

## Coastal & River

MANAGEMENT UNIT (MU)	ISSUE/IMPORTANCE	OBJECTIVE	ACTION/STRATEGY	RESPONSIBLE AGENCIES
MU01	<p>Stable Coastline</p> <ul style="list-style-type: none"><li>• Tidal Gate</li></ul>	<ul style="list-style-type: none"><li>• To track shoreline changes, evaluate tidal gate performance, analyze seasonal impacts, identify flood &amp; erosion risks and support sustainable management.</li></ul>	<ul style="list-style-type: none"><li>• Annual observation of stable coastline.</li><li>• Monitor and maintain tidal gates and channels regularly.</li></ul>	JPS Melaka JPS Daerah

### Marine Habitats and Biodiversity

The proposed development management strategies for marine habitats and biodiversity at MU01 are as follow.

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/ RESPONSIBLE AGENCIES
• MU01 (HS Linggi, HS Kuala Linggi, HS Linggi (Tambah))	Mangroves <ul style="list-style-type: none"> <li>• To protect, conserve and rehabilitate the mangrove areas.</li> <li>• To facilitate mangrove regeneration by implementation of appropriate tools and methods.</li> </ul>	<ul style="list-style-type: none"> <li>• Prohibit land use conversion within permanent forest reserve into other development projects.</li> <li>• No land reclamation projects allowed fronting the mangrove areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Mangroves serves various ecological importance such as providing protection and habitat for a wide diversity of aquatic species of different taxonomic groups.</li> <li>• Protected mangrove areas (Permanent Forest Reserve) i.e., Hutan Simpan Linggi (80.02 ha), Hutan Simpan Kuala Linggi (102.7 ha), and Hutan Simpan Linggi (Tambah) (10.56 ha),</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Forestry,</li> </ul>
• MU01 (Kuala Linggi)	Turtle Landing/Nesting Site <ul style="list-style-type: none"> <li>• To conserve and preserve turtle landing sites.</li> </ul>	<ul style="list-style-type: none"> <li>• Expedite plans to gazette turtle landing site in Kuala Linggi as protected area.</li> <li>• Promote sustainable coastal development at turtle nesting beaches.</li> <li>• Provision of solid waste disposal infrastructure.</li> <li>• Increase the 'do not litter' signboards at turtle nesting beaches.</li> <li>• Promote turtle awareness and educational programmes in collaboration with relevant agencies.</li> <li>• No coastal reclamation projects allowed at or adjacent to turtle nesting beaches.</li> </ul>	<ul style="list-style-type: none"> <li>• Turtle landing/nesting site in Kuala Linggi.</li> <li>• Turtles are susceptible to various stressors from rapid coastal developments and tourism activities i.e., noise disturbance, light spill, and potential solid waste disposal.</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Fisheries,</li> <li>• NGOs,</li> <li>• Majlis Bandaraya Melaka Bersejarah (MBMB),</li> <li>• MOTAC Melaka,</li> <li>• Department of Town and Planning,</li> <li>• Developers.</li> </ul>
• MU01 (HS Linggi, HS Kuala Linggi,	Wildlife in Mangrove Forest <ul style="list-style-type: none"> <li>• To protect and conserve important wildlife habitats.</li> </ul>	<ul style="list-style-type: none"> <li>• Prohibit land use conversion at permanent forest reserves into other development projects.</li> </ul>	<ul style="list-style-type: none"> <li>• Mangroves serves various ecological importance such as providing protection and habitat</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Forestry.</li> </ul>

