

PRELIMINARY ASSESSMENT FOR WEST COAST BAYS MARINE PARK LOCAL ADVISORY GROUP TO ASSIST WITH THE MEETING ON THE 3rd MAY 2011

Rapid Assessment on Comprehensive, Adequate and Representative (CAR) Principles for the West Coast Bays (Marine Park 3) suggested zoning options

Overview

DENR has undertaken a rapid assessment of the CAR principles for the possible sanctuary zone options for the West Coast Bays Marine Park suggested at a workshop held on 30 March 2011 (Option 1) and as a submission by a member of the Marine Parks Local Advisory Group (Option 2).

Community feedback and MPLAG advice has resulted in a number of possible sanctuary zones being suggested within the West Coast Bays Marine Park. Two separate submissions have resulted in two zoning options for this marine park (see Figures 1 and 2, page 2).

This rapid assessment¹ 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.

How to use this document

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

The rapid assessment also provides a measure of each suggested sanctuary zone to assist consideration of the adequacy of those zones. **Note: It is better to have fewer, larger sanctuary zones than many smaller ones.**

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.

Possible zoning options for marine park 3

Figure 1: Zoning Option 1 (8% of MP) - possible zones: A1, B1, C8, , D2, E1 F3,G4, H1, I1

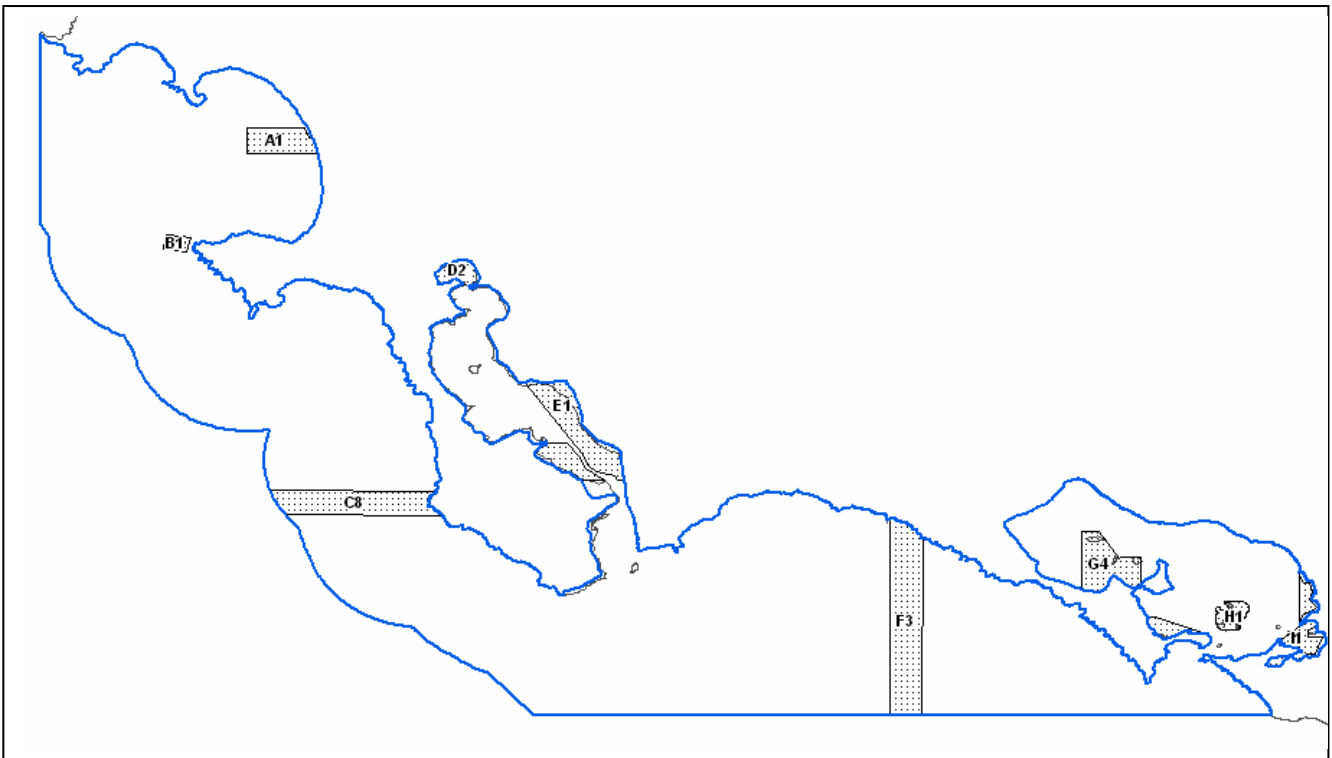
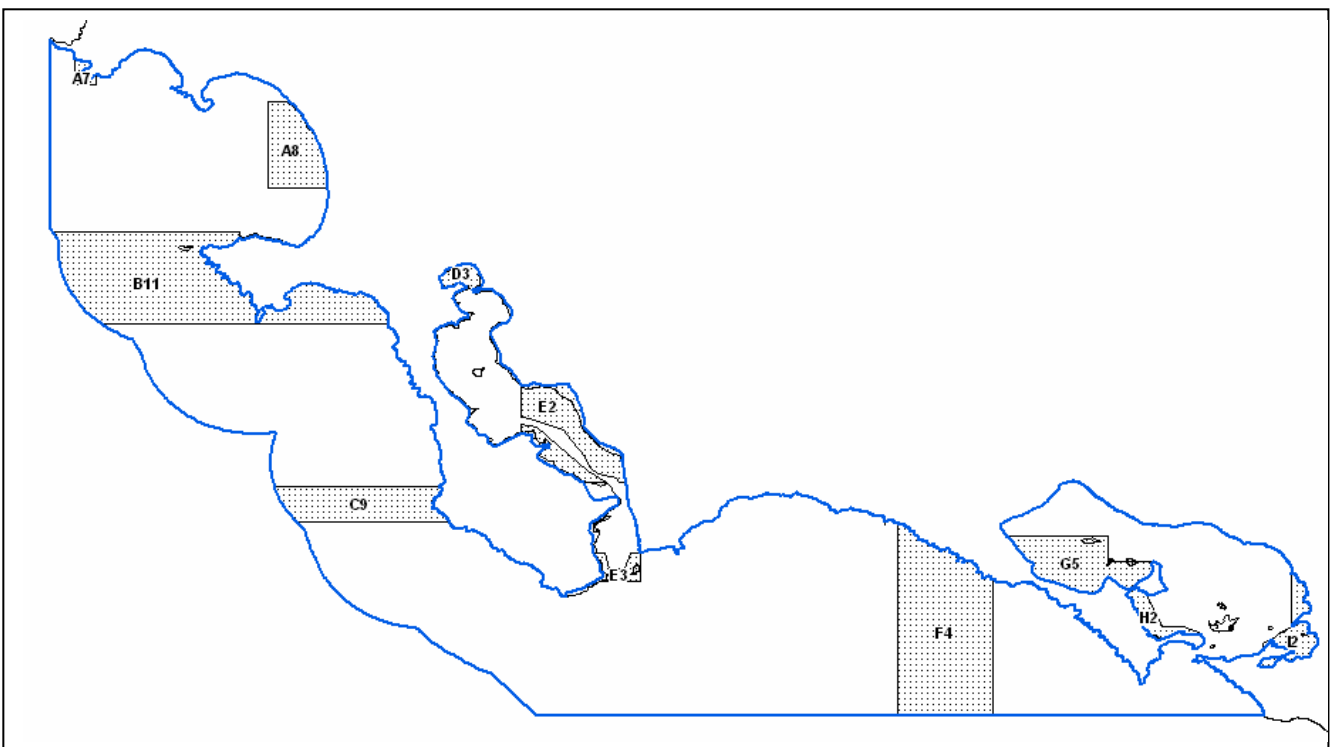


Figure 2: Zoning Option 2 (21% of MP) - possible zones: A7, A8, B11, C9, D3, E2, E3,F4, G5, H2, I2



Comprehensiveness

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

Both zoning options include the following shoreline types and seafloor (benthic habitats):

- ✓ Cobble
- ✓ Invertebrate community
- ✓ Macroalgae
- ✓ Rocky reef
- ✓ Seagrass
- ✓ Soft bottom habitat
- ✓ Unmapped
- ✓ Bedrock platform
- ✓ Cliff
- ✓ Coarse sand beach
- ✓ Mangrove
- ✓ Saltmarsh
- ✓ Sand dunes

In addition, Option 2 also includes:

- ✓ Fine-medium sand beach
- ✓ Seagrass

Option 1 does not include the following shoreline and seafloor (benthic) values:

- * Fine-medium sand beach
- * Seagrass

Representativeness

Each option was assessed against the proportion of environmental values² 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%.

