MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE \RESPONSIBLE AGENCIES
MU16	• To gazette as a heritage site in JWN for the heritage in inventory list	• Prepare complete documents for gazetting nominations for the conservation of the area under JWN	• Protecting the heritage area from changing as the land use changes in the future will impact the archaeology site	• JWN
	• Conserving the heritage sites	• Collaboration with the locals and the management to conserve	• 1. By collaborating, the heritage sites can be protected from vandalized, and it is more effective in terms of educating the locals of protecting the heritage.	• Local Authority: MPTI

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MU16	Coastal Bund • Ensure sufficient mangrove cover	• Annual monitoring of mangrove cover from satellite image should be carried out. • Width of mangrove cover less than 150m means the bunds will have to be raised to prevent overtopping. • Width of mangrove cover less than 50m means protection works must be constructed on the bunds. • Mangrove loss can be overcome by constructing escarpment protection such as the type constructed along the coastline of Sabak Bernam, Selangor.	• Mangrove cover fronting the bund is important in preventing bunds from overtopping and damage from wave action.
	• To keep record and update the bund levels. • To maintain safe bund levels and making sure that the bunds are in good condition. • Ease for bund improvement/repair.	• All bund levels must be above 2.91m LSD. Carry out annual monitoring of bund levels and top up bunds where necessary. o Monthly monitoring of the bunds. o Biannually bund level measurements • Carry out immediate improvement/repair on damaged and insufficient bund levels. • Check for mud lobster burrows. Where mud lobster burrows are allowing sea water to seep through the bund, the seepage must be plugged quickly.	• Insufficient information on the bund levels, for reaches that have coastal bunds. • Seawater overtopping the bunds during HAT and storm surge. • Bund damage due to storm surge, human activity and mud crabs. • Settlement of bund due to heavy vehicles.

		• Monitor coastline movement annually using satellite imagery. • Where aquaculture ponds are located seawards of the bund, the seaward line of the ponds must be adequate protection against erosion and bund breach. Proper revetment must be constructed.	
	Setback • Necessary deviations to allow for existing infrastructures and predicted movement of shorelines.	• Setback have been determined based on the coastal features and important infrastructure. Generally, the DID guidance of landward of the tree line 400m for mangroves and 60m landward of the Highest Astronomical Tide contour for sandy beaches is followed. However, deviations were necessary to allow for existing infrastructures such as roads and bunds where the authorities will be required to maintain the line. In such cases, the setback is placed landward of the infrastructure (see Appendix Bund Mangrove Cover and Setback). • The DSS should be used to determine the setback required for future developments.	• Allow for movement of the shoreline.
	River mouths • Maintain river mouth for navigation to important fishing landing site	• The channel should be dredged to at least -0.5m below MSL to allow access for small sampans and fishing boats that are using the jetties. Dredging should be done every 5 years or when required (see Appendix Outlets Require Maintenance).	• Insufficient depth
	Tidal Gates • Improve the flushing capacity and the function of the tidal gates	• One example of maintaining boat access is what is adopted at Sungai Pulai, Sabak Bernam, where the fishing community maintain the channel by plying their boats along the channel to create propeller	• Navigation – difficulty for the fisherman boats to manoeuvre in and out where places with tidal gates.

		wash that agitates the mud and prevent consolidation. • Breakwaters at the outlets can be constructed to prevent sediments from entering the channels and create tidal prism that will aid in flushing during ebb flows.	• Insufficient flushing capacity leads to sedimentation in front of the tidal gates.
	Sea Level Rise • Maintain and improve the usability and performance of the tidal gates • To make sure that developments along the coastal area are constructed away from flood prone areas. • Developments along the shoreline must take into account Sea Level Rise.	• Existing drainage systems will require improvement or adaptation. • Pumps maybe required to assist in evacuation of flood water. • Bund levels will have to be increased. • Determine practical setbacks along the coastal area. • To include the sea level rise value (aside from wind setup, storm surge and wave runup) in the calculation of the platform/finish level of a design.	• Tidal gate usability and performance • Coastal flooding

