

## River Tourism: A Potential in Pergau River, Jeli, Kelantan

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### Abstract

The study emphasize on the river-tourism prospect in which determining a new potential place for river-tourism area. Pergau River, Jeli, which is located at the southwest of the state of Kelantan, is the location to be chosen since the preliminary observation had shown that the river have many resources which are favorably in providing the river-tourism activities resources. River-tourism activities are rarely to be seen in the state of Kelantan. Some of the activities such as adventure water activities, white-water rafting, kayaking, boating, tubing, swimming, fishing and cruising are such an attractive and enjoyable moment which are get a high demand from the tourist around the world especially tourist who is seeking for challenges, adventures, experiences and satisfaction. This research paper consider several elements in river-tourism prospect include the geomorphological study of the Pergau River, Water Profile Study, Social Survey and also study of the suitability for nature-tourism area. All of those elements are important in determining Pergau River and surrounding area as a potential spot for river-tourism activities. The conclusion of the paper shows significant and scientific proves of the suitability and potential of the area, in terms of physical, biological, ecological and social aspect to be considered as one of the river-tourism spot in the state of Kelantan.

**Keywords:** River-tourism, River geomorphology, WTO Criteria, Water Quality, pergau River

### INTRODUCTION

One of the world's largest and fastest growing industry is tourism (Sharpey, 2002, Archer and Fletcher, 2003, cited by Norsiah Khadir 2008). In Malaysia, tourism industry is the second largest contributor after the manufacturing sector to Malaysia's economy. Over the past years, amount of visitors to Malaysia had reach about 24.6 millions thus generate about RM 56.5 billion by the tourism industry itself on year 2010 (Ministry of Tourism Malaysia,2010).Since this country situated along the equator, the climate is hot and humid throughout the year. The average rainfall is 250 centimeters (98 in) a year and the average temperature is 27 °C (source: Malaysia Travel Guide: Climate of Malaysia,2008).This favorable climate contribute to high biodiversities and natural resources availability, thus this wonderful creatures made Malaysia as one of the most must-visited country throughout the world for natural tourism or ecotourism activities.

Kelantan, which situated at northeast Peninsular Malaysia, has a lot of natural tourism destination area such as beaches, waterfall, water reservoir, tropical rain forest, National Park, Montane forest, mountain and an elongated river surrounded by beautiful flora and fauna. Known as unique destination, tourism plays a significant role in the economy where the average growth in tourism receipts doubles in the past decade. Data table 1, shows an increasing of 2.62 million of tourist arrival (domestic and international) in Kelantan from year 2000-2010 (Source from Kelantan Tourism information Centre). According to data on guest arrival per country in 2009, Kelantan has a total of 22917 number of domestic tourist, rank 4<sup>th</sup> after Kuala Lumpur, Kedah and Negeri Sembilan. Kelantan has contributed an account of 7.8% of the total number of tourist arrival in Malaysia.

Table 1.1: Tourism arrival in Kelantan from year 1984-2008(Kelantan tourism Information Centre, 2009)

YEAR	DOMESTIC	INTERNATIONAL	TOTAL
2000	2,235,024	527,969	2,762,993
2001	2,830,625	650,276	3,480,901
2002	3,514,674	610,531	4,125,205
2003	3,960,000	561,572	4,521,572
2004	4,266,286	590,964	4,857,250
2005	2,957,958	395,158	3,353,116
2006	4,212,247	674,004	4,886,251
2007	4,114,007	1,839,675	5,953,682
2008	4,396,242	541,500	4,937,742
2009	4,229,392	573, 649	4,803,041
2010	4,464,017	922,072	5,386,089

### Background of study

River is one of the most important resources for the human civilization. These fascinating places exhibit both natural charm and usefulness for a vast array of human activities such as transport route, food sources and in recent time as places to be visited and enjoyed. Prideaux, Timothy and Cooper (2009) stated that rivers have occupied a central place in human history since the dawn of civilization, and before. They provided water and the fertile alluvial plains that sustained the first human settlements, and in so doing helped foster the

accumulation of wealth based on agriculture and trade. This allowed the great civilizations of the past to flourish.

Using river as one of the tourism resources might be interesting to be studied. Since the major constituents of the river is based on water, so many activities can be done either on the surface, subsurface or down beneath the water. In this case, River Tourism is the appropriate topic to be chosen. In general, River Tourism is combination of river and tourism industry. According to Bruce and Malcolm (2009), rivers are a major tourism resource providing spectacular settings, recreational opportunities, waterfront landscapes in many centre's of tourism interest, a means of transport and an essential source of water for human consumption. The world's great rivers have long intrigued travelers and even in ancient times provided the backdrop for travel. Major excitement activities that can be done through the river are include water adventure tourism which comprises water-rafting, river-cruise, fishing, river exploration, boating, kayaking and leisure that could be interesting parts to attracts the tourist thus could potentially develop the selected area.

River tourism is a lucrative trade with the potential of making a major contribution to the local economies through employment on cruise ships, pleasure boats, and parks and recreational facilities along the riverbanks (Shakiry, 2007). It is possible that by implementing tourism project and activities along the rivers would potentially giving benefits to the local surrounding peoples.

In this case, the study had chosen Pergau River as the newly potential site for the river tourism project. Pergau River is the one of the most attractive place to be visited in the Kelantan state. Located at the west of the state, which near the border of Perak-Kelantan state, in the district of Jeli, it stretch from western side of the Jeli district, flow into Galas river and lastly joined together with the main Kelantan's river. This river is one of the important water reservoir and resources for the local people. As in the case in many tropical countries, heavy rainfall and effects of upstream changes in land use have always caused the changes of flow of the river. This river is potential for creating adventure tourism activities such as water-water rafting, kayaking, river cruise and many more. The current status of Pergau river still not been fully explored yet. However, there is construction of 600 MW hydroelectric power station which situated at the upstream of the Pergau River which formed the Pergau Lake reservoir. This is the only dam that been built in the state which was constructed by the British based company on year 1993. After the construction, the downstream of the river still had unknown spot for tourism thus it is good opportunity if someone had intention to transform the potential area to be beneficial and useful area.

The studies investigated the Pergau River and surrounding areas, physical, biological, ecological and social aspect and transform them to be a potential site for river-tourism site.

As noted above, river tourism is set as potential sectors in Kelantan. However, there have been facing some issues and challenges. First of all is the less and unknown of river-tourist spot in Kelantan. These had narrowed the tourist of taking river-spot as a tourist consideration. Furthermore, if the location is available, the evaluation of site that suitable for adventure activities is hardly to be observed. Secondly, is the lack of tourism systematic planning and undeveloped potential river tourism site such as accessibility to the place, facility, management of the natural resources and highly informative which might potential of turning it into an river-tourism spot. Such development is important as it may create ideas and job opportunities in rural communities. Lastly, even though number of tourist had been increase over the years, however the number in Kelantan still less compared to the overall of visitors coming to Malaysia.