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

OPTION 1

Environmental values that are represented at a level >20% for Option 1:

- ✓ Australian sealion breeding
- ✓ Coastal wader bird sites
- ✓ New Zealand Fur seal sites (breeding)
- ✓ Offshore islands
- ✓ Sea bird sites
- ✓ Cobble
- ✓ Soft bottom habitat (0 to -10m)
- ✓ Bedrock platform (sheltered)
- ✓ Coarse sand beach (sheltered)
- ✓ Mangrove (sheltered)
- ✓ Saltmarsh (sheltered)
- ✓ Sand dunes (sheltered)
- ✓ Estuaries

Environmental values that are represented between 10-19% for Option 1:

- ✓ Invertebrate community

² In this assessment an environmental values include seafloor habitats and shoreline habitats and ecologically important features available within the outer boundary.

- ✓ Macroalage (0 to -10m)
- ✓ Rocky reef (-10 to -30m)
- ✓ Seagrass (0 to -10m)
- ✓ Soft bottom habitat (-10 to -30m)
- ✓ Cliff (sheltered)

Environmental values that are represented at a level <10% for Option 1:

- ✓ Rocky reef (0 to -10m)
- ✓ Unmapped (0 to -10m)
- ✓ Unmapped (-10 to -30m)
- ✓ Unmapped (-30 to -50m)
- ✓ Unmapped (>50m)
- ✓ Cliff (exposed)

Environmental values that are not represented (0%) for Option 1:

- ✗ Emergent land
- ✗ Estuary
- ✗ Cliff (moderate)
- ✗ Australian sealion (haul out)
- ✗ Surveyed reef fish sites
- ✗ Rocky reef (-30 to -50m)
- ✗ Bedrock platform (exposed)
- ✗ Coarse sand beach (exposed)
- ✗ Coarse sand beach (moderate)
- ✗ Fine-medium sand beach (exposed)
- ✗ Seagrass (sheltered)

OPTION 2

Environmental values that are represented at a level >20% for Option 2:

- ✓ Australian sealion breeding
- ✓ Coastal wader bird sites
- ✓ New Zealand Fur seal sites (breeding)
- ✓ Offshore islands
- ✓ Sea bird sites
- ✓ Cobble
- ✓ Soft bottom habitat (0 to -10m)
- ✓ Bedrock platform (sheltered)
- ✓ Coarse sand beach (sheltered)
- ✓ Mangrove (sheltered)
- ✓ Saltmarsh (sheltered)
- ✓ Sand dunes (sheltered)
- ✓ Australian sealion sites (haul out)
- ✓ Surveyed reef fish sites
- ✓ Macroalage (0 to -10m)
- ✓ Rocky reef (0 to -10m)
- ✓ Rocky reef (-10 to -30m)
- ✓ Rocky reef (-30 to -50m)
- ✓ Seagrass (0 to -10m)
- ✓ Soft bottom habitat (-10 to -30m)
- ✓ Unmapped (0 to -10m)
- ✓ Unmapped (-10 to -30m)
- ✓ Bedrock platform (exposed)
- ✓ Cliff (exposed)
- ✓ Cliff (sheltered)
- ✓ Coarse sand beach(exposed)
- ✓ Coarse sand beach (moderate)
- ✓ Seagrass
- ✓ Estuaries

Environmental values that are represented between 10-19% for Option 2:

- ✓ Unmapped (-30 to -50m)

- ✓ Unmapped (>50m)
- ✓ Fine-medium sand beach (exposed)

Environmental values that are represented at a level <10% for Option 2:

- ✓ Invertebrate community

Environmental values that are not represented (0%) in Option 2:

- × Emergent land
- × Cliff (moderate)

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 <10% represented are shown in Appendix C.

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. And then the total area of each of the four options was calculated, as shown in Table 2.

For a zone to be adequate, it is recommended that, where possible, a zone should include whole habitats or areas with minimum dimensions of 7-10 km (or 5km areas where State waters are limited to 3 nautical miles). Smaller dimensions are likely to have a value but not for all organisms.

Table 1. Approximate length, width and size of each suggested zone (lengths rounded to the nearest whole number).

