Study on the Development of Hill Stations

Final Report Volume 2:
Penang Hill
Gunung Jerai
Bukit Larut

Report prepared by:
WWF Malaysia
49, Jalan SS23/15, 47301 Petaling Jaya

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EXECUTIVE SUMMARY
EXECUTIVE SUMMARY

INTRODUCTION
1. The study on "The Development of the Hill Stations in Peninsular Malaysia was commissioned by the Economic Planning Unit of the Prime Minister’s Department (EPU) in May 2001.

2. The main objective of the study is to formulate guidelines and recommendations for the sustainable development of six hill stations in Peninsular Malaysia namely Cameron Highlands (including Lojing), Fraser's Hill, Genting Highlands, Bukit Larut, Gunung Jerai and Penang Hill.

3. The reporting has been divided into two parts - Volume I presents the study on Cameron Highlands, Fraser's Hill and Genting Highlands. Volume II will focus on Bukit Larut, Gunung Jerai and Penang Hill.

4. Bukit Larut is located in the Bintang Range, while both Gunung Jerai and Penang Hill are isolated peaks in the Kedah-Singgora Range in the north.

PENANG HILL
Existing Situation
5. Penang Hill, covering an area of about 7,252 ha, occupies the central uplands of the island and includes the Penang Hill Town area (373 ha) with its funicular railway station.

6. The land use composition is forest (64%), agriculture (26%), scrubs and other vegetation (13%) and the rest being urban areas.

7. The Penang Hill Development Plan was prepared in 1993 and the Penang Hill Local Plan was prepared in 1998. Parts of Penang Hill are gazetted as ‘hill land’ under the Land Conservation Act, 1960.

8. Penang Hill is drained by the tributaries of two rivers, Sg. Pinang West and Sg Pinang East. Sg Air Terjun, Sg Air Puth and Sg Air Hitam are tributaries of Sg Pinang East which flows eastward through Georgetown, while the western slopes of Tiger Hill and Western Hill are drained by Sg Pinang West, which flows towards the Balik Pulau Plain.

9. 226.02 ha (48.6%) of Penang Hill have been designated as water catchment areas, namely the Ayer Hitam Water Catchment, Water Fall Water Catchment, Sg. Tat Water Catchment and Highland Water Catchment.

10. Forests form the main natural ecosystem in Penang Hill. The forests, consisting of a combination of primary and secondary forests as well as scrubs account for 77% of the total area of Penang Hill. These include areas
EXECUTIVE SUMMARY

that have been gazetted as forest reserve under the National Forestry Act 1984.

11. A total of 18 mammal, 133 bird, three reptile and five amphibian species have been recorded at Penang Hill. 11.2% of the Peninsula’s total plant species can be found in Penang Hill. Penang Hill does not support any “Endangered” or “Vulnerable” fauna. However, one ‘Lower Risk – near threatened’ mammal species i.e. the Long-tailed macaque and nine ‘Lower Risk – near threatened’ bird species are found on this hill.

12. The main economic activity is through accommodation channels at bungalows and rest houses. The commercial area covering 4.7 ha includes a hotel (Bellevue Penang Hill Hotel), historical convalescent bungalows for rent, a tea kiosk, souvenir shops and a hawker centre.

13. There are two principal tourism products in the Penang Hill, Heritage and Nature tourism.


15. Penang Hill gets its water supply exclusively from the Tiger Hill catchment, which is located to the eastern slopes. The quality of the water is generally good and the treatment process only involves chlorination and pH adjustments.

16. Waste collection services are limited to a 3.5 km radius from the Upper Station and the vicinity of the Upper Tunnel Station as well as the Lower Station.

17. There are two present accesses to Penang Hill, by funicular railway and by road. The funicular railway ferries about 1,000 passengers daily with this number doubling to 2000 passengers on peak periods. The road is only accessible using 4-wheel drives and only open to residents and government vehicles, as well as to pedestrians.

Strengths

18. Penang Hill has a Development Plan as well as a Local Plan as a guide to development which provides direction to future growth and identifies some of the environmental constraints to development.

19. The existing built environment of Penang Hill forms a rich architectural heritage with bungalows built from 1920’s, which is related to the “Historic City” tourism development theme of Georgetown.

20. The hill’s proximity to Georgetown relieves it of the pressure of having to develop a large accommodation base, and Georgetown also serves as a large tourist catchment.
EXECUTIVE SUMMARY

21. Penang Hill offers cool temperatures at the summit, the majestic view of Georgetown and the sea, the ecological attractions of the area including its role as a haven for avian life and a peaceful hill resort ambience.

22. The good tourism infrastructure and supporting services on Penang Island serve as an added advantage to Penang Hill where it also benefits from the active tourist promotion campaigns for Penang Island.

23. The funicular railway is the only one of its kind in Malaysia and therefore represents a unique tourism product to Penang Hill.

24. The existence of nature trails has made trekking a popular activity especially among the more adventurous of the Penang public as well as visitors and tourists.

Weaknesses

25. There are three major pockets of unplanned settlement areas located at the base of the hill. These are mostly private land and the pressure for development could lead to undesirable projects that could give a negative visual image to Penang Hill.

26. The abandoned farms, degradation of land and the encroachment of farming to the hill have resulted in environmental degradation and soil erosion.

27. The heritage resources are not fully developed, promoted or showcased. Some of the historic bungalows are not adequately utilised or well-maintained and public awareness of the heritage of Penang Hill is still limited and needs to be promoted.

28. The lack of tourist attractions and activities is a major reason behind the low visitor numbers in Penang Hill. At present, the only major attraction at Penang Hill is the panoramic view of Georgetown and a large portion of the island. There is inadequate dining facilities, which meant that visitors may not want to be on the hill during mealtimes. This greatly shortens the amount of time spent on the hill.

29. The funicular railway can only accommodate 65 passengers each way, at any one time. This causes problems during peak periods whereby visitors sometimes have to wait up to two hours to ride the funicular railway. Maintenance of the carriages is also poor and there is no back up generator to operate the railway in the case of a power outage.
EXECUTIVE SUMMARY

30. The facilities available at both the upper and the lower stations are inadequate. There is no proper waiting area for passengers at the upper stations, inadequate toilet facilities and absence of food stalls. During peak periods, the frequent arrivals of public buses, tour buses and cars result in congestion at the lower station due to inadequate parking.

31. There is a lack of detailed information on biodiversity for specific areas as well as information on the variation in the distribution of biodiversity between place to place for Penang Hill.

32. The solid waste in Penang Hill is not well managed. Areas outside the 3.5 km radius from the upper station are not provided with the collection service. Therefore the residents dispose the waste either by open burning or by dumping down the valleys. This causes air and water pollution and is an unpleasant sight to the visitors in Penang Hill.

Opportunities

33. The Penang Hill Development Plan has identified developable areas particularly at Telok Bahang, Sungai Pinang West, Sungai Rusa and Sg. Kelian, while the Local Plan allowed development at Strawberry Hill Crag Hotel, Lomond, Richmond, Ban Hin Lee and Edgecumbe, Government Hills, South View, Rajawali areas, Bel Retiro, Convalescent and Fern Hill areas. The Local Plan has also identified the types of development permissible and the development control guidelines to adhere to.

34. There is potential for more commercial activities to be developed. The present commercial area is not well presented and the products offered are not sufficient and varied.

35. The existing nature trails in Penang Hill offer great potential as an attractive tourism product and serves well to complement existing tourism activities in the beach and city on Penang Island.

36. There are good prospects for expanding the usage of the nature trails to facilitate nature education and interpretation. This could include the usage of biodiversity information for enhancing visitors’ experience to Penang Hill besides increasing their awareness of the importance of this hill station.

Threats

37. Hill farming on privately owned land has been a threat to the physical environment of the resort. Forest land cleared for farming activities has been the major contributor to soil erosion.
EXECUTIVE SUMMARY

38. Development in the form of residential buildings and agriculture has encroached into the forest reserves and water catchment in Penang Hill. Not only has this resulted in the degradation of the forests, loss of biodiversity and affected the ecological balance, but also clearly reflects the violation of laws governing these areas, which prohibit such activities.

39. Ultimately, a tourist destination such as Penang Hill is in competition with other destinations including other hill resorts and other attractions within Penang itself and in the region, such as Bukit Merah.

40. Numerous species of plants on Penang Hill are known to possess high ornamental values, rendering them vulnerable to illegal collectors. If left unchecked, continuous collection will be detrimental to the overall plant diversity of Penang Hill in the long term as this may lead to the extinction of certain species.

41. The cable car service proposed in the Local Plan has to be viewed upon as a weakness despite the fact that it can improve the efficiency of transportation. Penang Hill does not focus on mass tourism, therefore there is no real need for a mode of transport to ferry large numbers of people. The cable car is also not compatible with the recommended tourism theme (Section 2.5) for Penang Hill; i.e. nature and heritage tourism.

42. The Local Plan also proposed the utilisation of a road train at the upper station as a means to improve the efficiency of visitor movement on the hill. This proposal is not favoured and also considered a weakness as it involves road widening. The area on the hilltop is not very large, and with the cool atmosphere, visitors should be encouraged to walk.

Carrying Capacity

43. The carrying capacity for Penang Hill was determined by taking into consideration the biodiversity conservation as well as the proposed tourist facilities, and infrastructure improvements that are detailed in the Action Plans, and is calculated to be about 4000 visitors per day. It would be noted that this is lower than the carrying capacity indicated in the Local Plan where a cable car access was provided for. Moreover, the intensive land use zone used here is smaller than that used in Local Plan which included areas of steep slopes which could not be used by visitors.
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Action Plans

44. This study recommends 26 actions plans to enhance tourism, improve the environmental quality and to promote sustainable development. The main recommendations relate to:

(a) development controls through legislations
(b) better packaging of tourism products
(c) improvements in the present infrastructure
(d) biodiversity conservation

The action plans are presented after the Executive Summary.

GUNUNG JERAI

Existing Situation

45. The study area for Gunung Jerai is extended to cover the archeological sites in the Bujang Valley, the Jerai Gate and the Tangga Kenari area in Yan which includes the waterfall areas.

46. The main land use is forest, namely the Gunung Jerai Forest Reserve, with an area of 8560 hectares. The other major land use feature is the Peranginan Gunung Jerai Resort which has 13 chalets, a restaurant with facilities for seminars, a multipurpose hall, a mosque, children’s playground, and picnic and camping sites.

47. The single peak forming Gunung Jerai has a maximum elevation of 1217m with steep vertical drops on the western, south-western and north-western sides. The vertical drops here give rise to several spectacular waterfalls that are visible at some distance.

48. The rivers found here are mostly tributaries of Sg. Merbok or small streams that flow directly into the sea. The Gunung Jerai Forest Reserve is drained by Sg. Bujang and serves as a small but important water catchment for the district of Yan and Sg. Petani areas.

49. 12.9% of the Peninsula's total highland plant species can be found in Gunung Jerai. This high percentage reflects a significant contribution and importance of Gunung Jerai towards highland plant species diversity in Malaysia.

50. To date, Gunung Jerai is known to support some 38 mammal, 141 bird and 5 amphibian species. Amongst the various mammals occurring at Gunung Jerai, four mammal species are categorized as 'Vulnerable' and three as 'Lower Risk – near threatened', while 17 species of avian fauna are categorised as “Lower Risk – near threatened".
EXECUTIVE SUMMARY

51. There are two principal tourism products in Gunung Jerai, Nature and Cultural-Heritage tourism. The Gunung Jerai Forest Reserve supports high levels of biological diversity and species endemism, and its unique selection of montane plants makes it of special interest to nature enthusiasts and botanists. Gunung Jerai and Bujang Valley are also distinctive with its array of archaeological resources of a type not found in other hill stations.

52. Visitor arrivals to this hill station are estimated to have totalled 13,200 in 1999 and to have increased to 15,700 in the year 2000. The vast majority of visitors are domestic tourists.

53. Raw water is collected and stored in a reservoir in the summit for supply to the consumers in Gunung Jerai. The raw water is clean and pristine, requiring only minimal treatment of chlorine before being supplied to consumers.

54. Although Gunung Jerai is under the jurisdiction of Majlis Daerah Yan (MDY), MDY does not provide any waste collection services here. Instead, the management of solid waste is handled by the resort itself. Solid waste generation is very low here and a lorry ferries one tonne of waste every three days to the dumpsite in the lowlands.

55. The access to the summit is 13 km long, narrow, and fairly steep, but accessible to normal vehicles. At the summit, the road for public vehicles terminates at the resort, while a narrower and steeper route continues to the peak where the telecommunication station is sited. The parking facilities at the summit are sufficient at present.

Strengths

56. The cool climate, the spectacular views of the coastline and the rich forest environment are the main attractions of the resort.

57. Gunung Jerai and the Bujang Valley combined have a natural environment with forests, unique flora and fauna, waterfalls and these are easily accessible and interpreted with the forestry museum on site, as well as evidence of Hindu-Buddhist buildings and artefacts dating back to the 5th Century.

58. Compared to other highlands and mountains in Malaysia, the biodiversity of Gunung Jerai in terms of the habitat and both the flora and fauna composition is unique owing to the influences of geology, altitude and rainfall. These features offer scientific potential and are themselves important components of Kedah’s as well as the country’s rich natural heritage.
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Weaknesses

59. The absence of a statutory land use plan with guidelines and controls is a major drawback for the future development of the hill station.

60. The tourism infrastructure is lacking in many aspects. There is no tourist centre or even an information kiosk that disseminates information on the various attractions that are found along the way up, the summit as well as the waterfall areas.

61. Existing biodiversity information of Gunung Jerai is mostly from old literature dating back as early as the 1960s. Information relating to the flora and fauna species occurring on Gunung Jerai is not comprehensive. Information beyond 1984 is not available.

Opportunities

62. This hill station has potential to be packaged with Sungai Petani and the Bujang Valley whereby visitors could visit the Archaeological Museum at Merbok archaeological sites and combine this with a visit to Gunung Jerai. Sungai Petani is able to provide a large accommodation base for tourists in the area.

63. In addition to biodiversity, the natural history of Gunung Jerai and its physical setting are natural resources that can best be utilised for recreational and educational purposes. These resources provide great potential for developing a variety of hiking and nature trails, nature photography and nature interpretation programmes.

Threats

64. Any development proposals will have significant impacts on the forest reserves particularly the water catchment areas. Gunung Jerai is a water catchment area for the Yan / Gurun and therefore any development proposed for the resort must take into consideration the sensitivity of the environment.

65. Further expansion of the existing orchard farms, mainly durian orchards, at the foothills will encroach into the forest reserves. At the moment these orchards do not pose any threat but any demand for additional land could have adverse impact on the land use of the environment.
EXECUTIVE SUMMARY

66. Gunung Jerai faces competition from established hill resorts such as Cameron Highlands and Penang Hill and from areas with potential such as the Kinta Highlands and Lojing. Unless distinctive and unique products are developed and promoted there is a danger of split market shares if Gunung Jerai offers the same tourism products as other hill stations.

67. The introduction of non-native plant species, such as ornamental exotic plants being planted around the resort, could have detrimental effects on the existing biodiversity in the area. Exotic species are capable of invading and eventually replacing the native species, which could threaten the integrity of the natural biota in the long term.

68. The carrying capacity for Gunung Jerai was determined by taking into consideration the biodiversity conservation as well as the proposed tourist facilities, and infrastructure improvements that are detailed in the Action Plans, and is calculated to be about 120 visitors per day. As a low impact nature tourism resort, the current capacity of nature trails should be major determinant of current capacity. The present accommodation base capacity supports this although we would anticipate many visitors would in fact be day visitors rather than tourists staying over night as at present. There is also a sizeable stock of accommodation in both Sungai Petani and Alor Setar.

69. This study recommends 15 actions plans to enhance tourism, improve the environmental quality and to promote sustainable development. The main recommendations relate to:

   (e) development controls through legislations
   (f) better packaging of tourism products
   (g) improvements in the present infrastructure
   (h) biodiversity conservation

The action plans are presented after the Executive Summary.

BUKIT LARUT

Existing Situation

70. The major land use in Bukit Larut is forest, namely the Bukit Larut Forest Reserve which totals about 6878 hectares, of which 2247 hectares comprise of virgin jungle reserve. The Bukit Larut Forest Reserve is divided into 26 compartments of which six are virgin jungles reserve.
EXECUTIVE SUMMARY

71. Bukit Larut lies within the Bintang Range in the northwestern section of Peninsular Malaysia. There are three peaks here, Gunung Hijau being the highest at 1448m, followed by Gunung Biong at 1218m to the north and Wray’s Hill (1020m) to the south.

72. Bukit Larut is an important water catchment area for the Larut, Matang & Selama District. There are three major water catchment areas here, namely Sg Jana, Sg Ranting, and Sg Air Terjun.

73. 20.4% of Peninsular Malaysia’s total highland plant species can be found in Bukit Larut. This is a total of 621 highland plant species. The figure provides an indication of the substantial contribution and importance of a relatively small area like Bukit Larut towards highland plant species diversity in Malaysia. The number of endemic species for Bukit Larut is 89 or 14.3% of the total highland plant species recorded in Bukit Larut.

74. The forests of Bukit Larut support some 27 mammal, 227 bird, 9 reptile and 20 amphibian species, including one globally ‘Endangered’ mammal species, the tiger. In addition, it also supports four ‘Vulnerable’ mammal species and four ‘Lower Risk – near threatened’ mammal species.

75. The tourism sector is the main economic generator in Bukit Larut with the main tourism product in this hill station being nature tourism: its undisturbed natural environment, flora and fauna and its cool climate and serene surroundings constitute its principal attractions.

76. Visitor arrivals to this hill station have increased marginally from 23,428 in 1999 to 23,549 in 2000.

77. Bukit Larut obtains its water supply from its own source that is stored in a small reservoir uphill. The water is collected is pristine and requires minimal treatment before being supplied to the bungalows and other buildings here. The existing water supply is adequate for the present demand.

78. The solid waste management in Bukit Larut is the responsibility of the Larut, Matang & Selama District and Land Office. The waste generated up in the hill (mainly from the rest house and the bungalows) is collected and brought down using land rovers.

79. The only access to the top is a steep and narrow road, only passable by a single vehicle going in one direction. This route is only accessible with the use of 4-wheel drives or on foot. The Larut, Matang & Selama District and Land Office operates a fleet of Land Rovers that ferries passengers up and down the hill station.
EXECUTIVE SUMMARY

Strengths

80. The main strength of this hill station is its cool climate which is a significant attraction for residents of nearby Taiping and the state capital of Ipoh, as well as other domestic visitors and a small number of foreign visitors.

81. Bukit Larut serves as a nature retreat to the residents of settlements such as Taiping and Ipoh and it also embodies historic, architectural and aesthetic values. The hill station is also serene and scenic and abounds with groves of evergreen trees and colorful flora and fauna.

82. Bukit Larut possesses one of the richest flora for any hill stations within the country with a significant proportion of it consisting of rare and endemic species. Bukit Larut contains 20% of the total number of Peninsular Malaysia’s fern species and 17% of Malaysian montane orchids.

Weaknesses

83. The absence of a statutory land use plan for the Bukit Larut may attract incompatible development proposals that may be detrimental to the hill station and the surrounding heritage sites, particularly the lake gardens. The lack of development controls and guidelines may threaten the natural beauty of the resort through incompatible development proposals.

84. At present the major weakness is that this hill resort is not widely promoted and is relatively unknown especially in foreign markets. It has not been widely promoted even within Malaysia.

85. The tourism infrastructure is poor. The bungalows are in need of upgrading with e.g. better interior decoration, more self-catering facilities and improved heating. Accessibility needs to be improved and there is a clear need for better interpretative and informative signage as well as possible safety problems that could arise from the unstable nature of the slopes.

86. There is limited recent information on biodiversity on Bukit Larut. Although information on the biodiversity of Bukit Larut is available, most of this are derived from old literature and do not reflect the comprehensive range of biodiversity found here.

87. The existing Educational Forest located at the foothill of Bukit Larut and is run by the District Forestry Office, although is a good initiative, lacks publicity, and hence unknown to many visitors.

88. The only known forest trail in Bukit Larut, which leads to the peak of Gunung Hijau has been closed to public. The trail is unmarked and overgrown. These coupled with the fact that the trail is narrow and dangerous in places, pose a safety hazard to users.
EXECUTIVE SUMMARY

Opportunities

89. Whilst the potential for Bukit Larut by itself to become a major tourist destination is limited, when packaged with Ipoh, Taiping and Kuala Kangsar as part of a sub-regional tourism circuit, considerable benefits could arise. Within such a package this hill station could provide a unique recreation attraction complementing the urban-visitor and cultural-heritage attractions of Ipoh, Taiping and Kuala Kangsar.

90. The undisturbed natural surroundings, which provide a safe haven for flora and fauna, characterizes the image of Bukit Larut. Great potential exists for promoting the biodiversity theme to enhance the image of Bukit Larut as a special tourist destination.

91. There is potential for nature education and interpretation in Bukit Larut. Biodiversity information could be used to enhance visitors’ experience to Bukit Larut as well as their awareness of the importance of this hill station. Information such as the flora and fauna of special interest that are found in Bukit Larut are ideal especially as interpretative materials.

Threats

92. The existing Forest Reserves and the water catchment areas may come under pressure from agriculture use as evident form the small patches found particularly at Kuala Kangsar side.

93. Bukit Larut is only one of a number of hill stations in Malaysia and is considerably smaller and less well known than such established resorts as Genting Highlands, Cameron Highlands, Penang Hill and Fraser's Hill. New hill resorts such as Bukit Tinggi Hill resort in Pahang, given its proximity to the densely populated Klang Valley, is becoming another competitive destination.

94. The possibility of large-scale tourism development could pose a threat to the forest ecosystem in this hill station. Bukit Larut has previously been targeted for development to enhance its image as a tourist destination. In the past, there were several plans for large-scale development but these were shelved due to public protest.

95. The carrying capacity for Bukit Larut was determined by taking into consideration the biodiversity conservation as well as the proposed tourist facilities, and infrastructure improvements that are detailed the Action Plans, and is calculated to be about 120 visitors per day. As a low impact hill resort with nature tourism and local day use recreation as a main tourist theme, the carrying capacity of the nature trails should be a major determinant of current capacity. It is anticipated that the accommodation base would not be a major constraint since most visitors would be expected to be local day visitors rather than tourists staying overnight. There is also a diverse and sizeable stock of accommodation available in Taiping.
EXECUTIVE SUMMARY

96. This study recommends 14 actions plans to enhance tourism, improve the environmental quality and to promote sustainable development. The main recommendations relate to:

(a) development controls through legislations
(b) better packaging of tourism products
(c) improvements in the present infrastructure
(d) biodiversity conservation

LEGAL & INSTITUTIONAL ISSUES

97. Penang Hill, Gunung Jerai and Bukit Larut have associated rich heritage in their surrounding areas. For example, Penang Hill and the historical Georgetown; Gunung Jerai and the historical and cultural Bujang Valley; and Bukit Larut and the historical town of Taiping. As such, the Heritage Conservation Bill when tabled should consider these hill stations as part of the rich historical heritage.

98. Although hill stations such as Gunung Jerai and Bukit Larut are gazetted as Permanent Forest Reserves under Section 7 of the NFA, this does not fully guarantee that the hill stations will not be converted or excised under Section 11. This section gives the State Authority the prerogative to decide whether the purposes for which these forest reserves were classified are no longer required and therefore be converted for other uses. The State Authority is directed to act in favour of the option that would have a higher ‘economic value’. Therefore it is important that as a first step that the forests are classified into its functional categories under section 10 of the NFA.

99. The Tourism Vehicles Licensing Act (TVLA) 1999 provides for the licensing and regulation of tourism vehicles and for related matters. Currently transportation up Gunung Jerai is either by personal vehicles or hiring individual van operators. It was noted that the prices charged by the individual van operators are sometimes exorbitant. Therefore, there is a need to regulate the operations of the van service to prevent touting as well as to ensure a more efficient service where safety considerations are closely adhered.

100. On Penang Hill, if the area of illegal hill farming falls within the gazetted Penang Hill Local Plan, the Town and Country Planning Act (TCPA) 1976 makes it an offence for any person to use any land or building otherwise than in conformity with the local plan (Section 18(1)). A maximum penalty of RM 100,000 could be imposed for offences relating to unauthorized development (Section 26).
101. At Gunung Jerai, the demand on land for agriculture (especially for fruit orchards) may lead to possible encroachment on the Forest Reserve. To prevent such encroachment, the boundary of the forest reserve should be demarcated clearly with information boards on penalties imposed on encroachment, etc. displayed at strategic places.

102. In order for Penang Hill to be sustainably maintained, there is a need to have a lead agency co-ordinating all other agencies in the area concerned as well as be the focal point for relevant stakeholders to share their interests and concerns on the development and management of Penang Hill.
LIST OF ACTION PLANS
LIST OF ACTION PLANS

ACTION PLANS FOR PENANG HILL

Action Plan : PH-AP1
Stakeholder Action : State Government

Penang Hill must focus on Nature and Heritage tourism. Other types of new tourism development such as theme parks, golf courses, etc should not be permitted.

Action Plan : PH-AP2
Stakeholder Action : Majlis Perbandaran Pulau Pinang, Department of Town Planning & Country

The proposals and guidelines for development as stated in the Penang Hill Local Plan need to be revised and strengthened to be more compatible with the existing physical environment. The main issues amongst others include the development proposals at the foothills that allow for Flats with heights between 2 - 5 storeys. A uniform height restriction of 2 storeys should be applied for the whole area to protect the visual image and impact of the resort. There is a need to review the density requirements for developments in the Intensive Use Zone to ensure existing buildings with its rich architectural and designs are not displaced by the newer buildings.

Action Plan : PH-AP3
Stakeholder Action : Pejabat Tanah & Galian Pulau Pinang, Department of Agriculture

Exercise stringent controls to prevent land degradation and to enforce systematic agricultural practices. There is an existing committee that monitors the development of Penang Hill, chaired by the Director of the Pejabat Tanah & Galian Pulau Pinang, in which the DOA is a member. This committee can address the problem caused by the degradation of land from abandoned farms and encroachment of hill farming. These authorities provide the necessary manpower to conduct constant checks and supervision on farming activities on Penang Hill to ensure that all necessary guidelines have adhered to.

This committee should also implement and enforce more systematic agriculture practices and be responsible for environmental and land usage checks, and usage of pesticides and fertilisers. Activities that involve earthworks such as cutting up of the slope and for terracing for planting flowers and vegetables should be prohibited.
LIST OF ACTION PLANS

**Action Plan** : PH-AP4  
**Stakeholder Action** : Majlis Perbandaran Pulau Pinang

**MPPP should redevelop the hawker centre.** It is recommended that the redevelopment of the Hawker Centre accommodate food stalls or restaurants, handicraft and souvenir centres, information kiosk, etc. Products such as nutmegs, paintings, batik, kite, key chains, stickers, brassware depicting Penang Hill historical heritage, etc. have the potential to be sold-out attractions to the visitors. It is also proposed that the redevelopment of the Hawker Centre to consider and adopt the cultural village concept.

**Action Plan** : PH-AP5  
**Stakeholder Action** : Majlis Perbandaran Pulau Pinang

**The Tea Kiosk at the Strawberry Hill should be reopened** and with its operation based on the recommended guidelines in the Local Plan. The Local Plan has proposed that the Tea Kiosk be developed to provide mid range type of restaurants and tourist facilities. The forecourt area of the Tea Kiosk shall be developed into restaurant terraces.

**Action Plan** : PH-AP6  
**Stakeholder Action** : Majlis Perbandaran Pulau Pinang

**MPPP should establish souvenir and food stalls at the lower station area,** besides establishing public amenities such as resting/waiting areas, public facilities and conveniences and the proposed transportation terminal. MPPP shall ensure that the commercial centre be developed in accordance with the historical value of Penang Hill railway character and present surroundings.

**Action Plan** : PH-AP7  
**Stakeholder Action** : Department of Agriculture

**DOA should encourage the farmers to switch to cultivating perennial crops,** such as durian, mangoesteene, etc. rather than maintaining the present short-term crops.

**Action Plan** : PH-AP8  
**Stakeholder Action** : Majlis Perbandaran Pulau Pinang

**MPPP shall implement a Hill Heritage Park Development Programme.** This could encompass:

- **Designation of heritage buildings** into two categories, viz., I + II. For category I, no demolition, alteration or extension of the building, other than development or works necessary for restoring it to, and maintaining it in, a proper state of repair be permitted. For Category II, the existing external appearance of buildings shall be preserved and no alteration to any part of the façade shall be permitted, other than works necessary for restoring it to, and maintaining it in, a proper state of repair. The recommended listing for heritage buildings is shown in Appendix 2 of the Local Plan.
LIST OF ACTION PLANS

- The development of **interpretative plaques** for the bungalows which would briefly depict the history and heritage of the buildings and the canon. Whilst many of the bungalows are currently under private ownership, it is suggested that the agreement of the owners be sought to this scheme.

- The delineation of a **heritage trail** and production of brochures, leaflets and other necessary educational material for visitors.

- As recommended in the Penang Hill Local Plan, the open ground between Bel Retiro and Convalescence Area should be developed into a **heritage hill botanic garden** which, *inter-alia*, could emphasise the long history at Spice cultivation in Penang, and the splendour of the flora in Penang Hill. Such hill botanic garden does exist in other countries, for example, the Maymo Botanic Garden, Myanmar and the Nuwara Eliya, Sri Lanka. The proposed hill botanic garden would not only be a unique attraction but could serve both tourism and botanical research objectives and be an attractive venue for passive recreation.

- The MPPP shall also consider the refurbishment of the **Gate House**, a Category I heritage building, and development of an **art gallery**, showcasing the works of local artists and an **audio-visual interpretative display** focusing on the rich cultural heritage of Penang Hill.

**Action Plan** : PH-AP9

**Stakeholder Action** : Majlis Perbandaran Pulau Pinang, NGOs

MPPP, with assistance of NGO’s, carry out a Nature Trails and By-Paths Upgrading programme. Components could include:

- Regular maintenance, clearance of weeds, provision of rest areas with facilities such as benches, shelters, plaques, rubbish disposal bins, and marking of scenic points;

- Organisation of guided, structured and graded walks, guided bird walks, night walks, and educational tours. These walks should be so planned as to encompass that significance viewpoints, water features, interesting scenic areas, unique flora, historic sites and bungalows.

- Provision for rental of mountain bikes, field equipment such as binoculars, telescopes and waterproofs;

- Provision of leaflets describing the trails and indicating, e.g., which tourism activities are permitted and those such as hunting and picking flowers and plants which are not permitted.

- MPPP to secure private-sector sponsorship for the nature trails/by paths upgrading programme.
**LIST OF ACTION PLANS**

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<th>Action Plan</th>
<th>PH-AP10</th>
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<td>Stakeholder Action</td>
<td>Penang Heritage Trust</td>
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**Penang Heritage Trust** to implement the **Creation of Heritage Trees Trail** in Penang Hill, similar to the one approved by the Penang State Tourism Product Committee for Georgetown.

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<th>Action Plan</th>
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<td>Stakeholder Action</td>
<td>Majlis Perbandaran Pulau Pinang, Ministry of Culture, Art &amp; Tourism, Hotel Industry</td>
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**Develop small boutique hotels at the Richmond, Lomonds, Government Hill, Rajawali, South View and Ban Hin Lee areas.** This will serve to increase the present accommodation base that is archetypal to Penang Hill. The restaurants in these hotels will provide an added variety to dining/food scene. Boutique Hotels are preferred as they are “themed” and expected to be distinctive of high standards of personal service and high tariffs. The Carcosa Seri Negara serves as a fine example of such a hotel.

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<th>Action Plan</th>
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<td>Stakeholder Action</td>
<td>Majlis Perbandaran Pulau Pinang, Hotel Industry</td>
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**Develop a mid-price range restaurant and restaurant terraces** at Strawberry Hill, where there are magnificent panoramic views. The area should be attractively landscaped and a mix of indigenous and temperate plants to enhance the aesthetic appeal.

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<th>Action Plan</th>
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<td>Stakeholder Action</td>
<td>Penang Development Corporation, Malaysian Tourism Promotion Board, Penang Tourist Association</td>
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**PDC, with assistance of MTPB, the Penang Tourist Association and the private sector, shall, undertake well-funded joint advertising and promotion campaigns** marketing Penang Hill as part of Georgetown – Historic City Concept. PDC, with assistance from MTPB, shall also produce high quality promotional material including pamphlets, brochures, dos and don’ts guides, pocket checklists, information guides etc.

