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## **The Efforts of Town Planning System in Wetland Management in Peninsular Malaysia**

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### **ABSTRACT**

This paper examines about development plan as one element of town planning system can and should make a substantial contribution to wetland management in Peninsular Malaysia. By practising the development plan system, it is anticipated that the protection and conservation of nation's valuable wetland will be strengthened. The legislation backup of the town planning system offers a strong support for development plan in ensuring the sustainability of wetland habitats are achievable in the long run. Policy and strategy stated in development plan are the mechanisms of town planning system in relation to contribute to wetland management in Peninsular Malaysia.

*Keywords: development plan; town planning system; wetland; policy and strategy.*

### **1.0 INTRODUCTION OF WETLAND HABITATS**

Defining wetlands has been the subject of great debate over the time. However, most wetlands can be easily identified by three basic characteristics. First, is the presence of water. Water levels may range from just moist or saturated soil to water depths greater than three feet. Wetlands receive their water from three primary sources: surface runoff; ground water discharge; and direct precipitation. Water conditions shape the character of any wetland. Second, wetlands are defined according to the soil type. Wetland soils, in their undrained state, are usually saturated, flooded long enough during the growing season to develop conditions that favour the development of wetland vegetation. Third, wetlands are defined by the types of vegetation growing in them. Plants such as cattails, sedges, and bulrushes that prefer water conditions ranging from moist to wet are commonly associated with wetland habitats.

World Wetlands Day is celebrated around the globe on Feb 1. This means that it is highly appreciated for its precious values that support the life of mankind. Wetlands are among the world's most productive environments. Wetlands are recognised as an important natural resource; providing a range of social, economic and environmental benefits of one nation. Wetlands play a variety of important roles in the landscape in which they are found. Healthy wetland systems offer incalculable benefits to many stakeholders. Preserving and protecting wetlands makes good economic sense as well as good environmental sense, as replacing wetland benefits after they have been lost is an expensive and uncertain undertaking. Wetland systems and their associated uplands are

the anchors that give the natural landscape many of the qualities that make it so unique. It provides various functions and values to support the economic and social sectors. It has significant importance, covering a wide spectrum of life (Table 1).

**Table 1: Generic functions of wetland areas**

| <b>Functions</b>   | <b>Sector</b> |
|--|---------------|
| To provide habitat and refuge for many migratory and threatened species.   | Environment   |
| To support high concentrations of birds, mammals, reptiles, amphibians, fish and invertebrate species.   | Environment   |
| To provide important storehouses of plant genetic material.  | Environment   |
| To play an essential role in natural hydrological cycles, provide water passage and storage, and may contribute to flood mitigation and the recharge of groundwater. | Environment   |
| To purify water by filtering nutrients and sediments.  | Environment   |
| To help regulation of water quality, water discharge and recharge.   | Environment   |
| To provide coastal protection against destructive natural events, such as cyclones.  | Environment   |
| To lessen flood levels, flood flow alteration and control- wetlands in floodplains reduce or delay floods.   | Environment   |
| To assist shoreline stabilisation.   | Environment   |
| To provide essential water sources for agricultural, urban and industrial uses, fish resources, and fodder for livestock grazing.                                    | Economic      |
| To offer navigation and port facilities essential for trade.   | Economic      |
| To have strong feature in tourism and recreational opportunities.  | Economic      |
| To offer features significantly in the cultural heritage, and day-to-day living of community.  | Social        |
| To contribute to the well-being of people through landscape diversity, heritage values and aesthetic appeal.   | Social        |



Mangroves are an integral part of our wetlands.

## 2.0 FACTORS THREATEN WETLAND HABITATS

Area of wetlands in Malaysia is estimated around 700,000 hectare presently with the rate of loss of wetland is 0.9 % per year. There are many factors associated with natural or man-made causes that could threat wetland habitats. Many activities or conditions contribute to the degradation and losses of wetlands are shown in Table 2. When wetlands are modified or destroyed, this can have a serious impact on the water cycle in a catchment area as was clearly evident in Kota Tinggi during the recent big floods. Kota Tinggi was one of the worst hit towns in the recent floods in the country. Among the worst hit areas was the new town development area encompassing the new bus station of Kota Tinggi, which it is believed only 10 years ago was a mangrove swamp and partly peat swamp. This indicates that any alteration of the natural setting of wetland habitats may have an adverse impact in the long run.