Given the scenario of river tourism industry in Kelantan, some of the issues might ask such as:

- 1) Since there is an existing site of river that not fully consumed for tourism resource, what is the potential, attractions, key element and criteria that determine Pergau River as the most suitable site for nature tourism?
- 2) What type of activities that is potential to be done in Pergau River as medium of tourism activities?
- 3) Is there any prospect of river-tourism demand in Kelantan, and what are the estimates total visitors to river-tourism spot (forecast) so that it is reliable to be shown to government to take further steps of actions?
- 4) What is the perception of the local people by implementing the ecotourism project and what is the impact that might be occur to the social & surrounding environment?

This report began with the description of a brief introduction about river-tourism. In the second section, the objective of the study provided, followed by the research scope in third section. The description of a brief literature review on this subject state in the fourth section. In the fifth section we proposed the research methodology followed by the research activities and expected outcome of this study. Finally, the conclusion of the proposal is provided.

### **Objective of study**

In this study, the overall objective was to identify the potential of Pergau River as ecotourism site and planning a specific measure and planning in order to achieve it as one of the attractive place to be visited. The specific objectives of this study are as follows:

1. To observe the physical, ecological and social features that determine Pergau River as potential river-tourism site based on World Tourism Organization (WTO/UNDP 1992) criteria for assessing nature-based tourism destinations.

2. To determine what type of activities that suitable to be carried out at the Pergau River.
3. To determine the prospect of river-tourism demand in Kelantan
4. To investigate the social, environmental and economical impact from the project implementation

### **River-Tourism**

The main feature of river tourism is water, one of the most popular natural settings for rest and recreation. Even short periods near water are claimed to have a beneficial soothing effect on most people (Frazier, 2000). Using water or river as tourism resource might be interesting to be studied since the demand of adventure and outdoor activities are increasing. There are several types of activities that can be carried out on the flow water stream such as river journeys, whitewater kayaking, whitewater rafting, fishing, and wildlife watching.

According to Bruce and Malcolm (2009), rivers are a major tourism resource providing spectacular settings, recreational opportunities, waterfront landscapes in many centre of tourism interest, a means of transport and an essential source of water for human consumption. The world's great rivers have long intrigued travelers and even in ancient times provided the backdrop for travel. From the citation above, it is clear that apart from mountain, beaches, caves, lake and other nature tourism, river is the one of the most interesting tourism resources to be chosen.

Steinbach, (1995) in his book, *River Related Tourism in Europe* state that a certain number of these offers belong to the category "river related tourism". It includes individually organized vacations as well as offers by travel agencies which:

- a. Have the character of "roundtrips" where either the overnight accommodations differ (eg: hotels or campground) or the accommodation itself is moving to different sights (by cruise-ship or houseboat);
- b. The routes follow the run of river-valleys
- c. The cruise on the river or the travel along its banks provides for an essential part of experiences. They are taking place at different locations of the river-valley and usually do not reach its hinterland.

### **River geomorphology**

A fluvial system consists of the physical/abiotic (hill slopes, channels, river network, etc.) and the biological/biotic (terrestrial vegetation, riparian and riverine habitat, etc.) environment, which interact across a range of nested scales in space and time. At the drainage basin scale, the sensitivity of the fluvial system to disturbance is low but the recovery time is long, while at the river habitat scale the sensitivity is high but the recovery time is short (Frissel et al., 1986).

The fluvial system has been defined as a system of biotic and abiotic elements that responds to driving forces and self-adjusts at different timescales. Six fundamental concepts of geomorphic landscape change: uniformity, thresholds, progressive landscape change, complexity, self-organized criticality and optimality were presented. Using these concepts of change we are now in a position to describe the space-time variability in fluvial system dynamics.

Rivers and streams are not only conduits of water, but also of sediment. The water, as it flows over the channel bed, is able to mobilize sediment and transport it downstream, either as bed load, suspended load or dissolved load. The rate of sediment transport depends on the availability of sediment itself and on the river's discharge (Knighton, 1998)

According to Strahler (1950), rivers are also capable of eroding into rock and creating new sediment, both from their own beds and also by coupling to the surrounding hillslopes. In this way, rivers are thought of as setting the base level for large scale landscape evolution in non-glacial environments. Rivers also are key links in the connectivity of different landscape elements.

As rivers flow across the landscape, they generally increase in size, merging with other rivers. The network of rivers thus formed is a drainage system and is often dendritic (tree-like), but may adopt other patterns depending on the regional topography and underlying geology. (Burbank, 2002)

### **River ecology**

The ecology of the river's aquatic and terrestrial systems is heavily influenced by the downstream transport of nutrients and energy (carbon) as well as the position of the basin or catchment and, importantly, stream discharge. However, the relationship between the biological condition of the riverine system and the physical processes that shape the river is not well understood (see, e.g. Young et al., 2001). Through the study, the observation of wildlife aquatic species, water quality sampling and edge site of the river will be conducted from the upstream to the downstream of the river.

River-based ecology is also of special interest for aquatic ecotourists and geotourists. Seasonally flooded wetlands along many rivers dominate the landscape and offer rare flora and fauna, and many have been designated as a protected natural area. (Cooper and Prideaux, 2006). Thus, beside adventure activities, the spectacular views of the biodiversity around the river also will be potential attraction for river-tourism.

### WTO Criteria for Tourism Site

World Tourism Organization (WTO) & United Nation Declaration Programme, (UNDP) on year 1992 had proposed criteria for assessing the suitability of certain area as tourism site where it compiled and grouped into 4 categories which is flagship attractions, complementary and supporting attractions, accessibility and regional infrastructure and general political & social framework (Stecker, 1996).

Flagship attractions of tourism sites in natural areas are distinctive features of natural elements found in such a site. They best characterize the site or region and are the main reason for tourist to visit that place.

Complementary attractions refer to natural or cultural elements of a specific site. However, they do not possess the same degree as flagship attractions. They provide added value to a site.

Supporting attractions are artificial elements necessary for providing tourists with support and service. However, they are not the main reason for tourists to visit a specific place.

Accessible is mean by it is important to keep the nature tourism sites as natural as possible, but the areas should be accessible. Infrastructure is also important for tourists to enjoy a tourism place, for example: telecommunications (telephone, internet, fax, etc), shop/market, cafe/restaurant, etc.

Beside nature attractions, the political stability is one of the factors that attracts tourists. The roles of local authority and communities also take an important parts

### Water Quality Analysis (WQA)

According to International Association of Dredging Companies, IADC (2007), Turbidity is a description of how clear water is, or in other words, the clarity of the water. In simple terms it is a measurement of the water's "muddiness" or "cloudiness". In more precise terms, it is an expression of the optical properties of water that cause light to be scattered and absorbed in the water. Increased Turbidity changes the direction of the light, rather than letting it be transmitted through the water in a straight line down to the waterbed. If Turbidity is low, light will continue in the same direction. If Turbidity is high, light will scatter, illuminating the particles in the water, much like a ray of sunlight illuminates specks of dust in the air. The general rule is: the cloudier the water, the greater the turbidity.

## METHODOLOGY

### Study area

The study area located along of Pergau River and its surrounding area, which is 15.56 km in length. Several location were chosen as the checkpoint for data sampling where priorities given to the strategic places in terms of water features, vegetation, population, geomorphology, water flow and activities around the area. Starting from the first checkpoint, located beside the hydroelectric pond, the study location extends to the downstream area of the Pergau River, which is located at Kampung Salor, Jeli. Around the river, there are numbers of villages and the most nearest village located to the river is Kampung Batu Melintang. Jointed together with the Pergau River, several numbers of small rivers and also waterfall, which called Lata Terubong, upstream of the waterfall is came from Pergau reservoir at Batu 14, Jeli. In this study, 8 checkpoints were selected for data collection.

