

**Coastal & River**

MANAGEMENT UNIT (MU)	ISSUE/IMPORTANCE	OBJECTIVE	ACTION/STRATEGY	RESPONSIBLE AGENCIES
MU11	<p>Eroding Cat 1 &amp; 3</p> <ul style="list-style-type: none"> <li>• Coastal Protection</li> <li>• Setback</li> </ul>	<ul style="list-style-type: none"> <li>• To track shoreline changes, analyze seasonal impacts, identify flood &amp; erosion risks and support sustainable management.</li> <li>• Ensure new developments are positioned at a safe distance from the shoreline to allow for natural shoreline movement and protect properties.</li> <li>• Allow flexibility in setback policies to respond to changing shoreline conditions.</li> <li>• Enhance the effectiveness of setbacks by combining them with natural shoreline protection strategies.</li> <li>• Ensure that setbacks remain effective by regularly monitoring shoreline changes and adapting management practices.</li> <li>• Minimize the impact of new developments on the shoreline and support natural processes.</li> <li>• Raise awareness about the importance of setbacks and involve stakeholders in shoreline management efforts.</li> <li>• Ensure compliance with setback requirements and protect the shoreline effectively</li> </ul>	<ul style="list-style-type: none"> <li>• Frequent observation</li> <li>• Install revetments (housing area) – Cat 1</li> <li>• Maintenance existing structure</li> <li>• Develop Comprehensive Setback Guidelines, i.e., Conduct scientific assessments &amp; develop flexible setback guidelines.</li> <li>• Incorporate Adaptive Setback Practices, i.e., Design setback areas with buffers &amp; Implement zoning regulations. <ul style="list-style-type: none"> <li>➢ Muddy Shoreline <ul style="list-style-type: none"> <li>➢ With existing bunds; <i>Coastal setback follows the alignment of the bund.</i></li> <li>➢ In already developed areas; <i>Setback is defined by the seaward edge of the development.</i></li> <li>➢ In undeveloped mangrove areas: <i>Setback is established at the landward boundary of the mangroves.</i></li> </ul> </li> <li>➢ Sandy Shoreline <ul style="list-style-type: none"> <li>➢ Erosion occurs at a slower rate.</li> <li>➢ In unprotected areas: <i>Setback can be reduced to 30 meters.</i></li> <li>➢ Where roads or critical infrastructure exist: <i>Setback may be</i></li> </ul> </li> </ul> </li> </ul>	JPS Melaka JPS Daerah

			<p><i>positioned seaward of existing structures.</i></p> <ul style="list-style-type: none"> <li>› In areas with revetments: <i>Setback should align with the revetment line.</i></li> <li>› Setback lines in this study have been adjusted to allow for existing infrastructures and predicted movement of shorelines.</li> </ul> <ul style="list-style-type: none"> <li>• Integrate Natural Erosion Control Measures, i.e., Restore and protect natural habitats &amp; Plant native vegetation</li> <li>• Enhance Shoreline Monitoring and Management, i.e., Conduct periodic shoreline surveys &amp; Adjust setback requirements</li> <li>• Promote Sustainable Development Practices, i.e., Encourage low-impact development techniques &amp; Limit construction activities</li> <li>• Educate and Engage Stakeholders, i.e., Conduct outreach and education programs &amp; Involve stakeholders in planning and decision-making</li> <li>• Implement and Enforce Regulations, i.e., Enforce setback regulations &amp; Review and update regulations regularly</li> <li>• Setback determination shall be guided by the recommendations provided in the Decision Support System (DSS).</li> </ul>	
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#### Marine Habitats and Biodiversity

The proposed development management strategies for marine habitats and biodiversity at MU11 are as follow.

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/RESPONSIBLE AGENCIES
• MU11 (Sg. Duyong and Telok Mas)	<ul style="list-style-type: none"><li>Mangroves</li><li>• To protect, conserve and rehabilitate the mangrove areas</li></ul>	<ul style="list-style-type: none"><li>Rehabilitation, restoration and replanting of suitable mangrove species.</li></ul>	<ul style="list-style-type: none"><li>Degradation of mangrove areas due to coastal developments.</li></ul>	<ul style="list-style-type: none"><li>Department of Forestry,</li><li>• Developers.</li></ul>

#### Fisheries and Aquaculture

The proposed development management strategies for marine capture fisheries and recreational fisheries at MU11 are as follow.

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/RESPONSIBLE AGENCIES
• MU11 (Sg. Punggor and Telok Mas)	<ul style="list-style-type: none"><li>Marine Capture Fisheries</li><li>• To ensure high standards of fish quality, enhanced food safety and nutritional value through provision of better fisheries infrastructures and facilities.</li></ul>	<ul style="list-style-type: none"><li>Upgrade the fisheries infrastructures at Sg. Punggor and Telok Mas fish landing points.</li></ul>	<ul style="list-style-type: none"><li>Lack of fisheries infrastructures at Sg. Punggor and Telok Mas fish landing points.</li></ul>	<ul style="list-style-type: none"><li>Department of Fisheries.</li><li>• LKIM.</li><li>• Melaka State Government.</li></ul>
	<ul style="list-style-type: none"><li>• To improve the navigation of fishing vessels at Sg. Punggor and Telok Mas.</li></ul>	<ul style="list-style-type: none"><li>Undertake maintenance dredging at Sg. Punggor and Telok Mas.</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>
	<ul style="list-style-type: none"><li>• To ensure food security and safety.</li></ul>	<ul style="list-style-type: none"><li>Deployment of artificial reefs and Fish Aggregating Devices (FADs).</li><li>Promote sustainable coastal development through enhancement of fisheries habitat (eco-engineering structures).</li><li>No new coastal reclamation projects allowed from Sg. Duyong to Telok Mas.</li></ul>	<ul style="list-style-type: none"><li>Coastal development such as reclamation can cause adverse impacts on fisheries resources and fishermen income.</li></ul>	<ul style="list-style-type: none"><li>Department of Forestry,</li><li>• Department of Fisheries,</li><li>• Developers.</li></ul>

