

## ANNEXURES

## Annexure 4.1 Classification system for Land Use – Land Cover Mapping

Level I	Level II	Level III
Wetland		
	Mudflat /tidal flat	
		Sub - tidal
		Inter - tidal
		High tidal
		High tidal with Salt - encrustation
	Beach / Patch	
	Spit	
	Bar/barrier / island	
	Shoals	
	Beach ridge	
	Rocky coast	
	Rock exposure	
	Mangrove	
		Very Dense
		Dense
		Sparse
		Degraded
	Salt-marsh/Marsh vegetation	
		Dense
		Moderately dense
		Sparse
	Algae	
		Dense
		Moderately dense
		Sparse
	Sea grass	
		Dense
		Moderately dense
		Sparse
	<i>Porteresia coarctata</i> (grass)	
	Mud with vegetation	
	Sand with vegetation	
	Coral reef	
		Fringing
		Platform
		Patch
		Atoll
		Coral Lagoon
		Coral pinnacle
		Coralline shelf
		Coral head
Water bodies		
	Estuary	
	Creek	
	Lagoon	
	Bay	

Level I	Level II	Level III
	Pond/lake	
	Oxbow lake	
	Meanders	
	Cooling pond	
	Water treatment plant	
	River/stream	
	Canal	
	Waterlogged	
	Reservoir /tank	
<b>Barren/ wasteland</b>		
	Mining areas / dumps	
	rock outcrops / gullied / eroded/barren land	
	Sandy area	
<b>Shore land</b>		
	Saline area	
	Coastal dunes	
		Dune with vegetation
		Dune without vegetation
<b>Built-up land</b>		
	Habitation	
		Habitation With vegetation
	Open/vacant land	
	Industrial area	
	Waste dumping	
	Transportation	
		Roads
		Railways
		Port/Harbour/jetty
		Waterways
		Airport
<b>Agricultural land</b>		
<b>Forest (Non - tidal)/ Plantation</b>		
<b>Other features</b>		
	Aquaculture ponds	
	Salt pans	
	Cliff	
	Sea wall/Embankment	
	Oil Well	
	Brick kiln	
	Scrub	
		Dense
		Sparse
		Degraded

**Annexure 4.2 Classification system for coastal mapping**

Level I	Level II	Level III
Non-Vegetated Wet land		
	Mud	High tidal or Supra tidal
		Inter tidal
		Sub tidal
	Sand	Beach
		Spit
		Bar
		Shoals
	Coral reef	Barrier
		Fringing
		Platform
		Patch
		Atoll
		Coral pinnacles
	Rock	
Vegetated Wetland	Mangroves	Based on density
	Marsh	Based on density
	Algae	Based on density
	Scrub	Based on density
	Other vegetation	
Water bodies	Bay	
	Estuary	
	Creek	
	Lagoon	
	Other	
Shore land		
	Saline areas (Salt affected area)	
	(Coastal Watershed)	
	Delta	
	Flood prone areas	
	Paleo flats / Strand flat	
	Coastal dunes	
	Paleo meanders/oxbow	
	Lakes/Paleo channel	
	Reclaimed mudflat	
	Relict Alluvium	
	Terrace	
	Strandline	
Other Landforms	Cliff	
	High waterline	
	Low waterline	
	Islands	
	Lineament	
	Salt pans	
	Oil well	
	Aquaculture Industry	
	Other Industry	
	Jetty	

Annexure 4.3 Interpretation key for various land use land cover categories observed in this study

