

UNIVERSITI MALAYSIA SABAH

BORANG PENGESAHAN TESIS

JUDUL: LANDSCAPE DESIGN RECOMMENDATION FOR ACTIVE RECREATIONAL ACTIVITIES IN TAMAN REKREASI INDAH BASED ON USERS PREFERENCE

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**LANDSCAPE DESIGN RECOMMENDATION FOR
ACTIVE RECREATIONAL ACTIVITIES IN
TAMAN REKREASI INDAH**

WONG PHUI KEE

**PERPUSTAKAAN
UNIVERSITI MALAYSIA SABAH**

**HORTICULTURE AND LANDSCAPING PROGRAMME
SCHOOL OF SUSTAINABLE AGRICULTURE
UNIVERSITI MALAYSIA SABAH
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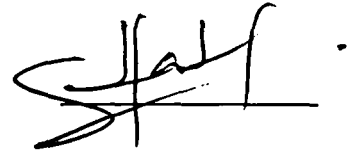
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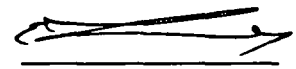
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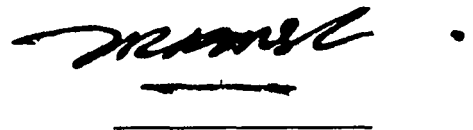


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ACKNOWLEDGMENT

I would like to express my sincere thanks to my supervisor Miss Shahida binti Mohd Sharif for their guidance, advice and supervision throughout the duration of this project. I would also to express my heartfelt thanks to Mr. Assiss Kamu for his advice and guidance on doing data analysis. I would like to thank for their patience and tolerance during the entire duration of this project. This thesis would not be the same as presented here without their supports and guidance. I appreciated their consultation very much.

Furthermore, I would like to thank Penguasa Penghiasan Bandar, Majlis Perbandaran Sandakan (MPS), Mr. Richard Kennedy and the staff of the department for helping in finding Taman Rekreasi Indah's plan.

I would like to express my best gratitude to my friends for their help, moral support and opinion during the duration of this project. Last but not least, I would like to express my sincere appreciation to my beloved family members who supported me spiritually and provided me unfailing love to lead me to the completion of this dissertation.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Urbanization has led to the loss of vegetation in cities. Forests are being cut down to build roads and structures. Many environmental problems such as green house effect, land erosion, and water pollution have gained people's attention. However, people have started to gain awareness of these problems. According to the Laws of Malaysia, Act 172, Part 5A Section 2(35A to 35H) every land development planning must include at least 10% of green area. This approaches show that the effort made by the government. In order to let the citizens appreciate more on natural, proper landscape designs are made. A proper landscape design not only can conserve and preserve the natural, it enable people to have visually and also mentally satisfaction.

According to Michael Laurie (1975), who is a professor of landscape architecture, when a land is described in term of its physiographic and environmental characteristic, it becomes a landscape. Design refers to qualitative and functional arrangement of a land for specific social purpose such as for recreation. An effective landscape design is considered a science because the designer need understand well about the environment and select the right and suitable plants which can grow best in that particular condition.

Landscape is not just something for fun and enjoyment. It also has its values in many aspects. In economic aspect, landscape adds value to a piece of land. For instance, landscape enhances the house beauty and therefore raises the economic value of the house. Besides, proper landscape design may help in reducing the energy use to encounter with the seasonal temperature. For example, the trees and shrubs can



buffer the hot air raise from hot weather and give shade for cooler environment in the hot summer day.

Moreover, landscape has its functional value. Proper selection and well-placed trees, shrubs, groundcover, and construction features maximize the use of a piece of land. Shade at the right place, open area for kids, ponds, or patio, add enjoyment of being outdoors. Shrubs can also plant as the fences or boundary for an area to substitute the normal, boring, steel or wood fences, creating a more natural and comfortable environment. Landscape can also help in solving maintenance problem. For instance, the steep hill in the yard can be planted with groundcover, which need low maintenance and help in preventing erosion. Groundcover with little flowers such as *Arachis pintoii* can also enhance the aesthetic value of the hill.

Furthermore, landscape plays an important role in environment control (Jay, 2009). Trees, shrubs, and groundcover moderate air temperature in urban environments. Trees, shrubs, and groundcover reduce air temperatures from 7°F to 14°F through the effects of shading and evapotranspiration. Landscape with multi-directional light reflection can also reduce glare. Some of the light may be absorbed by the leaves which lessen the visual stress of glare. The roots of the trees, shrubs, and groundcovers act as a filter to purify the water passes through them restore the clean groundwater resource. Last but not least, plants used in landscape help clean the surrounding air. Groundcovers especially, which completely cover the soil, trap the pollutant, dust, and soil particles to the ground, to avoid them to pollute the air when wind blow.