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<th>Action Plan</th>
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<tr>
<td>Stakeholder Action</td>
<td>Department of Agriculture, Department of Forestry, Pejabat Tanah &amp; Galian Pulau Pinang</td>
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**DOA, Land Office and Forestry Department under the committee mentioned in PH-AP3, must stop farming in all areas that has encroached into the forest reserve** and will take measures to rehabilitate these areas back into their natural state. A total of 277.87 ha of Penang Hill were identified in the Penang Hill Local Plan as degraded areas requiring rehabilitation. This includes areas of forest that have been cleared for agriculture activities that were illegally carried out but later abandoned because of non-feasibility of the physical conditions (such as slope too steep to sustain farming).
There are various benefits that could be derived through the rehabilitation of the degraded forests. From the biodiversity and nature conservation angle, the benefits relates to re-establishment of species richness by allowing biodiversity to regenerate and thrive once again. Additionally, there are other associated benefits, which include the enhancement of the aesthetic value of the landscape of Penang Hill while ensuring that ecological services of the forests are restored.

**Action Plan :** PH-AP15  
**Stakeholder Action :** Majlis Perbandaran Pulau Pinang

**Establish an Interpretation / Information Centre.** The MPPP should consider the establishment of an Interpretation / Information Centre to be constructed in a strategic location on Penang Hill. The Centre should serve the role of providing visitors with information including on the biodiversity of Penang Hill. It should also provide interpretative materials such as trail guides for the nature trails, maps, booklets and brochures ideally in both English and Bahasa Malaysia to cater for both local and foreign visitors. Suitable activities to be managed by the Centre such as audio-visual presentations, educational programmes, nature skills development courses and species identification courses could also be considered. Additionally, the possibility of equipping the Centre with research facilities for visiting scientists and university groups should also be explored.

**Action Plan :** PH-AP16  
**Stakeholder Action :** Department Of Forestry, Department of Wildlife and Nature Parks, Department of Agriculture

**Control of illegal collection of wild flora and fauna.** Measures to control illegal collection of wild flora especially species which are rare and have limited population need to be implemented urgently. The implementation of this effort could be lead by the Land Office with cooperation from Forestry Department, DWNP and Agriculture Department. Other agencies such as academic and research institutions, and conservation-based NGOs should also be encouraged to support this effort. Possible measures may include the following:

(a) Improving surveillance on activity of illegal collection of flora and fauna from the wild;
(b) Enforcing a ban on collecting wild flora and fauna;
(c) Incorporating information in multi-languages on the prohibition in promotional brochures and on signboards;
(d) Introducing a permit system to allow collection for scientific and research purposes only with conditions such as requiring the listings of all specimens collected and their quantity, usage of sustainable / proper collection methods and submission of scientific / research publications produced;
(e) Undertake monitoring of the trade in wild flora and fauna at the local level.
LIST OF ACTION PLANS

**Action Plan** : PH-AP17
**Stakeholder Action** : Penang Hill Railway Unit, State Government

**Improve the funicular railway service.** Since the funicular railway is part of the heritage of Penang Hill, its services will be maintained although other new transport modes may be introduced. However, the capacity of the funicular railway has to be improved through the addition of extra carriages. The addition of a second carriage will increase the peak capacity to 5850 passengers per day. The quality of the funicular railway ride must also be improved both through enhanced passenger comfort and better viewing opportunities.

The Penang Hill Railway Unit and the State Government shall undertake the upgrading programme. Components of such a programme could incorporate:

- Replacement of existing motors and other haulage equipment;
- Upgrading of the station. This could include refurbished waiting areas, toilets, restaurant, information kiosk and a souvenir shop;
- Introduction of new coaches with improved ventilation and communication system and a higher carrying capacity;
- The installation of appropriate and suitable lighting – for night rides – should be considered.
- Replacement of existing goods wagons with new wagons which would have the capacity to carry small containers;
- Installation of an emergency generator to power the cable car.

The Penang Hill Local Plan has also outlined proposals to improve the efficiency of the funicular railway.

**Action Plan** : PH-AP18
**Stakeholder Action** : Penang Hill Railway Unit, State Government

**Provide additional public access via the road.** The cable car proposal is deemed unnecessary, as the volume of visitors will not justify such a service. Instead, a fleet of four-wheel drive vehicles can be utilised to transport visitors up the hill by road on weekends, public and school holidays. The Penang Hill Railway Unit can be expanded to operate these vehicles, and the unit can be renamed Penang Hill Transport Unit (Unit Pengangkutan Bukit Bendera). No widening of the road is proposed to safeguard the fragile hill slopes.

**Action Plan** : PH-AP19
**Stakeholder Action** : Majlis Perbandaran Pulau Pinang

**Penang Hill should be maintained as a traffic free zone** area to conserve the fragile environment. Proposals to widen the existing road to allow more cars should not be allowed. Instead the existing pedestrian walkways should be upgraded to encourage visitors to walk.
LIST OF ACTION PLANS

**Action Plan : PH-AP20**  
**Stakeholder Action : Majlis Perbandaran Pulau Pinang**

**Improve solid waste management.** MPPP should provide collection, street cleaning and public hygiene service to the whole of the Penang Hill area. The most critical issue is the waste collection service which should be extended to every household and buildings on the hill. In areas where door-to-door collection is not feasible due to difficult in access, communal bins could be placed at a strategic locations and collection must be carried out every other day.

In view of the additional solid waste from both generation and increased collection services, the waste will no longer be transported down via the funicular railway. It will instead be taken down the hill using one–tonne lorries and disposed off at the proper sites designated by the MPPP. The lorries can be modified to enable them to ascend the hill. The additional volume of waste from the hill should not pose a problem at the disposal site as it only represents a very small percentage of the total waste generation for the entire island.

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**Action Plan : PH-AP21**  
**Stakeholder Action : Pejabat Tanah & Galian Pulau Pinang, Majlis Perbandaran Pulau Pinang**

**Areas within the water catchment areas should not be developed.** There should be no development within water catchment areas as the supply of portable water is of crucial importance. There are some bungalows which is already located within the catchment areas and the continual use of this property are allowed but no further development should take place.

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**Action Plan : PH-AP22**  
**Stakeholder Action : Majlis Perbandaran Pulau Pinang**

**MPPP must make water conservation measures mandatory** for all new facilities in Penang Hill. Half flush toilets and auto-shut off taps must be installed as a condition of building plan approval. All existing hotels shall be given a grace period of three years to implement these measures. Water demand management will help alleviate the water stress problem.

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**Action Plan : PH-AP23**  
**Stakeholder Action : Majlis Perbandaran Pulau Pinang**

**MPPP should ensure that all future hotels implement environmental management systems** (EMS) (ISO14001 or equivalent) as a condition of business licence. MPPP could give monetary incentives in the form of reduction in the annual quit rent and/or assessments according to hotels' level of implementation of these measures. The present Bellevue Hotel shall be given a grace period of three years to implement an EMS.
LIST OF ACTION PLANS

Action Plan : PH-AP24  
Stakeholder Action : Majlis Perbandaran Pulau Pinang, Department of Sewerage Services

**Improve sewerage system.** The Penang Hill Local Plan has outlined proposals for the sewage management. Areas with electricity supply can use small extended aeration treatment system or mechanised sewage treatment. The effluent shall comply with standard A of the Environmental Quality (Sewage and Industrial Effluent) Regulations, 1979. For bungalows, septic tanks with upward anaerobic filters are suggested whereby the sludge be disposed into proper areas.

Action Plan : PH-AP25  
Stakeholder Action : Majlis Perbandaran Pulau Pinang

**Rehabilitate the access road to the summit.** Turfing of all bare slopes along the access road must be done to reduce its susceptibility to landslides. The road must be resurfaced and repaired.

Action Plan : PH-AP26  
Stakeholder Action : Cabinet Committee, UPEN Pulau Pinang

The Cabinet Committee on Highlands and Islands with the assistance of UPEN Pulau Pinang should **continuously monitor all development activities** at Penang Hill.
LIST OF ACTION PLANS

ACTION PLANS FOR
GUNUNG JERAI

Action Plan : GJ-AP1
Stakeholder Action : State Government

Gunung Jerai must focus only on Cultural Heritage and Nature tourism, given the unique nature of this hill station. Other types of new tourism development such as theme parks should not be permitted. The State Government to issue directive in this regard.

Action Plan : GJ-AP2
Stakeholder Action : Department of Town and Country Planning

Prepare a Special Area Plan for Gunung Jerai. The Structure Plans for Kuala Muda and Yan identifies Gunung Jerai Forest Reserve for its research and education importance as well as a water catchment area. There is an urgent need to provide detail land use zonings and development components that are congruent to the existing surrounding development. In this respect it is recommended that a Special Area Plan to be prepared for Gunung Jerai to guide the comprehensive planning of the area as per Section 16B of the Town and Country Planning Act.

Action Plan : GJ-AP3
Stakeholder Action : Malaysian Tourist Promotion Board, UPEN Kedah

MTPB should set up a Tourist Centre at the Jerai Gate, offering to tie up hiking, waterfalls, Bujang Valley and the hill itself as a package. The gate area is an ideal location for the centre as being at the foothill, it does not disrupt the fragile hill environment. The centre shall be complete with a tourist reception centre (not just an info kiosk), parking places for cars and tour coaches, proper food and souvenir stalls.

Action Plan : GJ-AP4
Stakeholder Action : Department of Forestry

The Forestry Department should undertake a nature tourism-upgrading programme. Components of this programme might include the development of hiking and nature trails. The latter could incorporate orchid trails, i.e., self-guiding trails in areas rich in orchids, bird-watching trails, habitat trails, pitcher plant trails and scenic trails. Explanatory signboards would need to be provided for visitors.

Action Plan : GJ-AP5
Stakeholder Action : UPEN Kedah, Malaysian Tourist Promotion Board

UPEN Kedah, with assistance provided by MTPB, should provide high quality promotional materials including pamphlets, brochures, pocket checklists, information guides for this hill station and the Bujang Valley and this material should be widely distributed in Sungai Petani, Alor Setar, Kepala Batas Airport, golf and country clubs and other institutions in the region.
LIST OF ACTION PLANS

Action Plan : GJ-AP6  
Stakeholder Action : Kedah State Tourist Association  
The private sector, especially the hospitality and tour and travel sub-sectors, with the support of the Kedah State Tourist Association, should market and promote Gunung Jerai as part of a tour package with Sungai Petani and the Bujang Valley.

Action Plan : GJ-AP7  
Stakeholder Action : Kedah SEDC  
Refurbish the present Jerai Resort. Kedah SEDC should refurbish the Jerai Resort as it has become slightly dilapidated. The chalets should be given a new coat of paint and the worn out interiors can be replaced. The resort foyer can also be given a facelift to portray a warm and cosy atmosphere, while the restaurant can be improved both in décor and in quality of the dining. The renovations should reflect the harmony between the Resort and nature.

Action Plan : GJ-AP8  
Stakeholder Action : Majlis Daerah Yan, Majlis Daerah Kuala Muda, MDY and MDKM jointly with the State Forestry Department to determine the best option for meeting the biodiversity conservation needs and ensuring effective protection and utilisation of the natural resources of Gunung Jerai. In the past, there have been proposals for designating parts of the Gunung Jerai as state park or wildlife reserve but none of these were implemented. These proposals could be reviewed and reconsidered in terms of their relevance to serve the needs mentioned above. More detailed information such as those pertaining to specific areas on Gunung Jerai with biodiversity conservation value would be needed to support this process.

Action Plan : GJ-AP9  
Stakeholder Action : Majlis Daerah Yan, Majlis Daerah Kuala Muda, MDY and MDKM jointly with the State Forestry Department to collaborate in efforts to improve visitors management to prevent habitat degradation. Such efforts should include the integration of educational aspects to increase awareness amongst visitors about the importance of Gunung Jerai and its conservation needs. This may include both formal and informal educational programmes such as nature museum / nature education centre, educational forest and nature trails.
### Action Plan: GJ-AP10

**Stakeholder Action:** Department of Forestry, Department of Wildlife and Nature Parks

**Proactive measures involving periodical monitoring to prevent theft of wild plants and animal poaching are recommended.** Although there seem to be no record of illegal collection of wild flora and fauna from the forests in Gunung Jerai, these could be undertaken jointly by the relevant agencies such as the State Forestry Department and the DWNP. Theft of wild plants can be categorized into plants that are taken as a souvenir by tourists, and plants and animals being removed in large quantities to be sold elsewhere.

Warning to tourists prohibiting the removal of plants can be posted on signboards and in pamphlets, while park rangers can patrol the sensitive areas to deter large scale theft or poaching. Random vehicle checks can also be conducted by the park rangers when deemed necessary.

### Action Plan: GJ-AP11

**Stakeholder Action:** UPEN Kedah, Department of Forestry, Department of Wildlife and Nature Parks

**UPEN Kedah, Forestry Department and DWNP to encourage scientific research especially those geared towards providing baseline information to guide land use planning and development particularly in the tourism sector.** Studies aimed at establishing a complete inventory of the biodiversity found in Gunung Jerai as well as re-assessment to update previous records of the flora and fauna should also be given emphasis.

### Action Plan: GJ-AP12

**Stakeholder Action:** Department of Forestry

**The Department of Forestry should conduct further research on biodiversity especially on the heath/kerangas forest.** This is definitely needed because there is a lack of recent and comprehensive information on the biodiversity in Gunung Jerai. Also as Gunung Jerai harbours an interesting array of plant species contained in an environment that is comparatively undisturbed, the potential for carrying out scientific research here is promising.

Of greatest interest for research from the biodiversity perspective is the presence of a representative example of heath/kerangas forest. This forest type is fragile as it develops very slowly and is most important in demonstrating unusual features of its ecology such as effective nutrient cycling, hydrology and association with insectivorous plants. The heath/kerangas forest is also not widespread in Peninsular Malaysia hence making it important for research and conservation. Opportunities for conducting research in Gunung Jerai is further enhanced by the fact that this hill station is easily accessible.
LIST OF ACTION PLANS

Action Plan : GJ-AP13  
Stakeholder Action : Maljis Daerah Yan, private sector

Provide a transport service from the lower gate to the Resort area at the summit. Public vehicles should be prohibited from going to the summit, as although the tourism numbers are designed to be low, the present road is still too narrow to allow for the moderate increase in traffic. Any widening of the road is strongly discouraged to minimise the impact to the environment. The transport service can be in the form of mini-buses or 8-seater vans, and can be operated by the Majlis Daerah Yan or a private enterprise. Four-wheel drives are not required as the gradient of the access is manageable by ordinary vehicles.

Action Plan : GJ-AP14  
Stakeholder Action : Maljis Daerah Yan

Upgrade the sewerage system. As the buildings at Jerai Resort are located in a water catchment area, the sewage system must be upgraded to ensure a better treatment of the effluent. As a short-term measure, sewage from all buildings must be discharged into septic tanks with filters. These septic tanks must also be desludged regularly to ensure that they are performing optimally.

In the long-term, when the resort expands, centralised mechanized treatment plants such as extended aeration units must be installed to treat the sewage discharge.

Action Plan : GJ-AP15  
Stakeholder Action : Cabinet Committee, UPEN Kedah

The Cabinet Committee on Highlands and Islands with the assistance of UPEN Kedah should continuously monitor all development activities at Gunung Jerai.
LIST OF ACTION PLANS

ACTION PLANS FOR BUKIT LARUT

Action Plan   :  BL-AP1  
Stakeholder Action  : State Government  
The focus of tourism in Bukit Larut shall be limited to Nature Tourism. New proposals for other types of tourism shall not be permitted. Perak State Government to issue directives in this regard.

Action Plan   :  BL-AP2  
Stakeholder Action  : State Government, Perak Department of Town and Country Planning  
State Government shall commission for a Special Area Plan to be prepared to ensure controlled and sustainable development for Bukit Larut and the surrounding heritage sites. The scope of the Plan shall include amongst others the envisioned Development Strategies and Proposals; identify suitable developable land; land use zonings for development, recreational and protective designations; the carrying capacity; transportation issues, and the management of the land use. The Plan shall also include the development guidelines and controls including design briefs for the architectural styles.

Action Plan   :  BL-AP3  
Stakeholder Action  : Pejabat Daerah dan Tanah Larut, Matang dan Selama, Majlis Perbandaran Taiping  
Pejabat Daerah Taping and Majlis Perbandaran Taiping should set up more stalls at the gateway and encourage varied commercial products such as handicrafts and souvenir items, depicting Bukit Larut and Taiping history and landmarks, to be displayed and sold.

Action Plan   :  BL-AP4  
Stakeholder Action  : Perak Department of Forestry  
The Perak Department of Forestry should implement a nature tourism/day use recreation upgrading programme.

Components could include:

- The development of a small Nature Education Kiosk at the Gateway to provide visitors with information on Bukit Larut and the surrounding areas. The kiosk could incorporate information on the biodiversity of Bukit Larut. The interpretative and information materials (such as maps, booklets, brochures and postcards) should ideally be bilingual (in Bahasa Malaysia and English) to cater for both local and foreign visitors. Suitable activities such as audio-visual presentations, educational programmes, nature skills development courses and
species identification courses to be managed by the Centre could also be considered.

- Reopening of forest trails.
- Maintenance/upgrading of picnic and viewing sites.
- The organisation of a Bukit Larut Nature Jogathon as part of the event calendar. This could be designed to appeal to nature enthusiasts not only from the local areas but other parts of the country as well.

**Action Plan** : BL-AP5  
**Stakeholder Action** : Perak Tourism Association, private sector  
The private sector, with support from the Perak Tourism Association should vigorously endeavour to market Bukit Larut, Taiping and Kuala Kangsar, as an integral part of a sub-regional tour circuit. This should be designed to appeal to both domestic and foreign visitors to major centres such as Ipoh.

**Action Plan** : BL-AP6  
**Stakeholder Action** : Malaysian Tourist Promotion Board  
MTPB should produce high quality promotional materials including brochures, pamphlets, maps, pocket checklists, information guides for this hill station and Taiping which should be promoted and marketed together.

**Action Plan** : BL-AP7  
**Stakeholder Action** : Pejabat Daerah dan Tanah Larut, Matang dan Selama, Public Works Department  
The Pejabat Daerah dan Tanah Larut, Matang dan Selama, with assistance from JKR, should co-ordinate and synchronise the development of interpretative and informative signage for this hill resort.

**Action Plan** : BL-AP8  
**Stakeholder Action** : SEDC Perak  
SEDC Perak should upgrade the existing tourist bungalows/rest houses with improvements in interior decoration, more self-catering facilities, upgraded heating, hot water facilities and better facilities for meals. The structures should as far as possible made to reflect the identity found only in this District or locality.

**Action Plan** : BL-AP9  
**Stakeholder Action** : Cabinet Committee, UPEN Perak  
The Cabinet Committee on Highlands and Islands with the assistance of UPEN Perak must continuously monitor all development activities at Bukit Larut.
LIST OF ACTION PLANS

Action Plan : BL-AP10
Stakeholder Action : Department of Forestry, Pejabat Daerah dan Tanah Larut, Matang dan Selama

It is recommended that the forest trail leading to the peak of Gunung Hijau be upgraded with emphasis on putting in the necessary safety measures and to be reopened for public use. Possibility of providing trained guide services to take visitors through the trail should be considered. These could be undertaken through collaboration between the Larut Matang Forestry District Office and the Taiping District Office.

Action Plan : BL-AP11
Stakeholder Action : Department of Forestry

The Department of Forestry to promote the Educational Forest more extensively and introduce additional interpretative information such as labels on trees and information on the forest types. Notice boards showing a map of the Educational Forest and activities that are not permitted such as littering and cutting of vegetation should also be erected at suitable locations for visitors' information.

Action Plan : BL-AP12
Stakeholder Action : Department of Forestry

The Perak Department of Forestry should encourage more detailed studies to be conducted to establish and document the range of biodiversity found in Bukit Larut. More field studies in particular are needed to re-explore and update previous records of the flora and fauna of Bukit Larut. Collaboration with research institutions and other relevant organisations in this effort are required.

Action Plan : BL-AP13
Stakeholder Action : Public Works Department

JKR should increase safety of the access road by adding road furniture such as safety barriers at all bends and signage to remind pedestrians to beware of oncoming traffic. The vehicle driver must also be told to sound the horn before going into each bend to warn any pedestrians ahead. The access must also be inspected and maintained regularly, and any landslips must be repaired immediately. It is recommended that the road is not widened, for it would actually cause more damage to the environment.

Action Plan : BL-AP14
Stakeholder Action : Majlis Perbandaran Taiping, Pejabat Daerah dan Tanah Larut, Matang dan Selama

Reduce the generation of waste at source. At present, solid waste is transported down with the land rovers for disposal. With new developments, the volume of solid waste will increase and so will the difficulty in transporting them for disposal. Therefore, waste reduction must be practiced for example; by ensuring that all foodstuff sold at the hilltop is not wrapped in plastic, styrofoam or other types of non-biodegradable material.
## ACTION PLANS FOR LEGAL & INSTITUTIONAL ISSUES

<table>
<thead>
<tr>
<th>Action Plan</th>
<th>Stakeholder Action</th>
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<tbody>
<tr>
<td>LI-AP1</td>
<td>Federal &amp; State Government</td>
</tr>
<tr>
<td><strong>Pass the Heritage Conservation Bill</strong> and subsequently consider these hill stations to be part of the historical heritage of the country.</td>
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<th>Action Plan</th>
<th>Stakeholder Action</th>
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<tr>
<td>LI-AP2</td>
<td>Department Of Forestry</td>
</tr>
<tr>
<td><strong>Classify and gazette PFEs (permanent forest estates/ reserves) around the hill stations into functional categories such as soil protection, water catchment, virgin jungle reserve, amenity, education and research forests that are compatible to the functions and sensitivity of the highland ecosystems</strong> <em>(Section 10 of the NFA)</em></td>
<td></td>
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<tr>
<th>Action Plan</th>
<th>Stakeholder Action</th>
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</thead>
<tbody>
<tr>
<td>LI-AP3</td>
<td>Department Of Forestry</td>
</tr>
<tr>
<td><strong>Consider the gazettement of Gunung Jerai and Bukit Larut as State Parks (using the Perlis State Park as a model)</strong></td>
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<table>
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<tr>
<th>Action Plan</th>
<th>Stakeholder Action</th>
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<tr>
<td>LI-AP4</td>
<td>Ministry of Culture, Arts and Tourism</td>
</tr>
<tr>
<td><strong>Van operators to be licensed</strong> under TVLA for better regulation and safety of the transport services at Gunung Jerai.</td>
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<tr>
<th>Action Plan</th>
<th>Stakeholder Action</th>
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<tbody>
<tr>
<td>LI-AP5</td>
<td>Local Authorities</td>
</tr>
<tr>
<td><strong>Apply for more enforcement officers</strong> from the Federal/ State Public Service Commission</td>
<td></td>
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<tr>
<th>Action Plan</th>
<th>Stakeholder Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI-AP6</td>
<td>Local Authorities</td>
</tr>
</tbody>
</table>
| **Training of officers in the requisite skills** will enhance their competence in carrying out their job functions more effectively. The training modules could include**
|               | - laws relating to the hill stations                    |
|               | - enforcement procedures                                |
|               | - the need for conservation                             |
1

INTRODUCTION
1.1 BACKGROUND

The study on “The Development of the Hill Stations in Peninsula Malaysia was commissioned by the Economic Planning Unit of the Prime Minister’s Department (EPU) in May 2001. The main objective of the study is to formulate guidelines and recommendations for the sustainable development of six hill stations in Peninsular Malaysia namely Cameron Highlands (including Lojing), Fraser’s Hill, Genting Highlands, Bukit Larut, Gunung Jerai and Penang Hill. The study will also complement a parallel study presently being done on the sustainable development of the highlands of Peninsular Malaysia.

Hill stations play an important role in the development of the country, particularly in the tourism and agriculture sectors. The cool climate, fresh air and breathtaking landscapes and lush vegetation serve as major attractions for tourists. The temperate climate provides an ideal setting for a variety of crops, especially vegetables and flowers. The thrill of driving up hill roads and the sights and sounds along the route provide an exhilarating experience to holiday-makers, particularly those from crowded places such as the Klang Valley and Singapore. There are many who have chosen these hill stations to be their homes.

In addition, the hill stations and their surrounding areas also have an important place in the overall environment. The hills are the source of many streams and rivers that supply the majority of the country’s population. The hill stations and their environs are the natural habitats to many species of flora and fauna, and each of the individual hill station has its own unique and rich diversity of animal and plants species. The lower temperatures of the hills also mean that the species found here differs from that found in the lowlands and accounts for the high level of endemism occurring within the areas. By virtue to their location on hills, hill stations are often associated with steep slopes. The natural forest in these areas can be easily destroyed if set upon by uncontrolled development. The steep terrain is also prone to landslips and mudslides once it has been removed from its vegetative cover. The occurrence of flash floods at the lower catchment is also a direct result due to the loss of vegetative cover.

As the hill stations are the focal point for development at the highland areas, the formulation of proper development proposals and guidelines are vital to ensure the sustainability of the hill stations. Experience has shown that uncontrolled and ill-planned development can lead to disastrous results - the effects of which are often irreversible. It is also vital to recognize the important roles that the hill stations play, both in the context of economic development as well as in protecting the integrity of the highland environment. The commissioning of this study is therefore appropriate and timely and will hopefully lead to the sustainable development of the hill stations of Peninsular Malaysia.
1.2 Study Objectives

The objective of the study is to formulate guidelines and recommendations for the sustainable development of Hill Stations. The specific objectives are:

Objective 1

Conduct a comprehensive analysis of the existing situation.

Objective 2

Fill critical information gaps regarding development of Hill Stations.

Objective 3

Provide guidelines and recommendations to reduce existing detrimental environmental effects and prevent/reduce adverse effects of future development, and other land use activities.

Objective 4

Provide guidelines and recommendations for tourism development consistent with the ecological integrity of the Hill Stations.

Objective 5

Provide direction on the development of Hill Stations that will maintain ecological values and encourage sustainable tourism and development.

Objective 6

Develop a vision as well as goals for the Hill Stations that integrate ecological, social, economic and development values.

1.3 Study Approach

The main approach taken in this study is the SWOT wherein the strengths and weaknesses of the hill stations as well as the opportunities available and potential threats were charted out. The SWOT analysis enabled the development of development strategies for each of the hill stations that capitalize on the unique strengths and to avoid unnecessary competition.

The data required was scattered amongst the various departments in different states as well as in various documents, and efforts were made to source information from the relevant departments and to peruse documents that were pertinent to this study. Due to the limited time frame, only secondary data was collected. The information gathered was then reviewed, updated and analysed for gaps.
CHAPTER 1: INTRODUCTION

Consultation with stakeholders, both governmental and non-governmental, was carried out during meetings and on-site discussions. This interaction was beneficial to both parties in that the study team was able to gain better insights into the local conditions and site-specific issues, while the stakeholders were briefed on the study objectives and were also kept abreast on the progress of the study. The list of stakeholders is detailed in Appendix II.

Visits to the hill stations were organized and these greatly helped the study team better understand and appreciate the underlying issues specific to each Hill Station. The interactions with local stakeholders were also essential in filling information gaps that were not found in published sources.

The information collected was then analysed to identify the strengths and weaknesses of each hill station. Specific guidelines and recommendations for development were then formulated to address the issues. The proposals were prioritized for immediate, medium term or long-term action. The study also recommended and outlined the parameters for further detailed studies on unresolved issues.

1.4 Study Area

All the three hill stations addressed in the report are located in different mountain ranges. Bukit Larut is found in the Bintang Range in Perak, while both Gunung Jerai and Penang Hill are isolated peaks in the Kedah-Singgora Range. (Fig.1.1). Political boundaries are not significant in a study such as this as the influence of each Hill Station may extend a great distance from the actual area itself. For example, to analyze the sources of fresh water supply, the entire river catchment areas must be also be looked into. Therefore, it must be made clear that in order to portray an accurate picture of each hill station, the area of influence for each sector of the study will vary according to the priorities and issues of concern.

For Penang Hill, the study area covers the gazetted town limit, the areas surrounding the Lower Station, South View and Tiger Hill, Bel Retiro, Convalescent and Fern Hill and part of the Tat’s Stream water catchment area.

The study area for Gunung Jerai is extended to cover the archeological sites in the Bujang Valley, the Jerai Gate, the Tangga Kenari area in Yan which includes the waterfall areas.

The Bukit Larut study area includes the Permanent Forest Reserve, the water catchments of Sg. Jana, Sg. Ranting, Sg. Air Terjun, Sg. Batu Tegoh and Sg. Tupai. It also takes into consideration the attractions in the town of Taiping such as the mini-zoo and the famous Lake Garden.
1.5 Concept of Carrying Capacity

The concept of carrying capacity is to try and establish in measurable terms the number of visitors and the degree of development that can take place without detrimental effects on resources or a decrease in visitor satisfaction. Both positive and negative effects arise from the impact of tourism. Negative factors become predominant when the number of visitors reaches a particular threshold after which benefits progressively decline. Two aspects are important \( \text{(WTO, 1984)} \):

(a) The tourism image i.e. the loss of attractive quality.

The capacity or number of visitors that are compatible with the image of the tourist product and the type of environmental experience that the visitor is seeking.

(b) The indigenous environment i.e. damage to the physical, cultural and social environment.

The capacity that can be achieved without physical damage to the environment, without social or economic damage to the local community and culture, or without prejudicing the proper balance between development and conservation.

The approach to carrying capacity standards would be based on:

(a) Preserving areas of unique scientific, historic and cultural value in their entirety if they may be damaged by tourism, even though this may prevent their usage for tourism.
(b) Ensuring that there is no irreversible loss or damage to the heritage.
(c) Preventing non-essential tourism activities where they are likely to damage the environment and could be equally well provided elsewhere.

The approach would define indicative ranges adapted to specific cases, as precise capacities are unlikely to be established for these criteria.

Among factors that can be considered are:

- the need for conservation
- the volume of tourism providing optimum economic benefits
- the volume of tourism that can be absorbed without detriment to the community
- the availability of public utilities
- the availability of transport facilities
- climatic characteristics and freedom from pollution
- quality of accommodation and attractions
CHAPTER 1: INTRODUCTION

The emphasis is on management as opposed to planning. If the demand for increased capacity exists, it may be possible to take measures to increase capacity in existing areas of saturation. Where the absolute capacity level is already exceeded it may be necessary to reduce visitor volume. Hence, the planning and management problem is threefold - to decide the critical carrying capacity, to consider whether this can be increased, and how to divert pressure once saturation level has been reached and the capacity cannot be increased further.

The overall capacity is the result of the balance between different criteria. In addition, the values of criteria will vary among tourist types, different resources and different countries. Hence, the absolute capacity of any individual case must be related to its own particular circumstances.

In this report, the carrying capacity will be determined from the tourism aspect and the limitations of water supply and transport. While other aspects of the carrying capacity issues should rightly be considered, the short duration of this study does not permit a more in-depth approach. The criteria used in this report is therefore deemed sufficient to provide at least an indication of the carrying capacity for each of the hill stations.

1.6 Format Of Report

There are six Hill Stations identified for the purpose of this study: Cameron Highlands (including Lojing), Fraser’s Hill, Genting Highlands, Bukit Larut, Gunung Jerai and Penang Hill. The reporting have been divided into two parts - Volume I presents the study on Cameron Highlands, Fraser’s Hill and Genting Highlands while Volume II will focus on Bukit Larut, Gunung Jerai and Penang Hill.

Following the introductory material in this chapter, the report addresses each Hill Station in an individual chapter all site-specific issues are examined. For each hill station, the existing situation, assessments of the SWOT and development strategies are presented. Chapter 5, in turn, addresses the legal and institutional issues pertaining to all three hill stations.

The report has been arranged in the following structure:

Chapter 1 : Introduction
Chapter 2 : Penang Hill
Chapter 3 : Gunung Jerai
Chapter 4 : Bukit Larut
Chapter 5 : Legal and Institutional Framework

A set of Appendices containing supporting information is found at the end of the report.
Figure 1-1

Location of the Hill Stations
CHAPTER 2: PENANG HILL

2.1 INTRODUCTION

Penang Hill was established around the year 1800 and it is the country’s oldest hill resort. Penang Hill is a major landmark and the pride of the people of Penang Island. Its uplands form one of the last remaining areas of natural vegetation in Penang Island.

