

Location Efficiency

Center For Neighbourhood Technology

Location Efficiency recognises the inherent efficiency of a place. Cities, with their dense neighborhoods, interconnected street network, access to transit, mixed land uses, and concentration of retail and services, are highly efficient communities. When brought together as they are in a city, these elements enable an efficiency of scale. An interconnected street network is vital to location efficiency, it links housing to retail and to transit, it not only allows for more efficient car movement - but it is equally inviting to pedestrians by providing the choice to walk or take transit to their destination, rather than drive.



The benefits of location efficiency are plentiful; above all they enable households to own fewer or no vehicles. Rather than relying on automobiles, residents of location efficient communities have a choice of several modes of travel – walking, biking, or using public transit. In turn, monthly household transportation costs are lower, people take on a more active lifestyle, and fewer vehicles congest the street. Additionally

parking ratios for planned residential and retail establishments can be reduced. The reduced reliance on autos also results in reduced greenhouse gas emissions.

Whilst often equated to the “feel” of a place, these elements of location efficiency are quantifiable, and therefore can be measured and assigned a value. A Location Efficiency model was developed for the Greater London metropolitan area to measure car ownership at a household level. The model can be applied to the Walthamstow Master Plan to measure the current car ownership for the development boundary, and secondly to measure the impact on car ownership from the proposed developments outlined in the Master Plan. These modeled results can then be used to provide a more accurate impression of a household’s transportation options and help to frame location efficient policy decisions.

The model was built using a multi-dimensional

linear regression. It uses five variables from the National Statistics collected in 2001 and utilises the Lower Super Output Area to model household car ownership. These variables can be categorised as household or local environment variables. The local environment variables are Employment Density and Household Density. The Household variables are Workers per Household, Size of Household and the Percent Distressed Population – an indicator for income. These five independent variables are then regressed against the average number of cars per Household from the 2001 National Statistics. Street connectivity and access to transit, two additional local environment variables, are being sought and will be included in the Location Efficiency model as they become available for this project.

Walthamstow Location Efficiency

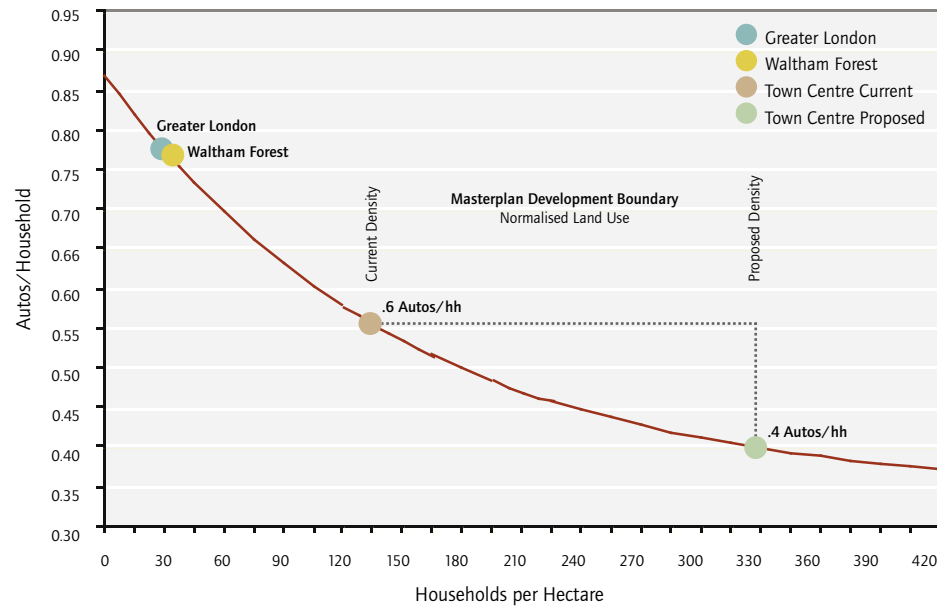
Walthamstow has very good transit availability – particularly within and just outside of the town centre development boundary and a relatively high density of 125 households per residential hectare, especially when compared to its borough of Waltham Forest, which has 23 Households/Hectare , (Greater London has 19 Households/Hectare).

The High Street provides a vibrant retail base from its open air market to the number of businesses that line the street. These assets and the household characteristics within the development boundary of Walthamstow yield an average of 0.6 vehicles per household. This is in comparison to an average of 0.9 vehicles per household for both Greater London and the

Table 1 MODEL RESULTS FOR METRO, BOROUGH, DEVELOPMENT BOUNDARY, & MASTER PLAN

	Total Households	Households per Hectare	Workers per Household	Percent Distressed Population	Employment Density Index	People per Household	Modeled Autos per Household
Greater London	3,016,058	19.2	1.10	18%	157,688	2.38	0.85
Waltham Forest	89,768	23.1	1.09	21%	105,796	2.43	0.86
Master Plan Development Boundary	972	124.6i	1.05	24%	125,541	2.40	0.57
Master plan Development Boundary & Proposed New Housing Units	2,438	312.6i	1.05	24%	125,541	2.40	0.40

Figure 1 MODELED AUTOS PER HOUSEHOLD



Waltham Forest borough, as per illustrated in the following table.

Despite relatively low vehicle ownership, there is still room to improve the overall density and retail. If the density were increased to 200 - 300 households per hectare – per the Master Plan – vehicle ownership would potentially decrease to 0.4 cars per household.

The Walthamstow masterplan also recognises the importance of increased connectivity throughout the development boundary. All of these changes will have a positive impact in helping to create a pedestrian environment and further decrease the car dependency for local residents.

Figure 1 shows this graphically. As household density increases dependency decreases. The brown curved line represents the regression model when all of the variables are held constant except for the households per hectare. The current density and the proposed density, once the masterplan is implemented, are also indicated.

*** The net density for Walthamstow is estimated at 125 households per residential hectare – the gross density is 24.9 households per hectare.**

The net density is listed for Walthamstow since it is the focus of this report. The densities for Waltham Forest and Greater London are based on gross land area; the gross density of Walthamstow is still higher than both.

