

PRE-RESTORATION ASSESSMENT REPORT

8 million Mangrove Plantation Project - Phase 2
Al Batinah Island, Eastern Province, Saudi Arabia

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Executive Summary

This Pre-Restoration Assessment Report documents the site evaluation findings for the four identified planting locations for the 8 million Mangrove Plantation Project.

Key Findings

- All four sites suitable for Avicennia marina plantation
- Total restorable area: 809.38 hectares
- Substrate conditions: Optimal to excellent
- Tidal connectivity: Direct access at all sites
- Existing vegetation: Minimal (high restoration potential)

Restoration Readiness Score: 92/100

Site Assessments

Overall Readiness Scores

Site	Area (ha)	Substrate	Tidal	Access	Total Score
Site 1	510	9/10	10/10	9/10	92%
Site 2	123.95	10/10	10/10	9/10	92%
Site 3	53.08	9/10	8/10	8/10	84%
Site 4	122.35	10/10	10/10	8/10	93%
Average					90.25%

Planting Priority Ranking

Rank	Site	Priority	Rationale
1	Site 1	Immediate	Coastal roads
2	Site 2	Immediate	Coastal roads
3	Site 3	High	Coastal roads
4	Site 4	Medium	Coastal roads

Site 1 – Al Batinah Sites Assessment

Physical Assessment

Parameter	Measurement	Rating
Substrate Type	Sandy-silt mudflat	Excellent
Elevation (above MSL)	0.3-0.6 m	Optimal
Slope	<1%	Ideal
Compaction	Low-moderate	Good
Debris/Obstacles	Minimal	Good

Hydrological Assessment

Parameter	Measurement	Rating
Tidal Access	Direct	Excellent
Inundation Frequency	Daily	Optimal
Salinity	42-48 ppt	Suitable
Water Quality	Clear, no pollution	Excellent

Baseline Conditions

Physical Baseline

Dominant substrate: Sandy-silt mudflat (typical for Arabian Gulf mangroves)

Organic content: <2% (expected to increase post-restoration)

pH: 7.5-8.5 across all sites

Salinity: 38-52 ppt (within *Avicennia marina* tolerance)

Biological Baseline

Invertebrate density: 50-200 individuals/m² (crabs, mollusks)

Fish juveniles: Present and sighted

Avifauna: Moderate use (foraging, not nesting)

No protected species nesting within planting zones

Vegetation Cover

Category	Coverage	Area (ha)
Bare substrate	80%	647.50
Halophytic vegetation	15%	121.41
Algal mats	5%	40.46
Total	100%	809.38

Restoration Prescriptions

Site-Specific Recommendations

Site 1: Planting density 10,000 seedlings/ha, spacing 1m x 1m

Site 2: Planting density 10,000 seedlings/ha, spacing 1m x 1m

Site 3: Planting density 10,000 seedlings/ha, spacing 1m x 1m

Site 4: Planting density 10,000 seedlings/ha, spacing 1m x 1m

Quality Standards

Seedling survival target: >85% at 90 days

Replacement planting: As needed at 90-day assessment

Growth monitoring: Quarterly measurements

Conclusions and Recommendations

The pre-restoration assessment confirms that all four identified sites are suitable for mangrove plantation. Site conditions meet or exceed requirements for *Avicennia marina* establishment, with average readiness scores of 90%.

Recommendations

1. Proceed with immediate planting at Sites 1 and 2 (January)
2. Establish secondary staging for Sites 3 and 4
3. Maintain baseline monitoring throughout implementation

Restoration Readiness Statement: All sites ready pending payment release.

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