



Faculty of Engineering

Study of Current Problems with River Transport Facilities:

Kuching Express Boat Passenger Terminal

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**STUDY OF CURRENT PROBLEMS WITH
RIVER TRANSPORT FACILITIES:
KUCHING EXPRESS BOAT PASSENGER TERMINAL**

JEREMY CHUA TZUU SHYAN

This subject is submitted in partial fulfillment of
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To my beloved family and friends

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ABSTRAK

Sarawak merupakan sebuah negeri yang mempunyai sistem sungai yang besar. Oleh itu, pengangkutan sungai sangat penting di dalam negeri Sarawak. Jumlah orang yang menggunakan sistem ini semakin meningkat setiap hari. Jadi, penggunaan infrastruktur di terminal Kuching juga semakin meningkat dan ini mengakibatkan peningkatan risiko dan masalah. Kajian ini fokus terhadap penilaian masalah-masalah melalui penilaian risiko di *Sarawak River Board, Kuching Express Boat Passenger Terminal*. Kaedah yang digunakan dalam kajian ini ialah temu-duga dan soal selidik. Signifikasi risiko diperolehi melalui analisis temu-duga yang telah dijalankan dan soalan-soalan selidik yang diperolehi daripada orang awam dan ahli-ahli pakar. Seterusnya, risiko-risiko disusun kepada kedudukan yang sesuai mengikut signifikasi risiko yang diperolehi. Dari hasil dan perbincangan yang dilakukan melalui pertemuan dengan ahli-ahli pakar, risiko kebocoran bumbung dianggap sebagai risiko yang paling kritikal. Walaupun risiko hakisan tanah secara teori menunjukkan hasil kritikal, risiko ini hanya boleh dianggap sebagai risiko kecil. Selain itu, risiko-risiko lain juga diukur tapi risiko-risiko ini dianggap risiko yang kecil dan tidak mempunyai kesan yang besar terhadap terminal. Ringkasnya, perbaikan dapat dilakukan terhadap kajian penilaian risiko untuk terminal lain untuk meningkatkan ketepatan nilai signifikasi risiko-risiko.

ABSTRACT

River transport is important in Sarawak as the state has a large network of river system. The number of people using this form transportation system is increasing each day. Therefore, the usage of the infrastructure of Kuching terminal will be increase and this would lead to increasing of the risk and problems. The study of this paper focused on problem quantification through risk identification of the Sarawak Rivers Board, Kuching Express Boat Passenger Terminal. In this study, the methods used for data collection was interview and questionnaires. The significance score was acquired through the analysis of questionnaires from both public and experts and the risk were ranked accordingly. From the results and discussion made through the meeting with the expert, roof leakage was considered as the most critical. Although soil erosion theoretically shows the critical result, this risk can only be considered as minor one. Additionally, other risks were also measured but these risks were considered low risk and have no major impact on the terminal. In sum, improvement can be done on the research of risk assessment for other terminal to further improve the accuracy of the significance scores of the risks.

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CHAPTER 1

INTRODUCTION

1.1 General

Sarawak is one of two Malaysian states on the island of Borneo. Known as *Bumi Kenyalang* ("Land of the Hornbills"), it is situated on the north-west of the island. It is the largest state in Malaysia. The major rivers from the south to the north include Sarawak River, the Lupar River, the Saribas River, the Rajang River with 563 km the longest river in Malaysia with the Baleh River branch, the Baram River, the Limbang River that drains into the Brunei Bay as it divides the two parts of Brunei and the Trusan River that also flows into the Brunei Bay. The Sarawak river 2459km² in area and is the main river flowing through Kuching. As such, rivers are an important mode of transportation. Hence, river transportation in Sarawak is an important transportation not only in transporting human, but also transporting goods in Sarawak. The Sarawak river system is shown in Figure 1.1.

Since river transport is important to Sarawak, therefore the many wharfs in Sarawak automatically becomes an important infrastructure. Therefore, this wharf would definitely become the main infrastructure in Sarawak. Public would be using

this wharf to transporting from place to place, hence the problems of this infrastructure is very important.