Zone	Length (longitude or from the coast to offshore) (km)	Width (latitude or Coastline along shore) (km)	Size of zone (km ²)
A1	3	2	5
A7	1	1	1
A8	3	5	12
B1	1	1	1
B11	7	5	53
C8	7	1	10
C9	7	2	15
D2	1	2	2
D3	1	2	2
E1	3	6	12
E2	3	6	15
E3	2	2	2
F3	11	2	17
F4	10	5	45
G4	3	3	7
G5	3	7	14
H1	1	3	2
H2	2	1	3
I1	2	1	5
I2	2	1	5

Note: size is not necessarily length x width, it is dependent on the shape of the zone.

Areas of alternative Options 1 and 2

A comparison of the total area (km²) of each of the zoning options and the percentage sanctuary zones in each option can be seen in Table 2.

Table 2. Comparison of the total area and percentage of sanctuary zones in each zoning option.

Suggested zoning option	Total area of sanctuary zones (km ²)	% of sanctuary zones located in the marine park
1	61	8
2	168	21

Comparing the two zoning options

- Zoning Option 2 includes 21% (168 km²) of sanctuary zones within the park. Option 1 includes 8% (61km²) of sanctuary zones within the park.
- Option 2 includes a larger number of environmental values with ≥20% representation within sanctuary zones.
- Option 2 includes seven additional environmental values compared to Option 1.
- Option 2 includes a higher percent representation (or at the same percentage) for all environmental values included in both zoning options with the exception of invertebrate community.

Appendix A.

Table 3. A comparison of the percentage of each environmental value included in each zoning option.

Environmental Value	Option 1 Total in all Zones %	Option 2 Total in all Zones %
Ecological Importance		
Australian Sealions (breeding)	50	100
Australian Sealions (haulout)	0	100
Coastal Wader Bird Sites	36	39
Emergent Land	0	0
New Zealand Fur Seals (breeding)	100	100
Offshore Islands	50	60
Survived reef fish sites	0	38
Sea Bird Sites	67	83
Estuaries	19	29
Underwater Habitats		
Cobble (0 to -10m)	100	100
Invertebrate Community (0 to -10m)	14	<1
Macroalgae (0 to -10m)	18	45
Rocky Reef (0 to -10m)	4	28
Rocky Reef (-10 to -30m)	10	30
Rocky Reef (-30 to -50m)	0	66
Seagrass (0 to -10m)	14	25
Soft-bottom habitat (0 to -10m)	23	34
Soft-bottom habitat (-10m to -30m)	18	44
Unmapped (0 to -10m)	9	27
Unmapped (-10 to -30m)	4	16
Unmapped (-30 to -50m)	5	16
Unmapped (>-50m)	5	19
Total	7	21
Shoreline Habitats		
Bedrock Platform (Exposed)	0	64
Bedrock Platform (Sheltered)	51	51
Cliff (Exposed)	6	30
Cliff (Moderate)	0	0
Cliff (Sheltered)	13	43
Coarse Sand Beach (Exposed)	0	28
Coarse Sand Beach (Moderate)	0	26
Coarse Sand Beach (Sheltered)	30	44
Fine-medium Sand Beach (Exposed)	0	16
Mangrove (Sheltered)	79	29
Saltmarsh (Sheltered)	45	57
Sand Dunes (Sheltered)	28	38
Seagrass (Sheltered)	0	98
Total	17	38

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

Note: numbers have been rounded to the nearest whole number

Appendix B.

Table 4. Environmental values represented in each suggested zone.

Ecological Importance	Units	A1	A7	A8	B1	B11	C8	C9	D2	D3	E1	E2	E3	F3	F4	G4	G5	H1	H2	I1	I2	Total in Marine Park (count)
Australian Sealions (breeding)	Count				1	1							1									2
Australian Sealions (haulout)	Count					1																1
Coastal Wader Bird Sites	Count				12	12			1	1	223	223	15			7	7	3	22	14	2	727
Emergent Land	Count																					1
Estuary	Count																					2
New Zealand Fur Seals (breeding)	Count				1	1																1
Offshore Islands	Count				1	1							1			3	3	1			1	10
Survayed Reef Fish Sites	Count					4							1									13
Sea Bird Sites	Count												1			4	4					6
Estuaries	km ²								2	2	12	14				7	14	2	3	5	5	143