**Table 2: Factors threaten wetland habitats**

| Activities   | Sector           |
|--|------------------|
| Clearing, draining and/or filling of wetland for residential, urbanisation, industrial and agricultural development. | Land development |
| Natural sediment accumulation and suspension.  | Environment      |
| Water pollution and nutrient enrichment, alterations to hydrological cycles, stormwater run-off, salinisation.       | Environment      |
| Excessive water extraction for urban use, agriculture and industry.  | Economic         |
| Modification of water regimes through emplacement of dams and other barriers.  | Economic         |
| Inappropriate and uncontrolled grazing regimes.  | Economic         |

|   |                  |
|---|------------------|
| Mining and other resource use activities. | Economic         |
| Aquatic and terrestrial feral animals.    | Environment      |
| Increased human activity within wetlands. | Land development |
| Climate change.                           | Environment      |

### **3.0 DEVELOPMENT PLAN POLICY IN RELATION TO ENVIRONMENTAL PROTECTION**

This paper examines the roles of development plan policy of the town planning system towards wetland management in Malaysia. Wong (1998) says that environmental issues have recently gained momentum in the town planning profession. Environmental considerations are important in town planning tasks, whether they are determining planning applications ranging from house extensions to a new airport, or developing policies for environmental conservation (ibid). It is, therefore, important to include environmental considerations in the town planning system, including controlling water quality, conserving coastal areas and protecting wetland habitats.

Town and country planning is a government activity that regulates the development and physical use of land in the public interest (Blowers, 2000; Greed, 1996; Gubbay, 2003; Midgley, 2000; Southgate, 2003). The basic concerns of the town planning system are housing, transportation, shopping, leisure facilities and industrial needs, as well the protection of the environment and countryside. Cowell and Owens (1997) suggest that land use and environmental changes are connected in fundamentally important ways, and that town planning is one of the oldest instruments of environmental protection. In this view, it is evident that town planning is a tool in protecting wetland habitats. Thus, it can substantially contribute to wetland management. Town planning is considered to be an important instrument for integrated planning and management of land resources which incorporates a balanced approach to the environmental conservation and development of land (Usulludin, 1999). From an environmental perspective, the contribution of the town planning system has been acknowledged as contributing to the conservation of natural resources.

Two principal instruments underlie the town planning framework (Dumashie, 2001; Rydin, 1998a, 1998b). These are the development plans, which are considered the ‘heart’ of the forward planning framework, and development control, which is the implementation mechanism (Bishop, Tewdwr-Jones & Wilkinson, 2000; Heap, 1981; Kirby & Carrick, 1985; Taussik, 1997). Most forward planning systems in the world generally involve these two elements of town planning practice.

A basic tool in a forward planning system is the statutory development plan, the broad strategies to which the plan-led system is applied (Hales, 2000; Reeves & Burley, 2002). Development plans form the basis for decisions on individual planning applications (Reeves & Burley, 2002). They are prepared to guide future development

and environmental changes, and to achieve planning objectives identified by national governments (Rydin, 1998b).

Evans and Rydin (1997) state that strategic planning has become a high-profile planning activity, and Healey (2004) says ‘strategic’ relates to a higher level of administration. Strategic planning relates to the process of determining long-term goals and identifying the best approach in achieving those goals. A development plan is considered as a strategic plan, and it may be in the form of a structure plan or local plan.

Sustainability can be achieved if planning decisions are made in a wider environmental context. If they are, the town planning system has a contribution to make to the whole system of environmental planning. Miller (1990) notes that the town planning system can offer additional safeguards to environmental management, which depends on the role of development control as an instrument of pollution control.