Recreation Parks are a public place provided for the purpose of leisure, entertainment and recreational pursuits, where public gathers. It is crucial that the park must be visually pleasing and safe to visit and for activities to carry out. Hence, proper landscape design must be applied, not only to attract people but also for safety purposes. Crime Prevention through Environmental Design (CPTED) is one of the approaches used by landscape designers in helping to prevent the occurrence of crime. This guideline enables the creation of a safer park for public enjoyment.

Taman Rekreasi Indah is a public recreation park located at Mile 4, Jalan Utara, Sandakan, Sabah, which is owned by Wah Mie Company. This park is surrounded by neighborhood. Beside, the adjacent buildings are mosque, Sung Siew Primary School, and Indah Club. People who visit this park are often the residents nearby, Indah Club

members, and also parents who fetch their children from the primary school. However, these people are not really spending time in this park for recreation activities. They are mostly just passing by the park because the park connects the places around. According to a primary survey done, residents seldom spend their leisure time in Taman Rekreasi Indah is because there are lots of people loitering around and flirt.

1.2 Justification

Mile 4 is the gathering place of most of the Sandakan citizens. However, there are no proper recreation parks that can be visited at the nearby area. The nearest recreational park is the Sandakan Sport Complex and Sandakan Rainforest Park, which are located at around Mile 5 to Mile 6. People may feel tired travel far just for recreational activities at the park. Hence, it is crucial to have a recreational park near the area to promote healthy lifestyle and also social activities. It is important to upgrade the landscape of Taman Rekreasi Indah because it looks abandoned and gives perception that the park is unsafe to visit.

Besides, the growth of bushes due to low maintenance in the park encourages crimes. Criminal may hide between bushes and wait for the opportunity to commit crimes, such as robbery, kidnap, and rape. Hence, to prevent such tragedies to happen, the appearance of the park must be clear of sight. Proper landscape design, which needs low maintenance, should be done to solve this problem. Crime Prevention through Environmental Design (CPTED) is the concept of landscape design, which aims to reduce the fear of crime and at the same time increase the quality of life (Jeffreys, 1971). This concept had been proven to have positive effects on reducing crime.

In this project, the park is divided into two zones, which are passive and active zone. Natural boundary, the river, is used to separate two zones. This upgrading project is mainly focusing on the active zone of the park. Active zone of the park is where the park users engage in moderate to vigorous physical activities. Hence, the landscape design must meet the need of the park users.

1.3 Problem Statement

Taman Rekreasi Indah does not have any proper entrance and parking lots. Hence, people do not even notice that there is a park over that area except the residents nearby. There is a playground inside the park, but the facilities are mostly spoiled.

Moreover, the lighting system is very poor. There are streetlights but there are all spoiled too. Bushes are all over the park, even the jogging trail is covered by bushes. Therefore, it is dangerous for young kids to visit and the park started to look abandoned, smoky and creepy once it comes to late evening, which is around 6PM.



Figure 1.1 Entrance of the park



Figure 1.2 Spoiled Facilities



Figure 1.2 Jogging trail with overgrown bushes

(Source: Taman Rekreasi Indah, 2013)

1.4 Goal

The goal of this project is to help in upgrading Taman Rekreasi Indah to become one of the most visited recreational parks in Sandakan. Since the park is located at the most crowded area of Sandakan, it has the potential to be the park where Sandakan citizens visit the most for recreational activities.

1.5 Objectives

The objectives of this study are:

- I. To identify site existing condition in Taman Rekreasi Indah.
- II. To identify users' landscape preferences on the park.
- III. To develop a landscape design for active zone of the park based on public preferences.

1.6 Research Questions

The Research questions for this study are:

- I. What are the perceptions of site users toward the current condition of Taman Rekreasi Indah?
- II. What are the landscape preferences of site users toward Taman Rekreasi Indah?

