

**Mapping and suitability study of existing locations of waste collection bins at University of Kelaniya**

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Solid waste management is one of the major environmental and social problems in Sri Lanka. Waste without proper segregation is the one of the main roots of barrier to implement solid waste management systems. University of Kelaniya has established waste collecting bins in different locations in the university premises in order to facilitate waste management within the university premises. The main objective of this study is to map the existing locations of the waste collecting bins in the University using Geographical Information System (GIS). Other objective was to find out the suitability of the existing locations of the waste collecting bins. There are two types of waste collecting bins at University premises. Namely, waste separated bins; biodegradable waste (green), paper waste (blue), polythene and plastic waste (orange), glass (red) and non-separated bins. Locations of the both types of bins were recorded using GPS Garmin eTrex 10 model. GPS data was transferred to ArcGIS10.2 software to map the locations of waste collecting bins. Base map was created by using high resolution satellite image. Building layer, road layer including foot path were digitized using ArcGIS 10.2 software and vector map was developed. Digitized vector layers and transferred GPS points layer were overlaid using overlay function in ArcGIS 10.2 software. Map layout was prepared to show the locations of waste collecting bins. Suitability of the existing locations of the waste collecting bins were studied according to the waste generation amounts in different places. Students canteens, staff canteens, student hostels, student recreational areas were identified as the main waste generation places at Dalugama premises in University of Kelaniya. Amount of waste generated was measured by using a spring weighing scale. Frequency of data collection was once a week. Microsoft Excel was used to analyze the data. The minimum and maximum range of bio degradable waste generation in Dalugama premises was 580-610 kg and non-bio degradable amount was 250-300 kg. Results show that the majority of separated bins are located in high waste generation places. Also it was clear that the generation amount of each type of waste depend on the type of the building, size of the building, amount of staff and students visited or worked and accessibility to bins. Further improvements are recommended in waste collection methods such as not to use separated bins to collect non separated waste and not to use non separated bins to collect separated waste. This will mislead the user when disposing garbage. Existing location of waste bins map can be used as a guide to the administration work as well as visitors and workers in the university.

**Keywords:** Waste separation, Waste management, Separation bins, Digitizing, GIS