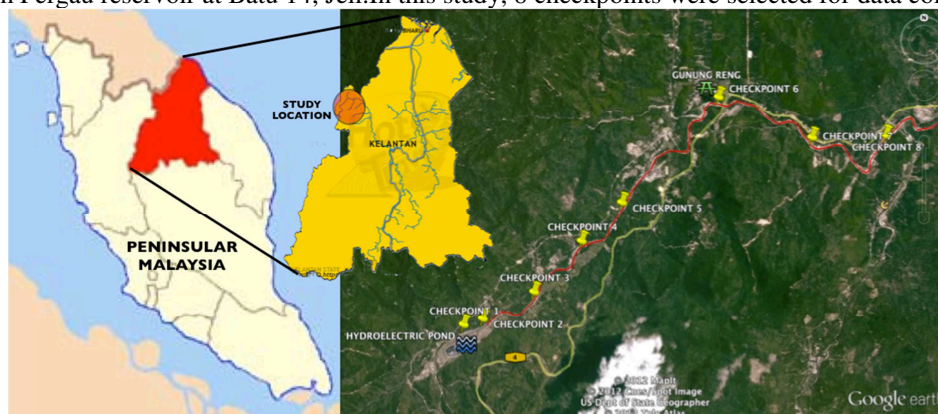


Figure 3.1: Map of Pergau River, Jeli, and Kelantan

### Primary data collection

#### Direct observation

For the direct observation methodology, materials that have been used include the Canon DSLR camera for picture snapping, Global Positioning System (GPS) for marking the coordinates, notebooks for data record and also specific checklist of quantifiable criteria. Several criteria & features are considered such as the river features, wildlife, vegetation, forest, interviewing the local people, rocks profile, the surrounding features and other assessment. Based on proposal by WTO/UNDP (1992), cited from Stecker (1996), criteria for assessing the suitability of Pergau River and the surrounding area as tourism attractions formulated. Data are compiled and

grouped into four categories:

- i. Flagship Attractions
- ii. Complementary and Supporting Attractions
- iii. Accessibility and regional infrastructure
- iv. General Political & Social Framework

This checklist used by relevant agencies as the first step in deciding whether Pergau River and surrounding areas are suitable for tourism through the direct observation process.

#### **Water quality sampling**

In the water quality sampling process, several checkpoints were selected for sampling. The sample of water were inserted into the sampling bottles and immediately brought to the lab for analysis. For this sampling, 8 samples were collected which relevant to 8 checkpoint. Parameter that been used in this sampling is Turbidity.

#### **River current**

River current analysis is important in this study since the flow rate and velocity of the river should be known in order to determine suitability, compatibility & any risk, if available. Material that been used is river current meter.

First and foremost, the locations that have been chosen are at the 8 checkpoints that have been selected. 10 readings were collected in order to get the accurate average of the result where 10 different places or water body were chosen in the responsible checkpoint.

#### **River depth & width**

The deepness and the width of the river water body are crucial in determining the flow rate of the rivers, the suitability of tourism activities, the risk analysis and the other features of the river. The materials that been used for this method is measuring tape & a 10 meters of rope, for security purpose.

The river deepness was measured 5 times at one checkpoint and the average reading was recorded. 2 types of reading were recorded where it divided into shallow water & deep-water reading.

For the river width, 5 readings also were taken at one checkpoint and the average reading recorded. The reading was taken with putting the end marker of the measuring tape to the waterfront to another waterfront. All the data's were recorded into the table according to the respective checkpoints.

#### **Geographical Information System (GIS)**

Global Positioning System (GPS) is an important tool in determining the data, which is then inserted into the Geographical Information System (GIS) for analysis. Several data were taken using GPS including coordinates, altitudes, tracking routes and also marking the checkpoint.

All the data were inserted into the GIS software, called as ArcGIS. The map was generated and several data that have been taken were interpreted in the system. Additional information such as land-use, forest profile, boundaries, administration boundaries, main-road, villages and contour also were inserted into the map analysis system.

#### **Questionnaire survey**

In order to ensure that all the questions in questionnaire are suitable and comply with the objectives study, a session of discussion were held with supervisor for validation of questionnaire. The purpose of this discussion is to identify questions, comply with the objectives studies, which are to be given to the respondent. The previous related survey also was considered as reference.

Questionnaire was divided to two types. Firstly focus on the demand of river-tourism and secondly focus on the impact of implementing the tourism project.

"Pilot test" were done in order to study on the effectiveness and the suitability of the questionnaire before been used in real case data collection. The purpose of pilot test is to study on the quality of the questionnaire. A total of 5 respondents are been set in the pilot test study.

In order to collect primary data using questionnaire survey, *random probability sampling* is selected. As Rescoe (1975) cites in Sakaran (2000:296), "sample sizes larger than 30 and less than 500 are appropriate for most research". Having in mind these limitations, the sample size were consisted of about 100 questionnaires, designed for the visitors at the Kota Bharu, Kelantan as the place for tourism arrival. Meanwhile, the other river-tourism impact perception questionnaire were targeted the population at the Pergau River surrounding areas. The river-tourism demand questionnaire was distributed via various mediums, hand-by-hand, direct interview & also through the Internet (Google Documents).

Meanwhile, for the river-tourism perception by the local communities, the survey was done by direct interview. It is to ensure that additional information and the subjective answer can be collected properly.

All the data were collected & inserted into SPSS software and undergone analysis. In this case, simple analysis was used where the generation of simple bar chart was done in order to describe the result.

#### **Secondary data collection**

Secondary data collection involved the collection of information and statistics from several related department such as Kelantan Tourism Information Centre, Department of Irrigation & Drainage (JPS Kelantan), World Wildlife Fund (WWF), Kelantan Forestry Department (PERHUTANAN), Tourism Department of



Malaysia and National Hydraulic Research Institute of Malaysia (NAHRIM). Interviewing the local communities that living at the surrounding area of Pergau River also considered as secondary data collection such as the river history, background and activities at the places.

**Data analysis**

The observation data and the sampling data were analyzed and described based on criteria for assessing suitability of tourism site as proposed by WTO/UNDP (1992). For the geomorphological features of Pergau River, Geographical Information System (GIS) software were use to interpret the data & generate the map. The others geomorphological features are analyzed using simple and direct analysis. Meanwhile, all the data collected from the questionnaire analyzed via quantitative method. In this analysis, all the data were inserted in SPSS software to allow easy generation of the graphs and tables. Then interpretation and analysis of data were conducted before discuss on the result obtained. All the data were collected & inserted into SPSS software and undergone analysis. In this case, simple analysis was used where the generation of simple bar chart was done in order to describe the result.

**RESULT & DISCUSSION**

**River geomorphology**

This section discuss on the geomorphologic features of Pergau River which comprises of topography, river elevation, river width, river deepness and the fluvial system of Pergau River

**Topography**

The following figure shows the map of Pergau River, generated from the Geographical Information System (GIS) software. Several data were included such as the river’s layout, checkpoints, reserve forest, administration boundaries, district boundaries, villages, some important places, small rivers, main road, contour and the tracking routes.