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

There are many different interpretation of the term "landscape". Forman and Godron (1986) defined landscape as a heterogeneous land area composed of a cluster of interacting ecosystems that is repeated in similar form throughout. Turner et al (2002) define landscape as an area that is spatially heterogeneous in at least one factor of interest. According to Oxford English Dictionary, landscape is defined as all the visible features of an area of land, which often considered in terms of their aesthetic appeal. Visible features are the things that can be seen. In landscape context, these visible features can be divided into softscape and hardscape. Softscape refers to trees, grass, shrubs, while hardscape refers to architectural structures such as gazebo, benches, and fountain. Cambridge Dictionary stated that landscape is referred to as a large area of countryside, especially in relation to its appearance. Summarizing these definition, landscape is an area of land with the combination of softscape and hardscape in a pleasant appearance which involves interaction of ecosystems. Landscape emphasizes the aesthetical value of an area of land. Attractive landscape is aesthetically valuable because it adds beauty or is pleasing to human senses (Williams, 2006). Visual beauty of a landscape can be enhanced through creative landscaping while undesirable features can be downplayed. The sounds of breeze rusting the leaves in the trees, sounds of birds or of water splashing in fountain, enhance the aesthetic qualities of a landscape.

Urbanization has speed up the pace of life. People work hard to keep pace with the time. Stress and fatigue from works causing various social and health problems. Being outdoor and enjoying natural scenes have been proven to reduce stress from



work (Godbey, 2009). Research confirmed that a link between physical activities that takes place outdoors and the positive health outcome; and also an association between an indoor, sedentary lifestyle and negative health consequences (Mowen *et. al*, 2008). The relations are sufficiently strong that practitioner in health related fields have started to identify parks and recreation as a health service.

2.2 Recreation Parks

From ancient time, parks have evolved to preserve the environment for the benefit and enjoyment of the people (Sherer, 2006). Besides, it is also a place to experience the beauty of nature and preserve the ecological health of the community. Federick Law Olmsted, the "father" of North American urban parks, was the first to propose the idea that parks can play a key role in the promotion of healthy and active lifestyles in the mid 1800's (Legates and Stout, 1999). Since then, parks serve two major functions: as settings in which to preserve and appreciate nature, and as places to have positive recreation experiences and leisure time physical activity (Mowen *et al.*, 2008). Parks provide recreation, inspiration, and essential respite from the city's blare and bustle. Hence, many visionaries were concerned that parks should be available to all city's residents especially those who did not have the resources to escape from the busy city. However, after World War II, this vision of parks had faded away. Many cities do not have the resources to create parks. The cities were then occupied by shopping centers and concrete parking lots (Sherer, 2006).

However, there is growing concern on availability of parks in the city. Many researchers begin to study the benefit of parks to individuals and communities. The National Recreation and Park Association (NPRA) claim that,

"Parks and recreation are resource and services provided for the purposes of leisure, entertainment and recreational pursuits... Resources may be public spaces and facilities like parks, nature preserves, open space areas, greenways, trails, and built structures for sport, recreation or arts programs. Examples of services include recreation activity programs, athletic leagues, special events, arts programs, and environmental education programs."

Neighborhood parks or recreational parks are the most common parks in Malaysia. These parks serve as the recreational and social focus of the neighborhood

and provide settings for recreational activities including active and passive forms of recreation. According to Oxford English Dictionary, recreation is activity done for enjoyment when one is not working. Meanwhile, Merriam-Webster Dictionary state that recreate means restore or refresh. Hence, recreation is defined as refreshment of strength and spirits after work. Therefore, recreational park is a place where one can relax from work.

2.2.1 Health Benefits

Malaysia is facing pressing public health concern relating to obesity. Malaysia is ranked as sixth in Asia with the highest adult obesity rate in The World Health Organization (WHO) survey in 2010. Malaysian National Health and Morbidity Survey in 2006 showed that 43% of Malaysian adults were obese. Result of obesity statistics of WHO in 2010 showed that 60% of Malaysian aged 18 and above is overweight (The Star, 2011). Research shows that lowering daily calorie intake accounts for most weight loss, but the only approach loss weight consistently is by engaging in physical activity. World Health Organization (2013) defines physical activity as "any bodily movement produced by skeletal muscles that requires energy expenditure". According to WHO, study shows that physical inactivity is the main cause of 21-25% of breast and colon cancers, 27% of diabetes and 30% of ischaemic heart disease burden. Physical activity is different from exercise. Exercise is subdivision of physical activity. Exercise is repetitive, structured, and purposeful in sense that the improvement of one or more components of physical fitness is objective, while physical activity is bodily movements which include playing, working, house chores, and also recreational activities.