Presently, the main attractions in Penang Hill for tourists are the cooler temperature and the breathtaking view of Penang Island from the vantage points. Local Penang folks on the other hand, tend to enjoy the refreshing stroll up the hill and at the same time, take in the sweet sounds of birds and other wildlife. Penang Hill is also home to about 200-odd people who either live in some of the quaint bungalows or in the village houses. These are people who are drawn to the tranquil atmosphere as well as chose to escape the hustle and bustle of city life.

There has been no shortage of literature concerning the development of Penang Hill; with the Penang Hill Local Plan being the most significant report prepared recently. This study aims to complement the Local Plan by reinforcing the proposals outlined in the Plan as well as recommending further improvements where necessary.

To date, there have been several development plans for Penang Hill, but most could not meet the conditions set by the relevant government agencies and were not approved. This serves as an indication that any development earmarked for Penang Hill must follow a set of development guidelines to safeguard the environment surrounding this popular hill station as well as to satisfy the concerns of the public.

2.2 EXISTING SITUATION

2.2.1 Physical Environment

2.2.1.1 Land Use

(a) Land Use Characteristics

Penang Hill covers an area of about 7,252 ha and is identified in the Penang Hill Development Plan as an area of unique characteristics particularly in the flora, topography and heritage. The Hill occupies the central uplands of the island and includes the Penang Hill Town area (373 ha) with its funicular railway station.

Parts of Penang Hill are gazetted as ‘hill land’ under the Land Conservation Act, 1960. The land use of the Penang Hill as designated by the Penang Hill Development Plan 1992-2005 is shown in Table 2.1 and in Figure 2.1. Forest areas constitute about 64% of the land use and include both primary and secondary forest. Agriculture constitutes about 21% of the land use with fruit tree cultivation, vegetable and horticulture farms. Scrubs and other types of vegetation make up about 13% of the land use while the remaining areas are urban and mostly located at Penang Hill Town Centre.
CHAPTER 2: PENANG HILL

### Table 2.1 Penang Hill Land Use

<table>
<thead>
<tr>
<th>Type</th>
<th>Area (ha)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Areas</td>
<td>50.4</td>
<td>0.69</td>
</tr>
<tr>
<td>Cemetery</td>
<td>0.7</td>
<td>0.01</td>
</tr>
<tr>
<td>Recreation</td>
<td>36.5</td>
<td>0.51</td>
</tr>
<tr>
<td>Quarry</td>
<td>12.3</td>
<td>0.17</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1510.9</td>
<td>20.84</td>
</tr>
<tr>
<td>Scrubs</td>
<td>965.4</td>
<td>13.31</td>
</tr>
<tr>
<td>Forest</td>
<td>4614.4</td>
<td>63.63</td>
</tr>
<tr>
<td>Cleared Land</td>
<td>27.0</td>
<td>0.37</td>
</tr>
<tr>
<td>Water Body</td>
<td>34.3</td>
<td>0.47</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>7,251.9</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(source: Penang Hill Development Plan 1993-2005)

The major land uses of Penang Hill as reported in the Penang Hill Local Plan are Forest Reserves which constitutes about 315 ha followed by agriculture (111 ha), commercial (1.2 ha) and quarry (4.4 ha) and residential (30 ha). In addition about 30 ha of land are abandoned or badly degraded and identified for rehabilitation. The residential development consists of mainly bungalows and the rest are clustered types. All the buildings are confined to 2-storey height thereby providing an uniform skyline that provides very good visual environment. Besides residential uses, public facilities and community facilities such as Police Station, Post Office, Multi Purpose Hall, Clinic, Mosque, Temples (Hindu & Chinese), Hawker Centre and a Meditation Centre are located on the hill station. **Figure 2.2** shows Penang Hill Town area existing land uses and Table 2.2 shows the land use numbers.

### Table 2.2 Penang Hill Town Area - Land use

<table>
<thead>
<tr>
<th>Type</th>
<th>Area (ha)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest</td>
<td>314.58</td>
<td>67.60</td>
</tr>
<tr>
<td>Residential</td>
<td>29.64</td>
<td>6.38</td>
</tr>
<tr>
<td>Commercial</td>
<td>1.20</td>
<td>0.25</td>
</tr>
<tr>
<td>Agriculture</td>
<td>111.50</td>
<td>24.02</td>
</tr>
<tr>
<td>Recreational</td>
<td>3.19</td>
<td>0.68</td>
</tr>
<tr>
<td>Religious Use</td>
<td>0.24</td>
<td>0.05</td>
</tr>
<tr>
<td>Public Use</td>
<td>0.32</td>
<td>0.06</td>
</tr>
<tr>
<td>Quarry</td>
<td>4.47</td>
<td>0.96</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>464.14</td>
<td>100.0</td>
</tr>
</tbody>
</table>

(source: Penang Hill Local Plan, 1998)
(b) Land Status and Ownership

The land use status for Penang Hill consists of mainly Gazetted Hill Land and Gazetted Forest Reserves. Figure 2.1 shows the Gazetted Hill Land and Forest Reserve areas within Penang Hill.

The current land status and ownership for Penang Hill Town Boundary are confined to three groups namely, private owners, City Council and State (including Penang Hill Railway Authority). The private owners constitute about 50% of the landowners followed by the State (44%) and City Council (6%).

(c) Development Plans

Penang Hill had been under pressure for development particularly from the private sector. A major and comprehensive development plan proposed by Bukit Pinang Leisure Sdn. Bhd. drew the most controversy and was quickly opposed by the public and NGOs. The development plan was severely criticized by its opponents and was finally shelved after its Environmental Impact Assessment failed to gain approval even after two submissions.

In view of all the development proposals being rejected, the State Government was prompted to prepare the Development Plan (1993 -2005). The Development plan formulated development and conservation strategies and the broad based zoning for Penang Hill. Figure 2.3 shows the zoning plan for Penang Hill. The Development Plan in its strategy has identified zones with the Core Area representing the focus for development in Penang Hill. The core area consists of 3 zones, namely the intensive use zone; nature recreation/conservation zone and nature recreation/rehabilitation zones. Other zones identified include Telok Bahang, Sg.Pinang West, Sg. Rusa, Sg. Pokok Kayu Besar, Sg. Dondang and Sg. Kelian. The Development Plan also recommended the preparation of a Local Plan for Penang Hill Town Area to monitor and control development.

The Penang Hill Local Plan was prepared in 1998 went through a series of public participation on the proposed development strategy and development options. The feedback from the public, NGO’s and pressure groups were incorporated in the finalisation of the Local Plan. The Local Plan for Penang Hill was gazetted in April 1999 and is the main tool for the development control and guidelines for development at the hill station.

2.2.1.2 Topography

Like Fraser’s Hill, there is no single hill actually designated as Penang Hill, but rather a composite of hills and spurs. Peaks such as Western Hill, Government Hill Tiger Hill, and Strawberry Hill are just some of the many distinct summits in the area. The highest point is at the Western Hill, which reaches 800 m and this is followed by Tiger Hill (760 m), Government Hill (720 m) and Mt Elvira (700 m).
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The terrain of Penang Hill is generally rugged and most of the areas are under steep slopes. The eastern slope of the core development area (on both sides of the funicular railway) was found to be steeper than 20%.

<table>
<thead>
<tr>
<th>Slope Steepness (%)</th>
<th>Area (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4.9</td>
<td>2.92</td>
</tr>
<tr>
<td>5-9.9</td>
<td>4.10</td>
</tr>
<tr>
<td>10-14.9</td>
<td>8.92</td>
</tr>
<tr>
<td>15-19.9</td>
<td>13.60</td>
</tr>
<tr>
<td>20-24.9</td>
<td>22.30</td>
</tr>
<tr>
<td>25-29.9</td>
<td>24.70</td>
</tr>
<tr>
<td>&gt;=30</td>
<td>387.60</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>464.14</strong></td>
</tr>
</tbody>
</table>

Penang Hill Local Plan, 1998

The soils on the upper slopes of Penang Hill are mapped as steepland soils. These soils are derived from granite, and are in the early stages of soil formation. They are shallow and medium to coarse textured, with low organic matter content. The soils are held in place only by the roots of the natural vegetation and susceptible to erosion.

2.2.1.3 River System & Water Catchments

Penang Hill is drained by the tributaries of two rivers, Sg. Pinang West and Sg Pinang East. Sg Air Terjun, Sg Air Putih and Sg Air Hitam are tributaries of Sg Pinang East which flows eastward through Georgetown, while the western slopes of Tiger Hill and Western Hill are drained by Sg Pinang West, which flows towards the Balik Pulau Plain.

Penang Hill falls within the following water catchment areas (Figure 2.4)
- Ayer Itam Water Catchment (to the south west)
- Water Fall Water Catchment (to the west)
- Sg. Tat Water Catchment (to the south - east of the funicular railway)
- Highlands Water Catchment (to the east)
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2.2.2 Biological Environment

2.2.2.1 Natural Ecosystem and Habitats Represented

Forests form the main natural ecosystem in Penang Hill. However, not all the forests are in pristine condition as some have been previously subjected to disturbances and are in a degraded state. The forests, consisting of a combination of primary and secondary forests as well as scrubs accounts for 67.7% (314.58 ha) of the total area of Penang Hill (Penang Hill Local Plan, 1998). The most common type of forest in Penang Hill is the Hill Dipterocarp Forest (HDF). At higher altitudes, plant species, which characterises the sub-montane oak-laurel vegetation, can be found. Other plants that are normally associated with high elevation such as coniferous trees and tree ferns also occur in the upper zone of Penang Hill.

2.2.2.2 Legal Status Of Natural Habitats

The 314.58 ha of forested land in Penang Hill include areas that have been gazetted as forest reserve under the National Forestry Act 1984 and are managed by the State Forestry Department. Some of these forests are under the status of state land. 226.02 ha (48.6%) of Penang Hill have also been designated as water catchment areas, namely the Ayer Hitam Water Catchment, Water Fall Water Catchment, Sg. Tat Water Catchment and Highland Water Catchment. There is some overlap between the areas of forest reserve and water catchments. Despite their legal status as forest reserve and water catchment, development have taken place in these areas which includes 106 units of buildings comprising mostly privately owned bungalows and agriculture plots.

Some of the forests within the vicinity of Penang Hill are forest reserves. In total, there are three forest reserves lying adjacent and around the boundary of Penang Hill (Table 2.4).

<table>
<thead>
<tr>
<th>Name of forest Reserve (FR)</th>
<th>Area (ha)</th>
<th>Forest type</th>
<th>Significant features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bt. Kerajaan FR</td>
<td>2,287</td>
<td>LDF</td>
<td>Diverse avifauna; surrounded by industry and plantations.</td>
</tr>
<tr>
<td>Laksamana FR</td>
<td>228</td>
<td>LDF, HDF</td>
<td>Diverse avifauna; important catchment area; important for slope protection.</td>
</tr>
<tr>
<td>Highlands FR</td>
<td>93</td>
<td>LDF, HDF</td>
<td>Diverse avifauna; important catchment area; important for slope protection.</td>
</tr>
</tbody>
</table>

Source: EPU (1993)

Note:
LDF Lowland Dipterocarp Forest  HDF Hill Dipterocarp Forest
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2.2.2.3 Prime Conservation Areas

Penang Hill is of particular scientific importance as the site from where many original specimens of Malaysian plant species have been collected. This justifies the need for conserving the population of these species and their habitats. However, in most cases, the exact localities in Penang Hill from where the collections were made have not been specified.

In terms of prime areas for flora conservation, a possible candidate would be the area along the bridle paths on the eastern slope of the core Penang Hill. This area is floristically significant and active botanical collections have been carried out here.

Other suitable areas for plant conservation are the rocky streams in Penang Hill. Some of the rare plants at Penang Hill have very specialized habitats such as the rocky streams. The rocky stream systems are known to be particularly important as the habitat for many rare herbs, orchids (including a beautiful white Orchid that can be found only in Penang Hill, *Zeuxine rupestris*), mosses and ferns. In addition to the stream system itself, the vegetated riparian strip and the associated tree canopy should be left intact in their pristine condition to maintain the shaded and cool conditions with a high humidity that these plants require.

Assessing the flora profile provides some indication of the significance of Penang Hill from the biodiversity context particularly for plant conservation. This is important for determining the conservation priority for Penang Hill. It also justifies the need for integrating biodiversity conservation into the planning and development framework of this hill station in achieving sustainable development. Additionally, outputs from this assessment helps to underline the importance of the flora in Penang Hill in contributing to Malaysia’s natural heritage.

The preliminary checklist of highland plant species compiled by Perumal & Lo (2000) is used for Penang Hill as the basis for the analysis of its flora profile as it represents the most comprehensive and recent consolidation of floristic information to-date. It concentrates on plant species occurring above 750 m elevation and includes highland specialist (or strictly highland species) as well as species that inhabit both highlands and lowlands.

Four plant groups are included in this checklist, namely (a) Ferns and Fern Allies, (b) Gymnosperm, (c) Monocotyledon and (d) Dicotyledon. Group (a) constitutes non-seed plants while (b), (c) and (d) are groups of seed plants. The plant species listing for Penang Hill is derived from this checklist. The species selection is based on direct reference made to known areas on Penang Hill or when Penang Hill is specifically cited as being the locality from where collection or record of the particular species was made.

It is possible that certain species generally known to occur in Peninsular Malaysia’s hill and montane forests, which may actually be found in Penang Hill stations, are excluded. The reason for this exclusion is because the methodology employed in this study does not include means for verifying the presence of the species in Penang Hill (for example, examination of herbarium specimens and field surveys). A possible implication of this is an underestimate of the total number of species found here.
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It should be noted that this checklist is still non-exhaustive because much of the floristic work involving highland plant species up till now have focused largely on seed plants whereas non-seed plants have somewhat been neglected. There is also possibility of inaccuracy of information due to taxonomic nomenclature problems.

Species Richness

'Species richness' refers to the size of the flora or number of plant species found in this particular hill station. A total of 342 highland plant species was recorded in Penang Hill (Table 2.5). In comparison to the total highland plant species found in Peninsular Malaysia, Penang Hill accounts for 11.2% of the Peninsula’s total highland plant species. This is a significant contribution in the Peninsular Malaysia context considering that this proportion is entirely from a single hill station which is of a relatively small size.

Table 2.5: A Comparison between the Total Highland Plant Species Found in Peninsular Malaysia with that in Penang Hill

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Total in Peninsular Malaysia</th>
<th>Penang Hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferns and Fern Allies</td>
<td>346</td>
<td>4 (1.2%)</td>
</tr>
<tr>
<td>Gymnosperms</td>
<td>17</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td>Monocotyledons</td>
<td>816</td>
<td>78 (9.6%)</td>
</tr>
<tr>
<td>Dicotyledons</td>
<td>1,871</td>
<td>255 (13.7%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3,050</strong></td>
<td><strong>342 (11.2%)</strong></td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

Special Features of Species: Endemism, Rarity and Highland Specialist

Endemism and rarity are good indicators for vulnerability of the species concerned as well as the place where they occur. This is because ‘endemic’ species are confined only to specific localities, in this case generally only in Peninsular Malaysia. However, there are also specific examples of species that are restricted only to Penang Hill (which means these species do not occur anywhere else). A ‘rare’ species in Penang Hill suggests that apart from Penang Hill, this species can be found only in very few locations and are not abundant and not common.

The number of endemic species is 22 or 6.4% of the total highland plant species recorded in Penang Hill (Table 2.6). 14 species are rare and this represents 4.1% of the total highland plant species found in Penang Hill. There are four species that are both endemic and rare, with three of them from the group Dicotyledon.
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Table 2.6: Endemism and Rarity among Plant Species Found in Penang Hill

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of endemic species</th>
<th>Number of rare species</th>
<th>Number of endemic and rare species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monocotyledon</td>
<td>3 (13.6%)</td>
<td>3 (21.4%)</td>
<td>1 (25.0%)</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>19 (86.4%)</td>
<td>11 (78.6%)</td>
<td>3 (75.0%)</td>
</tr>
<tr>
<td>Total</td>
<td>22 (100%)</td>
<td>14 (100%)</td>
<td>4 (100%)</td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

38.9% of the Penang Hill flora comprises strictly highland species with a majority of these comprising Monocotyledons (Table 2.7).

Table 2.7: Categorisation of Flora Species in Penang Hill According to Distribution

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of Species</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>Total</td>
</tr>
<tr>
<td>Ferns and Fern Allies</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Gymnosperm</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Monocotyledon</td>
<td>48</td>
<td>30</td>
<td>78</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>80</td>
<td>175</td>
<td>255</td>
</tr>
<tr>
<td>TOTAL</td>
<td>133 (38.9%)</td>
<td>209 (61.1%)</td>
<td>342 (100%)</td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

Note:
A: highland specialist
B: species occurring in both highlands and lowlands

Conservation Status of Species

Information on species conservation status (for example level of threat and protection) is essential in planning the conservation and sustainable management of individual species as well as the environment within which the species occur. The 342 species of plants recorded in Penang Hill were cross-checked with the following to assess their conservation status:

(a) 1997 IUCN (World Conservation Union) Red List of Threatened Plants;
(b) 1998 WCMC (World Conservation Monitoring Centre) World List of Threatened Trees;
(c) CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) Appendices.

Two monocotyledon species (one palm and one orchid) that occur in Penang Hill are listed in the IUCN list. The palm (*Calamus penicillatus*) is listed as vulnerable while the orchid (*Zeuxine rupestris*) is classified as rare in the IUCN list. The orchid species is also included in CITES Appendix II which suggests that the trading of this species is closely controlled and it requires export permit for international trade. Five tree species are in the WCMC list at varying degrees of threats. Of the five species, two that are classified as LRcd, are confined only to Penang Hill. One of the tree species that is classified as CRB is also known only from Penang Hill and is suspected to be extinct. None of the species from both groups of Fern and Fern Allies, and Gymnosperm is included in any of the three listings.
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Table 2.8: Threatened and CITES-listed Flora Species in Penang Hill

<table>
<thead>
<tr>
<th>Plant group</th>
<th>IUCN List</th>
<th>WCMC List</th>
<th>CITES Appendices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V</td>
<td>R</td>
<td>ENB</td>
</tr>
<tr>
<td>Monocotyledon</td>
<td>1</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

Note:
V: Vulnerable  
R: Rare  
ENB: endangered: criterion B  
END: endangered: criterion D  
CRB: critically endangered: criterion B  
LRcd: Lower Risk: conservation dependent

In terms of protection, at present there are no local or national laws in Peninsular Malaysia that affords protection specifically for wild plants. Some form of protection exist for plant species and their habitat if they occur within gazetted protected areas such as national / state park, wildlife sanctuary / reserve and protection forest. With regard to collection of and illegal trade in wild plant species, there is no monitoring or control of such activities for wild plants occurring outside the protected area system due to the absence of legal mechanisms. Although Malaysia is a signatory of CITES, Peninsular Malaysia does not have any laws apart from the Quarantine Act (enforced by Agriculture Department) for controlling the export of wild plants, even if their listed in the CITES Appendices (Kiew, 1990).

In the case of Penang Hill, even with the status of forest reserve and water catchment area, sufficient protection for the area is not guaranteed. This situation is reflected by the presence of development projects that are not supposed to have been permitted in such areas. Because of the lack of relevant species protection laws, it can be expected that the illegal collection of flora and fauna in Penang Hill is likely to continue unchecked. This could be detrimental to the maintenance of the biodiversity in Penang Hill. There is evidence to show the occurrence of considerable collection of wild plants with high ornamental values, especially the Penang Slipper Orchid. This orchid which was once commonly found on Penang Hill is now scarce due to over-collection.

The terrestrial vertebrate fauna of Penang Hill was compiled from published and unpublished sources. The bird checklist relied on unpublished information by Kanda Kumar and a dissertation by Rosli (1996). The mammal checklist was extracted from a report by AGERIS Sdn. Bhd. on the proposed tourism and recreational development in Penang Hill (Anon, 1991). Additional information was extracted from a publication by Friends of Penang Hill (Anon, 1991). The reptile checklist was prepared from information provided by a resident during a visit by the consultant and information from DWNP Penang. The amphibian checklist was prepared by extracting distribution records from Berry (1975).
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Species Richness

A total of 18 mammal, 133 bird, three reptile and five amphibian species have been recorded at Penang Hill. This amounts to 8.37%, 20.52%, 1.40% and 5.68% respectively, of the total Peninsular Malaysian fauna for each taxon. The apparent poor diversity of the reptilian and amphibian fauna at Penang Hill is likely due to the fact that hardly any work has been conducted on the herpetofauna here. More species are expected on this hill if intensive field surveys are carried out.

Species Endemism

Penang Hill does not support any fauna that is endemic to Peninsular Malaysia. However, it does have several mammal subspecies that can only be found on the island. These mammals are *Ratufa bicolor penangensis* (Black giant squirrel), *Callosciurus notatus lighti* (Plantain squirrel), *Lariscus insignis jalorensis* (Three-striped ground squirrel), *Iomys horsfieldii penangensis* (Horsfield’s flying squirrel), *Petaurista petaurista penangensis* (Red giant flying squirrel) and *Paradoxurus hermaphroditus cantori* (Common palm civet) (Medway, 1969). With the exception of the Three-striped ground squirrel, all other species are commonly found on the mainland. In view of the shortage of forested areas on the island due to decades of land development, Penang Hill is important in providing habitat for these mammalian subspecies.

Conservation status of species: 2000 IUCN Red List of Threatened Species

The IUCN Red Lists of Threatened Species are widely recognized as the most comprehensive, apolitical global approach for evaluating the conservation status of plant and animal species. The goals of the IUCN Red List Programme are to provide a global index of the state of degeneration of biodiversity and to identify and document those species most in need of conservation attention if global extinction rates are reduced (IUCN, 2000). The threatened species list is divided into eight categories. They are Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Lower Risk (LR), Data Deficient (DD) and Not Evaluated (NE). The Lower Risk category is divided into three subcategories, which are Conservation Dependent (cd), Near Threatened (nt) and Least Concern (lc) (IUCN, 2000).

**Definition of ‘Endangered’**: A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria listed by IUCN.

**Definition of ‘Vulnerable’**: A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the criteria listed by IUCN.

**Definition of ‘Lower Risk – near threatened’**: A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories of Critically Endangered, Endangered or Vulnerable. “Near threatened” is the second subcategory from this category indicating, a taxa which do not qualify for Conservation Dependent (first subcategory for Lower Risk), but which are close to qualifying for Vulnerable.
Penang Hill does not support any “Endangered” or “Vulnerable” fauna from a global point of view. However, one ‘Lower Risk – near threatened’ mammal species i.e. the Long-tailed macaque (*Macaca fascicularis*) and nine ‘Lower Risk – near threatened’ bird species (listed below) are found on this hill (see summary Table 2.9).

*Ptilinopus jambu* (Jambu fruit dove)  
*Calyptomena virdis* (Green broadbill)  
*Aegithina viridissima* (Green iora)  
*Chloropsis cyanopogon* (Lesser green leafbird)  
*Pyconotus cyaniventris* (Grey-bellied bulbul)  
*Macronous ptilosus* (Fluffy-backed tit-babbler)  
*Alcippe brunneicauda* (Brown fulvetta)  
*Anthreptes rhodolaema* (Red-throated sunbird)  
*Dicaeum everetti* (Brown-backed flowerpecker)

**Table 2.9: Conservation status of terrestrial vertebrate fauna of Penang Hill according to IUCN’s Red List of Threatened Species (IUCN, 2000)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Mammals</th>
<th>Birds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endangered</td>
<td>None</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>Vulnerable</td>
<td>None</td>
<td>None</td>
<td>-</td>
</tr>
<tr>
<td>Lower Risk – near threatened</td>
<td>1</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>

Conservation status of species: Protection of Wild Life Act, 1972
Among the diverse vertebrate fauna occurring at Penang Hill, numerous species are listed as Protected or Totally Protected according to the Protection of Wild Life Act, 1972 (*PWA, 1972*). A summary of this is presented in Table 2.10. According to the PWA, 1972, a "Totally Protected" species covers both avian and non-avian fauna.

According to the PWA, 1972: "Totally protected wild animal" or "totally protected wild bird" means a wild animal or wild bird described in Schedule One or Schedule Three respectively which shall not be shot, killed or taken or be held in possession by any person except as provided in Part V of this Act (Protection of Wild Life Act, 1972).

Likewise, the following paragraph describes the coverage for ‘protected species’

"Protected wild animal" or "protected wild bird" means a wild animal or wild bird described in Schedule Two and Schedule Five or Schedule Four respectively which may be shot, killed or taken or be held in possession by a licensed hunter, a licensed dealer or other persons as provided in this Act and the conditions prescribed in the license (Protection of Wild Life Act, 1972).
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Table 2.10: Terrestrial vertebrate fauna of Penang Hill accorded protection under the Protection of Wild Life Act, 1972 (applicable to Peninsular Malaysia)

<table>
<thead>
<tr>
<th>Status</th>
<th>Mammals</th>
<th>Birds</th>
<th>Reptiles</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally Protected</td>
<td>7</td>
<td>113</td>
<td>None</td>
<td>120</td>
</tr>
<tr>
<td>Protected</td>
<td>4</td>
<td>9</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>

The “Totally Protected” mammals of Penang Hill are:

*Cynocephalus variegatus* (Malayan flying-lemur)
*Nycticebus coucang* (Slow loris)
*Ratufa bicolor penangensis* (Black giant squirrel)
*Iomys horsfieldii penangensis* (Horsfield’s flying squirrel)
*Petaurista petaurista penangensis* (Red giant flying squirrel)
*Aeromys tephromelas* (Large black flying squirrel)
*Prionailurus bengalensis* (Leopard cat)

The “Protected” mammals of Penang Hill are:

*Macaca fascicularis* (Long-tailed macaque)
*Presbytis obscura* (Dusky leaf monkey)
*Tragulus javanicus* (Lesser mousedeer)
*Paradoxurus hermaphroditus cantori* (Common palm civet)

The “Protected” birds of Penang Hill are:

*Amaurornis phoenicurus* (White-breasted waterhen)
*Chalcophaps indica* (Emerald dove)
*Treron olax* (Little green pigeon)
*Treron vernans* (Pink-necked pigeon)
*Treron curvirostra* (Thick-billed pigeon)
*Ptilinopus jambu* (Jambu fruit dove)
*Copsychus malabaricus* (White-rumped shama)
*Gracula religiosa* (Hill myna)
*Zosterops palpebrosa* (Oriental white-eye)

The reptile species that is “Protected” is *Python reticulatus* (Reticulated python).
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2.2.3 Socio-Economic Environment

2.2.3.1 Population

Residential Area

The residential areas in Penang Hills are divided into two groups; individual bungalows at the top of the hill and hill villages at the foothills as well as at the Middle Range. The bungalow units are fairly dispersed and they are clustered between Summit Road and Moniot Road. The individual bungalow lots vary in size from as small as 0.2 ha (such as the Nook and the Spur) to 4.85 ha (such as the Lomonds). Many of the bungalows are under utilised and not well maintained.

One of the oldest houses on Penang Hill is the Convalescent built in 1803. The house was constructed by the East India Company’s Medical Department for the recuperation of invalids. Other bungalows such as the Bellevue, Fernhill, Brown House and Southview, built along the Summit Road are of considerable historical interest and reflect much of the social development of Penang.

One of the most impressive buildings is Bel Retiro, a hill mansion built for the British Resident. Today, it is the holiday residence of the Governor of Penang. There is a proposal to designate Bel Retiro as a Heritage Category 1. Other proposed bungalows to be designated as Heritage Category 1 include Gate House, Bukit Pinang, Raj Bhawan (Moy Craig and Brown House. The Heritage Category 1 does not allow any demolition, alteration or extension of the building except for restoration and maintenance.

A large number of the village houses are located within the vicinity of the Lower Station and the remaining are scattered near the Middle Station. Some of the residents in the hill villages are farmers and government servants.

There are also non-residential buildings, mostly public and institutional buildings such as the post office, clinic, mosque and temple. All of these buildings are atop of the hill except for the Meditation Centre, which is located at the Viaduct Road.

The Penang Hill Local Plan pointed out that 106 units of buildings are within the Forest Reserve and Water Catchment Areas, or ‘Environmental Sensitive Areas’. Table 2.11 shows the distribution of the said buildings in those areas.

Table 2.11: Buildings Within Forest Reserve and Water Catchment

<table>
<thead>
<tr>
<th>Type of House</th>
<th>Water Catchment</th>
<th>Forest Reserve</th>
<th>Forest Reserve in Water Catchment</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bungalow</td>
<td>-</td>
<td>30</td>
<td>24</td>
<td>54</td>
</tr>
<tr>
<td>Others</td>
<td>14</td>
<td>16</td>
<td>22</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>46</td>
<td>46</td>
<td>106</td>
</tr>
</tbody>
</table>

Source: Penang Hill Local Plan, 1993
CHAPTER 2: PENANG HILL

Population Structure

The Penang Hill population decreased from 581 in 1991 to 291 in 2000 with annual average growth rate (AAGR) of –7.4 % during the 1991 – 2000 period. The relatively huge decrease in the population growth rate could have been due to the close proximity of Penang Hill to the urban areas in Penang where the younger generation are more likely to stay in the residential areas rather than commute to work from the hill. The Penang Hill Development Plan concurred the same argument that the population in the 15-29 age group category has decreased substantially in 1980 – 1991 due to the out migration of this group to seek employment outside the area. It is believed that this trend continued in 1991 – 2000 period which resulted in the decline in the number of population in 2000.

The number of households was 128 in 1991, it has decreased to 81 in 2000, and the number of living quarters was 163 in 1991 and 99 in 2000. The Penang Hill Local Plan estimated that the population was 2,866 in 1991 and it was based upon the MPPP survey since the census data was not available during that time. This estimate was actually for the total coverage of the Penang Hill Development Plan which included population at Mt. Elvira/Sg. Pinang/Titi Kerawang with 65 housing units and 67 households, some part of Paya Terubong with 83 housing units and 86 households and the population at the Lower Station area with 180 housing units and 188 households. The estimated population for only Penang Hill was based upon 196 units of houses of which 63 were bungalows and the rest are house villages at the foothills.

Table 2.12: Population Distribution, 1991 – 2000

<table>
<thead>
<tr>
<th>Gender</th>
<th>1991</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Male</td>
<td>300</td>
<td>51.6</td>
</tr>
<tr>
<td>Female</td>
<td>281</td>
<td>48.4</td>
</tr>
<tr>
<td>Total</td>
<td>581</td>
<td>100.0</td>
</tr>
</tbody>
</table>

AAGR (1991 – 2000) (7.39 %)

Source: Preliminary Count Report for Urban and Rural Areas, Statistics Department, 2000

It is apparent that the population estimate given by the Penang Hill Local Plan seems to be on a high side, given the fact that the estimate was derived from the estimated relatively small number of houses. Furthermore, the official number of living quarters was only 163 in 1991 and the number of households was only 128.

The relatively small population is attributed by the closeness of Penang Hill to town centre, thus enabling commuting workers to workplace from nearby residential areas, using the funicular train or the existing Summit Road.
CHAPTER 2: PENANG HILL

Population Projection

The projected population of the Penang Hill takes into account the current declining population pattern. It is assumed that the trend will continue to decline, however at a slower pace. It is projected that the Penang Hill population will decrease to 225 in 2005, 174 in 2010, 150 in 2015 and 128 in 2020. The AAGR in 2000-2010 period will be at –5.00 % and –4.00 % during the 2010-2020 period. The overall AAGR during the 2000-2020 will be at -4.01 %. The decline in the number of the resident population is believed to arise from the decline in the number of ageing residents. It is also expected that the younger generation will not stay at the houses or bungalows.

Table 2.13: Projected Population of Penang Hill, 2000 – 2020

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Penang Hill</td>
<td>581</td>
<td>291</td>
<td>225</td>
<td>174</td>
<td>150</td>
<td>128</td>
<td>(7.39)</td>
<td>(4.01)</td>
</tr>
</tbody>
</table>

Source: i. Preliminary Count Report, Department of Statistics, 2000
ii. Consultant’s Estimate.