**PERGAU RIVER, JELI, KELANTAN**

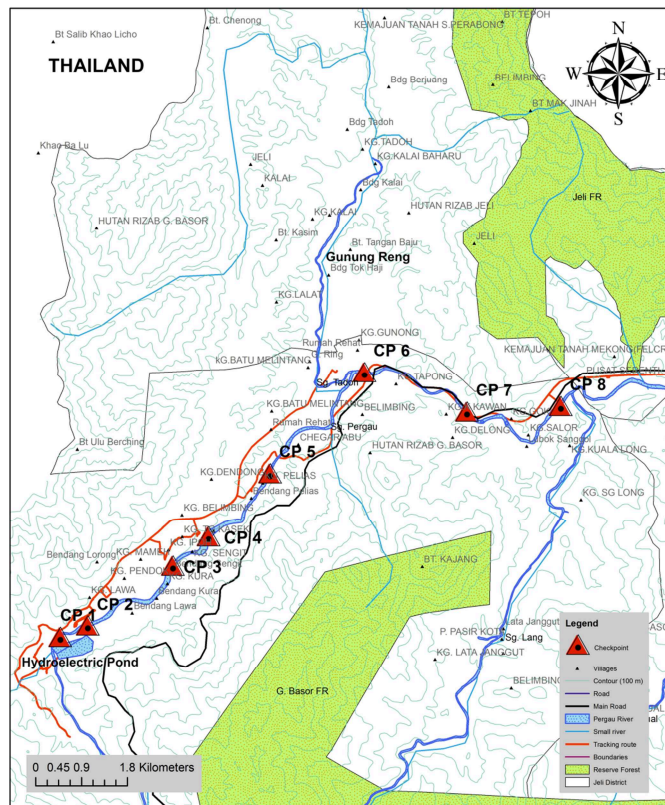


Figure 4.1: The map of Pergau River, generated from the Geographical Information System (GIS) analysis.

The above map, shown that the Pergau River is flowing down from the southwest part to the northeast part. Based on the contour analysis, the elevation of the river pointed downwards from 135 m (above sea level) until 85 m. The upstream of the river are located at the checkpoint 1 which is near the dam gate, extending from the hydroelectric pond. Before reaching the hydroelectric pond, the river is flowing downwards from the Pergau Lake, which is located at Batu 14, Jeli, about 5-6 kilometers underground before it enter control pond (Figure 4.2). In this study, the first checkpoint were chosen near the hydroelectric pond since the area is having many attractive spot such as virgin forest and the Lata Terubong (spectacular waterfall), which is located at the south part of the pond which then joined together with Pergau River at the southeast part of the area. The dam gate also

was chosen as the starting point where the water is flowing out from the pond, which determines the formation of the river.



Figure 4.2: The dam gate, located at the hydroelectric pond. This place was chosen as the starting checkpoint

Along the Pergau River's area, there are several villages nearing the streams such as Kg. Lawar, Kg. Bukit Ipoh, Kg. Pendok, Kg. Belimbing, Kg. Bukit Melintang, Kg. Gunung, Kg. Gok and Kg. Salor. The village that nearest to the river stream is Kampung Bukit Melintang. According to the survey that has been carried out with the villagers, many of the residents had migrated upwards, far from the river to prevent them to be flooded. Only Kg. Bukit Melintang remained.

Around the Pergau River also, there are 2 areas of reserve forest which called Jeli Reserve Forest, located at the north of the river and Gunung Basor reserve forest, located at the south part of the river. These reserve forest are crucial in providing the ecosystem health of the surrounding area & provide diversity of biotic & abiotic component for the place. The forest also are the habitat for some big wildlife such as elephant, deer, wild boar, snake, sun bear or even tiger.

There are two roads located near the Pergau River. First, the Jeli-Gerik highway, which located beside (right) of the river & the state's road located on the left side of the river. Access to the river is in good condition where the quality of the road is good, allows many vehicles to moving through it include big vehicles such as bus & lorry. There are several road that can direct the visitors to the river stream which is located at all the checkpoints. Nevertheless, there are a few bridges across the river, first, located at the Kg. Lawar, which at checkpoint 2, it allow cars to move across it. Bridges located at the Kg. Bukit Ipoh (checkpoint 3 & 4) only allows motorbike & bicycle to move across the river (Appendix A). Meanwhile the last bridge that can be seen is located near the Kg. Bukit Melintang (Checkpoint 5). It allow many small vehicles such as car, motorbike & bicycle.

Located near the checkpoint 6, there are tourism spot, which called Gunung Reng (Figure 4.3). This is the main attraction of Pergau River since it is located just beside the river. The distance from the stream is about 100-150 meters. Gunung Reng is historical site where the local peoples believe that the hill is transferred from other place. According to the local myth, a few hundred years ago, there is a small village under the mountain. However, the villagers was cursed because they had practiced gambling and cockfight which is a highly sin. As a punishment, the mountain which is believed, that the original position of the mountain is located at the Gunung Basor, near the state of Perak, had crushed the village. Thus the mountain is become legendary there received many tourist throughout the years. Today, the tourist comes to explore the spectacular views of the hill which they can climb up the hill by entering the cave. There are recreation site, camping site, restaurant, multipurpose hall and parking area. The visitors also can have a swimming activities at the Pergau River, beside the hill when the dam is close. The water is shallow, allow for human contact.





Figure 4.3: The beautiful scenery of the GunungReng which is located beside the Pergau River

Near this place also, there is a huge bridge, allowing 2 lanes, which connecting the highway from Gerik to Jeli. Many of the highway users can see the GunungReng and also the Pergau River from their vehicles and the view from there is such an extraordinary and beautiful.

**River’s elevation**

The Pergau River’s elevation was recorded using meters (above the sea level) unit. The following table shows the elevation of the Pergau River based on different checkpoints (from 1 to 8 ). These result were obtained using GPS

Table 4.1: The result of Pergau River’s elevation

Checkpoint	Altitude / m (above sea level)
1	134
2	127
3	116
4	118
5	108
6	105
7	99
8	83

Based on the above table, the elevation of the Pergau River is declining from checkpoint 1 to 8. However, at the checkpoint 3 to 4, there is a slight increase of elevation in which about 2 meters rose. After that, the elevation continues to goes down until the downstream. The result is proven by the following graph:

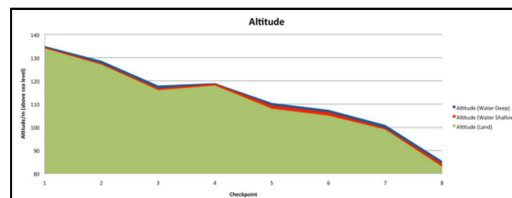


Figure 4.4: The elevation of Pergau River from Checkpoint 1 (upstream) to checkpoint 8 (downstream)

Based on the figure above, the location of Pergau River is at the high degree of slope and located at the mountainous area. Starting from checkpoint 1, the elevation was at 134 meters, pointing down to 83 meters at the last checkpoint. The differences of the elevation are 51 m (167.32 ft). Since the overall length of the river is 15.56 km (9.67 miles), the river drops of the Pergau River are estimated about 10.75 ft/miles. This result allow it to be categorized under Class II & III under the International River Classification system to rate sections of rivers as to their boating difficulty (Table 4.5)



Class II are stand for medium & intermediate category where the wave is regular, easy eddies & river are bends. For the class III, it stand for Difficult & Expert categories which is stand for maneuvering in rapids necessary, powerful eddies & standing waves. Thus, based on the elevation, the river is suitable for water recreation activities for Class I & II. The description & explanation of the suitability based on this class will be elaborated more in the river velocity section.

