State Environmental Conservation Department (ECD), Sabah, Malaysia

Draft Policy on Hillslope Development

Fourth Draft

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Policy on Hillslope Development

1. Vision

To maintain the integrity of the hillscape in Sabah by the application of effective legislation and enforcement, and regional land use planning schemes for all important hill areas.

2. Policy Statement

To ensure that development activities on hillslopes is carefully planned and implemented, thereby avoiding unnecessary detrimental impacts on the environment, landscape and surrounding settlements.

3. Principles

Hillslope Development activities shall be based on the following principles:

- Hills scenery constitute an important part of the cultural and physical landscape of Sabah and as such are an integral part of the State heritage, yielding benefits locally, nationally and internationally, both for the present and future.
- It is the responsibility of all sectors to maintain the hillscape of Sabah and ensure that it is prudently managed and developed
- Development on hillslopes must be planned and guided by the natural environmental setting - let the site influence the plan

4. Objectives

- To strengthen the present framework for control and management of development on hillslopes
- To ensure that all Government Agencies and the public are aware of and adhere to existing regulations, requirements and procedures
- To identify the key issues, geographical locations and stakeholders involved in hillsope development
- To prepare land use planning schemes and local plans for all important hill areas in the state
- To strengthen cooperation and management of hillslope development activities

5. Rationale

Overview

The terrain of Sabah is generally hilly and mountainous. The western part of Sabah is dominated by the 50 km wide, 1,200 to 1,800 m high Crocker Range, which stretches from the Sarawak border in the southwestern corner the Kinabalu massif at its northern end in Mount Kinabalu (4,093.37 m). Between the Crocker Range and the sea on the west coast is an extensive, heavily populated coastal plain with hills reaching down to the sea in many places.

East of the Crocker Range are several less prominent ranges. In the south central and part of east Sabah, the topography is dominated by a series of circular to sub-circular basins ranging from 16 to 50 km across and are defined by curved ridges, up to 1,800 m high, and valleys.

The Lokan Peneplain, 65 km wide and 180 to 300 m high occurs between Telupid and Sandakan. The southern part of the Sandakan Peninsula is hilly and terminates in a number of spectacular escarpments facing Sandakan harbour. The Semporna Peninsula is dominated by steep volcanic hills stretching parallel to the south coast. Inland from Tawau and Lahad Datu, the terrain is mountainous, with hills of more than 900 m high.

Five inter-montane plains are located along the west coast and interior.

Flat, non-swampy land available for development in Sabah is thus limited in extent compared to the hilly terrain, which constitutes most of Sabah. As pressures from population growth, economic activities and land use activities grow; it is inevitable that the hilly areas will be developed.

Construction on hillslopes is becoming increasingly evident in urban centres and hilly areas with tourism potential such as Kundasang and Gunung Emas in Penampang. The types of structures erected on such slopes range from residential houses to commercial condominiums/apartments and chalets; other structures include temples, water storage reservoirs and telecommunication/transmission towers.

It is anticipated that construction on hills will increase in the near future as pressures from population growth, economic activities and land use continue to increase.

Needs

Hills can have considerable development potential because of the views and attractive setting they provide. Historically, construction on hills had been conceived on short-term benefits with the rights of the individual prevailing. However, there are rising community expectations concerning the maintenance of visual values, natural habitat and biodiversity around urban and growth centres. Hillslopes are often prone to hazards such as soil erosion and landslide as is evident from past incidences, resulting in loss of lives and property. Development in these areas can compound such hazards and render them highly visible and costly to deal with. There is, therefore, a need to better manage and control construction activities on hills to reduce environmental impacts and to reduce loss of lives and property.

Future management decisions on hillsope development should also be based on the principle of sustainable development because of the unique values associated with hillslopes, which makes them a natural resource in their own right. In this context, sustainable development means that resources should be used in ways that do not jeopardise future use of the resource. Strategic planning, which recognises visual, conservation and recreational values, can provide clearer directions for future uses and management.

The Policy on hillslope development will help to ensure that such management decisions are implemented on a statewide basis.

Legislation

The need for controlling development on hillslopes has been recognised for many years. It is reflected in a number of legislative controls administered by various government agencies, for example:

- City/Municipal/Local District Council- ***Written Approval*** of the Development Plan under Section 23 of Land Ordinance 1930 and Land Rule 3(2)

- The Central Town and Country Planning Board - for ***approval to rezone*** the land on which construction will be carried out under Part I, Section 3 of the Town and Country Planning Ordinance 1950

- Environmental Conservation Department (ECD), Sabah – ***EIA Approval*** to carry out construction activities on hills with slopes having gradient of 20 degrees or more from the Director of ECD under the *Conservation of Environment Enactment 1996* and the *Conservation of Environment (Prescribed Activities) Order 1999*. Construction of buildings for commercial purposes or buildings exceeding 4 storeys high for residential purposes on hills with slopes having gradient of 20 degrees or more and construction of parks, resorts or other recreational facilities or major roads on hills with slopes having gradient of 20 degrees are Prescribed Activities, which require an EIA approval prior to project commencement.

Most of the approvals for hillslope development are issued on a piecemeal basis and little attention has been given to the cumulative effects, which a number of existing or future operations may have on the hill environment as a whole.