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HS Linggi (Tambahhan))			for a wide diversity of terrestrial fauna species of different taxonomic groups.	
• MU01 (Sg. Linggi)	<ul style="list-style-type: none"> <li>• To ensure the safety of public beaches from wildlife attacks (e.g., crocodile).</li> <li>• To protect and conserve important wildlife habitats.</li> </ul>	<ul style="list-style-type: none"> <li>• Promote awareness, education and safety programme about crocodile behaviour and habitats.</li> <li>• Installation of warning signboard (e.g. crocodile habitats) at respective beaches.</li> <li>• Establishment of crocodile sanctuary with local involvement in Sg. Linggi (e.g. Sg. Linggi Crocodile Sanctuary).</li> <li>• Enhance and promote sustainable ecotourism for birdwatching at Sg. Linggi.</li> </ul>	<ul style="list-style-type: none"> <li>• The presence of crocodiles in coastal areas, especially recreational beaches pose a significant risk to tourism and public safety.</li> <li>• Presence of crocodiles in Sg. Linggi has potential for ecotourism i.e., crocodile watching.</li> <li>• Mangroves in Sg. Linggi are important avifauna roosting sites for both migrant and resident birds.</li> <li>• Development activities could affect mangrove habitats thus impact the migratory bird observation activities and eco-tourism at Sg. Linggi.</li> </ul>	<ul style="list-style-type: none"> <li>• PERHILITAN,</li> <li>• Majlis Bandaraya Melaka Bersejarah (MBMB),</li> <li>• NGOs.</li> </ul> <ul style="list-style-type: none"> <li>• PERHILITAN,</li> <li>• Majlis Bandaraya Melaka Bersejarah (MBMB).</li> </ul> <ul style="list-style-type: none"> <li>• Melaka State Government,</li> <li>• PERHILITAN,</li> <li>• Department of Forestry,</li> <li>• Majlis Bandaraya Melaka Bersejarah (MBMB),</li> <li>• NGOs.</li> </ul>

### Fisheries and Aquaculture

The proposed development management strategies for fisheries and aquaculture at MU01 are as follow.

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/ RESPONSIBLE AGENCIES
• MU01 (LKIM Kuala Linggi)	Marine Capture Fisheries <ul style="list-style-type: none"><li>• To improve the navigation of fishing vessels at the affected areas.</li></ul>	<ul style="list-style-type: none"><li>• Undertake maintenance dredging at Sg. Linggi river mouth.</li></ul>	<ul style="list-style-type: none"><li>• Siltation issues prevented safe passage for fishing vessel during low tides.</li></ul>	<ul style="list-style-type: none"><li>• Department of Drainage and Irrigation</li></ul>
• MU01 (Kuala Linggi)	Aquaculture <ul style="list-style-type: none"><li>• To minimize the potential degradation of biodiversity due to aquaculture activities.</li><li>• To promote sustainable aquaculture practices.</li></ul>	<ul style="list-style-type: none"><li>• Encourage aquaculturists to obtain MyGAP certification.</li><li>• Apply genetic biocontrol method or sterile-male approach.</li><li>• A polluter pays policy is an essential regulatory approach and can be applied for managing and mitigating the impacts of bio invasions caused by aquaculture practices.</li></ul>	<ul style="list-style-type: none"><li>• The main species culture is Tilapia Merah (<i>Oreochromis niloticus</i>). Tilapia is considered as Invasive Alien Species (IAS). Fish escaped from cage culture may pose serious risk to indigenous fish communities in Sg. Linggi.</li></ul>	<ul style="list-style-type: none"><li>• Department of Fisheries.</li></ul>

## Water Quality

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE RESPONSIBLE AGENCIES
MU01	<p>Wastewater discharge</p> <ul style="list-style-type: none"> <li>Control of untreated discharge from aquaculture activities</li> </ul> <p>Fertilizers and Pesticides</p> <ul style="list-style-type: none"> <li>Control the usage of synthetic fertilizers and chemical pesticides.</li> </ul> <p>Erosion and Sediment Control</p> <ul style="list-style-type: none"> <li>Control the sedimentation</li> </ul>	<ul style="list-style-type: none"> <li>Increase awareness on the importance of Good Agricultural Practices (GAP). GAP Certification will assist in enhancing the traditional practices to be more sustainable.</li> <li><i>Pewartaan Kaedah-Kaedah Perikanan (Akuakultur Perikanan Dara)</i> by the Department of Fisheries.</li> <li>Provision of a Competent Person to operate the effluent treatment systems for the agriculture activities.</li> <li>Promote the use of environmentally friendly and biodegradable fertilizers and pesticides. Enhance the implementation of biological control for pest control.</li> <li>New aquaculture and agriculture 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.</li> <li>New aquaculture and agriculture 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.</li> </ul>	<ul style="list-style-type: none"> <li>The water quality within this management unit is highly influenced by the activities upstream of Kuala Sg. Linggi and the ongoing Kuala Linggi International Port (KLIP) development.</li> <li>Sg. Linggi supports a significant fishing community, aquaculture activities and agriculture predominantly oil palm plantations.</li> <li>The water quality index (WQI) for MU01 is within the moderate category from the year 2017 to 2023. Parameters of concern include nitrate, phosphate, unionized ammonia and faecal coliform.</li> <li>This could be largely due to the untreated discharge from the agriculture and aquaculture activities that contain residues from the use of fertilizers and pesticides.</li> <li>New development activities could also lead to a potential increase of total suspended solids and turbidity due to uncontrolled land clearing.</li> <li>Reclamation activities may also increase in the sediment dispersion if the proposed mitigation measures are not provided or properly maintained.</li> </ul>	<ul style="list-style-type: none"> <li>Department of Environment</li> <li>Department of Agriculture</li> <li>Department of Fisheries</li> <li>Local Council</li> </ul>