### Water width

The following table and chart shows the width of the Pergau River based on different checkpoints (from 1 to 8 ). These result were obtained using measuring tape where the width were measured across the riverfront.

Table 4.2: The width of Pergau River

Checkpoint	Width / m
1	14.3
2	21.3
3	28
4	42.9
5	28.9
6	28.9
7	33.5
8	51.6

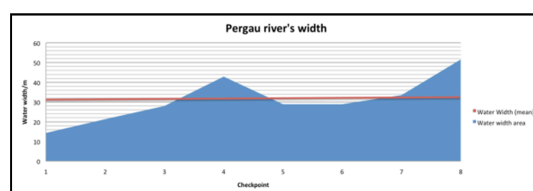


Figure 4.5: The width of Pergau River along the Pergau River, from checkpoint 1 to 8.

Based on the data above, there are varieties of river widths along the Pergau River. From checkpoint 1 to 4, the breadth of the river is increasing steadily. From the checkpoint 4 to 5, the width of the river is declining and after that it show a steady incline until the last checkpoint.

The maximum width (51.6 m) is noted at the last checkpoint, which is located near KampungSalor, and the minimum width (14.3 m) is noted at the first checkpoint, which is located beside the hydroelectric pond.

There are relation between the result of the water width & elevation of the river. Based on the result of the water elevation of checkpoint 4 (Table 4.1 and Figure 4.2) the river elevation is rising up for 2 meters. This cause the water body to be increased in size and forming a huge merge. Once the elevation goes down, the size of the river started to decrease and narrowing. The river also transport a sediments, therefore, once reaching the checkpoint, due to the low decline of elevation cause the accumulation of sediment that shallow the water and spread the water width.

In overall, the increase in width are corresponding to the statement that as rivers flow across the landscape, they generally increase in size, merging with other rivers (Charlton, 2008). This can be proven as the river flowing down across the checkpoint 1 to checkpoint 8 the width is getting wider.

### Water deepness

The following table shows the result of the water deepness of Pergau River, which is divided into 3 parts, deepness of shallow water, deepness of deep water and the mean. The measurement had been carried out from the checkpoint 1 until checkpoint 3.

Table 4.3: The depth of Pergau River.

Checkpoint	Water Depth/m (Shallow)	Water Depth/m (Deep)	Water Depth/m (Mean)
1	0.43	1	0.715
2	0.48	1.68	1.08
3	0.7	1.98	1.34
4	0.67	1	0.835
5	1.34	2.5	1.92
6	1.34	2.5	1.92
7	0.55	2	1.275
8	1.2	2.5	1.85

The data from the table were analyzed & interpreted by generating the graph bar that gives more comprehension about the trend of the deepness and the variety of the deepness throughout difference checkpoints.

Figure 1.1 shows various deepness of Pergau River, which is divided into two parts, shallow water & deep water throughout the different checkpoint. A series of water depth measurement was carried out through different checkpoints (Checkpoint 1 to 8). The overall mean of the deepness noted is about 1.35 meters.

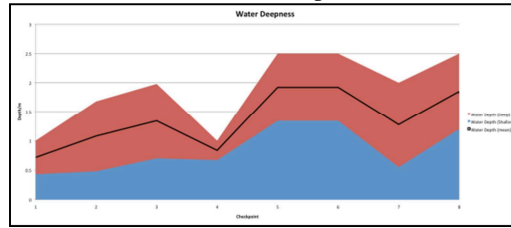


Figure 4.6: The depth of Pergau River according to different checkpoint (1-8)

Based on the figure above, there are differences trend of depth pattern from one checkpoint to another checkpoint. Clearly, from checkpoint 1 until 3, the mean depth of the river become more deeper as it started from the pond gate, which the water are flowing out, until the checkpoint at Bukit. However, after checkpoint 3, the deepness of the water is falling down, which is becoming shallower at the checkpoint 4. The depth of the river continues to incline from checkpoint 4 until checkpoint 6. At checkpoint 7, there is slight decline of river depth, which is located at KampungGok,Jeli. Last checkpoint (checkpoint 8) noted a slight incline of the river depth.

Based on the result, when the dam is closed, the minimum depth of the river was noted at the checkpoint 1 which is about 0.43 m while the maximum depth was noted at the checkpoint 5 & 6. Meanwhile, when the dam is open, the minimum depth of the river was noted at checkpoint 1 (1 meter) and the maximum depth was noted at the checkpoint 5,6 and 8 which is about 2.5 meters. Even though the mean depth of this river is around 1.35 m in average, however, swimming activities is not encourage at all times due to the instability of the river flow & also the deepness. The operation of the dam cannot be expected even though, the TNB open the dam gate at the morning. But, once the dam is open and the water is flowing out, the rising of river level of deepness cannot be expected. There is a case of death during the past 10 years where 3 children’s were drowned when the water had suddenly rising up after the dam was opened without any warning. Since the depth of a sudden and the high velocity of river flow, the children cannot be saved and drowned. The authorities found the dead body 3 days after drowned. This tragedy caused major of the villagers not dare to have any swimming activities at the river.

However, the deepness is favorable for surface water recreation activities such as white water rafting, kayaking, fishing, tubing, boating & river trekking. Checkpoint 1 is not suitable for engine-boat activities since the deepness is low & having a lot of rocks that is the primary obstacle for cruising. It can be said that, the river deepness are favorable of most surface water activities.

**River velocity**

In this section, the study relates the velocity of the river with the international standard classification for boating activities. The following table shows the result of Pergau River’s velocity from checkpoint 1 to checkpoint 8. The result were obtained using River Current Meter that the unit of the measurement are minutes per second (m/s). In order to synchronize the result based on the international standard, the unit was converted into miles per hour (mph).

Table 4.4: Pergau River’s velocity

Checkpoint	Water Velocity (m/s)	Water velocity (mph)
1	1.297	2.9
2	1.042	2.33
3	0.581	1.3
4	1.205	2.7
5	1.54	3.44
6	1.011	2.26
7	1.226	2.74
8	0.796	1.78

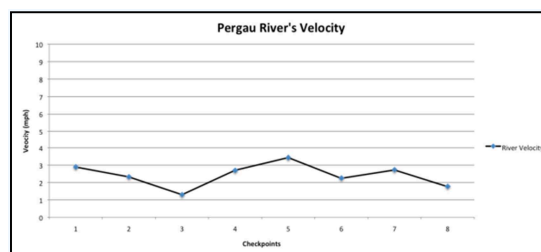


Figure 4.8: Graph of the velocity from checkpoint 1 to 8.