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MU16	Marine Capture Fisheries • To ensure high standards of fish quality, enhanced food safety and nutritional value through provision of better fisheries infrastructures and facilities.	• Upgrade the fisheries infrastructure at respective fish landing points (Bagan Nipah, Sg. Burung and Rungkup)	• Lack of fisheries infrastructure at most fish landing points	• Lembaga Kemajuan Ikan Malaysia (LKIM)
	• To improve the navigation of fishing vessels at the affected areas.	• Undertake maintenance dredging with proper planning and mitigation measures.	• Siltation problem at Rungkup have prevented safe passage for fishing vessel during low tides.	• JPS • Marine Department • Department of Fisheries
	Aquaculture • To minimize the potential of water quality degradation from aquaculture activities. • To promote sustainable aquaculture practice.	• Provision of proper wastewater treatment facilities at aquaculture farms to reduce discharge of untreated water directly into the river. • Regular maintenance of the wastewater treatment facilities. • Encourage aquaculture farmers to get MyGAP certification.	• Degradation of water quality due to the untreated wastewater discharge from brackishwater pond culture.	• Department of Fisheries

	• To promote sustainable aquaculture practice.	• Promote programmes related to the restoration and replanting of suitable mangrove species • Prohibition of new development plans within mangrove areas. • Restoration of abandoned farms as an alternative to minimize the development of new aquaculture farms. • Reforestation of abandoned shrimp farms.	• Aquaculture activities or coastal modification contributes to mangrove degradation.	• Department of Forestry • Department of Fisheries • PlaNMalaysia Perak
	• To conserve cockle farming through protection of mudflat areas.	• Mudflats and natural spatfall areas gazetted as fisheries protected area. • Propose Aquaculture Industrial Zone (AIZ) for cockle farming.	• Lack of protection of the cockle farming activities within mudflat areas off Sg. Perak river mouth to Bagan Sg. Tiang	• Department of Fisheries
	Recreational Fisheries • To promote good fishing practices in recreational fishing activities	• Strengthen the surveillance and enforcement.	• Unregistered fishing boat for recreational fishing activities can lead to unsustainable fishing and safety issues.	• Malaysian Maritime Enforcement Agency
		• Provision of sufficient garbage bins and portable toilets at Bagan Sg. Tiang. • Promote public awareness by organizing environmental talks on coastal cleanliness and protection of coastal habitats.	• Lack of solid waste disposal infrastructure & portable toilets at Bagan Sg. Tiang	• Local Authority • Department of Fisheries

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MU16	• Ensuring sustainable environmental management	• Gazette Environmental Sensitive Area (ESA)	• Ensure biodiversity resources are preserved. • Development that is not carefully planned will affect biodiversity resources and have a negative impact on the economic sector. • To preserve and conserve this sensitive area, sustainable management and high understanding are needed. • Any development program should emphasize the positive interaction between the development and retention of ESA	• Perak Forestry Department • PTD Bagan Datuk • State Government • PERHILITAN
	• Ensuring competitive economic growth	• Preservation and Monitoring of Sungai Tiang Baring Shrimp Catch Zone	• Monitor and preserve the water quality and ecosystem of Sungai Tiang waters • The preservation and monitoring of the shrimp catch zone from the effects of environmental pollution and the invasion of tow trawlers should be enforced. • Ensure that this fishery resource can be preserved and developed as one of the industry products based on the Bagan Datuk District fisheries.	• PTD Bagan Datuk • Perak State Government • Department of Fisheries • JAS • JPS

		• Upgrading of Bagan Datuk Public Market and Hutan Melintang	• The public market facilities in Bandar Bagan Datuk are provided but are not actively used by the residents. • The open market conditions and limited area also caused the sales activity in the market to be unresponsive. • In line with the intention to strengthen the role of Bandar Bagan Datuk as the District Administrative Centre, the proposed upgrading of the public market facilities is urgently needed.	• PTD Bagan Datuk
	• Improving the quality of life	• Construction of District Police Headquarters	• To align with the increase of population within the Bagan Datuk area • Provide rapid safety protection to the nearest spool area with 0.5 km. • Support to safe cities.	• PDRM

Major land use in MU16 is agriculture namely palm oil plantation and coconut. Most of the plantation are palm oil plantation which requires them to adhere to the MSPO standards. The upgrading of the public market is key in ensuring the main towns are still relevant and competitive for the public.