Note: i. It is assumed that the growth rate will continue to drop in 2000 – 2020 based on previous years growth pattern.
ii. It is assumed that the AAGR for 2000-2010 period will be at –5.00 % and the AAGR for 2010 – 2020 period will drop to –4.00 %

Employment

Table 2.14 depicts the employment sectors in Penang Hill in 1991. The three dominant employment sectors, were wholesale/retail/restaurants with 32 % share, agriculture with 12.3 % share and community and social services with 25 % share. Other important employment sectors include manufacturing, transport, communication, and construction. Altogether, there were 244 employed in 1991.

Table 2.14: Employment by Industrial Sectors, 1991

<table>
<thead>
<tr>
<th>Industry</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry, hunting and fishing</td>
<td>30</td>
<td>12.3</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>28</td>
<td>11.5</td>
</tr>
<tr>
<td>Electricity, gas and water</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Construction</td>
<td>13</td>
<td>5.3</td>
</tr>
<tr>
<td>Wholesale and retail trade, restaurants and hotels</td>
<td>78</td>
<td>32.0</td>
</tr>
<tr>
<td>Transport, storage and communication</td>
<td>16</td>
<td>6.6</td>
</tr>
<tr>
<td>Financing, insurance, real estate and business services</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Community, social and personal services</td>
<td>61</td>
<td>25.0</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>244</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Pengkalan Data Banci, Department of Statistics, Malaysia, (1991)
2.2.3.2 Local Economy

The main economic generation seems to be through accommodation channels at bungalows and rest houses as well as the retail sectors such as restaurants and souvenir shops. Facilities up the hill include a children’s playground, teahouse, hotel, hill mosque and an Indian temple. The railway station is located at Air Itam and the services normally operate until late evening.

Commerce

The commercial area up the hill covers an area of 4.7 ha. The commercial establishments include a hotel (Bellevue Penang Hill Hotel), historical convalescent bungalows for rent, a tea kiosk and a hawker centre. The tea kiosk was recently closed. There is also a mobile hawker operating close to the hawker centre.

The hawker centre has 26 stalls of which 20 sell food and beverage and four sell souvenirs. During a site visit on a weekday, only 11 stalls were open while the rest are believed to be open only on weekends or public holidays. The hawker centre, which is located in heart of Penang Hill, seems to need rehabilitation or upgrading. It is not properly maintained and blocks some good scenery of the proposed service centre for commercial activities, especially the bungalows and hotels.

The Penang Hill Local Plan has proposed the following for the upgrading of commercial areas to accommodate different sector of residents and visitors, in terms of income, origin and needs.

- Stall - hawker centre, cable car and funicular railway station areas
- General restaurant - Strawberry Hill, cable car and funicular railway station areas

Agriculture

Agriculture activities in Penang Hill have been in practice a long time ago. The British Indian officers were believed to have planted herbs and spice during 1800 to 1860’s. However, the intensity of the spice plantation has declined afterwards.

Agriculture in Penang Hills covers an area of 78.1 ha (vegetable farms and orchards). While taking a 30-minute Swiss-built funicular train ride up to the summit of the 830 metre high hill resort, vegetable plots, in privately owned land on the hill slopes could be observed. The Penang Hill Development Plan noted that the agricultural activities are dispersed on the lower slopes on the west, south and southeastern periphery.
CHAPTER 2: PENANG HILL

The Penang Hill Local Plan pointed out that there have been cases where agricultural activities in Penang Hill did not adhere to the right agriculture practices. Among the justifications cited include contravening the Land Conservation Act (1960) which prohibits farming on steep slopes and abandoning the farming areas since the terrain was too steep for sustained use for agriculture. The abandonment of the farming areas was claimed to have resulted in serious erosion. There were also cases of farming activities encroaching into state land. Some vegetation flowers have also taken place, for example, near Claremont and Mon Sejour. Some of these flowers are valuable, such as the Penang Slipper Orchid, which has already experienced persistent commercial collection.

2.2.3.3 Tourism

Penang Hill has certain unique features and special characteristics not found in the other hill stations. The main access to the summit is by funicular railway, which has been operational since 1922, and this system is unique to this hill station. There is also a walking track up the hill which begins at the “moongate” at Waterfall Road, about 300 metres from the entrance to the Botanic Gardens. Road access is limited to only service and government vehicles and local residents.

Spatially, Penang Hill is adjacent to a large urban concentration whilst the other hill stations are a considerable distance from the nearest significant urban settlement. Yet another distinction is that the extent of urbanisation in Penang is such that compared to the other states in which hill stations are located, viz., Pahang, Perak and Kedah, natural attributes are much more limited thus emphasising the critical importance of Penang Hill as a “green lung” and its role in contributing to sustainability of the tourism industry.

The Penang Tourism Action Plan, e.g., has indicated that future development in tourism must give consideration to:

- Ecological sustainability – sensitive areas such as hill slopes and water catchment areas should be preserved and conserved;
- Carrying capacity – there is a need to ensure that recreational and tourist facilities are not overloaded;
- Maintenance of environmental quality – enforcement is needed to ensure that the environment is well protected;
- Financial and economic viability – this has to be determined before permitting and commencing with development projects; and
- Social equity and community participation – there need to be a balance between development and local needs.

These guidelines are especially relevant for a destination such as Penang Hill.

Penang Hill has a number of attributes including a natural environment, a mild climate, compared to the lowlands a natural heritage and spectacular panoramic views of Georgetown and the mainland. Even the funicular railway ride, from a tourism perspective, is rather novel and interesting and represents an element of this hill station’s product. It has a strong sentimental value for the residents of Penang.
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These distinctive elements constitute the flagship attractions of this hill and complementary attractions exist in the form of elements of the natural and cultural heritage such as the historic colonial style bungalows, other buildings and fixtures such as the cannon.

Other facilities that are support attractions include the Bellevue Hotel, hawker stalls and vendors catering for food and drinks, seven outlets selling souvenirs, a mini bird park, attractive flower gardens and historic, picturesque, bungalows which reflect the heritage of Penang. There are also institutional buildings such as a Post Office, Clinic, Mosque and Temple. The food and beverage outlets are of relatively poor quality whilst the accommodation facilities at present are of moderate standard.

In essence there are two principal tourism products in Penang Hill, viz.,

- Heritage tourism
- Nature tourism

As noted in the Local Plan, Penang Hill has both the natural environmental and heritage resources, which are suited for tourism. The major tourist attractions in this hill station and surrounding areas development are illustrated in Figure 2.5.

Nature and heritage tourism as prime themes would, as noted in the Local Plan, complement existing tourism areas in the city and beach areas. (Municipal Council of Penang Island, Penang Hill Local Plan, April 1998). Indeed Penang Hill should be viewed as a very significant element in Penang’s heritage.

(a) Visitor Arrivals

Table 2.15 presents time series data from PDC on visitor arrivals to Penang over the period 1996-2000. Arrivals in 1996 totalled 3.44 million in 1996, and although the upward-trend in arrivals was temporarily reversed in 1997 and 1998 during the regional financial crisis, visitor arrivals rose again in 1999 and in 2000, when they are estimated to have reached nearly 3.53 million.

Table 2.15: Visitor Arrivals to Penang (1996-2000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Visitors</th>
<th>1996 (%)</th>
<th>1997 (%)</th>
<th>1998 (%)</th>
<th>1999 (%)</th>
<th>2000 (%)</th>
<th>AAGR 1996 – 2000 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Visitors</td>
<td>3,444,148</td>
<td>100.0</td>
<td>3,167,239</td>
<td>100.0</td>
<td>3,251,141</td>
<td>100.0</td>
<td>3,519,660</td>
</tr>
<tr>
<td>Foreign Visitors</td>
<td>1,920,457</td>
<td>55.8</td>
<td>1,653,299</td>
<td>52.2</td>
<td>1,979,945</td>
<td>60.9</td>
<td>2,059,705</td>
</tr>
<tr>
<td>Domestic Visitors</td>
<td>1,523,691</td>
<td>44.2</td>
<td>1,513,940</td>
<td>47.8</td>
<td>1,271,196</td>
<td>39.1</td>
<td>1,459,955</td>
</tr>
</tbody>
</table>

Source: Tourism Development Division, PDC.

As can be seen Penang attracts a high proportion of foreign visitors and over the period 1996-2000 foreign visitors share of the total rose from 55.76% to 65.8%. Although in the year 2000 domestic visitors only accounted for 34.2% of total visitors, in absolute terms there were still over 1.2 million domestic visitors to Penang.
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According to the PDC major foreign markets origin for visitors to Penang were UK (10.6%), Australia (9.4%) and Japan (7.7%) in year 2000. A large proportion of these international visitors (50.7%) constitute repeat visitors. See Table 2.16 for the Market Mix for the period July-September 1999 and 2000. Domestic tourists comprised 34.2% of the market mix in 2000.

Table 2.16: Visitor Market Mix, July-September, 1999-2000

<table>
<thead>
<tr>
<th></th>
<th>July-September, 1999</th>
<th>July-September, 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Domestic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>39.3</td>
<td>34.2</td>
</tr>
<tr>
<td>Foreign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom</td>
<td>9.8</td>
<td>10.6</td>
</tr>
<tr>
<td>Australia</td>
<td>8.7</td>
<td>9.4</td>
</tr>
<tr>
<td>Japan</td>
<td>8.6</td>
<td>7.7</td>
</tr>
<tr>
<td>Middle East</td>
<td>6.7</td>
<td>6.8</td>
</tr>
<tr>
<td>Benelux (Netherlands)</td>
<td>0.2</td>
<td>6.3</td>
</tr>
<tr>
<td>Singapore</td>
<td>4.6</td>
<td>4.5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3.8</td>
<td>3.3</td>
</tr>
<tr>
<td>USA</td>
<td>2.6</td>
<td>2.9</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>2.6</td>
<td>2.0</td>
</tr>
<tr>
<td>Taiwan</td>
<td>2.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Others</td>
<td>11.0</td>
<td>10.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: DCT Consultancy Services Sdn Bhd.

Table 2.17 shows the number of visitors in 1998 was 472,921 and increased to 524,248 in 2000. The vast majority of visitors are local residents and domestic visitors but relatively few foreign tourists visit Penang Hill.

Table 2.17: No. of Day Visitors to Penang Hill

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>472,921</td>
</tr>
<tr>
<td>1999</td>
<td>517,213</td>
</tr>
<tr>
<td>2000</td>
<td>584,248</td>
</tr>
</tbody>
</table>

Source: Penang Hill Railway Authority
(b) Purpose of Visit

Nationally, around 66% of tourists could be regarded as leisure tourists (holiday and visiting friends and relatives), around 10% are business tourists (business and conference), whilst more than 11% regarded themselves as in transit. We do not have disaggregated data at a site specific level but anticipate there would not be very significant differences from the national situation.

(c) Tourist Expenditure

The components of tourist expenditure nationally in 1999 comprised accommodation 31.6%, shopping 22.1%, food and beverages 19.1%, local transportation 9.5% while more minor components were domestic airfares, organised sightseeing and entertainment. We would anticipate that the pattern of expenditure in Penang Hill would not deviate very substantially from that at the national level.

MTPB data indicates that average per diem expenditure of tourists amounted to RM 313.30 in 1999 while average per capita expenditure in the same year was RM 1,599.60.

Figure 2.6: Components of Tourist Expenditure, Malaysia, 1999

Source: MTPB
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(d) Average Length of Stay

The average length of stay (ALS) is an important tourism indicator and, inter alia, is a measure of the ability of a destination to maintain visitor interest. For the country as a whole the ALS of foreign tourists has increased from 4.8 nights (1995), 5.4 nights (1996), 5.3 nights (1997), 5.5 nights (1998) and in 1999 was also 5.5 nights.

Many tourists visit multiple destinations during their visit to Malaysia and there are also generally significant variations between long-haul tourists and those from short-haul origin markets. Typically, the former tends to have a longer ALS than visitors from short-haul markets.

The ALS of tourists to Penang is estimated at 3.5 nights for foreign tourists and 3.8 nights for domestic visitors. (SERI, Economic Briefing to the Penang State government, Penang Economic Report, 2000). It is, it should be added the State government’s policy is to attract longer-stay visitors.

(e) Hotels and Infrastructure

Data on the total stock of hotels and the supply of rooms in Penang State for 1997 – 1999 is presented in Table 2.8. Over the period the number of hotels increased marginally from 102 (1997) to 105 (1999) whilst the supply of rooms rose from 10,066 (1997) to 10,750 (1999). In 1999 the state accounted for about 7.5% of all hotels in Malaysia and 9.8% of the national supply of hotel rooms.

Table 2.18: Supply of Hotels and Rooms in Penang, State, 1997 – 1999

<table>
<thead>
<tr>
<th>Location</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Hotels</td>
<td>No. of Rooms</td>
<td>No. of Hotels</td>
</tr>
<tr>
<td>Penang</td>
<td>102</td>
<td>10,066</td>
<td>103</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1,365</td>
<td>98,440</td>
<td>1,419</td>
</tr>
</tbody>
</table>

Source: MTPB

In 1999 in Penang Island there were a total of 79 hotels with some 9,903 rooms which makes Penang the second largest source of hotel accommodation of these hotels were Georgetown with a total of 4,872 rooms, the beach resort of Batu Ferringhi with 2,555 hotel rooms and Tanjung Bungah with 1,461 hotel rooms. Other locations include Teluk Bahang, Bandar Bayan Baru, Bukit Jambul and Penang Hill. 440 hotel rooms were located in Teluk Bahang, 150 rooms in Bandar Bayan Baru, Bukit Jambul has 413 rooms whilst the Bellevue Hotel in Penang Hill has 12 rooms.

The proximity of Penang Hill to the urban and accommodation centres of Penang means that there is no need for extensive hotel development in the hill; many visitors would prefer to seek accommodation in the range of city centre or beach hotels that are available.
(f) Hotel Guests and Guest Nights

The total number of hotel guests in Penang in 1998 was 2.596 million and this rose to total 2.667 million in 1999. Total hotel guest nights in Penang over the two years amounted to 4.182 million (1998) and 4.789 million in 1999. In the latter year Penang accounted for almost 14% of the national total of hotel guests.

In 1999, domestic hotel guests totalled 951,185 whilst foreign hotel guests numbered 1.716 million. (see Table 2.19).

Table 2.19: Distribution of Hotel Guests and Hotel Guests Nights, Penang, 1998 and 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Domestic</th>
<th>Total Foreigners</th>
<th>Grand Total</th>
<th>% Share of National Total Guests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Guests</td>
<td>Guests Nights</td>
<td>Guests</td>
<td>Guests Nights</td>
</tr>
<tr>
<td>1998</td>
<td>974,842</td>
<td>1,359,700</td>
<td>1,621,215</td>
<td>2,596,057</td>
</tr>
<tr>
<td>1999</td>
<td>951,185</td>
<td>1,430,027</td>
<td>1,716,377</td>
<td>2,667,562</td>
</tr>
</tbody>
</table>

Source: MTPB

(f) Average Occupancy Rates

Data on average hotel occupancy rates (AOR) for Penang and for hotels in the beach and city areas for 1996-2000 are shown in Table 2.20 the AOR for hotels in Penang, fluctuated over the period under review and was 61.42% in the year 2000. The AOR for the beach hotels showed a significant improvement arising from 59.6% in 1996 to 74.31% in 2000, however, that for city hotels registered decline from 64.98% to 52.19% over the corresponding period. The fell in occupancy rates for the city hotels, according to the PDC, can largely be attributed to the increase in the total supply of rooms available in several city hotels.

Table 2.20: Average Hotel Occupancy Rates, Penang, 1996-2000

<table>
<thead>
<tr>
<th></th>
<th>1996 (%)</th>
<th>1997 (%)</th>
<th>1998 (%)</th>
<th>1999 (%)</th>
<th>2000 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Occupancy Rate (AOR)</td>
<td>61.40</td>
<td>59.40</td>
<td>60.35</td>
<td>59.66</td>
<td>61.42</td>
</tr>
<tr>
<td>AOR for Beach Hotels</td>
<td>59.60</td>
<td>56.93</td>
<td>66.07</td>
<td>62.90</td>
<td>74.31</td>
</tr>
<tr>
<td>AOR for City Hotels</td>
<td>64.98</td>
<td>63.29</td>
<td>52.35</td>
<td>56.26</td>
<td>52.19</td>
</tr>
</tbody>
</table>

Source: Tourism Development Division, PDC

It might be noted that Penang has relatively high hotel average occupancy rates, considerably higher than rates for the country as a whole. For the year 2000, the national hotel AOR was 54.3% and many important tourist destinations such as Langkawi (58%), Kuantan (53.1%), Port Dickson (44.1%) and Johor Bahru (57.1%), had rates below those of Penang.
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As regards choice of accommodation, foreign visitors generally prefer city centre hotels (40.4%) to beach hotels (31.0%) but a sizeable proportion of domestic visitors seemingly prefer to stay with friends and relatives (52.4%). (SERI, Economic Briefing to the Penang State Government, Penang Economic Report, 2000).

2.2.4 Infrastructure & Utilities

2.2.4.1 Water Supply

Penang Hill gets its water supply exclusively from the Tiger Hill catchment, which is located to the eastern slopes. The water is pumped at a rate of 0.68 ML per day into the 1.1 ML capacity Tiger Hill reservoir for distribution to consumers. The supply is sufficient to meet the present demand of 0.32 ML per day, which includes the 20% non-revenue water as estimated by the Local Plan. The quality of the water is generally good and the treatment process only involves chlorination and pH adjustments.

2.2.4.2 Solid Waste Management

The management of solid waste in Penang Hill is undertaken by the Majlis Perbandaran Pulau Pinang.

Waste collection is carried out 6 times a week at residential, commercial areas and central bins. Waste is collected using pushcarts in the vicinity of the upper station area and motorcycles are used for areas further away. The waste is then transported down using the funicular railway for disposal at the municipal dumpsite.

However, waste collection services are limited to a 3.5 km radius from the Upper Station and the vicinity of the Upper Tunnel Station as well as the Lower Station. This meant that the waste collection service does not extent to a large portion of the residential areas of Penang Hill.

As result, only about 400 kg of waste is collected per day (600 kg during public holidays) compared to the total waste generated, which is estimated at 1400 to 1800 kg per day. Where collection services are not provided, waste is disposed off in the valleys and sometimes even burnt in the open flame, presenting all sorts of pollution problems.

Should the developments outlined in the Local Plan go ahead, the solid waste generation may increase to 5300kg per day.
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2.2.4.3 Road Access & Transportation

There are two present accesses to Penang Hill, by funicular railway and by road.

Funicular Railway

The funicular railway is the only transport available to the public to get to the hilltop. The railway is operated by the Railway Unit of Penang Hill. This railway, which was built in 1923, has never been upgraded or replaced except for the introduction of new carriages in 1978. The carriage travel along a 2 km track and the journey take approximately 25 minutes.

On a typical weekday, the funicular railway ferries about 1,000 passengers with this number doubling to 2000 passengers on weekends and public holidays. Although the permissible limit for the coaches is 80 passengers, it is observed that only 60 passengers can be accommodated at any one time. This amounts to a capacity of 120 – 160 passengers per hour and as a result, some passengers have to wait for more than two hours during peak periods.

Road Access

The road access is narrow, winding and steep (25% in some stretches), from the Botanical Garden to Strawberry Hill and is approximately 5.25 km in length. The slopes on both sides are not protected which makes it susceptible to landslips. The road has many blind hairpin bends, six of which are so close together that they form ‘S’ bends such that it is accessible by 4-wheel drive vehicles. This road is only open to residents and government vehicles, as well as to pedestrian.

2.2.4.4 Sewerage

All buildings in Penang Hill are equipped with septic tank system. Only toilet wastes are channeled to the septic tanks while sullage waters are discharged direct into drains. Effluent from the septic tanks is directed into roadside drains that eventually discharge into streams or rivers. Maintenance and desludging services are done by individual building owners with the assistance of private contractors, as this service is not provided by MPPP. The sludge is disposed off by trenching in suitable areas.
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2.3 STRENGTHS, WEAKNESSES, OPPORTUNITIES & THREATS

2.3.1 Strengths

(a) Penang Hill Development Plan & Local Plan

The Development Plan has identified the key issues and formulated development strategies and areas for future development potentials. The zoning and the priority for development are to be focused at Penang Hill Town Area. The gazetted Local Plan is very sensitive to the environment of the hill station, particularly on the development options and has indicated the future land use zonings and the density permissible for development. In addition the Plan also restricts the building heights to protect the visual environment. The Plan also recognizes the need to redevelop some of the existing facilities that deprive visual impressions such as the existing hawkers centre. In addition the Local Plan has taken into consideration land cleared for agriculture for rehabilitation to deter any further deterioration. The Local Plan provides a useful development control tool to ensure sustainable development and provide the necessary guidelines for development potentials.

(b) Existing Architectural Heritage

The existing built environment of Penang Hill forms a rich architectural heritage with bungalows built from 1920’s, which is related to the “Historic City” tourism development theme of Georgetown. The main emphasis of the built environment has been its sensitivity to the environment particularly on the urban form and texture, low density development and the scale of the buildings (not more than 2 storey). The built environment and the landscape found is congruous to the concept for a nature and heritage resort for the hill area as envisaged in the Local Plan.

(c) Proximity to Georgetown

Penang Hill is very close to the urban area. This scenario subsequently relieves the pressure for extensive commercial development on the hill since the facilities are available at the doorsteps of the hill. The focus will then be channelled towards developing, strengthening and maintaining tourism facilities, products and features. Another advantage also lies in the availability of a large tourist catchment.

(d) Cool Climate and Natural Environment

The special characteristics of this hill station in respect of tourism that constitute strengths include the cool temperatures at the summit, the majestic view of Georgetown and the sea, the ecological attractions of the area including its role as a haven for avian life and a peaceful hill resort ambience.
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(e) Good Tourism Infrastructure and Supporting Services on Penang Island

Another strength arises from the fact, that unlike other hill stations, this hill resort is adjacent to a large urban concentration. Moreover, Pulau Pinang has a very well developed accommodation base with 105 hotels and some 10,750 rooms and this means that visitors to Penang Hill do not need to source accommodation on the hill itself but have a wide choice in city centre and beach locations.

Pulau Pinang also has extensive and well-developed tourist support services including some 198 travel agents and about 628 tour guides. The national policy to effect a shift towards the K-economy and the widespread use of Information and Communication Technology (ICT) in the tourism and other sectors is also a natural advantage to Penang. This is because it has traditionally maintained a high level of educational attainment and its position as a “highly-wired” state as the hub of Malaysia’s electronic industry (Socio Economic and Environmental Research Institute (SERI), Penang Economic Report, 2000).

Bayan Lepas international airport is a very important “gateway” and was the entry point for over 267,000 tourists in 1999.

(f) The Funicular Railway

The funicular railway is the only one of its kind in Malaysia and therefore represents a unique feature to Penang Hill. The rail ride is regarded as an important element of the tourist product which adds to the magical atmosphere found in Penang Hill.

(g) Active Tourism Promotion

The Penang Development Corporation (PDC) also actively promotes Penang in the domestic, regional and international markets and co-ordinates joint marketing and promotional activities with local travel trade organisations, MTPB and other relevant organisations and institutions. It also provides an extensive range of advisory and supportive services for potential investors in tourism and tourism related ventures. The PDC also organises events which include major cultural and arts festival, sports carnivals and community events. Among annual events, festivals and celebrations on the tour calendar are the Penang International Triathlon, the Penang International Dragon Boat festival, the Penang Flora Festival, City on Parade, Penang Beach Carnival, Penang Food Festival and Pesta Pulau Pinang.

(h) Existence of Nature Trails

There are a number of trails leading to many parts of Penang Hill, such as to bungalows, farms, meteorological and telecommunication stations. An interesting feature of the trails is that while they radiate to various parts of the hill station, with many of them being interconnected. The availability of these trails has made trekking a popular activity especially among the more adventurous of the Penang public as well as to visitors and tourists. Nature lovers in particular, enjoy the nature trails because of the plants that still thrive along the trails. Some more popular trails are heavily used with large crowd of trekkers at weekends while others are so infrequently used that they have been overgrown.
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These trails vary in their condition in terms of the degree of natural character they project. From the biodiversity perspective, the strength of these nature trails lie in their potential to be used in highlighting interesting biodiversity features of the forest and natural surroundings. These nature trails could serve also as an attractive tourism product. Additionally, the nature trails could be utilised for nature education and interpretation to instill appreciation and responsibility towards the natural resources of Penang Hill among the locals, visitors and tourists.

2.3.2 Weaknesses

(a) Unplanned Settlement Areas

The Local Plan has identified three major pockets of unplanned settlement areas located at the base of the hill station. These lands are mostly under private ownership and the pressure for development could lead to undesirable projects that could give a negative visual image to Penang Hill.

(b) Planting of Short-term crops

Penang Hill is gazetted as ‘hill land’ under the Land Conservation Act, 1960. Despite this, short term crops are still being planted here.

(c) Degradation of Land due to Farming

Environmental problems including the abandonment of farming and degradation of land and encroachment of hill farming on both privately owned and state land which has resulted in environmental degradation and soil erosion is a blot on the natural environmental attractiveness of this hill station.

(d) Heritage Resources Not Fully Developed or Promoted

Another weakness is that the heritage resources are not fully developed, promoted or showcased. Some of the historic bungalows are not adequately utilised or well-maintained and public awareness of the heritage of Penang Hill is still limited and needs to be promoted for educational purposes.

(e) The Lack of Tourist Attractions

The lack of tourist attractions and activities is a major reason behind the low visitor numbers in Penang Hill. At present, the only major attraction offered by Penang Hill is the panoramic view of Georgetown and a large portion of the island.

Penang Hill suffers from inadequate accommodation base, and most importantly, dining facilities, which meant that most visitors do not want to be on the hill during mealtimes. This greatly shortens the amount of time spent on the hill.

The maintenance of public facilities, nature trails and bridle paths has also been poor.
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(f) Difficulty Of Access To The Hill

The main drawback is the transportation system up to the hill. The funicular railway can only accommodate 65 passengers at any one time. This causes problems during peak periods whereby visitors sometimes have to wait up to two hours to ride the funicular railway. This acts as a deterrent to visitors to ascend the summit and makes tour operators reluctant to bring in tour groups. In the case of emergencies, the visitors may have difficulties getting to the foothill as they have to wait to alight the train.

Travelling on the funicular railway can also uncomfortable when it is packed. Maintenance of the carriages is also poor as exemplified by the inability to shut the windows during rain. The funicular railway operates using the electricity supply, which means that power failures leads to complete shutdown of the funicular railway service. As a result, day-trippers would either have to walk down or depend on the government vehicles.

(g) Inadequate Facilities At The Lower And Upper Stations

The facilities available at both the upper and the lower stations are inadequate. There is no proper waiting area for passengers at the upper stations, inadequate toilet facilities and absence of food stalls. During peak periods, the frequent arrivals of public buses, tour buses and cars result in congestion at the lower station due to inadequate parking.

(h) Lack of Site-specific Biodiversity Information

There is insufficient detailed information on biodiversity for specific areas as well as information on the variation in the distribution of biodiversity between place to place for Penang Hill. Because of this, it is currently difficult to point out specifically areas and habitats in Penang Hill that are sensitive from the biodiversity context to guide land use planning and development decisions. Consequently, it is also not possible to use biodiversity as the basis in justifying recommendations for areas to be conserved or appropriateness in terms of project siting.

(i) Poor Management Of Waste

The solid waste in Penang Hill is not well managed. Areas outside the 3.5 km radius from the upper station are not provided with the collection service. Therefore the residents dispose the waste either by open burning or by dumping down the valleys. This causes air and water pollution and is an unpleasant sight to the visitors in Penang Hill.

Penang Hill also faces serious littering problems. Indiscriminate littering still occurs although MPPP has provided bins along popular tourists areas.
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(j) Sewerage

At the moment, all the buildings and bungalows in Penang Hill uses simple septic tank system. There is no treatment being carried out. The septic tank effluent is discharged into surface drains or watercourses and it is unlikely that the effluent is compliant to Standard A of the Sewage and Industrial Effluent Standard (Regulation 1979).

2.3.3 Opportunities

(a) Areas Available for Development

The Land Use Zoning for Penang Hill Town Area and the potential development opportunities are indicated in Fig. 2.5. For the other parts of Penang Hill, the Development Plan has identified developable areas particularly at Telok Bahang with about 76 ha available for development, Sg. Pinang West (29 ha), Sg. Rusa (121ha), and Sg. Kelian (28 ha). However the main focus of development is within the Penang Hill Town area.

Development opportunities are confined to the intensive use zone located on the upper station level. The Local Plan has identified the types of development permissible and the development control guidelines to adhere to. The identified areas include the Strawberry Hill and the central areas which have been identified for commercial, residential and institutional uses. Other opportunities includes for the provision of more accommodation facilities particularly at Crag Hotel, Lomond, Richmond, Ban Hin Lee and Edgecumbe, Government Hills, South View and the Rajawali areas. Recreational facilities to be located at Bel Retiro, Convalescent and Fern Hill areas. The Hill Villages located at the base of the resort are to be retained without further extensions.

(b) Development of More Commercial Activities

The Penang Hill potential as a tourism site has not been fully exploited from the economic generation perspective. The present commercial area is not well presented and the products offered are not sufficient and varied. There also areas where economic generation can be tapped such as the Lower Range Station, existing bungalows and hotels and potential new development areas especially at the designated service centre. Thus, there are potentials for more commercial activities to be developed.

(c) Use of Nature Trails as a Tourism Product

The existing nature trails in Penang Hill offer great potential as an attractive tourism product. This is in fact consistent with the recommendations stated in the 1993 Penang Hill Local Plan whereby nature tourism products such as nature trails for activities involving forest hiking and trekking were emphasized, to complement existing tourism activities in the beach and city. By improving the integration with other attractions of Penang Island, there is a better chance of success in promoting the nature trails on Penang Hill as a tourism attraction.
(d) Potential for Nature Education and Interpretation

The opportunity for nature education and interpretation has been acknowledged in the Penang Hill Local Plan as an integral component of nature tourism that could be further developed in Penang Hill. This could include the usage of biodiversity information for enhancing visitors' experience to Penang Hill besides increasing their awareness of the importance of this hill station. Such information is suitable to be used as interpretative materials for example to be included in brochures, booklets and signboards.

There are also good prospects for expanding the usage of the nature trails to facilitate nature education and interpretation. These potentials could be expanded with the necessary development and improvement to the trails.

2.3.4 Threats

(a) Hill Farming

Hill farming on privately owned land particularly terrace farming has been a major threat to the physical environment of the resort. Forest land cleared for farming activities has been the major contributor to soil erosion. Encroachment of farming activities into State Land has been noted and in some cases the steep terrain and serious erosion has led to the abandonment of these areas. This is quite evident as seen on both sides of the funicular railway corridor.

(b) Competitive Destinations

Ultimately, a tourist destination such as Penang Hill is in competition with other destinations including other hill resorts and other attractions within Penang itself and in the region such as Bukit Merah.

(c) Illegal Collection of Wild Flora

Numerous species of plants on Penang Hill are known to possess high ornamental values, rendering them vulnerable to illegal collectors. There are evidence that considerable collection of some species of wild plants from Penang Hill currently exists. The Slipper Orchid (Paphiopedilum barbatum) for example, has suffered from persistent collection for commercial trading. This species, together with several other plants which are previously common to Penang Hill such as the pitcher plant Nepenthes albomarginata and some species of Gesnereids, are now becoming rare. If left unchecked, continuous collection will be detrimental to the overall plant diversity of Penang Hill in the long term as this may lead to the extinction of certain species.
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(d) Development Encroachment into Forest Reserves and Water Catchments

The Penang Hill Local Plan reported that development in the form of residential buildings and agriculture has encroached into the forest reserves and water catchment in Penang Hill. Not only has this resulted in the degradation of the forests, loss of biodiversity and affected the ecological balance, but also clearly reflects the violation of laws governing these areas, which prohibit such activities.

(e) Proposed Cable Car Service

The cable car service proposed in the Local Plan has to be viewed upon as a weakness despite the fact that it can improve the efficiency of transportation. Penang Hill does not focus on mass tourism, therefore there is no real need for a mode of transport to ferry large numbers of people. The cable car is also not compatible with the recommended tourism theme (Section 2.5) for Penang Hill; i.e. nature and heritage tourism.