Based on the above table & the graph, result shown that there are several differences of velocity along the

Pergau River. The maximum velocity was recorded at checkpoint 5 which is located at BatuMelintang, Jeli, and the minimum velocity was recorded at checkpoint 3, which is located at Kg.Pendok, Jeli. The average velocity of the Pergau River recorded at 2.43 mph.

In order to synchronize the velocity result with the international standard for water activities, the following table shows the International River Classification System to rate sections of rivers as to their boating difficulty. This rating uses a "class" number to indicate its relative difficulty as outlined below.

Table 4.5: The International River Classification System standard.

Class	Difficulty	Description
I	Easy and Novice	Small waves, river speed about a fast walk (less than 4 mph), river drops less than 5 feet per mile.
II	Medium or Intermediate	Regular wave, easy eddies and river bends, river speed can be faster than a walk (2- 4 mph), river drops from 5-15 feet per mile.
III	Difficult or Expert	Maneuvering in rapids necessary, powerful eddies, standing waves, river speed 4-8 mph and drops 10-25 feet per mile.
IV	Very Difficult or Expert	Difficult water, long extended rapids, powerful hydraulics and eddies, standing waves, river speeds greater than 6 mph and river drops greater than 30 feet per mile.
V	Exceedingly Difficult	Large river drops and standing waves, extreme hydraulics, Seldom attempted.
VI	Dangerous	Involves substantial hazard to life.

Based on the table, Pergau River is categorized under Class II to Class III. Firstly, since the river drops of the Pergau River are estimated about 10.75 ft/mile. This result allow it to be categorized under Class II & III under the International River Classification system where the river drops of Class II is 5-15 ft/mile and river drops standard of Class III are 10 – 25 ft/mile.

This standard then supported by the average velocity of the PergauRiver which is around 2.43 mph. The average velocity is reported during the closed dam. It is expected that the velocity might be increase 2 – 3 times higher if the dam was open for outflow. Thus, based on the favorable river drops and velocity, Pergau River is categorized under Class II & III, which are, stand for Medium or Intermediate to Expert or Difficult category. The wave is regular, easy eddies & river are bends. The river also is maneuvering in rapids necessary, powerful eddies & standing waves.

### Water Quality Analysis (WQA)

#### Turbidity

The standard reading of turbidity unit is stand for Nephelometric Turbidity Unit (NTU). The following table shows the turbidity range standard and the reading of report to the nearest NTU.

The following table shows the result of Pergau River's turbidity.

Table 4.7: The result of Pergau River's turbidity from checkpoint 1 to 8

Checkpoint	Turbidity Range (NTU)	Report to the nearest NTU
1	19.4	1
2	46.16	5
3	8.8	0.1
4	12.27	1
5	16.76	1
6	15.08	1
7	17.35	1
8	18.35	1

Based on the above table, minimum turbidity (8.8 NTU) was recorded at the checkpoint 3, located at the Kg. Pendok while the maximum turbidity was recorded at the checkpoint 2, located at the downside of the dam gate, near the Kg. Lawar. The result of checkpoint 2 having a great incline where the turbidity reading is 46.16 NTU. This condition happens due to the location of the checkpoint which is located at the outflow point of the water. The checkpoint is about 100 meters from the dam gate. Since the water is flowing out in a huge amount, causing a great precipitation, accumulation & deposition to the river flow, therefore, high turbidity is expected. The other checkpoints record a steady turbidity, which is reported at nearest 1 NTU.

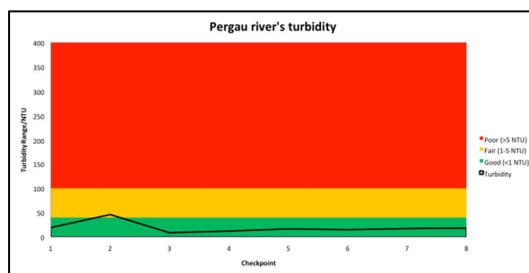


Figure 4.9: The graph of Pergau River's turbidity range and the class of the turbidity index

Based on table 4.7 and figure 4.9, the average reading show that the Pergau River's turbidity can be categorized under category Good, which in the green bar. For this category or class, the international standard of turbidity index describe that the condition of the water require newborns and people with weakened immune systems drink boiled water or a safe alternative at all times. There is no requirement to take extra precautions at this time. It is to said that, the water turbidity is safe for human consumption.

### River Ecology

The ecology study of the Pergau River focus only the fish and shell species that are the important elements in determining the healthy of the Pergau River and the potential for fishing activities, one of river-tourism medium.

Aquatic living is one of the important elements that determine Pergau River as river-tourism spot since it always related with fishing activities, one of the attractive activities under the river tourism. The aquatic living also is the indication for the healthy of river since it's determine the nutrients content, ecosystem that support the living of aquatic species.

Throughout the study, the determination and observation of aquatic species done by direct observation and social survey. Apparently, there are several species that makes Pergau as spectacular & extraordinary spot, which could attract the visitors.

The study comprises the study of fish and some crustacean species as the aquatic living study.

The aquatic species were categorized based on the checkpoints. The following table shows the result of the few aquatic species that can be obtained at the river:

Table 4.9: List of fish and shell species that had been found during the research according to the checkpoints (Appendix F & G for pictures)

Local Name	Scientific name	Location (Checkpoint)
Kelah (Malaysian Mahseer)	<i>Tor tambroides</i>	1,2,4,5,6
Lampam (River Carp)	<i>Barbodes schwanenfeldi</i>	1,2,4,5,6,7,8
Sebarau (Hampala Carp Anglers)	<i>Hampalamacrolepidota</i>	1,2,3,4,5,6,8
Etak (Carpet Clam)	<i>Paphia undulata</i>	1,3
Semilang Batu (Rock Carp)	<i>Epilabeo thynhuskalopterus</i>	3
Tilapia (Tilapia)	<i>Tilapia mossambica</i>	3
Seluang (Two-spot Rasbora)	<i>Rasbora elegans</i>	8

### 4.5 – Social survey

Throughout the study, 2 type of survey were carried out which are related on the demand of river-tourism activities by the tourist and the perception of local communities towards the river-tourism activities along the Pergau River.

#### Demand of river-tourism activities by tourist

For the demand of river-tourism activities by tourist's survey, the questionnaires were distributed to a difference tourist & different places. Such places include the students in University Malaysia Kelantan, tourist arrives at the Kota Bharu station bus, tourist arrive at the Pengkalan Chepa airport and a few tourists outside the Kelantan. The questionnaire distribution both by hand and also inserted into the Internet for public filling using the Google Documents software. The following graphs shows the result of various type of question that have been asked:

,Among the 50 respondents, majority of them are understand about river-based tourism meaning. The percentage is 42%, which is about 21 respondents. There are only 2 respondents did not understand about the term. This result shown that most of the tourists are comprehend about the terms and what its look likes. Most of the respondent likes water rafting and kayaking for river tourism activities. They are tend to involve in these activities if given an opportunities to experience the river-tourism. Boating is the least option of river-tourism activities. This trend show that the tourist perception on the both water-rafting and kayaking are extraordinary and hard to be found at t Kelantan.

