UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

APPLICATION OF MAXIMAL EXPECTED COVERAGE LOCATION PROBLEM: A CASE STUDY FOR RECYCLING FACILITIES IN PETALING JAYA, SELANGOR

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ABSTRACT

Rapid urbanisation has substantially increased the production of municipal solid waste (MSW). Currently, waste production and management have become a significant issue in urban areas, particularly in developing countries. Insufficient public participation and environmental ignorance have led to the failure of numerous waste management strategies. Malaysia is not an exception to the problem of solid waste management. MSW is one of three key environmental concerns that most municipalities face, along with water and air pollution. Malaysians require an effective MSW management programme, particularly with regard to separation at source activity that would encourage recycling behaviour. Therefore, recycling can contribute to the reduction of waste disposed of to landfills. Having optimal sustainable MSW management in Malaysia, particularly recycling facilities, is crucial given that the majority of landfills have exceeded their operational capacity. Indeed, replenishing recycling facilities is the most effective method for reducing waste and improving public access to recycling facilities. Hence, the purpose of our study is to determine the optimal location and allocation of recycling facilities in selected urban area, i.e., Petaling Jaya, Selangor, by using an improved version of the Maximal Expected Coverage Location Problem (MEXCLP) by Jamiron et al., (2021). As a result, the model is capable of covering 100% of the demand area within seven minutes of travel time by locating a single recycling facility with 20 recycling bins.