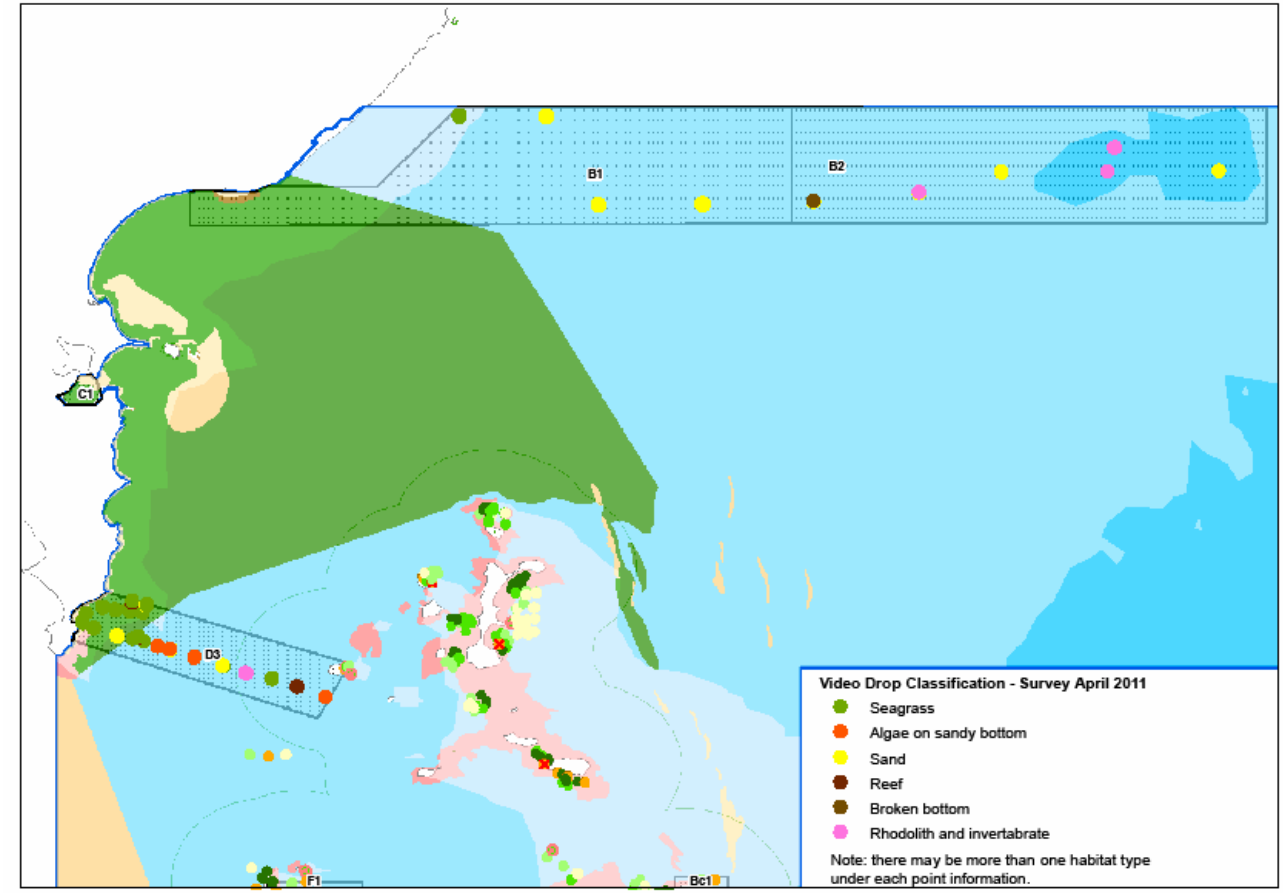


Coarse Sand Beach (Sheltered)



Mapping information:

Appendix D – Video drop information collected April 2011



Zone	Habitat Classification	Seagrass Sp.
B1	Sand	
B1	Seagrass	Halophila; Sparse
B1	Seagrass	Posidonia; Medium
B2	Broken bottom	
B2	Seagrass	Halophila; Medium
B2	Rhodolith & invertebrate	
B2	Sand	
B2	Seagrass	Halophila; Sparse
B2	Seagrass	Posidonia; Medium
D3	Algae; Sand; Medium	
D3	Algae; Sand; Sparse	
D3	Reef; Invertebrates; Rhodolith	
D3	Sand	
D3	Seagrass	Amphibolis; Dense
D3	Seagrass	Posidonia; Dense
D3	Seagrass	Posidonia; Medium