Underwater Habitats		A1	A7	A8	B1	B11	C8	C9	D2	D3	E1	E2	E3	F3	F4	G4	G5	H1	H2	I1	I2	Total in Marine Park (km2)
Cobble (0 to -10m)	km ²										<1	<1										<1
Invertebrate Community (0 to -10m)	km ²															<1	<1					<1
Macroalgae (0 to -10m)	km ²												<1			2	5		<1			12
Rocky Reef (0 to -10m)	km ²		1		<1	5	<1	<1					1	<1	1	<1	<1	<1				33
Rocky Reef (-10 to -30m)	km ²		<1		<1	3	1	1						<1	1							15
Rocky Reef (-30 to -50m)	km ²					<1																<1
Seagrass (0 to -10m)	km ²								<1	<1	4	5	1			4	9	<1	1	3	3	77
Soft-bottom habitat (0 to -10m)	km ²	3		8					1	1	6	7	<1			<1	<1	<1	1	2	1	59
Soft-bottom habitat (-10m to -30m)	km ²	1		3																		7
Unmapped (0 to -10m)	km ²	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1	1	<1	<1	1	<1	1	1	20
Unmapped (-10 to -30m)	km ²		<1		<1	7	2	3						2	6							99
Unmapped (-30 to -50m)	km ²					8	2	3						7	18							184
Unmapped (>-50m)	km ²					27	5	7						8	17							275
Total	km ²	5	1	12	0	53	10	15	1	1	10	12	2	16	45	6	13	1	3	5	5	780

Shoreline Habitats		A1	A7	A8	B1	B11	C8	C9	D2	D3	E1	E2	E3	F3	F4	G4	G5	H1	H2	I1	I2	Total in Marine Park (km)	
Bedrock Platform (Exposed)	km		3			2																	7
Bedrock Platform (Sheltered)	km										2	2											3
Cliff (Exposed)	km		<1			11	2	3					<1	2	8								72
Cliff (Moderate)	km																						4
Cliff (Sheltered)	km					4			2	2	<1	1	2			3	10		3	2	6		62
Coarse Sand Beach (Exposed)	km					5																	17
Coarse Sand Beach (Moderate)	km					1																	5
Coarse Sand Beach (Sheltered)	km					2			3	3	2	2	<1			1	1		1				20
Fine-medium Sand Beach (Exposed)	km			3																			22
Mangrove (Sheltered)	km																	3	2	2			6
Saltmarsh (Sheltered)	km										9	11						1	2	8	10		39
Sand Dunes (Sheltered)	km								<1	<1	3	4											11
Seagrass (Sheltered)	km																					<1	<1
Total	km	0	3	3	0	24	2	3	6	6	15	19	2	2	8	4	11	4	7	11	16	268	

Note: numbers have been rounded to the nearest whole number

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

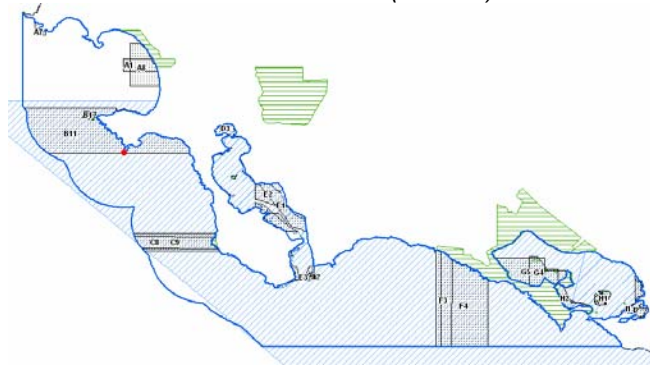
Environmental values that have <10% representation are shown in red, identifying where they could be represented within the outer boundary.

Note: maps are best viewed in colour.

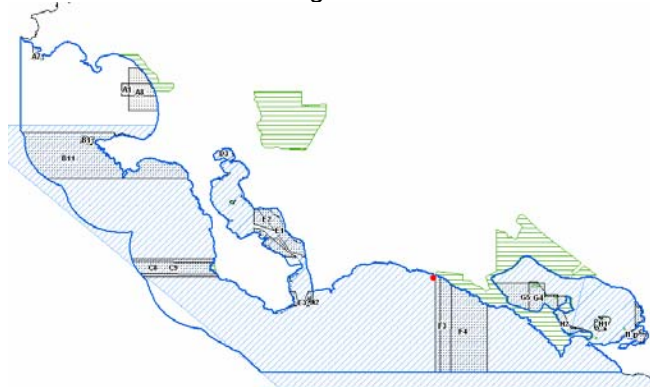
Legend

- Environmental Values
- Marine Park
- LAG Advice
- Netting Closures
- Parks and Reserves
- Coastline