Based on questionnaires, the result shown that 64% of the respondent were attracted with river tourism activities if it were possible to be carried out in this state and majority of the respondent know about the Pergau River. Most of them knew it from the internet whereby it have much relation with the Pergau Lake, one of the



tourism spot in Kelantan. The respondent also were known about the Pergau River from the signboard as most of the tourist are came from northern-west area of Peninsular Malaysia which they will see the river itself before arriving Kota Bharu. These indicate that, most of the respondent would have a bit idea & pictures of the Pergau River. 80% the respondent were interested to explore the Pergau River. This result also are one of the evidences that there is high interest and demand to know more about the Pergau River and it's attractions. Majority of the respondent are totally agree that the river-tourism activities should be planned and proposed at the Pergau River. From this survey, the statistics proves that they are high demand of river-tourism activities in Kelantan. Majority of the tourist are seeking for this type of activities instead of involve in mass-tourism, gesture-tourism, having vacation for culture, foods and shopping purpose. They are looking for something new and more challenges which can gives them a great experiences. Since Kelantan is having a high biodiversity and plenty of attractive natural places, it is an opportunities to establish a well services of river-tourism for the need of tourists

### **Perception of local community towards river tourism activities**

Base on the survey results, most of the respondents never involve in the river-tourism activities. This result indicate that, even though the respondent were living near the river-tourism spot, but most of them didn't really manage to involve with the activities due to several causes. Firstly, based on the survey, most of them are not really interested with the activities due to the economy factors, do not have leisure time for the activities and due to the distance to the river-tourism sport where the only nearing spot for those activities is located at Pergau Lake, which is quite far from their place. Most of the respondents also are 40 years old and above, therefore, they didn't have any interest to involve in the activity.

The result shows that most of the tourism think that Pergau River is significant to their life through the aesthetic value. Secondly, Pergau River also are sources of the income whereby some of the villagers utilize the resources from the river including fishing, mining the gold and also place for tourist which currently located at GunungReng.

Based on the result, it shows that most of the respondents think that the most positive impacts that came from the river tourism is it may increase the income and improve the economy condition of the local people. Since there is a river-tourism activities, majority of them thought that there are more opportunities in improving their economic condition whereby much business can be done, providing job opportunities and gives much benefits to the local communities especially the younger generation. Crowds and generating conservation option is less chosen since the local people did not care much about conservation throughout the interview and the crowds also sometimes give harmful to the local.

Majority of the respondent choose moral crisis, pollution and crimes as the most negative impact of the river tourism activities. Moral crisis is at the first place since the overflow of incoming tourist could affect the local behavior and could bring much harms to the younger people. According to the interview, many of the respondent said, incoming of tourist, especially, the foreigner and western could influence the bad behavior to the local people.

Due to the large amount of tourist, the pollution also is some of the concerns. The respondent thought there will be large dumping of waste especially to the water body; poor services of hygiene and some of the pollution are unmonitored by the authorities.

Crime also are one of the negative impact since there will be an outsiders coming into the place and do something immoral especially involving in drugging, drunk, sex and many more.

However, the option of dangerous and flood are also needed to be discussed since some of the respondent ever experiences the dangerous of the Pergau River where there were 3 children died at the places a few years ago due to the sudden high flow of river. This will cause dangerous to the people if the tourism operator not manages this case properly.

Based on the above diagram, most of the local communities think that Pergau River is suitable for river-tourism site due to several things. Firstly, the location of the river is in the right location since it is located near the tropical rainforest and extended from Pergau Lake, which are also tourism spot at the Jeli, Kelantan.

The suitability also corresponded to the physical & biological features of Pergau River that make the place as an extraordinary spot of tourism.

Based on the graph, 82% or 41 people of the respondents were agree with the statement that river-tourism activities should be planned and proposed at this area soon. 8% or 4 people did not agree with the statement while the other 6 people (12%), said they are not sure for that. This is the most important result that indicates the perception of local communities towards the river-tourism in the area. From the result of the survey, overall, the river-tourism proposal in that area are getting much positive feedback from the local people and there are not so much problems if the project of river-tourism will be implemented soon. However, several problems that might occur such as the negative impacts of the river-tourism should be mitigate in order to make sure that the local communities are not getting harmed by the proposed project and activities.

### **Suitability for tourism site**

In this section the suitability of Pergau River as tourism site were evaluated according to the World Tourism

Organization (WTO) criteria for tourism site suitability. The following table shows the overall suitability of Pergau River as potential tourism area. Checklist of suitability of Pergau River as nature tourism attraction

### **Flagship Attraction**

Flagship attraction of Pergau River is the river's stream itself. The river becomes the primary attraction to the tourist that likes to involve in adventure activities such as white water rafting, kayaking, boating, tubing and fishing. Since the geomorphological features and the condition of the water velocity and river drops that are met the international standard, it is believed that the river is suitable for those outdoor activities. The river also has abundance number of fish species and also 'Etak' species. The types of fish found at the Pergau Lake are Kelah (Malaysian Mahseer, Lampam (River Carp), Sebarau (Hampala Carp Anglers), Semilang Batu (Rock Carp), Tilapia (Tilapia) and Seluang (Two-spot Rasbora) (Appendix F). Furthermore, the abundance of 'etak' (Carpet Clam) could attract most of the local people to come Pergau Lake and collect them (Appendix G). 'Etak' is famous foods in Kelantan, which can be eaten many ways such as barbeque, 'etak' sup and spicy 'etak'.

The manifold landscapes such as mountain, virgin tropical forest, waterfall and the river itself could be the primary attraction for the places. Certainly, Gunung Reng (Figure 4.3) are one of the primary attraction that attracts the visitor to come to this area. Instead having activities throughout the river, the tourist also could enjoy camping activities at the checkpoint 1, whereby there is a wide grass field that can allow hundreds or even thousands of people to camp at the site (Appendix H). The visitor also can have a trekking around the jungle, which located along the Lata Terubong waterfall. One thing that can attract the visitors is that the Pergau River is contain of high valuable mineral resources such as gold and iron. From the study, there are local peoples that mining the gold using the traditional method (Appendix I & J). The location is near the Kampung Bukit Ipoh which is located at the checkpoint 3. There are also a hot spring pond which is located at the upstream of the Pergau River (Appendix K). However, the visitors can use the highway to access the place

Generally, the vegetation that can be found along the river includes the wild shrubs, dipterocarpaceae, secondary forest type, grassland, ferns and bamboos.

There are several species of large wildlife that can be observed around the Pergau River. Those include the large vertebrates, reptiles and also primates.

The local communities often see species such as Asian elephant where the species are moving around the downstream of Pergau River especially near the Kampung Sungai Rual, Kampung Salor, Kampung Gok and the opposite of Batu Melintang. According to the local people, these elephant movement cause several conflicts whereby it tends to destroy the agricultural plantation and the farms over the last few years. These cause a threat to the local people.

Wild boar also is the species that often saw by the local people. It is expected that along the Pergau River, the amount of these species are quite in number and sometimes the colonies went to the river side for shelter and searching for foods due to the fertile soil, beside the river bed. Primates such as monkey (long-tailed macaque) also are often seeing by the villagers. The species are living in the nearer forest and sometimes they get to the river for drinking. Other species, such as Burmese python, wild bulls, deer and even Malayan Tiger are available, but it is seldom appear. The species that are easily to be seen include several species of birds such as eagles, red-whiskered bulbul, king fisher and others.

