UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

DIJKSTRA'S ALGORITHM FOR OPTIMAL RECYCLABLE WASTE COLLECTION SYSTEM IN PORT DICKSON (P30S22)

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

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ABSTRACT

Irregular waste collection services are among key challenges for establishing waste recycling. Waste collection has been identified globally as a major task consuming a great proportion of the budgetary allocation to waste management authority such as cost allocation for labour, waste collection trucks, or fuel consumption. Having uncollected recyclable waste at the drop-off centers may discourage public engagement in recycling if the allocated containers are constantly full or overflowing, resulting in an odour problem and unclean collection centers. Moreover, waste collection and transportation problems are among the difficult operational problems. A practical recyclable waste collection system would optimize the Waste Management System (WMS), especially in route choice from Depot to each drop-off collection center. An average mean formula is used to determine the recycling collection centers at Port Dickson, Negeri Sembilan. The data are collected from Google Map and are applied in Excel Solver using the Dijkstra's Algorithm. Based on the simulation conducted, the results show the optimal route for the recyclable waste collection with minimum travel distance where the travel distance from Depot to C13 is 2386 meters, from C13 to D42 is 2555 meters and from D42 back to the Depot is 2407 meters. Hence, the total distance for the recyclable waste collection from Depot to each drop-off collection center is 7384 meters.