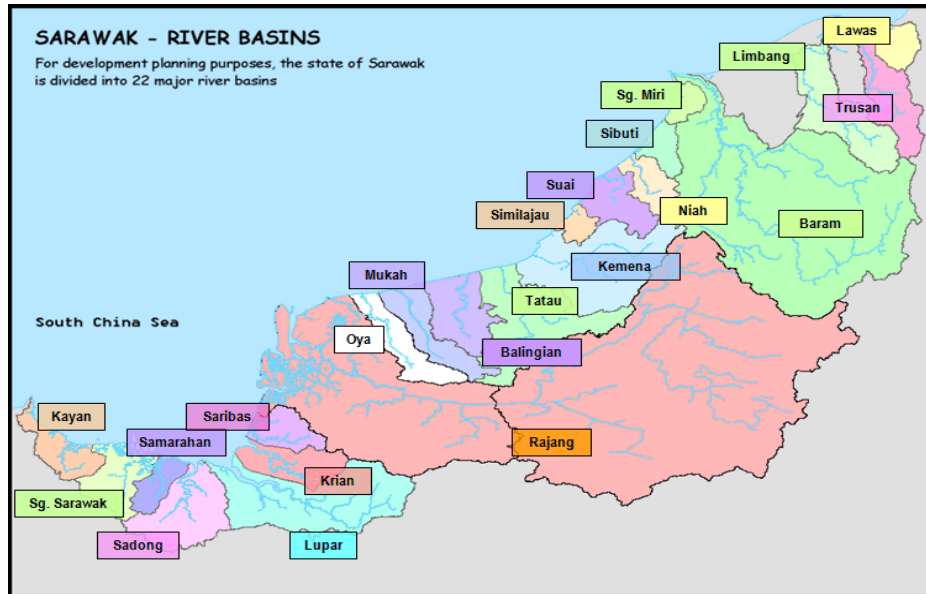


Figure 1.1: Sarawak River System

Currently, there are only few routes for river transportation at Kuching Pending Wharf, which is from Kuching to Sarikei, then final station to Sibu, and vice versa. There are lots of citizens that live in Sarikei and Bintangor that come to Kuching or to Sibu everyday for working. Therefore the boat express are important mode of transportation for them. Besides, there are also short distances route for citizens go across Sarawak River every day. These can clearly be seen at Kuching Waterfront where citizens from Petra Jaya using boats or 'Penambang' to cross the river. Additionally, all states in Sarawak can be connected by rivers, even the rural

area can be reach by rivers. Hence, Sarawak river transportation system is very important and has the potential to become one of the main transportation systems in Sarawak.

The Sarawak Rivers Board, Kuching Express Boat Passenger Terminal in Pending is the main terminal in Kuching for river transportation. This project is mainly to evaluate and access the potential problems available for the Pending wharf regarding to its design and construction.

Risk management need to be done on the wharf to evaluate and access the potential problems. Risk management is recognized as an integral part of good management practice. It is an interactive process consisting of steps, which, when undertaken in sequence, enable continual improvement in decision making. Risk management is the term applied to a logical and systematic method of establishing the context, identifying, analyzing, treating, monitoring and communicating risks associated with any activity, function or process in a way that will enable organizations to minimize losses and maximize opportunities. Risk management is as much about identifying opportunities as avoiding or mitigating losses. (Australian Standard AS/NZS 4360:1999 – Risk management)

Firstly there is a need to identify the risk which is defined as risk identification. Next is to manage the risk and access the risk. Risk may include failure, hazard and accident. A Failure may cause a component, sub-system, system or design is unable to fulfill its required function; e.g. crack at the wall of a building. On the other hand, a hazard can potentially cause a condition or practice which has

the potential to cause death, injury, ill health or damage, e.g. collapse of a level in a building. An accident mean to unplanned, uncontrolled event which results in death, injury, ill health or damage, e.g. collapse of roof due to wind strength strikes infrastructure. (Wain, 2008)