(g) Proposed Road Train

The Local Plan also proposed the utilisation of a road train at the upper station as a means to improve the efficiency of visitor movement on the hill. This proposal is not favoured and also considered a weakness as it involves road widening. The area on the hilltop is not very large, and with the cool atmosphere, visitors should be encouraged to walk.
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2.4 CARRYING CAPACITY

The Local Plan has devoted a section of the report to determine the carrying capacity. The report selected what was known as the Moderate Development Scenario and the carrying capacity was limited to 8000 persons per day.

In the this Hill Station study, the focus was on the tourism carrying capacity which took into consideration the biodiversity conservation as well as the proposed tourist facilities, and infrastructure improvements that are detailed in the Action Plans in Section 2.5.

The following is the derivation of the carrying capacity together with the assumptions:

(a) Tourism

Assumptions:

- Based on proposed 300 hotel rooms x 2.5 persons per room (overnight) x daily turnover rate of 1 per day
- 300 rooms x 1 person per room (day visitors) x daily turnover rate of 2 per day
- Area is 4.70 ha x 80 persons/ha x daily turnover rate of 5
- Length of Summit Road 1.5km x 50 persons/km with daily turnover rate of 4.5 each
- Carrying capacity of nature trails determined as 450 persons/day

Carrying capacity = 3980 visitors per day

(b) Transportation

Assumptions:

- Based on doubling the number of carriages on the funicular railway and a peak of 45 of trips a day at 65 passengers per trip.
- The additional services of the 4-wheel drives during peak times with a capacity of 8 passengers per vehicle, 10 vehicles and 8 trips per day
- Ratio of residents to visitor conservatively assumed at 1:9 for funicular railway.

Carrying capacity = 5905 visitors per day
(c) Water Supply

Assumptions:

- Based on the present delivery rate of the pumping station at 0.68ML per day (this can be further increased if necessary)
- The demand to be 250L per day for residents and 100L per day for visitors; ratio of residents to visitor conservatively assumed at 1:9.

**Carrying capacity = 6120 visitors per day**

The carrying capacity for Penang Hill is therefore calculated to be **4000 visitors per day**. It would be noted that this is lower than the carrying capacity indicated in the Local Plan where a cable car access was provided for. Moreover, the intensive land use zone used here is smaller than that used in Local Plan which included areas of steep slopes which could not be used by visitors.
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2.5 ACTION PLANS

2.5.1 Development Focus & Guiding Issues

The development strategy is in line with the Local Plan where the prime objective is to sustain the existing environment by discouraging major changes to the landscape.

Its proximity to the vast accommodation base located in Georgetown and the beaches strongly advocate the tourism focus for Penang Hill primarily as a day retreat for tourists. Nature tourism will be the main theme for Penang Hill and a moderate increase in tourist numbers is expected. With that, several vital issues need to be addressed in order to formulate a set of recommendations best suited to achieve the focal points.

New developments are to be kept to a minimum and any major construction works will be limited to the restoration of the present facilities based on the various Action Plans.

The present mode of transportation is limiting and requires an overhaul. The funicular railway is the only means of public transport, yet its capacity has been stretched way past the limit, especially during peak periods. The increased transport capacity offered by cable car system proposed in the Local Plan is not necessary as the passenger numbers are not expected to increase to that level.

There is a strong need for tourist attractions and facilities to lengthen the stay of visitors. It is therefore essential to provide food and beverage establishments which offer both quality as well as wide variety. New attractions favouring nature tourism will be introduced while the present attractions will be upgraded.
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2.5.2 Land Use Strategies

The Local Plan has emphasized sustainable development to protect the hill from environmental degradation. The Local Plan addresses the spatial approaches for development and adopts the mixed development pattern whereby the tourism development are concentrated in a particular locality with limited dispersed development surrounding the core development area. The Plan also ensures the conservation of Heritage Buildings and provides the necessary guidelines to restore and maintaining the buildings. To ensure that the resort envisioned to be a Nature Heritage resort the following action plans are recommended.

Action Plan : PH-AP1
Penang Hill must focus only on Nature and Heritage tourism. Other types of new tourism development such as theme parks, golf courses, etc should not be permitted. Penang State Government to issue directive in this regard.

Action Plan : PH-AP2
The proposals and guidelines for development as stated in the Penang Hill Local Plan need to be revised and strengthened to be more compatible with the existing physical environment. The main issues amongst others include the development proposals at the foothills that allow for Flats with heights between 2 - 5 storeys. A uniform height restriction of 2 storeys should be applied for the whole area to protect the visual image and impact of the resort. There is a need to review the density requirements for developments in the Intensive Use Zone to ensure existing buildings with its rich architectural and designs are not displaced by the newer buildings.

Action Plan : PH – AP3
Exercise stringent controls to prevent land degradation and to enforce systematic agricultural practices. There is an existing committee that monitors the development of Penang Hill, chaired by the Director of the Pejabat Tanah & Galian Pulau Pinang, in which the DOA is a member. This committee can address the problem caused by the degradation of land from abandoned farms and encroachment of hill farming. These authorities provide the necessary manpower to conduct constant checks and supervision on farming activities on Penang Hill to ensure that all necessary guidelines have adhered to.

This committee should also implement and enforce more systematic agriculture practices and be responsible for environmental and land usage checks, and usage of pesticides and fertilisers. Activities that involve earthworks such as cutting up of the slope and for terracing for planting flowers and vegetables should be prohibited.

2.5.3 Socio-Economic Programmes

The Action Plan for the socio economy of Penang Hill in large measure is in cognisance with the Penang Hill Local Plan and the Penang Hill Development Plan 1993-2005. The major recommendations included:
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- The development theme for Penang Hill is to promote this area as a hill resort that emphasises on eco-tourism, nature tourism and preservation of hill heritage.
- Adopted concept for Penang Hill’s physical development is ‘Concentration of development with limited diffusion’.
- Development of Penang Hill has to relate to natural environment and the hill heritage where the core area should remain as the prime centre for tourism and recreational activities.
- Strawberry Hill and its surrounding will remain as the main centre for tourism and recreational activities with the rest of the hill reserved as area of natural environment and hill heritage.
- The walking trails are to be integrated into the natural and heritage resources of the hill.
- Bridle paths should be upgraded.
- Based on the selected Moderate Development Scenario, a number of tourism and recreational features has been proposed.
- Mount Elvira and Teluk Bahang are to be developed as secondary centres for tourism and recreational activities. Activities related to the natural environment should be promoted at Mount Elvira while Teluk Bahang focuses on water based recreational activities. Both sites are physically separated from the core area, therefore should be provided with their own access.

The main strategies are:

**Optimisation of Economic Generation**

Penang Hill's sensitive habitat and its importance as a water catchment area need to be maintained and protected. However, Penang Hill is also important in the context of cultural heritage and nature tourism. Thus, there is scope for optimisation of economic generation, manipulating from potential income to be generated. Establishment of more commercial and retail outlets, accommodating to different segments of residents and visitors, specifically in food and beverage, handicrafts and souvenirs could be carried out.

Penang is well known to be a gourmet's paradise. It offers a delectable variety of exotic dishes comprising Malay, Chinese, Indian, Indian Muslim, Thai and Indonesian. Malaysia's 'shish kebab' (a Penang speciality), laksa penang, murtabak and nasi kandar could be offered to the visitors.

**Systematic Agriculture Practice**

While the agriculture sector will continue to be among the economic generators for some the residents of Penang Hill, a more systematic and sustainable approach must be introduced and implemented to curb the existing problems especially in regard to environmental degradation and encroachment into state land and forest reserve. The agricultural activities in Penang Hill should be checked and controlled, in order not to repeat the Cameron Highlands scenario. Unsustainable agriculture practice will lead to landslides, environmental degradation, unsightly bare slopes and silting of rivers. Thus, it is important for the agricultural activities to implement systematic agricultural practices.
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Redevelopment of the Hawker Centre and the Tea Kiosk

The Penang Hill Local Plan has proposed that the present hawker centre, occupying some 0.08 ha of land be redeveloped as a tourism centre. The redevelopment of the hawker centre would offer a potentially better place and image to Penang Hill.

Upgrading and Refurbishment of Hotel and Bungalows and development of new commercial areas.

The Local Plan has proposed hotels and some bungalows be upgraded and redeveloped for commercial and tourism purposes. The listed hotels and bungalows include:

- Bellevue Hotel - retain and refurbish existing building
  - siting of additional accommodation facilities
  - enlarge the present restaurant
- Crag Hotel - develop as accommodation facilities
  - commercial use for residential accommodation
- Lomonds - develop as accommodation facilities
  - commercial use for residential accommodation
- Richmond - develop as accommodation facilities
  - commercial use for residential accommodation
- Edgcumb - develop as accommodation facilities
  - commercial use for residential accommodation
- Ban Hin Lee - develop as accommodation facilities
  - commercial use for residential accommodation
- Fern Hill - Owners encouraged to provide rentable accommodation
- Sri Layang-Layang - Owners encouraged to provide rentable accommodation
- Moy Crag - Owners encouraged to provide rentable accommodation
- Brown House - Owners encouraged to provide rentable accommodation
- Rajawali - retain and develop as accommodation facilities
  - commercial use for residential accommodation

The new commercial areas proposed are:

- Coolie Lines - provide hotel/hostels
  - provide tourist shops
- Engineer’s Quarters - redevelop for commercial purposes
- Government Hill - develop as accommodation facilities
  - commercial use for residential accommodation

Establish a New Commercial Area in the Lower Range Station

At present, there are no commercial activities in the Lower Range Station area. Since the station serves as the main entrance to Penang Hill and portrays the image of the Penang Hill, it needs upgrading and beautification from the present state. The Local Plan has proposed it to be a transportation terminal.
Specific Action Plan programmes proposed are:

**Action Plan : PH-AP4**

**MPPP should redevelop the hawker centre.** It is recommended that the redevelopment of the Hawker Centre accommodate food stalls or restaurants, handicraft and souvenir centres, information kiosk, etc. Products such as nutmegs, paintings, batik, kite, key chains, stickers, brassware depicting Penang Hill historical heritage, etc. have the potential to be sold-out attractions to the visitors. It is also proposed that the redevelopment of the Hawker Centre to consider and adopt the cultural village concept.

**Action Plan : PH-AP5**

**The Tea Kiosk at the Strawberry Hill should be reopened** and with its operation based on the recommended guidelines in the Local Plan. The Local Plan has proposed that the Tea Kiosk be developed to provide mid range type of restaurants and tourist facilities. The forecourt area of the Tea Kiosk shall be developed into restaurant terraces.

**Action Plan : PH-AP6**

**MPPP should establish souvenir and food stalls at the lower station area,** besides establishing public amenities such as resting/waiting areas, public facilities and conveniences and the proposed transportation terminal. MPPP shall ensure that the commercial centre be developed in accordance with the historical value of Penang Hill railway character and present surroundings.

**Action Plan : PH-AP7**

**The Agriculture Department should encourage the farmers to switch to cultivating perennial crops,** such as durian and mangosteen, rather than maintaining the present short-term crops.

### 2.5.4 Tourism Enhancements

**Hill Heritage Park Development Programme**

A Hill Heritage Park Development Programme, which would aim to conserve and enhance the role of Penang Hill as a historic hill resort and integral part of Penang’s heritage, should be implemented. It is very evident that the historical aspects and heritage of this hill station can be more vividly expressed and showcased to interest both domestic and foreign visitors.

**Nature Trails / By-Paths Upgrading Programme**

There is a considerable interest in nature tourism in Penang Hill amongst visitors and also school groups. It is thus very important that the existing nature trails and by-paths are adequately and regularly maintained and any necessary conservation works to prevent erosion is undertaken.
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It should also be noted that the Penang State Tourism Product Committee has approved the Creation of Heritage Trees Trail in Georgetown to be implemented by NGO’s such as the Malaysian Nature Society (MNS) and the Penang Heritage Trust. This commendable initiative should also be undertaken in the Penang Hill.

Tourist Accommodation / Hospitality Facilities Programme

As noted in the Penang Hill Local plan an upgrading of tourism facilities is needed and it is recommended that the hospitality industry in lowland Penang be encouraged to develop suitable facilities which are in line with visitor needs and preferences.

If visitation levels to this hill station increases and more tourists are attracted, an expansion in the accommodation base would be needed. The Penang Hill Local plan identified the Richmond, Lomonds, Government Hill, Rajawali, South View and Ban Hin Lee as possible sites for tourism/accommodation purposes and the Crag Hotel for redevelopment as a heritage hotel. At present the average occupancy rate at the Bellevue Hotel is only around 35 % and accommodation expansion is more likely to be viable following the implementation of upgrading measures and related attractions.

Intensified Customer Focused, Tourism Marketing and Promotion Programme

It will be imperative for intensified, customer-focused, tourism marketing and promotion programmes to be developed, if this hill station is to realise its tourism potential in a sustainable manner.

Specific Action Plan programmes proposed are:

Action Plan : PH-AP8
MPPP shall implement a Hill Heritage Park Development Programme. This could encompass:

- Designation of heritage buildings into two categories, viz., I + II. For category I, no demolition, alteration or extension of the building, other than development or works necessary for restoring it to, and maintaining it in, a proper state of repair be permitted. For Category II, the existing external appearance of buildings shall be preserved and no alteration to any part of the façade shall be permitted, other than works necessary for restoring it to, and maintaining it in, in a proper state of repair. The recommended listing for heritage buildings is shown in Appendix 2 of the Local Plan.

- The development of interpretative plaques for the bungalows which would briefly depict the history and heritage of the buildings and the canon. Whilst many of the bungalows are currently under private ownership, it is suggested that the agreement of the owners be sought to this scheme.

- The delineation of a heritage trail and production of brochures, leaflets and other necessary educational material for visitors.
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- As recommended in the Penang Hill Local Plan, the open ground between Bel Retiro and Convalescence Area should be developed into a **heritage hill botanic garden**, which *inter-alia*, could emphasise the long history at Spice cultivation in Penang, and the splendour of the flora in Penang Hill. Such hill botanic garden does exist in other countries, for example, the Maymo Botanic Garden, Myanmar and the Nuwara Eliya, Sri Lanka. The proposed hill botanic garden would not only be a unique attraction but could serve both tourism and botanical research objectives and be an attractive venue for passive recreation.

- The MPPP shall also consider the refurbishment of the **Gate House**, a Category I heritage building, and development of an **art gallery**, showcasing the works of local artists and an **audio-visual interpretative display** focusing on the rich cultural heritage of Penang Hill.

**Action Plan : PH-AP9**

**MPPP, with assistance of NGO’s, carry out a Nature Trails and By-Paths Upgrading programme.** Components could include:

- Regular maintenance, clearance of weeds, provision of rest areas with facilities such as benches, shelters, plaques, rubbish disposal bins, and marking of scenic points;

- Organisation of guided, structured and graded walks, guided bird walks, night walks, and educational tours. These walks should be so planned as to encompass that significance viewpoints, water features, interesting scenic areas, unique flora, historic sites and bungalows.

- Provision for rental of mountain bikes, field equipment such as binoculars, telescopes and waterproofs;

- Provision of leaflets describing the trails and indicating, e.g., which tourism activities are permitted and those such as hunting and picking flowers and plants which are not permitted.

- MPPP to secure private-sector sponsorship for the nature trails/by paths upgrading programme.

**Action Plan : PH-AP10**

**Penang Heritage Trust to implement the Creation of Heritage Trees Trail** in Penang Hill, similar to the one approved by the Penang State Tourism Product Committee for Georgetown.
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Action Plan: PH-AP11

Develop small boutique hotels at the Richmond, Lomonds, Government Hill, Rajawali, South View and Ban Hin Lee areas. This will serve to increase the present accommodation base that is archetypal to Penang Hill. The restaurants in these hotels will provide an added variety to dining/food scene. Boutique Hotels are preferred as they are “themed” and expected to be distinctive of high standards of personal service and high tariffs. The Carcosa Seri Negara serves as a fine example of such a hotel.

Action Plan: PH-AP12

MPPP and the Hotel Industry should develop a mid-price range restaurant and restaurant terraces at Strawberry Hill, where there are magnificent panoramic views. The area should be attractively landscaped and a mix of indigenous and temperate plants to enhance the aesthetic appeal.

Action Plan: PH-AP13

PDC, with assistance of MTPB, the Penang Tourist Association and the private sector, shall, undertake well-funded joint advertising and promotion campaigns marketing Penang Hill as part of Georgetown – Historic City Concept. PDC, with assistance from MTPB, shall also produce high quality promotional material including pamphlets, brochures, dos and don’ts guides, pocket checklists, information guides etc.

The target markets should include both domestic tourists and foreign tourists from existing important origin markets such as UK, Australia, Japan and Singapore and markets offering such great potential such as China and India.

2.5.5 Biodiversity Conservation

Action Plan: PH-AP14

DOA, Land Office and Forestry Department under the committee mentioned in PH-AP3, must stop farming in all areas that has encroached into the forest reserve and will take measures to rehabilitate these areas back into their natural state. A total of 277.87 ha of Penang Hill were identified in the Penang Hill Local Plan as degraded areas requiring rehabilitation. This includes areas of forest that have been cleared for agriculture activities that were illegally carried out but later abandoned because of non-feasibility of the physical conditions (such as slope too steep to sustain farming).

There are various benefits that could be derived through the rehabilitation of the degraded forests. From the biodiversity and nature conservation angle, the benefits relates to re-establishment of species richness by allowing biodiversity to regenerate and thrive once again. Additionally, there are other associated benefits, which include the enhancement of the aesthetic value of the landscape of Penang Hill while ensuring that ecological services of the forests are restored.
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Action Plan : PH-AP15
Establish an Interpretation / Information Centre. The MPPP should consider the establishment of an Interpretation / Information Centre to be constructed in a strategic location on Penang Hill. The Centre should serve the role of providing visitors with information including on the biodiversity of Penang Hill. It should also provide interpretative materials such as trail guides for the nature trails, maps, booklets and brochures ideally in both English and Bahasa Malaysia to cater for both local and foreign visitors. Suitable activities to be managed by the Centre such as audio-visual presentations, educational programmes, nature skills development courses and species identification courses could also be considered. Additionally, the possibility of equipping the Centre with research facilities for visiting scientists and university groups should also be explored.

Action Plan : PH-AP16
Control of illegal collection of wild flora and fauna. Measures to control illegal collection of wild flora especially species which are rare and have limited population need to be implemented urgently. The implementation of this effort could be lead by the District and Land Office with cooperation from Forestry Department, DWNP and Agriculture Department. Other agencies such as academic and research institutions, and conservation-based NGOs should also be encouraged to support this effort. Possible measures may include the following:

(f) Improving surveillance on activity of illegal collection of flora and fauna from the wild;
(g) Enforcing a ban on collecting wild flora and fauna;
(h) Incorporating information in multi-languages on the prohibition in promotional brochures and on signboards;
(i) Introducing a permit system to allow collection for scientific and research purposes only with conditions such as requiring the listings of all specimens collected and their quantity, usage of sustainable / proper collection methods and submission of scientific / research publications produced;
(j) Undertake monitoring of the trade in wild flora and fauna at the local level.

2.5.6 Infrastructure & Environmental Improvements

The availability of reliable and adequate infrastructure is essential to a successful development. The critical areas that require action to be taken are:

Transportation & Access to the Summit

Actions will taken to improve the somewhat limited accessibility to the summit and also recommend improvements to the present system. The sensitivity to the environment and the interest of the residents there will also be taken into consideration.

Solid Waste Management

The present limitations in the management of solid waste will be addressed to ensure that there is no indiscriminate dumping or burning of waste on the hill.
CHAPTER 2: PENANG HILL

Environmental Management

The management of the environment can be improved with the implementation of conservation measures that focus toward sustainability. The target groups will be the hoteliers and other commercial establishments on the hill.

Sewerage

Proposals for the management of sewerage systems are detailed in the Local Plan, which recommends the use of treatment mechanized systems as well as modern septic tanks a far as possible to ensure the degradation to the water quality in this catchment area is kept to an absolute minimum.

Specific Action Programmes for this hill station are:

Action Plan : PH-AP17

Improve the funicular railway service. Since the funicular railway is part of the heritage of Penang Hill, its services will be maintained although other new transport modes may be introduced. However, the capacity of the funicular railway has to be improved through the addition of extra carriages. The addition of a second carriage will increase the peak capacity to 5850 passengers per day. The quality of the funicular railway ride must also be improved both through enhanced passenger comfort and better viewing opportunities.

The Penang Hill Railway Unit and the State Government shall undertake the upgrading programme. Components of such a programme could incorporate:

- Replacement of existing motors and other haulage equipment;
- Upgrading of the station. This could include refurbished waiting areas, toilets, restaurant, information kiosk and a souvenir shop;
- Introduction of new coaches with improved ventilation and communication system and a higher carrying capacity;
- The installation of appropriate and suitable lighting – for night rides – should be considered.
- Replacement of existing goods wagons with new wagons which would have the capacity to carry small containers;
- Installation of an emergency generator to power the cable car.

The Penang Hill Local Plan has also outlined proposals to improve the efficiency of the funicular railway.

Action Plan : PH-AP18

Provide additional public access via the road. The cable car proposal is deemed unnecessary, as the volume of visitors will not demand such a service. Instead, a fleet of four-wheel drive vehicles can be utilised to transport visitors up the hill by road on weekends, public and school holidays. The Penang Hill Railway Unit can be expanded to operate these vehicles, and the unit can be renamed Penang Hill Transport Unit (Unit Pengangkutan Bukit Bendera). No widening of the road is proposed to safeguard the fragile hill slopes.
CHAPTER 2: PENANG HILL

Action Plan : PH-AP19
Penang Hill should be maintained as a traffic free zone area to conserve the fragile environment. Proposals to widen the existing road to allow more cars should not be allowed. Instead the existing pedestrian walkways should be upgraded to encourage visitors to walk.

Action Plan : PH-AP20
Improve solid waste management. MPPP should provide collection, street cleaning and public hygiene service to the whole of the Penang Hill area. The most critical issue is the waste collection service which should be extended to every household and buildings on the hill. In areas where door-to-door collection is not feasible due to difficult in access, communal bins could be placed at a strategic locations and collection must be carried out every other day.

In view of the additional solid waste from both generation and increased collection services, the waste will no longer be transported down via the funicular railway. It will instead be taken down the hill using one–tonne lorries and disposed off at the proper sites designated by the MPPP. The lorries can be modified to enable them to ascend the hill. The additional volume of waste from the hill should not pose a problem at the disposal site as it only represents a very small percentage of the total waste generation for the entire island.

Action Plan : PH-AP21
Areas within the water catchment areas should not be developed. There should be no development within water catchment areas as the supply of portable water is of crucial importance. There are some bungalows which is already located within the catchment areas and the continual use of this property are allowed but no further development should take place.

Action Plan : PH-AP22
MPPP must make water conservation measures mandatory for all new facilities in Penang Hill. Half flush toilets and auto-shut off taps must be installed as a condition of building plan approval. All existing hotels shall be given a grace period of three years to implement these measures. Water demand management will help alleviate the water stress problem.

Action Plan : PH-AP23
MPPP shall ensure that all future hotels implement environmental management systems (EMS) (ISO14001 or equivalent) as a condition of business licence. MPPP could give monetary incentives in the form of reduction in the annual quit rent and/or assessments according to hotels’ level of implementation of these measures. The present Bellevue Hotel shall be given a grace period of three years to implement an EMS.

Action Plan : PH-AP24
Improve sewerage system. The Penang Hill Local Plan has outlined proposals for the sewage management. Areas with electricity supply can use small extended aeration treatment system or mechanised sewage treatment. The effluent shall comply with standard A of the Environmental Quality (Sewage and Industrial Effluent) Regulations, 1979. For bungalows, septic tanks with upward anaerobic filters are suggested whereby the sludge be disposed into proper areas.
CHAPTER 2: PENANG HILL

Action Plan : PH-AP25
Rehabilitate the access road to the summit. Turfing of all bare slopes along the access road must be done to reduce its susceptibility to landslides. The road must be resurfaced and repaired.

Action Plan : PH-AP26

The Cabinet Committee on Highlands and Islands with the assistance of UPEN Pulau Pinang should continuously monitor all development activities at Penang Hill.
CHAPTER 1: PENANG HILL

Plate 2-1  A Bungalow on Penang Hill

Plate 2-2  Hawker Centre on Penang Hill
Zoning plan for Penang Hill

Legend:
- Intensive use zone
- Nature recreation / conservation zone
- Nature recreation / rehabilitation zone
- Conservation zone
- Agriculture zone
- Wildlife sanctuary
- Water / passive recreation zone
- Planning zone boundary
- Penang Hill boundary as in Development Plan
- Core area boundary

Planning Zone
1. Sg. Tengah
2. Batu Ferringhi
3. Teluk Bahang
4. Sg. Pinang
5. Sg. Rusa
6. Ayer Itam
7. Sg. Pokok Besar
8. Sg. Dondang
9. Sg. Air Putih
10. Sg. Air Terjun
11. Sg. Kelian

Source: Penang Hill Development Plan (2005-2006)
Figure 2-5

Major Tourist Attractions in Penang Hill
CHAPTER 3: GUNUNG JERAI

3.1 INTRODUCTION

Gunung Jerai is located in the state of Kedah in the border of the district of Yan and Kuala Muda. Gunung Jerai is an isolated body of rock with a single peak with a summit of 1217m. It is an unusual peak in that is sits in solitude close to the coast, suggesting that this was once an island a long time ago.

Indeed its proximity to the coast has made it a landmark for sailors from distant lands who used it as a beacon for landfall thousands of years ago. The travelers sailed into the river mouth of Sg. Merbok, which is only a few kilometers from the Gunung Jerai, and settled in areas near the river. These travelers were largely from India, who came to the Malay Peninsula primarily because they were sailing to the rich, cultured civilisation of China. They sold pepper and cotton there and bought silk, porcelain and precious objects. However, when they discovered that gold, the most precious object of all, could also be secured in the Malay Peninsula, the country then became not an obstruction to be sailed around or walked across, but a land attractive in itself. As a result, there were signs of settlements flourishing at Bukit Penjara, Bukit Meriam and Batu Lintang, all to the south of Sg. Merbok. The heritage left behind by these settlers remained until today, where temple ruins surround the foothills of Gunung Jerai.

Today, Gunung Jerai is a minor tourist destination offering a cool solitude, with a breathtaking view of the coastline and paddy fields as well as a number of enchanting waterfalls. Several communication towers occupy its peak. Almost the entire Gunung Jerai is protected under the Gunung Jerai Forest Reserve.

Gunung Jerai appears to be the least documented compared to the other hill stations in this study, and also possibly the least known despite its role in the early civilization of the Bujang Valley.

3.2 EXISTING SITUATION

3.2.1 Physical Environment

3.2.1.1 Land Use

The administrative authority for the Gunung Jerai is the Majlis Daerah Yan. The main land use is forest, namely the Gunung Jerai Forest Reserve, totaling about 8560 hectares. Gunung Jerai has been gazetted as a forest reserve since 1953.

Besides the forest areas, the other main land use is the Peranginan Gunung Jerai Resort which was opened in 1986. These facilities include 13 chalets, a restaurant with facilities for seminars, a multipurpose hall, a mosque, children’s playground, and picnic and camping sites. In addition, there are flower / herbal gardens, and proposals to set up a mini golf and a mini zoo. Figure 3.1 shows the land use of the resort. There is a Forest Museum located not far from the summit with access to adjacent forest recreation park and waterfalls. In addition there are several small durian orchards found mainly at the foothills of the resort. At the foothills, there are some facilities for restaurants, retail lots and parking area.
CHAPTER 3: GUNUNG JERAI

The Gunung Jerai Tourism Master Plan prepared in 1994 have assessed the need to improve the resort and to incorporate other surrounding tourist attractions found in Southern Kedah, to market as a tourism package to encourage more visitors to the resort. The GJTMP includes Gunung Jerai together with the Bujang Valley; Pantai Merdeka/Tanjong Dawai; and the islands of Pulau Bidan; Telor and Songsong.

Gunung Jerai on its own has problems in attracting visitors due to the lack of facilities, activity programmes and ineffective marketing.

3.2.1.2 Topography

The single peak forming Gunung Jerai has a maximum elevation of 1217m with steep vertical drops on the western, south-western and north-western sides. The vertical drops here give rise to several spectacular waterfalls that are visible at some distance from the township of Yan. The geology of the Gunung Jerai suggests that it as been isolated for a lengthy period in geological terms, being composed of largely granite and sandstone. In many places, the bedrock has been exposed as large boulders, clearly evident in the streams.

3.2.1.3 River System & Water Catchments

The rivers found here are mostly tributaries of Sg. Merbok or otherwise small streams that flow directly into the sea. The Gunung Jerai Forest Reserve is drained by Sg. Bujang and serves as a small but important water catchment for the district of Yan and Sg. Petani areas.

3.2.2 Biological Environment

3.2.2.1 Natural Ecosystem and Habitats Represented

The natural ecosystem found in Gunung Jerai is largely forests that can be divided into several types namely:

(a) Lowland Dipterocarp Forest (LDF) extending up to about 400 m altitude;
(b) Hill and Upper Dipterocarp Forests (HDF and UDF) which are possibly merged and occurring between 400 to 900 m altitude;
(c) Heath / kerangas forest at around 900 m altitude upwards and occurring sporadically in some parts of the mountain. This forest type occur on nutritionally poor soil (i.e. sandy, acidic, thin layer of organic matter) and is characterised by gnarled trees with small stature, low canopy and few species with slow growth;
(d) Upper Montane Forest (UMF) or Montane Ericaceous Forest from about 1,000 m upwards to the summit.
CHAPTER 3: GUNUNG JERAI

A number of streams, which form part of Gunung Jerai’s natural ecosystem are also present. Owing to the steep and frequent vertical cliffs, several waterfalls occur here including some with spectacular scenery.

Gunung Jerai demonstrates several important features from the vegetation and flora perspectives and these are summarised below:

(a) Although in general, the flora of Gunung Jerai is predominantly Malaysian, there are a number of species with typical Thai-Burmese affinities;
(b) Gunung Jerai contains one of the few notable examples of montane forests in Kedah since the State lacks mountainous and highland areas due to its generally flat topography;
(c) Compared to most localities on the Main Range, Gunung Jerai may not be floristically rich. However, Gunung Jerai is floristically unique because it is an isolated mountain. The isolation effect causes certain vegetation types to be depressed to lower altitudes in Gunung Jerai compared to similar types of vegetation found on the main bulk of mountain massifs such as the Main Range. Additionally, this effect also results in the presence or dominance of certain vegetation types that are not normally demonstrated at comparable altitudes on the Main Range or other mountains inland.

3.2.2.2 Legal Status Of The Natural Habitats

Gunung Jerai is located in two districts, namely Yan and Kuala Muda. The lower slopes and base of Gunung Jerai are within the Yan district whereas the upper slopes and peak area come under the Kuala Muda district.

Documented records suggest that almost the entire Gunung Jerai from the base to the summit fall within the Gunung Jerai FR (established in 1953 covering an area of 8,560 ha) which is under the jurisdiction of the Kedah Forestry Department.

3.2.2.3 Prime Conservation Areas

There is no information in the existing literature to indicate specific areas on Gunung Jerai with outstanding value for plant conservation. It should be noted however, that most botanical studies undertaken in Gunung Jerai have tended to focus upon its upper zone. This is possibly because of the expectation that the upper region and peak area would be more significant floristically based on the general principle that such areas are more likely to support rich flora diversity with high level of species endemism (Kiew, 1990). The lower zones can be expected to contain species which are by no means restricted to Gunung Jerai and would be found elsewhere (WWF, 1977).

Of interest is the study by Kochummen (1982) which revealed the dominance of the family Myrtaceae at about 750 m elevation. This is a unique feature for two reasons. Firstly, this type of vegetation does not usually appear at the corresponding altitude in inland and continuous mountain massifs. Secondly, the presence and dominance of species of the Myrtaceae family is a characteristic of heath / kerangas forest. The significance of the heath / kerangas forest is based on
CHAPTER 3: GUNUNG JERAI

the fact that it is a fragile habitat which is very slow to develop and there is limited representative examples in Peninsular Malaysia. Therefore, this particular forest zone in Gunung Jerai could be regarded as an area of scientific importance for plant conservation.