		<ul style="list-style-type: none"><li>• Existing aquaculture ponds that are found to cause pollution by discharging untreated wastewater shall be warrant with a stop work order.</li><li>• Provision of Erosion and Sediment Control (ESCP) for submission to the Department of Irrigation and Drainage (DID)</li></ul>		
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Land Use

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/ RESPONSIBLE AGENCIES
<b>Human Settlement</b>				
MU01	<ul style="list-style-type: none"><li>• To manage and control any land use changes along the coast</li></ul>	<ul style="list-style-type: none"><li>• Define coastal zoning categories (including residential, commercial, conservation, and mixed-use areas).</li><li>• Establish zoning regulations</li><li>• Control the allowable density type for any development along the coast.</li><li>• Limit land conversion and approval for TOL permit</li></ul>	<ul style="list-style-type: none"><li>• Increase of population along the coastline may impact the existing infrastructure (including road, utilities, and traffic)</li></ul>	<ul style="list-style-type: none"><li>• MPAG</li><li>• PTD Alor Gajah</li><li>• PTG Melaka</li><li>• JKR</li><li>• JPS</li><li>• IWK</li><li>• SAMB</li><li>• TNB</li></ul>
	<ul style="list-style-type: none"><li>• To prevent and control erosion.</li><li>• To ensure compliance with environmental regulations regarding hydraulic impact assessments and erosion control.</li></ul>	<ul style="list-style-type: none"><li>• Construct proper erosion control structures such as retaining walls and sediment control barriers.</li><li>• Conduct regular hydrological studies to identify high-risk erosion zones.</li><li>• Enforce guidelines for land development near water bodies to minimize erosion risks.</li></ul>	<ul style="list-style-type: none"><li>• Impact from the hydraulic can cause erosion to the settlement</li></ul>	<ul style="list-style-type: none"><li>• JPS</li></ul>
	<ul style="list-style-type: none"><li>• To reduce environmental impact caused by the construction activities on the site</li></ul>	<ul style="list-style-type: none"><li>• Prepare an Environmental Impact Assessment (EIA) for any major projects along the coast (based on the DOE requirements).</li><li>• Manage thorough evaluations of EIA before approving construction projects.</li><li>• Adhere to the Environmental Managing Plan (EMP) recommendations as part of the mitigation major.</li><li>• Conduct periodical inspection during and</li></ul>	<ul style="list-style-type: none"><li>• Any changes to land use due to construction may affect the environment.</li></ul>	<ul style="list-style-type: none"><li>• MPAG</li><li>• DOE</li></ul>

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	<ul style="list-style-type: none"> <li>• To manage the land use due to UNESCO's heritage status and the high number of heritage sites</li> </ul>	<p>after construction.</p> <ul style="list-style-type: none"> <li>• Adhere to UNESCO and all JWN conservation standards. as stipulated by UNESCO in order to ensure the integrity and authenticity of this historical city</li> </ul>	<ul style="list-style-type: none"> <li>• Conflict of interest between the need of adhering to the conservation principles against the need of having land reclamation along the coast especially within the designated UNESCO World Heritage Site Core and Buffer Zone.</li> </ul>	<ul style="list-style-type: none"> <li>• UNESCO</li> <li>• JWN</li> <li>• PERZIM</li> <li>• MPAG</li> <li>• PTD Alor Gajah</li> <li>• PTG Melaka</li> <li>• SM-WEZ (Straits Melaka Waterfront Economic Zone)</li> <li>• DOE</li> </ul>
	<ul style="list-style-type: none"> <li>• To monitor coastal development</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct periodical inspection.</li> <li>• Regulate the law related to any developments along the coast.</li> <li>• Implement sustainable zoning regulations to prevent excessive land reclamation.</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal development within Melaka coastline possesses adverse impacts towards adjacent mudflat areas.</li> </ul>	<ul style="list-style-type: none"> <li>• MPAG</li> <li>• PTD Alor Gajah</li> <li>• PTG Melaka</li> </ul>
<b>Forest And Mangroves</b>				
MU01	<ul style="list-style-type: none"> <li>• To regulate human activities in order to minimize environmental impact</li> </ul>	<ul style="list-style-type: none"> <li>• Establish guidelines for tourism, aquaculture, and infrastructure development.</li> <li>• Enforce regulations to control pollution, illegal logging, and encroachment.</li> </ul>	<ul style="list-style-type: none"> <li>• Existence of the human activities within the mangrove forest, and requires proper management</li> </ul>	<ul style="list-style-type: none"> <li>• Forestry Department of Peninsular Malaysia (FDPM)</li> <li>• MPAG</li> </ul>