#### **4.0 THE EFFORTS OF MALAYSIAN GOVERNMENT IN WETLAND MANAGEMENT**

National Wetlands Policy was prepared by the Malaysian Government in 1998 as an effort to safeguard our valuable asset of wetland habitats. The main feature of the National Wetland Policy is the goal statement, which is to have sustainable management on wetlands for environmental and socio-economic functions to ensure the continual progress and well-being of the nation. This is followed by five main objectives, nine guiding principles and ten strategies for sustainable use of wetland resources and conservation of wetlands. For each strategy stated there is a corresponding action plan. In relation to other national environmental and conservation planning initiatives (e.g., National Environmental Action Plans, National Biodiversity Action Plans, National Conservation Strategies), the National Wetlands Policy relates more closely to the National Policy on Biological Diversity (1998), policy of which is geared towards sustainable development in critical ecosystems and the action plans for effective management of biological diversity.

At the national level, a number of initiatives available directly or indirectly on wetland management. Efforts have been made in Malaysia to have wetlands highly considered in integrated town planning system and management processes as shown in Table 3.

**Table 3: National initiatives in Malaysian wetland management**

| No | Title of Study   | Year         | Remarks  |
|----|--|--------------|--|
| 1  | National Coastal Erosion Study   | 1984-1985    | Indirectly; partially included in the document |
| 2  | Government of Malaysia circular on coastal development   | 1987         | Indirectly; partially included in the document |
| 3  | South Johore Coastal Resources Management Project  | 1992         | Directly; as a sectoral study                  |
| 4  | Integrated Management Plan for the Sustainable Use of the Johore Mangrove Forests                                      | 1997         | Directly; as a sectoral study                  |
| 5  | Town and Country Planning Department guidelines on coastal development   | 1997         | Indirectly; partially included in the document |
| 6  | Pilot projects on Coastal Zone Management for Penang, Sabah and Sarawak  | 1997-1999    | Indirectly; partially included in the document |
| 7  | Department of Environment guideline for environmental impact assessment in coastal areas                               | 1999         | Indirectly; partially included in the document |
| 8  | Guidelines for Planning and Development in and along Coastal Areas by the Department of Town and Country Planners      | 1997         | Indirectly; partially included in the document |
| 9  | Guidelines from the Department of Irrigation and Drainage to control erosion arising from development in Coastal Areas | 1997         | Indirectly; partially included in the document |
| 10 | National coastal zone policy initiative  | 1999-present | Indirectly; partially included in the document |

Source: Developed from Asmawi, 2006.

Currently the Town and Country Planning Department (TCPD) is looking into the approach and general guidelines to develop ecologically critical or specific sensitive areas like wetlands. The practice of development plan is one approach towards supporting sensitive areas, including wetland habitats. The inclusion of wetland issues is integrated in the environmental sector in which development policies on wetland management are provided. The policies might emphasis on how the wetland habitats should be managed. This includes the types of allowable development and its designated areas. The detailed information on wetland management depends on type of development plans. The superior National Physical Plan covers the whole Peninsular Malaysia with strategic policy for wetland management. On the other hand, the inclusion of wetland management is covered in detail in more localised study as Special Area Plan. Table 4 shows that hierarchy of development system practised in Peninsular Malaysia.

**Table 4: The Current Development Plan System in Peninsular Malaysia**

| Hierarchy of development plan | Responsible agency  | Remarks  |
|-------------------------------|---|--|
| National Physical Plan (NPP)  | Federal Town and Country Planning Department                        | National policy on Environmental Sensitive Areas (inclusive of wetlands) |
| State Structure Plan (SSP)    | State Town and Country Planning Department/Local Planning Authority | Strategic policy on wetland management for the state                     |
| District Local Plan (DLP)     | State Town and Country Planning Department/Local Planning Authority | Policy and strategy for wetland management at the district level         |
| Special Area Plan (SAP)       | State Town and Country Planning Department/Local Planning Authority | Detailed and specific policy and strategy for wetland management         |