The study by WWF (1977) reported the prominence of several plant families such as Fagaceae (oaks and chestnuts), Ericaceae (Rhododendrons), Lauraceae and Rosaceae above 1,000 m to the peak. These families are not represented or only occur scarcely in the lowlands. This finding could be used to justify the importance of the peak zone of Gunung Jerai as a potential plant conservation area.

Another potential area of significance for plant conservation is located along Tangga Kenari, a forest path with concrete steps leading to the peak of Gunung Jerai from the Titi Hayun waterfall at the foothill of Gunung Jerai. The Titi Hayun waterfall is located in a Recreation Park under the management of the Forestry Department. Tangga Kenari is frequently used by visitors who prefer hiking up to the Gunung Jerai peak as an alternative to driving using the ascent road. This path is interesting as it transverses examples of the different forest types found in Gunung Jerai. The forests along this path are also highly susceptible to disturbance and require careful management to safeguard its natural attractions.

3.2.2.4 Flora Profile

The preliminary checklist of highland plant species compiled by Perumal & Lo (2000) is used as the basis for the analysis of the Gunung Jerai flora profile.

The plant species listing for Gunung Jerai is extracted from the checklist when direct reference is made to known areas on Gunung Jerai or Gunung Jerai itself is specifically cited as being the locality from where collection or record of the particular species was made.

Species Richness

The checklist by Perumal & Lo (2000) gave a record of 393 highland plant species for Gunung Jerai (Table 3.1). In comparison to the total highland plant species found in Peninsular Malaysia, Gunung Jerai accounts for 12.9% of the Peninsula’s total highland plant species. This high percentage reflects a significant contribution and importance of Gunung Jerai towards highland plant species diversity in Malaysia.
CHAPTER 3: GUNUNG JERAI

Table 3.1: A Comparison between the total highland plant species found in Peninsular Malaysia with that in Gunung Jerai

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Total in Peninsular Malaysia</th>
<th>Gunung Jerai</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferns and Fern Allies</td>
<td>346</td>
<td>8 (2.3%)</td>
</tr>
<tr>
<td>Gymnosperms</td>
<td>17</td>
<td>2 (11.8%)</td>
</tr>
<tr>
<td>Monocotyledons</td>
<td>816</td>
<td>139 (17.0%)</td>
</tr>
<tr>
<td>Dicotyledons</td>
<td>1,871</td>
<td>244 (13.0%)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3,050</strong></td>
<td><strong>393 (12.9%)</strong></td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

Special Features of Species: Endemism, Rarity and Highland Specialist

The number of endemic species totalled 41 species or 10.4% of the total highland plant species recorded in Gunung Jerai (Table 3.2). 22 of the highland plant species in Gunung Jerai are rare, a majority of which are Dicotyledons. There are four species with both status of endemic and rare, all of them from the group Dicotyledon.

Table 3.2: Endemism and Rarity among Plant Species Found in Gunung Jerai

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of endemic species</th>
<th>Number of rare species</th>
<th>Number of endemic and rare species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fern and Fern Allies</td>
<td>1 (2.4%)</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Monocotyledon</td>
<td>15 (36.6%)</td>
<td>6 (27.3%)</td>
<td>None</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>25 (61.0%)</td>
<td>16 (72.7%)</td>
<td>4 (100%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>41 (100%)</strong></td>
<td><strong>22 (100%)</strong></td>
<td><strong>4 (100%)</strong></td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

44.3% of the Gunung Jerai flora comprises strictly highland species with a majority of this belonging to the group Monocotyledon (Table 3.3).

Table 3.3: Categorisation of Flora Species in Gunung Jerai According to Distribution

<table>
<thead>
<tr>
<th>Plant group</th>
<th>A</th>
<th>B</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferns and Fern Allies</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Gymnosperm</td>
<td>None</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Monocotyledon</td>
<td>98</td>
<td>41</td>
<td>139</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>70</td>
<td>174</td>
<td>244</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>174 (44.3%)</strong></td>
<td><strong>219 (55.7%)</strong></td>
<td><strong>393 (100%)</strong></td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

Note:
A: highland specialist       B: species occurring in both highlands and lowlands
CHAPTER 3: GUNUNG JERAI

Conservation Status of Species

The plant species record for Gunung Jerai (totalling 393 species) is cross-checked with the 1997 IUCN Red List of Threatened Plants, the 1998 WCMC World List of Threatened Trees and the CITES Appendices. Two species of trees that occur in Gunung Jerai are listed in the World List of Threatened Trees (Table 3.4). Both species are highland specialists and their survival may be threatened by uncontrolled development at high elevation in the highland areas. These species are classified as LRcd because they are at risk of facing greater threats if the required conservation measures are not currently available. None of the species in Gunung Jerai is listed in any of the categories in the IUCN list or in the CITES Appendices.

Table 3.4: Summary of Threatened and CITES-listed Flora Species in Gunung Jerai

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of Species</th>
<th>IUCN List</th>
<th>WCMC List</th>
<th>CITES Appendices</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ex</td>
<td>EX/E</td>
<td>E</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note:
Ex: Extinct  Ex/E: Extinct/Endangered  E: Endangered  V: Vulnerable  R: Rare  I: Indeterminate
LRcd: Lower Risk: conservation dependent

It can be concluded that for Gunung Jerai, both the plant species and their habitat which occur within the Gunung Jerai FR can be expected to receive some level of protection. Currently, threats from illegal collection of wild flora do not seem to exist. However, the Forestry Department acknowledged that is monitoring activities of illegal collection of plant species from the wild within the forest reserve.

3.2.2.5 Fauna Profile

Primary sources of information in compiling the faunal checklists were the Malayan Nature Journal (published by the Malaysian Nature Society), a report by WWF Malaysia and various vertebrate field and non-field guidebooks. For the bird checklist, a report by WWF Malaysia on Gunung Jerai State Park (WWFM, 1977) and the bird-list of Gregory-Smith (1994) were the primary sources of information. The mammal checklist was extracted from the WWFM Gunung Jerai report (WWFM, 1977) and information on rodents by Yong (1969) was added on. Information on the reptiles of Gunung Jerai could not be obtained and it is likely that such information is yet to be gathered and published. The amphibian checklist was compiled using locality records provided by Berry (1975). Although this publication is somewhat outdated, there is no recent authoritative publication on the subject. More recent publications by Cox et al. (1998) and Chan-ard et al. (1999) on the reptiles and amphibians of Thailand and Peninsular Malaysia was referred to for new data on distribution and natural history information.
CHAPTER 3: GUNUNG JERAI

Species Richness

To date, the forested habitats of Gunung Jerai have been recorded to support some 38 mammal, 141 bird and 5 amphibian species. In relation to the total number of faunal species, Gunung Jerai has 17.67%, 21.67% and 5.68% of total known Peninsular Malaysian mammal, bird and amphibian species respectively. Data on the reptiles was lacking and no published information could be obtained for the purposes of compiling a checklist. This is an obvious gap in our knowledge on the terrestrial vertebrate fauna of this mountain and basic research is required in this regard.

Conservation status of species: 2000 IUCN Red List of Threatened Species

Amongst the various mammals occurring at Gunung Jerai four mammal species are categorized as ‘Vulnerable’ and three as ‘Lower Risk – near threatened’ (listed below; Refer to Table 3.5).

The mammal species categorized as “Vulnerable” are:

- Macaca nemestrina (Pig-tailed macaque)
- Hystrix brachyura (Malayan porcupine)
- Tapirus indicus (Malayan tapir)
- Capricornis sumatrensis (Serow)

The mammal species categorized as “Lower Risk – near threatened” are:

- Macaca fascicularis (Long-tailed macaque)
- Hylobates sp. (Gibbon)
- Manis javanica (Malayan pangolin)

Amongst the Gunung Jerai avian fauna, 17 species are categorised as “Lower Risk – near threatened” (Table 3.5).

Table 3.5: Conservation status of terrestrial vertebrate fauna of Gunung Jerai according to IUCN’s Red List of Threatened Species (IUCN, 2000)

<table>
<thead>
<tr>
<th>Category</th>
<th>Mammals</th>
<th>Birds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vulnerable</td>
<td>4</td>
<td>None</td>
<td>4</td>
</tr>
<tr>
<td>Lower Risk – near threatened</td>
<td>3</td>
<td>17</td>
<td>20</td>
</tr>
</tbody>
</table>

Conservation status of species: Protection of Wild Life Act, 1972

Of the total vertebrate fauna of Gunung Jerai, 11 mammal and 134 bird species are listed as Totally Protected under the Protection of Wild Life Act, 1972 (PWA, 1972)(Table 3.6). Likewise, 9 mammal and four bird species that occur at Gunung Jerai are listed as ‘Protected’ according to the same Act. In total, 158 terrestrial vertebrate species occurring at Gunung Jerai are afforded protection by the PWA, 1972. This makes Gunung Jerai important for faunal conservation and management
as it is large enough an area to contain viable populations for most of the protected and totally protected species.

Table 3.6: Terrestrial vertebrate fauna of Gunung Jerai accorded protection under the Protection of Wild Life Act, 1972

<table>
<thead>
<tr>
<th>Status</th>
<th>Mammals</th>
<th>Birds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally Protected</td>
<td>11</td>
<td>134</td>
<td>145</td>
</tr>
<tr>
<td>Protected</td>
<td>9</td>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

The “Totally Protected” mammal species according to the PWA, 1972, are:

*Cynocephalus variegates* (Malayan flying lemur)  
*Nycticebus coucang* (Slow loris)  
*Hylobates* sp. (Gibbon)  
*Manis javanica* (Malayan pangolin)  
*Ratufa bicolor* (Black giant squirrel)  
*Ratufa affinis* (Common giant squirrel)  
*Petaurista elegans* (Spotted giant flying squirrel)  
*Panthera pardus* (Leopard)  
*Prionailurus bengalensis* (Leopard cat)  
*Tapirus indicus* (Malayan tapir)  
*Capricornis sumatrensis* (Serow)

The “Protected” mammal species according to the PWA, 1972, are:

*Presbytis obscurus* (Dusky leaf monkey)  
*Presbytis melalophos* (Banded leaf monkey)  
*Macaca fascicularis* (Long-tailed macaque)  
*Macaca nemestrina* (Pig-tailed macaque)  
*Hystrix brachyura* (Malayan porcupine)  
*Paradoxurus hermaphroditus* (Common palm civet)  
*Sus scrofa* (Wild boar)  
*Tragulus javanicus* (Lesser mouse deer)  
*Muntiacus muntjak* (Barking deer)

The “Protected” bird species of Gunung Jerai as listed in the PWA, 1972, are:

*Treron curvirostra* (Thick-billed pigeon)  
*Chalcophaps indica* (Green-winged pigeon)  
*Copsychus malabaricus* (White-rumped sharma)  
*Gracula religiosa* (Hill myna)
CHAPTER 3: GUNUNG JERAI

3.2.3 Socio-Economic Environment

3.2.3.1 Population

The resident population in Gunung Jerai is made up of mostly government servants, serving in the Army and Forestry Department as well as resort workers for the Gunung Jerai Resort. Altogether, the local population numbers less than 30 people with 15 people in the army camp, two forestry department workers staying in government quarters and 10 resort workers with 6 males and 4 females, staying in the resort itself. At the foothills, there are four houses occupied by Malay families, carrying out agricultural activities especially vegetable farming.

3.2.3.2 Local Economy

Commerce

Parts of Gunung Jerai have been selectively logged. While it is stretching things to call the settlement on the peak a "hill station", there's no colonial tradition here. However, there is one hotel, Gunung Jerai Resort, which can provide a pleasant overnight stop. The hotel has a restaurant, a gift kiosk at the reception area as well as 30 comfortable chalets. It provides tents for RM 30 for visitors or tourist who prefer sleeping al fresco. A food stall is also available close by.

The stalls at the foot hill serves as the landmark gateway for Tangga Kenari entry point. The partially old wooden building situates four food stalls and two tailor shops.

Agriculture

Agricultural activities are not the main economic generator in Gunung Jerai although there is a mushroom farm and a planned one-acre tomato cultivation by the Agriculture Department in areas close to the resort. However, there is a possibility that the tomato plan will be switched to strawberry because strawberry is more commercially viable. The department plans to start the strawberry farm sometime in 2002. The department has also considered planting tulips.

Areas at the foothills, surrounding the Gunung Jerai, both in Kuala Muda and Yan District have been extensively utilised for agricultural purposes. In the Kuala Muda District, some 100 ha of mixed vegetable farming is being carried out with the main crops include long bean, water spinach, chilli, lady's fingers, bitter gourd, brinjal and leaf vegetables. A 40 ha durian orchard is also situated here and 2000 lemon seedlings were recently supplied to be planted at Kampung Kepala Bukit, Kampung Banggul Lalang, Kampung Guar Nanas and Kampung Sungau Badak.

A total of 74 ha of fruit orchard is located in Yan District. Among the fruits grown are durian, cempedak, rambutan and mangoesteen. A 7 ha of vegetable farming is also found in this district, specifically in Kampung Titi Teras, Troi. Other agricultural activities include some rubber and palm oil plantation.
CHAPTER 3: GUNUNG JERAI

3.2.3.3 Tourism

Gunung Jerai, along with Gunung Raya Forest Reserve in Langkawi is the last significantly large area with montane forest in Kedah. The forest supports high levels of biological diversity and species endemism and its unique selection of montane plants makes it of special interest to botanists.

Among traditional medicine plants at Gunung Jerai are Pokok Cina Maki, Kelat Gelam, Tongkat Ali, Kacip Fatimah and Mata Pelandok whilst other plants include Dipterokorpa Atas Forest, Oil Resin and Conifers such as Podo Bukit, Podo Cucok Atap and Podo Ekor Kuda. Thus the first focus for visitor activity is the natural environment and environmental protection and conservation are necessarily of critical importance.

The second more unique focus of this hill station and the surrounding Bujang Valley is culture-heritage. Here Gunung Jerai and the valley are distinctive with its array of archaeological resources of a type not found in other hill stations. The Bujang Valley Archaeological Museum in Pengkalan Bujang, Merbok, houses a good collection of artefacts including numerous artificial stone caskets, gem stones, beads etc.

In essence there are two principal tourism products in Gunung Jerai, viz.,

Nature Tourism

- Cool temperatures, fresh mountain air and tranquillity.
- Forestry Museum which provides an interpretation to visitors of forest resources and is a complementary attraction.
- The Sg. Teroi Forest Recreation Park houses a wide variety of herbs, ferns, flowering plants, climbers and orchids, rhododendrons and pitchers plants are in abundant profusion.
- Waterfalls in the foothills of Gunung Jerai.
- Spectacular views of rice fields and the seas surrounding Penang in the South West and Langkawi in the North West.

Cultural-Heritage Tourism

- Gunung Jerai, along with in the Bujang Valley, has considerate potential in cultural-heritage tourism; this is closely related to the history of both Kedah and Malaysia. Physical heritage resources are found in a large number of archaeological sites in the Bujang Valley (see Table 3.7)
CHAPTER 3: GUNUNG JERAI

Table 3.7: Historical Monuments and Archaeological Sites in Kedah

<table>
<thead>
<tr>
<th>Monuments</th>
<th>Archaeological Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Tapak 8 Sg. Batu Pahat, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>3. Tapak 4 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>4. Tapak 11 Ladang Sg. Batu, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>5. Tapak 22 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>6. Tapak 21 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>7. Tapak 19 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>8. Tapak 20 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>9. Tapak 27 Sg. Trus, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>10. Tapak 24 Sg. Muda, Ladang Tikam Batu, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>11. Tapak 28 Srokam, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>12. Tapak 23 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>14. Tapak 18 Sg. Bujang, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>15. Tapak 26 Bukit Meriam, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>16. Tapak 29 Kota Aur, Lembah Bujang</td>
</tr>
<tr>
<td></td>
<td>17. Tapak 21 Tikam Batu, Lembah Bujang</td>
</tr>
</tbody>
</table>

Source: Jabatan Muzium dan Antikuiti, 2001

Figure 3.2 depicts the main tourist attractions in this hill station.

(a) Tourist Arrivals

Visitor arrivals to this hill station are estimated to have totalled 13,200 in 1999 and to have increased to 15,700 in the year 2000. The vast majority of visitors are domestic tourists but a few foreign visitors from Taiwan, New Zealand, Australia, Thailand and others stayed at Gunung Jerai. (see Table 3.8)

A high proportion of domestic visitors to this hill station comprise government officers attending meetings and seminars and students from institutions such as USM, UUM and other educational and training institutions in the region. There is a campsite with accommodation for 53 and many students stay in the campsite.
CHAPTER 3: GUNUNG JERAI

Table 3.8: Visitors Arrivals, Gunung Jerai, 1999-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Foreign Arrivals</th>
<th>Domestic Arrivals</th>
<th>Total Arrivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>20</td>
<td>13,180</td>
<td>13,200</td>
</tr>
<tr>
<td>2000</td>
<td>30</td>
<td>15,670</td>
<td>15,700</td>
</tr>
</tbody>
</table>

Source: Kedah Resort Sdn. Bhd.

The Forestry Museum received 2,421 visitors in 1999 and this increased to 4,185 in 2000 with the peak months for visitors being February – 613 visitors – and May – 621 visitors.

(b) Average Length of Stay (ALS)

The average length of stay (ALS) is a very significant tourism indicator. Nationally the ALS increased from 4.8 (days) (1995) to 5.5 (days) in 2000. Estimates made by Kedah Resort are that ALS in this hill station is 2 days.

(c) Tourism Facilities and Infrastructure

Hotels

As at 1999 there were a total of 28 hotels with 1889 rooms in the main tourist accommodation centres of Alor Setar, Sungai Petani and in this hill station. Both Alor Setar and Sungai Petani are near enough to Gunung Jerai to function as an accommodation base for visitors to make day trips to this hill resort. The accommodation stock is quite diverse with some 5 hotels of 3/4 star standard, comfortable 2 star accommodation and budget establishments.

Hotel Guests and Guests Nights

In Alor Setar hotel guests in 1998 amounted to 172,532 and increased to 186,710 in 1999 – this represented about 0.98% of the national total. Hotel guests in Sungai Petani in 1998 totalled 179,910 and increased significantly to 234,344 in 1999 when they accounted for same 1.23% of hotel guests in Peninsular Malaysia. In both instances the bulk of hotel guests were domestic visitors. (see Table 3.9)
Table 3.9: Distribution of Hotel Guests and Hotel Guest Nights, Alor Setar & Sg. Petani, 1998 and 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Domestic Guests</th>
<th>Guest Nights</th>
<th>Total Foreigners Guests</th>
<th>Guest Nights</th>
<th>Grand Total Guests</th>
<th>Guest Nights</th>
<th>% Share of National Total Guest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alor Setar</td>
<td>166,223</td>
<td>208,062</td>
<td>6,309</td>
<td>10,689</td>
<td>172,532</td>
<td>218,751</td>
<td>0.98</td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>179,071</td>
<td>217,860</td>
<td>7,639</td>
<td>16,791</td>
<td>186,710</td>
<td>234,651</td>
<td>0.98</td>
</tr>
<tr>
<td>Sungai Petani</td>
<td>161,148</td>
<td>226,377</td>
<td>18,762</td>
<td>30,402</td>
<td>179,910</td>
<td>256,779</td>
<td>1.02</td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>199,585</td>
<td>295,770</td>
<td>34,759</td>
<td>53,595</td>
<td>234,344</td>
<td>349,365</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Source: MTPB

(e) Average Occupancy Rate (AOR)

Average occupancy rate (AOR) of hotels in Malaysia have declined from 65.9% (1995) to 50.6% (1999) but there was a 3.6% rise to 53.8% in the year 2000. Published data on AOR for Gunung Jerai is not available.

For comparison, published data from MTPB on AOR in Alor Setar and Sungai Petani is available. This indicates that the AOR in Alor Setar increased from 46.8% to 47.9% over the period 1999-2000 whilst the corresponding figures for Sungai Petani were 54.5% and 50.7% respectively. (see Table 3.10)

Table 3.10: Average Occupancy Rate (AOR), January – September, 1999 and 2000

<table>
<thead>
<tr>
<th>Locality</th>
<th>1999</th>
<th>2000</th>
<th>Difference In %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alor Setar</td>
<td>46.8</td>
<td>47.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Sungai Petani</td>
<td>54.5</td>
<td>50.7</td>
<td>-3.8</td>
</tr>
<tr>
<td>Peninsular Malaysia</td>
<td>50.2</td>
<td>53.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Malaysia</td>
<td>49.9</td>
<td>54.3</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: MTPB
CHAPTER 3: GUNUNG JERAI

3.2.4 Infrastructure & Utilities

3.2.4.1 Water Supply

Raw water is collected and stored in a reservoir in the summit for supply to the consumers in Gunung Jerai. The raw water is clean and pristine, requiring only minimal treatment of chlorine before being supplied to consumers.

3.2.4.2 Solid Waste Management

Although Gunung Jerai is under the jurisdiction of Majlis Daerah Yan (MDY), MDY does not provide any waste collection services here. Instead, the solid waste is managed by the resort itself. Solid waste generation is very low here and a lorry ferries one tonne of waste every three days to the dumpsite in the lowlands.

3.2.4.3 Road Access & Transportation

Access to Gunung Jerai is just off the Federal Route 1 trunk road between Gurun and Guar Chempedak. The road leading to the summit is 13 km in length, narrow, and fairly steep, but accessible to normal vehicles. At the summit, the road for public vehicles terminates at the resort, while a narrower and steeper route continues to the peak where the telecommunication station is sited. The parking facilities at the summit are sufficient at present.

There are several unlicensed private van operators offering their services in providing transport tourists who chooses not to drive up. Their rate ranges from RM 5 to RM 60 per vehicle.

3.2.4.4 Sewerage

All buildings in Gunung Jerai are serviced by septic tanks. Effluent from the septic tanks is discharged into roadside drains that eventually flow into nearby streams or rivers. Maintenance and desludging service is carried out on a per need basis.
CHAPTER 3: GUNUNG JERAI

3.3 STRENGTHS, WEAKNESSES, OPPORTUNITIES & THREATS

3.3.1 Strengths

(a) Physical Characteristics

The cool climate, the spectacular views of the coastline and the rich forest environment are the main attractions of the resort. The serene environment and the low-key development have given the hill station an impressive image.

(b) Good Tourism Products

Gunung Jerai and the Bujang Valley combined have two existing tourism products including the natural environment with forests, unique flora and fauna, waterfalls and these are easily accessible and interpreted with the forestry museum on site and cultural-heritage tourism with evidence of Hindu-Buddhist buildings and artefacts dating back to the 5th Century.

(c) Unique Biodiversity Features

Compared to other highlands and mountains in Malaysia, the biodiversity of Gunung Jerai in terms of the habitat and both the flora and fauna composition is unique owing to the influences of geology, altitude and rainfall. The bedrock and soil types for example determine and limit the kind of flora that occur in Gunung Jerai. The successive types of forest found along the altitudinal gradient also resulted from the effect of altitude itself, of rainfall and of soil type. These features offer scientific potential and are themselves important components of Kedah’s as well as the country’s rich natural heritage.

3.3.2 Weaknesses

(a) Absence Of a Statutory Land Use Plan

The absence of a statutory land use plan with guidelines and controls and the lack of suitable developable land can be a major drawback for the future development of the hill station.

Existing provisions for tourist are adequate but with expected increase in visitors, there is a need to provide more accommodation and recreational facilities. Incompatible proposals such as the proposal for a mini zoo and golf course must be re-evaluated in relation to the sensitivity of the environment.
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(b) Lack Of Tourism Infrastructure

The tourism infrastructure is lacking in many aspects. There is no tourist centre or even an information kiosk that disseminates information on the various attractions that are found along the way up, the summit as well as the waterfall areas.

There is also scant tourism promotional material on Gunung Jerai as a tourist destination as well as directional and interpretative signage relating to this hill station.

(c) Limited Recent Information on Biodiversity

Existing biodiversity information of Gunung Jerai is mostly from old literature dating back as early as the 1960s. Information relating to the flora and fauna species occurring on Gunung Jerai is not comprehensive. This is especially true for groups of plants (such as ferns and fern allies, mosses and liverworts, lichens, fungi and terrestrial algae), and animals (such as reptiles, amphibians and invertebrates). Records of more recent information beyond 1984 also do not seem to be available.

3.3.3 Opportunities

(a) Combined Packaged Tour

This hill station has potential for packaging with Sungai Petani and the Bujang Valley whereby visitors could visit the Archaeological Museum at Merbok archaeological sites and combine this with a visit to Gunung Jerai. Sungai Petani is able to provide a large accommodation base for tourists in the area. The local tour industry could be encouraged to develop combined package tours with, e.g., a short visit to the Museum and archaeological sites and a half-day visit to the hill station.

(b) Recreational and Educational Potentials

In addition to biodiversity, the natural history of Gunung Jerai and its physical setting (i.e. beautiful scenery on Gunung Jerai and of the surrounding landscape) are natural resources that can best be utilised for recreational and educational purposes. These resources provide great potential for developing a variety of hiking and nature trails, nature photography and nature interpretation programmes.

There are possibilities of introducing a variety of trails, each highlighting a specific theme to serve the purpose of both recreation and education. Hiking trails to cater for the more physically fit could be made more challenging by capitalising on the steep terrain and cliffs. The nature trails could be categorised in relation to specific habitats or species. Possible examples are orchid, pitcher plant and rhododendron trails through areas rich in the respective plant species, or bird watching trails which go through places where particular bird species could be observed, or habitat trails that provide understanding of vegetation types, soil types and ecological conditions. Scenic trails could also be introduced where the focus is on scenic attractiveness along the trail or on a particular scenic attraction located at the end of the trail.
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3.3.4 Threats

(a) Development Pressure On Sensitive Areas

Any development proposals will have significant impacts on the forest reserves particularly the water catchment areas. Gunung Jerai is a water catchment area for the Yan / Gurun and therefore any development proposed for the resort must be take into consideration the sensitivity of the environment.

(b) Land Encroachment For Agriculture

Further expansion of the existing orchard farms, mainly durian orchards, at the foothills will encroach into the forest reserves. At the moment these orchards do not pose any threats but any demand for additional land could have adverse impact on the land use of the environment.

(c) Competitive Destinations

Tourist destinations are basically in competition with each other and in a competitive market the switching of “brands” is a distinct possibility. This hill station faces competition from established hill resorts such as Cameron Highlands and Penang Hill and from areas with potential such as the Kinta Highlands and Lojing. Unless distinctive and unique products are developed and promoted there is a danger of split market shares if Gunung Jerai offers the same tourism products as other hill stations.

(d) Introduction of Exotic Plant Species

At the summit area especially around the resort, ornamental exotic plants have been planted. This appears to have been done as part of the beautification and landscaping effort. The introduction of non-native plant species could have detrimental effects on the existing biodiversity in the area. Exotic species are capable of invading and eventually replacing the native species, which could threaten the integrity of the natural biota in the long term.
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3.4 CARRYING CAPACITY

The carrying capacity for Gunung Jerai is expected to be far lower than the number obtained for Penang Hill with the obvious fact that it covers a smaller area as well as the development strategy outlined in Section 3.5 does not focus on mass tourism. The following is the derivation of the carrying capacity together with the assumptions:

(a) Tourism

Assumptions:

- 15 rooms x 2.5 persons per room (overnight) x daily turnover rate 1 per day
- 15 rooms x 1.0 person per room (day visitors) x daily turnover rate 2 per day + 53 birth campsite x 1 per day (overnight).
- Nature trails (from Museum to Resort) is 3 km with WTO density standard of 40 visitors per day per km.

Carrying capacity = 120 visitors per day

(b) Water Supply

Assumptions:

- The water supply is based on the estimation of low-flows for a 20-year return period at 29.6 ML per day
- It is assumed that 10% of the water is abstracted for consumption.
- The demand to be 250L per day for residents and 100L per day for visitors; ratio of residents to visitor conservatively assumed at 2:3.

Carrying capacity = 2250 visitors per day

(c) Transportation

Assumptions:

- Based on 10 numbers of 8-seater vans at 8 trips per day

Carrying capacity = 640 visitors per day

The carrying capacity is therefore taken to be 120 visitors per day. As a low impact nature tourism resort, the current capacity of nature trails should be major determinant of current capacity. The present accommodation base capacity supports this although we would anticipate many visitors would in fact are day visitors rather than tourists staying overnight as at present. There is also a sizeable stock of accommodation in both Sungai Petani and Alor Setar.
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3.5 ACTION PLANS

3.5.1 Development Focus & Guiding Issues

On the basis of the strengths and opportunities identified earlier, the study proposes that the main development focus for Gunung Jerai to be Cultural-Heritage and Nature-based tourism.

As a Gunung Jerai is a solitary hill, its success as a tourist spot relies heavily on the other attractions that surround it. With the rich heritage left behind by the bygone civilizations that inhabited the Bujang Valley, it is a great opportunity to package it together with the natural beauty and the rich biodiversity of the hill station and create a unique tourism focus. This Hill station should be promoted to be a major consideration for tourist destination by holiday-makers in the northern region of Peninsular Malaysia.

The present tourist infrastructure has to be upgraded and the promotion material has to reflect the tourism focus for the area. Plans also must be formulated to attract visitors during the weekdays and off-peak seasons.
CHAPTER 3: GUNUNG JERAI

3.5.2 Land Use Strategies

Action Plan : GJ-AP1
Gunung Jerai must focus only on Cultural Heritage and Nature tourism, given the unique nature of this hill station. Other types of new tourism development such as theme parks, should not be permitted. Kedah State Government to issue directives in this regard.

Action Plan : GJ-AP2
There is an urgent need to prepare a Special Area Plan for Gunung Jerai. The Structure Plans for Kuala Muda and Yan identifies Gunung Jerai Forest Reserve for its research and education importance as well as a water catchment area. There is an urgent need to provide detail land use zonings and development components that are congruent to the existing surrounding development. In this respect it is recommended that a Special Area Plan to be prepared for Gunung Jerai to guide the comprehensive planning of the area as per Section 16B of the Town and Country Planning Act.

3.5.3 Socio-Economic & Tourism Enhancement

In the Action Plan the major issues being addressed are the development strategies, recommended programmes, proposed implementation agency.

Among the issues are:

Optimisation of Economic Generation

While it is noted that low impact visitation should be maintained due to Gunung Jerai’s extremely sensitive habitat and its importance as a water catchment area, there are still scope for optimisation of economic generation. A travel agent kiosk could be set up to operate four-wheel drive transportation for visitors. Establishment of more commercial and retail outlets, specifically in food and beverage, handicrafts and souvenirs at the foothills of Jerai Gate, could be carried out.

The utilisation of accommodation mode during weekdays and off-peak periods must be increased through various measures such as giving promotional package, intensifying publicity and organising sport and tourism events. The increase in visitation would provide a better platform for the increase in the usage of the travel agent transportation mode and serve the retail and commercial outlets at the gateway.
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As noticed in Fraser's Hill, which have many jungle trails, there are also problems in Gunung Jerai with the limited number of tourist guides. Tapping from this weakness, a training place for trail and tourist guides could be set up in Gunung Jerai. The training place could also accommodate courses for retail and commercial entrepreneurship skills for local youth.

Themes for Tourism Development

Sustainable tourism development would best be promoted if this hill station is integrally linked with the Bujang Valley and the twin products of nature tourism and cultural-heritage tourism constitute the principal themes. In isolation Gunung Jerai lacks the capacity, infrastructure and facilities for it to be the foci for large-scale tourism. Indeed, its biodiversity and its ecological sensitivity are such that this hill station must carefully balance the access and ecological protection.

It can do this more effectively if market extension is achieved by way of dispersing visitor loads in time and space through, e.g., encouraging more visitation during off-peak times and packaging the nature tourism attractions of this hill station with the cultural heritage attractions of the nearby Bujang Valley.

The main target group for marketing purposes could be expected to be domestic tourists although opportunities for attracting foreign tourists, especially those from origin markets such as India, should not be overlooked.

Specific Action Programmes for this hill station are:

Action Plan : GJ-AP3
MTPB should set up a Tourist Centre at the Jerai Gate, offering to tie up hiking, waterfalls, Bujang Valley and the hill itself as a package. The gate area is an ideal location for the centre as being at the foothill, it does not disrupt the fragile hill environment. The centre shall be complete with a tourist reception centre (not just an info kiosk), parking places for cars and tour coaches, proper food and souvenir stalls.