Therefore, hazards need to be identified first. Hazard identification is defined as the process of examining each work area and work task for the purpose of identifying all the hazards which are “inherent in the job”. Work areas include but are not limited to machine workshops, laboratories, office areas, agricultural and horticultural environments, stores and transport, maintenance and grounds, reprographics, and lecture theatres and teaching spaces. Tasks can include (but may not be limited to) using screen based equipment, audio and visual equipment, industrial equipment, hazardous substances and/or dangerous goods, teaching/dealing with people, driving a vehicle, dealing with emergency situations, construction. (Hazard Identification, Risk Assessment and Control Procedure, 2008)

As for risk assessment, it is defined as the process of assessing the risks associated with each of the hazards identified so that appropriate control measures can be implemented based on the probability, such as likelihood that harm, injury or ill health may occur and how severe the consequences of exposure might be. (Hazard Identification, Risk Assessment and Control Procedure, 2008)

1.2 Problem statement

River transport is important in Sarawak as the state has a large network in river system. The number of people using this transportation system will be increasing each day. Therefore, the usage of the infrastructure of Kuching terminal will be increase and this would lead to increasing of the risk. The study of this paper is focusing on problems that is related to the Sarawak Rivers Board, Kuching Express Boat Passenger Terminal.. This is to identify the potential problems and identified the potential risk available and hence rates the risk accordingly.

1.3 Scope of the project

The project would be mainly investigating the risk available at the Kuching Terminal, Pending Wharf. Accordingly, interview with the engineers from the Sarawak River Board and Sarawak Marine Department whom are in charge with the construction of the Kuching Terminal were conducted to obtain further information. In additional, surveys were conducted on experts and public for data collection.

1.4 Objectives

The objectives of this study are:

- Through risk identification method, identify the possible problems that might occur at the terminal;
- Identify the root cause of the problems;
- Quantifying the problems by using the calculation of significance score of each risk;
- Identify the solution for the critical risk.

1.5 Thesis structure

This thesis consists of six main chapters. The first chapter is the introduction, which consists of the objectives and the description of the overall research. Chapter one also consists of the scope of the project, limitation and explains on the potential benefits of the research.

Chapter two is the literature review, includes review into the basic concept of the risk which consists of definition of hazard, consequence, likelihood and perception. This chapter also explains the principle of risk and strategies of control risk. Consist of explanation on risk management, consist of role and process of risk management and risk assessment.

Chapter three provides methodology to be assessed for this research. This chapter also explains type of method and type of analysis to be used.

Chapter four mainly shows all the result obtains from this research. The results will be divided into few categories for easy understanding. Analysis of the results will also be discussed in this chapter.

Chapter five further discuss on the results obtained from previous chapter. Reasons for the results acquired will be discussed in detailed in this chapter.

Conclusion for this research is presented in chapter six. This chapter includes some recommendations for future research purpose.

1.6 Potential benefits

This study was conducted in order to improve the risk management of the terminal. In future, the terminal might become crowded as the demand for river transportation increase, therefore the safety of the passenger need to be considered and the risk assessment could secure the public safety. Additionally, the risk identification would also help the department in charge in designing the terminal if the government expanding the terminal. Therefore this study would be important for the future of the terminal.

CHAPTER 2

LITERATURE REVIEW

2.1 General

This chapter presents the definition of risk and river transportation problems. Transportation problem basically includes traffic congestion, lack of mobility and accessibility, disconnected transportation modes, severe budgetary constraints and pollution. Temporary wreck of inland water transportation shows another problem for transportation problem. As for risk is often defined as uncertainty concerning loss, which is estimated in advanced, is caused by deficiencies of designing and management. (Westerman, 2007) Risks also mean the likelihood or probability that a hazardous event will occur.

On the other hand, risk can be considered as a systematic way of dealing with hazards. (Beck, 1986) Therefore for a risk to exist there must be a hazard. Therefore, hazard is the potential causes of harm. Hazard identification is the first step to be conducted in a risk management. By defining the probable hazard, the team can then continue to manage the potential risk. Managing risk includes risk analysis, risk assessment, risk control and arrangement which will further discuss in the next section.