The World Health Organization (2013) defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". Meanwhile, Alberta Centre for Well Being (1989) finds that "the concept of well-being or optimal health involves a delicate balance among physical, emotional, spiritual, intellectual and social health". This concept ranges wide dimensions, from nutrition, fitness, stress management to education, and relationships. Outdoor recreation contributes to all these aspects of health. It not only enhances physical health but also emotional well-being. There are evidences that being closer to the nature environment is healthy. Nature helps to calm stressful people. The daily chores of life such as commuting, work, complex decisions, according to Geoffrey Godbey

(2009), cause mental fatigue. Mental stress decrease blood flow to heart causing coronary heart disease. People with high stress levels are at higher risk for common cold, heart attack, and cancer. Stress suppresses body's immune system and causing hormonal imbalances that lead to increase production of abnormal cells. Spending time in nature prove to reduce stress. Negative moods will decrease after spending time in a park. Park users also report to have lower anxiety and sadness level (More and Payne, 1978). This is because recreation parks provide a space for people to escape from the busy life, enjoy the nature and even promote physical activities.

2.2.2 Park Location

Location of the park determines the frequency of people visiting the park. It is crucial that the park should be located in proximity to residences where people can have easy access. Studies show that living closer to recreation parks is consistently related to higher physical activity levels (Humpel *et al.*, 2002 and Sallis and Kerr, 2006). People who live within walking distance to the parks get at least 35-45 minutes more of physical activity per week and less likely to be overweight or obese, than those who live in neighborhood that do not have walkable distance park (Ewing *et al.*, 2003 and Sallis *et al.*, 2009).

2.2.3 Park Facilities and Conditions

Recreation parks need variety of features to promote physical activity. Features must meet that needs of individual of different age groups. Studies show that park users tend to have higher levels of physical activity in parks that have playground and trails (Floyd, 2008). In addition, parks with either paved or unpaved trail are 26 times more likely to be visited for physical activity than parks that did not have these features (Kaczynski *et al.*, 2008). There is a raising trend where wide variety of features such as picnic pavilions, trails, playground, and open land, are included in park design. These features are designed in close proximity to one another to promote interaction between the park users and also intergeneration park activity (Mowen *et al.*, 2008).

Park conditions influence people perceptions on the park and affect decision of park users whether they want to visit the park. Parks users are more likely to visit park

that is consistently well maintained either in facilities or its landscape (Bedimo-Rung *et al.*, 2005). Facilities must be in good condition and safe to use. Inadequate or low maintained playground equipment may lead to serious injuries and death. Moreover, play equipment condition in park influences parents' decisions in allowing their children to play in that particular park. Aesthetic value of the park is also crucial in increasing visitation to the park. Research proves that parks with higher aesthetic value are more likely to be visited by public (Cohen *et al.*, 2006). Attractive environmental features and enjoyable scenery can motivate people to use the park for physical activity. Aesthetic features that involve are such as landscape design, park size, shade and ponds.

2.2.4 Park Safety

Another factor that determines the park use is perceived and objective personal safety. According to Bedimo-Rung *et al.*, "perceived safety is how safe one feels in and around parks while objective safety is the actual rate of crime that occurs in and around parks". Mowen A. *et al.* (2008) in the context of parks selection for regular visit state that,

"Perceptions of safety and pleasant surroundings are necessary to attract people to community parks although this alone may be insufficient to increase park use and physical activity."

Summarizing these statements, the perception of park users on the safety of the park is the real factor. Fear of crime in and around the park decide the willingness of people to visit the park. Graffiti, bushes, spoiled facilities, and poor lighting, contribute to the fear of crime in people. A study showed that residents, who witnessed sign of disorder in their nearby recreation park such as graffiti, garbage, and vandalism, feel unsafe to visit in park (CQuebec, 2011).

2.3 Crime Prevention through Environmental Design (CPTED)

Crime is a social problem that affects people's lives. Crime has resulted fear of crime that restrict people's freedom of movement and also their interaction with others. Merriam-Webster Dictionary define crime as an act or commission of an act that is forbidden or the omission of duty that is commanded by a public law and that makes the offender liable to punishment by law. Crime may not be stop but it can be

prevented. Crime happen based on three elements, which are crime itself, victims, and also environment that gave opportunities to criminal. There are many different strategies that can use to prevent crime and combat the fear of crime. One of the strategies is through the concept of Crime Prevention through Environmental Design (CPTED). Council for Scientific and Industrial Research (CSIR) Building and Construction Technology (2003) in one of their research paper stated that,

“The environment can play a significant role in influencing perception of safety. Certain environments can impart a feeling of safety, while others can induce fear, even in areas where levels of crime are not high. In this regard, planning and design measures can be utilized very successfully to enhance feelings of safety in area where people feel vulnerable.”