Action Plan : GJ-AP4
The Forestry Department should undertake a nature tourism upgrading programme. Components of this programme might include the development of hiking and nature trails. The latter could incorporate orchid trails, i.e., self-guiding trails in areas rich in orchids, bird-watching trails, habitat trails, pitcher plant trails and scenic trails. Explanatory signboards would need to be provided for visitors.

Action Plan : GJ-AP5
UPEN Kedah, with assistance provided by MTPB, should provide high quality promotional materials including pamphlets, brochures, pocket checklists, information guides for this hill station and the Bujang Valley and this material should be widely distributed in Sungai Petani, Alor Setar, Kepala Batas Airport, golf and country clubs and other institutions in the region.
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Action Plan: GJ-AP6
The private sector, especially the hospitality and tour and travel sub-sectors, with the support of the Kedah State Tourist Association, should **market and promote** Gunung Jerai as part of a tour package with Sungai Petani and the Bujang Valley.

Action Plan: GJ-AP7
**Refurbish the present Jerai Resort.** Kedah SEDC should refurbish the Jerai Resort as it has become slightly dilapidated. The chalets should be given a new coat of paint and the worn out interiors can be replaced. The resort foyer can also be given a facelift to portray a warm and cosy atmosphere, while the restaurant can be improved both in décor and in quality of the dining. The renovations should reflect the harmony between the Resort and nature.

3.5.4 Biodiversity Conservation

Action Plan: GJ-AP8
MDY and MDKY together with the State Forestry Department to determine the best option for meeting the biodiversity conservation needs and ensuring effective protection and utilisation of the natural resources of Gunung Jerai. In the past, there have been proposals for designating parts of the Gunung Jerai as state park or wildlife reserve but none of these were implemented. These proposals could be reviewed and reconsidered in terms of their relevance to serve the needs mentioned above. More detailed information such as those pertaining to specific areas on Gunung Jerai with biodiversity conservation value would be needed to support this process.

Action Plan: GJ-AP9
MDY and MDKM jointly with the State Forestry Department to collaborate in efforts to improve visitors management to prevent habitat degradation. Such efforts should include the integration of educational aspects to increase awareness amongst visitors about the importance of Gunung Jerai and its conservation needs. This may include both formal and informal educational programmes such as nature museum / nature education centre, educational forest and nature trails.

Action Plan: GJ-AP10
**Proactive measures involving periodical monitoring to prevent theft of wild plants and animal poaching are recommended.** Although there seem to be no record of illegal collection of wild flora and fauna from the forests in Gunung Jerai, these could be undertaken jointly by the relevant agencies such as the State Forestry Department and the DWNP. Theft of wild plants can be categorized into plants that are taken as a souvenir by tourists, and plants and animals being removed in large quantities to be sold elsewhere.
CHAPTER 3: GUNUNG JERAI

Warning to tourists prohibiting the removal of plants can be posted on signboards and in pamphlets, while park rangers can patrol the sensitive areas to deter large scale theft or poaching. Random vehicle checks can also be conducted by the park rangers when deemed necessary.

Action Plan: GJ-AP11
UPEN Kedah, Forestry Department and DWNP to encourage scientific research especially those geared towards providing baseline information to guide land use planning and development particularly in the tourism sector. Studies aimed at establishing a complete inventory of the biodiversity found in Gunung Jerai as well as re-assessment to update previous records of the flora and fauna should also be given emphasis.

Action Plan: GJ-AP12
The Department of Forestry should conduct further research on biodiversity especially on the heath/kerangas forest. This is definitely needed because there is a lack of recent and comprehensive information on the biodiversity in Gunung Jerai. Also as Gunung Jerai harbours an interesting array of plant species contained in an environment that is comparatively undisturbed, the potential for carrying out scientific research here is promising.

Of greatest interest for research from the biodiversity perspective is the presence of a representative example of heath/kerangas forest. This forest type is fragile as it develops very slowly and is most important in demonstrating unusual features of its ecology such as effective nutrient cycling, hydrology and association with insectivorous plants. The heath/kerangas forest is also not widespread in Peninsular Malaysia hence making it important for research and conservation. Opportunities for conducting research in Gunung Jerai are further enhanced by the fact that this hill station is easily accessible.

3.5.5 Infrastructure & Environmental Improvements

The focus of this sector will be to ensure that the entire development proposal are well supported with adequate infrastructure as well as ensuring the environment is sufficiently preserved.

Specific Action Programmes for this hill station are:

Action Plan GJ-AP13
Provide a transport service form the lower gate to the Resort area at the summit. Public vehicles should be prohibited from going to the summit, as although the tourism numbers are designed to be low, the present road is still too narrow to allow for the moderate increase in traffic. Any widening of the road is strongly discouraged to minimise the impact to the environment. The transport service can be in the form of mini-buses or 8-seater vans, and can be operated by the Majlis Daerah Yan or a private enterprise. Four-wheel drives are not required as the gradient of the access is manageable by ordinary vehicles.
CHAPTER 3: GUNUNG JERAI

Action Plan GJ-AP14
Upgrade the sewerage system. As the buildings at Jerai Resort are located in a water catchment area, the sewage system must be upgraded to ensure a better treatment of the effluent. As a short-term measure, sewage from all buildings must be discharged into septic tanks with filters. These septic tanks must also be desludged regularly to ensure that they are performing optimally.

In the long-term, when the resort expands, centralised mechanized treatment plants such as extended aeration units must be installed to treat the sewage discharge.

Action Plan GJ-AP15
The Cabinet Committee on Highlands and Islands with the assistance of UPEN Kedah should continuously monitor all development activities at Gunung Jerai.
Gunung Jerai and Bujang Valley - Major Tourist Attractions

Legend:
- North-South Expressway
- Major Road
- Railway
- Airport
- State Border

ALOR SETAR
- Accommodation Base
- Tourism Support Services

GUNUNG JERAI
- Resort and Chalets
- Forestry Museum
- Nature trails

The Bujang Valley Archaeological Museum, Pengkalan Bujang, Merbok Archaeological Artifacts

SUNGGAI PETANI
- Accommodation and Tourism Support Services

Figure 3-3
CHAPTER 4: BUKIT LARUT

4.1 INTRODUCTION

Bukit Larut lies on the Bintang Range with the town of Taiping at its foothills. It is formerly known as Maxwell Hill, and was founded more than 100 years ago back in 1884 as a retreat for the British. As with Penang Hill being a source of pride to the Penang residents, Bukit Larut is sentimental to generations of Taiping folks.

Presently, the development in Bukit Larut has been limited to a few colonial bungalows and rest houses. Like Penang Hill, there have been large-scaled plans to develop Bukit Larut into a massive tourist complex complete with posh hotels and convention centres but have been shelved due to opposition from the public.

Similar to other hill stations, the Bukit Larut Forest Reserve is rich in biodiversity and has also been gazetted as a Permanent Forest Reserve.

4.2 EXISTING SITUATION

4.2.1 Physical Environment

4.2.1.1 Land Use

Bukit Larut lies within the Districts of Larut Matang and Kuala Kangsar. The major land use is forest, namely the Bukit Larut Forest Reserve which totals about 6878 hectares, of which 2247 hectares comprises of virgin jungle reserve. The hill station is very much underdeveloped except for the existing bungalows / rest houses, Telecoms Tower and the Tea Garden (Jeep Station check point). Figure 4.1 shows the existing land use for Bukit Larut. The foothill has some stalls and the Jeep Station. The surrounding land uses include other attractions such as the Lake Gardens, the Zoo, Golf course and the waterfalls.

The Bukit Larut Forest Reserve is divided into 26 compartments of which six are virgin jungles reserve. The Forest Reserve is managed by the Perak State Forestry Department with the respective district forest offices in Larut Matang and Kuala Kangsar responsible for the management of the forest reserves under their District. Other Authorities include the Pejabat Daerah dan Tanah Larut, Matang dan Selama who are responsible for the all the bungalows. The maintenance of the roads is under Jabatan Kerja Raya (JKR). Besides this, the Perak Water Board is responsible for the water catchment areas and for water supply.

4.2.1.2 Topography

Bukit Larut lies within the Bintang Range in the northwestern section of Peninsular Malaysia. There are three peaks here, Gunung Hijau being the highest at 1448m, followed by Gunung Biong at 1218m to the north and Wray’s Hill (1020m) to the south. The terrain is very steep and not suited for agriculture. The area around Bukit Larut consists of granite, alluvium and organic deposits. Bukit Larut is classified as an area with very high erosion risk, where the soil loss is estimated to be 150 tons/ha/yr.
CHAPTER 4: BUKIT LARUT

4.2.1.3 River System & Water Catchments

Bukit Larut is an important water catchment area for the Larut, Matang & Selama District. There are three major water catchment areas here which includes Sg Jana, Sg Ranting, and Sg Air Terjun. Sg Batu Tegoh, Sg Jana, Sg Larut and Sg Tupai form part of the Sg Sepetang river basin. Figure 4.2 shows the water catchment areas in Bukit Larut.

The water quality data from 1997 to 1999 (Table 4.1) shows that the water quality is generally good with most parameters within Class II of the National Water Quality Standard.

<table>
<thead>
<tr>
<th>Rivers</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BOD</td>
<td>COD</td>
<td>TSS</td>
</tr>
<tr>
<td>Sg Jana</td>
<td>2.50</td>
<td>4.67</td>
<td>7.33</td>
</tr>
<tr>
<td>Sg Larut</td>
<td>5.29</td>
<td>16.00</td>
<td>24.67</td>
</tr>
<tr>
<td>Sg Tupai</td>
<td>10.04</td>
<td>30.67</td>
<td>20.00</td>
</tr>
<tr>
<td>Sg Batu Teguh</td>
<td>4.65</td>
<td>14.33</td>
<td>19.33</td>
</tr>
</tbody>
</table>

4.2.2 Biological Environment

4.2.2.1 Natural Ecosystem and Habitats Represented

The majority of the natural ecosystem of Bukit Larut is forest. The forests encompass a range of vegetation types that can be correlated to specific altitudinal zones. This includes Lowland Dipterocarp Forest (LDF) which begins at about 60 m asl at the foothills of Bukit Larut while the Upper Montane Forest (UMF) begins at about 1,400 m elevation at the peak of Gunung Hijau. Hill Dipterocarp Forest (HDF), Upper Dipterocarp Forest (UDF) and Lower Montane Forest (LMF) constitute the three other vegetation types that can be identified in between the LDF and UMF.

4.2.2.2 Legal Status Of Natural Habitats

The forests in Bukit Larut fall within the Bukit Larut Forest Reserve (BLFR) covering a total area of 6,878 ha. The BLFR straddles two forestry districts namely, Larut Matang and Selama, and Kuala Kangsar and are managed by the respective District Forestry Offices.

The entire BLFR is divided into 26 forest compartments, of which approximately 18 compartments in the Larut Matang District section constitute the BLFR that is popularly known as Bukit Larut. The 18 compartments include areas of the BLFR classified as Virgin Jungle Reserves (VJR) (comprising 6 compartments) and three major water catchments (Sg. Jana, Sg. Ranting and Sg. Air Terjun) for the Taiping.
CHAPTER 4: BUKIT LARUT

4.2.2.3 Prime Conservation Areas

Based on existing literature, there is no known recommendation of specific areas in Bukit Larut with outstanding potential to be designated as prime areas for flora conservation. A possible candidate is the forest in the upper zones of Bukit Larut (i.e. the UMF) because of its sensitivity to disturbance and its importance in performing important ecological and hydrological functions.

There are potentially other areas in Bukit Larut with significant value for flora conservation as Bukit Larut is known for its high diversity of flora and because its montane forest supports many rare and endemic species. It is therefore critical that further investigation is carried out to determine other important flora conservation areas for Bukit Larut. In doing this, it would be sensible to combine the floristic significance with the ecological criteria (for example, sensitivity to erosion and landslides) to present a stronger justification for conserving these areas.

4.2.2.4 Flora Profile

For consistency in the analysis, the checklist compiled by Perumal & Lo (2000) is also used for assessing the Bukit Larut flora profile.

The criteria for deriving the plant species listing for Bukit Larut from the checklist of Perumal & Lo (2000) are as follows:

(a) direct reference are made to known areas on Bukit Larut or Bukit Larut itself is specifically cited as being the locality from where collection or record of the particular species was made;
(b) the distribution of the species includes the Bintang Range.

Species Richness

The checklist by Perumal & Lo (2000) revealed a total of 621 highland plant species recorded in Bukit Larut (Table 4.2). This corresponds to 20.4% of Peninsular Malaysia’s total highland plant species. The figure provides an indication of the substantial contribution and importance of a relatively small area like Bukit Larut towards highland plant species diversity in Malaysia.

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Total in Peninsular Malaysia</th>
<th>Bukit Larut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferns and Fern Allies</td>
<td>346</td>
<td>14 (4.0%)</td>
</tr>
<tr>
<td>Gymnosperms</td>
<td>17</td>
<td>5 (29.4%)</td>
</tr>
<tr>
<td>Monocotyledons</td>
<td>816</td>
<td>192 (23.5%)</td>
</tr>
<tr>
<td>Dicotyledons</td>
<td>1,871</td>
<td>410 (21.9%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,050</td>
<td>621 (20.4%)</td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)
CHAPTER 4: BUKIT LARUT

Special Features of Species: Endemism, Rarity and Highland Specialist

The number of endemic species for Bukit Larut is 89 or 14.3% of the total highland plant species recorded in Bukit Larut (Table 4.3). 34 species are rare and this comprises largely Dicotyledons. There are nine species with both endemic and rare status, and eight of them are from the Dicotyledon group.

Table 4.3: Endemism and Rarity among Plant Species Found in Bukit Larut

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of endemic species</th>
<th>Number of rare species</th>
<th>Number of endemic and rare species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monocotyledon</td>
<td>31 (34.8%)</td>
<td>7 (20.6%)</td>
<td>1 (11.1%)</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>58 (65.2%)</td>
<td>27 (79.4%)</td>
<td>8 (88.9%)</td>
</tr>
<tr>
<td>Total</td>
<td>89 (100%)</td>
<td>34 (100%)</td>
<td>9 (100%)</td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

51.1% of the Bukit Larut flora consists of species that exclusively inhabit the highlands (Table 4.4). The two plant groups with the highest number of highland specialist are Monocotyledon and Dicotyledon with 124 and 180 species respectively.

Table 4.4: Categorisation of Flora Species in Bukit Larut According to Distribution

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A (51.1%)</td>
</tr>
<tr>
<td>Ferns and Fern Allies</td>
<td>12</td>
</tr>
<tr>
<td>Gymnosperm</td>
<td>1</td>
</tr>
<tr>
<td>Monocotyledon</td>
<td>124</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>180</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>317</strong></td>
</tr>
</tbody>
</table>

Source: Perumal & Lo (2000)

Note:
A: highland specialist  B: species occurring in both highlands and lowlands

Conservation Status of Species

The plant species record for Bukit Larut (totalling 621 species) is cross-checked with the 1997 IUCN Red List of Threatened Plants, 1998 WCMC World List of Threatened Trees and the CITES Appendices. Two species of orchid (*Dendrobium aegle* and *Liparis furcata*) that occur in Bukit Larut are classified as vulnerable in the IUCN List and are included in CITES Appendix II. These two orchid species have potential as ornamental plants and may be at risk of facing over-exploitation, which can lead to possible extinction in future if left unchecked. Being listed under Appendix II suggest that the international trade of these species is closely monitored through requirement of export permit.

A total of 12 tree species are included in the WCMC list under varying degrees of threat. None of the species from the group Ferns and Fern Allies, and Gymnosperm is included in any of the three lists.
Chapter 4: Bukit Larut

Table 4.5: Threatened and CITES-listed Flora Species in Bukit Larut

<table>
<thead>
<tr>
<th>Plant group</th>
<th>Number of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IUCN List</td>
</tr>
<tr>
<td></td>
<td>E</td>
</tr>
<tr>
<td>Monocotyledon</td>
<td>-</td>
</tr>
<tr>
<td>Dicotyledon</td>
<td>-</td>
</tr>
</tbody>
</table>

Note:
E: Endangered  V: Vulnerable  R: Rare  I: Indeterminate
CRB: critically endangered: criterion B  VUB: vulnerable: criterion B
VUD: vulnerable: criterion D  LRcd: Lower Risk: conservation dependent

The current scenario pertaining to the protection of plant species and their habitats in Malaysia has been discussed in 2.3.4. Based on this, it can be concluded that because Bukit Larut is within a Permanent Forest Estate (PFE), a certain degree of protection is afforded to both the plant species and their habitat. However, the protection is not permanent as the possibility of degazettement of forest reserve does exist. There is also the likelihood of parts of the Bukit Larut forests (and therefore the associated habitats and plant species) to be excised from the PFE for development in future judging from several attempts in the past by the private sector to introduce large scale development in this hill station. This will have direct implication on the integrity of Bukit Larut in terms of biodiversity and the environmental services it provides. Any measures to strengthen the protection of the forests in Bukit Larut would definitely benefit biodiversity conservation in the long term.

With regard to exploitation of wild flora in Bukit Larut, currently there seem to be no evidence of illegal collection of plants from the wild. Although illegal collection of wild plants may not be a problem in Bukit Larut now, proactive measures involving monitoring of such activity should be encouraged.

4.2.2.5 Fauna Profile

The bird checklist for Bukit Larut was compiled by referring to an unpublished report by Kanda Kumar (1997) on the birds of the area and information contained in a WWFM report “Biological management study of Bukit Larut” (Nadarajah, 1997). The mammal checklist was extracted entirely from Nadarajah (1997) and this was based on museum records. It is noteworthy that there have been no recent publications on the mammals of Bukit Larut although this area supports some interesting fauna such as tapir, tiger, clouded leopard and the dark-handed gibbon. Tweedie’s “Snakes of Malaya” (Tweedie, 1983) provided baseline data for the compilation of the reptile checklist. In addition, an unpublished information by van Dijk (2001) was also used. The amphibian checklist was compiled using distribution information provided in Berry (1975) and unpublished information by van Dijk (2001). Information on reptiles and amphibians contained in the above sources was supplemented by data where possible from Cox et al. (1998) and Chan-ard (1999).
CHAPTER 4: BUKIT LARUT

Species Richness

The forests of Bukit Larut support some 27 mammal, 227 bird, 9 reptile and 20 amphibian species. If compared to the total faunal species in Peninsular Malaysia according to each taxon, Bukit Larut has 12.56% of mammal, 35.03% of bird, 4.21% of reptile and 22.73% of amphibian species respectively. The total reported numbers for each taxon is by no means exhaustive, particularly that of the reptiles and amphibians where hardly any work has been conducted.

Species Endemism

The Malaysian mountain spiny rat (Maxomys inas), endemic to Peninsular Malaysia, occurs at Bukit Larut (Medway, 1969). Similarly, one endemic bird, the Mountain peacock-pheasant (Polyplectron inopinatum) occurs at this hill (Jeyarasingam, 1999). In addition, four endemic reptile and three endemic amphibian species have been recorded to occur here (Tweedie, 1983; van Dijk, 2001). This makes Bukit Larut important in conservation terms as it provides habitat for a total of nine endemic terrestrial vertebrates.

The four endemic reptiles occurring at Bukit Larut are:

Lycodon butleri (Butler’s wolf snake)
Macrocalamus lateralis (Malayan mountain reed snake)
Gehyra butleri (Butler’s four-clawed gecko)
Hemiphyllodactylus larutensis (Larut dwarf gecko)

The three endemic amphibians occurring at Bukit Larut are:

Microhyla annectans (Mountain narrow-mouthed frog)
Leptolalax heteropus (Variable slender frog)
Caudacaecilia larutensis (Larut caecilian)

Endangered Species (2000 IUCN Red List of Threatened Species)

Bukit Larut has one ‘Endangered’ species according to the IUCN Red Data List and this is the Indochinese tiger (Panthera tigris corbetti). Unlike Penang Hill and Gunung Jerai, Bukit Larut has more bird species that are considered “Vulnerable” according to the IUCN (2000).

Strictly Montane Species

Amongst the various Peninsular Malaysian bird species that inhabit montane areas (strictly above 900m), 31 species occur in Bukit Larut. If compared to the total strictly montane bird species in Peninsular Malaysia, 50% can be found here. Strictly montane bird species do not occur at either Penang Hill or Gunung Jerai. As with the case of species endemism on Bukit Larut, this hill is equally important in providing habitat for montane birds. Its overall area of undisturbed natural habitat is possibly the most important factor that has to be maintained if at all the terrestrial vertebrate fauna is to be maintained.
Conservation Status of Species: 2000 IUCN Red List of Threatened Species

The forests of Bukit Larut, as mentioned earlier, supports one globally ‘Endangered’ mammal species i.e. the tiger (*Panthera tigris corbetti*). In addition, it also supports four ‘Vulnerable’ mammal species and four ‘Lower Risk – near threatened’ mammal species (Table 4.6).

The mammal species occurring at Bukit Larut and listed as ‘Vulnerable’ (*IUCN, 2000*) are:

*Macaca nemestrina* (Pig-tailed macaque)
*Neofelis nebulosa* (Clouded leopard)
*Tapirus indicus* (Malayan tapir)
*Capricornis sumatrensis* (Serow)

The ‘Lower Risk – near threatened’ mammal species occurring at Bukit Larut are:

*Aethalops alecto* (Grey fruit bat)
*Miniopterus schreibersii* (Schreibers’ bat)
*Macaca fascicularis* (Long-tailed macaque)
*Hylobates agilis* (Dark-handed gibbon)

Table 4.6: Conservation status of terrestrial vertebrate fauna of Bukit Larut according to IUCN’s Red List of Threatened Species (*IUCN, 2000*)

<table>
<thead>
<tr>
<th>Category</th>
<th>Mammals</th>
<th>Birds</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endangered</td>
<td>1</td>
<td>None</td>
<td>1</td>
</tr>
<tr>
<td>Vulnerable</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Lower Risk – near threatened</td>
<td>4</td>
<td>29</td>
<td>33</td>
</tr>
</tbody>
</table>

Three species of birds occurring at Bukit Larut have been categorised as ‘Vulnerable’ in the IUCN’s global assessment of threatened species (*IUCN, 2000*) and 29 species of birds for this hill station have been placed under the ‘Lower Risk – near threatened’ category.

The birds of Bukit Larut that are listed as ‘Vulnerable’ are:

*Aquila clanga* (Greater spotted eagle)
*Polyplectron inopinatum* (Mountain peacock-pheasant)
*Centropus rectunguis* (Short-toed coucal)
The birds of Bukit Larut that are listed under the 'Lower Risk – near threatened' species category are:

- Caloperdix oculea (Ferruginous wood-partridge)
- Rollulus rouloul (Crested wood-partridge)
- Argusianus argus (Great argus)
- Ptilinopus jambu (Jambu fruit-dove)
- Psittinus cyanurus (Blue-rumped parrot)
- Phaenicophaeus sumatranus (Chestnut-bellied malkoha)
- Otus rufescens (Reddish scops-owl)
- Harpactes diardi (Diard’s trogon)
- Berenicornis comatus (White-crowned hornbill)
- Buceros rhinoceros (Rhinoceros hornbill)
- Buceros bicornis (Great hornbill)
- Rhinoplax vigil (Helmeted hornbill)
- Rhyticerus corrugatus (Wrinkled hornbill)
- Megalaima henricii (Yellow-crowned barbet)
- Megalaima mystacophanos (Red-throated barbet)
- Meiglyptes tukki (Buff-necked woodpecker)
- Eurylaimus ochromalus (Black-and-yellow broadbill)
- Calyptomena viridis (Green broadbill)
- Pericrocotus igneus (Fiery minivet)
- Aegithina virdissima (Green iora)
- Chloropsis cyanopogon (Lesser green leafbird)
- Pycnonotus squamatus (Scaly-breasted bulbul)
- Pycnonotus cyaniventris (Grey-bellied bulbul)
- Platylophus galericulatus (Crested jay)
- Stachyris leucotis (White-necked babbler)
- Macronus ptilosus (Fluffy-backed tit-babbler)
- Alcippe brunneicauda (Brown fulvetta)
- Enicurus ruficapillus (Chestnut-naped forktail)
- Prionochilus thoracicus (Scarlet-breasted flowerpecker)

Conservation Status of Species: Protection of Wild Life Act, 1972

The forests of Bukit Larut support eight mammal species and 262 bird species that are listed as Totally Protected according to the PWA, 1972 (Table 4.7). This hill station additionally has six mammal species and eight bird species listed as “Protected”. In addition, there is also one Protected reptile. In terms of protected species, Bukit Larut has a total of 285 terrestrial vertebrates that are afforded protection by law. This makes the hill unique and underlines the need to maintain as much natural forest cover to allow these protected species to survive.

Table 4.7: Terrestrial vertebrate fauna of Bukit Larut accorded protection under the Protection of Wild Life Act, 1972

<table>
<thead>
<tr>
<th>Status</th>
<th>Mammals</th>
<th>Birds</th>
<th>Reptiles</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Totally Protected</td>
<td>8</td>
<td>262</td>
<td>None</td>
<td>270</td>
</tr>
<tr>
<td>Protected</td>
<td>6</td>
<td>8</td>
<td>1</td>
<td>15</td>
</tr>
</tbody>
</table>
CHAPTER 4: BUKIT LARUT

The “Totally Protected” mammals of Bukit Larut are:

*Hylobates agilis* (Dark-handed gibbon)
*Ratufa bicolor* (Black giant squirrel)
*Neofelis nebulosa* (Clouded leopard)
*Panthera pardus* (Leopard)
*Panthera tigris corbetti* (Indochinese tiger)
*Prionailurus bengalensis* (Leopard cat)
*Tapirus indicus* (Malayan tapir)
*Capricornis sumatrensis* (Serow)

The “Protected” mammals of Bukit Larut are:

*Presbytis obscura* (Dusky leaf monkey)
*Presbytis melalophos* (Banded leaf monkey)
*Macaca fascicularis* (Long-tailed macaque)
*Macaca nemestrina* (Pig-tailed macaque)
*Sus scrofa* (Wild pig)
*Muntiacus muntjak* (Barking deer)

The “Protected” birds of Bukit Larut are:

*Gallus gallus* (Red junglefowl)
*Treron curvirostra* (Thick-billed pigeon)
*Treron vernans* (Pink-necked pigeon)
*Ptilinopus jambu* (Jambu fruit-dove)
*Macropygia unchall* (Barred cuckoo-dove)
*Macropygia ruficeps* (Little cuckoo-dove)
*Chalcophaps indica* (Green-winged pigeon)
*Copsychus malabaricus* (White-rumped shama)

The only Bukit Larut reptile that is listed as “Protected” in the PWA, 1972 is *Python reticulatus* (Reticulated python).
CHAPTER 4: BUKIT LARUT

4.2.3 Socio-Economic Environment

4.2.2.3 Population

Population is almost non-existent in Bukit Larut except for two people who operate a rest house and a mini restaurant in the rest house. Some government servants work as drivers for Pejabat Daerah dan Tanah Larut, Matang dan Selama and gardeners, but they commute from the foothills. There are several hawkers at the foothills but they are not the hill residents.

4.2.2.4 Local Economy

Bukit Larut is a small resort with limited facilities compared to the other hill stations such as Cameron Highlands, Genting Highlands and Fraser's Hill. At the foothills, there are six food stalls serving the hill’s visitors though none is found to be selling souvenirs or handicrafts. Though business is relatively good, some disturbances to the stalls from wild animals, especially monkeys, could be observed. There is also a restaurant at the rest house.

The main economic generation seems to be through accommodation channels at bungalows and rest houses. No high-rise hotels or accommodation can be found here but colonial rest houses and old bungalows with fireplaces are scattered around, providing comfortable accommodation. The Bukit Larut Resthouse reservations can be made through the Superintendent of Bukit Larut, Taiping.

Agriculture

In the past, coffee and tea were grown on an experimental basis but ceased to continue, believed to be due to transport and logistic complexities. This is understandable since Bukit Larut is accessible only by four-wheel drive vehicles as the way up consists of twists and turns through the tropical virgin jungle. The Tea Garden House, situated midway to the summit, is major landmark and was once part of the tea plantation area.

4.2.2.3 Tourism

The tourism sector is the main economic generator in Bukit Larut. From the summit there are breathtaking views of the Straits of Malacca with Penang in the north and Pangkor Island to the south. From the rest houses and bungalows, and the Tea Garden – midway to the summit and once part of an extensive tea estate – are the magnificent views of Taiping and the surrounding area.

The day temperature at this hill station ranges between 15°C and 25°C and on certain nights, the temperature may fall to as low as 10°C. It is however, the wettest spot in Peninsular Malaysia and records approximately 198 inches of rain a year.

The recreational facilities, the profusion of flowers, birds, moths, butterflies etc and the natural and serene atmosphere of Bukit Larut attract visitors and excursionists. Among the major flowers are roses, dahlias, daisies, pansies, petunias, lupines, marigold and Bukit Larut reputedly houses the largest variety of golden sunflowers in the country. It functions as a nature retreat for the residents of Taiping and Ipoh as well as attracting
other domestic and foreign visitors. Its rich heritage and colonial style infrastructure have been very carefully maintained and thus provides a historical value to this hill station. Apart from the hill station itself, other principal tourism attractions are in nearby Taiping – 9 km from Bukit Larut – including the Taping Lake Gardens, the Perak Museum, the Taiping Zoo, which attracts around 690,000 visitors annually, and the Kota Ngah Ibrahim Historical Complex.

There is also the Residency, built in 1877, which was the residence of Sir Hugh Low, Perak’s second Resident and later become the formal residence of other successive Residents of Perak.

Taiping is thus renowned both for history and natural beauty, including one of the most beautiful lake-gardens in Malaysia. Also near the foothills of Bukit Larut, there is the 18-hole Bukit Jana Golf and Country Club.

Thus we may deduce that the main tourism product in this hill station is nature tourism: its undisturbed natural environment, flora and fauna and its cool climate and serene surroundings constitute its principal attractions. It is imperative that the appropriate image of Bukit Larut emphasises the sensitivity of this hill station and vulnerability to overuse by visitors or by way of uncontrolled development. Figure 4.3 shows the major tourist attractions in Bukit Larut.

(a) Tourist Arrivals

Visitor arrivals to this hill station are shown in Table 4.8. Arrivals have increased marginally from 23,428 in 1999 to 23,549 in 2000.

A major market characteristic is the dominance of domestic tourists: in 2000 they accounted for 97.9% of total arrivals with foreign tourists representing 2.1% of arrivals.

Table 4.8 : Tourist Arrivals in Bukit Larut, 1999 and 2000)

<table>
<thead>
<tr>
<th>Year</th>
<th>Foreign Arrivals</th>
<th>%</th>
<th>Domestic Arrivals</th>
<th>%</th>
<th>Total Arrivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>517</td>
<td>2.2</td>
<td>22,911</td>
<td>97.8</td>
<td>23,428</td>
</tr>
<tr>
<td>2000</td>
<td>491</td>
<td>2.1</td>
<td>23,058</td>
<td>97.9</td>
<td>23,549</td>
</tr>
</tbody>
</table>

Source : UPEN Perak

(b) Average Length of Stay (ALS)

The average length of stay (ALS) is a very useful tourism indicator. Nationally the ALS has risen from 4.8 (days) 1995 to 5.5 (days) in the year 2000. Tourists typically visit several destinations so the ALS of a single destination is normally lower than the national figure. In the case of Bukit Larut, UPEN Perak estimates that the ALS is 1 day.
CHAPTER 4: BUKIT LARUT

(c) Tourism Facilities and Infrastructure

Hotels

As at 1999 there were a total of 20 licensed hotels with 600 rooms in Taiping and five in Bukit Larut – predominantly bungalows – with some 16 rooms. The accommodation base is reasonably diverse with several good quality 3-star hotels in Taiping, small budget hotels and colonial bungalows (in Bukit Larut).

Hotel Guests and Guest Nights

Published data on hotel guests and guests’ nights is not currently available for Taiping or Bukit Larut but in Table 4.9 details are shown for the resort of Lumut and the state capital of Ipoh. In 1999 total hotel guests in Lumut totalled 41,083 (or about 0.2% of the total for Peninsular Malaysia) whilst in the same year hotel guests in Ipoh amounted to 690,831 (or nearly 2.7% of hotel guests in the country) up from 626,470 recorded in 1998. These guests, mainly domestic visitors, constitute a potential market for day visits to Taiping and Bukit Larut.

