Monash University
Faculty of Engineering
Master of Professional Engineering
Civil Engineering Specialization
CIV5178 – Advanced Water Treatment

Wastewater Treatment Plant Design

Presented by:
Kevin González – 111
Jhon Solórzano – 222
Julian Mejia – 34774564

Presented to:
Unit coordinator and chief examiner: Brandon Winfrey

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EXECUTIVE SUMMARY

Executive summary to be added here afterwards

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1   INTRODUCTION AND CONCEPTUAL DESIGN DESCRIPTION

Population and economical growth among other factors require the subsequently development of cities and the general infrastructure that supports them. As a cities expand, the electrical grid, road systems, drinking water and Wastewater recolection and treatment, among others, need to increase their capabilities as well. In the recent years, a northwest area in Melbourne has been rapidly developping and therefore, requires the construction of a new Wastewater treatment plant that can address the current and future needs of the community. In the presente report, the authors present the design of the abovementioned plant following local guidlines.

1.1   Population estimations

To determine the waswater flowrates and mass loads for develoment areas that the plant should be capable of process, where actual flow and load measurements are not avilable, the population equivalent can be used. This is a standarization of the wastewater production and characteristics based on the amount of people that would produce the same values. For example, in the *AMF L8 Sewerage Planning and Design Principles* which is the standard for wastewater treatment plants, developed by *Yarra Valley Water* which covers the area underdesign in the present report, on *Table 3-4* equivalent population factors are presented for different development types for both residential and commercial use. For this report, based on previous surveys and analysis, it is known that the equivalent population from domestic contributions is equal to 340000. Similarly, for commercial contributions, the equivalent population is known to comply with the following calculation: $PE_{\text{commercial}} = \left\lceil \sqrt{10} \times 9000 \right\rceil = 28461$

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