

A GIS-ASSISTED EARLY ASSESSMENT OF THE IMPLEMENTATION CONSTRAINTS FOR UTILITY CORRIDOR Case Study in Kurunegala Municipal Council Area

E. H. Liyanaathukorala

Postgraduate Institute of Science, University of Peradeniya, Peradeniya, Sri Lanka

A corridor provides land for the coordinated placement of future linear facilities for infrastructure services. Repeatedly these facilities must span several miles impacting hundreds of people, hundreds of acres of natural resources, and costs millions of rupees in land acquisition and construction becoming a challenge for all the utility companies. The research examines the infrastructure systems and the constraints of implementing the corridor concept at different scales of observation.

To conduct the study foremost formulate mapping criteria and extracted essential layers from the landuse map in Kurunegala District. For evaluate the specific characteristics beside the road, 15 m buffer zone created and clipped to the extracted layers. Surface analysis conducted using reclassification techniques to determine the slope variation in the study area. Density maps was created by using Kernel Density technique in Spatial Analyst Tool to get a better understanding of the density of buildings roads and existing water supply pipe lines. Evaluate the cost benefits of the corridor concept by designing a structure with minimum requirements. For that a literature review has been conducted on utility corridor concept, utility accommodation, and corridor width requirement together with geospatial technology and as a case study water supply pipe laying has been taken in to consideration. Therefore, further to the literature survey factors based on responses of focus group discussions and interviews have been considered.

The results clearly indicate that the proposed utility corridor has to implement beside the roads in commercial and residential areas (0.57 km^2) where the building density is very high. The research has identified some restricted and unfeasible areas to construct the proposed utility corridors hence, it is necessary to get professional knowledge. Terrain pattern in Kurunegala MC area observed and it is suitable for constructing utility corridor considering the flat and stability of the surface. Road network (23 km) is very important aspect in this study and as a result the road density, commercial and residential land use; settlements and water bodies/paddy proximity factor as principal elements along the road which the proposed utility corridor has been considered. Existing (54 km) and Proposed (110 km) pipe line network also a very essential factor as demand for the safe dirking water requirement rapidly increasing and also the pipe line diameter is the major determinant of the width of the utility trench.

Although the implementation of corridor is awkward and costly in financial terms than the ordinary method, this study concludes that corridor do provides economic and social benefits for the community in the long term. Therefore, further studies should be conducted to convey this topic to the responsible authorities to make use of utility corridor as a sustainable development solution for the urban planning in Sri Lanka.