Table 4.9: Distribution of Hotel Guests and Hotel Guest Nights, Ipoh, 1998 and 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Domestic Guests</th>
<th>Total Domestic Guest Nights</th>
<th>Total Foreigners Guests</th>
<th>Total Foreigners Guest Nights</th>
<th>Grand Total Guests</th>
<th>Grand Total Guest Nights</th>
<th>% Share of National Total Guests</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lumut</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
<td>n.a</td>
</tr>
<tr>
<td>1999</td>
<td>36,975</td>
<td>39,124</td>
<td>4,108</td>
<td>4,496</td>
<td>41,083</td>
<td>43,620</td>
<td>0.21</td>
</tr>
<tr>
<td>Ipoh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>433,147</td>
<td>543,381</td>
<td>80,650</td>
<td>147,450</td>
<td>513,797</td>
<td>690,831</td>
<td>2.69</td>
</tr>
</tbody>
</table>

Source: MTPB
Note: n.a = Not available

(e) Average Occupancy Rate (AOR)

Nationally average occupancy rate (AOR) of hotels have fallen from 65.9% (1995) to 50.6% (1999) but there was a 3.6% increase in the year 2000 when the AOR was 53.8%. Unfortunately, AOR data is not available in published form for Taiping or Bukit Larut but was 43.0% (1999) and 33.4% (2000) for the resort of Lumut and 53% (1999) and 54% (2000) for hotels in the state capital of Ipoh (see Table 4.10).

Table 4.10: Average Occupancy Rate (AOR), January – September, 1999 and 2000

<table>
<thead>
<tr>
<th>Locality</th>
<th>1999</th>
<th>2000</th>
<th>Difference In %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lumut</td>
<td>43.0</td>
<td>33.4</td>
<td>-9.6</td>
</tr>
<tr>
<td>Ipoh</td>
<td>53.0</td>
<td>54.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Peninsular Malaysia</td>
<td>50.2</td>
<td>53.8</td>
<td>3.6</td>
</tr>
<tr>
<td>Malaysia</td>
<td>49.9</td>
<td>54.3</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Source: MTPB
CHAPTER 4: BUKIT LARUT

4.2.4 Infrastructure & Utilities

4.2.4.1 Water Supply

Bukit Larut obtains its water supply from its own source that is stored in a small reservoir uphill. It does not rely on water pumped from downhill due to the high costs. The water is collected is pristine and requires minimal treatment before being supplied to the bungalows and other buildings here. The existing water supply is adequate for the present demand.

4.2.4.2 Solid Waste Management

The solid waste management in Bukit Larut is the responsibility of the Pejabat Daerah dan Tanah Larut, Matang dan Selama. The waste generated up in the hill (from the hotel and the bungalows) is collected and brought down using Land Rovers. The waste is then dumped in the communal bins provided by the district office at the foothill. The garden waste is buried at designated sites up in the hill. There are no recycling programmes being carried out at the moment.

4.2.4.3 Road Access & Transportation

The only access to the top is via a very steep 13 km length of road. The road is very narrow and is only passable by a single vehicle going in one direction. This route is only accessible with the use of 4-wheel drives or on foot. The Larut, Matang & Selama District & Land Office operates a fleet of Land Rovers that ferries passengers up and down the hill station. This service is provided on an hourly basis from 9 am to 5 pm. At times, two or three land rovers may operate simultaneously when the demand is high. The journey takes about 20 minutes and is precarious due to the high speeds of the vehicles as well as the lack of guardrails at the sharp bends. The road is maintained by JKR and is in a fair condition but there have been incidences of landslides at some locations.

4.2.4.4 Sewerage

The sewage treatment system in Bukit Larut consists of mainly septic tanks. The effluent from the septic tank is eventually discharged into the streams. Due to the limited and dated development at present, there is no communal or central sewage system available within Bukit Larut. As such it is unlikely that the effluents discharged here is compliant to Standard A of the Sewage and Industrial Effluent Standard (Regulation 1979).
CHAPTER 4: BUKIT LARUT

4.3 STRENGTHS, WEAKNESSES, OPPORTUNITIES & THREATS

4.3.1 Strengths

(a) Cool Climate

The strengths of this hill station include its cool climate which is a significant attraction for residents of nearby Taiping and the state capital of Ipoh, as well as other domestic visitors and a small number of foreign visitors. A surprisingly large number of local residents regularly hike up the hill, with visitation levels increasing during the school holiday period, public holidays and weekends.

(b) Cultural Heritage

The hill station is also serene and scenic and abounds with groves of evergreens and colourful flora and fauna. Bukit Larut serves as a nature retreat to the residents of settlements such as Taiping and Ipoh and it also embodies historic, architectural and aesthetic values. Furthermore there are buildings of considerable historical significance, for instance, The Cottage and Cendana and Tempinis bungalows. The old colonial-style rest house and the bungalows also provide comfortable and unique accommodation with appeal to some market segments such as the “silver haired”. The gardens of the bungalows are exceptionally well maintained.

(c) Rich Flora Diversity and Well-retained Natural Landscape

Existing documentation of the flora of Bukit Larut suggest that Bukit Larut possesses one of the richest flora for any hill stations within the country with a significant proportion of it consisting of rare and endemic species. Using the altitude limit of 250 m, record shows a total of 1,449 flowering plant species possibly local to Bukit Larut (Burkill & Henderson, 1925). This contains 20% of the total number of Peninsular Malaysia's fern species and 17% of Malaysian montane orchids. In fact, many of the orchid species recorded here are unique only to the montane habitats and endemic to Peninsular Malaysia, with collections known only from Bukit Larut. The vast pristine forested environment and natural landscape that are still well retained in this hill station attributed to the rich flora at Bukit Larut.
4.3.2 Weaknesses

(a) Absence Of Development Strategies and Plans

The absence of a statutory land use plan may attract incompatible development proposals that may threaten the hill station and the surrounding heritage sites, particularly the lake gardens. The lack of development controls and guidelines may be detrimental to the natural beauty of the resort through incompatible development proposals.

This is evident by the proposals submitted in 1997, and approved by the State to enhance the tourism potentials at Bukit Larut. The proposals included three storey hotels, look out towers, seminar centre and a 400m suspension bridge, which were later cancelled due to public objections. In view of this, there is an urgency to prepare a Special Area Plan for the resort and introduce stringent development controls and guidelines to protect the natural heritage of the resort.

(b) Inadequate Promotion for Tourism

At present the major weakness is that this hill resort is not widely promoted and is relatively unknown especially in foreign origin markets. It has not been widely promoted even within Malaysia. This is evidenced in visitor arrival data, which shows that in the year 2000 only 491 foreign tourists visited Bukit Larut.

(c) Insufficient and Poorly Maintained Tourism Infrastructure

The tourism infrastructure is a further weakness. The bungalows are in need of upgrading with e.g. better interior decoration, more self-catering facilities and improved heating. Accessibility needs to be improved and there is a clear need for better interpretative and informative signage as well as possible safety problems that could arise from the unstable nature of the slopes.

(d) Limited Recent Information on Biodiversity

Although information on the biodiversity of Bukit Larut is available, most of this are derived from old literature and do not reflect the comprehensive range of biodiversity found here. The floristic knowledge for example can be traced back to as early as the 1870s but the best and only existing comprehensive documentation to date is by Burkill & Henderson (1925).

Records of more recent information are very scarce. In fact, existing literature indicates that very little exploration has been undertaken in Bukit Larut during the past 50 years or so. There are also many aspects of the flora of Bukit Larut that are still unknown especially of the non-flowering plant groups as past studies have focused mainly on flowering plants.
CHAPTER 4: BUKIT LARUT

(e) Under-Utilised Educational Forest

The existing Educational Forest located at the foothill of Bukit Larut and is run by the District Forestry Office although is a good initiative, lacks publicity, and hence its existence is unknown to many visitors of Bukit Larut. The Educational Forest also lacks interpretative information that relates information about the forest and its flora and fauna. These have caused the inability to fully realise the enormous potential of this Educational Forest to serve its intended purpose.

(f) Unsafe Condition of Existing Forest Trail

The only known forest trail in Bukit Larut, which lead to the peak of Gunung Hijau has been closed to public. The trail is unmarked and overgrown. These coupled with the fact that the trail is narrow and dangerous in places, pose a safety hazard to users.

4.3.3 Opportunities

(a) Packaged Tour Circuit

Whilst the potential for Bukit Larut to become a major tourist destination is limited when packaged with Ipoh, Taiping and Kuala Kangsar as part of a sub-regional tourism circuit, considerable benefits could arise. Within such a package this hill station could provide a unique recreation attraction complementing the urban-visitor and cultural-heritage attractions of Ipoh, Taiping and Kuala Kangsar. The hill station, however, should be maintained as a unique, low impact, tourist destination. The increasing discretionary incomes among a socially advancing Malaysian Community experiencing pressures and tensions of urban living, would provide opportunities for controlled expansion of day excursionists and domestic tourists to Taiping and Bukit Larut, especially during off-peak times.

(b) Potential for Promoting Biodiversity Theme

The undisturbed natural surroundings, which provide a safe haven for flora and fauna, characterises the image of Bukit Larut. There is however currently limited focus and information on the flora and fauna aspects in the promotion of Bukit Larut. Great potential exists for promoting the biodiversity theme to enhance the image of Bukit Larut as a special tourist destination. Results of a study by WWF Malaysia (1997) revealed that information on bird watching, flora, fauna and the natural surroundings of Bukit Larut would be useful especially for attracting foreign groups comprising leisure and nature tourists, special interest tour groups and low-budget tourists. The study also suggested that the current low number of tourists from these groups to Bukit Larut is associated to the inadequacy of promotion of the biodiversity theme.
CHAPTER 4: BUKIT LARUT

(c) Potential for Nature Education and Interpretation

Biodiversity information could be used to enhance visitors’ experience to Bukit Larut as well as their awareness of the importance of this hill station. Information such as the flora and fauna of special interest that are found in Bukit Larut are ideal especially as interpretative materials. Such materials are essential for any tourist site like Bukit Larut.

With the necessary development and improvement, the Educational Forest could also potentially be used to support nature education and interpretation. Additionally, the Educational Forest could help divert some pressure off Bukit Larut especially for visitors who want to view wildlife, visit waterfalls and take a jungle walk, but do not necessarily have the time to ascend Bukit Larut.

4.3.4 Threats

(a) Encroachment Of Agriculture On Sensitive Areas

The existing Forest Reserves and the water catchment areas may come under pressure from agriculture use as evident form the small patches found particularly at Kuala Kangsar side. The need to strengthen the legal protection of the Forest Reserve has to be considered. The water catchment areas are the main water source for a Taiping and surrounding towns and need to protect these areas from any development pressure.

(b) Competitive Destinations

Bukit Larut is only one of a number of hill stations in Malaysia and is considerably smaller and less well known than such established resorts as Genting Highlands, Cameron Highlands, Penang Hill and Fraser’s Hill. New hill resorts such as Bukit Tinggi Hill resort in Pahang, given its proximity to the densely populated Klang Valley, is becoming another competitive destination.

(c) Large Scale Tourism Development

The possibility of large-scale tourism development could pose a threat to the forest ecosystem in this hill station. Bukit Larut has previously been targeted for development to enhance its image as a tourist destination. In the past, there were several plans for large-scale development but these were shelved due to public protest. (WWF, Perak: An Ecosystem Profile).
CHAPTER 4: BUKIT LARUT

4.4 CARRYING CAPACITY

As will be discussed in Section 4.5, the development focus for Bukit Larut is similar to that proposed for Gunung Jerai, i.e. to keep Bukit Larut as a low-impact tourist resort. The following is the derivation of the carrying capacity together with the assumptions:

(a) Tourism

Assumptions:

- 16 rooms x 2.5 persons per room (overnight) x daily turnover rate 1 per day
- 16 rooms x 1 person per room (day visitors) x daily turnover rate 2 per day.
- Nature trail assumed to total 3 km with WTO density standard of 40 visitors per day per km.

Carrying capacity = 120 visitors per day

(b) Transportation

Assumptions:

- Based on use of 4-wheel drives with a capacity of 8 passengers per vehicle, a proposed mobilization of 10 vehicles and 8 trips per day during peak times.

Carrying capacity = 640 visitors per day

(c) Water Supply

- The water supply is based on the estimation of low-flows for a 20-year return period at 74.5ML per day from the combined catchments of Sg. Batu Tegoh, Sg. Ranting and Sg. Air Terjun
- It is assumed that only 1% of the water from these three catchments is abstracted for consumption.
- The demand to be 250L per day for residents and 100L per day for visitors; ratio of residents to visitor conservatively assumed at 1:9.

Carrying capacity = 6705 visitors per day

The carrying capacity is therefore taken to be 120 visitors per day. As a low impact hill resort with nature tourism and local day use recreation as a main tourist theme, the carrying capacity of the nature trails should be a major determinant of current capacity. It is anticipated that the accommodation base would not be a major constraint since most visitors would be expected to be local day visitors rather than tourists staying overnight. There is also a diverse and sizeable stock of accommodation available in Taiping.
CHAPTER 4: BUKIT LARUT

4.5 ACTION PLANS

4.5.1 Development Focus & Guiding Issues

To date, Bukit Larut has not been developed commercially. A recent study on the biological management of Bukit Larut advised against mass tourism to this hill based on the fact that its rich biodiversity and its vital role as a water catchment should not be disturbed (WWF, 1997). The study also highlighted the unstable nature of the hill’s steep slopes and strongly suggests that large scale developments are unsuitable here.

The focus therefore is to maintain the profile of this place as a low-density tourist resort. With its rich biodiversity, the theme should be Nature-tourism and the main target groups will be the people of Taiping and from neighbouring towns such as Ipoh and Kuala Kangsar.

4.5.2 Land Use Strategies

The land use strategy to be envisaged for Bukit Larut is to apply sustainable development principles in the development of the hill station. This includes the strengthening the protection status for Bukit Larut and the surrounding heritage sites such as the Lake gardens, the zoo, and waterfalls. Being the main water catchment area for Taiping and surrounding towns, necessary legislation needs to be enforced to protect the forest reserves and water catchment areas. The limited availability of suitable developable land has constrained the development opportunities for Bukit Larut and it is envisaged that any future development proposals for Bukit Larut are low key and compatible with the natural environment.

Specific Action Plan programmes proposed includes:

**Action Plan : BL – AP1**

*The focus of tourism in Bukit Larut shall be limited to Nature Tourism.* New proposals for other types of tourism shall not be permitted. Perak State Government to issue directives in this regard.

**Action Plan : BL - AP2**

To ensure controlled and sustainable development for Bukit Larut and the surrounding heritage sites, *State Government shall commission for a Special Area Plan to be prepared.* The scope of the Plan shall include amongst others the envisioned Development Strategies and Proposals; identify suitable developable land; land use zonings for development, recreational and protective designations; the carrying capacity; transportation issues, and the management of the land use. The Plan shall also include the development guidelines and controls including design briefs for the architectural styles.
CHAPTER 4: BUKIT LARUT

4.5.3 Socio-Economic & Tourism Enhancement

The Action Plan addresses major issues such as the development strategies, recommended programmes, proposed implementation agency and implementation period.

Optimisation of Economic Generation

While it is noted that low impact visitation should be maintained, there is still scope for optimisation of economic generation through the establishment of more commercial stalls, selling products such as handicrafts and souvenirs, depicting Bukit Larut history and landmarks. The utilisation of bungalows during weekdays and off-peak periods must be increased through various measures such as giving promotional package, intensifying publicity and organising sport and tourism events. The increase in visitation would provide a better platform for the increase in the usage of the District Office transportation mode.

Themes for Tourism Development

The principal theme for sustainable tourism development in this hill station is low impact nature tourism and local day-use recreation. As a single destination Bukit Larut does not possess the capacity, infrastructure or facilities to enable it to function as a focal point for mass tourism. Its biodiversity and its ecological sensitivity means that this hill resort should be maintained for low-impact visitation although that should not be construed as implying there is no scope for upgrading of its existing facilities or for linking and integrating its attractions to those of Taiping.

Indeed good synchronised management could help regulate the carrying capacity of Bukit Larut through, eg, the dispersal of visitation in both space and time. Whilst the limited availability of rooms for public use obviously limits the number of overnight stays, increases in visitation levels in mid-week and other off-peak periods could be accommodated. Similarly, the potential of Taiping itself as a tourist destination can be strengthened to benefit Bukit Larut as well.

Specific Action Plans proposed for this Hill Station are:

Action Plan : BL-AP3
Pejabat Daerah dan Tanah Larut, Matang dan Selama and Majlis Perbandaran Taiping should set up more stalls at the gateway and encourage varied commercial products such as handicrafts and souvenir items, depicting Bukit Larut and Taiping history and landmarks, to be displayed and sold.
CHAPTER 4: BUKIT LARUT

Action Plan : BL-AP4
The Perak Department of Forestry, should implement a nature tourism/day use recreation upgrading programme. Components could include:

- The development of a small Nature Education Kiosk at the Gateway to provide visitors with information on Bukit Larut and the surrounding areas. The kiosk could incorporate information on the biodiversity of Bukit Larut. The interpretative and information materials (such as maps, booklets, brochures and postcards) should ideally be bilingual (in Bahasa Malaysia and English) to cater for both local and foreign visitors. Suitable activities such as audio-visual presentations, educational programmes, nature skills development courses and species identification courses to be managed by the Centre could also be considered.
- Reopening of forest trails.
- Maintenance/upgrading of picnic and viewing sites.
- The organisation of a Bukit Larut Nature Jogathon as part of the event calendar. This could be designed to appeal to nature enthusiasts not only from the local areas but other parts of the country as well.

Action Plan : BL-AP5
The private sector, especially the local hospitality industry, with support from the Perak Tourism Association should vigorously endeavour to market Bukit Larut, Taiping and Kuala Kangsar, as an integral part of a sub-regional tour circuit. This should be designed to appeal to both domestic and foreign visitors to major centres such as Ipoh.

Action Plan : BL-AP6
MTPB should produce high quality promotional materials including brochures, pamphlets, maps, pocket checklists, information guides for this hill station and Taiping which should be promoted and marketed together.

Action Plan : BL-AP7
The Pejabat Daerah dan Tanah Larut, Matang dan Selama, with assistance from JKR, should co-ordinate and synchronise the development of interpretative and informative signage for this hill resort.

Action Plan : BL-AP8
SEDC Perak should upgrade the existing tourist bungalows/rest houses with improvements in interior decoration, more self-catering facilities, upgraded heating, hot water facilities and better facilities for meals. The structures should as far as possible made to reflect the identity found only in this District or locality.

Action Plan : BL-AP9
The Cabinet Committee on Highlands and Islands with the assistance of UPEN Perak should continuously monitor all development activities at Bukit Larut.
CHAPTER 4: BUKIT LARUT

4.5.4 Biodiversity Conservation

**Action Plan: BL-AP10**

It is recommended that the forest trail leading to the peak of Gunung Hijau be **upgraded** with emphasis on putting in the necessary safety measures and to be reopened for public use. Possibility of providing trained guide services to take visitors through the trail should be considered. These could be undertaken through collaboration between the Larut Matang Forestry District Office and the Pejabat Daerah dan Tanah Larut, Matang dan Selama.

**Action Plan: BL-AP11**

The Perak Department of Forestry to promote the Educational Forest more extensively and introduce additional interpretative information such as labels on trees and information on the forest types. Notice boards showing a map of the Educational Forest and activities that are not permitted such as littering and cutting of vegetation should also be erected at suitable locations for visitors’ information.

**Action Plan: BL-AP12**

The Perak Department of Forestry should encourage more detailed studies to be conducted to establish and document the range of biodiversity found in Bukit Larut. More field studies in particular are needed to re-explore and update previous records of the flora and fauna of Bukit Larut. Collaboration with research institutions and other relevant organisations in this effort are required.

4.5.5 Infrastructure & Environmental Improvements

**Action Plan BL-AP13**

**JKR should increase safety of the access road** by adding road furniture such as safety barriers at all bends and signage to remind pedestrians to beware of oncoming traffic. The vehicle driver must also be told to sound the horn before going into each bend to warn any pedestrians ahead. The access must also be inspected and maintained regularly, and any landslips must be repaired immediately. It is recommended that the road is not widened, for it would actually cause more damage to the environment.

**Action Plan BL-AP14**

**Reduce the generation of waste at source.** At present, solid waste is transported down with the land rovers for disposal. With new developments, the volume of solid waste will increase and so will the difficulty in transporting them for disposal. Therefore, waste reduction must be practiced for example; by ensuring that all foodstuff sold at the hilltop is not wrapped in plastic, styrofoam or other types of non-biodegradable material.
CHAPTER 4: BUKIT LARUT

Plate 4-1 Foodstalls at the foot of Bukit Larut

Plate 4-2 Gateway to Bukit Larut
CHAPTER 4: BUKIT LARUT

Plate 4-3  Bungalows & Rest House on Bukit Larut

Plate 4-4  Another Bungalow on Bukit Larut
Figure 4-3  Major tourist attractions in Taiping and Bukit Larut
LEGAL AND INSTITUTIONAL ISSUES
CHAPTER 5: LEGAL & INSTITUTIONAL ISSUES

5.1 INTRODUCTION

This chapter examines the legal and institutional aspects of the issues, in particular the weaknesses and threats that have been identified in the 'strengths, weaknesses, opportunities and threats (SWOT)' analyses of Penang Hill, Gunung Jerai and Bukit Larut. This chapter also looks at the legal and institutional mechanisms needed to implement some of the action plans identified.

The hill stations of Gunung Jerai and Bukit Larut are gazetted Permanent Forest Reserves under the National Forestry Act (NFA) 1984. Gunung Jerai was gazetted on 30 May 1953 (8560 hectares) and Bukit Larut in 1910 (6878.30 hectares) respectively. Penang Hill has a Penang Hill Development Plan (1993 – 2000) (Municipal Council of Penang Island and TCPD, 1993) and a gazetted Penang Hill Local Plan (TCPD, 1998). The Local Plan was gazetted on 15 April 1999.

As these hill stations are under some kind of legal protection and development control, there are fewer issues that lend themselves to legal and institutional analyses.

5.2 LEGAL ISSUES

5.2.1 Enhance Protection of Hill Stations

Penang Hill, Gunung Jerai and Bukit Larut have associated rich heritage in their surrounding areas. For example, Penang Hill and the historical Georgetown; Gunung Jerai and the historical and cultural Bujang Valley and; Bukit Larut and the historical town of Taiping. As such, the Heritage Conservation Bill when tabled should consider these hill stations as part of the rich historical heritage (Daily Express, 9 January 2001).

Recommendations

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ACTIONS</th>
<th>BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI-AP1</td>
<td>• Pass the Heritage Conservation Bill and subsequently consider these hill stations to be part of the historical heritage of the country.</td>
<td>Federal &amp; State Government</td>
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</table>

5.2.1.1 National Forestry Act 1984

Although hill stations such as Gunung Jerai and Bukit Larut are gazetted as Permanent Forest Reserves under Section 7 of the NFA, this does not fully guarantee that the hill stations will not be converted or excised under Section 11. This section gives the State Authority the prerogative to decide whether the purposes for which these forest reserves were classified are no longer required and therefore be converted for other uses. The State Authority is directed to act in favour of the option that would have a higher ‘economic value’. Therefore it is important that as a first step that the forests are classified into its functional categories under section 10 of the NFA.
CHAPTER 5: LEGAL & INSTITUTIONAL ISSUES

There has been a move to consider the gazettement of forest areas under the jurisdiction of the State Forestry Department as State Parks. For example, the proposed Perlis State Park is one such model. This model allows the State Forestry Department to maintain its jurisdiction even after the gazettement as a State Park but with enhanced responsibilities and a more central co-ordinating role with other relevant agencies. Gunung Jerai and Bukit Larut are excellent candidates to be considered as State Parks under this model.

Recommendations

<table>
<thead>
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<tr>
<td>LI-AP2</td>
<td>Classify and gazette PFEs (permanent forest estates/ reserves) around the hill stations into functional categories such as soil protection, water catchment, virgin jungle reserve, amenity, education and research forests that are compatible to the functions and sensitivity of the highland ecosystems (Section 10 of the NFA)</td>
<td>State Department of Forestry</td>
</tr>
<tr>
<td>LI-AP3</td>
<td>Consider the gazettement of Gunung Jerai and Bukit Larut as State Parks (using the Perlis State Park as a model)</td>
<td>State Department of Forestry</td>
</tr>
</tbody>
</table>

5.2.2 Regulation of Transport Services

Currently transportation up Gunung Jerai is either by personal vehicles or hiring individual van operators. It was noted that the prices charged by the individual van operators are sometimes over-priced. Therefore, there is a need to regulate the operations of the van service to prevent touting as well as to ensure a more efficient service where safety considerations are closely adhered.

5.2.2.1 Tourism Vehicles Licensing Act 1999

The Tourism Vehicles Licensing Act (TVLA) 1999 provides for the licensing and regulation of tourism vehicles and for related matters. The law has come into force in June 2000. Section 19 of the TVLA makes it an offence for any person to use a motor vehicle to be used as a tourism vehicle without a licence granted under this Act. The definition of ‘tourism vehicle’ (section 2 of TVLA) means ‘an excursion bus or a hire and drive car’.

These van operators would be contravening this law if their vans have been used as a ‘tourism vehicle’ without a licence. It is suggested that these van operators at Gunung Jerai obtain a license under section 5 of the TVLA. However, section 4 of the TVLA requires anyone carrying on a tourism vehicle business to be registered under the Tourism Industry Act 1992. Section 10 of the TVLA provides for conditions to be attached to the licence and this could include the maximum passengers allowable and qualified drivers. Section 11 of the TVLA provides for statutory conditions of licence, which is essential, as it requires that the
tourism vehicle to be maintained in a fit and serviceable condition; and provides for limits of speed and weight.

Recommendation

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ACTIONS</th>
<th>BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI-AP4</td>
<td>Van operators to be licensed under TVLA for better regulation and safety of the transport services at Gunung Jerai.</td>
<td>Ministry of Culture, Arts and Tourism</td>
</tr>
</tbody>
</table>

**Table 5-1: Summary of Legal Recommendations**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ACTIONS</th>
<th>BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>LI-AP1</td>
<td>Pass the Heritage Conservation Bill and subsequently consider these hill stations to be part of the historical heritage of the country.</td>
<td>Federal &amp; State Government</td>
</tr>
<tr>
<td>LI-AP2</td>
<td>Classify and gazette PFEs (permanent forest estates/ reserves) around the hill stations into functional categories such as soil protection, water catchment, virgin jungle reserve, amenity, education and research forests that are compatible to the functions and sensitivity of the highland ecosystems (Section 10 of the NFA)</td>
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</table>
CHAPTER 5: LEGAL & INSTITUTIONAL ISSUES

5.3 INSTITUTIONAL ISSUES

5.3.1 Lack of Enforcement and Capacity (Human and Technical)

Illegal or encroachment of hill farming is noted on Penang Hill. On Penang Hill, if the area of illegal hill farming falls within the gazetted Penang Hill Local Plan, the Town and Country Planning Act (TCPA) 1976 makes it an offence for any person to use any land or building otherwise than in conformity with the local plan (Section 18(1)). A maximum penalty of RM 100,000 could be imposed for offences relating to unauthorized development (Section 26).

The local authority therefore could use their powers under this act to prevent or stop illegal land clearing in their area of jurisdiction. However, the problem seems to be due to a lack of physical manpower to ensure that illegal land clearing is not taking place.

At Gunung Jerai, the demand on land for agriculture (especially for fruit orchards) may lead to possible encroachment on the Forest Reserve. To prevent such encroachment, the boundary of the forest reserve should be demarcated clearly with information boards on penalties imposed on encroachment, etc. displayed at strategic places. Frequent monitoring and patrol of the area will deter possible encroachment. However, this means having the requisite manpower to carry out such enforcement activities.

Recommendations

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ACTIONS</th>
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</tr>
</thead>
<tbody>
<tr>
<td>LI-AP5</td>
<td>• Apply for more enforcement officers from the Federal/ State Public Service Commission</td>
<td>Local Authorities</td>
</tr>
</tbody>
</table>
| LI-AP6 | • Training of officers in the requisite skills will enhance their competence in carrying out their job functions more effectively. The training modules could include –
  - laws relating to the hill stations
  - enforcement procedures
  - the need for conservation | Local Authorities |
CHAPTER 5: LEGAL & INSTITUTIONAL ISSUES

5.3.2 Lack of Co-ordination

The Penang Hill Local Plan noted that the planning, management and administration of the area involves a number of agencies (at least 17). Although each agency has their main area of responsibility, sometimes agencies overlap in the type of services they provide. In order for Penang Hill to be sustainably maintained, there is a need to have a lead agency co-ordinating all other agencies in the area concerned as well as be the focal point for relevant stakeholders to share their interests and concerns on the development and management of Penang Hill.

The Penang Hill Local Plan has suggested a ‘consortium agencies approach’ which is co-ordinated by the State Secretary’s Office, whereas the Friends of Penang Hill (1997) proposed the establishment of a Penang Hill Corporation governed by a Board of Directors appointed by the government. The advantages of both these approaches are similar, except that the latter allows for public interest representation.

It is suggested that the former approach should be adopted, however with modifications to allow for better participation of relevant stakeholders (which includes local communities and public interest organisations). It is proposed that the Local Agenda 21 approach be adopted whereby all relevant stakeholders are consulted and have a voice in the planning, management and development in the area concerned.

Table 5-2: Summary of Institutional Recommendations

<table>
<thead>
<tr>
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- laws relating to the hill stations  
- enforcement procedures  
- the need for conservation | Local Authorities |
APPENDIX I: REFERENCES


Daily Express. (9.1.01). *Bill on Heritage Conservation to be Tabled: DPM*


APPENDIX I: REFERENCES


APPENDIX I: REFERENCES

National Forestry Act 1984 (Act 313)


Perak Water Board Enactment 1988 (En.12/1988)


APPENDIX I: REFERENCES


APPENDIX II
LIST OF MEETINGS WITH STAKEHOLDERS
## APPENDIX II: LIST OF MEETING WITH STAKEHOLDERS

### LIST OF MEETINGS WITH STAKEHOLDERS

<table>
<thead>
<tr>
<th>Date</th>
<th>Agency</th>
<th>Persons Met/Contacted</th>
<th>Issues Discussed/Data Collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8/01</td>
<td>Unit Perancang Ekonomi Bahagian Pelancongan</td>
<td>K. Rajasegaran Tourism Officer</td>
<td>Discussed issues and problems and visitor arrivals to Bukit Larut</td>
</tr>
<tr>
<td>4/9/01</td>
<td>Gunung Jerai Resort, Gurun</td>
<td>En Md Zaki Resort Coordinator</td>
<td>Visitor arrivals, average length of stay and other tourism information.</td>
</tr>
<tr>
<td>4/9/01</td>
<td>Jabatan Perhutanan Daerah Gurun, Kedah</td>
<td>En. Ramli b. Khamis Forestry Museum Officer, Gunung Jerai</td>
<td>Discussed issues and problems, activities and facilities at Gunung Jerai</td>
</tr>
<tr>
<td>5/9/01</td>
<td>Penang Water Supply Department, Penang</td>
<td>Dato’ Ir. Lee Yow Ching Director.</td>
<td>Discussion on water issues in Penang.</td>
</tr>
<tr>
<td>5/9/01</td>
<td>Consumer’s Association of Penang</td>
<td>Meenakashi Raman Legal Advisor</td>
<td>The Penang Hill Controversy, a Seminar Paper</td>
</tr>
<tr>
<td>5/9/01</td>
<td></td>
<td>En. Ahmad Chik Resident of Penang Hill</td>
<td>Views about future development of Penang Hill.</td>
</tr>
<tr>
<td>5/9/01</td>
<td>Resident Association of Penang Hill</td>
<td>Arunasalam @ Raja Chairman</td>
<td>Views about future development of Penang Hill.</td>
</tr>
<tr>
<td>6/9/01</td>
<td>Majlis Perbandaran Taiping</td>
<td>Dr. Kevin Lazarus Director, Taiping Zoo</td>
<td>Obtained visitor arrivals and facilities provided in Taiping Zoo.</td>
</tr>
</tbody>
</table>