CHAPTER 1

INTRODUCTION

1.1   Background Study

Human activities consume and pollute a lot of water. At a global scale, most of the water use occurs in agricultural production, but there are also substantial water volumes consumed and polluted in the industrial and domestic sectors. Irrigation, bathing, washing, cleaning, cooling and so on are specific activities of water consumption and pollution. Total water consumption and pollution are generally because of increasing water demanding and polluting activities. There has been little attention paid to the fact that, in the end, total water consumption and pollution relate to what and how much communities consume and to the structure of the global economy that supplies the various consumer goods and services. Until the recent past, there have been few thoughts in the science and practice of water management about water consumption and pollution along whole production and supply chains.

The concept of "water footprint" was introduced by hoekstra in 2002 (Hoekstra,2003). The indicator of the water footprint of fresh water usage is not only on direct water consumption but also on indirect use of water. The water footprint can defined likely as the virtual water concept, the volume of water required to produce a commodity or service. Virtual water also can be referred to the hidden flow of water. The concept of virtual water was introduced by Allan in the early 1990s (Allan, 1993, 1994).

Basically, there are three key of water footprint components which is the blue water footprint (WFblue), green water footprint (WFgreen) and grey water footprint (WFgrey). Green water footprint is water from precipitation that is stored in the root zone of the soil and evaporated, transpired or incorporated by plants. Agricultural, horticultural and forestry products is one of receiving green water naturally . Meanwhile, the blue

water footprint is water that has been sourced from surface or groundwater resources and is either evaporated, incorporated into a product or taken from one body of water and returned to another, or returned at a different time. The most user of blue water footprint is from agriculture, industry and domestic sector. Lastly is grey water footprint. Grey water footprint is the amount of fresh water required to assimilate pollutants to meet specific water quality standards. The grey water footprint considers a point-source pollution discharged to a freshwater resource directly through a pipe or indirectly through runoff or leaching from the soil, impervious surfaces, or other diffuse sources. (Hoekstra, 2011)

1.2   Problem Statement

Kuantan is the state capital of Pahang, Malaysia. Kuantan is one of the future growth centres and a hub for trade, commerce, transportation and tourism and considered the social, economic and commercial hub for the East Coast of Peninsular Malaysia due to its strategic location. A little growth of population in Kuantan, Pahang will definitely affect the usage of fresh water.

In addition yo that, uncontrolled usage of water will create chaos in the future. Therefore, a research on water supply sustainabilty is pertinent. Water Supply Treatment Plant (WSTP) is known as the main component in producing a fresh water to the distribution areas. In general, there are several processes in WSTP such as as flocculation, sedimentation and filtration.

Currently, a population of Kuantan residence is rapidly growing. Until now, there is no single research focusing on the sustainability of water supply treatment plant to distribute treated water to the increasing population especially in Kuantan district. Previously, Kuantan residents have several times been experienced water shortage problems.

These occurrences have raised an issue whether the supply system is efficent or not, what factors are contributing to the issues and eventually on how to overcome those issues.

1.3   Objective

The objectives of this study are as the followings:-

1. To determine the water footprint of water supply treatment process at Panching Water Supply Treatment Plant
2. To determine the water availability of the particular river used as water intake.
3. To determine the effect of land use development to the sustainability of Panching Water Supply Treatment Plant.

1.4   Scope Of Study

This study focuses on water supply sustainability following a rapid land use development at Kuantan, Pahang. One of the Water Supply Treatment Plant (WSTP) in Kuantan basin that has been selected for this study was Panching WSTP. The source of water intake river involved for the Panching WSTP is Sungai Kuantan. All the data used in this study was secondary data obtained from several local authorities such as Pengurusan Air Pahang Berhad (PAIP) and others.