A1 IMPLEMENTATION SCHEDULE

This *Annex* provides a consolidation of the mitigation measures recommended for the Project. The *Implementation Schedule* has the following column headings:

EIA Ref

This denotes the section number or reference from the EIA Report (*EIA Register Number: AEIAR-089/2005*) Main text.

EM&A Log Ref

This denotes the sequential number of each of the recommended mitigation measures specified in the *Implementation Schedule*.

Environmental Protection Measures

This denotes the recommended mitigation measures, courses of action or subsequent deliverables that are to be adopted, undertaken or delivered to avoid, minimise or ameliorate predicted environmental impacts.

Objectives

This denotes the objectives of the recommended mitigation measures and main concerns to address.

Location/Duration of Measures/Timing of Completion of Measures

This indicates the spatial area in which the recommended mitigation measures are to be implemented together with details of the programming or timing of their implementation.

Implementation Agent

This denotes where the responsibility lies for the implementation of the recommended mitigation measures.

Implementation Stage

This denotes the stage at which the recommended mitigation measures are to be implemented either during the Design, Construction, Operation or Decommissioning.

Relevant Legislation

This section defines the controlling legislation that is required to be compiled with.

Table 1.1 Implementation Schedule for the South Brothers Contaminated Sediment Disposal Facility

EIA Ref	EM&A Log Ref	Environmental Protection Measures	Objectives	Location/ Duration of Measures/ Timing of Completion of Measures	Implementation Agents	Implementation Stage			Relevant Legislation & Guidelines	
						Des	С	Ο	Dec	
		WATER QUALITY								
S 4.6		Although there is no requirement for constraints								
		on timing or sequencing apparent from the								
		assessment, as all scenarios have been								
		demonstrated to be acceptable with the required								
		mitigation measures in place. The following								
		operational constraints shall be implemented to								
		ensure no unacceptable water quality impacts.	m	D 1	CEDD	/	1			
	1	CMP 1 (the upper pit) of the proposed	To avoid	During project	CEDD	'	~	✓		
		Facility should be constructed and operated	Potential interface issues	planning and						
		first for backfilling of contaminated sediment.	with the proposed	design						
			Brothers Island Marine Park							
S 4.6	2	- D 1: (2 34: d CD (33)	To avoid	At the work site,	Contractor		√			Water
5 4.6	2	Dredging operation within the SB facility		,	Contractor		*			vvater Pollution
		should not exceed 100,000 m ³ week ⁻¹	unacceptable water	throughout the whole duration of						Control
			quality impacts during dredging	the dredging						Ordinance
			areaging	works						Oramanee
S 4.6	2	Backfilling operations within the Facility do	To avoid	At the work site,	CEDD			√		Water
34.0	3	not exceed a disposal rate of 26,700 m ³ day ⁻¹ .	unacceptable water	throughout the	CEDD			Ť		Pollution
		not exceed a disposal fate of 20,700 fit day	quality impacts during	whole duration of						Control
			backfilling	backfilling						Ordinance
S 4.6	4	Capping operations within the Facility do not	0	At the work site,	Contractor			√		Water
34.0	7	exceed a capping rate of 26,700 m ³ day ⁻¹ .	unacceptable water	throughout the	Contractor					Pollution
		exceed a capping rate of 20,700 meday .	quality impacts during	whole duration of						Control
			capping	capping						Ordinance
	1		Cupping	capping .	ĺ					

EIA Ref	EM&A Log Ref		Objectives	Location/ Duration of Measures/ Timing of Completion of Measures	Implementation Agents	Impl Stag		Relevant Legislation & Guidelines	
						Des	C	O De	c
S 4.6	5	To verify the calculated prediction in the EIA Review water quality impact assessment taking into account latest programmes of construction and operation of the SB facility with the presence of other latest concurrent projects as well as coastline changes due to these projects, a water quality remodelling exercise will be carried out prior to project construction works commencing.	To avoid Unacceptable water quality impacts during dredging	During project planning and design	CEDD	✓			Water Pollution Control Ordinance
S 4.6	6	Dredged marine mud shall be disposed of in a gazetted marine disposal area in accordance with the <i>Dumping at Sea Ordinance (DASO)</i> permit conditions.	To avoid Unacceptable water quality impacts during dredging	At the work site, throughout the whole duration of the construction period	Contractor		√		Water Pollution Control Ordinance
S 4.6	7	All disposal vessels should be fitted with tight bottom seals in order to prevent leakage of material during transport.	To prevent leakage of material during transport	At the work site, throughout the whole duration of the construction and operation period	Contractor			V	Water Pollution Control Ordinance
S 4.6	8	All barges should be filled to a level which ensures that material does not spill over during transport to the disposal site and that adequate freeboard is maintained to ensure that the decks are not washed by wave action.	To ensure that material does not spill over during transport and the decks are not washed by wave action	At the work site, throughout the whole duration of the construction and operation period	Contractor		√	V	Water Pollution Control Ordinance
S 4.6	9	After dredging, any excess materials should be cleaned from decks and exposed fittings before the vessel is moved from the dredging area.	To avoid potential adverse water quality impacts associated with dredging	At the dredging sites, throughout the dredging period	Contractor		√		Water Pollution Control Ordinance
S 4.6	10	The contractor(s) should ensure that the works cause no visible foam, oil, grease, litter, or other objectionable matter to be present in the water within and adjacent to the dredging site	To avoid potential adverse water quality impacts associated with dredging	At the dredging site through the dredging period	Contractor		√		Water Pollution Control Ordinance