This shows that the landscape design plays an important role in handling fear of crime. Although a place do not have any crime occurrences, people may have the fear of crime due to the environment condition. People’s perception toward the safety of the park can be mentally influenced by the appearance or condition of the park. For example, Taman Rekreasi Indah crime rate is not high, but due to the appearance of the park, people are afraid to step in the park because of the fear of crime.

The idea of Crime Prevention through Environmental Design (CPTED) has occurred for centuries (Virginia Crime Prevention Association, 2000). However, obvious relationship between the environment and crime had only been found in the 19th century by Shaw and McKay (Crowe and Zahm, 1994). Later, Jane Jacob’s *The Death and Life of Great American Cities*, published in 1961, brought a great influence on the awareness on the relationship between crime and environment. She proposed that there should be 24-hour-a-day activity to suppress the occurrence of crime. “Eyes on the street” theory is then developed. She recommended the installation of streetlight for clearer sight. C.Ray Jeffreys agreed with her result (Crowe and Zahm, 1994). CPTED is then defines as “proper design and effective use of built environment that can lead to reduction in fear and incidence of crime, and an improvement in the quality of life” by C. Ray Jeffreys (1971). Jeffreys was the first to use the term CPTED in his book *Crime Prevention through Environmental Design* (1971). However, his idea received little attention from public until the year 1977. In the 1980s, CPTED has started to be applied in many cities. After years, CPTED had finally been widely used in most of the countries. British government used method of CPTED as the main strategy

in order to reduce crime nationwide and it shows good results. However, CPTED is yet to be common in Malaysia. The concept of CPTED is well known by the government but the practices are few.

2.3.1 Principles in CPTED

The aims of Crime Prevention through Environmental Design is to reduce the causes of, and opportunities for, criminal events and address the fear of crime by applying sound planning, design and management principles to the built environment (National Crime Prevention Council, 2003). There are four principles of CPTED (Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia, 2010):

- I. Nature surveillance
- II. Natural access control
- III. Territorial reinforcement
- IV. Maintenance and management

Nature surveillance is derived from the concept "eyes on the street". Criminals do not wish to be observed. The aim of this principle is to keep intruders under observation (National Crime Prevention Council, 2003). Criminals may lose their confidence to commit crime when potentially threatening situations develop through this approach. Nature surveillance emphasize on increasing the visibility of property or building from different angle. It maximizes the potential to deter crime by making the criminal's behavior easily notice by people. The proper placement and design of windows, lighting, landscape, and removal of obstructions increase the sight lines from within building (Virginia Crime Prevention Association, 2000). Besides, surveillance can be performed in two forms, which are informal and formal surveillance (Robert, 1995). Informal surveillance is created from architectural or landscape design. Open design with minimum visual obstacles encourage the use of that particular environment as people feel safer that they can easily see and be seen. On the other hand, formal surveillance use closed-circuit television (CCTV), fixed guard posts, and organized security patrols to control the security of a place. This form of surveillance normally applies to places that experience regular period of isolation or inactivity.



Figure 2.1: Clear sight line that allow people to see and be seen easily.

(Source: Inverleith Park by Kenny Lam, 2013)

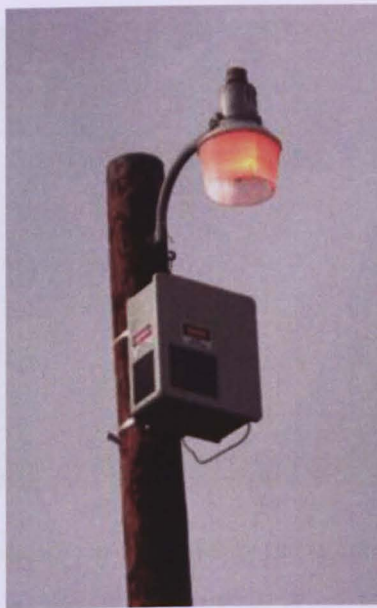


Figure 2.2: Lighting system and CCTV used to perform "eyes on the street" theory.

(Source: <http://www.supercircuits.com>, 2012)

Natural access control aim to restrict the movement of an individual either in or out from a place (Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia, 2010). Criminal events and sites are often deliberately chosen. Site with easy access are normally chosen as criminals can easily escape after committing a crime. Natural access control relies on elements such as doors, gates, fences, and shrubs. Fence around the recreational park is an example of an access control that controls the

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