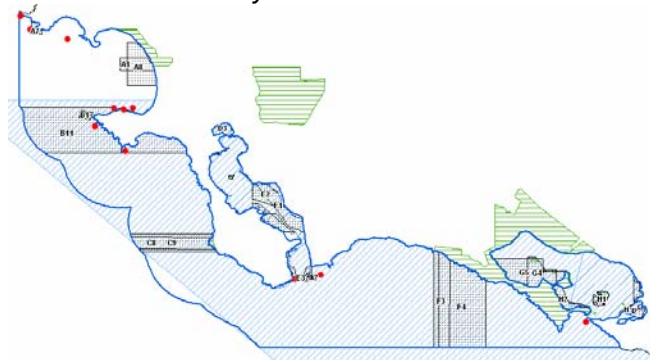
Australian sealion (haulout)



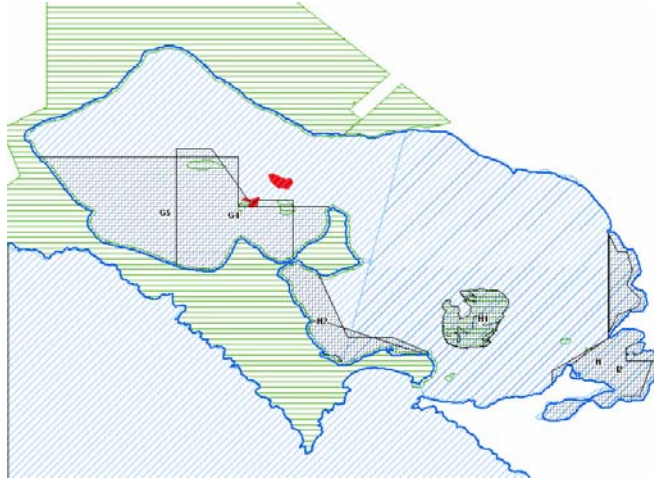
Emergent land



Surveyed Reef Fish Sites



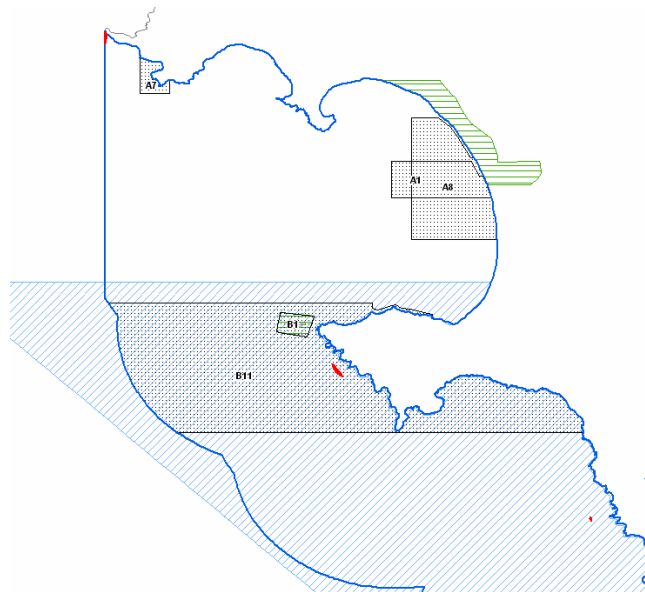
Invertebrate communities (0 to -10m)



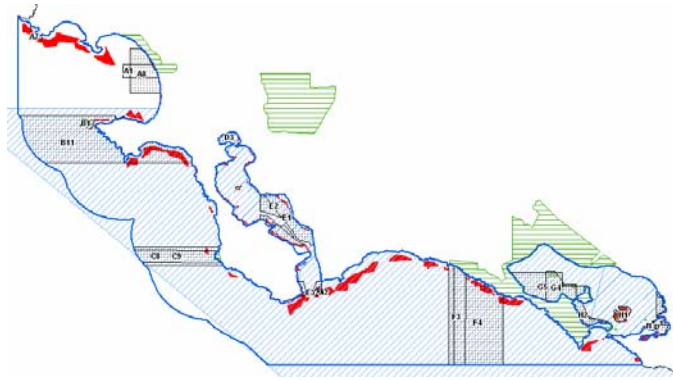
Rocky reef (0 to -10m)