Category	Tone	Shape	Texture	Location	Association	Remarks
<b>Wetland</b>						
<i>Mudflat</i>						
Sub-tidal mud flat	Black/Dark grey	Irregular	Smooth	Along low water line	Low energy coast	Usually clayey and silty. Expose only during low tide. Vegetation may be present.
Inter-tidal mud flat	Light Grey	Irregular	Smooth	Between high-water line and low water line	Low energy coasts & quiet depositional areas, where tidal influence is not so strong.	Made up of soft mud and suitable habitat for mangroves.
High-tidal mud flat	Light blue to grey	Irregular	Smooth	Near hightide line		Does not get inundated by daily tides and Habitat of salt marsh vegetation and scrub.
<i>Shoals</i>	Black/Dark grey	Irregular	Smooth	Near the coast or offshore, within estuary, delta, gulf.		Either submerged ridge, bank or bar producing shoal. Consisting of sand, mud, gravel etc.
<i>Mangrove</i>	Bright red-very dense; pale red if dense orangish red if sparse	Irregular	Smooth	In inter-tidal area and along creek	Low energy coasts or quite depositional area. Warm waters.	Grows on substratum of mud or mud-sand composition. Evergreen.
<i>Salt marsh vegetation</i>	Dark brown if dense and become pale as density decrease.	Irregular	Smooth	In inter-tidal area and high-tidal area	Low energy coasts or quite depositional area.	Usually occur in temperate countries. Certain species occur within mangroves or after the mangrove belt. Evergreen.
<i>Algae</i>	Pinkish-Maroon	Irregular	Smooth	In transition zone of sub tidal mudflat	On mudflats, rock and reef.	Filamentous, Dominant in Oct. to Feb-march.

Category	Tone	Shape	Texture	Location	Association	Remarks
				and inter tidal mud flat		
<i>Scrub</i>	Brown- red	Irregular	Rough	On high tidal mud flat and on land		Usually occur along coast. Evergreen
<b>Water bodies</b>						
<i>Sea water</i>	Bluish green	Irregular	Smooth	Coastal area		
<i>Creek</i>	Bluish green	Wavy/Meandering	Smooth	Inter tidal area to supra tidal area	Mudflats	Complex network of narrow inlets of sea water in tidal mud flat.
<i>Pond/Lake</i>	Dark blue	Square to round	Smooth	Near habitation		Water body natural or constructed for storage of water
<i>River/Stream</i>	Blue	Wavy/ meandering	Smooth	Inter tidal area to supra tidal area		Meandering feature, debouching in sea.
<i>Canal</i>	Blue	Linear	Smooth			A linear built up feature for providing water.
<i>Waterlogged</i>	Black-brown	Irregular	Smooth	Near high-tidal area	High tidal mud flat	Dense grass vegetation during monsoon and dry for rest of the year.
<b>Barren land / Wasteland</b>	White	Irregular	Smooth	Near villages and in Agricultural Land		Non-vegetated land. Not utilized for any purpose.
<i>Gullied area</i>	off-white	Irregular	Smooth	Along the river	Mud flat	Eroded area along the river. Vegetation may be present.
<b>Shore land</b>						
<i>Dune with vegetation</i>	red	Irregular	Smooth	Near the tidal flat.	Along the coast	Covered with scrub vegetation or barren.
<b>Built-up land</b>						

Category	Tone	Shape	Texture	Location	Association	Remarks
<i>Habitation</i>	Light bluish grey	Irregular	Rough-Smooth	Terrestrial area	Network of road and Industries.	Built up land near industries, dense road network.
Habitation with vegetation	Light bluish green with reddish tinge on periphery	Irregular	Smooth	Terrestrial area	Network of road and Industries.	Built up land near industries, dense road network.
<i>Industrial area</i>	light blue	Regular(squares-rectangular)	Smooth	Near Coastal area / big town	Network of Road	Built up area with regular shape.
<i>Transportation</i>						
Port/Harbour/Jetty	Light blue to White	Linear	Smooth	on the coast	Surrounded by blue tone	Linear feature extending from land in to sea.
<b>Agricultural land</b>	Bright red to greenish brown	Regular	Smooth	Towards land side	Towards land side	Rectangular features with typical pattern of raw.
<b>Forest</b>	red	Irregular	Rough	Along coastal area	Sandy area	
<b>Other features</b>						
Aquaculture ponds	Bluish black	Regular	Smooth	In high tidal mudflat	High tidal mudflat	Regular, small sized features in high tidal mudflat.
Salt pans	white to bluish black	Regular	Smooth	In high-tidal mud flat	High tidal mud flat	Regular feature in high tidal mud flat.
Oil well	white-blue with red tinge	Regular(squares-rectangular)	Smooth	Along coastal and land area	Coastal area and land	Three regular features and water body with in the area of oil well.
Brick kiln	Whitish green	Regular	Smooth	Nearer to water bodies	Water bodies like river	Regular features nearer to water bodies especially river
Scrub	Brown- red	Irregular	Rough	On high tidal mud flat and on land		Usually occur along coast. Evergreen