Presently, the principal act for the town planning system in Peninsular Malaysia is the Town and Country Planning Act 1976 (TCPA) (Act 172). Sabah and Sarawak do not practise this act as they have their own enactment and ordinance on town planning field. The Federal Town and Country Planning Department (TCPD) of the Ministry of Housing and Local Government administers the TCP Act (Act 172) and functions as the advisory body for planning related issues. The act was introduced to express the planning authority's intentions to initiate, encourage and control physical, economic, environmental and social change in a particular area. This means that any element of environment that associates with the physical development will be administered by this planning act. Act 172 was updated in 1995 (Act A933) to provide for the achievement of sustainable development, particularly with regard to the protection of the natural environment from the impacts of development (United Nations, 2005). The amendments include the preservation and planting of trees, preservation of natural topography, provision of open spaces and a requirement that development proposal reports (Section 21A, Act 172) be submitted with all applications for planning permission. The latest amendment was made in 2001 (known as Act A1129) and provides the formulation of a National Physical Plan (NPP) for Peninsular Malaysia. Table 5 outlines the evolution of town planning act in Peninsular Malaysia. The coverage of town planning issues in Malaysia Plans is divided into numerous sections encompassing housing development, transportation planning and environmental enhancement. It seems that the amendment of the act incorporates the efforts of environmental protection in line with the Government's commitment towards achieving sustainability in developing the nation.

**Table 5: The Evolution of Town Planning Act in relation to Environmental Protection**

| The act                            | Code of the act | Remarks of environmental aspect  |
|------------------------------------|-----------------|--|
| Town and Country Planning Act 1976 | Act 172         | To include environmental protection in the practice of development plan (policy) and development control.  |
| Act 172 was amended in 1993        | Act A866        | To strengthen the act with the provisions of the Sewerage Services Act, 1993.  |
| Act 172 was amended in 1995        | Act A933        | To strengthen the act by including the preservation green areas and topography; providing more open spaces; provision of tree preservation order; preparing Development Proposal Report. |
| Act 172 was amended in 2001        | Act A1129       | To strengthen the act by including the identified environmental sensitive areas, including wetland habitats-providing national policy on wetland management (National Physical Plan)     |

The Malaysian Government seriously plays its role in conserving natural resources and the environment in line with its strong commitment to the concept of sustainable development. The management of natural resources and the environment in a sustainable manner is a big challenge to the country. The effective management of natural resources and the environment is vital to the quality of human life and overall wellbeing of the country. It is recognised that land resources, including wetland areas being used for a variety of purposes of which all interact with both positive and sometimes negative impacts, should be properly planned and managed in a holistic and integrated manner. This approach is advocated in the United Nations sponsored Agenda 21 programmes. Prudent management of natural resources and the environment is thus vital for the creation of an efficient, equitable and sustainable national spatial framework for the country.

It is identified that wetlands are among the most threatened ecosystems and their conservation is vital for the well-being of the country. Conversion of wetlands to other land uses will aggravate flooding in many parts of the country. Most of the wetland forests especially on the west coast of Peninsular Malaysia have been developed and the remaining areas are under threat of encroachment and over-exploitation. Currently, the Protected Areas (PA) in Peninsular Malaysia include gazetted National and State Parks, Wildlife Reserves/Sanctuaries, Marine Parks, Protection Forests (of the Permanent Forest Estate, or PFE) and other areas designated for statutory protection. Although these Protected Areas already comprise various habitats/ecosystems, the distribution of reserves reveals that some habitats/ecosystems are seriously under-represented, namely wetland habitats. Policy in the National Physical Plan (i.e. NPP 18) states that “Environmentally Sensitive Areas (ESA) shall be integrated in the planning and management of land use and natural resources to ensure sustainable development”. According to the National Physical Plan, wetland habitats are considered in Environmental Sensitive Area, Rank 1 in which ‘no development, agriculture or logging shall be permitted except for low-impact nature tourism, research and education’ (Figure



1). Consequently, Structure Plans and Local Plans shall refine and delineate the Environmental Sensitive Area identified in the National Physical Plan to include other Environmental Sensitive Area that may be of importance at the state or local levels.