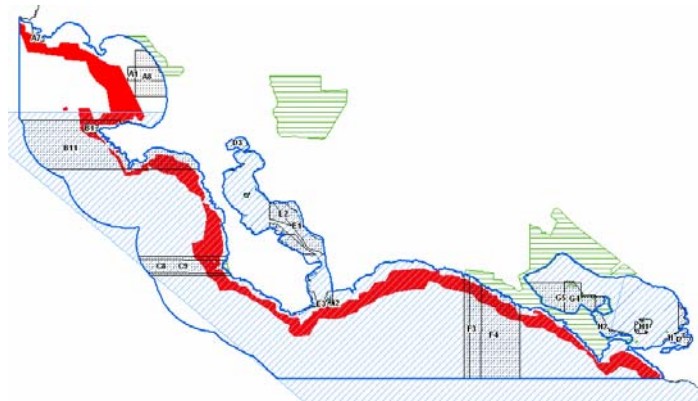
Rocky reef (-30 to -50m)



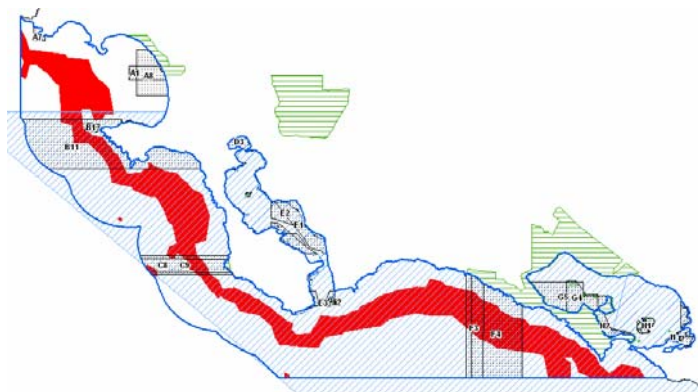
Unmapped habitat (0 to -10m)



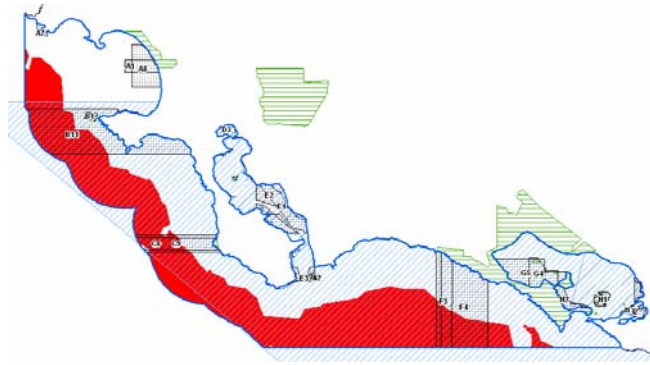
Unmapped habitat (-10 to -30m)



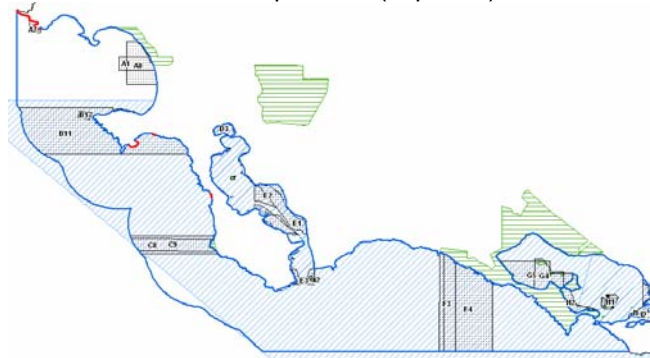
Unmapped habitat (-30 to -50m)



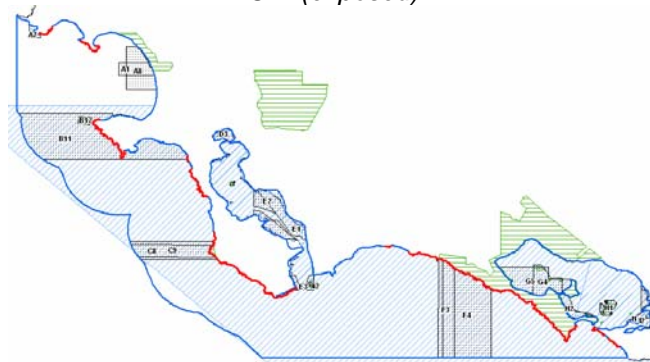
Unmapped habitat (>-50m)



