UNIVERSITI TEKNOLOGI MARA
TECHNICAL REPORT

ADJUSTED COVERING METHOD: OPTIMAL RECYCLING FACILITY LOCATION ALLOCATION IN BANDAR BUKIT MAHKOTA

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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TABLE OF CONTENTS

ABSTRACT

There are two types of waste, reusable and non-reusable wastes. As Malaysia's economy grows, so does the volume of these types of waste. Most of the waste are disposed of by sending them to landfill sites, often in excessive amounts. Issues that arise from improper disposal of waste include noise and air pollution, indirect greenhouse gas emissions through human activities such as farming and deforestation and increased global warming. Therefore, a solution must be implemented to ensure that reusable waste is properly disposed of. Recycling is a concept in waste management, in which the process carries out prevention of waste production through in-process modifications, such as collecting, sorting, cleaning and processing reusable waste which then are used in productions. This cycle will repeat if, it is in any capacity, a reusable condition. This is a proven method in which helps mitigate the amount of waste that ends up in landfill sites. Another issue is ensuring that the recycling bins are always available and accessible for nearly demand locations. In this study, a modified version of Maximal Expected Coverage Location Problem (MEXCLP) is implemented to determine the optimum number of bins and the location of recycling bins in Bukit Mahkota, Kajang. Constraints and parameters are included and analysed in the CPLEX programming language, to find the optimal solution that covers the whole study area with the minimum amount of recycling bins possible. As a result, it was found out that 100% of the study area can be covered by placing one recycling bin in either one of two recycling bin locations, namely j_3 and j_6.