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MU16	Mangrove • To protect, conserve and rehabilitate the mangrove areas. • To facilitate mangrove regeneration by implementation of appropriate tools and methods.	• Gazettement of mangroves areas as Permanent Forest Reserve at state land mangrove forests.	• Mangrove serves various ecological importance such as providing protection and habitat for a wide diversity of aquatic species of different taxonomic groups.	• Department of Forestry
		• Rehabilitation, restoration and replanting of suitable mangrove species at the affected areas.	• Degradation of mangroves area at some part within Perak coastline due to the coastal erosion (Pasang Api to Rungkup).	• Department of Forestry
		• Promote programmes related to the restoration and replanting of suitable mangrove species. • Provision of buffer zone between mangrove and development areas. • Restoration of abandoned farms as an alternative to minimize the development of new aquaculture farms. • Reforestation of abandoned shrimp farms.	• Potential mangrove forest degradation due to coastal and aquaculture developments (Sg. Burong and Rungkup)	• Department of Forestry • Land Office • PlaNMalaysia Perak • Department of Fisheries
	Mudflat • To protect and conserve the mudflat areas.	• Minimize coastal developments in respect to mudflat areas. • No land reclamation and coastal development at MMFR areas.	• Coastal development within Perak coastline possesses adverse impacts towards adjacent mudflat areas.	• Pejabat Tanah dan Galian (PTG) Perak

		• Mudflats and natural spatfall areas gazetted as fisheries protected area. • Protect mudflat areas due to its importance as cockle farming area.	• Mudflat areas serve as important grounds for cockle farming off Sg. Perak river mouth to Bagan Sg. Tiang	• Department of Fisheries
	Avifauna • To protect and conserve important bird areas.	• Enhance and promote the sustainable ecotourism for birdwatching at Bagan Datuk. • Propose the Mangrove Germplasm Heritage of Bagan Datuk to be considered as a single IBA with its potential to complement existing North Central Selangor Coast (NCSC) IBA.	• Mangroves and mudflats off Bagan Datuk are important areas for wintering waterbirds with 116 bird species recorded comprising both migrant and resident birds.	• Department of Forestry • PERHILITAN
		• Promote sustainable coastal development at Bagan Datuk IBA. • Prohibit land reclamation activities within Bagan Datuk coastlines.	• Coastal development possesses adverse impacts towards important bird areas within Perak coastline especially within Bagan Datuk mudflat areas.	• PlaNMalaysia Perak • PERHILITAN • Land Office

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE \RESPONSIBLE AGENCIES
MU16 (Sungai Burung, Sungai Tiang)	• To develop and manage the area as tourist destination more systematically	• Provide tourist facilities at the beach • Do engagement with the local community to develop the beach as a tourist destination	• There is no proper tourism development in the area	• PTD Bagan Datuk • Tourism Perak • Tourism Malaysia

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MU16	• Control of effluent discharge from oil palm mills. • Control of surface runoff containing residues of fertilizers and pesticides from oil palm plantation. • Control the usage of synthetic fertilizers and chemical pesticides.	• Promote the use of more environmentally friendly/biodegradable pesticides and herbicides together with biological control for pesticides. • New agricultural activities that fall under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 must submit the EIA report to the Department of Environment for approval. • New agricultural activities that do not fall under the Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015 shall submit their development proposal to the Local Authority and conditions on discharge should be imposed on the operators.	• Surface runoff from the oil palm plantation contain residues of fertilizers and pesticides.	• Department of Agriculture • Department of Environment • Local Council