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M I L T O N K E Y N E S -

AN OUTLINE COST-BENEFIT STUDY

- by -

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S U M M A R Y

This is a preliminary survey of some of the factors which would need to be investigated in the design and cost-benefit analysis of alternative transport systems for Milton Keynes. It outlines the framework within which further work can be developed and provides some order-of-magnitude estimates for basic elements in the transport cost-benefit equations.

Interim conclusions draw attention to the importance of the journey to work and the extent to which work journeys are localised within the various parts of the city or evenly distributed over the city as a whole. In addition, possible commuting into and out of the city will need to be considered. If excellent transport facilities are provided, facilitating work journeys over a wide area, then the amount of travel on work journeys will also increase. How desirable is this?

The case for public transport requires much more detailed study. This initial study confirms the high cost and space requirements of road systems for high car usage. For the assumed cost levels a segregated public transport system offers a cheaper solution but selection between high cost, high capacity rail systems and lower cost, lower capacity bus systems needs to be investigated more fully. Since this work was done more detailed information has come to hand on costings for urban rapid transit systems in the U.K., ref. 3. This indicates that the public transport system construction costs assumed in this report are minimal, and that the effects of higher cost levels should also be considered before definite conclusions are reached.

City Layout

A notional city layout has been assumed as a model for generating traffic flows, calculating journey times and estimating system costs for private and public transport. This layout, shown in Fig. 1 develops some of the principles discussed in previous studies for a North Bucks new city, ref. 1 and 2, but is in no sense a definitive or recommended layout. Other layouts merit study and eventually it is intended that representative city layouts proposed by the professional town planning consultants should be examined for their effects on traffic generation and transport costs.

A basic dumb-bell shaped residential unit for 15,000 persons is postulated. This is constructed from two overlapping circles of $^3/_8$ mile radius, at $\frac{1}{2}$ mile centres enclosing an area of 500 acres with a population density of 30 persons/acre. Public transport terminals at the centres of the circles are within $7\frac{1}{2}$ minutes walking distance of any point in the residential unit. Population for a 240,000 head conurbation is assumed to be housed in twelve of these residential units in addition to 40,000 people at Bletchley and 20,000 at Wolverton. Industry is assumed to be concentrated in four similarly sized units, employing 15,000 workers each, with an additional 6,000 at both Bletchley and Wolverton.

Each residential unit is assumed to contain its own local shops, offices and social facilities. Primary and secondary schools are located in open areas adjacent to each residential unit. Main business offices, shops and entertainment are in the city centre which is two miles long by one mile wide.

Outline layouts for the residential and industrial units are shown in Fig. 2, showing approximate location and penetration of feeder roads.

Traffic Generation

40% of the population are assumed to go out to work, 30% to industry, 5% to the city centre and 5% locally. Initially, an even distribution of workers from each residential area to each work area has been assumed, so that traffic demand between a pair or origin and destination points is proportioned to the product of their sizes.

Peak traffic flows are assumed to result from journeys to and from work, concentrated into one hour both morning and evening. For journeys by car an occupancy of 1.5 persons per car is assumed.

Journey to work traffic flows between origins and destinations are tabulated on next page.