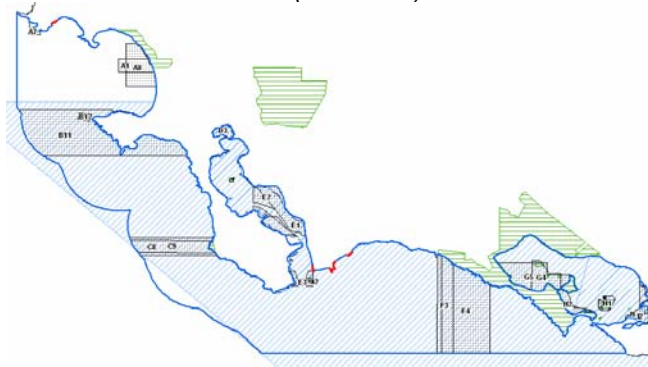
Bedrock platform (exposed)



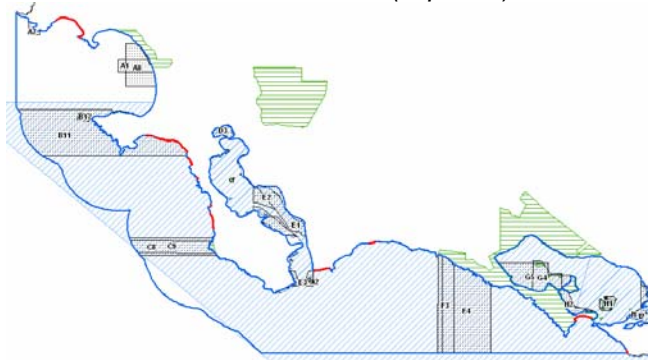
Cliff (exposed)



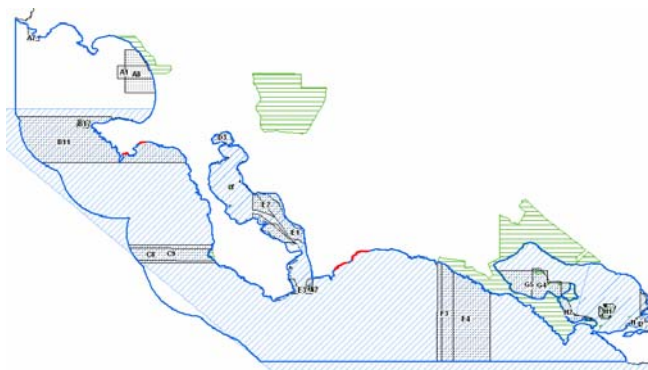
Cliff (moderate)



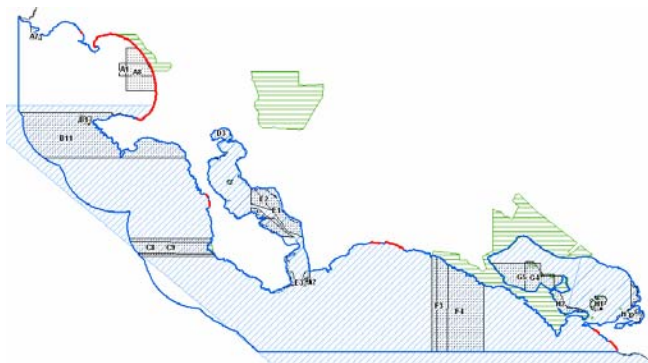
Coarse sand beach (exposed)

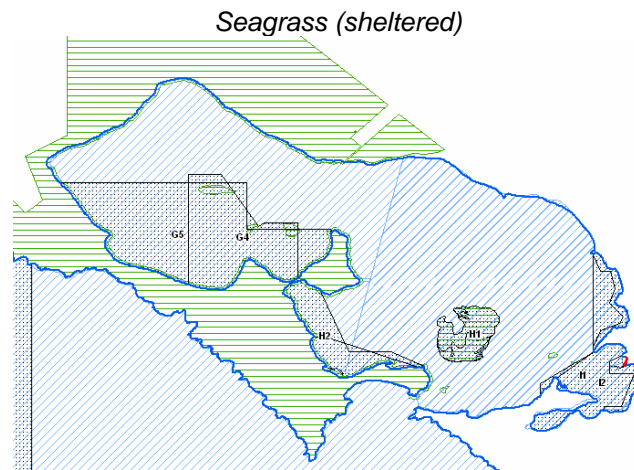


Coarse sand beach (moderate)



Fine-medium sand beach (exposed)





Mapping information:

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