The Government plans that the Protected Areas network shall be enlarged to include a full representation of the diversity of natural ecosystems, including wetland habitats in which Tasik Chini, Pahang and its surrounding wetlands are recommended to be gazetted as Protected Areas, and shall be managed as Environmentally Sensitive Areas, Rank 1.

Besides that, a few Non-Governmental Organisations (NGOs) are also participated in managing wetland habitats in Malaysia, both at the international and national levels. Wetlands International-Asia Pacific is a body at international level, whereas World Wide Fund for Nature (WWF, Malaysia) and Malaysian Nature Society (MNS) are active locally.

Figure 1: Environmental Sensitive Areas Identified in the National Physical Plan



Source: National Physical Plan, 2001

## 5.0 HOW ARE WETLANDS PROTECTED BY LEGISLATION?

Legislation for the management of wetlands is administered by various Malaysian government agencies. In addition to legislation, policies and strategies to protect wetlands have been developed at the national, state and local levels. These have been developed in accordance with the internationally recognised the Ramsar Convention on Wetlands 1971 (accreditation as wetlands of international importance), which aims to halt the worldwide loss of wetlands and to conserve those that remain through wise use and management. Ramsar Convention provides the framework for national action and international co-operation for the conservation and wise use of wetland habitats and their resources.

The predominant roles of government in wetlands protection and management are in providing a legal and administrative structure. Consequently, they also provide technical and management expertise, and enforcement of relevant laws, rules and regulations. The following synopsis in Table 6 identifies only a flavour of the many activities of relevant agencies.

**Table 6: Government agencies involved in wetland management in Peninsular Malaysia**

| No | Agency   | Relevant legislation or regulation   | Concern for:  |
|----|--|--|---|
| 1  | Economic Planning Unit   | <ul style="list-style-type: none"> <li>Federal Constitution</li> <li>National Land Code 1965</li> </ul>  | <ul style="list-style-type: none"> <li>Wetland habitat issues that affect the state's interests in terms of environment</li> </ul>  |
| 2  | Town and Country Planning Department, Ministry of Housing and Local Government | <ul style="list-style-type: none"> <li>Town and Country Planning Act 1976</li> <li>Guidelines for Development and Planning in Coastal Areas (Planning Standard JPBD 6/97)</li> </ul>   | <ul style="list-style-type: none"> <li>Development plans (eg. policies on wetland habitat)</li> </ul>   |
| 3  | Local Planning Authorities   | <ul style="list-style-type: none"> <li>Town and Country Planning Act 1976</li> </ul>   | <ul style="list-style-type: none"> <li>Local forward planning and planning control (eg. implementation of policies on wetland habitat)</li> </ul>   |
| 4  | Department of Irrigation and Drainage (DID), Ministry of Agriculture           | <ul style="list-style-type: none"> <li>Administrative circular no. 5/87 (requires all development submit plans to DID)</li> <li>Guidelines on Erosion Control for Development Projects on the Coastal Zone, Guidelines no. 1/97</li> </ul> | <ul style="list-style-type: none"> <li>Engineering approach to protect the environment (eg. wetland habitat)</li> <li>control and management of flooding (natural way-wetland areas)</li> </ul> |