Environmental Impacts

The major adverse environmental impacts of hillslope development are:

(a) Slope erosion. Site clearing during earthworks result in the removal of vegetation and the creation of cleared surfaces, which become vulnerable to the erosive action of rain and surface runoff. Erosion on exposed slopes starts with rain splash leading to sheet, rill and gully erosion creating badlands if the site is left exposed for too long or abandoned altogether. Cuts and fills change the slope angle, often creating steeper slopes. The steeper the slope, the faster the surface runoff flows and the more force it will have to remove material downslope.

(b) Slope stability. Landforms are the product of the local balance between weathering, erosion and deposition and are continuously evolving. Natural slopes that have been stable for years may suddenly fail because of development activities on hills.

Changes to the terrain and hydrology through construction or earthworks may cause erosion, which create conditions conducive to mass movement if exposed surfaces are not protected within a short period. Exposed rocks will be weathered at a faster rate and the weathered material is susceptible to movement especially when saturated with water.

Over cutting the toe or over steepening of the slope gradient can induce instability. Slope cutting changes the slope topography and releases residual horizontal stresses and cause expansion of the slope. Joints or weak zones may be exposed along which sliding may occur. Placement of fill will also lead to increase in shear stresses acting on slopes and may lead to slope failure.

Drainage patterns of an existing terrain may be altered as a result of construction. The change in groundwater flow patterns may cause changes detrimental to the stability of the newly constructed slopes of the existing *in-situ* slopes that were stable prior to construction.

(c) Landscape impacts. The impact on landscape is the direct physical change to existing landscape features such as vegetation, topographical, geomorphological features and recreational facilities as well as buildings and structures. Visual impact is a change to the appearance of the landscape and the subsequent effect on the views of groups of people at particularly sensitive viewpoints. Visual impact can vary from overall improvement to degradation. Construction on hills will bring about a change in the landscape and will thus have a visual impact on landscape quality.

Other adverse environmental impacts of hillslope development include:

- Loss of ecological habitat
- Objectable noise levels from construction and transportation activities
- Vibration associated with piling, vehicular movement and blasting
- Dust and atmospheric pollutants from machinery and transport vehicles
- Wastewater and solid waste disposal.

6. Strategies and action plans

The Policy will be guided by the following strategies and action plans:

Strategy 1: Strengthen the present framework for control and management of construction on hillslopes (Development Plan level)

Action Plans:

- Enforce existing regulations and guidelines related to construction on hillslopes

- Strengthen the existing Town and Country Planning Ordinance by making it mandatory for land developers to follow guidelines for development in hilly areas when planning and submitting development plan proposals

- Strengthen the implementation of the Conservation of Environment (Prescribed Activities) Order and the accompanying guidelines for construction on hillslopes

- Promote co-ordination in the implementation of hill resources management between the different units managing, controlling and enforcing regulations on construction activities on hillslopes at district and state levels

- Conduct seminars and other relevant information dissemination activities for all relevant Government agencies personnel on regulations, requirements, procedures and criteria when processing and approving development plan proposals.

Strategy 2: Enhance awareness on the present regulations, requirements and procedures for development on hillslopes

Action Plans:

- Conduct seminars and road shows and use mass media, pamphlets, booklets etc. to inform land developers and the public on the regulations, requirements and procedures when planning and submitting development plan proposals for approval

- Create awareness among land developers that construction on hillslopes might have adverse downstream effects and that they must do their part in reducing the negative impacts downstream and on adjacent land users. Land developers and the public should be made aware of the need that construction on hillslopes should be implemented without destroying the unique characteristics of the hills. The policy of 'let the site influence the plan' shall be adopted.

Strategy 3: Improve the knowledge database

Action Plans:

- Conduct studies to (i) document existing construction on hillslopes and their impacts on the environment, including slope stability, erosion and landscape impacts, (ii) cut and fill activities, (iii) agricultural activities – both shifting and permanent (iv) identify catchment areas or hills with high ecological and landscape values where current or past development are/had taken place and take immediate action to conserve these areas, and (v) determine the development capacities of hills which are currently being developed; if the carrying capacities have been exceeded, take immediate action to restrict and control new constructions

- Promote international, national and local collaboration on issues related to hillslope development.

Strategy 4: Prepare land use planning schemes and local plans for all important hill areas (planning – zoning - level)

Action Plans:

- Review existing land use planning schemes and local plans covering critical hill areas and update accordingly to be in line with the Policy

- Prepare new land use planning schemes and local plans for all hill areas with priority given to hills, which have potential to be developed. Land use planning schemes and local plans for hill areas have to be evolved with an area basis perspective, shall take into consideration the water catchment basis and must be prepared using an integrated approach taking into account conservation issues vis-à-vis development needs, thereby ensuring compatibility between conservation of hill natural resources and construction activities on hillslopes. The planning of hill areas shall be carried out in an integrated and coordinated manner between all agencies involved

- Secure that the land use planning schemes and local plans prepared are fully implemented and enforced

- Take action to gazette hill areas which have been identified to be conserved

- Amend or enact new regulations to manage and control construction activities on hills where necessary, for example legislation that specifies type of construction allowed and low-impact facilities, forbids high-rise structures on hills, limits density, demarcates sensitive hill areas that requires Special EIA, makes developers put down a good behaviour bond to ensure that they take adequate care of the environment and make good any damage the development causes.

Strategy 5: Strengthen institutional implementation framework (implementation level)

Action Plans:

- Set up an inter-agency working group for hill development. This working group will be responsible for integrating all resource planning and setting state priorities

- Identify the potential for reallocation of resources and seek new and additional sources for the implementation of the strategies of the Policy on hillslope development.