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• MU11 (Sg. Punggor and Telok Mas)	<p>Recreational Fisheries</p> <ul style="list-style-type: none"> <li>• To improve recreational fisheries infrastructures and facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Upgrade the recreational fisheries infrastructures.</li> <li>• Upgrade/Provision of septic tanks/toilets.</li> </ul>	<ul style="list-style-type: none"> <li>• Limited recreational fisheries infrastructures and facilities.</li> </ul>	<ul style="list-style-type: none"> <li>• Melaka State Government</li> <li>• MOTAC Melaka</li> <li>• Majlis Bandaraya Melaka Bersejarah (MBMB).</li> </ul>
• MU11 (Telok Mas)	<ul style="list-style-type: none"> <li>• To promote good fishing practices in recreational fishing activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of sufficient garbage bins and portable toilets at the recreational beaches.</li> <li>• Promote public awareness by organizing environmental talks on coastal cleanliness and protection of coastal habitats.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of solid waste disposal infrastructures and portable toilets.</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Fisheries,</li> <li>• Melaka State Government</li> <li>• NGOs</li> </ul>

Water Quality

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE RESPONSIBLE AGENCIES
MU11	<p>Waste Control</p> <ul style="list-style-type: none"> <li>• Solid waste and Scheduled Waste Control</li> </ul> <p>Erosion and Sediment Control</p> <ul style="list-style-type: none"> <li>• Control the sedimentation</li> </ul> <p>Sewage Discharge</p> <ul style="list-style-type: none"> <li>• Control of sewage discharge</li> </ul>	<ul style="list-style-type: none"> <li>• New 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 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> <li>• Provision of Erosion and Sediment Control (ESCP) for land clearing activities</li> <li>• Submission of the ESCP plan to the Department of Irrigation and Drainage (DID) for approval prior to start of land clearing and earthwork activities</li> <li>• Provision of septic tanks in remote areas</li> <li>• Upgrading of existing sanitary facilities</li> <li>• Compliance to Malaysian Marine Water Quality Standard</li> <li>• Compliance to Standard Kebangsaan Kualiti Air Rekreasi Semulajadi dan Garispanduan bagi Pemantauan Air Rekreasi Semulajadi</li> <li>• Compliance with Environmental Quality (Sewage) Regulations 2009</li> <li>• Environmental Quality (Scheduled Waste) Regulations 2005</li> </ul>	<ul style="list-style-type: none"> <li>• MU11 has the same land use pattern as MU10, with housing as the largest land use.</li> </ul>	<ul style="list-style-type: none"> <li>• Department of Environment</li> <li>• Local Council and Authorities</li> <li>• Indah Water Konsortium (IWK)</li> <li>• National Water Services Commission (Suruhanjaya Perkhidmatan Air Negara, SPAN)</li> </ul>

Land Use

MANAGEMENT UNIT (MU) (LOCATION)	MANAGEMENT OBJECTIVES	MANAGEMENT STRATEGIES	ISSUE/IMPORTANCE/REASON	RESPECTIVE/ RESPONSIBLE AGENCIES
<b>Human Settlement</b>				
MU11	<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>MBMB</li><li>PTD Melaka Tengah</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></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>MBMB</li><li>DOE</li></ul>

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		<ul style="list-style-type: none"> <li>Conduct periodical inspection during and after construction.</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>MBMB</li> <li>PTD Melaka Tengah</li> <li>PTG Melaka</li> </ul>
<b>Forest and Mangroves</b>				
MU11	<ul style="list-style-type: none"> <li>To protect the coastal of the state.</li> <li>To protect, conserve and rehabilitate the mangrove areas.</li> </ul>	<ul style="list-style-type: none"> <li>Gazetttement of mangroves areas as Permanent Forest Reserve at state land mangrove forests.</li> <li>Prohibit land use conversion within mangrove areas into other development projects</li> <li>Prohibition of new development plans to facilitate the regeneration of mangrove within respective areas.</li> <li>Rehabilitation, restoration and replanting of suitable mangrove species at the affected areas.</li> <li>Facilitate mangrove regeneration by implementation of appropriate tools and methods.</li> <li>Promote programs related to the restoration and replanting of suitable mangrove species.</li> </ul>	<ul style="list-style-type: none"> <li>Mangrove serves various ecological importance such as providing protection and habitat for a wide diversity of aquatic species of different taxonomic groups.</li> <li>Extensive protected mangroves area, including the area between Umbai to Sungai Rambai</li> <li>Regeneration and re-establishment of mangroves.</li> <li>Degradation of mangroves area at some part within Melaka coastline due to the coastal erosion.</li> <li>Potential mangrove forest degradation due to coastal and aquaculture developments.</li> </ul>	<ul style="list-style-type: none"> <li>FDPM</li> <li>FDPM</li> <li>FDPM</li> <li>FDPM</li> <li>FDPM</li> </ul>

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		<ul style="list-style-type: none"> <li>• Provision of buffer zone between mangrove and development areas.</li> <li>• Restoration of abandoned farms as an alternative to minimize the development of new aquaculture farms.</li> </ul>		
	<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>• FDPM</li> <li>• MMBB</li> </ul>