**Recreational & Tourism**

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/ RESPONSIBLE AGENCIES
<b>Activities</b>				
MU01	<ul style="list-style-type: none"> <li>To manage and control all the business activities to be legal in operations and follow the Standard Operating Procedures</li> </ul>	<ul style="list-style-type: none"> <li>Local authorities need to carry out enforcement operations on illegal business operations.</li> </ul>	<ul style="list-style-type: none"> <li>Licensing issues related to tourism involving buildings, sites and land use.</li> </ul>	<ul style="list-style-type: none"> <li>MPAG</li> </ul>
	<ul style="list-style-type: none"> <li>To implement zoning to separate different activities and prevent accidents.</li> </ul>	<ul style="list-style-type: none"> <li>Provide a gazette area for the water-sport activities such as windsurfing, kayaking, banana-boat rides, and scuba diving lessons.</li> <li>Establish clear safety guidelines and enforce regulations for all water sports.</li> </ul>	<ul style="list-style-type: none"> <li>There is no specific area that have been dedicated for water-sport activities.</li> </ul>	<ul style="list-style-type: none"> <li>MPAG</li> </ul>
<b>Attractions</b>				
MU01	<ul style="list-style-type: none"> <li>To promote tourism and cultural heritage by highlighting its unique attractions.</li> </ul>	<ul style="list-style-type: none"> <li>Upgrade and maintain facilities and improve accessibility</li> <li>Improve lighting and signage by installing proper streetlights and directional signage to improve safety and navigation.</li> <li>Restore heritage and cultural sites by refurbish and highlight the historical and cultural significance</li> </ul>	<ul style="list-style-type: none"> <li>Unattractive and low maintenance of Kota Supai has not attracted tourists to visit.</li> </ul>	<ul style="list-style-type: none"> <li>MOTAC</li> <li>Tourism Malaysia</li> <li>MPAG</li> </ul>
	<ul style="list-style-type: none"> <li>To manage the uses of the heritage site to the public to promote the potential of the site as an economic catalyst</li> </ul>	<ul style="list-style-type: none"> <li>Information centre or an information board which tells about the history of the area.</li> <li>Provide adequate and suitable infrastructures to support the</li> </ul>	<ul style="list-style-type: none"> <li>Inadequate information and suitable infrastructures at the historical sites.</li> </ul>	<ul style="list-style-type: none"> <li>UNESCO</li> <li>JWN</li> <li>PERZIM</li> <li>MPAG</li> <li>PTD Alor Gajah</li> </ul>

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		historical site.		<ul style="list-style-type: none"> <li>PTG Melaka</li> <li>DOE</li> </ul>

Archaeological & Historical

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MU01	<ul style="list-style-type: none"> <li>To manage the land use due to UNESCO's heritage status</li> </ul>	<ul style="list-style-type: none"> <li>Adhere to UNESCO and all JWN conservation standards as stipulated by UNESCO in order to ensure the integrity and authenticity of this historical city</li> </ul>	<ul style="list-style-type: none"> <li>Conflict of interest between the need of adhering to the conservation principles against the need of having land reclamation along the coast especially within the designated UNESCO World Heritage Site Core and Buffer Zone.</li> </ul>	<ul style="list-style-type: none"> <li>UNESCO</li> <li>JWN</li> <li>PERZIM</li> <li>MPAG</li> <li>PTD Alor Gajah</li> <li>PTG Melaka</li> <li>DOE</li> </ul>