EIA Ref	EM&A Log Ref	Environmental Protection Measures	Objectives	Location/ Duration of Measures/ Timing of Completion of Measures	Implementation Agents				Relevant Legislation & Guidelines	
S 4.6	11	If installed degassing systems should be used to avoid irregular cavitations within the pump	To avoid adverse water quality impacts due to irregular cavitation within the pump	At the work site, throughout the whole duration of the construction and operation period	Contractor	Des	C ✓	O	Dec	Water Pollution Control Ordinance
S 4.6	12	Monitoring and automation systems should be used to improve the crews information regarding the various dredging parameters to improve dredging accuracy and efficiency	To improve dredging accuracy and efficiency	At the dredging site, throughout the dredging period	Contractor		√			Water Pollution Control Ordinance
S 4.6	13	Control and monitoring systems should be used to alert the crew to leaks or any other potential risks.	To alert the crew to leaks or any other potential risks	At the work site, throughout the whole duration of the construction and operation period	Contractor		√	√		Water Pollution Control Ordinance
S 4.6	14	When the dredging material has been unloaded at the disposal area, any material that has accumulated on the deck on other exposed parts of the vessel should be removed and placed in the hold of a hopper. Under no circumstance should the decks be washed in a way that permits material to be released overboard	To prevent release of dredged material overboard	At the dredging sites, throughout the dredging period	Contractor		√			Water Pollution Control Ordinance
S 4.6	15	All dredgers should be maintained adequate clearance between vessels and the seabed at all states of the tide and reduced operations speed to ensue that excessive turbidity is not generated by turbulence from vessel movement or propeller wash	To ensure that undervessel turbidity is not generated by turbulence from vessel movement or propeller wash	At the dredging sites, throughout the dredging period	Contractor		√			Water Pollution Control Ordinance

EIA Ref	EM&A Log Ref	Environmental Protection Measures	Objectives	Location/ Duration of Measures/ Timing of Completion of Measures	Implementation Agents	on Implementation Stage				ntation		entation		ntation		Relevant Legislation & Guidelines
S 4.8	16	Water quality monitoring will be required for the following activities at: - Dredging of each pit; - Backfilling of each pit with contaminated mud; and - Capping of each pit.	To avoid impacts to water quality during dredging, backfilling and capping	At the work sites, throughout the dredging, backfilling and capping period	Contractor	Des	C	O	Dec	Water Pollution Control Ordinance						
S 4.8	17	Sediment quality monitoring will be required for the backfilling activities	To avoid impacts to water quality during backfilling	At the work sites, throughout the backfilling period	Contractor		√			Water Pollution Control Ordinance						
S 5.6	18	In accordance with the guidelines in the EIAO-TM, the general policy for mitigating impacts to marine ecological resources shall be applied in order of the following priority: - Avoidance: Potential impacts should be avoided to the maximum extent practicable by adopting suitable alternatives; - Minimisation: Unavoidable impacts should be minimised by taking appropriate and practicable measures such as constraints on the intensity of works operations (eg dredging rates, timing of works operations: The loss of important species and habitats may be provided for elsewhere as compensation. Enhancement and other conservation measures should always be considered whenever possible.	To avoid potential impacts to marine ecology	During project planning and design	Design Team	Y				EIAO-TM						
S 5.6	19	Sediment toxicity monitoring will be conducted to assess the potential toxicity impacts to marine life due to backfilling activities.	To avoid impacts to marine life due to backfilling activities	At SB throughout the backfilling period	Contractor			*								
S 5.6	20	Marine biota monitoring will be conducted to assess the potential impacts to fisheries resources due to backfilling activities.	To avoid impacts to fisheries due to backfilling activities	At SB throughout the backfilling period	Contractor			√								

	EM&A Log Ref	Environmental Protection Measures	Objectives	Location/ Duration of Measures/ Timing of Completion of Measures	Implementation Agents	Implementation Stage				Relevant Legislation & Guidelines	
						Des	C	O	Dec		
	21	Benthic recolonisation monitoring will be required to assess the recolonisation status of benthic fauna on capped pits.	To assess the recolonisation status of benthic fauna on capped pits	At SB, after capping of mud pits	Contractor			√			
		HAZARD TO HEALTH									
S7	22	A risk assessment to verify that no unacceptable risk are occurring to either human health or marine mammals as a result of consuming prey species from the waters in the vicinity of the pits will be required.	To assess hazard to health of humans and marine mammals	In the vicinity of SB, throughout the disposal period	Contractor			\[\sqrt{1}			