

WATER SUPPLY TREATMENT SUSTAINABILITY OF SEMAMBU
WATER TREATMENT PLANT (WTP) – A WATER FOOTPRINT APPROACH

MUHAMAD IQMAL HISHAM BIN ABD HADI

Thesis submitted in fulfillment of the requirements
for the award of the
Bachelor Degree in Civil Engineering

Faculty of Civil Engineering and Earth Resources
UNIVERSITI MALAYSIA PAHANG

JUNE 2017

ABSTRAK

The Life Cycle Assessment (LCA) telah lama digunakan untuk memberi kesan atau perkhidmatan kepada alam sekitar tetapi baru-baru ini Water Footprint Assesment (WFA) telah diperkenalkan. Dalam kajian ini, penilaian dengan menggunakan pendekatan jejak air (*Water Footprint Approach*) telah dijalankan untuk menilai penggunaan air dalam proses rawatan bekalan air (WSTP) Perkhidmatan Loji Rawatan Air Semambu (LRA). Pengenalpastian jenis jejak air (WF) pada setiap peringkat WSTP telah dijalankan dan kemudian perakaunan jejak air (*WF Accounting*) bagi tempoh yang 2010 - 2016 telah dikira. Beberapa faktor yang mungkin mempengaruhi perakaunan seperti penduduk, dan penggunaan tanah. Nilai peningkatan jumlah WF setiap tahun adalah disebabkan permintaan air yang semakin meningkat daripada aktiviti penduduk dan penggunaan tanah. Walau bagaimanapun, corak keamatan hujan daripada perubahan monsun tidak sepenuhnya menjejaskan jumlah jejak air (WF) dalam setahun. Kesimpulannya, jika nilai jejak air (WF) setiap tahun terus meningkat disebabkan oleh pembangunan yang tidak terkawal sebagai tambahan kepada perubahan iklim, air sungai pengambilan (*water intake*) tidak mencukupi dan boleh membawa kepada kekurangan air. Penemuan dalam kajian ini mencadangkan tindakan perlu diambil untuk mengurangkan jejak air (WF) mungkin akan mempunyai kesan yang besar kepada ketersediaan sumber air tawar dan kemampuannya.

ABSTRACT

The Life Cycle Assessment (LCA) has long been used to assess the impact of products or services to the environment however recently Water Footprint Assessment (WFA) has been introduced. In this study, the assessment by using Water Footprint (WF) approach was conducted to assess water consumption within the water supply treatment process (WSTP) services of Semambu Water Treatment Plant (WTP). Identification of the type of WF at each stage of WSTP was carried out and later the WF accounting for the period 2010 – 2016 was calculated. Several factors that might influence the accounting such as population, land use and monsoonal changes were also investigated. In this study, the increasing value of total WF per year was due to the increasing water demand from population and land use activities. However, the pattern of rainfall intensity from the monsoonal changes was not a crucial influenced factor to the total amount of WF per year. As a conclusion, if the value of WF per year keeps increasing due to unregulated development in addition to the occurrences of climate changing, the intake river water will be inadequate and hence may lead to water scarcity. The findings in this study suggest actions to reduce the WF will likely have a great impact on freshwater resources availability and sustainability.