|    |   |  |   |
|----|---|--|---|
| 5  | Department of Environment, Ministry of Science, Technology and Innovation | <ul style="list-style-type: none"> <li>• Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 1987</li> <li>• Environmental Quality Act 1974</li> </ul> | <ul style="list-style-type: none"> <li>• EIA prescribes activities such as land reclamation, (eg. development in wetland habitat)</li> </ul>                |
| 6  | Department of Forestry, Ministry of Primary Industries                    | <ul style="list-style-type: none"> <li>• National Forest Act 1984</li> <li>• Forest Rules 1986</li> </ul>  | Planning, managing and enforcing forestry laws and practices with respect to wetlands.  |
| 7  | Fisheries Department  | <ul style="list-style-type: none"> <li>• Fisheries Act 1985</li> </ul>   | <ul style="list-style-type: none"> <li>• Activities result in the creation of artificial wetlands such as aquaculture ponds for prawns and fish.</li> </ul> |
| 8  | Land and Mines Department   | <ul style="list-style-type: none"> <li>• National Land Code 1965</li> </ul>  | <ul style="list-style-type: none"> <li>• Land administration (eg. wetland habitat)</li> <li>• Demarcation for wetland areas</li> </ul>                      |
| 9  | Ministry of Culture, Arts and Tourism                                     | <ul style="list-style-type: none"> <li>• Ecotourism guidelines for coastal development, (Beach)</li> </ul>   | <ul style="list-style-type: none"> <li>• Coastal wetland resources</li> </ul>   |
| 10 | Department of Wildlife and National Park                                  | <ul style="list-style-type: none"> <li>• Marine Parks Regulations, sections 41-45 of Fisheries Act 1985</li> <li>• Protection of Wildlife Act 1976</li> </ul>                            | <ul style="list-style-type: none"> <li>• Conservation area with important wetland resources</li> </ul>  |

*Source: Developed from Asmawi, 2006*

## 6.0 RECOMMENDATIONS TO STRENGTHEN WETLAND MANAGEMENT

The relevance of development plans in managing wetland habitats can be seen in the bigger perspective of environmental planning. The planning system can be integral to the processes by which some efforts on managing wetland habitats are achieved. It is suggested that development plans can contribute to wetland management by:

- i. offering opportunities for the incorporation of wetlands policy and strategy into a statutory framework of development plan documents.  
The inclusion of wetland policy in the preparation of development plans assists managing the wetland habitats by providing legal support of a statutory nature to wetland policy.
- ii. offering opportunities to use the development plan to implement wetland development and management plans.  
The linkage between wetlands plan and comprehensive development plans (State Structure Plan, District Local Plan and Special Area Plan) is crucial to support the effort towards wetland management. Integration of wetlands with residential, commercial, industrial and more intense governmental uses is one of the most important components of a comprehensive plan.

- iii. using development plans as an instrument to achieve wetland management objectives.  
Incorporating wetland management in all relevant environmental protection, such as monitoring environmental quality and hazards to achieve a sustainable wetland management programmes.

In addition to the development plan system, other elements such as community role and physical development can also contribute to the improved wetland management. Practical ways that can be considered are:

- i. Planning parks and recreation in wetlands as it can provide open space and places for passive recreation. Fishing, canoeing, studying nature, plant and wildlife viewing, photographing, and walking, jogging, or bicycling along trails near wetlands are valuable components of a community recreation program.
- ii. Protection of natural resources. Wetlands are part of a natural watershed, which includes a system of ponds, streams, creeks, rivers, and groundwater.
- iii. Instilling community values. Wetlands are part of the nature of the community and often have an interesting history. Whether they are natural open space, places for recreation, part of the public water resources facilities, associated with an economic development, part of a school system's outdoor education program, places for scientific research, or a tourist attraction, wetlands can provide multiple benefits which contribute to a liveable community.

## **7.0 CONCLUSION**

The comprehensive wetland approach is an excellent way to address wetlands issues in accordance with the aim towards achieving sustainable development for the nation. The comprehensive wetlands management plan allows for the best available information to be integrated into a rational solution, particularly when it relates with town planning. The legislation status of town planning system is an advantage for it to support and strengthen the efforts towards protecting wetland habitats. The development plan system, comprising the bigger perspective of institutional framework and localised information is seen as a promising workable tool in pursuing the sustainability development in Malaysian wetland management. Government must learn from the previous bitter experience that there is a price for unsustainable development. Everyone player in developing the nation must think beyond today. Removing the fragile wetland eco-systems is damaging the nation's rich biodiversity, fragile landscape and legacy.

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