Apart from that, the river has a beauty scenery especially when sunrise in which tourist can see how the dark scenery of Pergau River become brighten slowly with the light reflect by the sun. Tourist also can feel the tranquility, peace and calmness with the sound of nature only. Therefore, this place is suitable for those people who love nature and also people who want to stay away from work or release their pressure.

But from the observation to the Pergau River, there are quite number of waste and rubbish being thrown at the side of the river especially at the Kampung Batu Melintang area. This is due to the population that is nearest the river and also there is one restaurant located just beside the river. This condition may affect the scenery of the river and reduce the satisfaction of tourist that visits there. Therefore, the management needs to continuously inspect the surrounding of the lake and manage well their rubbish.

The description of the aquatic livings can be referred at section 4.4.1. In addition, it is proposed that management should control the fishing activities that done by tourist and also the activity of collecting the 'etak' in a reasonable way. It is very important to them to determine the carrying capacity of the river. Carrying capacity of the river refers to ability of the biophysical and social environment to support the tourist activity (fishing activity) while maintaining its productivity, adaptability and capability of renewal. By determine the carrying capacity of the river; it can help prevent the reduction of aquatic species especially the fish species in the river due to excessive fishing activities and also the activity of collecting the 'etak'. Reduction of this species causes the decline of number of visitors and also loss instead of profit.

### **Complementary and Supporting Attraction**

Complementary Attraction refers to the natural and cultural elements that found at the area. But, it does not have the degree of singularity or relevance which flagship has. By themselves, they may have not sufficient allure to motivate a tourist to visit that specific site. But, complementary attraction should not be neglected as it provide a

tourism added value to a site, contributing to an experience of greater richness of others natural element or cultural heritage found at an area and inducing a visitor to stay longer in the area. Apart from that, it offers the tourist the opportunities to carry out additional activities. Furthermore, complementary attraction may also help prevent excessive concentration of visitor in one single place and at the same time, it encourages distribution of tourist to different site within an area.

There are many complementary attraction found in the Pergau River. The place is surrounded by lush and green forest, which has variety of flora and fauna species. According to local people, the visitors can see Tongkat Ali, Rafflesia(nearing GunungBasor) and many others medical plant at the forest. In addition, valuable trees also found in the forest but there are people try to log in that area. Continuous logging activity causes the extinction of flora and also fauna as it destroy the habitat of wildlife species. Apart from that, visitor has the chances to see the wildlife species such as elephant, tiger and deer if they go deeper into the virgin forest, which is located at the upstream of the river. Tiger footprint was found at the jungle trekking area. According to Mr. Zaaba, one of the villagers who also the manager of the Pergau Lake Sanctuary Park, he himself are seldom saw these kind of species. Of course, activities such as outdoors and adventure challenges are suitable at this place as mention before. For the opportunities of swimming, there is LataTerubong waterfall (Appendix L) that can be enjoyed by the visitors. However, due to the limited space, allowing not more than 100 peoples at one time to be in the place should do the control of tourist capacity. Pergau River itself is suitable & excitable for swimming activities due to the clear and cool water. However, due to the unstable flow of the river, mitigation measure should be done by both party, the tourist operator and the dam operator in which warning should be given at least 1 hour before the dam is open so that the visitors can be warned by the siren or any announcement.

Supporting Attraction is the artificial element that found at a site which necessary as it gives the tourist different satisfaction. They give support and services to the tourist but they are not the main reason for the tourist to visit that area. For that reason, several authors point out that the supporting attraction must always be the low key which mean it not become the primary attraction or factor that induce tourist to visit a site and of a secondary nature.

Some supporting element such as the availability of Indigenous culture (ethnic groups, villages, handicrafts, folklore), visitor centre (exhibitions, museum, lecturers, library), accommodation / catering facilities in different price categories, tourist guides and porters are not exist in that place. However, there are several facilities and accommodation such as food stall, located at GunungReng and BatuMelintang, playground, car parking and multipurpose hall, located beside GunungReng.

It is recommended that Pergau Riveshould having an interpretive features as danger and caution sign board and also no information Centre about the river or about wildlife species and others type of attraction found at the lake. Therefore, it does not give general idea to the tourist about uniqueness of the Pergau River and also does not educate people by providing information about the nature. In addition, there are no shops in the lake area and visitors are advised to bring their own foods.

#### **Accessibility & Regional Infrastructure**

The way to Pergau River is very accessible. It was a stop over for travelers going through the East-West Link Highway whose coming from Perak to Kota Bahru just beside the river and the GunungReng. To reach there, it takes two hours drive from Kota Bharu town. However, there is minimal accessibility by public transport such as bus, taxi and train. Mostly, visitors are using their own transport in order to reach there. It is not difficult to get to the PergauRiver. The visitors can see the river from the main road (Appendix M). The current primary entrance to access the river is through the GunungReng recreation centre. However, there are small roads which the visitors can access to the checkpoint 1 to checkpoint 8 which just allowing small vehicles such as car, van and motorbike. The entrance from the main road to the river is quite poor and unmanageable with bushes, narrow and damage road. The entrance is not attracted due to the old and obscure signs.

Generally, the infrastructure development in this area should be upgraded especially the one that located near the GunungReng. There are several shops around the area. This is an excellent destination for those seeking a back to nature experience. As ecotourism site, it is important to keep this area with minimum development. Currently, network coverage of mobile phone is quite limited, only accessible to certain areas.

#### **General Political and Social Framework**

Throughout the social survey that have been carried out to the local population, the social framework in Pergau Lake is in good condition as the local community accepts the tourism and also want participates in the tourism as worker and also as a tourist. This is because the river-tourism could offer the job opportunities to the local communities there. Besides that, during the visitation, there are a good interaction, hospitality and feedback given by the local peoples. This kind of relationship which was a warm and friendly welcoming from the local communities attract people to comes here often because they feel comfortable with the area of lake and also the community within it. The local people also provide much information about the river, which is contributing much data in this study. This types of welcoming could makes visitors feel comfortable staying over there and induce us to visit there more often.

## CONCLUSION

Based on the observation of the physical, ecological and social features of the river, Pergau River are potential as river-tourism site based on World Tourism Organization (WTO/UNDP 1992) criteria for assessing nature-based tourism destinations.

The activities that are suitable to be carried out at the places include the major adventure tourism such as white water rafting, kayaking, tubing and river cruising. Fishing, camping, jungle trekking and also swimming is also suitable to be carried out in the place.

The prospect of river-tourism demand in Kelantan is at the high place. Based on the survey that have been made, the demand of these activities by the tourist are high and it is expected in the future, if the project of river-tourism is being implemented, it is possible to attract more visitors and generate much income to the state.

Throughout the investigation, there are more positive rather than negative social impact from the river-tourism activity. But, nevertheless, the mitigation measure also should be taken in order to minimize any changes to the local sensitivity. For the environmental impact, there is not much negative impact since the activities emphasize on eco-tourism principal. However, the control of tourist capacity and also management of the waste should be done systematically if the project were implemented soon. Last but not list, there will be much economical impact from the project implementation especially to the local communities where they can participate in the tourism industries and seek for opportunities in generating their income from the incoming of tourists.

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